

Government of Nepal Ministry of Federal Affairs and Local Development Office of District Development Committee Rasuwa FOREWORD

It is my great pleasure to introduce this revised District Transport Master Plan (DTMP) of Rasuwa district which was concurred by the district stakeholders' meeting and approved by the DDC body and endorsed by Rasuwa District Council. Based on the DTMP Guideline 2012, all together 19 District Road Core Network (DRCN) aiming to connect all Village Development Committee (VDC) headquarters with the district headquarter, either directly or through strategic road network (SRN) have been selected. By bringing the DRCN to a maintainable and all-weather standard, year-round access to all VDCs headquarters can be ensured.

I believe this document will be helpful in sustainable planning, resources mobilization, implementation and monitoring of the road development. The document is anticipated to generate substantial employment opportunities for rural people through conversation, improvement activities of the existing road network including new construction requirements. DRCN plays an important role to strengthen and promote overall economic growth of the district through established and improved year round transport services reinforcing intra and inter-district linkages. It is most crucial to expand DRCN in a planned way as per the DTMP recommendations by considering the framework of available resources in DDC. This document is very essential in lobbying the donor agencies through central government to attract fund gap. Furthermore, this document will be supportive in avoiding prevailing duplication in resources allocation in road network development by considering basket fund approach.

I would, firstly like to express my gratitude to RAP3 for technical support. Secondly, my thanks go to Chief District Engineer (CDE) Mr. Madan Mohan Lal Shrestha and other DDC/DTO Staff for their valuable efforts in the process of producing this document. My special thank goes to all the representatives of political parties, who played crucial role in providing constructive feedbacks and valuable support in preparing this document successfully.

Last but not least, I would like to express my heartfelt gratitude to Ministry of Federal Affairs and Local Development (MoFALD) and Department of Local Infrastructure Development and Agriculture Road (DoLIDAR/MoFALD) for providing valuable suggestions and cooperation to produce this report. Any pioneering and constructive suggestions regarding this document will be highly appreciated.

तिवीर्य विकास अधिकारी

Rajendra Dev Pandey Local Development Officer

ACKNOWLEDGEMENTS

The District Transport Master Plan of Rasuwa District has been prepared for DDC/DTO-Rasuwa, DoLIDAR and Rural Access Programme(Phase 3), under the Contract Agreement between Rural Access Programme(Phase-3) and Everest Engineering Consultant (Contract No: RAP3/2014/014, DTMP03) to carry out the task of preparing of DTMP of Rasuwa District of Nepal. We would like to convey our indebtedness to Rural Access programme (Phase-3) for entrusting us the responsibility to carry out the task of preparing of DTMP of Rasuwa District.

We would like to express our sincere gratitude to the Project Coordinator Mr. Maheshwor Ghimire (SDE) of DoLIDAR and Programme Manager Mr. Michael Green, Deputy Programme Manager Mr. Dilli Prakash Sitaula, Deputy Programme Manager Mr. Arjun Poudel, Engineering Team Leader Bill Seal LRN Asset Management Specialist Er. Manoj Krishna Shrestha, Central Assets Management Specialist Er. Laxman Bhakta Dahi Shrestha and Er. Shalik Ram Paudelof (RAP3) whose valuable co-operation and suggestions guided us to accomplish this stage of work. We would also like to express our sincere thanks to LDO of Rasuwa DDC Mr.Bishnu Prasad Koirala, DTO Chief Mr.Madan Mohan LalShrestha (CDE), Planning officer, Program Officer, Information officer, Engineers, Sub-engineers and other staffs of DDC and DTO offices, Rasuwa for their extended help and regular support.

The local leaders and local people from Rasuwa district are also thankful for their help and suggestion for the selection and identification of the DRCN. We hope, this prepared DTMP of Rasuwa District will be very helpful and a valuable guideline for the planning and development of effective and systematic transport network in Rasuwa District.

Finally, we would like to thanks the DTMP team members of Everest Engineering Consultant for their valuable efforts to bring the study report in this stage.

Krishna DevYadav Project Director

Executive summary

Rasuwa District is located in Bagmati Zone which falls in Central Region of Nepal. Geographically, it ranges from latitude 27°58'00"N to 28°23'00"N and longitude 85°48'00"E to 85°07'00"E. The district's lowest point is of elevation 600mand highest point is of elevation 7234 mfrom mean sea level.

The district inventory identified just over 236.41 km of roads, along with 66.20 km of strategic roads and 170.21 km of rural roads. In coordination with the DDC/DTO, 19 rural roads with a length of 137.79 km forms the district road core network (DRCN), and the remaining 32.42 km were classified as village roads.

Road Class	Total length	Black Top	Gravel	Earthen
Strategic road network	66.20	50.50	15.70	-
Urban roads	-	-	-	-
District road core network	137.79	-	-	137.79
Village roads	32.42	-	-	32.42
Total	236.41	50.50	15.70	170.21

An analysis of the road network identified the need for improvement of all the DRCN roads in order to bring them to a maintainable all-weather standard and provide them with a proper road surface in light of existing traffic volumes. The required improvements and their estimated costs are listed below.

Improvement type	Requiremen	ıt	Cost (NPR)
Bridges	52	m	41,600,000
Slab culverts	3	m	450,000
Causeways	757	m	12,070,000
Hume pipes	168	units	16,800,000
Masonry retaining walls	10,060	m3	100,600,000
Gabion retaining walls	17,080	m3	59,780,000
Lined drains	54,800	m	65,760,000
Widening	-	m	-
Rehabilitation	-	km	-
Gravelling	137.79	km	303,137,039
Blacktopping	-	km	-
New construction	99.60	km	617,499,912
Total			1,217,696,951

The available budget for the road sector for the coming five years (fiscal year 2072/73 to 2076/77) is estimated to be NPR 1.374 Million Allocation to the district road core network was set at 85% of the total road sector budget, which was subsequently allocated firstly to the annual maintenance needs, secondly to the improvement needs and lastly to new construction.

ABBREVIATIONS

ARAMP	Annual Road Asset Management Plan
ARMP	Annual Road Maintenance Plan
BT	Black Top
DDC	District Development Committee
DOLIDAR	Department of Local Infrastructure Development and Agriculture Road
DOR	Department of Road
DRCN	District Road Core Network
DTICC	District Transport Infrastructure Coordination Committee
DTMP	District Transport Master Plan
DTPP	District Transport Perspective Plan
GIS	Geographical Information system
GPS	Global Positioning System
GON	Government of Nepal
GR	Gravel
Km	Kilometre
LGCDP	Local Governance and Community Development Programme
LRBP	Local Road Bridge Project
MoFALD	Ministry of Federal Affairs and Local Development
MTMP	Municipal Transport Master Plan
NPR	Nepali Rupees
PCU	Passenger Car Unit
RAP	Rural Access Programme
RTI	Rural Transport Infrastructure
SWAp	Sector Wide Approach
VDC	Village Development Committee
VPD	Vehicle per Day

CONTENTS

FOREWORD	i
Acknowledgements	.ii
Executive summary	iii
ABBREVIATIONS	iv
CONTENTS	.v
1. Introduction	.1
2. District road core network (DRCN)	.2
2.1 Total road network	.2
2.2 National Highways and Feeder Roads	.2
2.4 Village roads	.4
3. District Transport Perspective Plan (DTPP)	.7
3.1 Conservation	.7
3.2 Improvement	.8
3.4 District Transport Perspective Plan	12
4 Cost estimation	15
4.1 Conservation	15
4.2 Improvement	17
4.3 New construction	19
5. Ponking	20
5.1 Conservation	20 20
5.2 Improvement	22
5.3 New construction	23
6. District Transport Master Plan (DTMP)	24
6.1 Five Year Projected Financial resources	24
6.3 DTMP outcome	29
6.4 DTMP outcome	29
Annex 1 GIS FILE PROJECTION AND COORDINATE SYSTEM	31
Annex 2 TRAFFIC DATA	32
Annex 3 POPULATION SERVED	33
Annex 4 LOCATION OF PROPOSED INTERVENTIONS	35
Annex 5 OVERALL ROAD INVENTORY	36
Annex 6 PHOTOGRAPHS	38
Annex 7 MINUTES	40
Annex 8 UNTRACK ROAD IN RASUWA	48
Annex 9 Village ROADS IN Rasuwa	48
Annex 10List of comments/suggestions received from final workshop and its answer	49

TABLES

Table 2.1.1	Total road length (km)	2
Table 2.2.1	National Highways and Feeder Roads (km)	2
Table 2.3.1	Road length in Rasuwa District (km)	3
Table 2.3.2	District Road Core Network in Rasuwa District (km)	3
Table 3.1.1	Conservation requirements	8
Table 3.2.1	Sections of the district road core network requiring rehabilitation	9
Table 3.2.2	Sections of the district road core network requiring gravelling	9
Table 3.2.3	Required cross drainage structures	10
Table 3.2.4	Required protective structures	11
Table 3.2.5	Sections of the District Road Core Network requiring widening	11
Table 3.2.6	Sections of the district road core network requiring blacktopping	12
Table 3.3.1	Sections of the district road core network requiring new construction	12
Table 3.4.1	District Transport Perspective Plan	13
Table 4.1.1	Standard unit costs for conservation	15
Table 4.1.2	Estimated conservation costs for the first year (NPR '000)	16
Table 4.2.1	Standard unit costs for improvement activities	17
Table 4.2.2	Cost estimate for improvement measures (NPR '000)	18
Table 4.3.1	Standard unit costs for new construction	19
Table 4.3.2	Cost Estimate for new construction (NPR '000)	19
Table 4.4.1	DTPP Costs (NPR '000)	20
Table 5.1.1	Ranking of Conservation works (NPR '000)	21
Table 5.2.1	Ranking of improvement works (NPR '000)	22
Table 5.3.1	Ranking of construction works (NPR '000)	23
Table 6.1.1	Estimated funding levels (roads) for next five years (in NPR '000)	24
Table 6.2.1	Investment Plan	26
Table 6.3.1	DTMP output	29
Table 6.4.1	Standard of DRCN roads	29
Table 6.4.2	Population with access to road network	29

FIGURES

Figure 1	Location of the district	
Figure 2 :	Total Road Inventory Map for Rasuwa District	5
Figure 3 :	District Road Core Network (DRCN) Map for Rasuwa District	6
Figure 4 :	District Transport Perspective Plan (DTPP)	14
Figure 5 :	District Road Sector Budget Allocation	
Figure 6 :	District Transport Master Plan (DTMP	

1. INTRODUCTION

Rasuwa district is located in Bagmati zone in Western Development Region and covers an area of 1523.58 square kilometer within latitude27°58'00"N to 28°23'00"N and longitude 85°48'00"E to 85°07'00"E. Rasuwa district is surrounded by Sindhupalchowk and Nuwakot districts to the East; Dhading to the West; Tibet to the North; and Nuwakot to the South. According to the national census 2011, the total population of the district is 43,300 comprising 21,825 female and 21,475 male. Besides the agriculture farming, small scale livestock is the main source of occupation and livelihood of the majority of the population.

The district is divided into 18 VDCs and has no municipality. The district headquarter is Dhunche Bazar.



Figure 1 Location of the district

Rasuwa has limited but increasing accessibility. The district is served by surface transport facilities linking the district with national strategic road network through Kathmandu-Trishuli-Dhunche-Rasuwagadhi feeder road.

2. DISTRICT ROAD CORE NETWORK (DRCN)

This chapter gives an overview of the existing roads in Rasuwa district, differentiating between strategic roads and rural roads. It goes on to identify those rural roads that make up the district road core network (DRCN) that will form the basis for this DTMP. The remaining rural roads are classified as village roads.

2.1 TOTAL ROAD NETWORK

Table 2.1.1

The length of the total road network in the district is 236.41 km. This comprises of 66.20 km of Strategic Road Network (SRN) and 170.21 km of Rural Roads.

Road Class	Total length	Black Top	Gravel	Earthen
Strategic roads	66.20	50.50	15.70	
Urban roads				
Rural roads	170.21			170.21
Total	236.41	50.50	15.70	170.21

Total road length (km)

2.2 NATIONAL HIGHWAYS AND FEEDER ROADS

Rasuwa district has only feeder roads in total length of 66.20 km. Among section PhalankhaKhola to Dhunche and Dhunche to Shyaphru which is blacktop and section from Shyaphru to Rasuwagadhi is gravel.

 Table 2.2.1
 National Highways and Feeder Roads (km)

		Total			
Code	Name of Road	length	Black Top	Gravel	Earthen
F02110	Phalankha Khola-Dhunche	40.50	40.50		
F02111	Dhunche-Shyaphru	10.00	10.00		
F02112	Shyaphru-Rasuwagadhi (IB)	15.70		15.70	
Total		66.20	50.50	15.70	0.00

Source: www.dor.gov.np

2.3 DISTRICT ROAD CORE NETWORK

As part of the preparation of this DTMP, the District Road Core Network (DRCN) was identified together with the DTICC and DDC. This DRCN is the minimum network that allows all VDC headquarters to be connected with the strategic road network and the district headquarters, either directly or through other VDCs. In the selection of the DRCN roads, account was taken of the road conditions and the existing traffic levels. The identified DRCN roads were subsequently provided with road codes according to national standards. Road code has been assigned to village roads (road data as available in old DTMP and provided by DDC/DTO).

A complete list of the DRCN roads and their characteristics is provided in Table 2.3.1.

Table 2.3.1 Road length in Rasuwa District (km)							
Road Class	Total length	Black Top	Gravel	Earthen			
Strategic road network	66.20	50.50	15.70	-			
Highways	-						
Feeder roads	66.20	50.50	15.70				
Urban roads	-	-	-	-			
District road core network	137.79	-	-	137.79			
Village roads	32.42	-	-	32.42			
Total	236.41	50.50	15.70	170.21			

Table 2.3.1 Road length in Rasuwa District (km)

Table 2.3.2 District Road Core Network in Rasuwa District (km)

		Total	Black			All	Fair
Code	Name of Road	length	Тор	Gravel	Earthen	weather	weather
Total		137.79	-	-	137.79	-	137.79
	Percentage		0%	0%	100%	0%	100%
	Ronga-Desigang-Mendogaun-						
	Thuman-Dahalphedi-						
29DR001	Rasuwagadhi Hydro	4.18			4.18	-	4.18
200000	Ronga-Kerabari-Thambuchet-	0.00			0.60		0.60
2906002	Gatlang	0.09			0.09	-	0.09
29DR003	Thambuchet	5.80			5 80	-	5 80
2908004	Supfru Catlang Somdang	39.83			30.83	_	30.83
2501004	Satdobato (Nuwakot)-	35.85			55.65		55.05
	Thulogaun-Dandagaun-Siruchet-						
29DR005	Karumryang-Haku-Gre-Gatlang	11.54			11.54	-	11.54
29DR006	Rudraganga-Charan-Bhotekoshi	0.56			0.56	-	0.56
29DR007	Sole-Bhimali-Hakubensi	1.82			1.82	-	1.82
	Kalikasthan-Dhunge-Karmi dada-						
29DR008	Banuwa	9.74			9.74	-	9.74
29DR009	Timure-Khaide-Phyasing(New	-				-	-
2501005	Lingling-Pelko-Briddhim-						
	Khamjing-Sherpagaun-Lama						
29DR010	Hotel	5.23			5.23	-	5.23
2000044	Bharkhu-Brawal-Thulo Syabru-				4.20		4.20
29DR011	Langtang	4.20			4.20	-	4.20
29DR012	Syaubari-Laukil-Doklang-Yarsa	13.49			13.49	-	13.49
29DR013	Kalikasthan-Jibjibe-Sarsyum	5.50			5.50	-	5.50
2000014	Jipjive-Rupsepani-Bhadaure-	6.74			674		6 74
29DR014	Dharapani	0.74			0.74	-	0.74
29DR015	Bunenani	4.44			4 44	-	4 44
2501015	Koldada-Aapchaur-Badahare-						
29DR016	Chiti-Khalchet	4.60			4.60	-	4.60
	Bogatitar-Simle-Bhorle-						
29DR017	Parchyang	12.11			12.11	-	12.11
2000019	Lachyang(Nuwakot)-Saramthali-	1 20			1 20		4 20
2906018	Patiknarka-Parchyang	4.28			4.28	-	4.28
29DR019	Lachyang(Nuwakot) -Nirku Bhaniyang-Yarsa	3.04			3.04	-	3.04
					0.01		5.01
		-				-	-

2.4 VILLAGE ROADS

The 132.92 km of remaining roads that do not form part of the identified District Road Core Network (DRCN) in which 32.42 km is classified as village roads and 100.5 is classified as untrack roads which is shown in **Annex** and are under the responsibility of the 18 VDCs in Rasuwa district. These are roads of a lower importance that do not form the main link between the VDC headquarters and the district headquarters or strategic road network. Instead they provide additional access to other parts of the VDCs. Data of these roads is compiled from existing DTMP and the data provided by DDC/DTO Rasuwa. GPS tracking of these roads were not carried out as such the works beyond scope of works of this contract.

It is recommended that the VDCs organise maintenance workers to carry out the emergency and routine/recurrent maintenance of these roads to ensure they remain accessible. Any upgrading or new construction of village roads falls outside the scope of this DTMP and is the responsibility of the VDCs.

Funding for these roads will mainly come from the VDC grants. Some district funding will also be allocated to the village roads. However, this district funding will be mainly for maintenance, especially emergency maintenance and routine/recurrent maintenance to keep the village roads open.







Figure 3 : District Road Core Network (DRCN) Map for Rasuwa District

3. DISTRICT TRANSPORT PERSPECTIVE PLAN (DTPP)

This chapter looks at the required interventions regarding conservation, improvement and new construction of the district road core network. It provides a complete list of all works required in the DRCN, which together form the District Transport Perspective Plan (DTPP). For the works forming part of the DTPP, chapter 4 will subsequently provide cost estimation, while chapter 5 will rank the works according to priority and chapter 6 will select those priority works that can be carried out in the next 5 years and thus form part of the District Transport Master Plan (DTMP).

3.1 CONSERVATION

Conservation refers to the actions required to repair a road and keep it in good and passable condition. For DTMP planning purposes standard costs per kilometre for each maintenance type are applied to the entire district road core network, whereby for certain maintenance type distinction is made according to the surface type of the road. Identification of the actual maintenance requirements of each road is made annually in the ARMP. Conservation activities include:

- Emergency maintenance Basic repairs aimed at removing landslides and repairing damage to the road that inhibit the proper use of the road and make it impassable. This mainly takes place during and after the rainy season. A provisional lump sum is reserved for the entire district road core network based on the network length. Allocation to specific road sections is based on the actual need for clearing landslides or repairing washouts and cuts in the road.
- 2. <u>Routine maintenance</u> General maintenance of the road aimed at preventing damage by ensuring the proper working of the different road elements (retaining walls, drainage system, carriageway, etc.) and cutting vegetation. This is carried out each year on a more or less continuous basis. Routine maintenance is required for the entire district road core network. The specific requirements for routine maintenance are determined on an annual basis through the road condition survey and defined in the ARMP.
- 3. <u>Recurrent maintenance</u> Repairs of minor damage to the road surface and road structures to bring them back to good condition. This is generally carried out once or twice a year. Recurrent maintenance is required for the entire district road core network, whereby distinction is made according to the surface type. The specific requirements for recurrent maintenance are determined on an annual basis through the road condition survey and defined in the ARMP.
- 4. <u>Periodic maintenance</u> Larger repairs to the road largely aimed at renewing the road surface through re-gravelling, resealing or overlays. It is generally carried out with several years interval. Although periodic maintenance is only required for specific sections of the district road core network, a lump sum allocation is made for the entire district road core network based on average annual requirements, distinguishing between different surface types. The specific periodic maintenance requirements are determined on an annual basis through the annual road condition survey and defined in the ARMP.

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

Code	Total length (km)	Black Top (km)	Gravel (km)	Earthen (km)	Emergency maintenance (km)	Routine maintenance (km)	Recurrent maintenance earthen (km)
Total							
	137.79	-	-	137.79	137.79	137.79	137.79
29DR001	4.18			4.18	4.18	4.18	4.18
29DR002	0.69			0.69	0.69	0.69	0.69
29DR003	5.80			5.80	5.80	5.80	5.80
29DR004	39.83			39.83	39.83	39.83	39.83
29DR005	11.54			11.54	11.54	11.54	11.54
29DR006	0.56			0.56	0.56	0.56	0.56
29DR007	1.82			1.82	1.82	1.82	1.82
29DR008	9.74			9.74	9.74	9.74	9.74
29DR009	-			-	-	-	-
29DR010	5.23			5.23	5.23	5.23	5.23
29DR011	4.20			4.20	4.20	4.20	4.20
29DR012	13.49			13.49	13.49	13.49	13.49
29DR013	5.50			5.50	5.50	5.50	5.50
29DR014	6.74			6.74	6.74	6.74	6.74
29DR015	4.44			4.44	4.44	4.44	4.44
29DR016	4.60			4.60	4.60	4.60	4.60
29DR017	12.11			12.11	12.11	12.11	12.11
29DR018	4.28			4.28	4.28	4.28	4.28
29DR019	3.04			3.04	3.04	3.04	3.04

 Table 3.1.1
 Conservation requirements

3.2 IMPROVEMENT

Improvement refers to actions required to improve a road to bring it to a maintainable allweather standard. It includes the following actions, which for Rasuwa are described in more detail in the subsequent sections.

- 1. <u>Rehabilitation</u>- Significant repairs required to bring a very poor road back to a maintainable standard. This does not include any changes to the original surface type.
- 2. <u>Gravelling</u> Placement of a gravel layer to make it all-weather and ensure that the road remains passable during the rainy season.
- 3. <u>Cross drainage</u> Placement of suitable cross-drainage structures with the aim of making the road all-weather and ensuring that the road remains passable even during the rainy season.
- 4. <u>Protective structures</u> Placement of retaining walls and lined side drains to avoid excessive damage to the road during the rainy season and bring it to a maintainable standard.
- 5. <u>Blacktopping</u> Placement of a blacktop layer in roads with traffic volumes exceeding 50passenger car units (PCU) to reduce damage to the road surface.
- 6. <u>Widening</u> Increase of the road width in roads with traffic volumes exceeding 100 Vehicles Per Day (VPD) to ensure the proper flow of traffic.

3.2.1 REHABILITATION

No road identified for rehabilitation in the district road core network.

Table 3.2.1 Sections of the district road core network requiring rehabilitation

Code	Name of Road	Total length (km)	Rehabilitation (km)
	Total		-

3.2.2 GRAVELLING

As the entire district road core network needs to be brought to an all-weather status, gravelling of the road surface is required for all the earthen sections in the DRCN. Total 137.79 km DRCN need to be gravelled in this district which is given in table 3.2.2 below.

Table 3.2.2 Sections of the district road core network requiring gravelling

		Total	
		length	Gravelling
Code	Name of Road	(km)	(km)
	Total	137.79	137.79
29DR001	Ronga-Desigang-Mendogaun-Thuman-Dahalphedi-Rasuwagadhi Hydro	4.18	4.18
29DR002	Ronga-Kerabari-Thambuchet-Gatlang	0.69	0.69
29DR003	Bahundanda-Goljung-Thambuchet	5.80	5.80
29DR004	Syafru-Gatlang-Somdang	39.83	39.83
29DR005	Satdobato (Nuwakot)-Thulogaun-Dandagaun-Siruchet-Karumryang-Haku-Gre-Gatlang	11.54	11.54
29DR006	Rudraganga-Charan-Bhotekoshi	0.56	0.56
29DR007	Sole-Bhimali-Hakubensi	1.82	1.82
29DR008	Kalikasthan-Dhunge-Karmi dada-Banuwa	9.74	9.74
29DR009	Timure-Khaide-Phyasing(New proposed)	-	-
29DR010	Lingling-Pelko-Briddhim-Khamjing-Sherpagaun-Lama Hotel	5.23	5.23
29DR011	Bharkhu-Brawal-Thulo Syabru-Langtang	4.20	4.20
29DR012	Syaubari-Laukil-Doklang-Yarsa	13.49	13.49
29DR013	Kalikasthan-Jibjibe-Sarsyum	5.50	5.50
29DR014	Jipjive-Rupsepani-Bhadaure-Dharapani	6.74	6.74
29DR015	Dasmure-SetiDevi-Dhuseni-Rupepani	4.44	4.44
29DR016	Koldada-Aapchaur-Badahare-Chiti-Khalchet	4.60	4.60
29DR017	Bogatitar-Simle-Bhorle-Parchyang	12.11	12.11
29DR018	Lachyang(Nuwakot)-Saramthali-Patikharka-Parchyang	4.28	4.28
29DR019	Lachyang(Nuwakot) -Nirku Bhanjyang-Yarsa	3.04	3.04
		-	-

3.2.3 CROSS DRAINAGE

The need for cross drainage was identified for different DRCN roads. One bridge with length of 52 m, one slab culvert with length of 3m, concrete causeways with total length of 50m, and 168nos. of pipe culverts were identified as cross drainage structure.

		Total		Slab	CC	Stone	Pipe
		length	Bridge	culvert	Causeway	Causeway	culvert
Code	Name of Road	(km)	(m)	(m)	(m)	(m)	(units)
	Total	137.79	52	3	50	707	168
	Ronga-Desigang-Mendogaun-						
	Thuman-Dahalphedi-Rasuwagadhi						
29DR001	Hydro	4.18					6
	Ronga-Kerabari-Thambuchet-						
29DR002	Gatlang	0.69					
29DR003	Bahundanda-Goljung-Thambuchet	5.80					5
29DR004	Syafru-Gatlang-Somdang	39.83					30
	Satdobato (Nuwakot)-Thulogaun-						
	Dandagaun-Siruchet-Karumryang-						
29DR005	Haku-Gre-Gatlang	11.54					10
29DR006	Rudraganga-Charan-Bhotekoshi	0.56					
29DR007	Sole-Bhimali-Hakubensi	1.82					
	Kalikasthan-Dhunge-Karmi dada-						
29DR008	Banuwa	9.74				67	18
	Timure-Khaide-Phyasing(New						
29DR009	proposed)	-					
	Lingling-Pelko-Briddhim-Khamjing-						
29DR010	Sherpagaun-Lama Hotel	5.23					10
	Bharkhu-Brawal-Thulo Syabru-						
29DR011	Langtang	4.20					4
29DR012	Syaubari-Laukil-Doklang-Yarsa	13.49					10
29DR013	Kalikasthan-Jibjibe-Sarsyum	5.50				120	10
	Jipjive-Rupsepani-Bhadaure-						
29DR014	Dharapani	6.74		3		160	15
	Dasmure-SetiDevi-Dhuseni-						
29DR015	Rupepani	4.44				100	8
	Koldada-Aapchaur-Badahare-Chiti-						
29DR016	Khalchet	4.60	3.2.4	3.2.5	10	20	8
29DR017	Bogatitar-Simle-Bhorle-Parchyang	12.11	52	3.2.6	3.2.7	120	18
	Lachvang(Nuwakat) Cararathali						
2000010	Lachyang(Nuwakot)-Saramthali-	1 20	220	220	20	10	10
ZADKOTA	Pauknarka-Parchyang	4.28	3.2.8	3.2.9	20	10	10
	Lachvang(Nuwakot) -Nirku						
29DR019	Bhaniyang-Yarsa	3 04	3 2 10	3 2 11	20	110	6
29DR019	Bhanjyang-Yarsa	3.04	3.2.10	3.2.11	20	110	6

 Table 3.2.3
 Required cross drainage structures

3.2.12 PROTECTIVE STRUCTURES

Based on the road survey carried out in Rasuwa, following retaining/ and breast walls were identified as required ensuring the protection of the district road core network.

		Total	Masonry	Gabion	Lined
Code	Name of Road	length (km)	(m3)	(m3)	drain (m)
	Total	137.79	10,060	17,080	54,800
29DR001	Ronga-Desigang-Mendogaun-Thuman-Dahalphedi-Rasuwagadhi Hydro	4.18	460		2,000
29DR002	Ronga-Kerabari-Thambuchet-Gatlang	0.69			
29DR003	Bahundanda-Goljung-Thambuchet	5.80	120	2,060	3,000
29DR004	Syafru-Gatlang-Somdang	39.83	3,740	4,820	15,000
29DR005	Satdobato (Nuwakot)-Thulogaun-Dandagaun-Siruchet-Karumryang-Haku-Gre- Gatlang	11.54	530	1,200	5,000
29DR006	Rudraganga-Charan-Bhotekoshi	0.56			
29DR007	Sole-Bhimali-Hakubensi	1.82			
29DR008	Kalikasthan-Dhunge-Karmi dada-Banuwa	9.74	1,500	1,600	4,500
29DR009	Timure-Khaide-Phyasing(New proposed)	-			
29DR010	Lingling-Pelko-Briddhim-Khamjing-Sherpagaun-Lama Hotel	5.23	460	1,300	2,000
29DR011	Bharkhu-Brawal-Thulo Syabru-Langtang	4.20	730	1,550	2,000
29DR012	Syaubari-Laukil-Doklang-Yarsa	13.49	120	2,060	7,000
29DR013	Kalikasthan-Jibjibe-Sarsyum	5.50	80	200	1,500
29DR014	Jipjive-Rupsepani-Bhadaure-Dharapani	6.74	530	1,200	3,000
29DR015	Dasmure-SetiDevi-Dhuseni-Rupepani	4.44	120		1,000
29DR016	Koldada-Aapchaur-Badahare-Chiti-Khalchet	4.60	240	460	1,400
29DR017	Bogatitar-Simle-Bhorle-Parchyang	12.11	1,200	160	5,000
29DR018	Lachyang (Nuwakot) - Saramthali - Patikharka - Parchyang	4.28	130	330	1,400
29DR019	Lachyang(Nuwakot) -Nirku Bhanjyang-Yarsa	3.04	100	140	1,000

 Table 3.2.4
 Required protective structures

3.2.13 WIDENING

Widening of the district road core network in Rasuwa arenot identifiedbut in specific locations (especially in loops) needs to bring it up to the minimum standard to ensure sufficient space in the curves. Additional widening to a higher standard is not required because traffic volumes remain very low.

Code	Name of Road	Total length (km)	VPD	Widening (m)
	Total			-

3.2.14 BLACKTOPPING

An analysis of the traffic data for the different roads making up the district road core network shows that there is no roads that are eligible for blacktopping (traffic volume exceeds 100 PCU).

Table 3.2.6	Sections of the district road core network requiring blacktopping

Code	Name of Road	Total length (km)	Blacktop (km)	Traffic (PCU)	Blacktopping (km)
	Total				-

3.3 NEW CONSTRUCTION

29DR012

29DR018

29DR019

New construction of DRCN roads is required to connect the remaining 6 VDC headquarters. A list of proposed roads for new construction is listed below. These roads provide access to new VDC headquarters that do not currently have road access.

Table 3.3. ⁴	1 Sections of the district ro	oad core network requiring n	ew constr	uction	
Code	Name of Road	New VDCs	Existing length (km)	New length (km)	Bridge (m)
		Total	137.79	99.60	-
29DR001	Ronga-Desigang-Mendogaun-Thuman- Dahalphedi-Rasuwagadhi Hydro	Thuman	4.18	3.36	
29DR002	Ronga-Kerabari-Thambuchet-Gatlang	Chilime, Gatlang, Goljung, Thuman	0.69	11.18	
29DR005	Satdobato (Nuwakot)-Thulogaun-Dandagaun- Siruchet-Karumryang-Haku-Gre-Gatlang	Haku,Thulogaun	11.54	20.17	
29DR006	Rudraganga-Charan-Bhotekoshi		0.56	1.64	
29DR007	Sole-Bhimali-Hakubensi	Haku	1.82	3.81	
29DR009	Timure-Khaide-Phyasing(New proposed)	Tourism Road	-	7.09	
29DR010	Lingling-Pelko-Briddhim-Khamjing-Sherpagaun- Lama Hotel	Tourism Road	5.23	23.51	
29DR011	Bharkhu-Brawal-Thulo Syabru-Langtang	Langtang	4.20	12.13	

13.49

4.28

3.04

5.68

5.28

5.73

3.4 DISTRICT TRANSPORT PERSPECTIVE PLAN

Syaubari-Laukil-Doklang-Yarsa

Parchyang

Lachyang(Nuwakot)-Saramthali-Patikharka-

Lachyang(Nuwakot) -Nirku Bhanjyang-Yarsa

The following table lists the required interventions, while the proposed network is shown in the DTPP map in figure 4.

Yarsa

Saramthali

Saramthali, Yarsa

Table 3.4.1 District Transport Perspective Plan

Code	Emergency maintenance (km)	Routine maintenance (km)	Recurrent maintenance (km)	Periodic maintenance (km)	Rehabilitation (km)	Gravelling (km)	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)
Total	137.79	137.79	137.79	-	-	137.79	52	3	50	707	168	10,060	17,080	54,800	99.60
29DR001	4.18	4.18	4.18	-	-	4.18	-	-	-	-	6	460	-	2,000	3.36
29DR002	0.69	0.69	0.69	-	-	0.69	-	-	-	-	-	-	-	-	11.18
29DR003	5.80	5.80	5.80	-	-	5.80	-	-	-	-	5	120	2,060	3,000	-
29DR004	39.83	39.83	39.83	-	-	39.83	-	-	-	-	30	3,740	4,820	15,000	-
29DR005	11.54	11.54	11.54	-	-	11.54	-	-	-	-	10	530	1,200	5,000	20.17
29DR006	0.56	0.56	0.56	-	-	0.56	-	-	-	-	-	-	-	-	1.64
29DR007	1.82	1.82	1.82	-	-	1.82	-	-	-	-	-	-	-	-	3.81
29DR008	9.74	9.74	9.74	-	-	9.74	-	-	-	67	18	1,500	1,600	4,500	-
29DR009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.09
29DR010	5.23	5.23	5.23	-	-	5.23	-	-	-	-	10	460	1,300	2,000	23.51
29DR011	4.20	4.20	4.20	-	-	4.20	-	-	-	-	4	730	1,550	2,000	12.13
29DR012	13.49	13.49	13.49	-	-	13.49	-	-	-	-	10	120	2,060	7,000	5.68
29DR013	5.50	5.50	5.50	-	-	5.50	-	-	-	120	10	80	200	1,500	-
29DR014	6.74	6.74	6.74	-	-	6.74	-	3	-	160	15	530	1,200	3,000	-
29DR015	4.44	4.44	4.44	-	-	4.44	-	-	-	100	8	120	-	1,000	-
29DR016	4.60	4.60	4.60	-	-	4.60	-	-	10	20	8	240	460	1,400	-
29DR017	12.11	12.11	12.11	-	-	12.11	52	-	-	120	18	1,200	160	5,000	-
29DR018	4.28	4.28	4.28	-	-	4.28	-	-	20	10	10	130	330	1,400	5.28
29DR019	3.04	3.04	3.04	-	-	3.04	-	-	20	110	6	100	140	1,000	5.73

Figure 4 : District Transport Perspective Plan (DTPP)



4. COST ESTIMATION

Standard costs for the different activities required have been referred from guideline during cost estimation. Estimation of improvement and new construction activities are calculated by summation of estimation of the total cost required for each activities.

4.1 CONSERVATION

The costs of the required conservation measures have been calculated using the following standard costs. These standard costs have been applied to the entire district road core network, whereby distinction is made based on the surface type in the case of recurrent and periodic maintenance. The standard cost for recurrent maintenance in guidelines seems very high so it is reduced and makes realistic by studying reports/estimates of recurrent maintenance carried out by DoR. Standard cost of emergency maintenance is adjusted by slightly reducing in the DTMP guideline's rate as suggested by DTO office.Periodic maintenance of blacktop road is practically done in every 5 years interval and that of gravel road in every 3 years interval.Hence the budget is allocated in fourth and fifth year only.The estimated costs for the first year are presented below, while the costs for subsequent years will vary slightly as road surface types change as a result of improvements. Detailed cost estimations for the actual maintenance needs in any given year will be prepared every year based on condition survey and actual requirementin the ARAMP.

Activity	Unit	DTMP actual unit cost (NPR)
Emergency maintenance	km	25,000
Routine maintenance	km	20,000
Recurrent maintenance (blacktop)	km	200,000
Recurrent maintenance (gravel)	km	130,000
Recurrent maintenance (earthen)	km	120,000
Periodic maintenance (blacktop)	km	200,000
Periodic maintenance (gravel)	km	150,000

Table 4.1.1 Standard unit costs for conservation

	Т	ab	le	4.	1	.2
--	---	----	----	----	---	----

Estimated conservation costs for the first year (NPR '000)

Code	Total length (km)	Blacktop (km)	Gravel (km)	Earthen (km)	Emergency maintenance	Routine maintenance	Recurrent maintenance (blacktop)	Recurrent maintenance (gravel)	Recurrent maintenance (earthen)	Periodic maintenance (blacktop)	Periodic maintenance (gravel)	Total first year cost	Total 5-year cost
Total	137.79	-	-	137.79	3,445	2,756	-	-	16,535	-	-	22,735	113,676
29DR001	4.18	-	-	4.18	104	84	-	-	501	-	-	689	3,445
29DR002	0.69	-	-	0.69	17	14	-	-	83	-	-	114	568
29DR003	5.80	-	-	5.80	145	116	-	-	696	-	-	957	4,787
29DR004	39.83	-	-	39.83	996	797	-	-	4,780	-	-	6,572	32,859
29DR005	11.54	-	-	11.54	288	231	-	-	1,385	-	-	1,904	9,519
29DR006	0.56	-	-	0.56	14	11	-	-	67	-	-	93	464
29DR007	1.82	-	-	1.82	46	36	-	-	219	-	-	301	1,504
29DR008	9.74	-	-	9.74	244	195	-	-	1,169	-	-	1,608	8,038
29DR009	-	-	-	-	-	-	-	-	-	-	-	-	-
29DR010	5.23	-	-	5.23	131	105	-	-	627	-	-	863	4,313
29DR011	4.20	-	-	4.20	105	84	-	-	505	-	-	694	3,469
29DR012	13.49	-	-	13.49	337	270	-	-	1,618	-	-	2,225	11,127
29DR013	5.50	-	-	5.50	137	110	-	-	660	-	-	907	4,535
29DR014	6.74	-	-	6.74	169	135	-	-	809	-	-	1,112	5,562
29DR015	4.44	-	-	4.44	111	89	-	-	533	-	-	732	3,661
29DR016	4.60	-	-	4.60	115	92	-	-	552	-	-	760	3,798
29DR017	12.11	-	-	12.11	303	242	-	-	1,453	-	-	1,999	9,993
29DR018	4.28	-	-	4.28	107	86	-	-	513	-	-	706	3,529
29DR019	3.04	-	-	3.04	76	61	-	-	364	-	-	501	2,505

4.2 IMPROVEMENT

Costs of required improvement measures have been calculated using the following standard rates. These standard rates have been revisited that presented in DTMP Preparation guidelines 2012. These rates has been applied in identified improvement requirements presented in the previous chapter.

Activity	Unit	DTMP actual unit cost (NPR)
Rehabilitation	km	800,000
Widening	m	2,500
Gravelling	km	2,200,000
Blacktopping	km	5,700,000
Bridge construction	m	800,000
Slab culvert construction	m	150,000
CC Causeway construction	m	100,000
Stone Causeway construction	m	10,000
Pipe culvert placement	unit	100,000
Masonry wall construction	m ³	10,000
Gabion wall construction	m ³	3,500
Lined drain construction	m	1,200

Table 4.2.1 Standard unit costs for improvement activities

Code	Total length (km)	Rehabilitation	Widening	Gravelling	Blacktopping	Bridges	Slab culverts	CC causeways	Stone causeways	Pipe culvert	Masonry walls	Gabion walls	Lined drains	Total cost
Total	137.79	-	-	303,137	-	41,600	450	5,000	7,070	16,800	100,600	59,780	65,760	600,197
29DR001	4.18	-	-	9,186	-	-	-	-	-	600	4,600	-	2,400	16,786
29DR002	0.69	-	-	1,514	-	-	-	-	-	-	-	-	-	1,514
29DR003	5.80	-	-	12,764	-	-	-	-	-	500	1,200	7,210	3,600	25,274
29DR004	39.83	-	-	87,625	-	-	-	-	-	3,000	37,400	16,870	18,000	162,895
29DR005	11.54	-	-	25,385	-	-	-	-	-	1,000	5,300	4,200	6,000	41,885
29DR006	0.56	-	-	1,237	-	-	-	-	-	-	-	-	-	1,237
29DR007	1.82	-	-	4,010	-	-	-	-	-	-	-	-	-	4,010
29DR008	9.74	-	-	21,435	-	-	-	-	670	1,800	15,000	5,600	5,400	49,905
29DR009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29DR010	5.23	-	-	11,503	-	-	-	-	-	1,000	4,600	4,550	2,400	24,053
29DR011	4.20	-	-	9,250	-	-	-	-	-	400	7,300	5,425	2,400	24,775
29DR012	13.49	-	-	29,672	-	-	-	-	-	1,000	1,200	7,210	8,400	47,482
29DR013	5.50	-	-	12,094	-	-	-	-	1,200	1,000	800	700	1,800	17,594
29DR014	6.74	-	-	14,833	-	-	450	-	1,600	1,500	5,300	4,200	3,600	31,483
29DR015	4.44	-	-	9,763	-	-	-	-	1,000	800	1,200	-	1,200	13,963
29DR016	4.60	-	-	10,127	-	-	-	1,000	200	800	2,400	1,610	1,680	17,817
29DR017	12.11	-	-	26,647	-	41,600	-	-	1,200	1,800	12,000	560	6,000	89,807
29DR018	4.28	-	-	9,411	-	-	-	2,000	100	1,000	1,300	1,155	1,680	16,646
29DR019	3.04	-	-	6,681	-	-	-	2,000	1,100	600	1,000	490	1,200	13,071

Table 4.2.2

Cost estimate for improvement measures (NPR '000)

4.3 NEW CONSTRUCTION

For new construction, the following standard costs have been applied to estimate the costs involved.

Table 4.3.1 Standard unit costs for new construction

Activity	Unit	DTMP actual unit cost (NPR)
Track opening	km	4,000,000
Gravelling	km	2,200,000
Bridge construction	m	800,000

Table 4.3.2Cost Estimate for new construction (NPR '000)

Code	Name of Road	New length (km)	Opening up (NPR)	Gravelling (NPR)	Bridges (NPR)	Total cost (NPR)
	Total	99.60	398,387	219,113	-	617,500
	Ronga-Desigang-Mendogaun-					
	Thuman-Dahalphedi-					
29DR001	Rasuwagadhi Hydro	3.36	13,446	7,395	-	20,841
	Ronga-Kerabari-Thambuchet-					
29DR002	Gatlang	11.18	44,730	24,602	-	69,332
	Bahundanda-Goljung-					
29DR003	Thambuchet	-	-	-	-	-
29DR004	Syafru-Gatlang-Somdang	-	-	-	-	-
	Satdobato (Nuwakot)-Thulogaun-					
	Dandagaun-Siruchet-Karumryang-					
29DR005	Haku-Gre-Gatlang	20.17	80,699	44,384	-	125,083
29DR006	Rudraganga-Charan-Bhotekoshi	1.64	6,578	3,618	-	10,197
29DR007	Sole-Bhimali-Hakubensi	3.81	15,237	8,381	-	23,618
	Kalikasthan-Dhunge-Karmi dada-					
29DR008	Banuwa	-	-	-	-	-
	Timure-Khaide-Phyasing(New					
29DR009	proposed)	7.09	28,350	15,592	-	43,942
	Lingling-Pelko-Briddhim-					
29DR010	Khamjing-Sherpagaun-Lama Hotel	23.51	94,031	51,717	-	145,748
	Bharkhu-Brawal-Thulo Syabru-					
29DR011	Langtang	12.13	48,540	26,697	-	75,236
29DR012	Syaubari-Laukil-Doklang-Yarsa	5.68	22,735	12,504	-	35,239
29DR013	Kalikasthan-Jibjibe-Sarsyum	-	-	-	-	-
	Jipjive-Rupsepani-Bhadaure-					
29DR014	Dharapani	-	-	-	-	-
	Dasmure-SetiDevi-Dhuseni-					
29DR015	Rupepani	-	-	-	-	-
	Koldada-Aapchaur-Badahare-					
29DR016	Chiti-Khalchet	-	-	-	-	-
29DR017	Bogatitar-Simle-Bhorle-Parchyang	-	-	-	-	-
	Lachyang(Nuwakot)-Saramthali-					
29DR018	Patikharka-Parchyang	5.28	21,125	11,619	-	32,743
	Lachyang(Nuwakot) -Nirku					
29DR019	Bhanjyang-Yarsa	5.73	22,916	12,604	-	35,520

4.4 DTPP COSTS

Code	Name of Road	Conservation	Improvement	New construction	Total
	Total	113,676	600,197	617,500	1,331,373
29DR001	Ronga-Desigang-Mendogaun-Thuman-Dahalphedi-Rasuwagadhi Hydro	3,445	16,786	20,841	41,072
29DR002	Ronga-Kerabari-Thambuchet-Gatlang	568	1,514	69,332	71,414
29DR003	Bahundanda-Goljung-Thambuchet	4,787	25,274	-	30,061
29DR004	Syafru-Gatlang-Somdang	32,859	162,895	-	195,755
29DR005	Satdobato (Nuwakot)-Thulogaun-Dandagaun-Siruchet-Karumryang- Haku-Gre-Gatlang	9,519	41,885	125,083	176,487
29DR006	Rudraganga-Charan-Bhotekoshi	464	1,237	10,197	11,897
29DR007	Sole-Bhimali-Hakubensi	1,504	4,010	23,618	29,132
29DR008	Kalikasthan-Dhunge-Karmi dada-Banuwa	8,038	49,905	-	57,943
29DR009	Timure-Khaide-Phyasing(New proposed)	-	-	43,942	43,942
29DR010	Lingling-Pelko-Briddhim-Khamjing-Sherpagaun-Lama Hotel	4,313	24,053	145,748	174,114
29DR011	Bharkhu-Brawal-Thulo Syabru-Langtang	3,469	24,775	75,236	103,480
29DR012	Syaubari-Laukil-Doklang-Yarsa	11,127	47,482	35,239	93,848
29DR013	Kalikasthan-Jibjibe-Sarsyum	4,535	17,594	-	22,129
29DR014	Jipjive-Rupsepani-Bhadaure-Dharapani	5,562	31,483	-	37,045
29DR015	Dasmure-Seti Devi-Dhuseni-Rupepani	3,661	13,963	-	17,625
29DR016	Koldada-Aapchaur-Badahare-Chiti-Khalchet	3,798	17,817	-	21,615
29DR017	Bogatitar-Simle-Bhorle-Parchyang	9,993	89,807	-	99,799
29DR018	Lachyang(Nuwakot)-Saramthali-Patikharka-Parchyang	3,529	16,646	32,743	52,918
29DR019	Lachyang(Nuwakot) -Nirku Bhanjyang-Yarsa	2,505	13,071	35,520	51,097

Table 4.4.1 DTPP Costs (NPR '000)

5. RANKING

Ranking of required interventions determine the priority for implementation. The ranking is done separately for conservation, improvement and new construction. Ranking is done according to cost per person served, whereby the costs are estimated costs of the previous chapter. Population served is calculated using population data for VDCs linked by particular road given in **Annex 2**.

5.1 CONSERVATION

Ranking of roads for conservation is done in basis of total conservation costs per person served by the road. This ranking of roads will be updated each year in the ARAMP based on the actual cost estimates for the year concerned. An example ranking is provided in the table below based on standard costs for the first year.

Table 5.1.1Ranking of Conservation works (NPR '000)

Code	Total length (km)	1. Emergency	2. Routine	3. Recurrent (blacktop)	4. Recurrent (gravel)	5. Recurrent (earth)	6. Periodic (blacktop)	7. Periodic (gravel)	Total cost (NPR '000)	Population served	Cost/person (NPR)
29DR009	-	-	-	-	-	-	-	-	-	423	-
29DR002	0.69	17	14	-	-	83	-	-	114	4,155	27
29DR006	0.56	14	11	-	-	67	-	-	93	2,744	34
29DR007	1.82	46	36	-	-	219	-	-	301	4,913	61
29DR019	3.04	76	61	-	-	364	-	-	501	7,836	64
29DR013	5.50	137	110	-	-	660	-	-	907	10,498	86
29DR018	4.28	107	86	-	-	513	-	-	706	7,836	90
29DR012	13.49	337	270	-	-	1,618	-	-	2,225	18,864	118
29DR015	4.44	111	89	-	-	533	-	-	732	5,570	131
29DR017	12.11	303	242	-	-	1,453	-	-	1,999	15,020	133
29DR016	4.60	115	92	-	-	552	-	-	760	5,570	136
29DR011	4.20	105	84	-	-	505	-	-	694	4,076	170
29DR014	6.74	169	135	-	-	809	-	-	1,112	5,570	200
29DR005	11.54	288	231	-	-	1,385	-	-	1,904	7,516	253
29DR001	4.18	104	84	-	-	501	-	-	689	2,246	307
29DR008	9.74	244	195	-	-	1,169	-	-	1,608	4,522	356
29DR003	5.80	145	116	-	-	696	-	-	957	1,378	695
29DR010	5.23	131	105	-	-	627	-	-	863	837	1,031
29DR004	39.83	996	797	-	-	4,780	-	-	6,572	5,048	1,302

Allocation of maintenance funding will follow a specific sequence indicated below, and will be applied to the road ranking as defined in the ARAMP. This is importance and be followed accordingly where fund is insufficient to cover all conservation costs.

- 1. Emergency maintenance
- 2. Routine maintenance
- 3. Recurrent maintenance paved roads
- 4. Recurrent maintenance gravel roads
- 5. Recurrent maintenance earthen roads
- 6. Periodic maintenance blacktop roads
- 7. Periodic maintenance gravel roads

5.2 IMPROVEMENT

In the case of improvement activities, ranking is again done in the basis of the total cost per person served. The resulting order of the roads is shown in the table below. In the case of roads requiring blacktopping, the improvement of the road has been split into two phases. The first phase includes all improvements to bring the road to a maintainable all-weather standard (gravelling, widening, cross drainage and protective structures), while the second phase only includes the blacktopping. This has been done to avoid unnecessarily delaying the improvement of such roads to all-weather gravel standard due to the additional cost of blacktopping (increasing the cost per person served).

Code	Total length (km)	Gravelling (km)	Blacktopping (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
29DR009	-	-	-	-	423	-
29DR002	0.69	0.69	-	1,514	4,155	364
29DR006	0.56	0.56	-	1,237	2,744	451
29DR007	1.82	1.82	-	4,010	4,913	816
29DR019	3.04	3.04	-	13,071	7,836	1,668
29DR013	5.50	5.50	-	17,594	10,498	1,676
29DR018	4.28	4.28	-	16,646	7,836	2,124
29DR015	4.44	4.44	-	13,963	5,570	2,507
29DR012	13.49	13.49	-	47,482	18,864	2,517
29DR016	4.60	4.60	-	17,817	5,570	3,199
29DR005	11.54	11.54	-	41,885	7,516	5,573
29DR014	6.74	6.74	-	31,483	5,570	5,652
29DR017	12.11	12.11	-	89,807	15,020	5,979
29DR011	4.20	4.20	-	24,775	4,076	6,078
29DR001	4.18	4.18	-	16,786	2,246	7,474
29DR008	9.74	9.74	-	49,905	4,522	11,036
29DR003	5.80	5.80	-	25,274	1,378	18,341
29DR010	5.23	5.23	-	24,053	837	28,737
29DR004	39.83	39.83	-	162,895	5,048	32,269

Table 5.2.1Ranking of improvement works (NPR '000)

5.3 NEW CONSTRUCTION

For the roads proposed for new construction, ranking is also according to the cost per person served by the new road. The result of ranking is given in the table below.

Code	Length (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
29DR012	5.68	35 239	18 864	1 868
29DR006	1.64	10.197	2.744	3.716
29DR018	5.28	32,743	7,836	4,179
29DR019	5.73	35,520	7,836	4,533
29DR007	3.81	23,618	4,913	4,807
29DR001	3.36	20,841	2,246	9,279
29DR005	20.17	125,083	7,516	16,642
29DR002	11.18	69,332	4,155	16,686
29DR011	12.13	75,236	4,076	18,458
29DR009	7.09	43,942	423	103,883
29DR010	23.51	145,748	837	174,132

 Table 5.3.1
 Ranking of construction works (NPR '000)

6. DISTRICT TRANSPORT MASTER PLAN (DTMP)

Based upon the prioritized transport linkages and the projected financial plan, first five year District Transport Master Plan (DTMP) indicating the year-wise target has been prepared. Various categories of interventions such as Conservation, Improvement and New construction for roads have been prepared and presented in this report.

6.1 FIVE YEAR PROJECTED FINANCIAL RESOURCES

Major sources of funding to rural road network development are mainly the DDC development grant, DDC's own resources, DoLIDAR support, GoN's grant and support from other donor agencies. While preparing the financial plan, current available financial resources from various agencies and assuming 10% annual growth on this was considered and this is then projected for the next five years to prepare the First Five-year Financial Plan as presented in table 6.1.1.

			Fiscal year		
Funding source	2070/71	2071/72	2072/73	2073/74	2074/75
DDC Grant	2,323	2,556	2,811	3,092	3,401
Strength National Rural Transport Project(SNRTP)	50,000	150,000	150,000	150,000	100,000
Rural Transport Infrastructure sector Programme	15,600	17,160	18,876	20,764	22,840
Road Board Nepal	3,500	3,850	4,235	4,659	5,124
Local Level Roads and Bridge (LRBP)		8,250	9,075	9,983	10,981
Constitution area Development program	1,600	1,760	1,936	2,130	2,343
Constitution area Infrastructure Development special program	90,000	99,000	108,900	119,790	131,769
Road Connecting Market Center and Two District	7,500	8,250	9,075	9,983	10,981
Total	170,523	290,826	304,908	320,399	287,439
Grand total			1,374,095		

 Table 6.1.1
 Estimated funding levels (roads) for next five years (in NPR '000)

Note: 1) LRBP budget is conditional and already been allocated for Sano Khola bridges in this year so that budget is not included in financial resources.

Source: DDC/DTO Rasuwa

6.2 BUDGET ALLOCATION

Distribution of available district road sector budget is indicated in the figure below. 85% of total budget is allocated for the District Road Core Network. Remaining 15% budget can be used by the DDC for village roads, giving priority to emergency maintenance then routine/recurrent maintenance. Alternatively, this 15% may be used for the new construction of DRCN roads following the ranking which is considered a priority by the district. The DRCN budget is primarily allocated to conservation and surplus of this is then allocated to improvement. Also planned some new road construction andremaining new construction shall plan for next DTMP period.



Figure 5 : District Road Sector Budget Allocation

Based on distribution of the estimated budget, the available annual budget for each intervention type and the resulting district road core network length by surface type can be calculated. The results are shown in the following table. Budget allocation to improvements new construction to some roads. New construction of all roads is not possible due to the shortage of funds during this DTMP period..

Α	Item	Year								
	Fiscal year	2070/71	2071/72	2072/73	2073/74	2074/75				
	Total budget	170,523	290,826	304,908	320,399	287,439				
	Village roads	25,578	43,624	45,736	48,060	43,116				
	Core road network budget (DTMP)	144,945	247,202	259,172	272,339	244,323				
В	Core network length (km)	137.79	137.79	137.79	137.79	137.79				
	Blacktop (km)	-	-	-	-	-				
	Gravel (km)	-	15.64	72.70	124.11	137.79				
	Earthen (km)	137.79	122.15	65.09	13.68	- 0.00				
С	Conservation (NRs)	22,735	25,238	34,367	42,593	44,782				
	Emergency	3,445	3,445	3,445	3,445	3,445				
	Routine	2,756	2,756	2,756	2,756	2,756				
	Recurrent (blacktop)	-	-	-	-	-				
	Recurrent (gravel)	-	2,034	9,451	16,134	17,913				
	Recurrent (earthen)	16,535	14,658	7,811	1,642	- 0				
	Periodic (blacktop)	-	-	-	-	-				
	Periodic (gravel)	-	2,347	10,905	18,617	20,668				

Table 6.2.1 Investment Plan

.

E	Construction	Cost	GR	24,727	GR	-	GR	-	GR	173,800	GR	199,542	GR
	29DR003	-	-	-	-	-	-	-	-	-	-	-	-
	29DR004	-	-	-	-	-	-	-	-	-	-	-	-
	29DR008	-	-	-	-	-	-	-	-	-	-	-	-
	29DR013	-	-	-	-	-	-	-	-	-	-	-	-
	29DR014	-	-	-	-	-	-	-	-	-	-	-	-
	29DR015	-	-	-	-	-	-	-	-	-	-	-	-
	29DR016	-	-	-	-	-	-	-	-	-	-	-	-
	29DR017	-	-	-	-	-	-	-	-	-	-	-	-
	29DR012	35,239	5.68		-	-	-	-	-	35,239	8.81	-	-
	29DR006	10,197	1.64		-	-	-	-	-	10,197	2.55	-	-
	29DR018	32,743	5.28		-	-	-	-	-	32,743	8.19	-	-
	29DR019	35,520	5.73		-	-	-	-	-	35,520	8.88	-	-
	29DR007	23,618	3.81		-	-	-	-	-	23,618	5.90	-	-
	29DR001	20,841	3.36		-		-	-	-	20,841	5.21	-	-
	29DR005	125,083	20.17	24,727	6.18	-	-	-	-	15,642	3.91	40,330	10.08
	29DR002	69,332	11.18	-	-	-	-	-	-	-	-	44,730	11.18
	29DR011	75,236	12.13	-	-	-	-	-	-	-	-	48,540	12.13
	29DR009	43,942	7.09	-	-	-	-	-	-	-	-	43,942	7.09
	29DR010	145,748	23.51	-	-	-	-	-	-	-	-	22,000	3.55
		-	-	-	-	-	-	-	-	-	-	-	-
	Total new const	truction		24,727	6.18	-	-	-	-	173,800	43.45	199,542	44.04
F	Remaining bud	get		- 0		-		-		0		- 0	

Actions Taken for Table 6.2.1

Section A: DTMP Final worshop/Meeting decided that budget allocation for VRCN to be 20% of total resources.But almost budget from different projects is conditional and to be allocated for DRCN so it is reduced as 15%.

Section B: The exact road length by surface type is calculated for the different years based on starting length and any upgrading or new construction carried out in previous years.

Section B: The exact road length by surface type is calculated for the different years based on starting length and any upgrading or new construction carried out in previous years.

Section C: There is no blacktop & gravel road, hence no recurrent maintenance required. Similarly periodic maintenance of gravel road has been proposed from fourth year for the improved section in first year and fifth year for improved section in second year.

Section D: Justification for budget allocations:

Roads: 29DR009, 20DR002, 29DR006, 29DR007, 29DR013, 29DR018, 29DR012, 29DR015,29DR019, 29DR016, 29DR005 do not receive budget in first year. Whereas for roads 29DR017 and 29DR014 budget allocated for improvement works because these roads already been selected for SNRTP funding prior to this DTMP preparation even they stood below in ranking.

Section E: Clarification on budget allocation for New Construction:- For road 29DR005 budget has been allocated for new construction from DTMP Budget as such DDC has already been selected for new construction from DDC and RBN funding.

6.3 DTMP OUTCOME

Based on the investment plan presented above, all DRCN roads will be conserved for the duration of DTMP implementation. Further 137.79 km will be improved to gravel standard and 64.20 km will be new constructed of DRCN roads. All of these roads will also receive the cross drainage and protective structures required to make them maintainable all-weather roads.

Table 6.3.1DTMP output

Conservation	Improvement gravel	Improvement blacktop	New construction
137.79	137.79	-	93.67

6.4 DTMP OUTCOME

	Total						
	length	Fair-weath	ner	All-weather grav	/el	All-weather black	top
	km	km	%	km	%	km	%
Start of DTMP	137.79	137.79	100%	-	0%	-	0%
End of DTMP	137.79	- 0.00	0%	137.79	0%	-	0%
Difference	-	- 137.79	-100%	137.79	0%	-	0%

Table 6.4.1 Standard of DRCN roads

Table 6.4.2	Population with access to road network
-------------	--

							Fai	r-weather co	ore	All-weather core				
	Dire	ct access to	SRN	No access to road roads							roads			
	VDC	Populati		VDC	Populati		VDC	Populati	VDC	Populati				
	s	on	%	s	on	%	s	on	%	s	on	%		
Start of			42			28			72			41		
DTMP	7	17,578	%	6	11,710	%	12	30,423	%	6	17,156	%		
End of			42									99		
DTMP	7	17,578	%	1	415	1%	-	-	0%	17	41,718	%		
						-			-					
Differen				-	-	27	-	-	72			58		
ce	-	-	0%	5	11,295	%	12	30,423	%	11	24,562	%		

Figure 6 : District Transport Master Plan (DTMP



ANNEX 1 GIS FILE PROJECTION AND COORDINATE SYSTEM

GPS Setting

Grid: Lat/Long hdd.ddd and Datum Indian Bangaladesh and Unit in metric system has been considered in GPS during field survey. Garmin 62S GPS receiver was used in GPS field survey.

Defining the coordinate systems and re-projecting data in ArcGIS

We can define a coordinate system for data using the following options in ArcGIS using the <u>Define Projection tool</u> in the Data Management toolbox. If the data has a coordinate system definition, but it does not match the typical coordinate system used by an organization, we can reproject the data using the <u>Project tool</u> in the Data Management toolbox. We need to use the corresponding projection parameters while defining the coordinate system or reprojecting the data.

Projection and coordinate System used in GIS Shape file

- Projection type: Conformal (preserving shape)
- Projected coordinate system: Modified Universal Transverse Mercator
- Parameters of the coordinate system:
- False_Easting: 500000
- False_Northing: 0
- Central_Meridian: 84 for Central of Nepal
- Scale_Factor: 0.9999
- Latitude_Of_Origin: 0
- Datum: D_Nepal_Nagarkot
- Spheroide: Everest_Adjustment_1937

ANNEX 2 TRAFFIC DATA

		Total		Car-				
		Length	Motorcycl	Jeep-		Truck-		
Code	Description	(km)	е	Minibus	Tractor	Bus	PCU	VPD
	Ronga-Desigang-Mendogaun-							
2055004	Thuman-Dahalphedi-			0	0	0	•	
29DR001	Rasuwagadhi Hydro	4.18	4	0	0	0	2	-
200000	Ronga-Kerabari-Thambuchet-	0.60	0	0	0	0		
29DR002	Bahundanda Caliung	0.69	0	0	0	0	-	-
2009002	Banunuanua-Goijung-	5 71	20	E	7	10	74	22
290000		3.71	30	15	7	10	74	22
29DR004	Syarru-Gatlang-Somdang	39.89	30	15	/	10	84	32
	Satdobato (Nuwakot)-Inulogaun-							
2008005	Haku Gro Gatlang	11 57	0	0	2	2	17	л
290000	Dudre ser se Charten Dhataliashi	11.34	3	0	2	2	- 17	-
29DR006	Rudraganga-Charan-Bhotekoshi	0.57	4	0	0	0	2	-
29DR007	Sole-Bhimali-Hakubensi	1.92	4	0	0	0	2	-
	Kalikasthan-Dhunge-Karmi dada-	10.00			_			
29DR008	Banuwa	10.00	15	4	5	4	38	13
29DR009	Timure-Khaide-Phyasing		0	0	0	0	-	-
	Lingling-Pelko-Briddhim-							
29DR010	Khamjing-Sherpagaun-Lama Hotel	5.24	5	2	2	0	9	4
	Bharkhu-Brawal-Thulo Syabru-		_	-	-	-		
29DR011	Langtang	4.23	0	0	0	0	-	-
29DR012	Syaubari-Laukil-Doklang-Yarsa	13.49	10	3	4	3	28	10
29DR013	Kalikasthan-Jibjibe-Sarsyum	5.70	10	5	5	5	40	15
	Jipjive-Rupsepani-Bhadaure-							
29DR014	Dharapani	8.80	13	3	3	2	24	8
	Dasmure_SetiDevi_Dhuseni_Rupe							
29DR015	pani	4.80	8	4	4	2	24	10
	Koldada-Aapchaur-Badahare-							
29DR016	Chiti-Khalchet	7.20	6	2	2	2	17	6
29DR017	Bogatitar-Simle-Bhorle-Parchyang	12.00	10	4	4	4	33	12
	Lachyang(Nuwakot)-Saramthali-							
29DR018	Patikharka-Parchyang	4.28	8	3	2	2	19	7
	Lachyang(Nuwakot) -Nirku							
29DR019	Bhanjyang-Yarsa	8.32	4	0	0	0	2	-

ANNEX 3 POPULATION SERVED

VDC/municipality	Population	Connections	SRN	29DR001	29DR002	29DR003	29DR004	29DR005	29DR006	29DR007	29DR008	29DR009	29DR010	29DR011	29DR012	29DR013	29DR014	29DR015	29DR016	29DR017	29DR018	29DR019
Total population	42,133		17,578	2,246	4,155	1,378	5,048	7,516	2,744	4,913	4,522	423	837	4,076	18,864	10,498	5,570	5,570	5,570	15,020	7,836	7,836
Total VDCs/municipalities	18		7	2	3	1	3	4	1	2	1	1	2	2	4	2	1	1	1	3	2	2
Bhorle	5,570	6													х	х	х	х	х	х		
Birdim	422	2	х										х									
Chilime	1,378	3		х	х	х																
Dandagaun	2,186	1						х														
Dhunche	2,744	3	х						х	х												
Gatlang	1,805	4			х		х	х						х								
Goljung	972	2			х		х															
Haku	2,169	2						х		х												
Dhaibung	4,928	4	х												х	х				х		
Laharepouwa	4,522	4	х								х				х					х		
Langtang	415	1											х									
Ramche	2,268	1	х																			
Saramthali	3,992	2																			х	х
Syafru	2,271	3	х				х							х								
Thulogaun	1,356	1						х														
Thuman	868	1		х																		
Timure	423	2	х									х										
Yarsa	3,844	3													х						х	х

Level of Access

VDC/municipality	No access DRCN start DTMP	No access DRCN end DTMP	Fair- weathe r DRCN start DTMP	Fair- weathe r DRCN end DTMP	All- weathe r DRCN start DTMP	All- weathe r DRCN end DTMP	Direct access to SRN
Total population	11,71 0	415	30,42 3	0	17,15 6	41,71 8	17,15 6
Total VDCs	6	1	12	0	6	17	6
Bhorle			x			х	
Birdim	х					х	
Chilime			x			х	
Dandagaun			x			х	
Dhunche			x		x	х	х
Gatlang			x			х	
Goljung			x			х	
Haku	х					х	
Dhaibung			x		x	х	х
Laharepouwa			x		x	х	Х
Langtang	х	х					
Ramche			x		x	х	Х
Saramthali	x					х	
Syafru			x		x	х	х
Thulogaun			x			х	
Thuman	x					x	
Timure			x		x	x	х
Yarsa	x					x	

ANNEX 4 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)
	Total	137.79			-	137.79	-	-	52	3	50	707	168	10,060	17,080	54,800
29DR001	Ronga-Desigang-Mendogaun- Thuman-Dahalphedi- Rasuwagadhi Hydro	4.18	0+000	4+180		4.18							6	460		2,000
2009002	Ronga-Kerabari-Thambuchet-	0.69	0+000	0+690		0.69										
29DR003	Bahundanda-Goljung- Thambuchet	5.80	0+000	5+800		5.80							5	120	2,060	3,000
29DR004	Syafru-Gatlang-Somdang	39.83	0+000	39+830		39.83							30	3,740	4,820	15,000
29DR005	Satdobato (Nuwakot)- Thulogaun-Dandagaun- Siruchet-Karumryang-Haku- Gre-Gatlang	11.54	0+000	11+540		11.54							10	530	1,200	5,000
29DR006	Rudraganga-Charan- Bhotekoshi	0.56	0+000	0+560		0.56										
29DR007	Sole-Bhimali-Hakubensi	1.82	0+000	1+820		1.82										
29DR008	Kalikasthan-Dhunge-Karmi dada-Banuwa	9.74	0+000	9+740		9.74						67	18	1,500	1,600	4,500
29DR009	Timure-Khaide-Phyasing Lingling-Pelko-Briddhim- Khamjing-Sherpagaun-Lama Hotel	0.00	0+000	5+230		5.23							10	460	1 300	2 000
29DR011	Bharkhu-Brawal-Thulo Syabru- Langtang	4.20	0+000	4+200		4.20							4	730	1,550	2,000
29DR012	Syaubari-Laukil-Doklang-Yarsa	13.49	0+000	13+490		13.49							10	120	2,060	7,000
29DR013	Kalikasthan-Jibjibe-Sarsyum	5.50	0+000	5+500		5.50						120	10	80	200	1,500
29DR014	Jipjive-Rupsepani-Bhadaure- Dharapani	6.74	0+000	6+740		6.74				3		160	15	530	1,200	3,000
29DR015	Dasmure-SetiDevi-Dhuseni- Rupepani	4.44	0+000	4+440		4.44						100	8	120		1,000

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)
	Koldada-Aapchaur-Badahare-															
29DR016	Chiti-Khalchet	4.60	0+000	4+600		4.60					10	20	8	240	460	1,400
	Bogatitar-Simle-Bhorle-															
29DR017	Parchyang	12.11	0+000	12+110		12.11			52			120	18	1,200	160	5,000
	Lachyang(Nuwakot)-															
	Saramthali-Patikharka-															
29DR018	Parchyang	4.28	0+000	4+280		4.28					20	10	10	130	330	1,400
	Lachyang(Nuwakot) -Nirku															
29DR019	Bhanjyang-Yarsa	3.04	0+000	3+040		3.04					20	110	6	100	140	1,000

ANNEX 5 OVERALL ROAD INVENTORY

Road code	Road Name	Length (km)	Start chainage (km) or XY- coordinate	End chainage (km) or XY-coordinate	Surface Type: Black Top	Surface Type : Gravel	Surface Type : Earth	All Weather	Fair Weather	Conditiom - Good/ Fair	Condition - Poor
	Total	170.21			-	-	170.21	-	170.21	-	170.21
29DR001	Ronga-Desigang-Mendogaun-Thuman- Dahalphedi-Rasuwagadhi Hydro	4.18	0+000	4+180			4.18		4.18		4.18
29DR002	Ronga-Kerabari-Thambuchet-Gatlang	0.69	0+000	0+690			0.69		0.69		0.69
29DR003	Bahundanda-Goljung-Thambuchet	5.80	0+000	5+800			5.80		5.80		5.80
29DR004	Syafru-Gatlang-Somdang	39.83	0+000	39+300			39.83		39.83		39.83
29DR005	Satdobato (Nuwakot)-Thulogaun- Dandagaun-Siruchet-Karumryang-Haku-Gre- Gatlang	11.54	0+000	11+540			11.54		11.54		11.54
29DR006	Rudraganga-Charan-Bhotekoshi	0.56	0+000	0+560			0.56		0.56		0.56
29DR007	Sole-Bhimali-Hakubensi	1.82	0+000	1+820			1.82		1.82		1.82
29DR008	Kalikasthan-Dhunge-Karmi dada-Banuwa	9.74	0+000	9+740			9.74		9.74		9.74
29DR009	Timure-Khaide-Phyasing		0+000	0+000							
29DR010	Lingling-Pelko-Briddhim-Khamjing- Sherpagaun-Lama Hotel	5.23	0+000	5+230			5.23		5.23		5.23

Road code	Road Name	Length (km)	Start chainage (km) or XY- coordinate	End chainage (km) or XY-coordinate	Surface Type: Black Top	Surface Type : Gravel	Surface Type : Earth	All Weather	Fair Weather	Conditiom - Good/ Fair	Condition - Poor
29DR011	Bharkhu-Brawal-Thulo Syabru-Langtang	4.20	0+000	4+200			4.20		4.20		4.20
29DR012	Syaubari-Laukil-Doklang-Yarsa	13.49	0+000	13+490			13.49		13.49		13.49
29DR013	Kalikasthan-Jibjibe-Sarsyum	5.50	0+000	5+500			5.50		5.50		5.50
29DR014	Jipjive-Rupsepani-Bhadaure-Dharapani	6.74	0+000	6+740			6.74		6.74		6.74
29DR015	Dasmure-SetiDevi-Dhuseni-Rupepani	4.44	0+000	4+440			4.44		4.44		4.44
29DR016	Koldada-Aapchaur-Badahare-Chiti-Khalchet	4.60	0+000	4+600			4.60		4.60		4.60
29DR017	Bogatitar-Simle-Bhorle-Parchyang	12.11	0+000	12+110			12.11		12.11		12.11
29DR018	Lachyang(Nuwakot)-Saramthali-Patikharka- Parchyang	4.28	0+000	4+280			4.28		4.28		4.28
29DR019	Lachyang(Nuwakot) -Nirku Bhanjyang-Yarsa	3.04	0+000	3+040			3.04		3.04		3.04
	VRCN										
29VR001	Chilime Road	1.27	0+000	1+270			1.27		1.27		1.27
29VR002	Santibazaar (Nuwakot) - Mailungbesi - Hakubesi - Syafrubesi	5.46	0+000	5+460			5.46		5.46		5.46
29VR003	Satdobato-Thulogaun-Dandagaun-Siruchet- Karumaryang-Haku-Gre-Gatlang(Part of 29DR005)	11.22	0+000	11+230			11.22		11.22		11.22
29VR004	Banuwa-Kuwapani	2.55	0+000	2+570			2.55		2.55		2.55
29VR005	Bogatitar-Chaukitar-Banuwa	2.17	0+000	2+170			2.17		2.17		2.17
29VR006	Syafrubesi-Ghodatabela-Langtang-Kyarijung- Ganjala Himal	2.06	0+000	2+060			2.06		2.06		2.06
29VR007	Shiva Mandir-Hospital Sadak	3.28	0+000	3+280			3.28		3.28		3.28
29VR008	Satmaran(Nuwakot)-Ghalegaun Saramthali	1.64	0+000	1+640			1.64		1.64		1.64
29VR009	Lachyang(Nuwakot) -Nirku Bhangyang-Yarsa (Part of 29DR019)	2.76	0+000	2+760			2.76		2.76		2.76

ANNEX 6 PHOTOGRAPHS



Team Leader of the consultant presenting on DRCN workshop



Participants in DRCN Selection workshop



Consultant Engineer Taking Field Data during DRCN Condition Survey



Consultant Engineer Taking Field Data during DRCN Condition Survey

ANNEX 7 MINUTES

this doled and strang 98 Jides 201157 POTEMI ZUMIZED STLANDI (DT MP) 302019-(ractor) 1-211.10.20. EMMA Cetas 2181 2510121 (h) 32 (m) 4 कायतनारित्य द्वालत तथा 203 an 811 GODT जारयो BULEOTA विग्रा म कोड्राला, स्था कि 9. - मद्रत्याहत लाल शहर, रेज दे THE ELLOI QUILS RE 3. 2731 - FIGO MINISI LAI . VI. J. W. 61/6 1/0 00 8 May in sort Unally ल्हार्ट्, तबार ज्ञा झा पा मेपाल E. 6. रावजान्द्र नेपाल, उद्योग डाधकत हाहेन तथा थो ...व. एत्रिल 5. 2 The starger of the Street 90 Prest in reacht a. a. M. - Par ash 17.8. 19-101 Gillen 91. Alt GETE TI 12. 81-3 33717 स्तिला दिसार अम्हिस्त, रसुवा 13. डा लगा जीवत ते लि, जिल्हा जे का, रस्व , ि ज ज जा, रसवा ATT TO I FA . Sho TAS AND I CAN G 48 किल्हा जम्होत १४. सरस्वति क्यीपाले पत्तकार जिल्ली प्रपाह याप्ता हिंदु देवल्य Ruman Radial Stan 2001 frin ac Julane Aurai, pr. m. for frig अग्रे प्रावत् कारेस्ट कोगके ४३५ St. det sing write the RE

हलफल तथा तिर्वाश 31219 24 (तहली शाताणात २६७ थोएतन) 4rdreya) mezzzan (1) पत्रहर रख्वात्रा भाष्क्र uport prations UFAR DaxA troband Tid Remis Rais quaiz Anan Strata Direct and paratis to moop day an da The expansion formant anomig 1916A 2421 गावन जोडते 9 600 प्रतिक गा- मि- ध-(150,05) ्राह्ययन जार्ता हर्यालात प्रोर पाविदिक ्या हिंदि ; स्ताक्षाणित साहवे कि इ तामावर्शीय मतालाई रिक्री क किंगेड सिरी । २. कहि गत्रका बढी सत्राकार बाला किंबी प्रजान प्राप्त दिनि दिल्ला प्राप्त निविधि द तागरिन प्राप्त दिनेति द्वार्ग्तान जिस्ट यातायात गुरुवेक याण्या वहाँ उते कायलाई आगाई वर्गा अने स्वताने। द्वांतुङ जान कि सा का कालिका हवाय मात भाषिणाल जारिते केचालन जारित हल्लेख अनिया नियारितः कर्त्वात्वित्व हलीय जानुरोद्द जीत तिर्वेष गरिया 2

STOT MAY 062 911/2 12 ST Brisdan (m)
150 IST CATOLIC MINING COTMP
Bally DIT "Smillmin) DKCN KOand
2188 21000 217 1000 100101 200 DD 1910.
aiscial Stan Sten Statel (Spix ability)
a) 341End HI ales all 2014 and bh
an erma dell 19th Differ
A - Contract -
(9) Al pary De mister, can to be without
(2) Sit styor asuat til. 21. 7. 25 granni
3 " HEADIGANIA STOR 10-3, 10-91-51." 15 2
४) " द्राह वाद पतानी कि रू में अ, फि रू में आ
2) 11 किलनाम देवनीहा देवियो राष्ट्र गाल
E) EIRIT ARIS. (. 9. 5. 4. (MIMOR) - CAM
() of archite disso partor at 201 Merening
A GENERAL AND TACOULTS A CONTRACT
10 At AT ATTET TES, POST. THAT TOLORENTES
99 मेह प्रयाह जाउल अबन छिमोर्गन कायात्य रघुवा
92. वावुलस्न तामाङ रहुवा नागरी काम आह्यका हि
99 रंडराव भादम जिल्ला मालापीन कामानाय, हरना 900
- १४ अदेष्ठ आपा रजिल्ला नापी कार्यालय, स्ट्राइ
मार्ग्यायहरी जीती फ्रिंग्य स्वयन्त्र गर्म्याच्यान्द्र गर्म्याच्या प्रदेश हिंद
44. डा'लना आउल परास कर कर का 644
92. मार्थ 23305 , महायान महत्वाण सहित्व ती म कि का तेग
15 TH 90001 2001 200 0 0 0 1 100 10 0. 8. 8. 124.
20 310121 23x1- 51 117 (7. Mr. 7. 4. 81)
२. समिदप निवारी जागति स साधिव जालादुह, वृद्भि सीधेक्रमे
21. क्रिकेट्र माने मेरिन मानवेतर प्राच्य श्राम, हिम्हे
22. निर्लाधाम आखाल गिरहा। प्राविधीक अमिलाय दिल्येक.
28 2MARIA MELANZ 2017 AU WITING
22 Panel A. MITED DELUTAL TO TO TO ALLA CO
26 CHILL TAIL TAIL IN THE AND THE
20 TOT WILL WITH TIME TO
and have for and for the state

ant Arty Ee min m Gorran God mon 557 3mora ak m (1) HIM Anician wirst TMP DTMP Gim 2012 ant SON PRCIN lino RO ast Attached 37) 3ng die E Road STO_CH ST Bic maria cone isio as Sabbal 5 96139 217 are) 13 65 At Q 91/ N.

Pond Code	District Road Core Network(DRCN) List With Length and VDC Passes					
Road Code	Road Name	Length (Km)	Blacktop Gra	vel Earthe	n New Construction	VDC Passes
2002001	Nonga-Desigang-Mendogaun-Thuman-			- 17a		
2908002	Ponga Karabasi Themburbat Catl	7.54		4.1	8 3.36	5 Thuman
2902002	Ronga-Kerabari-Thambuchet-Gatlang	11.87		0.6	9 11.18	Chilime, Gatlang, Goljung, Thuman
2008003	Sanundanda-Goljung-Thambuchet	5.71		5.7	1	Chilime,Goljung
250R004	Syarru-Gatlang-Somdang	39.89		39.8	9	Gatlang, Goljung, Syafru
29DR005	Siruchet-Karumryang-Haku-Gre-Gatlang	31.71		11.5	4 20.17	Dandagaun,Gatlang,Haku,Thulogaun
29DR006	Rudraganga-Charan-Bhotekoshi	2.22		0.5	7 1.64	Dhunche
29DR007	Sole-Bhimali-Hakubensi	7.00		1.9	2 5.08	Dhunche,Haku
29DR008	Kalikasthan-Dhunge-Karmi dada-Banuwa	10.00		10,0	D	Laharepouwa, Dhaibung
29DR009	Timure-Khaide-Phyasing	7.00		0.0	7.00	Timure,Briddhim
29DR010	Lingling-Pelko-Briddhim-Khamjing- Sherpagaun-Lama Hotel	28.75		5.24	23.51	Birddhim,Langtang
29DR011	Bharkhu-Brawal-Thulo Syabru-Langtang	16.37		4.2	3 12.13	Syafru, Langtang
29DR012	Syaubari-Laukil-Doklang-Yarsa	19.17		13.49	5.68	Bhorle, Dhaibung, Laharepouwa, Yarsa
29DR013	Kalikasthan-Jibjibe-Sarsyum	5.70		5.70		Bhorle Dhaibung
29DR014	Jipjive-Rupsepani-Bhadaure-Dharapani	8.80		8.80)	Bhorle Dhaibung
29DR015	Dasmure_SetiDevi_Dhuseni_Rupepani	4.80		4.80		Bhorle
29DR016	Koldada-Aapchaur-Badahare-Chiti-Khalchet	7.20		7.20		Bhorle
29DR017	Bogatitar-Simle-Bhorle-Parchyang	12.00		12.00		Bhorle Dhaibung Labarenouwa Saramti
29DR018	Lachyang(Nuwakot)-Saramthali-Patikharka- Parchyang	9,56		4,28	5.28	Saramthali
29DR019	Lachyang(Nuwakot) -Nirku Bhanjyang-Yarsa	13.09		8.32	4.77	Sərəmthali,Yarsa

A आम मिने 062 9012 = 20 विहीवा का दिन स्थानीन विवास आधिकारी श्री विदय प. कोइराला उन्द्र के अध्यासम मा आभीष पड्न काम्यम (RAP-3) का पंथ्योग्म यस रखूवा जिल्लाका जिल्ला यातायात् यु क्रयाज (DTMP) and Starter Starter And TONT TILL AND THE THE THE THE THE THE 6 mm प्रमुख एन प्रतिनिधी, जिन निर्भ प्राधिका ती 151 19-h- 4411 cpits En, hang pa du bla 31 Hels 31963 341200 मा देखा को जिन् निर्मा रहियों no Gill's Elais June June Armis, Ciart (1) 2aui. 1a - 31 - 21 - 1044 9. mistimizz ... (2) BAG STONT & RI HEI HEN MIN SIZE N 3) For to go are your its a ar a der man far ta B. 51 THEA 50211 (8) Grain rathe undit ainguir das SA (4) TEURS FITHI 12311 (591 स्प्र (६) चरिप्रसाद दुवेही (जिल्ला मे जेरहाण डायलिय, रदुवा (६) करतराज राई नि.मे. जि. का रयुवा (६५) पुत्रति गेहराता NTV (स्वादकाता २५वा भार्ष, अन्यु दुङ्गाना अहिला तचा वालवात्रिकाकार्थरलयर सुवा स्तर्वलाल भेट २० उ० वा० यहा gun and a har I an a to to ही राज माहत काइराता प्रमुख : खानपानी- कामलाग र सुका 7_92. anuil 93. 351 415 m Quo 40 40 9 410 9 4191 Ata EST : 15.98 ने . ठा. रखना मीर वहाडर गरुद्र. भगवती न्यांपाने अन्तरपाटी महिला संस्मल ,रसवा (र माओवादी) 92 Party mini . Hind A SHI KAIN KON Jaget भिष्ठः डा. लना गोगल प. चि, जि. ए. रते. का भिष्ठिः यत्र अर्हाद्वर रोणाय साठक्री, ति के तिमार र विग at gran yerry asim sinola A ATRA DESTURITSISIONS 21701 July 2129 151. 201- 47. 20- 30 311741 98 X4 01, 15ta 00 21 ATRI 3. 27 AN EEC KIM A 991

Faurian o मिर्भम् में ने यह बेहजून DRCN मा पेश ठारेका सडकहरूलाई प्रवे त्वर्घ मंत्रेन समा ठाने LISORE MIS XUNDAL HAN HAN (SIA 2 DRCN AN HANDER STRANG USORAMIS ENZIONAD STE SHIT ET IN STRANG USORAMIS SERTIAN BAR ASTERN - 280% DRCN DA 92% VRCN ESART MODES 2113-1 FANT STICK]. निर्माने २ यदा DTMP मा प्राथमिक्ता मा परिता तर सदक विकारामे हैंचालन काने हउछक लाई प्राथमिकता बाट हटाउन निर्मार गरिमा निर्मा ले ३ परामर्थ (गता रेसर हटाउन निर्मार कन्दाल्टन द्वारा प्रस्तुत DTMP रिपार्टलाई यस बार्ट्टीमा प्राप्त प्रजाबलाई यमावेश्वी गरि पारित कार्व निर्माय कार्टियों। of 4





प.सं. :- ०७२/७३/ योजना च.नं. :- ८ ६ ९ २

मिति :- २०७३/०२/२०

विषयः जिल्ला यातायात गुरुयोजना(DTMP) सम्बन्धमा ।

श्ची स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग(DoLIDAR), स्थानीय यातायात पूर्वाधार क्षेत्रगत कार्यक्रम, श्रीमहल, पूल्चोक, ललितपुर ।

Rural Access Programme (RAP3)/DoLIDAR को सहयोगमा जिल्ला यातायात गुरुयोजना(DTMP) तयार गर्ने शिलशिलामा पहिलो चरणको गोष्ठी मार्फत जिल्लामा भएका मौजुदा सडकहरुबाट District Road Core Network(DRCN) पहिचान भई ती सडकहरुको Date Collection गरी परामर्शदाताबाट प्राप्त हुन आएको Draft Final Report माथि गरिएको Comment समावेश गरी मिति २०७२/१०/२८ मा सम्पन्न अन्तिम चरणको गोष्ठीद्वारा जिल्ला यातायात गुरुयोजना(DTMP) पारित भएको जानकारी गराइन्छ ।

बोधार्थ :-

श्री ग्रामीण पहुँच कार्यकम(RAP3), जावलाखेल, ललितपुर । श्री एभरेष्ट इन्जिनियरिङ्ग कन्सल्टेन्ट, मध्यवानेश्वर, काठमाडौँ ।

(राजन्द्र स्थानीय विकास अधिकारी शतियि जिनिह

ANNEX 8 UNTRACK ROAD IN RASUWA

S.N	Name of Road	Length (KM)
1	Ronga khola-Pajung-Tatopani-Sangjen Khola	10
2	Parchyang-Ghichet-Yubra-Yarsa	8
3	Pairibesi-Kuwapani-Bhalayadanda-Manigaun	10
4	Ramche-Palep-Karmidada	10
5	Mailung-Siruchet-Karumaryang-Khadku-Dadagaun	25
6	Simle-Salimebhitta-Pairegaun-Thulogaun-dandagaun	4
7	Laharepauwa-Dikhet-Bhorlekhet-Sadhi Khola	5
8	Betini-Upallopauwa-Chhap	3.5
9	Sanukhola-Danusara-Partikharka	4
10	Ronga-Khanjing Sadak	6
11	Shivamandir-Nagung Sadak	3
12	Zyanglang-Aledanda-Laukil	7
13	Sapche-Ghattekhola(Mini Gosaikunda	2
14	Thulo Bharkhu-Tatopani(Bhote Koshi)	3
Total=		100.5

ANNEX 9 VILLAGE ROADS IN RASUWA

			Grand
Code	Road Name	ER	Total
29VR001	Chilime Road	1.27	1.27
29VR002	Santibazaar (Nuwakot) - Mailungbesi - Hakubesi - Syafrubesi	5.46	5.46
	Satdobato-Thulogaun-Dandagaun-Siruchet-Karumaryang-Haku-Gre-		
29VR003	Gatlang	11.22	11.22
29VR004	Banuwa-Kuwapani	2.55	2.55
29VR005	Bogatitar-Chaukitar-Banuwa	2.17	2.17
29VR006	Syafrubesi-Ghodatabela-Langtang-Kyarijung-Ganjala Himal	2.06	2.06
29VR007	Shiva Mandir-Hospital Sadak	3.28	3.28
29VR008	Satmaran(Nuwakot)-Ghalegaun Saramthali	1.64	1.64
29VR009	Lachyang(Nuwakot) - Nirku Bhangyang-Yarsa	2.76	2.76
	Grand Total	32.42	32.42

ANNEX 10 LIST OF COMMENTS/SUGGESTIONS RECEIVED FROM FINAL WORKSHOP AND ITS ANSWER

प्रश्न एबं सुझाब	प्रस्टीकरण	
29DR007 सोले भिमले हाकुवेसी सडकको लम्बाई कम देखियो ।	मौजुदा सडकको मात्र लम्बाई भएकोले कम	
जबका या संडकका लम्बाइ ४ कि.मा.भन्दी बढी हुनु पन ।	देखिएको, त्येसै सडकको नया खण्डको लम्बाई	
	अर्को तालिकामा छ	
बिगतको DTMP को सडकहरुलाई प्राथमिकता दिन्	धेरै DRCN सडक हरु पुरानो DTMP को Aर B class बाट नै	
पर्ने.	छनौट भएका छन्, प्राथमिकता तोक्ने निर्देशिकाको प्राबधान	
	बाट भएको छ,	
DRCN बाहेकको सडकलाई जिविसले अब बजेट छुट्टयाउनु मिल्छ कि	जम्मा बजेटको २०% सम्म बजेट जिविसले गाविस अन्तर्गतको सनम्पर्न राष्ट्र पित्तर ।	
।मल्दन ?	संख्याहराजा मिल्द्र।	