

**2013**

**District Development Committee  
RAMECHHAP**

**Third District  
Transport Master Plan  
[2070/71 – 2074/75]**

# **District Transport Master Plan**



**JULY 2013**

**Supported by:  
District Roads Support Programme  
Programme Support Unit**

## FOREWORD

The second five year District Periodic Plan (DPP) of Ramechhap is launched having vision of 'Capable, Prosperous and Civilized Ramechhap' effective from F/Y 2070/71 to 2074/75. The goal set in infrastructure sector of the second DPP is 'Improved livelihood and economical opportunity of the people benefitting from access to service, resource, facility and market through development and extension of public infrastructure'. The major objective of rural road transport sector of DPP is to extend year round motorable access from 15% now to 65% of people of Ramechhap.

To complement the vision, mission, goal and objective of the district periodic plan as well as to meet the aspiration of local community with limited resource in rural road transport sector is a challenging issue. In addition, scattered resource allocation rather than focussing in the roads having more economical return and benefit is also a prevailing situation in the district. However, utilization of resources considering social justice is also inevitable. To deal with these concerns, a plan in transport sector is necessary in the district and the District Transport Master Plan is a fundamental plan in transport sector enforced by Government of Nepal. Considering the abovementioned factors DoLIDAR has updated the guidelines to prepare the DTMP in more realistic and focussed way, best utilizing the available resources.

Viewing these aspects, DDC Ramechhap has prepared a District Transport Master Plan (DTMP) following recently updated guideline of DoLIDAR. There are three components in this plan; that are conservation, improvement and new construction and priority is given to utilize available resources accordingly.

In this context, it is my great pleasure to introduce this District Transport master Plan (DTMP) of Ramechhap covering the period from 2070/71 to 2074/75 as a formal document to utilize road sector budget of the district. I believe that this document will be helpful in backstopping to Rural Transport Infrastructure Sector Wide Approach (RTI-SWAp) through sustainable planning, resources mobilization, implementation and monitoring of the rural road sector development activities in the district. It is anticipated that implementing this DTMP, it helps to generate substantial employment opportunities for rural people in one hand, and in other hand improve livelihood through increased and reliable accessibility service, resource, facility and market. It is also believed to establish economical opportunity as well as in on-farm livelihood diversification and commercialization of agriculture sector.

Moreover, it is assumed that the document becomes helpful in lobbying and/or fascinating the donor agencies towards generating needy resources through basket fund approach for road sector development of the district. Furthermore, this document will be supportive in avoiding pervasive duplication approach in resources allocation under the rural road network development sector of this district.

Any innovative and constructive suggestions regarding this document will be highly appreciated.



Narayan Prasad Mainali  
Local Development Officer  
Ramechhap  
July 2013

## PREFACE / ACKNOWLEDGEMENTS

It is my immense gratification to bring forward this District Transportation Master Plan (DTMP) of Ramechhap covering year 2070/071 to 2074/075. We have received an opportunity to formulate third DTMP after completion of previous second DTMP of the district. It is favorable coincidence that the five year District Periodic Plan is launched covering same five fiscal year. I believe that this fundamental document in rural road transport sector contributes to achieve the sectoral goal thereby contributing the overall goal of DPP leading to realize the vision of Ramechhap district.

At this time, I would like to express my heartily appreciation to SDC Nepal for their encouragement and technical support through DRSP-PSU to prepare this document. A special acknowledgement goes to Department of Local Infrastructure and Agricultural Road (DoLIDAR) for policy guidance.

A number of influential people in the district from political parties, civil society, reporters, janajati and dalit federations, NGOs, FNCCI and district line agencies supported in preparing document by providing their valuable ideas, observations and suggestions during the course of identification of roads, their prioritization and finalize the document. I would like to express my sincere gratitude to all the dignitaries.

I am grateful to all individuals from DDC, DTO, DRSP-PSU (DIST as well as Centre) who were engaged in different stages of preparation of this document, explaining gist of recently updated DTMP guideline of DoLIDAR and making the DTMP in line with the requirements of updated guideline.

Last but not least, I would thank to District Roads Coordination Committee (DRCC), for their valuable suggestion and recommendation to formalize the District Transport Master Plan.



Narayan Prasad Mainali  
Local Development Officer  
Ramechhap  
July 2013

## EXECUTIVE SUMMARY

Ramechhap district has implementing transport infrastructure in planned way preparing District Transport Master Plan since last ten years. As the duration of second five year plan in transport sector comes to end by July 2013, the district has formulated a new five year District Transport Master Plan covering the period from FY: 2070/071 to 2074/075. It is another opportunity to the district is that the five year periodic plan of the district is prepared covering same duration, which gives the harmonized plan of the transport sector with other sectors.

The district has altogether 55 VDCs with total population of 202,646 (population census 2011). The district is connected with capital city Kathmandu via Nayapul Manthali road, Lamosangu Jiri road and Araniko highway. Alternately the district will connect capital city via B.P. Highway soon. The district is connected with China boarder (Tatopani) via Lamosangu Jiri road and Arniko Highway. Similarly the district is connected with Terai and India through B.P. highway. It is also connected to eastern hill of Nepal through Midhill Highway. In addition there are district roads that connect neighbouring districts Kavrepalanchowk, Sindhupalchowk, Dolakha, Solukhumbu, Okhaldhunga and Sindhuli as inter-district connectivity.

As an entry point to formulate the District Transport Master Plan, inventory of existing roads in the district is prepared and the requirements of new road to be constructed are assessed. Based on the the inventory data compiled requirement of new roads, 34 roads are identified as District Road Core Network in DRCC/DTICC meeting. On identifying the DRCN, emphasis was given that no VDC center remains unconnected through DRCN. A summary of road network(s) in the district is as shown in Table 1-1.

**Table 1-1: Summary of Disttict Road Networks**

Road Class	Total length	Black Top	Gravel/Cobble	Earthen
Strategic road network	101.25	30.10	-	71.15
Highways	-			
Feeder roads	101.25	30.10	-	71.15
Urban roads	-			
District road core network	688.41	-	69.00	619.41
Village roads	397.91	-	-	397.91
<b>Total</b>	<b>1,187.57</b>	<b>30.10</b>	<b>69.00</b>	<b>1,088.47</b>

This plan deals with three major components of road transport sector; that are conservation of existing roads, improvement of existing roads and construction of new roads. Out of selected 34 DRCN roads, the DTMP for this period will be dealt with 23 roads only. Out of 23 roads conservation of 7 roads will be done in first year, fifteen roads will be improved to meet the requirement of Nepal Rural Road Standard (NRRS) with all weather gravelled/cobbled standards and 5 new roads will be constructed in which both conservation and improvement will be done 4 roads.

The component wise cost based on the road inventory survey and indicative cost estimate for 23 roads are NPR 168,888,000 for conservation, NPR 3,862,262,000 for Improvement and NPR 620,860,000 for new construction.

A summary of required cost for improvement works including new construction is shown in Table 1-2.

**Table 1-2: Summary of road for intervention**

Improvement type	Requirement	Cost (NPR)
Bridges	1390 m	546,000,000
Slab culverts	378 m	52,200,000
Causeways	4,334.5 m	73,315,000
Hume pipes	3,062.5 units	61,250,000
Lined drains	390,800 m	781,600,000
Widening with retaining walls	342.3 km	1,032,636,790
Rehabilitation	0 km	-
Gravelling/Cobbling	357.8 km	787,160,000
Blacktopping	0 km	-
Grade Improvement	108.85 km	870,800,000
New construction (Track Opening)	69.54 km	278,160,000
Conservation	260.32 km	168,888,000
<b>Total</b>		<b>4,652,009,790</b>

Guidelines for DTMP, categorically states that the priority shall be given to conservation component first and then improvement and new construction; however, it is the reality of Ramechhap district that most of the roads does not meet the Nepal Rural Road Standards (NRRS) and are not in maintainable condition. Therefore, most of the resource is allocated in improvement of roads to bring the road in a condition as per the standard. It is planned to maintain under conservation part for only those roads which are in maintainable conditions. With regard to new construction, it is planned to complete remaining stretch of the roads which are not completed in previous five year plan.

Estimated 5-years' estimated budget for transport sector is NPR. 3,385,300,000. During the period of this DTMP; conservation of 260.32 km, up-gradation of 390.80 km and new construction of 69.54 km of roads is proposed. The number of accessible VDCs and percentage of the population of the district having access to SRN and/or all-weather DRCN roads will be 45 and 86% respectively at the end of this DTMP period.

## ABBREVIATIONS

DBR	District Bridge Record
DDC	District Development Committee
DoLIDAR	Department of Local Infrastructure Development and Agriculture Road
DoR	Department of Road
DPP	District Periodic Plan
DRCC	District Road Coordination Committee
DTICC	District Transport Infrastructure Coordination Committee
DTMP	District Transport Master Plan
DTPP	District Transport Perspective Plan
GIS	Geographical Information system
GoN	Government of Nepal
GPS	Global Positioning System
LGCDP	Local Governance and Community Development Programme
LRBP	Local Road Bridge Programme
MFALD	Ministry of Federal Affairs and Local Development
MP	Member of Parliament
NGO	Non-Government Organization
NRRS	Nepal Rural Road Standard
RBN	Road Board Nepal
RRN	Rural Reconstruction Nepal
SWAp	Sector Wide Approach
VDC	Village Development Committee

# CONTENTS

Foreword.....	i
Preface / Acknowledgements .....	i
Executive summary.....	ii
Abbreviations .....	iv
<b>1. Introduction.....</b>	<b>1</b>
<b>2. District road core network (DRCN) .....</b>	<b>3</b>
2.1 Total road network .....	3
2.2 National Highways and Feeder Roads .....	3
2.3 identification of District Road Core Network .....	4
2.4 Village roads .....	7
2.5 Bridges .....	7
<b>3. District Transport Perspective Plan (DTPP).....</b>	<b>10</b>
3.1 Conservation.....	10
3.2 Improvement.....	12
3.3 New construction .....	16
3.4 District Transport Perspective Plan .....	16
<b>4. Cost estimation.....</b>	<b>20</b>
4.1 Conservation.....	20
4.2 Improvement.....	20
4.3 New construction .....	22
4.4 DTPP costs.....	22
<b>5. Ranking .....</b>	<b>23</b>
5.1 Conservation.....	24
5.2 Improvement.....	24
5.3 New construction .....	25
<b>6. District Transport Master Plan (DTMP).....</b>	<b>26</b>
6.1 Five Year Projected Financial resources .....	26
6.2 Budget allocation .....	27
6.3 DTMP outputs.....	29
6.4 DTMP outcome .....	30
<b>7. Trail Bridge.....</b>	<b>31</b>
<b>Annex 1 Traffic data.....</b>	<b>1</b>
<b>Annex 2 Population served .....</b>	<b>2</b>
<b>Annex 3 Location of proposed interventions.....</b>	<b>4</b>
<b>Annex 4 Trail Bridge Data (Long List)</b>	

## TABLES

Table 1-1:	Summary of District Road Networks .....	ii
Table 1-2:	Summary of road for intervention .....	iii
Table 2-1:	Summary of All Roads .....	3
Table 2-2:	National Highways and Feeder Roads.....	3
Table 2-3:	Summary of All Roads .....	4
Table 2-4:	Roads under DRCN.....	4
Table 2-5:	DRCN for DTMP .....	6
Table 3-1:	Conservation requirements.....	12
Table 3-2:	Sections of the district road core network requiring gravelling.....	13
Table 3-3:	Required cross drainage structures .....	13
Table 3-4:	Required protective structures .....	14
Table 3-5:	Sections of the district road core network requiring widening .....	15
Table 3-6:	action required for grade improvement .....	15
Table 3-7:	Sections of the district road core network requiring new construction .....	16
Table 3-8:	District Transport Perspective Plan .....	17
Table 4-1:	Standard unit costs for conservation .....	20
Table 4-2:	Estimated conservation costs for the first year (NPR '000) .....	20
Table 4-3:	Standard unit costs for improvement activities .....	21
Table 4-4:	Cost estimate for improvement measures (NPR '000) .....	21
Table 4-5:	Standard unit costs for new construction .....	22
Table 4-6:	Cost estimate for new construction (NPR '000).....	22
Table 4-7:	DTMP costs (NPR '000) .....	22
Table 5-1:	Ranking of conservation works (NPR '000).....	24
Table 5-2:	Ranking of improvement works (NPR '000) .....	24
Table 5-3:	Ranking of construction works (NPR '000).....	25
Table 6-1:	Estimated funding levels (roads) for next five years (in NPR '000).....	26
Table 6-2:	DTMP investment plan .....	28
Table 6-3:	DTMP output .....	29
Table 6-4:	Road wise planned output .....	29
Table 6-5:	Standard of DRCN roads .....	30
Table 6-6:	Population with access to road network .....	30
Table 7-1:	Trail Bridge Plan .....	31
Table 7-2:	Budet Estimate for Trail Bridge (NPR.'000).....	31
Table 7-3:	Budget planning for trail bridge .....	31

## FIGURES

Figure 1-1:	Location of the district .....	1
Figure 2-1:	Road Inventory Map .....	8
Figure 2-2:	District Road Core Network (DRCN) Map.....	9
Figure 3-1:	District Transport Perspective Plan (DTPP).....	19
Figure 6-1:	District road sector budget allocation.....	27
Figure 7-1:	District Transport Master Plan (DTMP).....	32



# 1. INTRODUCTION

Ramechhap district is located in Janakpur Zone of the Central Development Region of Nepal. It borders with Kavrepalanchowk and Sindhupalchowk district of Bagmati Zone in the west; Solukhumbu and Okhaldhunga districts of Sagarmatha Zone in east; Dolakha district in north; and Sindhuli district in south. There are altogether 55 VDCs in the district.

Ramechhap has total population of 202,646 (census 2011) which is 27th least populated district of the country with the growth rate of 1.22%, lying below the national average. The district is predominantly rural with an average population density of around 137 (2001) person per square kilometer. Manthali is the headquarters of the district having population of 7,569.

With regard to gender composition, the district has female population of 109,260 and 93,386 males. The total no of household in the district is 43,910 and the average household size is 5.26. Major ethnic groups residing in the district are Chhetri, Tamang, Newar, Magar and Brahmin. Similarly, it is found that Nepali, Tamang, Newar, Magar and Sunuwar are languages spoken within the district. Whilst the average literacy rate is about 39.4% but only about 26.6% of the women are literate.

Approximately 45.6% of the district area is covered with forest and about 37.5% of the district area is under cultivation.

**Figure 1-1 Location of the district**



The district has only motorable access to the capital city Kathmandu through Lamosangu Jiri feeder road and Araniko highway having distance of 200km. Sunkoshi River, Tamakoshi River, Likhu River, Chauri Khola and Khimti Khola are the major hurdle for road transport of Ramechhap. There are three bridges under construction over Sunkoshi River which connects Ramechhap and Sindhuli districts and BP Highway. Another three bridges are constructing over Likhu River which will connect Okhaldhunga and Solukhumbu districts. Likewise two bridges are under construction over Chauri Khola which will connect the Kavrepalanchowk and Sindhupalchowk district. One bridge

is under construction over Tamakoshi river at Manthali which will link the eastern and western part of the district. By the end of this plan, these bridges will be completed, some more bridge will be constructed under the implementation of this plan and district will have smooth access within and out of district.

There exist several roads even providing bus services; however, most of them are not meeting the standards, and need to be improved in terms of geometry (vertical as well as horizontal alignments), protection works, water management works, widening, surfacing etc. Only few district roads are with the condition of regular traffic operation. There exists predominant scenario of transportation, especially in inner areas, is still trail based. Ramechhap district can become a hub as the district is located on the cross road of Midhill Highway and possible major strategic road connecting India and China.

## 2. DISTRICT ROAD CORE NETWORK (DRCN)

The first revision, 2069 (2012) of Nepal Rural Road Standards (2055) has slightly modified the existing types or classification of district or rural roads. As per the update, the road network within a district is divided within two types (except strategic road network and urban roads). A road within the district joining a VDC headquarters or a growth centre to the district headquarters, directly or via other VDC(s), a neighbouring district headquarters or the Strategic Road Network is called the “**District Road**”. A network of such roads within a district is called “**District Road Core Network**”. Whereas, the smaller roads not falling under District Road (Core Network) category are Village Roads, including other Agricultural Roads. This chapter summarises the existing status of roads in the district covering mainly the District Road Core Network (DRCN).

### 2.1 TOTAL ROAD NETWORK

As a part of preparation of this DTMP, a detailed road inventory of all roads in the district is carried out. The class of the roads include strategic, urban and rural roads in one way and surface types include blacktop, gravel and earthen road. A summary of different classes of roads is presented in the following Table 2-1

**Table 2-1: Summary of All Roads**

Road Class	Length (km)			
	Total	Black Top	Gravel	Earthen
Strategic roads	101.25	30.10	-	71.15
Urban roads	-	-	-	-
Rural roads	1,086.32		69.00	1,017.32
<b>Total</b>	<b>1,187.57</b>	<b>30.10</b>	<b>69.00</b>	<b>1,088.47</b>

### 2.2 NATIONAL HIGHWAYS AND FEEDER ROADS

There are seven feeder roads in Ramechhap district and there is no high lies in the district; however, BP Highway and Midhill Highway pass just another bank of Sunkoshi Rifer. In addition to the district level roads, few sections of some strategic roads passes through Ramechhap district. Out of 101 km of feeder road only 31 km is black topped and remaining are in upgrading stage. A summary list of such roads in the district is summarised in the Table 2-2.

**Table 2-2 National Highways and Feeder Roads**

Code	Description	Total length	Black Top	Gravel/Cobble	Earthen
F070[01]	Khurkot (H06)-Manthali	11.00	11.00		
F159[01]	Khurkot-Ramechhap-Sanghutar	33.00			33.00
F201[02]	Khahare-Dhaule-Pekarnas	-			
F202[02]	Siuraune (Dharapani)-Those-Bamti	24.25			24.25
F3201[05]	Milti Khola-Kirnetar	2.00	2.00		
F3201[06]	Kirnetar-Khimti Khola	2.10	2.10		
F3201[07]	Khimti Khola-Ramechhap	28.90	15.00		13.90
<b>Total</b>		<b>101.25</b>	<b>30.10</b>	<b>0.00</b>	<b>71.15</b>

A GIS map of all road networks of the district is prepared and attached with this report as Figure 2. The map includes different elements with the objective of facilitating easy comparison and understanding of different maps and/or alignments in this DTMP report.

## 2.3 IDENTIFICATION OF DISTRICT ROAD CORE NETWORK

Initially an orientation session was organised at DDC on 21<sup>st</sup> January 2013 and February 25, 2013 regarding recently updated guideline of DTMP and 1<sup>st</sup> Revision, 2069 (2012) of Nepal Rural Road Standard (2055), which has put forward the idea (for the first time) of “District Road Core Network (DRCN)”. The concept of DRCN is envisioned to prioritise (short-list) few roads with comparatively equitable distribution of accessibility within the district. With this, it is supposed that road-sector resources within a district shall be used in more planned way for measurable output and also for serving people even residing in remote areas of the district.

In the mean time, exercises are followed to prepare district road core-network. The exercises are made basically referring the detailed inventory map of existing roads in the district prepared using GPS instrument. A summary of all types of roads existing in the district is presented in the Table 2-3.

**Table 2-3 Summary of All Roads**

Road Class	Total length	Black Top	Gravel/Cobble	Earthen
Strategic road network	101.25	30.10	-	71.15
Highways	-			
Feeder roads	101.25	30.10	-	71.15
Urban roads	-			
District road core network	688.41	-	69.00	619.41
Village roads	397.91	-	-	397.91
<b>Total</b>	<b>1,187.57</b>	<b>30.10</b>	<b>69.00</b>	<b>1,088.47</b>

While identifying core network of district roads, requirements of the district are traced and/or addressed through series of formal as well as informal discussions with different stakeholders. The district road core network is identified considering mainly the following factors.

- Each VDC is linked with the district headquarters directly or through other VDC(s), neighbouring districts or SRN;
- There exists only one linkage from a VDC headquarters (growth centre) to district headquarters, unless that road connects other VDC(s) as well;
- Minimum length of DRCN is obtained to link VDC HQs with district HQ;
- Best technical and most economical routes are identified;
- Each road of the DRCN ends at VDC HQ or its development centre.

The identified core network of districts roads is presented, discussed and agreed in the meeting of District Road Coordination Committee (DRCC) on 21<sup>st</sup> January 2013 and February 25, 2013. The same core network is approved and/or endorsed by DDC and District Council. A table summarising all such roads (DRCN roads with their road code, total length and length by surface types) of the district is presented in the Table 2-4.

**Table 2-4 Roads under DRCN**

S.N.	Code	Description	Length (Km)					
			Total length	Black Top	Gravel	Earthen	All weather	Fair weather
1	21DR001	Devitar-Doramba-Paseban-Koilibagar	50.50			50.50	-	50.50
2	21DR002	Manthali-Galba-Chauri	65.00		7.00	58.00	7.00	58.00
3	21DR003	Khairnighat-Bethan-Galba	30.00			30.00	-	30.00
4	21DR004	Khairnighat-Galba-Doramba-Kholakharka	36.35			36.35	-	36.35

5	21DR005	Puditar-Tharbhanjyang - Alchidhunga-Alampur	14.12			14.12		14.12
6	21DR006	Chauri(Bangebeshi)-Gunsi-Bhadaure Gurase	8.48			8.48	-	8.48
7	21DR007	Khairanighat-Khanyapani-Danse-Sunapati-Dogma	18.69			18.69	-	18.69
8	21DR008	Goganpani Sunarkhop Maihuwa	7.78			7.78	-	7.78
9	21DR009	Majhuwa(Dadhuwa) Nigalbas Timu	12.74			12.74		12.74
10	21DR010	Sitkha-Goganpani-Dhulebesi	15.20			15.20	-	15.20
11	21DR011	Bhatauli-Dhulebesi-Mahakalsthan(Gagal)	13.00			13.00	-	13.00
12	21DR012	Sathimure Kalleri Pinkhuri (Gothdanda)	8.00			8.00		8.00
13	21DR013	Manthali-Chisapani-Puranagaun(Health Post)- Thanapati	12.50			12.50	-	12.50
14	21DR014	Manthali Chanakhu Ga. Bi. Sha. Bhawan Pokharidanda	10.12			10.12	-	10.12
15	21DR015	Manthali-Gelu-Pokharidanda	17.00			17.00	-	17.00
16	21DR016	Khimti-Betali-Dharapani	34.50		17.00	17.50	17.00	17.50
17	21DR017	Shivalaya-Garjang-Sangbadanda	12.50			12.50	-	12.50
18	21DR018	Deurali-Serding-Gumdel	23.00			23.00	-	23.00
19	21DR019	Salu-Dhobi-Base-Bamti	54.39			54.39	-	54.39
20	21DR020	Dilauri-Sabra- Kaileshor-Bamti	16.16			16.16	-	16.16
21	21DR021	Those-Singati-Pritee	26.00			26.00	-	26.00
22	21DR022	Rasnal Bhitrikhani Gupteshor Kaileshor Dhungebhir Bhujikoldanda	23.35			23.35		23.35
23	21DR023	Yonjantole Pharpu Ga. Bi. Sha. Bhawan	4.98			4.98		4.98
24	21DR024	Khimti Shivalaya	4.00			4.00		4.00
25	21DR025	Haldebeshi-Dhobi-Dhandebesi	36.00		36.00		36.00	-
26	21DR026	Manthali-Kathjour-Dhobi	22.00		5.00	17.00	5.00	17.00
27	21DR027	Manthali-Sunarpani	8.50			8.50	-	8.50
28	21DR028	Manthali Bhaluwajor	11.06			11.06	-	11.06
29	21DR029	Manthali Raltar Samalsthan (Salu)	7.50			7.50		7.50
30	21DR030	Kukurkutte Bhanjyang Gothgaun Sirise	14.00			14.00	-	14.00
31	21DR031	Ramechhap-Bhalukhop-Okhreni-Himganga	12.00			12.00	-	12.00
32	21DR032	Ramechhap-Rampur-Kolunjorghat	23.00			23.00	-	23.00
33	21DR033	Ramechhap Birtaghat	11.74			11.74		11.74
34	F202[02]	Siuraune(Dharapani)-Those-Bamti	24.25		4.00	20.25	4.00	20.25
<b>Total</b>			<b>688.41</b>	<b>-</b>	<b>69.00</b>	<b>619.41</b>	<b>69.00</b>	<b>619.41</b>

Considering the available budget for DTMP, DDC Ramechhap in coordination with DRCC has decided on July 26, 2013 for intervention of 23 roads only. In which 15 roads for improvement and 5 roads for new construction. Seven roads are selected for conservation in which 4 roads are selected for both improvement and conservation which are presented in Table 2-5: DRCN for DTMP. Out of identified 688.41 DRCN, DTMP will deal only 522.69 km and rest will manage for conservation by the district by 2% of the available budget.

**Table 2-5: DRCN for DTMP**

S.N.	Code	Description	Length (Km)					
			Total length	Black Top	Gravel	Earthen	All weather	Fair weather
1	21DR001	Devitar-Doramba-Paseban-Koilibagar	50.50			50.50	-	50.50
2	21DR002	Manthali-Galba-Chauri	65.00		7.00	58.00	7.00	58.00
3	21DR003	Khairenighat-Bethan-Galba	30.00			30.00	-	30.00
4	21DR004	Khairenighat-Galba-Doramba-Kholakharka	36.35			36.35	-	36.35
5	21DR005	Puditar-Tharbhanjyang - Alchidhunga-Alampur	14.12			14.12		14.12
6	21DR009	Majhuwa(Dadhuwa) Nigalbas Timu	12.74			12.74		12.74
7	21DR010	Sitkha-Goganpani-Dhulebesi	15.20			15.20	-	15.20
8	21DR011	Bhatauli-Dhulebesi-Mahakalsthan(Gagal)	13.00			13.00	-	13.00
9	21DR013	Manthali-Chisapani-Puranagaun(Health Post)-Thanapati	12.50			12.50	-	12.50
10	21DR015	Manthali-Gelu-Pokharidanda	17.00			17.00	-	17.00
11	21DR016	Khimti-Betali-Dharapani	34.50		17.00	17.50	17.00	17.50
12	21DR017	Shivalaya-Garjang-Sangbadanda	12.50			12.50	-	12.50
13	21DR019	Salu-Dhobi-Base-Bamti	54.39			54.39	-	54.39
14	21DR020	Dilauri-Sabra- Kaileshor-Bamti	16.16			16.16	-	16.16
15	21DR021	Those-Singati-Pritee	26.00			26.00	-	26.00
16	21DR023	Yonjantole Pharpu Ga. Bi. Sha. Bhawan	4.98			4.98		4.98
17	21DR024	Khimti Shivalaya	4.00			4.00		4.00
18	21DR026	Manthali-Kathjour-Dhobi	22.00		5.00	17.00	5.00	17.00
19	21DR027	Manthali-Sunarpani	8.50			8.50	-	8.50
20	21DR030	Kukurkutte Bhanjyang Gothgaun Sirise	14.00			14.00	-	14.00
21	21DR031	Ramechhap-Bhalukhop-Okhrenei-Himganga	12.00			12.00	-	12.00
22	21DR032	Ramechhap-Rampur-Kolunjorghat	23.00			23.00	-	23.00
23	F202[02]	Siuraune(Dharapani)-Those-Bamti	24.25		4.00	20.25	4.00	20.25
Total			522.69	-	33.00	489.69	33.00	489.69

A GIS map of all district roads core network is prepared and attached with this report as Figure 3. The map includes different elements with the objective of facilitating easy comparison and understanding of different maps and/or alignments in this DTMP report.

## **2.4 VILLAGE ROADS**

All roads of the district those do not fall under DRCN, Strategic Road Network (SRN) or Urban Road Network (within municipal boundaries) are categorized as village roads. As per the current update 397.91km is the total length of all village roads, which gives average figure of 7 km for maintenance responsibility of each VDC in Ramechhap district. VDCs manage emergency and routine/recurrent maintenance of these roads using mainly the VDC grants and community contributions and also in some cases district level allocations.

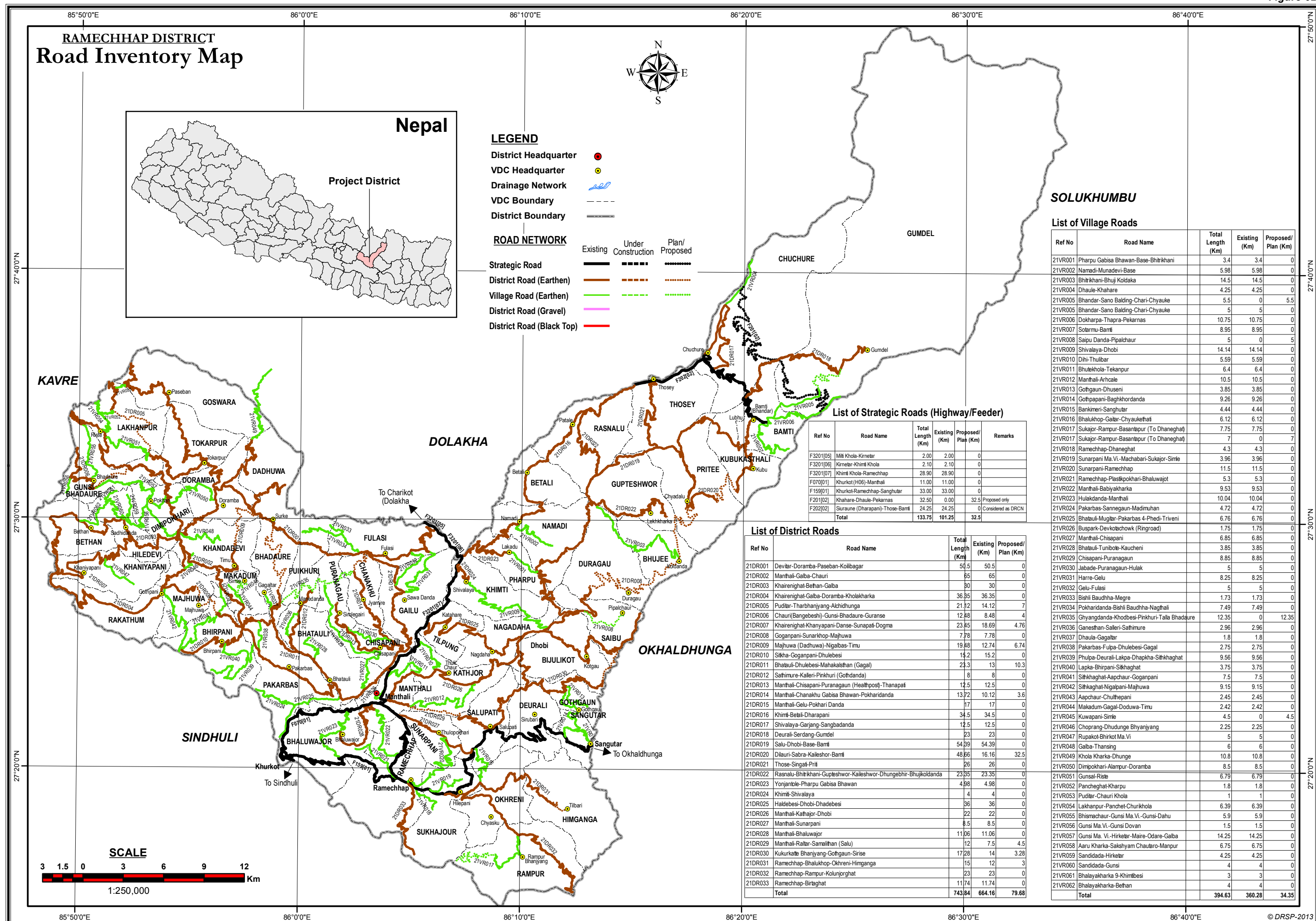
For planning purpose, these roads do not fall within the scope of DTMP. Instead, a Village Road Core Network (VRCN) can be prepared separately. These roads are for providing linkages from different settlements to DRCN or SRN and ultimately to district headquarters.

## **2.5 BRIDGES**

Water management aspect is a measure threat to maintain serviceability of our roads. Likewise, because of the topography of the district, different types of water crossing structures like causeways, slab-culverts, bridges etc are unavoidable to develop our roads to all-weather standard. In the case of Ramechhap district also, preliminary assessment has shown that a total length of about 910m of bridges is needed for different DRCN roads. However, proposal for design and cost estimate of bridges required along the alignments of DRCN roads of the district is not included in this DTMP.

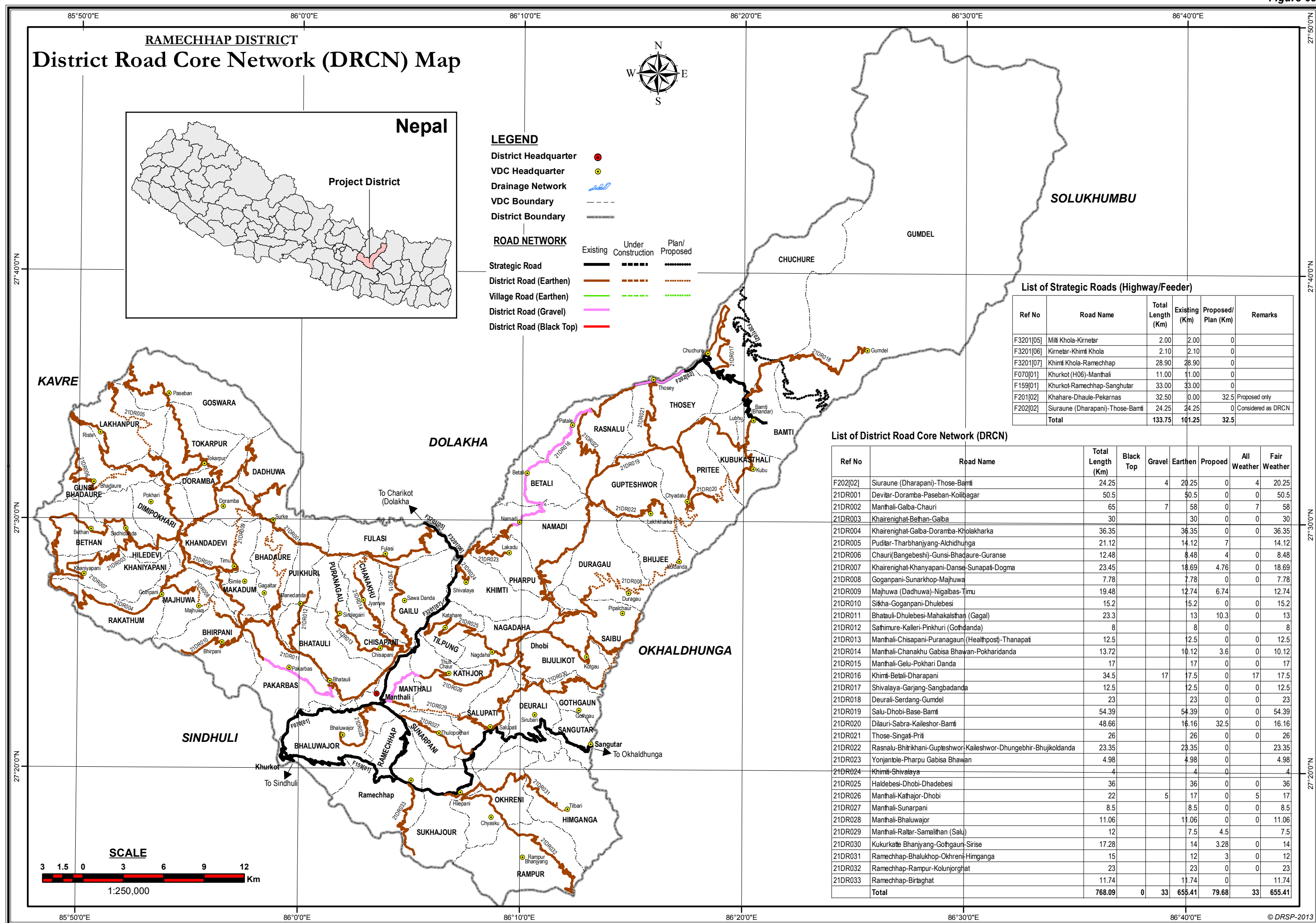


**Figure-02**





© DRSP-2013



### 3. DISTRICT TRANSPORT PERSPECTIVE PLAN (DTPP)

After the identification of DRCN, a plan of road-works is prepared for all roads in the district under the responsibility of District Development Committee. The plan is taken here as district Transport Perspective Plan (DTPP), where limitation of available resources is not usually considered, rather requirements are assessed and addressed. It simply details the list of all the identified interventions that are necessary to bring the roads to a maintainable all-weather standard and keep them there, as well as the creation of any new roads considered necessary to complete construction of the DRCN. Major points taken into account in this stage are:

- Operable condition of all DRCN roads is maintained at least as in the existing situation;
- Necessary interventions for DRCN roads are identified to bring them into maintainable condition;
- All VDCs are linked with district headquarters through DRCN or SRN;
- All DRCN roads are upgraded at least up to the standards defined by 1<sup>st</sup> revision (2069) of Nepal Rural Road Standard (2055) and to the “all weather condition”;
- Water crossing structures and surface improvement works are included respectively / appropriately.

In order to carry out the planning and prioritization process, following information are collected. The information, which show the existing situation and requirement for expected services in the district are important at this stage. Most of them are gathered through secondary sources and some others which are not readily available are collected from primary sources.

- Traffic data for the DRCN roads;
- Road data for the DRCN roads;
- Standard cost of different interventions (road-works);
- Population data for the VDCs in the district;
- Financial / budgetary position of the district especially for the road sector ;
- Other general data regarding the district.

For planning the DRCN road-works in this process of preparing DTPP, interventions like conservation, widening, improvement (alignment), rehabilitation, protective structure, cross drainages, gravelling and blacktopping are considered with due priority. Extent of these requirements including financial part is presented in following paragraphs.

#### 3.1 CONSERVATION

The action taken to minimize the effects of deteriorating factors on road is known as maintenance or conservation. Lack of maintenance accelerates the deterioration of a road. National Plan for Rural Road Maintenance (NPRRM) 2056 defines road maintenance as a function of keeping the roadways, roadside structures, cross-drainage structures and other facilities in the best possible condition to ensure reliable and safe transportation along the roadways. It:

- Minimises the rate of deterioration of the road and prolong its life;
- Provides better running surface and thus reduce the cost of vehicle operation; and ensure reliable and safe transport services.

Realizing the challenge of maintaining the district roads in their serviceable condition, road-works related to conservation of assets of the district are given first priority in this process of preparaton of DTMP. Major scopes of work in this part are as follows.

### 3.1.1 EMERGENCY MAINTENANCE

Emergency maintenance works are to be carried out due to unexpected and sudden blockage of roads that stop vehicular movement due mainly to natural disasters. Immediate works to be executed for the quick opening of the road, reinstating vehicular movement and to protect the road from further damage are termed emergency maintenance. Reinstating the damaged road to its original condition after completion of emergency maintenance works is not included under this heading.

### 3.1.2 ROUTINE MAINTENANCE

These are minor maintenance works, which are of regular nature and cannot be accurately estimated or measured, are categorized under routine maintenance. It covers the work involved in keeping the road in proper shape and in protecting it from deterioration. Apart from traffic the major factor that causes deterioration of the road surface is water. Hence prevention of water accumulation on the road surface and managing the flow of water to desired design consideration is the primary objective of routine maintenance. Generally there is no need for skilled person power for routine maintenance. **Rekhalus** (length workers) are given the responsibility of carrying out routine maintenance work along maintainable roads. These are an unskilled labor who works with simple hand tools. Even with the movement of traffic or without, it is important to ensure that routine maintenance is carried out whole months of the year but given priority during the monsoon months. With the increase in the workload for Rekhalus during monsoon, the numbers of Rekhalus are increased in proportions from 5 KM/Rekhalu to 2.5 KM/Rekhalu. This work is conducted at fixed cost and generally carried out through users committees deploying length persons.

Routine Maintenance consists of following works and hence are the responsibilities of Rekhalus.

- Safety inspection and removal of obstruction and security checks;
- Cleaning of drains, culverts, bridges;
- Filling and compaction of pot-holes;
- Trimming road edges for water shedding;
- Reshaping carriageway and compaction;
- Removal of small-sized slides/slips that fall on road surface;
- Cutting grass, bushes and branches of tree for visibility splays;
- Maintaining trees along the road sides;
- Cleaning of vegetation from drainage paths;
- Maintaining and placing of road signs and delineation;
- Any other simple works.

### 3.1.3 RECURRENT MAINTENANCE

Small maintenance works to be carried out depending on the season of a year but not categorized under routine and emergency maintenance are categorized as Recurrent Maintenance. Requirement of these works can arise from vehicular traffic flow or due to rainfall. These are to be carried out from time to time, typically 2-3 times in a year. This work may also need some skilled person power. Before starting the maintenance work, needs identification and preparation of cost estimate in this category. Some of the examples of works grouped in this type are maintenance of gravel carriageway and shoulders by repairing irregularities/rills, repairing of potholes and ruts, maintenance of side drain and masonry wall, rehabilitation of small cross-drainage structures etc.

### 3.1.4 PERIODIC MAINTENANCE

Maintenance works to be carried out in intervals of years and of large scale are kept under this category. It is not always possible to maintain the road in a useable state through routine and recurrent maintenance alone and roads requiring quantitatively large volumes of maintenance fall under this category. Periodic maintenance are to be typically carried out once at intervals on black topped roads of 5 to 7 years, on graveled road of 3 to 5 years and on earthen road as per road condition but typically 2 to 3 years but on some rural roads every year particularly after rainy season. This work may generally require skilled person power. Before starting the maintenance works of this type, identification and preparation of cost estimate is needed.

Periodic maintenance usually consists of following works.

- Re-cambering and re-grading long stretch of earthen and gravel roads;
- Re-gravelling;
- Improvement of carriageway and resealing of black topped roads;
- Clearance of medium to large scale landslide and its protection works;
- Improvement or reconstruction of roadside guard wall, parapet wall, railing of bridges & culverts;
- Construction of small scale river training structures;
- Repair and/or rehabilitation of dry stone masonry, gabion retaining/toe wall;
- Plantation/replanting of grasses, shrubs, trees etc. as per site conditions.

During the process of preparation of this DTMP, requirements of different types of conservation works for DRCN is assessed and summarized in the following Table 3-1.

**Table 3-1 Conservation requirements**

S.N.	Code	Emergency maintenance (km)	Routine maintenance (km)	Recurrent maintenance (km)	Periodic maintenance (km)
1	21DR002	16.50	16.50	16.50	16.50
2	21DR026	22.00	22.00	22.00	22.00
3	21DR017	12.50	12.50	12.50	12.50
4	21DR016	34.50	34.50	34.50	34.50
5	F202[02]	10.00	10.00	10.00	10.00
6	21DR024	4.00	4.00	4.00	4.00
7	21DR023	4.98	4.98	4.98	4.98
<b>Total</b>		<b>104.48</b>	<b>104.48</b>	<b>104.48</b>	<b>104.48</b>

## 3.2 IMPROVEMENT

Under this scope of improvement, the road-works (interventions) that are required or identified for upgrading from the existing situation of this time of the roads are included. Since there exit several roads in the district which are recently opened and also most of them are non-engineered, requirements of upgrading are mainly related to alignment (horizontal as well as vertical) correction, widening etc. In this chapter, details of identified required interventions of different scopes are mentioned as follows.

### 3.2.1 REHABILITATION

Since all of the DRCN roads of the district are recently opened with mainly the earthen surface where alignment corrections are still to be made, no roads (or sections of roads) are accounted here for rehabilitation.

### 3.2.2 GRAVELLING

Since almost all of the DRCN roads are of earthen standard now, they all are to be gravelled for their upgraded standards. A list of gravelling needs identified during the survey of the DRCN roads is as follows in Table 3-2.

**Table 3-2: Sections of the district road core network requiring gravelling**

S.N.	Code	Description	Total length (km)	Gravelling/Cobbling (km)
1	21DR001	Devitar-Doramba-Paseban-Koilibagar	50.50	50.50
2	21DR002	Manthali-Galba-Chauri	65.00	58.00
3	21DR003	Khairanighat-Bethan-Galba	30.00	30.00
4	21DR004	Khairanighat-Galba-Doramba-Kholakharka	36.35	36.35
5	21DR010	Sitkha-Goganpani-Dhulebesi	15.20	15.20
6	21DR013	Manthali-Chisapani-Puranagaun(Health Post)-Thanapati	12.50	12.50
7	21DR015	Manthali-Gelu-Pokharidanda	17.00	17.00
8	21DR016	Khimti-Betali-Dharapani	34.50	17.50
9	21DR021	Those-Singati-Pritee	26.00	26.00
10	21DR026	Manthali-Kathjour-Dhobi	22.00	17.00
11	21DR027	Manthali-Sunarpani	8.50	8.50
12	21DR030	Kukurkatte Bhanjyang Gothgaun Sirise	14.00	14.00
13	21DR031	Ramechhap-Bhalukhop-Okhreni-Himganga	12.00	12.00
14	21DR032	Ramechhap-Rampur-Kolunjorhat	23.00	23.00
15	F202[02]	Siuraune(Dharapani)-Those-Bamti	24.25	20.25
<b>Total</b>			<b>390.80</b>	<b>357.80</b>

### 3.2.3 CROSS DRAINAGE

Since the district accommodates mostly Hilly and some mountainous range as well, there are a number of gullies, streamlets, streams and rivers. And, hence, a lot of crossing structures are needed to upgrade the DRCN roads to all weather standards. In some cases, the crossing structures are very expensive. A list of required cross drainage structures as determined during the field survey of DRCN roads is as shown in the Table 3-3.

**Table 3-3 Required cross drainage structures**

S.N.	Code	Description	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway (m)	Pipe culvert (m)
1	21DR001	Devitar-Doramba-Paseban-Koilibagar	50	18	30	829	441
2	21DR002	Manthali-Galba-Chauri	90	30		653	508
3	21DR003	Khairanighat-Bethan-Galba	40	18		338	263
4	21DR004	Khairanighat-Galba-Doramba-Kholakharka				410	319
5	21DR005	Puditar-Tharbhanjyang - Alchidhunga-Alampur	90	48		-	-
6	21DR009	Majhuwa(Dadhuwa) Nigalbas Timu	120	30		-	-
7	21DR010	Sitkha-Goganpani-Dhulebesi	30	30		171	133
8	21DR011	Bhatauli-Dhulebesi-Mahakalsthan(Gagal)	30	30	61	-	-

9	21DR013	Manthali-Chisapani-Puranagaun(Health Post)-Thanapati				140	109
10	21DR015	Manthali-Gelu-Pokharidanda	30	12		194	151
11	21DR016	Khimti-Betali-Dharapani	150		50		154
12	21DR017	Shivalaya-Garjang-Sangbadanda		30		-	-
13	21DR019	Salu-Dhobi-Base-Bamti		6	171	-	-
14	21DR020	Dilauri-Sabra- Kaileshor-Bamti	240	96		-	-
15	21DR021	Those-Singati-Pritee				293	228
16	21DR023	Yonjantole Pharpu Ga. Bi. Sha. Bhawan				-	-
17	21DR024	Khimti Shivalaya					
18	21DR026	Manthali-Kathjour-Dhobi				194	151
19	21DR027	Manthali-Sunarpani				95	74
20	21DR030	Kukurkatte Bhanjyang Gothgaun Sirise	40	30		158	123
21	21DR031	Ramechhap-Bhalukhop-Okhreni-Himganga			21	135	105
22	21DR032	Ramechhap-Rampur-Kolunjorghat				261	203
23	F202[02]	Siuraune(Dharapani)-Those-Bamti				135	105
<b>Total</b>			<b>910</b>	<b>378</b>	<b>333</b>	<b>4,002</b>	<b>3,063</b>

### 3.2.4 PROTECTIVE STRUCTURES

In the district having varied topography like Ramechhap, different types of protective structures are needed for their conservation and/or upgrading. Based on the observations of field survey team on DRCN roads, average figures are adopted to calculate quantities of protective structures like masonry wall, gabion wall and lined drain. A list of required protective structures as determined during the survey of DRCN roads is presented in the Table 3-4.

**Table 3-4 Required protective structures**

S.N.	Code	Description	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)
1	21DR001	Devitar-Doramba-Paseban-Koilibagar			50,500
2	21DR002	Manthali-Galba-Chauri			65,000
3	21DR003	Khairnighat-Bethan-Galba			30,000
4	21DR004	Khairnighat-Galba-Doramba-Kholakharka			36,350
5	21DR010	Sitkha-Goganpani-Dhulebesi			15,200
6	21DR013	Manthali-Chisapani-Puranagaun(Health Post)- Thanapati			12,500
7	21DR015	Manthali-Gelu-Pokharidanda			17,000
8	21DR016	Khimti-Betali-Dharapani			34,500
9	21DR021	Those-Singati-Pritee			26,000
10	21DR026	Manthali-Kathjour-Dhobi			22,000
11	21DR027	Manthali-Sunarpani			8,500
12	21DR030	Kukurkatte Bhanjyang Gothgaun Sirise			14,000
13	21DR031	Ramechhap-Bhalukhop-Okhreni-Himganga			12,000
14	21DR032	Ramechhap-Rampur-Kolunjorghat			23,000
15	F202[02]	Siuraune(Dharapani)-Those-Bamti			24,250
<b>Total</b>			<b>-</b>	<b>-</b>	<b>390,800</b>

### 3.2.5 WIDENING

As mentioned above, field survey of DRCN roads has shown that at least some sections of most of them are at upgrading stage from track opening. Therefore, requirement of widening works even for DRCN roads is in remarkable quantity. A list of the required widening works as identified during the field survey of DRCN roads is as shown in the Table 3-5.

**Table 3-5 Sections of the district road core network requiring widening**

S.N.	Code	Description	Total length (km)	Widening (m)
1	21DR001	Devitar-Doramba-Paseban-Koilibagar	50.50	2.0
2	21DR002	Manthali-Galba-Chauri	65.00	2.0
3	21DR003	Khairanighat-Bethan-Galba	30.00	2.5
4	21DR004	Khairanighat-Galba-Doramba-Kholakharka	36.35	3.0
5	21DR010	Sitkha-Goganpani-Dhulebesi	15.20	2.5
6	21DR013	Manthali-Chisapani-Puranagaun(Health Post)- Thanapati	12.50	3.0
7	21DR015	Manthali-Gelu-Pokharidanda	17.00	2.5
8	21DR016	Khimti-Betali-Dharapani	34.50	-
9	21DR021	Those-Singati-Pritee	26.00	2.5
10	21DR026	Manthali-Kathjour-Dhobi	22.00	1.0
11	21DR027	Manthali-Sunarpani	8.50	2.0
12	21DR030	Kukurkatte Bhanjyang Gothgaun Sirise	14.00	-
13	21DR031	Ramechhap-Bhalukhop-Okhreni-Himganga	12.00	3.0
14	21DR032	Ramechhap-Rampur-Kolunjorghat	23.00	3.0
15	F202[02]	Siuraune(Dharapani)-Those-Bamti	24.25	2.0
<b>Total</b>			<b>391</b>	

### 3.2.6 GRADE IMPROVEMENT

Most of the road are no meeting the requirement of NRRS. One of the geometry that is not meeting the standard is vertical alignment. To maintain the grade standard some section of roads are needed to realign to improve the vertical alignment. The list of road needing grade improvement and corresponding length is presented in Table 3-6: Section required for grade improvement

**Table 3-6: Section required for grade improvement**

S.N.	Code	Description	Total length (km)	Grade Improvement Length (Km)
1	21DR001	Devitar-Doramba-Paseban-Koilibagar	50.50	10.00
2	21DR002	Manthali-Galba-Chauri	65.00	15.00
3	21DR003	Khairanighat-Bethan-Galba	30.00	8.00
4	21DR004	Khairanighat-Galba-Doramba-Kholakharka	36.35	10.35
5	21DR010	Sitkha-Goganpani-Dhulebesi	15.20	6.00
6	21DR013	Manthali-Chisapani-Puranagaun(Health Post)- Thanapati	12.50	6.50
7	21DR015	Manthali-Gelu-Pokharidanda	17.00	6.00
8	21DR016	Khimti-Betali-Dharapani	34.50	

9	21DR021	Those-Singati-Pritee	26.00	8.00
10	21DR026	Manthali-Kathjour-Dhobi	22.00	
11	21DR027	Manthali-Sunarpani	8.50	2.00
12	21DR030	Kukurkatte Bhanjyang Gothgaun Sirise	14.00	9.00
13	21DR031	Ramechhap-Bhalukhop-Okhreni-Himganga	12.00	7.00
14	21DR032	Ramechhap-Rampur-Kolunjorghat	23.00	11.00
15	F202[02]	Siuraune(Dharapani)-Those-Bamti	24.25	10.00
<b>Total</b>			<b>390.80</b>	<b>-</b>

### 3.2.7 BLACKTOPPING

The traffic survey of DRCN roads in Ramechhap district has shown that no roads exceed the limit of traffic data that requires upgrading of surfacing works of the roads to blacktopping.

### 3.3 NEW CONSTRUCTION

In Ramechhap district, several VDC headquarters are linked with district headquarters either by district roads or through strategic roads. In remaining cases, very small length of road access is to be opened from vehicle operable road to VDC office, which is not considered here. In the cases of only four VDCs, it is considered that they are not connected with DRCN roads yet. Even in these cases, there exist roads passing through the VDCs but offices are a bit far away. A list of required new construction of DRCN roads is shown in the Table 3-7

**Table 3-7 Sections of the district road core network requiring new construction**

S.N.	Code	Description	New VDCs	Existing length	New length	Bridge (m)	Total Length
1	21DR019	Salu-Dhobi-Base-Bamti		54.39	13.00	-	67.39
2	21DR020	Dilauri-Sabra- Kaileshor-Bamti		16.16	32.50	240.00	48.66
3	21DR011	Bhatauli-Dhulebesi-Mahakalsthan(Gagal)		13.00	10.30	30.00	23.30
4	21DR005	Puditar-Tharbhanjyang - Alchidhunga-Alampur		14.12	7.00	90.00	21.12
5	21DR009	Majhuwa(Dadhuwa) Nigalbas Timu		12.74	6.74	120.00	19.48
<b>Total</b>				<b>688.41</b>	<b>69.54</b>	<b>480</b>	<b>757.95</b>

### 3.4 DISTRICT TRANSPORT PERSPECTIVE PLAN

District Transport Perspective Plan (DTPP) of the district is prepared summarising all identified interventions required for conservation, improvement and new construction of the DRCN roads. The DTPP gives a total list of such requirements. After all interventions made as per the plan, it is expected that all DRCN roads are of all weather standards. In addition to a table of next page mentioning the required interventions, a map as Figure 4 is prepared as part of DTPP. The map also indicates major interventions like gravelling, new construction, bridges, causeways, slab culverts etc.

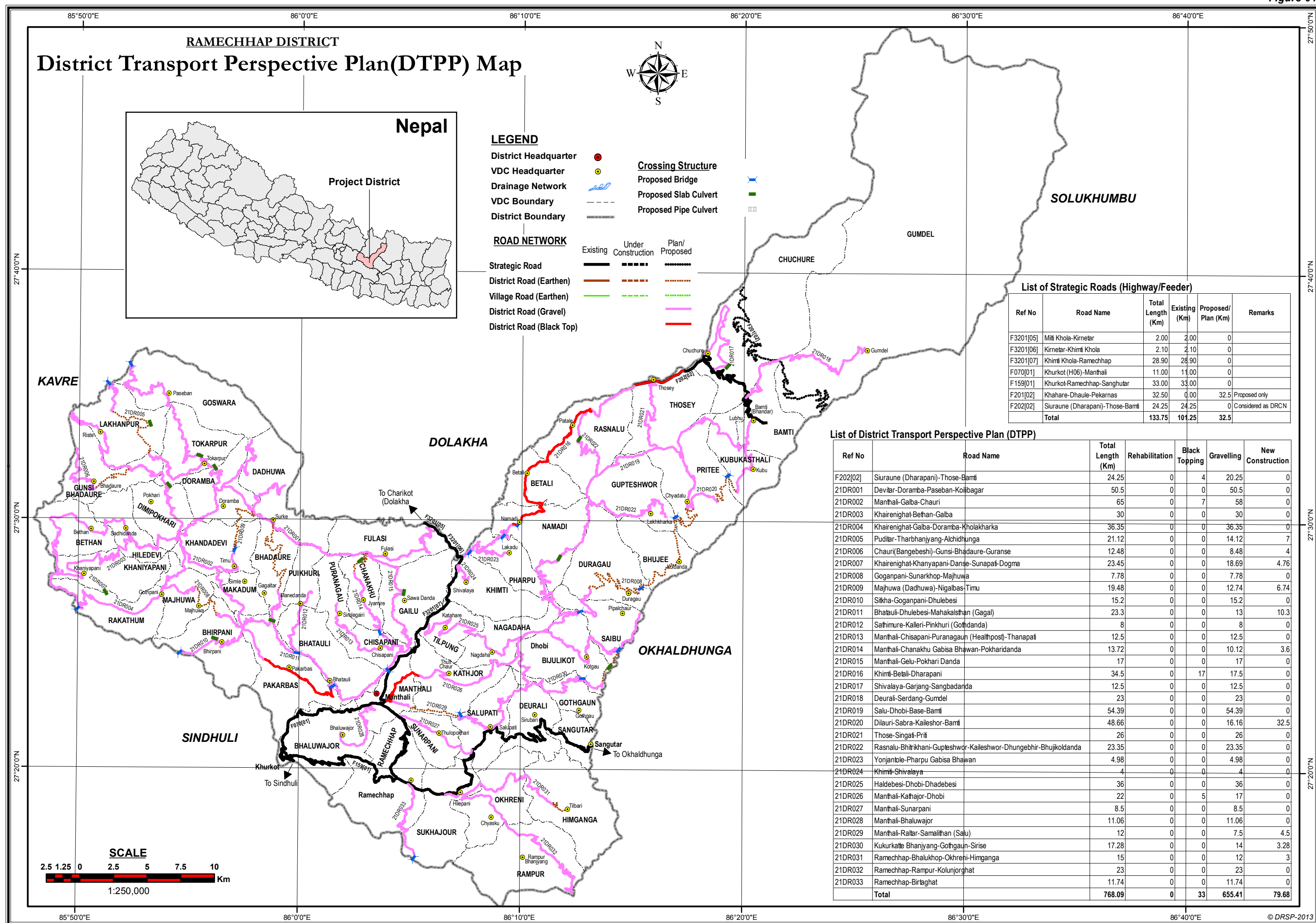


**Table 3-8 District Transport Perspective Plan**

S.N.	Code	Emergency maintenance (km)	Routine maintenance (km)	Recurrent maintenance (km)	Periodic maintenance (km)	Rehabilitation (km)	Gravelling/Cobbling (km)	Blacktopping (km)	Widening (m)	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway (m)	Pipe culvert (units)	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)	New construction (km)
1	21DR001	-	-	-	-	-	50.50	-	2.00	50.00	18.00	30.00	829.00	441.00	-	-	50,500.00	-
2	21DR002	16.50	16.50	16.50	16.50	-	58.00	-	2.00	90.00	30.00	-	652.50	507.50	-	-	65,000.00	-
3	21DR003	-	-	-	-	-	30.00	-	2.50	40.00	18.00	-	337.50	262.50	-	-	30,000.00	-
4	21DR004	-	-	-	-	-	36.35	-	3.00	-	-	-	409.50	318.50	-	-	36,350.00	-
5	21DR005	-	-	-	-	-	14.12	-	-	180.00	48.00	-	157.50	122.50	-	-	14,120.00	7.00
6	21DR006	-	-	-	-	-	8.48	-	-	-	-	-	94.50	73.50	-	-	8,480.00	-
7	21DR007	-	-	-	-	-	18.69	-	-	20.00	-	-	211.50	164.50	-	-	18,690.00	-
8	21DR008	-	-	-	-	-	7.78	-	-	-	2.00	-	85.50	66.50	-	-	7,780.00	-
9	21DR009	-	-	-	-	-	12.74	-	-	240.00	30.00	-	144.00	112.00	-	-	12,740.00	6.74
10	21DR010	-	-	-	-	-	15.20	-	2.50	30.00	30.00	-	171.00	133.00	-	-	15,200.00	-
11	21DR011	-	-	-	-	-	13.00	-	2.00	60.00	30.00	61.00	148.50	115.50	-	-	13,000.00	10.30
12	21DR012	-	-	-	-	-	8.00	-	2.00	-	12.00	-	90.00	70.00	-	-	8,000.00	-
13	21DR013	-	-	-	-	-	12.50	-	3.00	-	-	-	139.50	108.50	-	-	12,500.00	-
14	21DR014	-	-	-	-	-	10.12	-	2.00	20.00	24.00	-	112.50	87.50	-	-	10,120.00	-
15	21DR015	-	-	-	-	-	17.00	-	2.50	30.00	12.00	-	193.50	150.50	-	-	17,000.00	-
16	21DR016	34.50	34.50	34.50	34.50	-	17.50	-	-	150.00	-	50.00	-	154.00	-	-	34,500.00	-
17	21DR017	12.50	12.50	12.50	12.50	-	12.50	-	3.00	-	30.00	-	139.50	108.50	-	-	12,500.00	-
18	21DR018	-	-	-	-	-	23.00	-	3.00	-	-	-	261.00	203.00	-	-	23,000.00	-
19	21DR019	-	-	-	-	-	54.39	-	3.00	-	6.00	171.00	612.00	476.00	-	-	54,390.00	13.00
20	21DR020	-	-	-	-	-	16.16	-	2.00	480.00	96.00	-	180.00	140.00	-	-	16,160.00	32.50
21	21DR021	-	-	-	-	-	26.00	-	2.50	-	-	-	292.50	227.50	-	-	26,000.00	-
22	21DR022	-	-	-	-	-	23.35	-	2.50	60.00	36.00	-	261.00	203.00	-	-	23,350.00	-
23	21DR023	4.98	4.98	4.98	4.98	-	4.98	-	2.50	-	-	-	54.00	42.00	-	-	4,980.00	-

24	21DR024	4.00	4.00	4.00	4.00	-	4.00	-	2.50	-	-	6.00	45.00	35.00	-	-	4,000.00	-
25	21DR025	-	-	-	-	-	36.00	-	1.00	-	-	18.00	405.00	315.00	-	-	36,000.00	-
26	21DR026	22.00	22.00	22.00	22.00	-	17.00	-	1.00	-	-	-	193.50	150.50	-	-	22,000.00	-
27	21DR027	-	-	-	-	-	8.50	-	2.00	-	-	-	94.50	73.50	-	-	8,500.00	-
28	21DR028	-	-	-	-	-	11.06	-	2.50	-	-	32.00	126.00	98.00	-	-	11,060.00	-
29	21DR029	-	-	-	-	-	7.50	-	-	90.00	-	-	85.50	66.50	-	-	7,500.00	-
30	21DR030	-	-	-	-	-	14.00	-	-	40.00	30.00	-	157.50	122.50	-	-	14,000.00	-
31	21DR031	-	-	-	-	-	12.00	-	3.00	-	-	21.00	135.00	105.00	-	-	12,000.00	-
32	21DR032	-	-	-	-	-	23.00	-	3.00	-	-	-	261.00	203.00	-	-	23,000.00	-
33	21DR033	-	-	-	-	-	11.74	-	-	60.00	-	28.00	130.50	101.50	-	-	11,740.00	-
34	F202[02]	10.00	10.00	10.00	10.00	-	20.25	-	2.00	-	-	-	135.00	105.00	-	-	24,250.00	-
<b>Total</b>	<b>Total</b>	<b>104.48</b>	<b>104.48</b>	<b>104.48</b>	<b>104.48</b>	<b>-</b>	<b>655.41</b>	<b>-</b>	<b>59</b>	<b>1,640</b>	<b>452</b>	<b>417</b>	<b>7,345</b>	<b>5,663</b>	<b>-</b>	<b>-</b>	<b>688,410</b>	<b>69.54</b>

**Figure-04**



## 4. COST ESTIMATION

Cost estimations of different interventions are made after determining the required interventions through detailed survey of the DRCN roads. For this purpose, single standard costs or unit rates for the whole district are used for each road or intervention. At this stage, separate detailed calculations are avoided. This chapter contains costs required for different interventions needed for DRCN roads of the district.

### 4.1 CONSERVATION

The conservation costs have been calculated using standard unit rates determined for the district. Actual cost for conservation will be determined on an annual basis in ARMP. The unit rates used at this stage are as per Table 4-1

**Table 4-1: Standard unit costs for conservation**

Activity	Unit	Unit cost (NPR)
Emergency maintenance	km	20,000
Routine maintenance	km	20,000
Recurrent maintenance (blacktop)	km	500,000
Recurrent maintenance (gravel/cobble)	km	150,000
Recurrent maintenance (earthen)	km	50,000
Periodic maintenance (blacktop)	km	200,000
Periodic maintenance (gravel/cobble)	km	50,000

Using the unit rates as mentioned above, total conservation cost required for the first fiscal year is obtained, which is shown in the following table. Based on the same figure, costs for 5-year period are projected. The estimated 5-year cost may be changed slightly as the road length and surface may vary year by year.

**Table 4-2: Estimated conservation costs for the first year (NPR '000)**

S.N.	Code	Total length (km)	Gravel/cobble (km)	Earthen (km)	Emergency maintenance	Routine maintenance	Recurrent maintenance (gravel/cobble)	Recurrent maintenance (earthen)	Periodic maintenance (gravel/cobble)	Total first year cost
1	21DR002	16.50	7.00	9.50	330	330	1,050	475	350	2,535
2	21DR016	34.50	17.00	17.50	690	690	2,550	875	850	5,655
3	21DR017	12.50	-	12.50	250	250	-	625	-	1,125
4	21DR023	4.98	-	4.98	100	100	-	249	-	448
5	21DR024	4.00	-	4.00	80	80	-	200	-	360
6	21DR026	22.00	5.00	17.00	440	440	750	850	250	2,730
7	F202[02]	10.00	4.00	6.00	200	200	600	300	200	1,500
<b>Total</b>		<b>104.48</b>	<b>33.00</b>	<b>592.66</b>	<b>2,090</b>	<b>2,090</b>	<b>4,950</b>	<b>29,633</b>	<b>1,650</b>	<b>14,353</b>

### 4.2 IMPROVEMENT

The improvement costs have been calculated using standard unit rates determined for the district. Actual cost for improvement will be determined on an annual basis for subsequent years while preparing the Annual Work Program (AWP). The unit rates used at this stage are as per Table 4-3.

**Table 4-3: Standard unit costs for improvement activities**

Activity	Unit	Unit cost (NPR)
Rehabilitation	km	800,000.00
Widening		
For 1m/Km	m/km	1501400
For 2m/Km	m/km	2729800
For 2.5m/Km	m/km	3241600
For 3m/Km	m/km	3685200
Grade Improvement	km	8,000,000
Gravelling	km	2,200,000
Blacktopping	km	5,700,000
Bridge construction	m	600,000
Slab culvert construction	m	150,000
CC Causeway construction	m	100,000
Stone Causeway construction	m	10,000
Pipe culvert placement	unit	10,000
Masonry wall construction	m <sup>3</sup>	10,000
Gabion wall construction	m <sup>3</sup>	2,500
Lined drain construction	m	1,000

Using the unit rates as mentioned above and identified interventions required for improvement of DRCN roads, total cost needed is obtained, which is shown in the following table. The estimated cost may be changed slightly as the road length and conditions may vary year by year.

**Table 4-4: Cost estimate for improvement measures (NPR '000)**

S.N.	Code	Total length (km)	Grade Improvement	Widenin <sub>g</sub>	Gravellin <sub>g</sub> /cobblin <sub>g</sub>	Bridges	Slab culverts	CC causeways	Stone causeways	Pipe culvert	Lined drains	Total cost
1	21DR001	50.50	80,000	137,855	111,100	30,000	2,700	3,000	8,290	8,820	101,000	482,765
2	21DR002	65.00	120,000	177,437	127,600	54,000	4,500	-	6,525	10,150	130,000	630,212
3	21DR003	30.00	64,000	97,248	66,000	24,000	2,700	-	3,375	5,250	60,000	322,573
4	21DR004	36.35	82,800	133,957	79,970	-	-	-	4,095	6,370	72,700	379,892
5	21DR005	14.12	-	-	-	54,000	7,200	-	-	-	-	61,200
6	21DR009	12.74	-	-	-	72,000	4,500	-	-	-	-	76,500
7	21DR010	15.20	48,000	49,272	33,440	18,000	4,500	-	1,710	2,660	30,400	187,982
8	21DR011	13.00	-	-	-	18,000	4,500	6,100	-	-	-	28,600
9	21DR013	12.50	52,000	46,065	27,500	-	-	-	1,395	2,170	25,000	154,130
10	21DR015	17.00	48,000	55,107	37,400	18,000	1,800	-	1,935	3,010	34,000	199,252
11	21DR016	34.50	-	-	38,500	90,000	-	5,000	-	3,080	69,000	205,580
12	21DR017	12.50	-	-	-	-	-	-	-	-	-	-
13	21DR019	54.39	-	-	-	-	900	17,100	-	-	-	18,000
14	21DR020	16.16	-	-	-	144,000	14,400	-	-	-	-	158,400
15	21DR021	26.00	64,000	84,282	57,200	-	-	-	2,925	4,550	52,000	264,957
16	21DR023	4.98	-	-	-	-	-	-	-	-	-	-
17	21DR024	4.00	-	-	-	-	-	-	-	-	-	-
18	21DR026	22.00	-	33,031	37,400	-	-	-	1,935	3,010	44,000	119,376
19	21DR027	8.50	16,000	23,203	18,700	-	-	-	945	1,470	17,000	77,318
20	21DR030	14.00	72,000	-	30,800	24,000	4,500	-	1,575	2,450	28,000	163,325
21	21DR031	12.00	56,000	44,222	26,400	-	-	2,100	1,350	2,100	24,000	156,172
22	21DR032	23.00	88,000	84,760	50,600	-	-	-	2,610	4,060	46,000	276,030
23	F202[02]	24.25	80,000	66,198	44,550	-	-	-	1,350	2,100	48,500	242,698
<b>Total</b>		<b>688.41</b>	<b>#####</b>	<b>1,032,637</b>	<b>787,160</b>	<b>546,000</b>	<b>52,200</b>	<b>33,300</b>	<b>40,015</b>	<b>61,250</b>	<b>781,600</b>	<b>4,204,962</b>

### 4.3 NEW CONSTRUCTION

For those VDCs which are not yet connected with district headquarters by motorable road directly or through any strategic road network, roads for new construction are proposed. The required cost for such new construction is obtained here using standard costs or unit rates derived for the district and estimated road length. The standard unit cost adopted here is as per Table 4-5

**Table 4-5: Standard unit costs for new construction**

Activity	Unit	Unit cost (NPR)
Opening up	km	4,000,000.00
Gravelling	km	2,200,000.00
Bridge construction	m	600,000.00

Using this unit cost, cost required for new construction of DRCN roads is calculated which is as shown in Table 4-6

**Table 4-6 Cost estimate for new construction (NPR '000)**

Code	Code	Description	New length (km)	Opening up (NPR)	Bridges (NPR)	Total cost (NPR)
1	21DR005	Puditar-Tharbhanjyang - Alchidhunga-Alampur	7.00	28,000	54,000	<b>82,000</b>
2	21DR009	Majhuwa(Dadhuwa) Nigalbas Timu	6.74	26,960	72,000	<b>98,960</b>
3	21DR011	Bhatauli-Dhulebesi-Mahakalsthan(Gagal)	10.30	41,200	18,000	<b>59,200</b>
4	21DR019	Salu-Dhobi-Base-Bamti	13.00	52,000	-	<b>52,000</b>
5	21DR020	Dilauri-Sabra- Kaileshor-Bamti	32.50	130,000	144,000	<b>274,000</b>
<b>Total</b>			<b>69.54</b>	<b>278,160</b>	<b>288,000</b>	<b>566,160</b>

### 4.4 DTPP COSTS

The total estimated cost for all interventions foreseen for District Transport Perspective Plan is derived and presented in Table 4-7.

**Table 4-7 DTPP costs (NPR '000)**

S.N.	Code	Conservation	Improvement	New construction	Total
1	21DR001	-	482,765	-	482,765
2	21DR002	12,675	630,212	-	642,887
3	21DR003	-	322,573	-	322,573
4	21DR004	-	379,892	-	379,892
5	21DR005	-	180,529	82,000	262,529
6	21DR006	-	94,031	-	94,031
7	21DR007	-	191,903	-	191,903
8	21DR008	-	83,161	-	83,161
9	21DR009	-	189,688	98,960	288,648

10	21DR010	-	187,982	-	187,982
11	21DR011	-	204,882	59,200	264,082
12	21DR012	-	83,538	-	83,538
13	21DR013	-	154,130	-	154,130
14	21DR014	-	120,605	-	120,605
15	21DR015	-	199,252	-	199,252
16	21DR016	28,275	205,580	-	233,855
17	21DR017	5,625	106,630	-	112,255
18	21DR018	-	236,030	-	236,030
19	21DR019	-	678,516	52,000	730,516
20	21DR020	-	664,266	274,000	938,266
21	21DR021	-	264,957	-	264,957
22	21DR022	-	285,831	-	285,831
23	21DR023	2,241	38,439	-	40,680
24	21DR024	1,800	31,516	-	33,316
25	21DR025	-	217,400	-	217,400
26	21DR026	13,650	119,376	-	133,026
27	21DR027	-	77,318	-	77,318
28	21DR028	-	120,724	-	120,724
29	21DR029	-	151,685	-	151,685
30	21DR030	-	163,325	-	163,325
31	21DR031	-	156,172	-	156,172
32	21DR032	-	276,030	-	276,030
33	21DR033	-	139,443	-	139,443
34	F202[02]	7,500	242,698	-	250,198
<b>Total</b>		<b>71,766</b>	<b>7,159,178</b>	<b>385,200</b>	<b>7,616,144</b>

## 5. RANKING

While preparing this DTMP, importance and/or priority of a road is determined on the basis of cost per capita. Subsequently, ranking of DRCN roads is done according to the priority defined based on cost required for identified interventions of any road and population served by that road. The cost required in this stage is as per the estimation in previous chapter and population served is defined as the total population of all VDCs linked by the road (excluding VDCs of which the headquarters are linked directly to the strategic road network). Therefore, priority is defined after dividing the total estimated cost of all the interventions under conservation, improvement or new construction by the serving population of the road. Following the same parameters, ranking of roads is also done for different scopes of road-works.

## 5.1 CONSERVATION

Priority of roads for conservation works is defined by dividing the estimated cost for identified conservation works of a road by population served by that particular road. The roads are ranked in order of increasing cost per capita. The road with lowest figure is of highest priority and appears at the top, whereas the road with highest figure is of lowest priority and appears at Table 5-1.

**Table 5-1 Ranking of conservation works (NPR '000)**

S.N.	Code	Total length (km)	Gravel/cobble (km)	Earthen (km)	Emergency maintenance	Routine maintenance	Recurrent maintenance (gravel/cobble)	Recurrent maintenance (earthen)	Periodic maintenance (gravel/cobble)	Total first year cost
1	21DR002	16.50	7.00	9.50	330	330	1,050	475	350	2,535
2	21DR016	34.50	17.00	17.50	690	690	2,550	875	850	5,655
3	21DR017	12.50	-	12.50	250	250	-	625	-	1,125
4	21DR023	4.98	-	4.98	100	100	-	249	-	448
5	21DR024	4.00	-	4.00	80	80	-	200	-	360
6	21DR026	22.00	5.00	17.00	440	440	750	850	250	2,730
7	F202[02]	10.00	4.00	6.00	200	200	600	300	200	1,500
<b>Total</b>		<b>104.48</b>	<b>33.00</b>	<b>592.66</b>	<b>2,090</b>	<b>2,090</b>	<b>4,950</b>	<b>29,633</b>	<b>1,650</b>	<b>14,353</b>

## 5.2 IMPROVEMENT

For ranking under the scope of improvement as well, similar process as that for conservation works is applied. Where, per capita cost is calculated, sorted from smallest to largest and given first priority for lowest per capita cost. A list of DRCN roads with ranking is presented in Table 5-2.

**Table 5-2 Ranking of improvement works (NPR '000)**

Code	Code	Total length (km)	Gravelling/cobbling (km)	Blacktopping (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
1	21DR027	8.50	8.50	-	77,318	14,629	5,285
2	21DR026	22.00	17.00	-	119,376	19,405	6,152
3	21DR016	34.50	17.50	-	205,580	22,524	9,127
4	21DR002	65.00	58.00	-	630,212	58,825	10,713
5	21DR004	36.35	36.35	-	379,892	31,919	11,902
6	F202[02]	24.25	20.25	-	242,698	12,488	19,435
7	21DR031	12.00	12.00	-	156,172	7,769	20,103
8	21DR001	50.50	50.50	-	482,765	20,885	23,115
9	21DR015	17.00	17.00	-	199,252	8,519	23,391
10	21DR013	12.50	12.50	-	154,130	6,195	24,880
11	21DR003	30.00	30.00	-	322,573	9,698	33,264
12	21DR010	15.20	15.20	-	187,982	5,636	33,355
13	21DR030	14.00	14.00	-	163,325	4,806	33,984
14	21DR021	26.00	26.00	-	264,957	7,510	35,283
15	21DR032	23.00	23.00	-	276,030	7,622	36,217
<b>Total</b>		<b>390.80</b>	<b>357.80</b>	<b>-</b>	<b>3,862,262</b>	<b>238,426</b>	



### 5.3 NEW CONSTRUCTION

For ranking under the scope of new construction also, similar process as above is applied. Where, per capita cost is calculated, sorted from smallest to largest and given first priority for lowest per capita cost. A list of DRCN roads with ranking is presented in Table 5-3

**Table 5-3          Ranking of construction works (NPR '000)**

S.N.	Code	Length (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
1	21DR011	10.30	59,200	6,521	9,078
2	21DR019	13.00	52,000	4,669	11,137
3	21DR020	32.50	274,000	18,712	14,643
4	21DR005	7.00	82,000	3,984	20,584
5	21DR009	6.74	98,960	2,164	45,735
<b>Total</b>		<b>69.54</b>	<b>566,160</b>	<b>-</b>	

## 6. DISTRICT TRANSPORT MASTER PLAN (DTMP)

This section is the final stage of DTMP preparation process. Here, balance is made between available budget and estimated costs of the required interventions to determine which interventions can be carried out within 5-years' period of the DTMP. Further exercise is done to determine which portion of the DTPP can be carried out in each of the DTMP implementation years.

### 6.1 FIVE YEAR PROJECTED FINANCIAL RESOURCES

The budget available in DTMP period is estimated to determine how much of the proposed work can be carried out within the period. For the estimation, sources of road sector budgets of Fiscal Year 2069-070 are taken as the basis and 10% annual growth rate is assumed for subsequent years for each funding source.

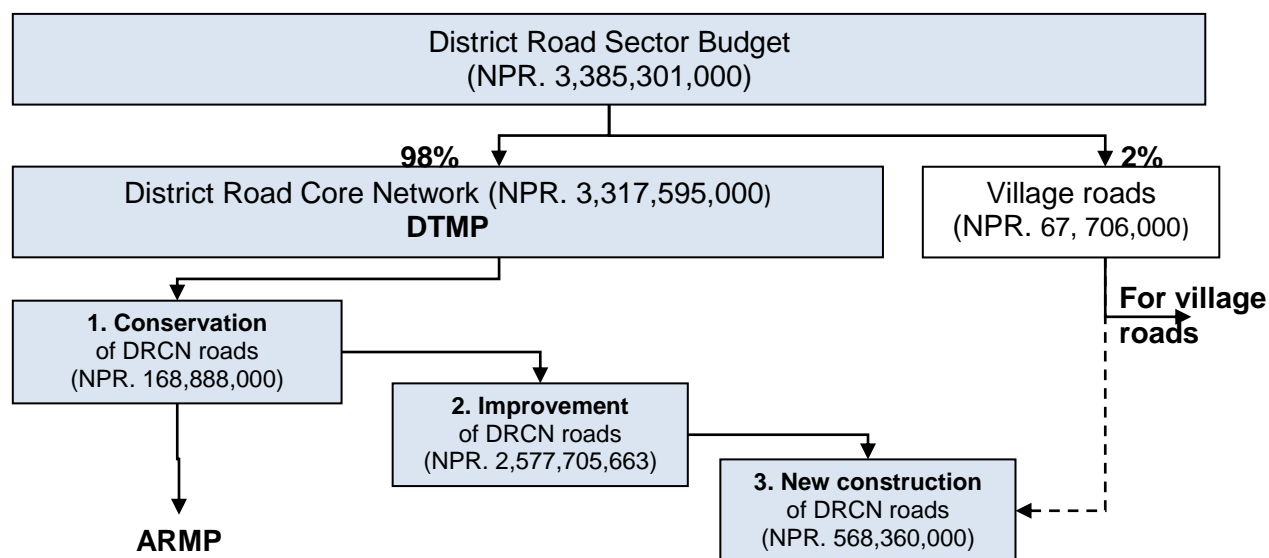
**Table 6-1 Estimated funding levels (roads) for next five years (in NPR '000)**

S.N.	Funding source	2070/071	2071/072	2072/073	2073/074	2074/075
1	DDC Internal Budget	500	550	605	666	733
2	GoN local road road program	45,000	49,500	54,450	59,895	65,885
3	Road maintenance fund/RRN/RBN/MP fund	6,000	6,600	7,260	7,986	8,785
4	Department of Road	50,000	55,000	60,500	66,550	73,205
5	SDC transport sector support	150,000	165,000	181,500	199,650	219,615
6	LGCDP	5,803	6,383	7,021	7,723	8,495
7	VDC (40% of total)	26,400	29,040	31,944	35,138	38,652
8	DRILP-AF	60,000	66,000	72,600	79,860	87,846
9	Other Development Partners	50,000	55,000	60,500	66,550	73,205
10	LRBP	50,000	55,000	60,500	66,550	73,205
11	People's contribution (20%)	110,801	121,881	134,069	147,476	162,224
<b>Total</b>		<b>554,504</b>	<b>609,954</b>	<b>670,949</b>	<b>738,044</b>	<b>811,850</b>
<b>Grand total</b>		<b>3,385,301</b>				

## 6.2 BUDGET ALLOCATION

Once the total road sector budget is calculated, it is discussed in the meeting of DRCC and DDC. After the discussion, the district has decided to allocate 98% of total road sector budget for DRCN roads and it is the amount available for implementation of DTMP. The budget is allocated giving priority for conservation works, followed by improvement works and finally for new construction of DRCN roads.

Figure 6-1 District road sector budget allocation



Thus road sector budget of the district is divided first for DRCN roads (DTMP budget) and VRCN roads (non-DTMP budget) respectively as 98% and 2%. Details of the 2% road sector budget separated for VRCN is not included here in this DTMP. The 98% road sector budget is allocated first for identified conservation works and only the remaining budget is allocated for identified improvement works. Under each scope of conservation and improvement, the budgets are allocated for different DRCN roads based on the determined priority ranking. Further year wise details shall be made while preparing ARMPs in the case of conservation works and AWP in the case of improvement works. A detailed investment plan of this DTMP at this stage is presented in Table 6-2.

**Table 6-2 DTMP investment plan**

Item				Year															
Fiscal year				2070/071			2071/072			2072/073			2073/074			2074/075			
Total budget				554,504			609,954			670,949			738,044			811,850			
Village roads				11,090			12,199			13,419			14,761			16,237			
Core road network budget (DTMP)				543,414			597,755			657,530			723,283			795,613			
Core network length (km)				104.00			104.00			152.07			202.17			260.32			
Blacktop (km)				-			-			-			-			-			
Gravel/cobble (km)				33.00			74.21			122.28			172.38			230.53			
Earthen (km)				71.00			29.80			29.80			29.80			29.80			
Conservation				14,310			20,491			32,028			44,052			58,008			
Emergency				2,080			2,080			3,041			4,043			5,206			
Routine				2,080			2,080			3,041			4,043			5,206			
Recurrent (blacktop)				-			-			-			-			-			
Recurrent (gravel/cobble)				4,950			11,131			18,342			25,856			34,579			
Recurrent (earthen)				3,550			1,490			1,490			1,490			1,490			
Periodic (blacktop)				-			-			-			-			-			
Periodic (gravel/cobble)				1,650			3,710			6,114			8,619			11,526			
Improvement	Cost	BT	GR	529,104	BT	GR	577,264	BT	GR	625,502	BT	GR	679,232	BT	GR	737,605	BT	GR	
21DR027	77,318	-	8.50	23,195	-	2.55	27,061	-	2.98	27,061	-	2.98	-	-	-	-	-	-	
21DR026	119,376	-	17.00	35,813	-	5.10	41,782	-	5.95	41,782	-	5.95	-	-	-	-	-	-	
21DR016	205,580	-	17.50	61,674	-	5.25	71,953	-	6.13	71,953	-	6.13	-	-	-	-	-	-	
21DR002	630,212	-	58.00	189,064	-	17.40	220,574	-	20.30	220,574	-	20.30	-	-	-	-	-	-	
21DR004	379,892	-	36.35	113,968	-	10.91	132,962	-	12.72	132,962	-	12.72	-	-	-	-	-	-	
F202[02]	242,698	-	20.25	-	-	-	-	-	-	24,270	-	2.03	97,079	-	8.10	121,349	-	10.13	
21DR031	156,172	-	12.00	-	-	-	-	-	-	-	-	-	39,043	-	3.00	39,043	-	3.00	
21DR001	482,765	-	50.50	-	-	-	-	-	-	-	-	-	120,691	-	12.63	96,553	-	10.10	
21DR015	199,252	-	17.00	-	-	-	-	-	-	-	-	-	49,813	-	4.25	29,888	-	2.55	
21DR013	154,130	-	12.50	-	-	-	-	-	-	-	-	-	38,533	-	3.13	23,120	-	1.88	
21DR003	322,573	-	30.00	-	-	-	-	-	-	-	-	-	80,643	-	7.50	48,386	-	4.50	
21DR010	187,982	-	15.20	-	-	-	-	-	-	-	-	-	46,996	-	3.80	28,197	-	2.28	
21DR030	163,325	-	14.00	-	-	-	-	-	-	-	-	-	40,831	-	3.50	24,499	-	2.10	
21DR021	264,957	-	26.00	-	-	-	-	-	-	-	-	-	66,239	-	6.50	39,743	-	3.90	
21DR032	276,030	-	23.00	-	-	-	-	-	-	-	-	-	69,007	-	5.75	41,404	-	3.45	
Total improvement				423,713	-	41.21	494,332	-	48.07	518,602	-	50.10	648,876	-	58.15	492,182	-	43.88	
Construction	Cost	GR		105,390	GR		82,932	GR		106,900	GR		30,356	GR		245,423	GR		
21DR011	69,800	10.30		34,900	5.15		34,900	5.15		-	-		-	-		-	-		
21DR019	70,000	13.00		10,500	1.95		7,000	1.30		-	-		-	-		-	-		
21DR020	288,400	32.50		-	-		-	-		288,400	32.50		-	-		-	-		
21DR005	89,200	7.00		44,600	3.50		44,600	3.50		-	-		-	-		-	-		
21DR009	103,460	6.74		-	-		-	-		51,730	3.37		25,865	1.69		25,865	1.69		
Total new construction				90,000	10.60		86,500	9.95		340,130	35.87		25,865	1.69		25,865	1.69		
Remaining budget				15,390	-		3,568	-		233,230	-		4,491	-		219,558	2,641		

In addition to the representation of information as above in this DTMP, a map indicating the DRCN and the prioritized DTMP interventions is included as Figure 6. This map indicates the elements using the symbols as mentioned below. Similarly, a table listing the DRCN length, the all-weather DRCN length, the number of VDCs with access to the SRN or all-weather DRCN roads, and the percentage of the district population with access to the SRN or all-weather DRCN roads (both at the start of the DTMP period and at the end) is also included in this DTMP report.

- District boundaries (thin black line);
- VDC boundaries (thin dashed black line);
- Names of surrounding districts/states/countries;
- District headquarters (red circle, including name)
- VDC headquarters (yellow circle, including name of VDC);
- Major waterways and water bodies (light blue lines or shapes);
- SRN roads (thick black line, including road code);
- Blacktopped DRCN roads (thick red line);
- DRCN roads planned for blacktopping (thick line with red and green);
- Gravel DRCN local roads (slightly thinner green line);
- DRCN roads planned for gravelling (slightly thinner line with green and orange);
- Earthen DRCN roads (thin orange line);
- Missing water crossings making road impassable in the rainy season;
- Bridges for construction;
- Causeways for construction;
- Slab culverts for construction.

### 6.3 DTMP OUTPUTS

In this section, planned outputs after implementation of the DTMP are mentioned. The outputs are basically under conservation and improvement. Likewise, under improvement works, there may be several types of work like widening, alignment (geometry) improvement, cross drainages, protective structures etc. Following table summarizes the planned output.

**Table 6-3 DTMP output**

	Conservation	Improvement gravel/cobble	Improvement blacktop	New construction
DTMP Output (km)	260.32	260.70	-	59.79
Allocated Budget (NPR.)	168,888,000	2,577,705,663		568,360,000

The road wise output in this DTMP period is listed in Table 6-4: Road wise planned output

**Table 6-4: Road wise planned output**

S.N.	Roads	Total Length	Achieved Length	% Achieved
<b>A</b>	<b>Conservation</b>			
1	Year I	104.00	104.00	100%
2	Year II	104.00	104.00	100%
3	Year III	152.07	152.07	100%
4	Year IV	202.17	202.17	100%
5	Year V	260.32	260.32	100%
<b>B</b>	<b>Improvement</b>			
1	21DR027	8.50	8.50	100%
2	21DR026	17.00	17.00	100%
3	21DR016	17.50	17.50	100%
4	21DR002	58.00	58.00	100%

5	21DR004	36.35	36.35	100%
6	F202[02]	20.25	20.25	100%
7	21DR031	12.00	6.00	50%
8	21DR001	50.50	22.73	45%
9	21DR015	17.00	6.80	40%
10	21DR013	12.50	5.00	40%
11	21DR003	30.00	12.00	40%
12	21DR010	15.20	6.08	40%
13	21DR030	14.00	5.60	40%
14	21DR021	26.00	10.40	40%
15	21DR032	23.00	9.20	40%
	<b>Total</b>	<b>357.80</b>	<b>241.41</b>	<b>67%</b>
<b>C</b>	<b>New Construction</b>			
1	21DR011	10.30	10.30	100%
2	21DR019	13.00	3.25	25%
3	21DR020	32.50	32.50	100%
4	21DR005	7.00	7.00	100%
5	21DR009	6.74	6.74	100%
	<b>Total</b>	<b>69.54</b>	<b>59.79</b>	<b>86%</b>

## 6.4 DTMP OUTCOME

After the implementation of this DTMP, full length of DRCN roads becomes motorable with additional 59.79 km new construction in this DTMP period. Similarly, some 260.70 km of fair-weather road is upgraded to all-weather gravel road. A summary outcome of this DTMP period is shown in the Table 6-5.

**Table 6-5 Standard of DRCN roads**

	Total length km	Fair-weather		All-weather gravel/cobble		All-weather blacktop	
		km	%	km	%	km	%
Start of DTMP	688.41	619.41	90%	33.00	5%	-	0%
End of DTMP	748.20	454.50	61%	293.70	39%	-	0%
Difference	59.79	-164.91	-29%	260.70	34%	-	0%

Out of 55 VDCs of the district 15 VDCs and subsequently 28% population of the district have access to the SRN and/or all-weather DRCN roads at the beginning of the DTMP and the number of accessible VDCs and percentage of the population of the district having access to SRN and/or all-weather DRCN roads will be 45 and 86% respectively at the end of this DTMP period.

**Table 6-6 Population with access to road network**

	Direct access to SRN			No access to DRCN			Access to fair- weather DRCN roads			Access to all-weather DRCN roads		
	VDCs	Pop	%	VDCs	Pop	%	VDCs	Pop	%	VDCs	Pop	%
Start of DTMP	15	56,966	28%	4	12,549	6%	51	188,874	94%	10	47,631	24%
End of DTMP	15	56,966	28%	0	-	0%	55	201,423	100%	45	172,559	86%
Difference	-	-	0%	-4	-12,549	-6%	4	12,549	6%	35	124,928	62%

## 7. TRAIL BRIDGE

Ramechhap district has long list of Trail Bridge with priority ranking. Construction of new trail bridge is implementing as per the long list in the district. Ramechhap district has also updated the District Bridge Record (DBR) for the maintenance of the bridge. There are 156 bridges in long list and out of which 25 bridges have been constructed. Similarly DBR has recommended for the maintenance of 60 bridges. Similarly, all the constructed bridges are planned for routine maintenance. The planned trail bridge intervention is presented in Table 7-1.

**Table 7-1: Trail Bridge Plan**

	Year I	Year II	Year III	Year IV	Year V	Total
Major Maintenance (m)	960	960	960	960	960	4800
New Construction (m)	800	800	800	800	800	4000
Routine Maintenance (nos)	116	126	136	146	156	156

It is planned to construct 800m of new bridge every year and 960m of bridge is planned for major maintenance. Routine maintenance will be done for 116 bridges in first year and for 156 bridges in last year of DTMP. The estimated budget for Trail Bridge is as following Table 7-2;

**Table 7-2: Budet Estimate for Trail Bridge (NPR.'000)**

	Year I	Year II	Year III	Year IV	Year V	Total
DDC	4,500	4,950	5,445	5,990	6,588	27,473
DRILP-AF	10,000	11,000	12,100	13,310	14,641	61,051
RAIDP	2,000	2,200	2,420	2,662	2,928	12,210
GWS/Kaduri	5,000	5,500	6,050	6,655	7,321	30,526
Other	12,500	13,750	15,125	16,638	18,301	76,314
<b>Total</b>	<b>34,000</b>	<b>37,400</b>	<b>41,140</b>	<b>45,254</b>	<b>49,779</b>	<b>207,573</b>

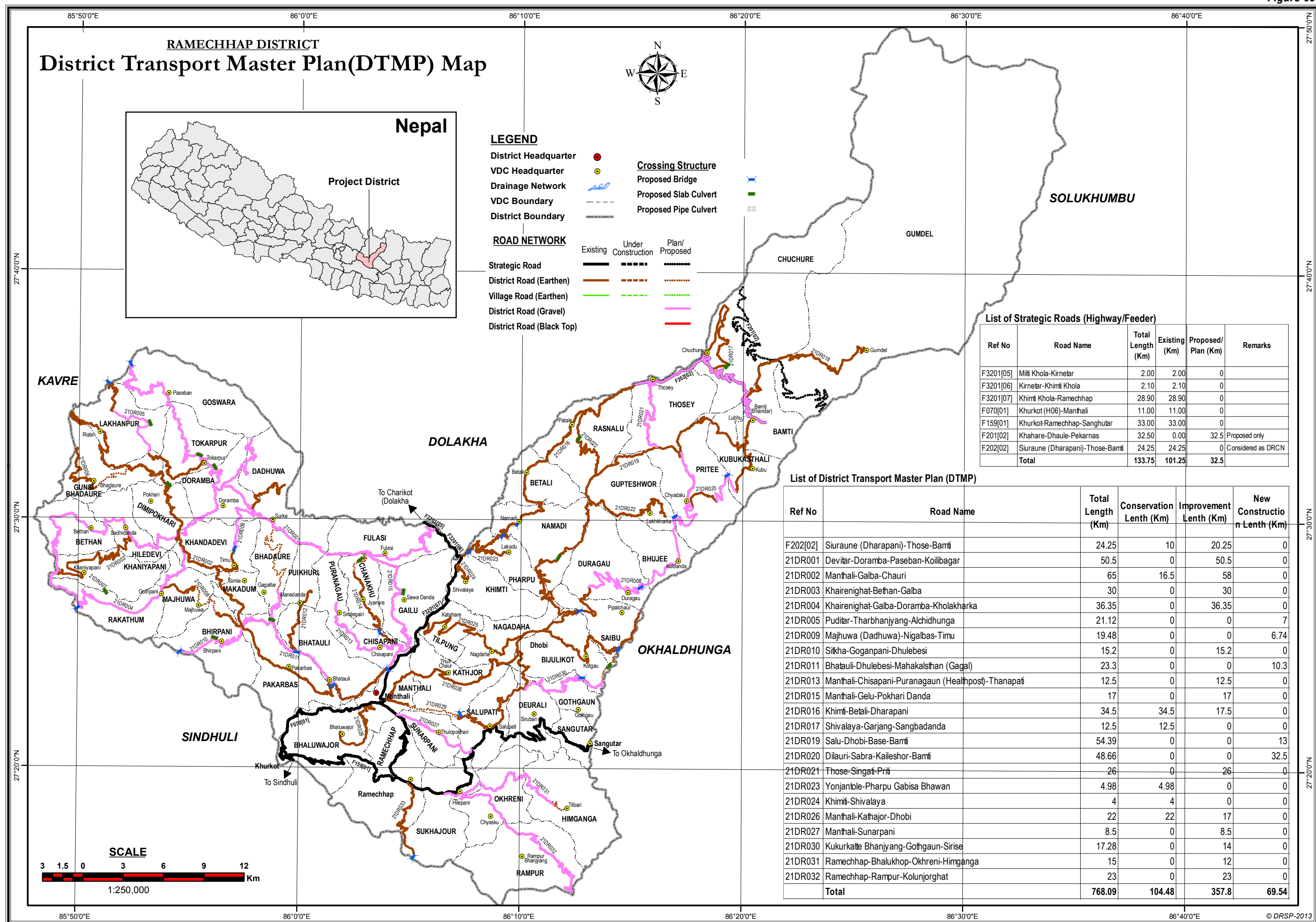
As per the prevailing indicative unit rate of bridge construction and maintenance, the five year budget planning of DTMP in trail bridge sector is as flows in Table 7-3;

**Table 7-3: Budget planning for trail bridge**

	Total	Per Unit Cost	Total cost
Major Maintenance (m)	4,800	35,000	168,000,000
New Construction (m)	4,000	10,000	40,000,000
Routine Maintenance (nos)	680	6,000	4,080,000
<b>Total</b>			<b>212,080,000</b>

By the end of DTMP, it is expected to facilitate 75% of population for safe river crossing and access to motaorable road for their further mobility and access to opportunities and facilities.

**Figure-05**





## ANNEX 1 TRAFFIC DATA

Code	Total Length (km)	Motorcycle	Car-Jeep-Minibus	Tractor	Truck-Bus	PCU	VPD
21DR013	12.50	2	0	3	2	15	5
21DR003	30.00	10	10	2		19	12
21DR004	36.35	4	2	2	2	16	6
21DR019	54.39	8	0	8	8	52	16
21DR001	50.50	2			14	57	14
21DR025	36.00	10	2	0	12	55	14
21DR002	65.00	10	4	4	2	25	10
21DR027	8.50	6	1	4	11	56	16
21DR031	12.00	16	0	4	4	32	8
21DR032	23.00	10	0	2	2	17	4
21DR021	26.00	4	0	0	4	18	4
21DR026	22.00					-	-
21DR015	17.00					-	-
21DR010	15.20	2	2.0	2	1	11	5
21DR017	12.50					-	-
21DR018	23.00	6	2.0	1	6	31	9
21DR016	34.50					-	-
21DR020	16.16					-	-
F202[02]	24.25	15	5.0	0	9	49	14
21DR011	13.00	10	2.0	3	1	17	6
21DR007	18.69					-	-
21DR006	8.48	10	2.0	0	5	27	7
21DR014	10.12	2		3	2	15	5
21DR008	7.78	4	2.0	1	2	14	5
21DR028	11.06					-	-
21DR030	14.00	0	-	2	3	16	5
21DR024	4.00	6	-	0	0	3	-
21DR023	4.98					-	-
21DR022	23.35	6	2.0	2	8	41	12
21DR012	8.00					-	-
21DR033	11.74					-	-
21DR005	14.12	0	-	0	0	-	-
21DR029	7.50	2	-	2	0	5	2
21DR009	12.74					-	-
<b>Total</b>	<b>688.41</b>						

## ANNEX 2 POPULATION SERVED

S.NO.	VDC/municipality	Population	Road																												SRN					
			21DR013	21DR003	21DR004	21DR019	21DR001	21DR025	21DR002	21DR027	21DR031	21DR032	21DR021	21DR026	21DR015	21DR010	21DR017	21DR018	21DR016	21DR020	F202[02]	21DR011	21DR007	21DR006	21DR014	21DR008	21DR028	21DR030	21DR024	21DR023		21DR022	21DR012	21DR033	21DR005	21DR029
1	BAMTI	3144				786													3144	3144																
2	BETALI	4483																4483																		
3	BETHAN	4634		4634					4634																											
4	BHADAURE	2475							2475												2475															
5	BHALUWAJOR	3496																								2622									3496	
6	BHATAULI	3936							3936												1968											984				
7	BHIRPANI	3253							3253						2440																					
8	BHUJEE	2402																	2402												1201					
9	BIJULIKOT	5058				1265		2529						5058														1686								
10	CHANAKHU	2366																						2366												
11	CHISAPANI	3187	3187																																	
12	CHUCHURE	2629														2629		2629		2629																
13	DADHUWA	4730			4730		4730																												1183	
14	DEURALI	3257								3257																										3257
15	DIMIPOKHARI	3073			3073				3073																											
16	DORAMBA	3273			3273		3273		3273																											
17	DURAGAU	3023												3023					3023																	
18	FULASI	5733					5733								2867																					5733
19	GAILU	5652													5652																					
20	GOSWARA	3632			3632		3632		1816																											
21	GOTHTGAUN	2401								2401																		2401								
22	GUMDEL	2466															2466	2466		2466																
23	GUNSI BHADAURE	4702							4702															2351												
24	GUPTESHWOR	1769				442						442							885	442										1769						
25	HILEDEVI	3031		3031	1516				3031																											
26	HIMGANGA	4248									4248																									
27	KATHJOR	4716												4716																					1179	4716

S.NO.	VDC/municipality	Population	Road																												SRN						
			21DR013	21DR003	21DR004	21DR019	21DR001	21DR025	21DR002	21DR027	21DR031	21DR032	21DR021	21DR026	21DR015	21DR010	21DR017	21DR018	21DR016	21DR020	F202[02]	21DR011	21DR007	21DR006	21DR014	21DR008	21DR028	21DR030	21DR024	21DR023		21DR022	21DR012	21DR033	21DR005	21DR029	21DR009
28	KHANDADEVI	3925			1963				3925																										981		
29	KHANIYAPANI	4065		2033					4065													2033															
30	KHIMTI	4278																										2139									4278
31	KUBUKASTHALI	2727											1364							2727	1364								2139								
32	LAKHANPUR	6209			6209				6209																									3105			
33	MAJHUWA	2293			573				2293																	2293											
34	MAKADUM	1911							1911																												
35	MANTHALI	7569												1892																						7569	
36	NAGADAHA	3679						1840						1840																							
37	NAMADI	3981																3981																			
38	OKHRENI	3503								876	1752	1752																									
39	PAKARBAS	6392							6392							3196																					
40	PHARPU	2098																	2098																		
41	PRITEE	5093				1273							5093							5093										2098							
42	PUIKHURI	2078							2078												2078												1039				
43	PURANAGAU	3008	3008																																		
44	RAKATHUM	3434			3434																																
45	RAMECHHAP	5222																																1306			5222
46	RAMPUR	4101										4101																									
47	RASNALU	4424																4424														1106				4424	
48	SAIBU	2876						719						2876						1438								719									
49	SALUPATI	3612				903				3612																									1806		3612
50	SANGUTAR	2342								2342																											2342
51	SUKHAJOR	3538									1769	1769																						885			3538
52	SUNARPANI	2141								2141																											2141
53	THOSE	2443											611					2443		2443																	2443
54	TILPUNG	4195						4195																													4195
55	TOKARPUR	3517			3517		3517		1759																										879		
Total population		201,423	6,195	9,698	31,919	4,669	20,885	9,283	58,825	14,629	7,769	7,622	7,510	19,405	8,519	5,636	2,629	2,466	22,524	18,712	12,488	6,521	2,033	2,351	2,366	2,293	2,622	4,806	2,139	2,098	4,076	2,023	2,190	3,984	2,985	2,164	56,966
Total VDCs/ municipalities		55	3	4	11	6	6	5	18	7	4	4	5	7	3	3	2	2	8	8	7	4	2	2	2	2	2	4	2	2	4	3	3	3	3	3	15

Source: 2011 Census.

## ANNEX 3 LOCATION OF PROPOSED INTERVENTIONS

Road code	Road Name	Length (km)	Start chainage (km) or X-coordinate	End chainage (km) or Y-coordinate	Rehabilitation (km)	Gravelling (km)	Blacktopping (km)	Widening (m)	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway (m)	Pipe culvert (units)	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)
21DR013	Manthali-Chisapani-Puranagaun(Health Post)- Thanapati	12.5	0+000	12+500	-	12.50	-	3.00	-	-	-	139.50	108.50	-	-	12,500.00
21DR003	Khairenighat-Bethan-Galba	30	0+000	30+000	-	30.00	-	2.50	40.00	18.00	-	337.50	262.50	-	-	30,000.00
21DR004	Khairenighat-Galba-Doramba-Kholakharka	36.35	0+000	36+350	-	36.35	-	3.00	-	-	-	409.50	318.50	-	-	36,350.00
21DR019	Salu-Dhobi-Base-Bamti	54.39	0+000	54+390	-	-	-	-	-	6.00	171.00	-	-	-	-	-
21DR001	Devitar-Doramba-Paseban-Koilibagar	50.5	0+000	50+500	-	50.50	-	2.00	50.00	18.00	30.00	829.00	441.00	-	-	50,500.00
21DR002	Manthali-Galba-Chauri	65	0+000	65+000	-	58.00	-	2.00	90.00	30.00	-	652.50	507.50	-	-	65,000.00
21DR027	Manthali-Sunarpani	8.5	0+000	8+500	-	8.50	-	2.00	-	-	-	94.50	73.50	-	-	8,500.00
21DR031	Ramechhap-Bhalukhop-Okhreni-Himganga	12	0+000	12+000	-	12.00	-	3.00	-	-	21.00	135.00	105.00	-	-	12,000.00
21DR032	Ramechhap-Rampur-Kolunjorghat	23	0+000	23+000	-	23.00	-	3.00	-	-	-	261.00	203.00	-	-	23,000.00
21DR021	Those-Singati-Pritee	26	0+000	26+000	-	26.00	-	2.50	-	-	-	292.50	227.50	-	-	26,000.00
21DR026	Manthali-Kathjour-Dhobi	22	0+000	22+000	-	17.00	-	1.00	-	-	-	193.50	150.50	-	-	22,000.00
21DR015	Manthali-Gelu-Pokharidanda	17	0+000	17+000	-	17.00	-	2.50	30.00	12.00	-	193.50	150.50	-	-	17,000.00
21DR010	Sitkha-Goganpani-Dhulebesi	15.2	0+000	15+200	-	15.20	-	2.50	30.00	30.00	-	171.00	133.00	-	-	15,200.00
21DR017	Shivalaya-Garjang-Sangbadanda	12.5	0+000	12+500	-	-	-	-	-	30.00	-	-	-	-	-	-
21DR016	Khimti-Betali-Dharapani	34.5	0+000	34+500	-	17.50	-	-	150.00	-	50.00	-	154.00	-	-	34,500.00
21DR020	Dilauri-Sabra- Kaileshor-Bamti	16.16	0+000	16+160	-	-	-	-	240.00	96.00	-	-	-	-	-	-
F202[02]	Siuraune(Dharapani)-Those-Bamti	24.25	0+000	24+250	-	20.25	-	2.00	-	-	-	135.00	105.00	-	-	24,250.00
21DR011	Bhatauli-Dhulebesi-Mahakalsthan(Gagal)	13	0+000	13+000	-	-	-	-	30.00	30.00	61.00	-	-	-	-	-
21DR030	Kukurkatte Bhanjyang Gothgaun Sirise	14	0+000	14+000	-	14.00	-	-	40.00	30.00	-	157.50	122.50	-	-	14,000.00
21DR024	Khimti Shivalaya	4	0+000	4+000	-	-	-	-	-	-	-	-	-	-	-	-
21DR023	Yonjantole Pharpu Ga. Bi. Sha. Bhawan	4.98	0+000	4+980	-	-	-	-	-	-	-	-	-	-	-	-
21DR005	Puditar-Tharbhanyang - Alchidhunga-Alampur	14.12	0+000	14+120	-	-	-	-	90.00	48.00	-	-	-	-	-	-
21DR009	Majhuwa(Dadhuwa) Nigalbas Timu	12.74	0+000	12+740	-	-	-	-	120.00	30.00	-	-	-	-	-	-
<b>Total</b>					-	<b>357.80</b>	-	<b>31.00</b>	<b>910.00</b>	<b>378.00</b>	<b>333.00</b>	<b>4,001.50</b>	<b>3,062.50</b>	-	-	<b>390,800.00</b>

Rank	VDC / Municipality		River Name	Place Name	Total Population	Bridge	
	Right Bank	Left Bank				type	span
Ramechhap							
1	Puranohangajho	Bhirpani	Sunkoshi	Dapkhaghat	1300	SuspenDed	200
2	Majhipheda	Lakhanpur	Chauri Khola	Majhipheda	2725	SuspenDed	110
3	Khaniyapani	Rakathum	Ghatte Khola	Keurani Puchhar	2290	SuspenDed	100
4	Bamti	Goli	Likhu Khola	Likhu Khola	2345	SuspenDed	85
5	Hawa	Rasanalu	Khimti Khola	Urleni Chapleti	2286	SuspenDed	80
6	Those	Those	Thado Khola	Thado Khola Baz	4725	Truss	28
7	Tilpung	Kathjor	Kathajor	Kathajor	2730	SuspenDed	120
8	Madankundari	Bethan	Chauri Khola	Dum Danda	5800	SuspenDed	125
9	Kusheshwar Du	Rakathum	Sunkoshi	Dumja	1715	SuspenDed	160
10	Mechchhe	Bethan	Sunkoshi	Pande Khoriya	8500	SuspenDed	140
11	Phulasi	Shahare	Tamakoshi	Milti Dovan	3304	SuspenDed	120
12	Khandadevi	Gagal Bhadaure	Kale Male	Kale Male	3300	SuspenDed	70
13	Khaniyapani	Rakathum	Ghatte Khola	Thyange Pakha	3800	Truss	30
14	Namadi	Namadi	Haluwa Khola	Majhuwa Haluwa	2275	SuspenDed	100
15	Khaniyapani	Rakathum	Ghatte Khola	Simpani Pakha	3105	SuspenDed	35
16	Nagdaha	Nagdaha	Tilpung Khola	Irambas	2358	SuspenDed	90
17	Bijulikot	Bijulikot	Chilaune	Chilaune Padher	2700	SuspenDed	75
18	Dimipokhari	Dimipokhari	Dimi Khola	Kholaghari	2490	SuspenDed	100
19	Pingkhuri	Pingkhuri	Gogane Khola	Gogane beshitol	4900	SuspenDed	80
20	Dudhbhanjyang	Rampur	Sunkoshi	Sunkoshi Moreng	1414	SuspeNsion	225
21	Saipu	Pokali	Likhu Khola	Dhandebeshi	2184	SuspeNsion	120
22	Puranohangajho	Bhirpani	Sunkoshi	Palase Beshi	8900	SuspenDed	170
23	Khaniyapani	Rakathum	Gopi Khola	Lampate Gopi Kh	2375	SuspenDed	38
24	Gelu	Gelu	Gelu Khola	Gelu Jantare Khe	3500	SuspenDed	80
25	Bijulikot	Bijulikot	Chilaune	Simkharka	3480	SuspenDed	110
26	Hiledevi	Hiledevi	Kama Khola	Ghatte Kama Kho	4300	SuspenDed	105
27	Shahare	Puranagaun	Khimti Khola	Pharpu Phedi	2900	SuspenDed	120
28	Dimipokhari	Dimipokhari	Dimi Khola	Teng Sing Dimi P	2600	SuspenDed	60
29	Rampur	Palapu	Likhu Khola	Likhu Dovan	600	SuspeNsion	120
30	Phulasi	Dandakharka	Milti Khola	Odare Puchhar	2459	SuspenDed	90
31	Gelu	Gelu	Gelu Khola	Mahadevsthan/G	1800	SuspenDed	120
32	Sandhutar	Singhadevi	Likhu Khola	Khudukra Dhand	2058	SuspenDed	112
33	Bijulikot	Bijulikot	Murkhali	Sano Aitabare	3576	SuspenDed	80
34	Bijulikot	Bijulikot	Murkhali Khola	Raute Danda	5616	SuspenDed	105
35	Phulasi	Phulasi	Khokar Khola	Hulakko Puchhar	1710	Truss	30
36	Gunsi	Bethan	Khani Khola	Dhonja	4100	SuspenDed	110



Rank	VDC / Municipality		River Name	Place Name	Total Population	Bridge	
	Right Bank	Left Bank				type	span
37	Puranagaun	Chanakhu	Baphar Khola	Simle	1230	SuspenDed	75
38	Bijulikit	Yesham	Likhu Khola	Bire Muhan	1967	SuspenDed	115
39	Syama	Chuchure	Khimti Khola	Manetar School	1747	SuspenDed	100
40	Rasanalu	Rasanalu	Chhahare	Chhahare	2070	SuspenDed	80
41	Thulo Pataal	Rasanalu	Khimti Khola	Kothe	1212	SuspenDed	110
42	Tharpu	Namadi	Pharpu Khola	Bata Janghar	1500	SuspenDed	75
43	Namadi	Namadi	Kami Khola	Majhuwa	2275	SuspenDed	65
44	Puranagaun	Khimti	Pharpu Chinne Khol	Chinne Khola	2500	SuspenDed	120
45	Khaniyapani	Rakathum	Gopi Khola	Chapadi Padhero	2375	SuspenDed	55
46	Gothgaun	Bijulikit	Lorkhu Khola	Bara Bote	2242	SuspenDed	90
47	Khandadevi	Khandadevi	Ghatte Khola	Ghatte Khola	2298	SuspenDed	50
48	Thokarpur	Thokarpur	Chyan Khola	Sigarche Chyan	1362	SuspenDed	55
49	Gupteshwar	Priti	Mahabhir	Balakhi Mahabhir	1446	SuspenDed	75
50	Phulasi	Phulasi	Khokar Khola	Khokar Nigure D	900	SuspenDed	105
51	Khimti	Nagdaha	Nagdaha	Gairi	960	SuspenDed	60
52	Khandadevi	Doramba	Khalpu	Khalpu	1848	Truss	30
53	Dadhuwa	Dadhuwa	Ghumaune Khola	Salime pawa	1900	Truss	32
54	Phulasi	Melung	Milti Khola	Chaude Dovan	1920	SuspenDed	110
55	Gunsi	Thokarpur	Khaire Khola	Kalleri	2220	SuspenDed	60
56	Dadhuwa	Dadhuwa	Khalanga Khola	Gaira Kateri	1150	Truss	20
57	Jhangajholi Rat	Rakathum	Sunkoshi	Khahareghat Gair	1875	SuspenDed	200
58	Gagal Bhadaure	Gagal Bhadaure	Bhandare	Bhandare	1000	Truss	30
59	Thokarpur	Doramba	Tuteni	Tuteni Lekh Khar	1300	Truss	25
60	Gumdel	Gumdel	Likhu Khola	Tongmarche	272	SuspenDed	118
61	Pakarbass	Bhaluwajor	Tamakoshi	Masantar	1080	SuspenDed	115
62	Okhreni	Salu	Nibuwa Khola	Nibuwa Bote	1685	SuspenDed	100
63	Kunbhukasthali	Priti	Sapsu Khola	Handi	1605	SuspenDed	70
64	Phulasi	Melung	Milti Khola	Milti Khola	2040	SuspenDed	90
65	Doramba	Doramba	Ahal Khola	Ahal Khola Beshi	700	Truss	25
66	Saipu	Duragaun	Chokte Khola	Dhande Tallo Mu	3000	SuspenDed	80
67	Rasanalu	Rasanalu	Surke	Burke Khola	1488	SuspenDed	30
68	Bamti	Bamti	Tatopani Khola	Tatopani	2476	Truss	16
69	Saipu	Duragaun	Tiulauri Khola	Tilauri	3000	SuspenDed	90
70	Baseshwar	Ramechhap	Sunkoshi	Bhotetar	1350	SuspenDed	190
71	Kattike Deurali	Gunsi	Chauri Khola	Chauri Khola	1595	SuspenDed	180
72	Those	Those	Phokse	Phokse	2073	Truss	32
73	Gunsi	Dimipokhari	Khani Khola	Kholaghari	2600	SuspenDed	65



Rank	VDC / Municipality		River Name	Place Name	Total Population	Bridge	
	Right Bank	Left Bank				type	span
74	Nagdaha	Kathjor	Kathajor	Kathajor Bhut Ch	2700	SuspenDed	100
75	Dadhuwa	Dandakharka	Milti Khola	Kudule Beshi	1300	SuspenDed	60
76	Bhuji	Gupteshwar	Mahadev Khola	Balike Ghat	1746	SuspenDed	80
77	Bijulikot	Yesham	Lorkhu Khola	Lorkhu Dovan	1486	SuspenDed	150
78	Chuchure	Chuchure	Chake Khola	Chake	1900	Truss	20
79	Syama	Chuchure	Khimti Khola	Deugunsha	1700	SuspenDed	150
80	Thokarpur	Thokarpur	Laligurans	Chauda Chahare	1020	SuspenDed	60
81	Syama	Chuchure	Khimti Khola	Khimti	1320	SuspenDed	100
82	Gothgaun	Bijulikot	Lorkhu Khola	Simle Trisule Dov	1519	SuspenDed	110
83	Bamti	Bamti	Surke	Sotarmu	1581	SuspenDed	50
84	Gumdel	Gumdel	Ghatte Khola	Patkari Tekam	2570	Truss	20
85	Bijulikot	Bijulikot	Khalte Khola	Simalbote	1986	SuspenDed	60
86	Rasanalu	Rasanalu	Chhahare Khola	Sisnughari Biraut	1770	SuspenDed	60
87	Chanakhu	Chanakhu	Mul Khola	Jyamire Mul Khol	800	SuspenDed	55
88	Doramba	Dimipokhari	Dhobi Khola	Kudule	822	SuspenDed	60
89	Duragaun	Duragaun	Sabra Khola	Deuki Bhirkharka	1452	SuspenDed	105
90	Gumdel	Gumdel	Gumdel Khola	Gumdel Khola	1200	SuspenDed	70
91	Okhreni	Deurali	Phalate	Dasmure Ahale	1454	SuspenDed	115
92	Kathjor	Salu	Rana Jor	Dunde Thumki	1401	SuspenDed	190
93	Priti	Priti	Arkhaule Khola	Sukar	1020	SuspenDed	50
94	Makadhum	Gagal Bhadaure	Bhatauli Khola	Bhatauli Simle	1000	SuspenDed	90
95	Chuchure	Chuchure	Chamla Khola	Chamla Kopche	1687	Truss	20
96	Gunsi	Hiledevi	Khani Khola	Kalo Pahara	1900	SuspenDed	70
97	Chuchure	Chuchure	Mehele Khola	Mehele	1397	SuspenDed	55
98	Gupteshwar	Gupteshwar	Dumja Khola	Dumja	723	SuspenDed	115
99	Bamti	Gumdel	Surma Khola	Surma	1560	SuspenDed	45
100	Mechchhe	Bethan	Sunkoshi	Sinduretar	1600	SuspenDed	150
101	Gumdel	Gumdel	Chari Khola	Chari Khola	1348	SuspenDed	65
102	Chuchure	Chuchure	Chamla Khola	Gairi Gaun	1396	Truss	20
103	Chisapani	Chanakhu	Baphar Khola	Mahadevtar	900	SuspenDed	75
104	Kunbhukasthali	Bamti	Gairamane	Gairamane	1637	SuspenDed	65
105	Gumdel	Gumdel	Chiwa Huda Khola	Chiwa	1000	SuspenDed	50
106	Bijulikot	Bijulikot	Nagi Khola	Coprang Khet	1122	SuspenDed	50
107	Duragaun	Duragaun	Sabra Khola	Khaola Kharka	960	SuspenDed	60
108	Gupteshwar	Gupteshwar	Surke Ghudeni	Surke Ghudeni	750	Truss	30
109	Bijulikot	Bijulikot	Choprang Khola	Choprang	1122	SuspenDed	80
110	Those	Those	Sotre Khola	Sotre	3345	Truss	20



Rank	VDC / Municipality		River Name	Place Name	Total Population	Bridge	
	Right Bank	Left Bank				type	span
111	Dudhbhanjyang	Rampur	Sunkoshi	Siling Beshi	1170	SuspenDed	210
112	Makadhun	Gagal Bhadaure	Bhatauli Khola	Baghmare	700	SuspenDed	28 50
113	Saipu	Saipu	Burpa Khola	Burpa	1044	SuspenDed	65
114	Khaniyapani	Rakathum	Ghatta Khola Bagma	Ghatta Bagmati	1395	SuspenDed	120
115	Rasanalu	Rasanalu	Darkha	Darkha	996	SuspenDed	50
116	Goshwara	Goshwara	Satdhare	Kalo Dhunga	100	Truss	32
117	Tilpung	Kathjor	Kathajor	Judi Kathajor	782	SuspenDed	80
118	Pingkhuri	Pingkhuri	Gogane	Gogane	1234	SuspenDed	65
119	Bijulikot	Bijulikot	Dungre Khola	Dhungrepuchhar	723	Truss	30
120	Bijulikot	Bijulikot	Lorkhu Khola	Thuldaha Kholak	1320	SuspenDed	90
121	Chuchure	Chuchure	Bhirkuna	Duimane	1397	Truss	25
122	Bhimeshwar	Bhaluwajor	Sunkoshi	Nabughat	735	SuspenDed	250
123	Thokarpur	Thokarpur	Chhahare	Chhahare	650	SuspenDed	70
124	Thokarpur	Doramba	Chautara khola	Sansaripari	1000	SuspenDed	60
125	Khimti	Tilpung	Tilpung Khola	Niurini Ghari	1475	SuspenDed	75
126	Gumdel	Gumdel	Koram Khola	Koram Chari Khol	1238	SuspenDed	50
127	Gupteshwar	Priti	Pati Khola	Pati Khola	390	SuspenDed	70
128	Khandadevi	Khandadevi	Ghatta Khola	Ghatta Khola	684	SuspenDed	60
129	Khaniyapani	Rakathum	Ghatta Khola	Simle Kholaghari	925	SuspenDed	60
130	Thokarpur	Dimipokhari	Khani Khola	Chareni	866	SuspenDed	90
131	Khaniyapani	Khaniyapani	Khaniyapani Khola	Bhuchyat	840	Truss	32
132	Goshwara	Goshwara	Ratamata Khola	Ratmata	500	SuspenDed	75
133	Bijulikot	Saipu	Poku Khola	Bashghari Puchh	1096	SuspenDed	70
134	Namadi	Namadi	Khahare Khola	Chapgaun	2700	SuspenDed	50
135	Chuchure	Chuchure	Mahabhir Khola	Mahabhir Buldan	410	SuspenDed	40
136	Thokarpur	Doramba	Andheri Khola	Andheri	650	SuspenDed	110
137	Chuchure	Chuchure	Chamla Khola	Chamla	667	SuspenDed	100
138	Dodhapokhari	Goshwara	Sailung Khola	Simsim Dudhpok	600	SuspenDed	75
139	Rampur	Himganga	Phundre Khola	Dhuseni Til Bajho	360	SuspenDed	60
140	Pakarbass	Bhatauli	Bhatauli Khola	Ashikhetchaur	1327	SuspenDed	150

(350 D)  
925