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District Transport Master Plan (DTMP)

Ministry of Federal Affairs
and Local Development



Department of Local Infrastructure
Development and Agricultural
Roads (DOLIDAR)

District Development Committee,
Mugu



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Prepared by Rural Infrastructure Developers Consultants (RIDC) P.Ltd, Kathmandu for the District Development Committee (DDC) and District Technical Office (DTO), Mugu with Technical Assistance from the Department of Local Infrastructure and Agricultural Roads (DOLIDAR), Ministry of Federal Affairs and Local Development and grant supported by DFID

FOREWORD

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24 Jun. 2013 2:18PM P1

FOREWORD

It is my great pleasure to introduce this revised District Transport Master Plan (DTMP) of Mugu district which was concurred by the district stakeholder's meeting held on 29th March, 2013 and District Core Road Network selected by DDC body on 1st April and approved by DDC Board on 2nd April Based on DTMP guideline 2012, All District Core Road Network (DRCN) aiming to connect all Village Development Committee (VDC) headquarters with the district headquarters, either directly or through highway and strategic road network have been selected.

It is believed the document will be helpful to materialize Rural Transport Sector Wide Approach (RTI SWAp) through sustainable planning, resource mobilization, implementation and monitoring of the road development. The document is anticipated to line out creating substantial employment opportunities for rural people and conservation, improvement and new construction activities of the existing road network. DRCN plays a vital role to strengthen and promote overall economic growth of the district through established and improved year round transport services reinforcing transportation linkages. It is most decisive to expand DRCN in a planned way as per the DTMP recommendation by considering the framework of available resource of DDC. This document is very essential in lobbying the donor agencies through central government recover. Furthermore, this document will be supportive in avoiding existing duplication in resource allocation in road network development by considering basket fund approach.

I would like to express my gratitude to RTI Sector Maintenance Pilot for financial and technical support; I would like to express my gratitude to Bharat Gautam, Local Development Officer, for his continuous support. My thanks go to Er Ghanashyam Sharma, Keshav Dhungana and others staffs (DDC & DTO staffs) for their efforts to organize and make succeed the workshop as well as collecting data. Accordingly, I would like to express my heart full gratitude to Ministry of Federal Affairs and Local Development (MFALD) and Department of Local Infrastructure Development and Agriculture Road (DoLIDAR) for providing valuable suggestions and cooperation to produce this report. Any pioneering and constructive suggestion regarding to the document will be highly appreciable.


Bir Bahadur Rawal
Acting Local Development Officer / District Engineer
April 03, 2013



ACKNOWLEDGEMENTS

We would like to express gratitude to RTI SECTOR Maintenance Pilot for entrusting us on preparation of District Transport Master Plan of Mugu District.

We would also like to express our sincere thanks to Mr. Bharat Gautam, LDO and Er. Bir Bahadur Rawal, DTO of Mugu District for their cooperation and coordination during DTMP preparation. We would also like to thank the concerned officials and staffs from DDC for their support during the DTMP workshops.

We thank the expert team who has worked very hard to bring this report at this stage and successful completion of the assignment.

We are grateful to the VDC secretary from all VDCs, local people, political parties and leaders, members of government organizations and non government organizations of Mugu District who have rendered their valuable suggestion and support for the successful completion of the DTMP work.

Rural Infrastructure Developers Consultants P. Ltd. (RIDC),
Baneshwor, Kathmandu.

EXECUTIVE SUMMARY

Mugu District is located in Karnali Zone of the Mid-western Development Region of Nepal. It borders with Dolpa district of Karnali to the East, Bajura district of Seti Zone to the West, Humla of Karnali Zone and Tibet of People Republic of China to the North and Kalikot and Jumla of Karnali Zone to the South. The district has 24 VDCs, 9 Ilakas and 1 constituency area. Moreover, the district is also divided into 4 broad geographical areas; Khatyad area, Soru area, Gam area and Karan area. The district, with Gamgadhi as its district headquarters, covers an area of 3,103 km² and has a population of 55286 as per census 2011. The total area of the district is 3,103 km². The district lies in the *High-Hills*. The lowest elevation point is 1,201 meter and the highest elevation point is 6,717 meter from mean sea level. Mugu Karnali, Humla Karnali and Khatyad are the major rivers in the district. The biggest lake called *Rara Tal* is located in this district. Only 5 % of total areas are cultivable in Mugu district. Due to low level of agricultural production, the majority of the households face acute food shortages for a large part of the year.

The district inventory identified about 437.18 km of roads, including 194 km strategic roads (24 km under construction and 170 km under planning) and 243.18 km of rural roads (19.58 under construction and 223.6 km under planning). In coordination with the DDC, 11 rural roads with a length of 237.6 km were identified as making up the district road core network (DRCN), and the remaining 5.5 km were classified as village roads. Of total 237.68 km proposed DRCN, the existing DRCN was found less than 15 km (under construction phase) and remaining has to be constructed as new construction. The existing DRCN roads lies within the VDC where district headquarter is located, hence they do not link up any other VDC headquarters. All the roads are planned for new construction to link up VDC headquarters and major settlements with district headquarter directly or through SRN. Although, the existing and under planning SRN passes through 13 VDCs, they connect only 5 VDC headquarters out of 24 VDCs headquarters. Of total 11 DRCN, 1 road is planned and constructed by DRILP within this DTMP period.

Road Class	Total length	Black Top	Gravel	Earthen
Strategic road network	24.00	-	-	24.00
Urban roads	-	-	-	-
District road core network	14.08	-	-	14.08
Village roads	5.50	-	-	5.50
Total	43.58	-	-	43.58

Annual conservation costs of two roads with 14.08 km are estimated at NPR 5.843 million based on the first year, and will be updated in the ARMP based on actual annual maintenance needs as determined in the annual road condition survey. For the full five-year period the conservation costs will come to NPR 62.134 million. 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. For the full five-year period the conservation costs will come to NPR 131.28 million. The required improvements and their estimated costs are listed below.

Improvement type	Requirement		Cost (NPR)
Bridges	625	m	44,000,000
Slab culverts	10	m	3,500,000
Causeways	0	m	-
Hume pipes	1	units	35,000
Masonry retaining walls	0	m ³	-
Gabion retaining walls	1495	m ³	10,465,000
Lined drains	3000	m	24,000,000
Widening	0	m	-
Rehabilitation	0	km	-
Gravelling	14.08	km	49,280,000

Blacktopping	0	km	-
New construction	223.60	km	2,432,300,000
Total			2,563,580,000

The available budget for the road sector for the coming five years (fiscal year 2070/71 to 2074/75) is estimated to be NPR 766 million. Allocation to the district road core network was set at 99% 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. This budget is insufficient to cover all the estimated costs of conservation, improvement and new construction. However, it allows all conservation requirements and improvement works of existing DRCN to be covered throughout the DTMP period and part of new construction works to be completed before the end of the DTMP period. The remaining new construction works will be carried out in the next DTMP.

Within the DTMP period, 75.51 km of roads will be gravelled and will be brought to a maintainable all-weather standard. VDC headquarters with access to all-weather DRCN roads or the SRN will increase from 0 to 15, while the percentage of the district population with such access will increase from 0% to 66%.

ABBREVIATIONS

ARMP	Annual Road Maintenance Programme
DDC	District Development Committee
DOLIDAR	Department of Local Infrastructure Development and Agriculture Road
DOR	Department of Road
DTICC	District Transport Infrastructure Coordination Committee
DTMP	District Transport Master Plan
DTO	District Technical Office
DRCN	District Road Core Network
DRILP	Decentralised Rural Infrastructure and Livelihood Programme
DTPP	District Transport Perspective Plan
GIS	Geographical Information system
GPS	Global Positioning System
GON	Government of Nepal
LGCDP	Local Governance and Community Development Programme
LDO	Local Development Officer
MLD	Ministry of Local Development
RAP	Rural Access Programme
SRN	Strategic Road Network
SWAp	Sector Wide Approach
VDC	Village Development Committee

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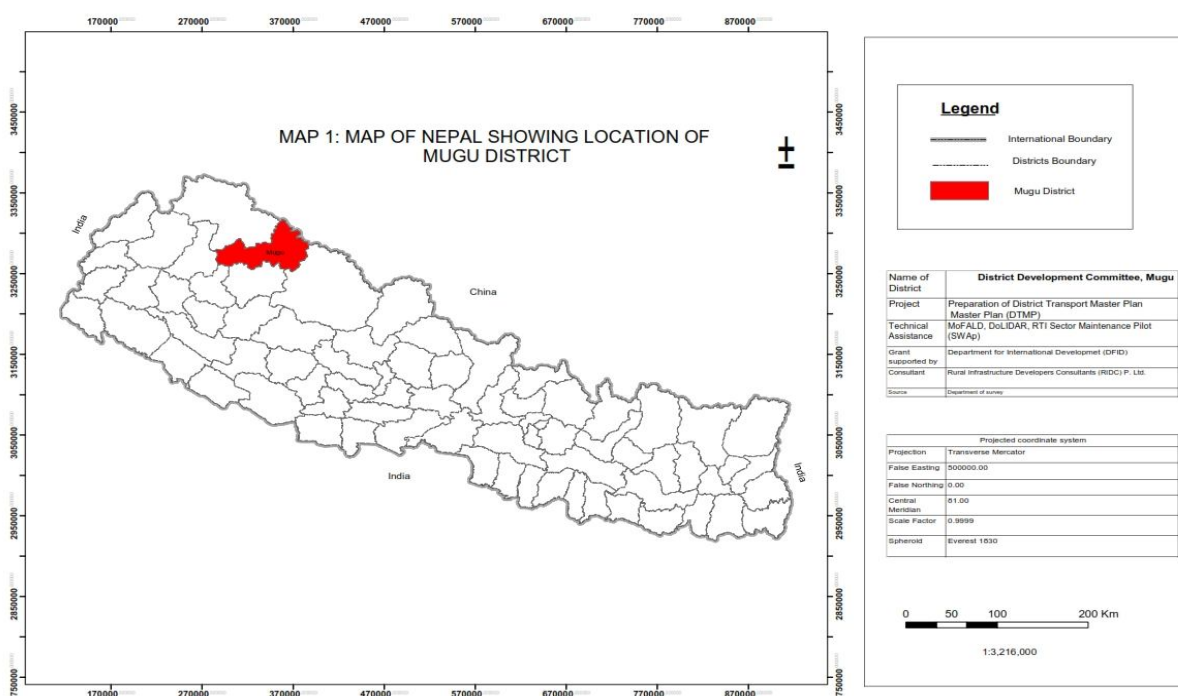
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1. INTRODUCTION

Mugu District is located in Karnali Zone of the Mid-western Development Region of Nepal. It borders with Dolpa district of Karnali to the East, Bajura district of Seti Zone to the West, Humla of Karnali Zone and Tibbet of People Republic of China to the North and Kalikot and Jumla of Karnali Zone to the South. The district has 24 VDCs, 9 Ilakas and 1 constituency area. Moreover, the district is also divided into 4 broad geographical areas; Khatyad area, Soru area, Gam area and Karan area. The district, with Gamgadhi as its district headquarters, covers an area of 3,103 km² and has a population of 55286 as per census 2011. The total area of the district is 3,103 km². The district lies in the *High-Hills*. The lowest elevation point is 1,201 meter and the highest elevation point is 6,717 meter from mean sea level. Mugu Karnali, Humla Karnali and Khatyad are the major rivers in the district. The biggest lake called *Rara Tal* is located in this district. As a result of the elevation differences, the district has four different types of climate. The annual rainfall is about 706 mm and temperatures vary from 0 °C to 30 °C. Only 5 % of total areas are cultivable in Mugu district. Due to low level of agricultural production, the majority of the households face acute food shortages for a large part of the year.

Figure 1 Map of Nepal indicating Mugu District



According to the National Census 2011, the total population of the district is 55,286 comprising 27,261 female (49%) and 28,025 male (51%) residing in 9,619 households. Mugu district has an average population density of around 18 people per square km. The average family size is 6.1. The average literacy rate is about 49% (38% female and 60% male are literate). Mugu district has a multi ethnic composition with Chhetri, Thakuri, Brahman, Tamang Sherpa Bhote Lama, Damai, Kami, Newar, Kumal, Sunar, Bitalu and Yogi. The common language is Nepali (89%) followed by Bhot (10%).

The district has access to the Jumla through Jumla – Gamgadhi road which is currently being constructed by DRILP under DDC and by DOR. A 65 km feeder road between the district headquarters and Sukadhik, near to Bajura border is currently also being planned to construct by DOR. The another feeder road with 20 km between Sukhadhik and Dulachaur which passes through the border of Bajura and Mugu districts is also under planned which ultimately link up the district headquarter. The Gamgadhi-Nagchelagna road with 85 km length is being also under planning stage by DoR as regional road. This road connects Gamgadhi with Tibbet and passes five VDCs of eastern Mugu.

2. DISTRICT ROAD CORE NETWORK (DRCN)

This chapter gives an overview of the existing and under planning roads in Mugu district, distinguishing 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 Existing and Planned Road Network

Mugu district has an estimated road network of 437.18 kilometres, including 194 km of strategic roads either planned or constructed by DOR and 243.18 km of rural roads which are planned to construct and managed by Mugu DDC and the VDCs. Most of the strategic roads and all of the rural roads are under planning stage. A map of the total road network including existing and under planning in Mugu district is shown in Figure 2 at the end of this chapter.

Table 2.1.1 Road length in Mugu District (km)

Road Class	Total length	Black Top	Gravel	Earthen
Strategic roads	24.00	-	-	24.00
Urban roads	-	-	-	-
Rural roads	19.58			19.58
Total	43.58	-	-	43.58

2.2 National Highways and Feeder Roads

Mugu district has 4 feeder roads totalling 194 km. The Bulbule-Gamgadhi road that connects the Mugu headquarters with Jumla district has already been constructed but need to be upgraded.

Table 2.2.1 Feeder Roads in Mugu district (km)

Code	Name of Road	Total length	Black Top	Gravel	Earthen
F15402	Bulbule-Gamgadhi	24.00			24.00
F17301	Gamgadhi-Sukadik	-			
F17204	Boldhik-Sukadik-Dulachaur	-			
SRN_New	Gamgadhi-Nagchelagna	-			
Total		24.00	0.00	0.00	24.00

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 DTO and DDC with series of consultation workshop. This DRCN is the minimum network that allows all VDC headquarters and/or major settlement 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.

The resulting District Road Core Network in Mugu district is shown in Figure 3 at the end of this chapter. The DRCN consists of 11 district roads with a total length of 237.68 km. The remaining nearly 6 km of existing rural roads are not considered to be DRCN roads and are classified as village roads under the responsibility of the VDCs (see also section 2.3). A total of 10 DRCN roads are currently under planned except 14.08 kilometres existing earthen roads (Gamgadhi –Pina-Mundu road and part of Gamgadhi – Dhaina – Dulachaur road). The existing DRCN are under construction stage and considered fair-weather only (see Table 2.3.1. A complete list of the DRCN roads and their characteristics is provided in Table 2.3.2

Table 2.3.1 Road length in Mugu district (km)

Road Class	Total length	Black Top	Gravel	Earthen
Strategic road network	24.00	-	-	24.00
Highways	-			
Feeder roads	24.00			24.00
Urban roads	-	-	-	-
District road core network	14.08	-	-	14.08
Village roads	5.50	-	-	5.50
Total	43.58	-	-	43.58

Table 2.3.2 District road core network in Mugu district (km)

Code	Name of Road	Total length	Black Top	Gravel	Earthen	All weather	Fair weather	Name Settlements on Road
65DR009	Gamgadhi-Mundu	12.58			12.58	-	12.58	Chaina, Karkibada, Pina
65DR003	Gamgadhi-Dhaina-Dulachaur	1.50			1.50	-	1.50	Imja
Total		14.08	-	-	14.08	-	14.08	

2.4 Village Roads

The nearly 6 km of existing roads and other linkages planned for new construction that do not form part of the identified district road core network (DRCN) are classified as village roads and are under the responsibility of the 24 VDCs in Mugu 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.

It is recommended that the VDCs organise maintenance workers to carry out the emergency and routine/recurrent maintenance of the existing 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 (see also chapter 6). However, this district funding will be mainly for maintenance, especially emergency maintenance and routine/recurrent maintenance to keep the village roads open.

Figure 2 Total Road Inventory Map of Mugu District

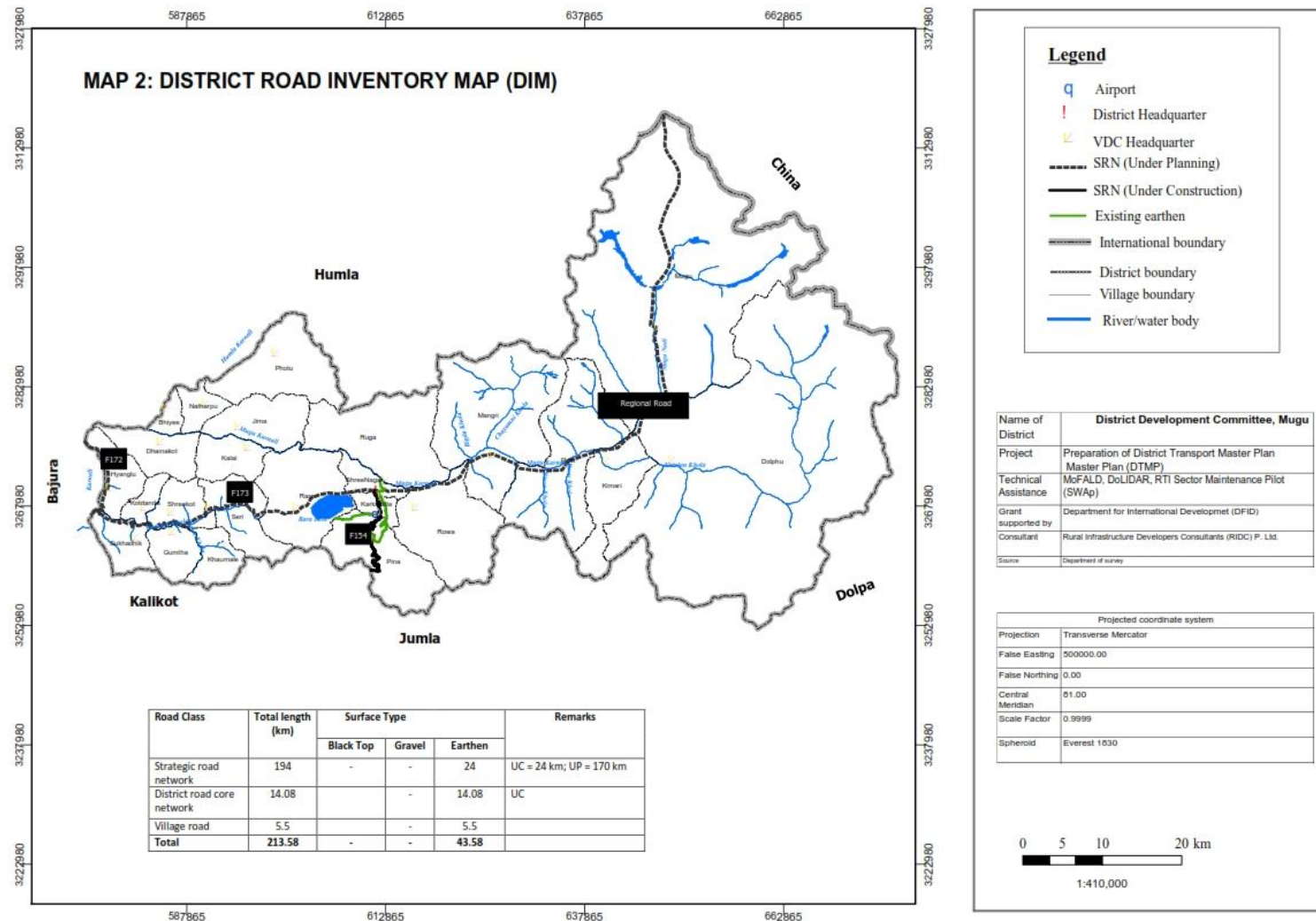
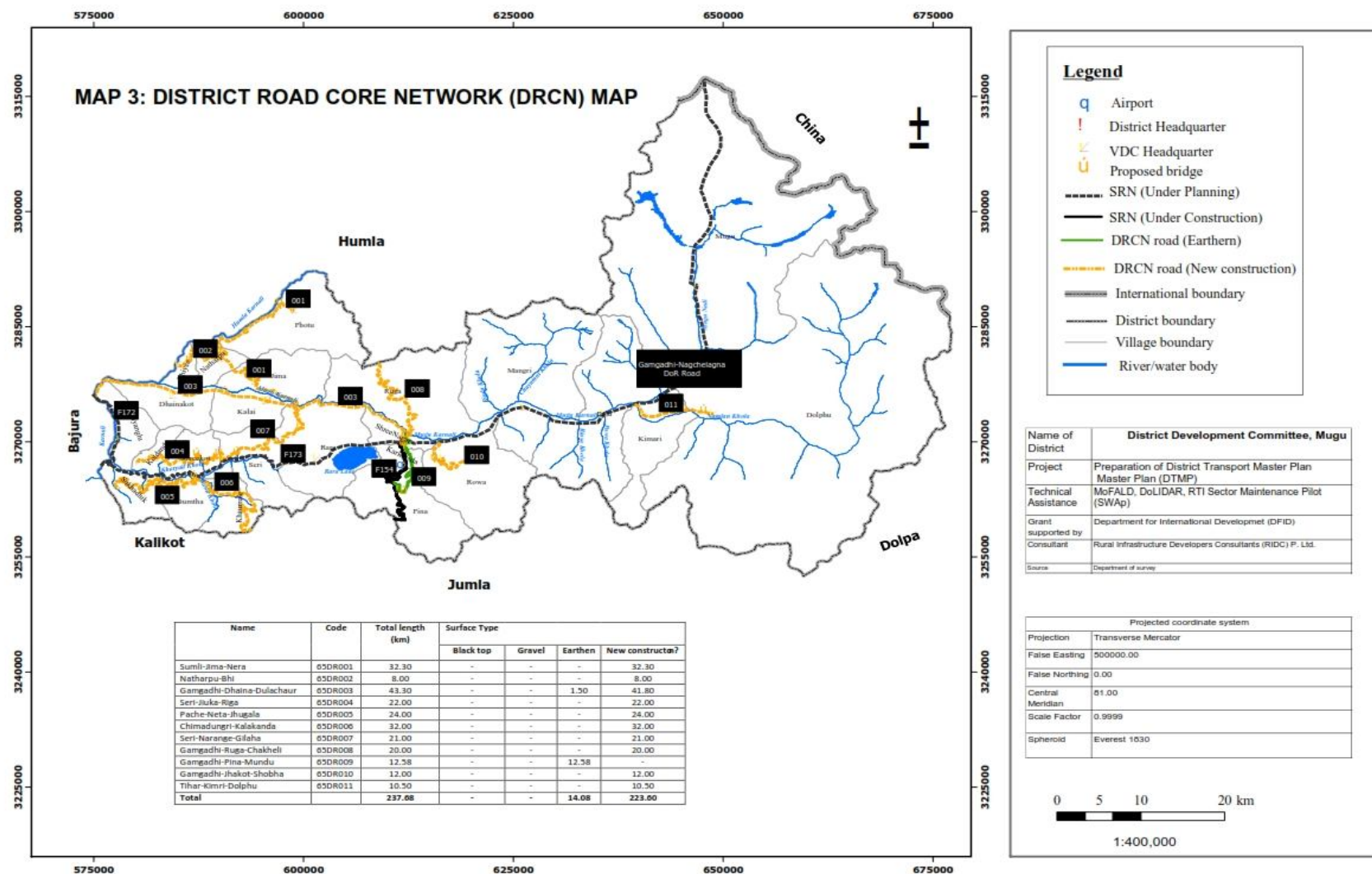


Figure 3 District Road Core Network (DRCN) Map



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 a 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 types 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 lumpsum 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.

Routine maintenance - General maintenance of the road aimed at preventing damage by ensuring the proper working of the different road elements (retaining walls, drainage system, carriageway, etc.) and cutting vegetation. This is carried out each year on a more or less continuous basis. Routine maintenance is required for the entire district road core network. The specific requirements for routine maintenance are determined on an annual basis through the road condition survey and defined in the ARMP.

Recurrent maintenance - Repairs of minor damage to the road surface and road structures to bring them back to good condition. This is generally carried out once or twice a year. Recurrent maintenance is required for the entire district road core network, whereby distinction is made according to the surface type. The specific requirements for recurrent maintenance are determined on an annual basis through the road condition survey and defined in the ARMP.

Periodic maintenance - Larger repairs to the road largely aimed at renewing the road surface through regravelling, 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 lumpsum 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 in as far as it does not require rehabilitation.

Table 3.1.1 Conservation requirements

Code	Emergency maintenance (km)	Routine maintenance (km)	Recurrent maintenance (km)	Periodic maintenance (km)
65DR009	12.58	12.58	12.58	12.58
65DR003	1.50	1.50	1.50	1.50
Total	14.08	14.08	14.08	14.08

3.2 Improvement

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

Rehabilitation - Significant repairs required to bring a very poor road back to a maintainable standard. This does not include any changes to the original surface type.

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

Cross drainage - Placement of suitable cross-drainage structures with the aim of making the road all-weather and ensuring that the road remains passable even during the rainy season

Protective structures - Placement of retaining walls and lined side drains to avoid excessive damage to the road during the rainy season and bring it to a maintainable standard.

Blacktopping - Placement of a blacktop layer in roads with traffic volumes exceeding 50 passenger car units (PCU) to reduce damage to the road surface

Widening - Increase of the road width in roads with traffic volumes exceeding 500 passenger car units (PCU) to ensure the proper flow of traffic.

3.2.1 Rehabilitation

No rehabilitation needs were identified 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)
65DR009	Gamgadhi-Mundu	12.58	
65DR003	Gamgadhi-Dhaina-Dulachaur	1.50	
Total		14.08	-

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. For Mugu this concerns the total of 14.08 km of DRCN roads.

Table 3.2.2 Sections of the district road core network requiring gravelling

Code	Name of Road	Total length (km)	Gravelling (km)
65DR009	Gamgadhi-Mundu	12.58	12.58
65DR003	Gamgadhi-Dhaina-Dulachaur	1.50	1.50
Total			14.08

3.2.3 Cross drainage

The need for cross drainage was identified for the different DRCN roads. A total of 2 bridge with a total length of 40 m, 2 slab culverts with a total length 10 m, and 1 pipe culvert were identified as being required.

Table 3.2.3 Required cross drainage structures

Code	Name of Road	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway (m)	Pipe culvert (units)
65DR009	Gamgadhi-Mundu	40				1
65DR003	Gamgadhi-Dhaina-Dulachaur		10			
Total		40	10	-	-	1

3.2.4 Protective structures

Based on the road survey carried out in Mugu, the following retaining walls were identified as being required to ensure the protection of the district road core network.

Table 3.2.4 Required protective structures

Code	Name of Road	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)
65DR009	Gamgadhi-Mundu		1,495	1,500
65DR003	Gamgadhi-Dhaina-Dulachaur			1,500
Total		-	1,495	3,000

3.2.5 Widening

Widening of the district road core network in Mugu is not required in existing situation because all the roads are either under construction or under planning stage.

Table 3.2.5 Sections of the district road core network requiring widening

Code	Name of Road	Total length (km)	VPD	Widening (m)
65DR009	Gamgadhi-Mundu	12.58	-	
65DR003	Gamgadhi-Dhaina-Dulachaur	1.50	-	
Total		14.08		-

3.2.6 Blacktopping

In current situation, blacktopping of the district road core network in Mugu is not required.

Table 3.2.6 Sections of the district road core network requiring blacktopping

Code	Name of Road	Total length (km)	Blacktop (km)	PCU	
				Traffic (PCU)	Blacktopping (km)
65DR009	Gamgadhi-Mundu	12.58	-	-	-
65DR003	Gamgadhi-Dhaina-Dulachaur	1.50	-	-	-
Total		14.08			-

3.3 New Construction

New construction of DRCN roads is required to connect the almost all VDC headquarters. A list of proposed roads for new construction is provided below. Although, the existing and under planning SRN passes through 13 VDCs, they connect only 5 VDC headquarters out of 24 VDCs headquarters. Of total 11 DRCN, only one road i.e. Gamgadhi-Pina-Mundu road is currently under construction stage while remaining 10 DRCN are newly planned during this DTMP preparation. Similarly, 1 road is planned and constructed by DRILP within this DTMP period. Now, these roads (SRN and DRCN) provide access to all VDC HQs.

Table 3.3.1 Sections of the district road core network requiring new construction

Code	Name of Road	New VDCs	Existing length	New length	Bridge (m)
65DR009	Gamgadhi-Mundu	Karkibada, Pina	12.58	-	0
65DR003	Gamgadhi-Dhaina-Dulachaur	Shreenagar, Rara, Kalai, Dhaina, Hyanglu	1.50	41.80	30
65DR001	Sumli-Natharpu-Nera	Jima, Natharpu, Nera	-	32.30	60
65DR002	Natharpu-Bhi	Bhi	-	8.00	15
65DR004	Seri-Juika-Riga	Shrikot, Kotdada	-	22.00	100
65DR005	Pache-Neta-Jhugala	Gumtha, Sukhadhik	-	24.00	120
65DR006	Chimadungri-Kalakanda	Khamale	-	32.00	60
65DR007	Seri-Narange-Gilaha	Sheri, Rara, Gumtha	-	21.00	40
65DR008	Gamgadhi-Chakheli	Ruga	-	20.00	50
65DR010	Gamgadhi-Shobha	Rowa	-	12.00	50
65DR011	Tihar-Kimri-Dolphu	Kimari, Dolphu	-	10.50	60
Total			14.08	223.60	585

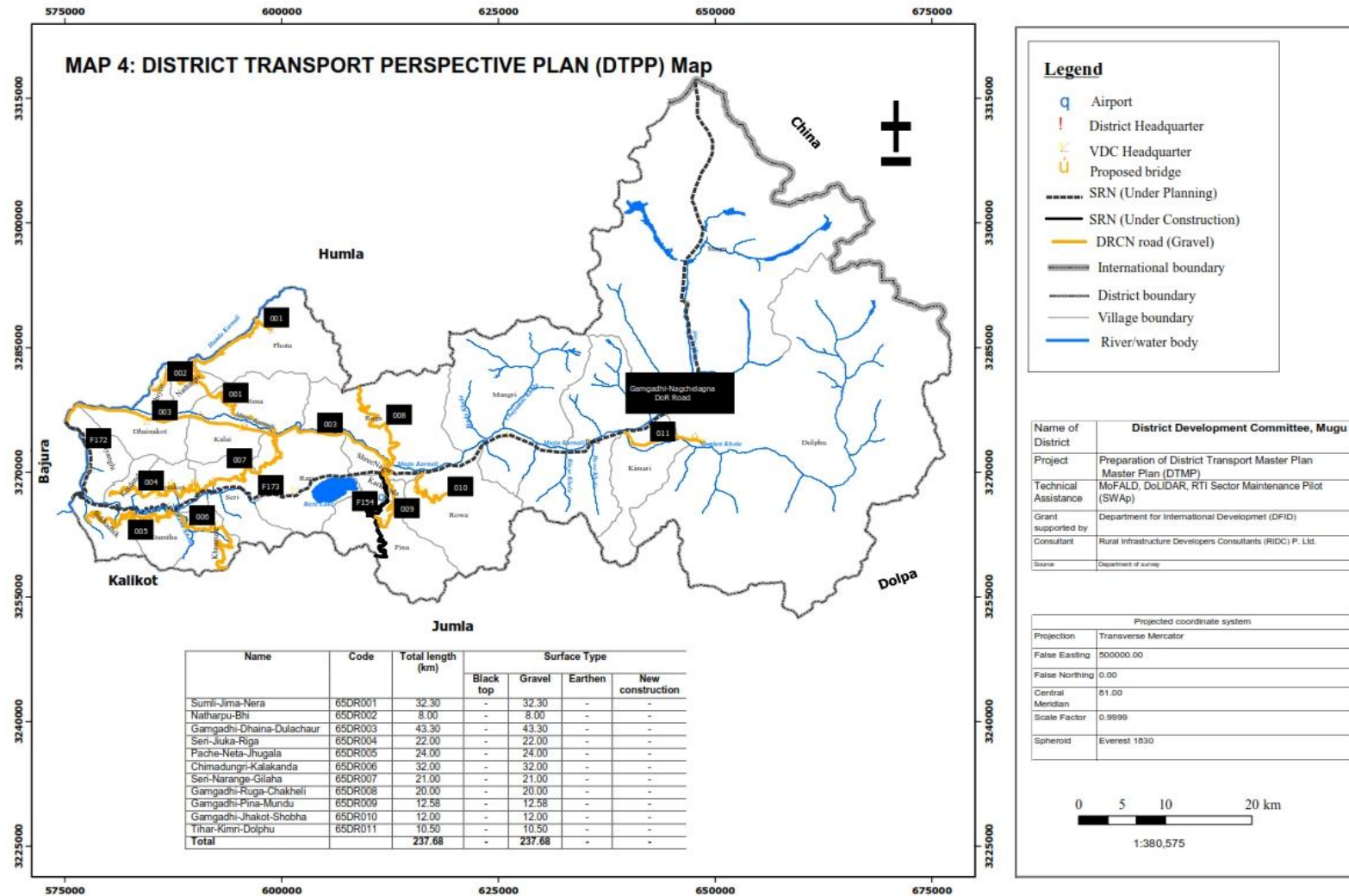
3.4 District Transport Perspective Plan

The DTPP foresees bringing the entire existing district road core network to maintainable all-weather status, and expanding it to provide access to all 24 VDC headquarters. For this purpose, all 14.08 km will be gravelled and a number of different cross drainage and protective structures will be constructed. A further 223.60 km of new road (including 1 road with a total length 32 km by DRILP) will be constructed to maintainable all-weather gravel standard providing access to all VDC HQs. The district road core network will subsequently consist of 237.68 km of maintainable all-weather roads. The following table lists the required interventions, while the proposed network is shown in the DTPP map in Figure 4.

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)	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)
65DR009	12.58	12.58	12.58	12.58	-	12.58	-	-	40.00	-	-	-	1.00	-	1,495.00	1,500.00	-
65DR003	1.50	1.50	1.50	1.50	-	1.50	-	-	30.00	10.00	-	-	-	-	-	1,500.00	41.80
65DR001	-	-	-	-	-	-	-	-	60.00	-	-	-	-	-	-	-	32.30
65DR002	-	-	-	-	-	-	-	-	15.00	-	-	-	-	-	-	-	8.00
65DR004	-	-	-	-	-	-	-	-	100.00	-	-	-	-	-	-	-	22.00
65DR005	-	-	-	-	-	-	-	-	120.00	-	-	-	-	-	-	-	24.00
65DR006	-	-	-	-	-	-	-	-	60.00	-	-	-	-	-	-	-	32.00
65DR007	-	-	-	-	-	-	-	-	40.00	-	-	-	-	-	-	-	21.00
65DR008	-	-	-	-	-	-	-	-	50.00	-	-	-	-	-	-	-	20.00
65DR010	-	-	-	-	-	-	-	-	50.00	-	-	-	-	-	-	-	12.00
65DR011	-	-	-	-	-	-	-	-	60.00	-	-	-	-	-	-	-	10.50
Total	14.08	14.08	14.08	14.08	-	14.08	-	-	625.0	10.0	-	-	1.0	-	1,495	3,000	223.60

Figure 4 District Transport Perspective Plan (DTPP)



4. COST ESTIMATION

For the cost estimation, use has been made of standard costs for the different activities required. For the conservation activities this results in an estimation of annual costs, while for improvement and new construction activities these results in an estimation of the total costs required.

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. It must be noted here that the standard costs for periodic maintenance are the average annual costs, but that the cost for applying periodic maintenance in a specific section every several years will be higher (the cumulative cost of several years). 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 presented in the ARMP.

Table 4.1.1 Standard unit costs for conservation

Activity	Unit	Unit cost (NPR)
Emergency maintenance	km	40,000
Routine maintenance	km	25,000
Recurrent maintenance (blacktop)	km	600,000
Recurrent maintenance (gravel)	km	550,000
Recurrent maintenance (earthen)	km	350,000
Periodic maintenance (blacktop)	km	300,000
Periodic maintenance (gravel)	km	400,000

For the first year the estimated costs for conservation of the DRCN come to NPR 5.843 million. Based on this cost for the first year, the costs for conservation of the DRCN for the next 5 years are estimated at NPR 62.134 million. These costs will change slightly as the roads are improved and the standard conservation costs change. This will be updated in the ARMP on an annual basis.

Table 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
65DR009	12.58	-	-	12.58	503	315	-	-	4,403	-	-	5,221	26,104
65DR003	1.50	-	-	1.50	60	38	-	-	525	-	-	623	3,113
Total	14.08	-	-	14.08	563	352	-	-	4,928	-	-	5,843	29,216

4.2 Improvement

The costs of the required improvement measures have been calculated using the following standard costs. These standard costs have been applied to the identified improvement requirements presented in the previous chapter.

Table 4.2.1 Standard unit costs for improvement activities

Activity	Unit	Unit cost (NPR)
Rehabilitation	km	950,000
Widening	m	40,000
Gravelling	km	3,500,000
Blacktopping	km	9,500,000
Bridge construction	m	1,100,000
Slab culvert construction	m	350,000
CC Causeway construction	m	250,000
Stone Causeway construction	m	15,000
Pipe culvert placement	unit	35,000
Masonry wall construction	m ³	15,000
Gabion wall construction	m ³	7,000
Lined drain construction	m	8,000

The resulting estimated costs come to NPR 131.280 million as indicated in the table below.

Table 4.2.2 Cost estimate for improvement measures (NPR '000)

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
65DR009	12.58	-	-	44,030	-	44,000	-	-	-	35	-	10,465	12,000	110,530
65DR003	1.50	-	-	5,250	-	-	3,500	-	-	-	-	-	12,000	20,750
Total	14.08	-	-	49,280	-	44,000	3,500	-	-	35	-	10,465	24,000	131,280

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	Unit cost (NPR)
Track opening	km	4,500,000
Gravelling	km	3,500,000
Bridge construction	m	1,100,000

The resulting estimated costs for new construction come to NPR 2432.3 million.

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

Code	Name of Road	New length (km)	Opening up (NPR)	Gravelling (NPR)	Bridges (NPR)	Total cost (NPR)
65DR009	Gamgadhi-Mundu	-	-	-	-	-
65DR003	Gamgadhi-Dhaina-Dulachaur	41.80	188,100	146,300	33,000	367,400
65DR001	Sumli-Natharpu-Nera	32.30	145,350	113,050	66,000	324,400
65DR002	Natharpu-Bhi	8.00	36,000	28,000	16,500	80,500
65DR004	Seri-Juika-Riga	22.00	99,000	77,000	110,000	286,000

65DR005	Pache-Neta-Jhugala	24.00	108,000	84,000	132,000	324,000
65DR006	Chimadungri-Kalakanda	32.00	144,000	112,000	66,000	322,000
65DR007	Seri-Narange-Gilaha	21.00	94,500	73,500	44,000	212,000
65DR008	Gamgadhi-Chakheli	20.00	90,000	70,000	55,000	215,000
65DR010	Gamgadhi-Shobha	12.00	54,000	42,000	55,000	151,000
65DR011	Tihar-Kimri-Dolphu	10.50	47,250	36,750	66,000	150,000
Total		223.60	1,006,200	782,600	643,500	2,432,300

4.4 DTPP Costs

The total costs for the District Transport Perspective Plan come to NPR 2592.796 million as indicated in the table below.

Table 4.4.1 DTPP costs (NPR '000)

Code	Conservation	Improvement	New construction	Total
65DR009	26,104	110,530	-	136,634
65DR003	3,113	20,750	367,400	391,263
65DR001	-	-	324,400	324,400
65DR002	-	-	80,500	80,500
65DR004	-	-	286,000	286,000
65DR005	-	-	324,000	324,000
65DR006	-	-	322,000	322,000
65DR007	-	-	212,000	212,000
65DR008	-	-	215,000	215,000
65DR010	-	-	151,000	151,000
65DR011	-	-	150,000	150,000
Total	29,216	131,280	2,432,300	2,592,796

5. RANKING

The ranking of the required interventions determines the order in which they will be carried out. This ranking is done separately for conservation, improvement and new construction. Ranking is done according to the cost per person served, whereby the costs are the estimated costs of the previous chapter. For the calculation of the population served, use is made of the population data for the VDCs linked by the road concerned.

5.1 Conservation

Ranking of roads for conservation is based on the total conservation costs per person served by the road. This ranking of roads will be updated each year in the ARMP 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 5.1.1 Ranking of conservation works (NPR '000)

Code	Total length (km)	1. Emergency	2. Routine	3. Recurrent (paved)	4. Recurrent (gravel)	5. Recurrent (earth)	6. Periodic (blacktop)	7. Periodic (gravel)	Total cost (NPR '000)	Population served	Cost/person (NPR)
65DR003	1.50	60	38	-	-	525	-	-	623	11,327	55
65DR009	12.58	503	315	-	-	4,403	-	-	5,221	7,501	696

The allocation of maintenance funding will follow a specific sequence indicated below, and will be applied to the road ranking as defined in the ARMP. This will be of particular importance where funding is insufficient to cover all conservation costs.

- Emergency maintenance
- Routine maintenance
- Recurrent maintenance paved roads
- Recurrent maintenance gravel roads
- Recurrent maintenance gravel roads
- Periodic maintenance blacktop roads
- Periodic maintenance gravel roads

5.2 Improvement

In the case of improvement activities, ranking is again based on 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).

Table 5.2.1 Ranking of improvement works (NPR '000)

Code	Total length (km)	Gravelling (km)	Blacktopping (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
65DR003	1.50	1.50	-	20,750	11,327	1,832
65DR009	12.58	12.58	-	110,530	7,501	14,735

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 resulting ranking is indicated in the table below.

Table 5.3.1 Ranking of construction works (NPR '000)

Code	Length (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
65DR009	-	-	7,501	-
65DR003	41.80	367,400	11,327	32,436
65DR007	21.00	212,000	6,304	33,629
65DR010	12.00	151,000	4,439	34,017
65DR004	22.00	286,000	5,488	52,114
65DR008	20.00	215,000	3,899	55,142
65DR001	32.30	324,400	5,815	55,787
65DR002	8.00	80,500	1,406	57,255
65DR005	24.00	324,000	5,469	59,243
65DR011	10.50	150,000	964	155,602
65DR006	32.00	322,000	1,785	180,392

6. DISTRICT TRANSPORT MASTER PLAN (DTMP)

The District Transport Master Plan (DTMP) that covers the next five years, is prepared based on the projected financial resources available and the prioritized transport interventions as listed in the DTPP. Year-wise targets are prepared for the different roads and intervention types.

6.1 Five Year Projected Financial Resources

The projected financial resources for the next five years are estimated by considering all possible funding sources. The funding levels are based on the existing trend of funding. An annual increase in funding of 10% is assumed for all funding sources. The total district budget for the road sector is NPR 7,66.65 million for the five-year period.

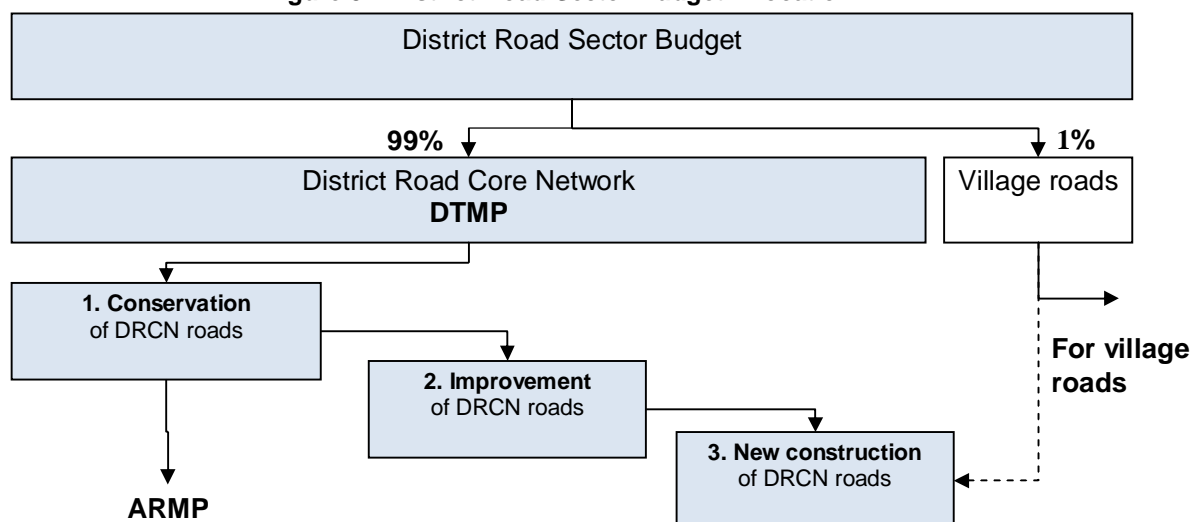
Table 6.1.1 Estimated funding levels (roads) for next five years (in NPR '000)

Funding source	2070/71	2071/72	2072/73	2073/74	2074/75
DDC Internal Budget (20% of total)	550	605	666	732	805
Local Agricultural Road Programme	7,700	8,470	9,317	10,249	11,274
DDC grant	2,640	2,904	3,194	3,514	3,865
DRILP	-	-	-	-	-
RAP + Other	33,000	36,300	39,930	43,923	48,315
RCIW	2,200	2,420	2,662	2,928	3,221
Karnali Employment Programme	19,800	21,780	23,958	26,354	28,989
Durgam Chhetra Programme	990	1,089	1,198	1,318	1,449
Central Road Programme	6,600	7,260	7,986	8,785	9,663
VDC (40% of total)	22,000	24,200	26,620	29,282	32,210
People's contribution (20%)	30,096	33,106	36,416	40,058	44,064
Total	125,576	138,134	151,947	167,142	183,856
Grand total	766,654				

6.2 Budget Allocation

The distribution of the available district road sector budget is indicated in the figure below. Due to the low number of village roads, 99% of the total budget is reserved for the district road core network including conservation, improvement and new construction. The remaining 1% is to be used by the DDC for the village roads, giving priority to emergency maintenance and routine/recurrent maintenance. The 99% of the district road sector budget for the DTMP is allocated firstly to conservation, secondly improvement, and any remaining funding is allocated to new construction. As few kilometers DRCN roads are existence in under construction stage, most of the district road sector budget is allocated to new construction in Mugu district.

Figure 5 District Road Sector Budget Allocation



Based on this 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.

Table 6.2.1 Investment plan

Section	A	Item				Year														
		Fiscal year				2070/71			2071/72			2072/73			2073/74			2074/75		
		Total budget				125,576			138,134			151,947			167,142			183,856		
		Village roads				1,256			1,381			1,519			1,671			1,839		
		Core road network budget (DTMP)				124,320			136,752			150,427			165,470			182,017		
	B	Core network length (km)				14.08			14.08			14.08			14.08			14.08		
		Blacktop (km)				-			-			-			-			-		
Gravel (km)				-			12.62			14.08			14.08			14.08				
Earthen (km)				14.08			1.46			-			-			-				
C	Conservation (NRs)				5,843			13,417			14,291			14,291			14,291			
	Emergency				563			563			563			563			563			
	Routine				352			352			352			352			352			
	Recurrent (blacktop)				-			-			-			-			-			
	Recurrent (gravel)				-			6,943			7,744			7,744			7,744			
	Recurrent (earthen)				4,928			510			-			-			-			
	Periodic (blacktop)				-			-			-			-			-			
	Periodic (gravel)				-			5,049			5,632			5,632			5,632			
	D	Improvement	Cost	BT	GR	118,477	BT	GR	123,335	BT	GR	136,136	BT	GR	151,179	BT	GR	167,726	BT	GR
65DR003		20,750	-	1.50	20,750	-	1.50	-	-	-	-	-	-	-	-	-	-	--	-	
65DR009		110,530	-	12.58	97,727	-	11.12	12,803	-	1.46	-	-	-	-	-	-	-	--	-	
Total improvement				-118,477	--	-12.62	-12,803	--	-1.46	--	--	--	--	--	--	--	--	--		
E	Construction	Cost	GR		-	GR		110,532	GR		136,136	GR		151,179	GR		167,726	GR		
	65DR009	-	-		-	-		-	-		-	-		-	-		-	-		
	65DR003	367,400	41.80		-	-		-110,532	-12.58		-136,136	-15.49		-120,732	-13.74		-	-		
	65DR007	212,000	21.00		-	-		-	-		-	-		-30,447	-3.02		-167,726	-16.61		
	65DR010	151,000	12.00		-	-		-	-		-	-		-	-		-	-		
	65DR004	286,000	22.00		-	-		-	-		-	-		-	-		-	-		
	65DR008	215,000	20.00		-	-		-	-		-	-		-	-		-	-		
	65DR001	324,400	32.30		-	-		-	-		-	-		-	-		-	-		
	65DR002	80,500	8.00		-	-		-	-		-	-		-	-		-	-		
	65DR005	324,000	24.00		-	-		-	-		-	-		-	-		-	-		
	65DR011	150,000	10.50		-	-		-	-		-	-		-	-		-	-		
	65DR006	322,000	32.00		-	-		-	-		-	-		-	-		-	-		
	Total new construction				-	-		-110,532	-12.58		-136,136	-15.49		-151,179	-16.75		-167,726	-16.61		
	F	Remaining budget				-	0		0	0		0	0		0	0		0	0	

6.3 DTMP Outputs

Based on the investment plan presented above, all DRCN roads will be conserved for the duration of the DTMP period. A further 14.08 km will be improved to gravel standard. The same goes for the new construction which will only take place after the existing DRCN roads have been improved to maintainable all weather standards (some of these roads may be constructed using VDC funding).

Table 6.3.1 DTMP output

Conservation	Improvement gravel	Improvement blacktop	New construction
14.08	14.08	-	

Of the total DTMP budget, NPR 62.134 million will be spent on conservation and NPR 131.280 million on improvement. This will use up the entire DTMP budget for the five-year period.

6.4 DTMP Outcome

As a result of the activities planned in this DTMP, the percentage of all-weather maintainable DRCN roads increases from 0 km to 75.51 km.

Table 6.4.1 Standard of DRCN roads

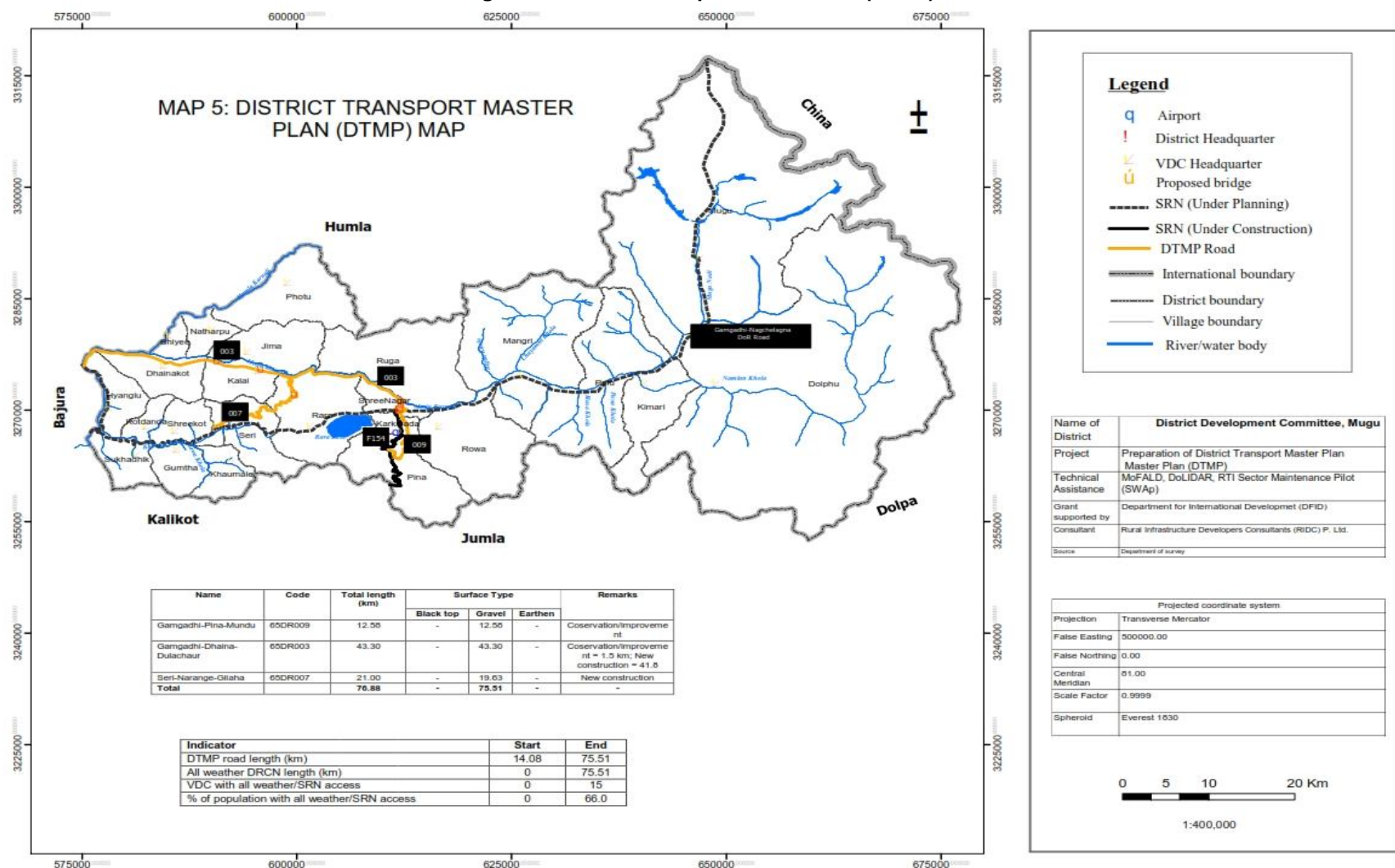
	Total length	Fair-weather		All-weather gravel		All-weather blacktop	
	km	km	%	km	%	km	%
Start of DTMP	14.08	14.08	100%	-	0%	-	0%
End of DTMP	14.08	-	0%	14.08	100%	-	0%
Difference	-	-14.08	-100%	14.08	100%	-	0%

As the existing SRN road is not in all-weather condition, the number of VDC headquarters with access to the SRN or all-weather DRCN roads will increase from 0 to 15 and the district population with access to the SRN or all-weather DRCN roads will increase from 0% to 66%.

Table 6.4.2 Population with access to road network

	Direct access to SRN			No access to road			Fair-weather core roads			All-weather core roads		
	VDCs	Population	%	VDCs	Population	%	VDCs	Population	%	VDCs	Population	%
Start of DTMP	8	17,958	33%	19	39,051	71%	3	11,407	21%	0	-	0%
End of DTMP	8	17,958	33%	14	26,387	48%	0	-	0%	7	18,324	33%
Difference	-	-	0%	-5	-12,664	-23%	-3	-11,407	-21%	7	18,324	33%

Figure 6 District Transport Master Plan (DTMP)



ANNEXES

Annex 1: DDC Letters



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

Ref No : 069/070 — 825

Date: April 2, 2013

To,
RTI SwAP
DoLIDAR,
Shreemahal, Lalitpur

Sub: Completion of DTMP Preparation workshop

Dear Sir/Madam

This is to certify that the team of **RIDC (P). Ltd.**, Kathmandu has successfully completed the following DTMP preparation workshop;

1. Orientation Workshop
2. DRCN Selection Workshop
3. Draft Report Presentation Workshop

Thanking you.

Er. Bir Bahadur Rawal
Acting Local Development Officer
District Development Committee, Mugu

मिति ०२ अप्रिल २०१३

महेश्वर मकर बहादुर रावल जावि (सचिव कोलकाता) ५५
कमल धन प्रसाद पाण्डे ॥ ॥ पिना मुगु

महेश्वर बहादुर रावल ॥ ॥ ५५
महेश्वर कलामाड ॥ जि. प्र. का. मुगु
महेश्वर बहादुर राव ॥ जि. वि. स. सचिव श्री तारुणा वि. वि.

महेश्वर देव बहादुर सोकाय ॥ जि. वि. स. प्र. स. सचिव
महेश्वर प्रदीप रावल ॥ जि. वि. स. सचिव

महेश्वर जगत क. सोकाय ॥ सचिव
महेश्वर देव बहादुर शाही ॥ जि. वि. स. सचिव

महेश्वर गोविन्द रावल ॥ जि. वि. स. सचिव
महेश्वर मणि लाल काको ॥ जि. वि. स. सचिव

महेश्वर टोप क. थापा ॥ जि. वि. स. सचिव
महेश्वर रतन बहादुर बुद्धा मांगी ॥ जि. वि. स. सचिव

महेश्वर रेशम बहादुर रावल ॥ जि. वि. स. सचिव
महेश्वर ई. हरि देव पणेत ॥ जि. वि. स. सचिव

महेश्वर केशव डेगाना ॥ जि. वि. स. सचिव
महेश्वर जय बहादुर रावल ॥ जि. वि. स. सचिव

महेश्वर D.R. Pathak, TL RIDC (P) Ltd

महेश्वर Ramesh Rana Bhat ॥
महेश्वर Gharana Shyam Sharma DDC DEES, Mugu (EDO)

महेश्वर राम चन्द्र नाथ, पं. वि. जि. प्र. स. सचिव
महेश्वर सिंह बहादुर राव ॥ जि. वि. स. सचिव

महेश्वर राज बहादुर रावल ॥ जि. वि. स. सचिव

महेश्वर मदन सोकाय ॥ जि. वि. स. सचिव

महेश्वर देव बहादुर राव ॥ जि. वि. स. सचिव

महेश्वर राजा राम मल्ल ॥ जि. वि. स. सचिव

महेश्वर उज्ज्वल शर्मा ॥ जि. वि. स. सचिव

आज मिति २०६९/१२/१९ गते जिला विकास समितिको
हलमा मुगु जिल्लाका नि.स्थानीय विकास अधिकारी श्री
ई. बिर बाबुदर रावल ज्यू को अध्यक्षतामा बैठक बसी यस
मुगु जिल्लाको सडक गरुयोजना छनौट गोठिठमा तपशिल
बमोजिमका माहुरभावहरूको उपस्थितिमा बैठक बसी देहाय
बमोजिमको निर्णय गरियो ।

उपस्थिति

१. श्री ई. बिर बाबुदर रावल	उ. जि. नं. ३७	नि. स्थ. वि. प्र. जि. वि. व.
२. श्री मोहन बानीया	श्र. पु. सभापती	"
३. श्री शुक्तीर बुढा	श. मा. के. वादी	"
४. श्री गोपाल बम	जिल्ला अध्यक्ष	श. मा. ले.
५. श्री जसु ब. बोहोरा	जिल्ला सचिव	रा. मा. ने. प. ले.
६. श्री दल बहादुर रावल	म. प्र. पा. नेपाल	अध्यक्ष
७. श्री राजा बहादुर मल्ल	रा. मा. पा. मि. अ.	"
८. श्री गोम बहादुर बुढाल	ने. के. पा. माले	"
९. श्री अंगराज बुढा	रेडीयो बरा.	"
१०. श्री प्रसाद खतिवडा	मुगु	"
११. श्री दल बहादुर थापा	मुगु	"
१२. श्री मान बहादुर थापा	मुगु	"
१३. श्री लक्ष्मण थापा	मुगु	"
१४. श्री देव प्रसाद	मुगु	"
१५. श्री मधु रेग्मी	मुगु	"
१६. श्री माने राम चौधरी	मुगु	"
१७. श्री रूप बहादुर थापा	मुगु	"
१८. श्री रोप बं. थापा	मुगु	"
१९. श्री सरोज के. सी.	मुगु	"
२०. श्री मेल बहादुर थापा	मुगु	"
२१. श्री उजैला	मुगु	"
२२. श्री देव प्रसाद	मुगु	"
२३. श्री देव प्रसाद	मुगु	"
२४. श्री मदन रौकाया	मुगु	"
२५. श्री राजा राज मल्ल	मुगु	"

श्री हस्त बहादुर मल्ल - पूर्व बिहारी राज्य मन्त्री
 श्री रवीन्द्र बहादुर मल्ल - सह-राष्ट्रिय नेपाली कांग्रेस मुख्यालय
 श्री विष्णु बहादुर रावल - अध्यक्ष - त्रैलोक्य मण्डल
 श्री उदयन ब. शाही - सम्मानित N.P.N. मण्डल
 श्री धन श्याम बामा - उपाध्यक्ष, मण्डल
 श्री देवदत्त देवदत्त - अध्यक्ष, मण्डल

निर्णयहरू

- निम्न सडकहरू जिल्ला मुख्य सडक सञ्जाल (DRCN) का लागि चिह्नित गरियो ।

Road Code	Road Name
65DR001	Sumli - Natharpu - Nera
65DR002	Natharpu - Bhi
65DR003	Gangadhi - Dhina - Dulachaur
65DR004	Seri - Juika - Rigau
65DR005	Pache - Neta - Ramdhakandh - Jhugala
65DR006	Chimadungri - Kalakanda
65DR007	Seri - Narange - Gilaha
65DR008	Gangadhi - Chankheli
65DR009	Gangadhi - Mandu
65DR010	Gangadhi - Nagchelagna
65DR011	Gangadhi - Chatte bagar - Shobha
65DR012	Tihar - Kimri - Dolphu

१९/०१/९५

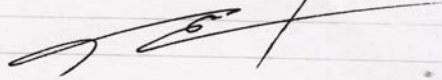
उपस्थिति

[illegible]

ભાઈ સુનાર
સુમ્બેની વિ.ક.
ગોવિંદભાઈ ઝાંગરાજ કુટુંબ

પતિત મર્યાદા પૈડો
" "
ચેડિયો સારા

નિર્ણય કી DTMP કી Draft Report presentation મળી
મુજાં DRCU C VRCU કીએ હાજરી મેં Report
DRC ના પડાએ જીવેને મળે



Annex 3: Population Served

#	VDC/municipality	Population	Road											SRN
			65DR009	65DR003	65DR001	65DR002	65DR004	65DR005	65DR006	65DR007	65DR008	65DR010	65DR011	
1	Bhi	1,406				X								
2	Dhainakot	2,398		X										
3	Dolphu	385											X	
4	Gumtha	2,598						X						
5	Hyanglu	2,067		X										X
6	Jima	2,841			X									
7	Karkibada	3,654	X											
8	Kimri	579											X	
9	Kot Danda	1,812					X							
10	Mangri	2,439												X
11	Mugu	898												X
12	Natharpu	1,603			X									
13	Photu	1,371			X									
14	Pina	3,847	X											X
15	Pulu	1,095												x
16	Rara	1,399		X						x				X
17	Kalai	1,557		X										
18	Rowa	4,439										X		
19	Ruga	3,899									X			
20	Khamale	1,785							X					
21	Seri	2,307								x				X
22	Shreekot	3,676					x							
23	Shreenagar	3,906		X										X
24	Sukadhik	2,871						X						
	Total population	54,832	7,501	11,327	5,815	1,406	5,488	5,469	1,785	3,706	3,899	4,439	964	17,958
	Total VDCs/municipalities	24	2	5	3	1	2	2	1	2	1	1	2	8

Annex 4: Level of Access

#	VDC/municipality	No access DRCN start DTMP	No access DRCN end DTMP	Fair-weather DRCN start DTMP	Fair-weather DRCN end DTMP	All-weather DRCN start DTMP	All-weather DRCN end DTMP	Direct access to SRN
1	Bhi	X	X					
2	Dhainakot	X					X	
3	Dolphu	X	X					
4	Gumtha	X	X					
5	Hyanglu							X
6	Jima	X	X					
7	Karkibada							X
8	Kimri	X	X					
9	Kot Danda	X	X					
10	Mangri	X	X					
11	Mugu	X	X					
12	Natharpu	X	X					
13	Photu	X	X					
14	Pina							X
15	Pulu	X	X					
16	Rara	X					X	
17	Kalai	X					X	
18	Rowa	X					X	
19	Ruga	X	X					
20	Khamale	X	X					
21	Seri							X
22	Shreekot	X	X					
23	Shreenagar							X
24	Sukadhik	X					X	
	Total population	39,051	26,387	.	.	.	12,664	15,781
	Total VDCs	19	14	0	0	0	5	5

Annex 5: Photographs



Introductory Workshop



Inventory Work



DRCN Workshop



Draft Report Presentation

