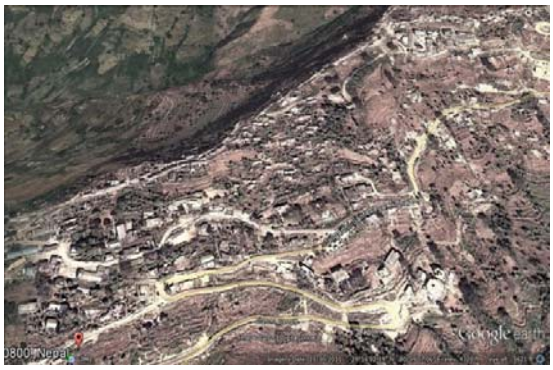
Government of Nepal



District Transport Master Plan (DTMP)

VOLUME – I

MAIN REPORT

Ministry of Federal Affairs and Local Development

Department of Local Infrastructure Development and Agricultural Roads (DOLIDAR)

District Development Committee,

Doti

July 2013

Submitted by: (Sustainable Infrastructure Development Foundation (SIDeF), Sinnamangal, Kathmandu) for the District Development Committee (DDC) and District Technical Office (DTO), Doti 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.

Ministry of Federal Affairs and Local Development
Office of District Development Committee
Doti

Phone No: 094-420242/420156

Date : 14th July, 2013,

FOREWORD

It is my pleasure to introduce this District Transport Master Plan (DTMP) of Doti district. I believe that this document will be helpful in backstopping to Rural Transport Infrastructure Sector through sustainable planning, resource mobilization, implementation and monitoring of the rural road sub-sector development. The document is anticipated to generate substantial employment opportunities for rural people through increased and reliable accessibility in on-farm and off-farm livelihood diversification and commercialization and industrialization of agriculture sector. In this context, rural road sector will play a fundamental role to strengthen and promote overall economic growth of this district through established and improved year round transport services reinforcing intra and inter-district linkages .

Therefore, it is most crucial in expanding rural road networks in a planned way as per the District Transport Master Plan (DTMP) by considering the framework of available resources in DDC comprising both internal and external sources. Considering these aspects, DDC Doti has prepared the DTMP by focusing most of the available resources into upgrading and maintenance of the existing road networks. It is expected that this DTMP will be helpful in lobbying and facilitating the donor agencies through central government generating resources required through basket fund approach. Furthermore, this document will be supportive in avoiding pervasive duplication approach in resources allocation under the rural road network development of Bajhang District.

I would like to thank, Acting Chief District Engineer, Mr. Bimal Kisor KP, Engineer and other DDC and DTO staffs who directly and indirectly supported in the process of preparing this document.

I would, like to express my gratitude to SIDeF team - Mr. Hare Ram Shrestha, Project Director, Mr. Rohit Kumar Shrestha, Team Leader/Engineer, Mr. Ganesh Datta Itani,Sub Engineer for their field work and continuous dedication, in bringing this DTMP to final stage.

My special thank goes to all the representatives of political parties and other DRCC members who played central role in providing constructive and valuable supports in preparing this document.

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

Shiva Kumar Karki
Local Development Officer
District Development Committee
Doti, Nepal

ACKNOWLEDGEMENT

This Final report on the of Preparation of District Transport Master Plan (DTMP) of Doti District has been prepared under the contract agreement between RTI Sector Maintenance Pilot, DOLIDAR, Lalitpur and SIDeF, Kathmandu.

The consultant has prepared this report after extensive documentary consultation/ field work, road inventory study and interaction with line agency of the district.

We would like to extend our heartfull gratitude to the District Development Committee (DDC) Doti for providing us to carry out this task.

We would like to express our gratitude to Mr. Jagannath Panta, Local Development Officer; Mr. Bimal Kishor KP, Chief DTO, Mr. Shyam Gurung, DTL RAP Doti, Mr. Shanker Pokhrel, Engineer RAP, Mr. Baburam Dahal, Sub Engineer, Amar Lal Raut, Sub Engineer and all the DDC, DTO and RAP staffs for their valuable suggestions and co- operation for the preparation of this report.

We also extend our sincere thanks to the representatives of political parties for their active and valuable participation in the process of DTMP preparation. We are grateful to all the local people and leaders who have rendered their valuable accompany to our team during execution of the works.

We thank to our own team (Rohit Kumar Shrestha and Ganesh Datta Itani, Engineers) who worked continuously to finalize the DTMP.

Hare Ram Shrestha
Project Director
SIDeF, Kathmandu

EXECUTIVE SUMMARY

Doti district lies in Seti Zone, Far Western Development Region and has total area of 2025 sq.kilometers, which covers 1.37 % of total area of Nepal. The adjacent districts are Surkhet and Aacham in the East, Dadeldhura and Baitadi in the West Bajhang and Bajura in the North and Kailaili in the South. Dipayal-Silgadi municipality, district headquarter is the key growth centre, centralized all facilities available in the district level. The district lies between 28^o 54' to 29^o 28' North latitude and 80^o 30' to 81^o 14' East longitude in Mahabharata and Siwalik range. The elevation of the district is 335 meters (kanachaur) to 3295 meters (khapad Ilaka) from the mean sea level. The average temperature of the district varies from minimum 0.2^oC to maximum 44^oC. The average annual precipitation is 954mm.The major rivers of the Doti districts are Seti river, Gandigad, Kalagad, Tundalgad, Sailigad, Thuligad, and Garseragad.

The total population of the Doti district is 207070 as per the latest census. 25.9 percent of the land is used for the agriculture purpose and 28.2 percent of lad is forest

The district inventory identified just over 585.97 km of roads, including 185.46 km of strategic roads, 10.45 Km of urban roads and 230.11 Km of DRCN roads. In coordination with the DTICC and DDC, 9 rural roads with a length of 230.11 km were identified as making up the district road core network (DRCN), and the remaining 159.95 km were classified as village roads. The existing DRCN roads link up 32 of the VDC headquarters and 14 of the VDC link up by the SRN roads. All of the DRCN roads are earthen fair-weather roads.

Road Class	Total length	Black Top	Gravel	Earthen
Strategic road network	185.46	115.46	5.00	65.00
Urban roads	10.45	-	-	10.45
District road core network	230.11	0.95	0.50	228.66
Village roads	159.95	-	-	159.95
Total	**585.97**	**116.41**	**5.50**	**464.06**

The total estimated cost of the total DRCN road is Rs. 3,512,713,000 in which Rs 347,353,000, Rs. 1,196,776,000 and Rs. 1,968,584,000 for conservation, improvement and new construction

Improvement type	Requirement		Cost (NPR)
Bridges	423	M	253,800,000
Slab culverts	8	M	1,200,000
Causeways	1302	M	94,560,000
Hume pipes	5	units	50,000
Masonry retaining walls	6153	m^3	61,530,000
Gabion retaining walls	23493	m^3	58,732,500
Lined drains	186970	M	186,970,000
Widening	0	M	-
Rehabilitation	12.125	Km	36,881,716
Gravelling	228.66	Km	503,052,000
Blacktopping	0	Km	-
New construction	225.00	Km	1,968,584,175
Total			**3,165,360,391**

The total estimated budget for the five year DTMP period is Rs. 644,661,000 and its 80% budget is allocated to DRCN and 20% budget allocated for the village roads. The order of priority is given to allocate the conservation, improvement and new construction. Due to the insufficient budget source of the district, all DRCN roads will not be in the all-weather standard of the DRCN roads. According to priority for conservation, improvement and new construction will be done from the 80% budget of estimated budget of five-year DTMP period.

ABBREVIATIONS

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
DTPP	District Transport Perspective Plan
GIS	Geographical Information system
GPS	Global Positioning System
GON	Government of Nepal
LGCDP	Local Governance and Community Development Programme
MFALD	Ministry of Federal Affairs and Local Development
SWAp	Sector Wide Approach
VDC	Village Development Committee
RMP	Annual Road Maintenance Plan

CONTENTS

FIGURES

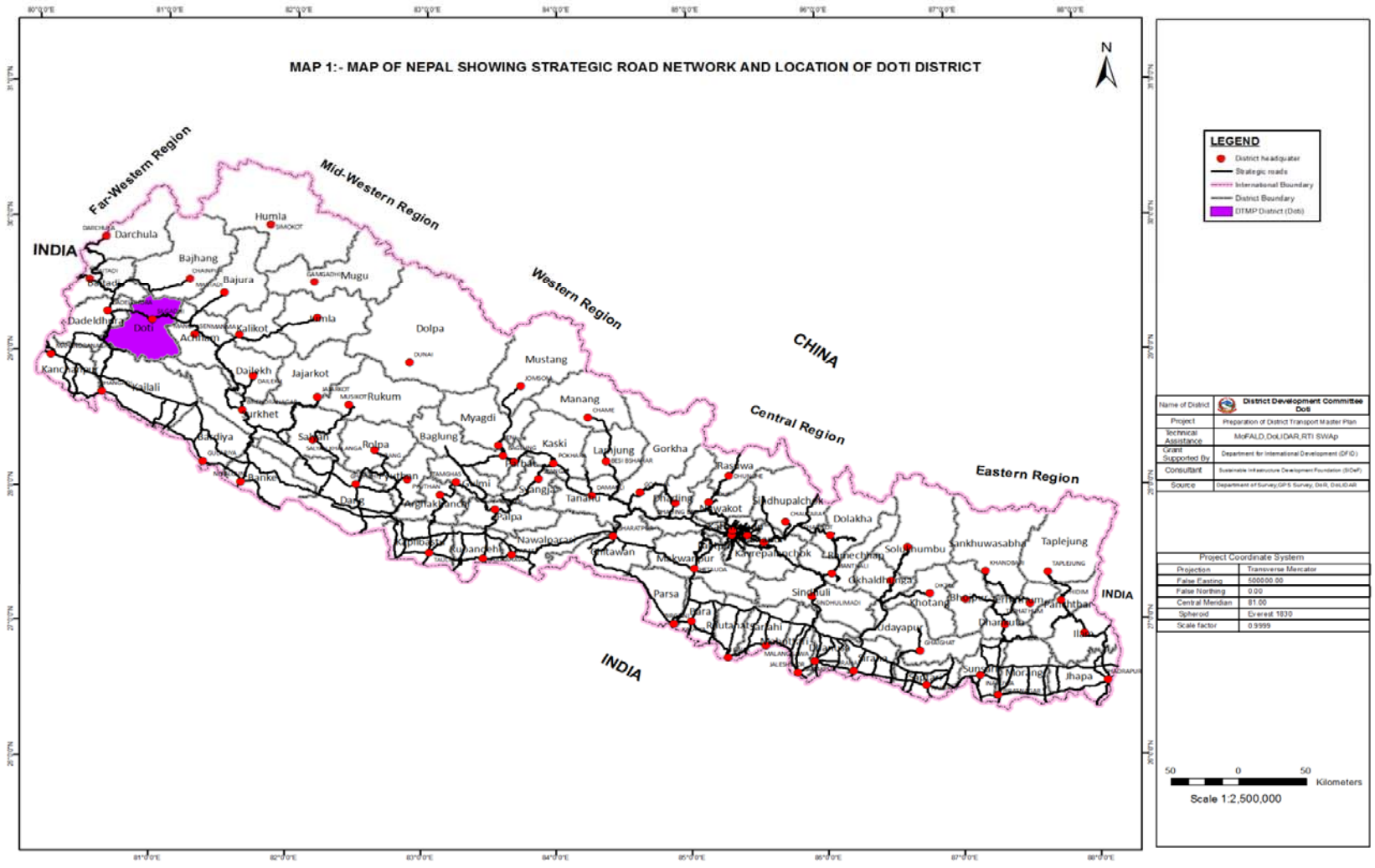
1. INTRODUCTION

Doti district lies in Seti Zone, Far Western Development Region and has total area of 2025 sq. kilometres, which covers 1.37 % of total area of Nepal The adjacent districts are Surkhet and Aacham in the in the East, Dadeldhura and Baitadi in the West Bajhang and Bajura in the North and Kailaili in the South. Dipayal-Silgadi municipality, district headquarter is the key growth centre, centralized all facilities available in the district level. The district lies between 28^o 54' to 29^o 28' North latitude and 80^o 30' to 81^o 14' East longitude in Mahabharata and Siwalik range. The elevation of the district is 335 meters to 3295 meters from the mean sea level. The average temperature of the district varies from minimum 0.2^o C to maximum 44^oC. The average annual precipitation is 954mm .The major rivers of the Doti district are Seti river, Gandigad, Kalagad, Tundalgad, Sailigad, Thuligad, and Garseragad.
The total population of the Doti district is 207070 as per the latest cencus. 25.9 percent of the land is used for the agriculture purpose and 28.2 percent of lad is forest.

According to the National Census 2011, the total population of the district is 207070 comprising 114092 female and 92978 male residing in 41440 households. Doti district has an average population density of around 126.04 people per sq. km. The average family size is 5.11. Life expectancy of the people is 58 years. The average literacy rate is about 56.3%. Doti district has a multi ethic composition with Chhetri (52.75%), Bramhin (9.18%), Kami (8.04%), Damai (5.21%), Dalit (6.24%) 0ther (18.58%). The common language is Nepali (96.13%) followed by Magar (1.73%) Tamang (0.11%) Maithali (0.10%) Sherpa (0.07%) and (1.86%) other.

The district headquarter is linked with Mahakali Rajmarg from Seule (Dadeldhura) by 118.46 km Blacktop. The district headquarter is also linked with Seule (Dadeldhura) by 95 km Blacktop road.

Location of the Doti district



2. DISTRICT ROAD CORE NETWORK (DRCN)

This chapter gives an overview of the existing roads in Doti 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 road. The concept of DRCN is such that, the particular road which will connect the VDC headquarter by which all of the people from the VDC will be able to access the DRCN roads.

2.1 TOTAL ROAD NETWORK

Doti district has the road network of 585.97 kilometers, including 185.46 kilometers of strategic roads managed by DOR and 159.65 kilometers of rural, managed by Doti DDC and the VDCs. Most of the strategic roads and all of the rural roads have an earthen surface. A map of the total road network in Doti district is shown in Figure 2 at the end of this chapter.

Table 2.1.1 Total road length (km)

Road Class	Total length	Black Top	Gravel	Earthen
Strategic roads	185.46	115.46	5.00	65.00
Urban roads	10.45	-	-	10.45
Rural roads	159.65			159.65
Total	**355.56**	**115.46**	**5.00**	**235.10**

2.2 NATIONAL HIGHWAYS AND FEEDER ROADS

Doti district has Feeder Roads of 185.46 km. There are mainly two highways in Doti district (Seti Highway, Mahakali Highway). All of the highways are blacktopped totaling 115.46 klimeters.

Table 2.2.1 National Highways and Feeder Roads (km)

Code	Road Ref No	Link Name	Total Length KM	Black Top	Gravel	Erthen	Remarks
F05101-0-41	F051	Silgadhi-Chaukhutte Bajar	41.00	41.00			
F14902-28-48	F149	BP Nagar-Silgadhi(Dipayal)	20.00			20.00	
F14902-48-53	F150	BP Nagar-Silgadhi(Dipayal)	5.00		5.00		
F14902-53-83	F149	BP Nagar-Silgadhi(Dipayal)	30.00			30.00	
F17401-0-8	F174	Silgadhi-Khaptad	8.00			8.00	
F20402-32-37	F204	Gadhsera-Napani-Dipayal	5.00			5.00	
F20402-93-95	F205	Gadhsera-Napani-Dipayal	2.00			2.00	
H1404-68-18-79-56	H14	Faltunde-Budar	11.38	11.38			
H1404-79-56-101-64	H14	Budar-Gairha	22.08	22.08			
H1502-24-96-49-69	H15	Koryal-Samuhagad	24.73	24.73			

H1503-49-69-65-96	H15	Samuha Gad-Junction,Safe road	16.27	16.27			
Total			**185.46**	**115.46**	**5.00**	**65.00**	

2.2.1 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.

The DRCN covers 32 VDCs out of 50 VDCs and one municipality. The DRCN consists of 9 district roads with a total length of 230.11 km. The remaining 159.65 km of existing rural roads are not considered to be DRCN roads and are classified as village roads under the responsibility of the VDCs. All DRCN roads are currently earthen roads some are gravel and are considered fair-weather only.

Table 2.2.1 Total road length (km)

Road Class	Total length	Black Top	Gravel	Earthen
Strategic roads	185.46	115.46	5.00	65.00
Urban roads	10.45	-	-	10.45
Rural roads	159.65			159.65
Total	**355.56**	**115.46**	**5.00**	**235.10**

Table 2.2.2 District road core network (km)

Code	Description	Total length	Black Top	Gravel	Earthen	All weather	Fair weather
70DR001	Budar (chhatiwan) laxminagar - Sarswotinagar - Mudbhara – Talkot	43.00			43.00	-	43.00
70DR002	Durgamandu - Satpheri - Lanakedareshwor – Bagchheda	3.35			3.35	-	3.35
70DR003	Rajpur - Ranagau - Durgamandu - Basudevi - Tikhatar - Gagauda - Chamara chautara - Kedara khada - Kanachaur – Beni	66.00			66.00	-	66.00
70DR004	(BP nagar - Barchain - Khadeuli - Bachheda) - Bachheda - Sunalek - Ghangal - Simichaur - Kedarakhada – Lodeghat	9.96			9.96	-	9.96
70DR005	Satnali - Lamikhal - Mahadevsthan - Banjhakakani (syule)	12.46			12.46	-	12.46
70DR006	Dipayal - Bajhkakani - Dahakalikasthan - Daud – Patihalne	64.37	0.95	0.50	62.92	1.45	62.92
70DR007	Dobanj - Dahakalikasthan - Chhapali - Deura (pipalkot)	4.21			4.21	-	4.21
70DR008	Silgadi - Kalena – Mellekh	6.52			6.52	-	6.52
70DR009	Santinagar - Ladagada - Dang – Tikhatar	20.24			20.24	-	20.24
Total		**230.11**	**0.95**	**0.50**	**228.66**	**1.45**	**228.66**

2.3 VILLAGE ROADS

The 159.65 km of remaining roads 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 VDCs in Doti 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.
On average each 50 VDC will thus be responsible for 4.64 km of village roads. 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 maintenances keep the village roads open.

Figure 1 Total road inventory

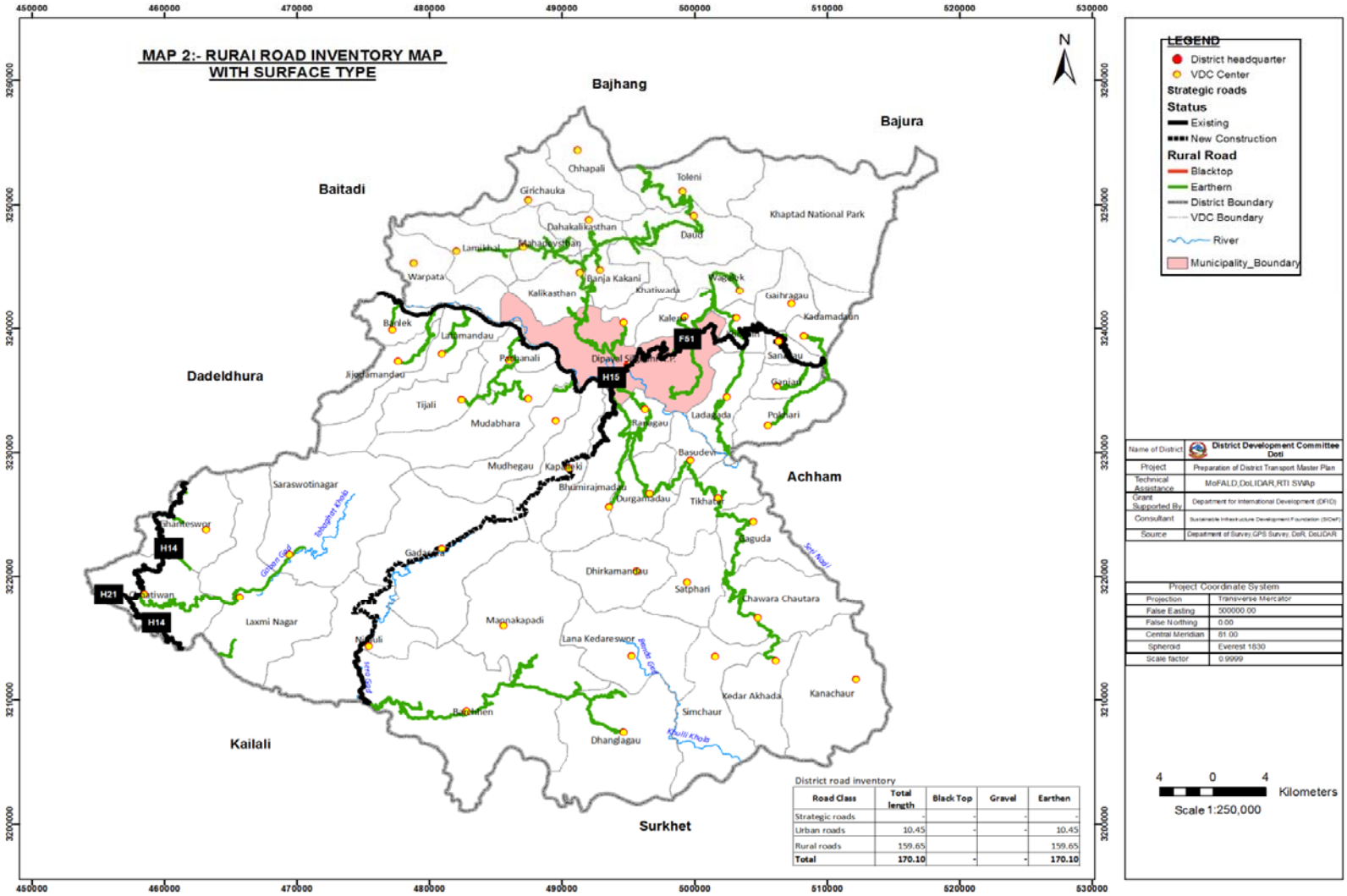
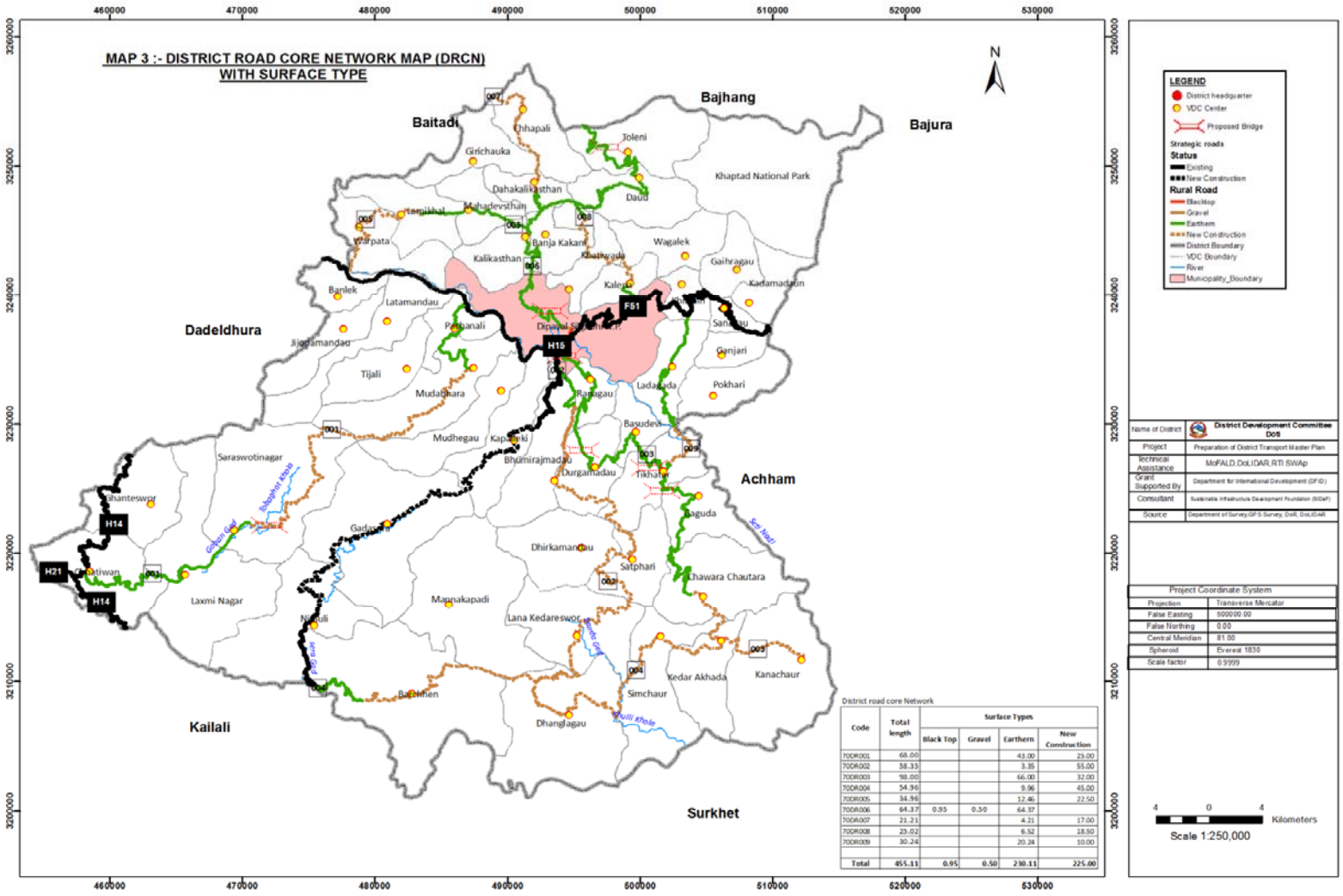


Figure 2 District Road Core Network (DRCN)



3. DISTRICT TRANSPORT PERSPECTIVE PLAN (DTPP)

The District Transport Perspective Plan is simply the list of all the identified interventions that are necessary to bring the roads to a maintainable all-weather standard and keep them there, as well as the construction of any new roads considered necessary to complete the DRCN. As such it is the summation of the interventions identified which are required to improve the road to the proper standard, as well as the conservation requirements to keep the roads at this standard.

3.1 CONSERVATION

Allocations to conservation has been done in order of priority: emergency maintenance – routine – recurrent (blacktop) – recurrent (gravel) – periodic (blacktop) – periodic maintenance (gravel). And reduction in allocation should be applied to the lowest priority type of conservation. The total requirements of the emergency maintenance is 230.11 Km, routine maintenance is 230.11 Km recurrent maintenance is 230.11Km and periodic maintenance is 230.11 km in the Doti district

Table 3.1.1 Conservation requirements

Code	Emergency maintenance (km)	Routine maintenance (km)	Recurrent maintenance (km)	Periodic maintenance (km)
70DR001	43.00	43.00	43.00	43.00
70DR002	3.35	3.35	3.35	3.35
70DR003	66.00	66.00	66.00	66.00
70DR004	9.96	9.96	9.96	9.96
70DR005	12.46	12.46	12.46	12.46
70DR006	64.37	64.37	64.37	64.37
70DR007	4.21	4.21	4.21	4.21
70DR008	6.52	6.52	6.52	6.52
70DR009	20.24	20.24	20.24	20.24
Total	**230.11**	**230.11**	**230.11**	**230.11**

3.2 IMPROVEMENT

Improvement of the DRCN road includes rehabilitation, gravelling, application of required cross drainage and protective structures, blacktopping and widening, which gives the DRCN roads in all weather standard.

Rehabilitation refers to existing road network where the roads are in poor condition, to require an improved road surface. Gravelling refer in existing earthen road to make them all weather standards. Similarly blacktopping refers in existing gravel road to improve its standard. Cross drainage structure (causeway, pipe culvert, slab culvert, bridge), protective structures (gabion wall, masonry wall, dry wall) are required to meet the all weather standard of the DRCN roads.

3.2.1 REHABILITATION

Table 3.2.1 Sections of the district road core network requiring rehabilitation

Code	Description	Total length (km)	Rehabilitation (km)
70DR001	Budar (chhatiwan) laxminagar - Sarswotinagar - Mudbhara – Talkot	43.00	10.00
70DR002	Durgamandu - Satpheri - Lanakedareshwor – Bagchheda	3.35	
70DR003	Rajpur - Ranagau - Durgamandu - Basudevi - Tikhatar - Gagauda - Chamara chautara - Kedara khada - Kanachaur – Beni	66.00	
70DR004	(BP nagar - Barchain - Khadeuli - Bachheda) - Bachheda - Sunalek - Ghangal - Simichaur - Kedarakhada – Lodeghat	9.96	
70DR005	Satnali - Lamikhal - Mahadevsthan - Banjhakakani (syule)	12.46	
70DR006	Dipayal - Bajhkakani - Dahakalikasthan - Daud – Patihalne	64.37	
70DR007	Dobanj - Dahakalikasthan - Chhapali - Deura (pipalkot)	4.21	
70DR008	Silgadi - Kalena – Mellekh	6.52	1.90
70DR009	Santinagar - Ladagada - Dang – Tikhatar	20.24	0.23
Total		**230.11**	**12.13**

3.2.2 GRAVELLING

Table 3.2.2 Sections of the district road core network requiring gravelling

Code	Description	Total length (km)	Gravelling (km)
70DR001	Budar (chhatiwan) laxminagar - Sarswotinagar - Mudbhara – Talkot	43.00	43.00
70DR002	Durgamandu - Satpheri - Lanakedareshwor – Bagchheda	3.35	3.35
70DR003	Rajpur - Ranagau - Durgamandu - Basudevi - Tikhatar - Gagauda - Chamara chautara - Kedara khada - Kanachaur – Beni	66.00	66.00
70DR004	(BP nagar - Barchain - Khadeuli - Bachheda) - Bachheda - Sunalek - Ghangal - Simichaur - Kedarakhada – Lodeghat	9.96	9.96
70DR005	Satnali - Lamikhal - Mahadevsthan - Banjhakakani (syule)	12.46	12.46
70DR006	Dipayal - Bajhkakani - Dahakalikasthan - Daud – Patihalne	64.37	62.92
70DR007	Dobanj - Dahakalikasthan - Chhapali - Deura (pipalkot)	4.21	4.21
70DR008	Silgadi - Kalena – Mellekh	6.52	6.52
70DR009	Santinagar - Ladagada - Dang – Tikhatar	20.24	20.24
Total			**228.66**

3.2.3 CROSS DRAINAGE

Table 3.2.3 Required cross drainage structures

Code	Description	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway (m)	Pipe culvert (units)
70DR001	Budar (chhatiwan) laxminagar - Sarswotinagar - Mudbhara – Talkot	53		20		
70DR002	Durgamandu - Satpheri - Lanakedareshwor – Bagchheda					
70DR003	Rajpur - Ranagau - Durgamandu - Basudevi - Tikhatar - Gagauda - Chamara chautara - Kedara khada - Kanachaur – Beni	210	8	313		
70DR004	(BP nagar - Barchain - Khadeuli - Bachheda) - Bachheda - Sunalek - Ghangal - Simichaur - Kedarakhada – Lodeghat					
70DR005	Satnali - Lamikhal - Mahadevsthan - Banjhakakani (syule)			43		
70DR006	Dipayal - Bajhkakani - Dahakalikasthan - Daud – Patihalne	160		484		2
70DR007	Dobanj - Dahakalikasthan - Chhapali - Deura (pipalkot)			19		
70DR008	Silgadi - Kalena – Mellekh				105	1
70DR009	Santinagar - Ladagada - Dang – Tikhatar			27	291	2
Total		**423**	**8**	**906**	**396**	**5**

3.2.4 PROTECTIVE STRUCTURES

Table 3.2.4 Required protective structures

Code	Description	Masonry walls (m^3)	Gabion walls (m^3)	Lined drain (m)
70DR001	Budar (chhatiwan) laxminagar - Sarswotinagar - Mudbhara – Talkot	850	3,618	35,000
70DR002	Durgamandu - Satpheri - Lanakedareshwor – Bagchheda	440	780	3,350
70DR003	Rajpur - Ranagau - Durgamandu - Basudevi - Tikhatar - Gagauda - Chamara chautara - Kedara khada - Kanachaur – Beni	520	2,880	57,750
70DR004	(BP nagar - Barchain - Khadeuli - Bachheda) - Bachheda - Sunalek - Ghangal - Simichaur - Kedarakhada – Lodeghat	1,285	1,520	8,630
70DR005	Satnali - Lamikhal - Mahadevsthan - Banjhakakani (syule)	545	1,016	8,460
70DR006	Dipayal - Bajhkakani - Dahakalikasthan - Daud – Patihalne	1,113	5,105	53,620
70DR007	Dobanj - Dahakalikasthan - Chhapali - Deura (pipalkot)	50	260	3,310
70DR008	Silgadi - Kalena – Mellekh	540	1,300	3,220
70DR009	Santinagar - Ladagada - Dang – Tikhatar	810	7,014	13,630
Total		**6,153**	**23,493**	**186,970**

3.2.5 WIDENING

Table 3.2.5 Sections of the district road core network requiring widening

Code	Description	Total length (km)	Widening (m)
70DR001	Budar (chhatiwan) laxminagar - Sarswotinagar - Mudbhara – Talkot	43.00	
70DR002	Durgamandu - Satpheri - Lanakedareshwor - Bagchheda	3.35	
70DR003	Rajpur - Ranagau - Durgamandu - Basudevi - Tikhatar - Gagauda - Chamara chautara - Kedara khada - Kanachaur – Beni	66.00	
70DR004	(BP nagar - Barchain - Khadeuli - Bachheda) - Bachheda - Sunalek - Ghangal - Simichaur - Kedarakhada – Lodeghat	9.96	
70DR005	Satnali - Lamikhal - Mahadevsthan - Banjhakakani (syule)	12.46	
70DR006	Dipayal - Bajhkakani - Dahakalikasthan - Daud - Patihalne	64.37	
70DR007	Dobanj - Dahakalikasthan - Chhapali - Deura (pipalkot)	4.21	
70DR008	Silgadi - Kalena – Mellekh	6.52	
70DR009	Santinagar - Ladagada - Dang – Tikhatar	20.24	
Total		**230.11**	

3.2.6 BLACKTOPPING

Table 3.2.6 Sections of the district road core network requiring blacktopping

Code	Description	Total length (km)	Blacktop (km)	Traffic (VPD)	Blacktopping (km)
70DR001	Budar (chhatiwan) laxminagar - Sarswotinagar - Mudbhara - Talkot	43.00	-	15	-
70DR002	Durgamandu - Satpheri - Lanakedareshwor – Bagchheda	3.35	-	-	-
70DR003	Rajpur - Ranagau - Durgamandu - Basudevi - Tikhatar - Gagauda - Chamara chautara - Kedara khada - Kanachaur – Beni	66.00	-	18	-
70DR004	(BP nagar - Barchain - Khadeuli - Bachheda) - Bachheda - Sunalek - Ghangal - Simichaur - Kedarakhada – Lodeghat	9.96	-	-	-
70DR005	Satnali - Lamikhal - Mahadevsthan - Banjhakakani (syule)	12.46	-	12	-
70DR006	Dipayal - Bajhkakani - Dahakalikasthan - Daud – Patihalne	64.37	0.95	45	-
70DR007	Dobanj - Dahakalikasthan - Chhapali - Deura (pipalkot)	4.21	-	3	-
70DR008	Silgadi - Kalena – Mellekh	6.52	-	3	-
70DR009	Santinagar - Ladagada - Dang - Tikhatar	20.24	-	13	-

3.3 NEW CONSTRUCTION

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

Code	Description	New VDCs	Existing length	New length	Bridge (m)
70DR001	Budar (chhatiwan) laxminagar - Sarswotinagar - Mudbhara - Talkot		43.00	25.00	
70DR002	Durgamandu - Satpheri - Lanakedareshwor – Bagchheda	Lanakedareshwor, Satpheri, Dhirkamandu	3.35	55.00	
70DR003	Rajpur - Ranagau - Durgamandu - Basudevi - Tikhatar - Gagauda - Chamara chautara - Kedara khada - Kanachaur – Beni	Kedarakhada, Kanachaur(Bini)	66.00	32.00	
70DR004	(BP nagar - Barchain - Khadeuli - Bachheda) - Bachheda - Sunalek - Ghangal - Simichaur - Kedarakhada – Lodeghat	Kedarakhada, Simchaur, Kanachaur(Lodeghat)	9.96	45.00	
70DR005	Satnali - Lamikhal - Mahadevsthan - Banjhakakani (syule)	Warpata	12.46	22.50	
70DR006	Dipayal - Bajhkakani - Dahakalikasthan - Daud - Patihalne		64.37		
70DR007	Dobanj - Dahakalikasthan - Chhapali - Deura (pipalkot)	Chhapali(Pipalbot Deura)	4.21	17.00	
70DR008	Silgadi - Kalena – Mellekh	Khatiwada, Baglekh	6.52	18.50	
70DR009	Santinagar - Ladagada - Dang – Tikhatar		20.24	10.00	
Total			**230.11**	**225.00**	**-**

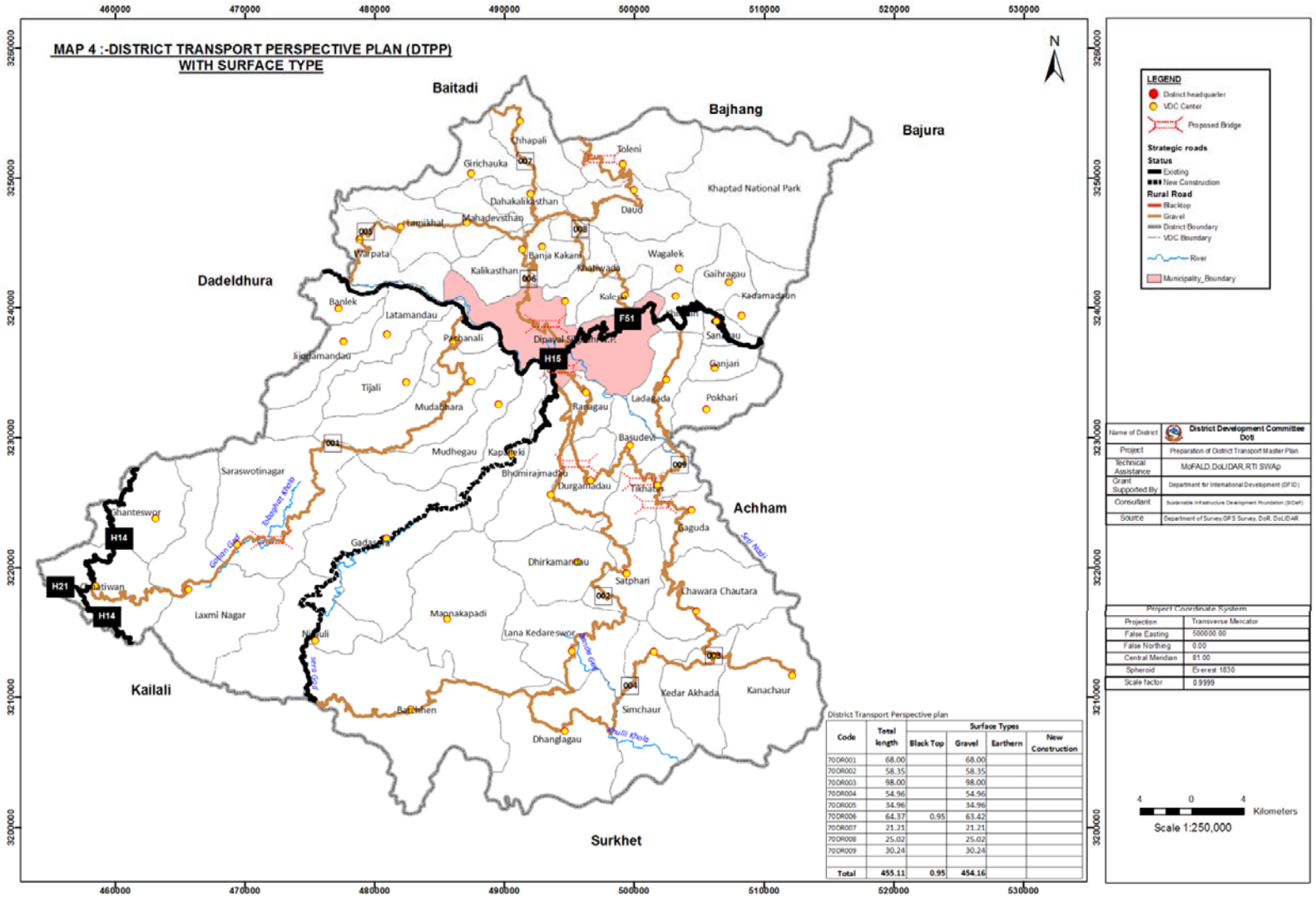
3.4 DISTRICT TRANSPORT PERSPECTIVE PLAN

The DTPP looks at the DTPP at the new construction, rehabilitation, and upgrading works deemed necessary, which are ranked according to the specific criteria. New construction is required where the existing network does not provide sufficient accessibility. Whereas the roads are found to be in poor condition upgrading is required. All of the DRCN roads of Doti district are fair weather. To make them all weather 230.11 Km roads should be gravelled, 423 m bridge, 8m slab culvert, 906m cc causeway, 396m stone causeway, 5 no. of pipe culvert, 6153 cubic meter masonry wall, 23,493 cubic meter gabion wall and 186,970m line drain is to be constructed.

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)
70DR 001	43.00	43.00	43.00	43.00	10.00	43.00	-	-	53.00	-	20.00	-	-	850.00	3,618.00	35,000.00	25.00
70DR 002	3.35	3.35	3.35	3.35	-	3.35	-	-	-	-	-	-	-	440.00	780.00	3,350.00	55.00
70DR 003	66.00	66.00	66.00	66.00	-	66.00	-	-	210.00	8.00	313.00	-	-	520.00	2,880.00	57,750.00	32.00
70DR 004	9.96	9.96	9.96	9.96	-	9.96	-	-	-	-	-	-	-	1,285.00	1,520.00	8,630.00	45.00
70DR 005	12.46	12.46	12.46	12.46	-	12.46	-	-	-	-	43.00	-	-	545.00	1,016.00	8,460.00	22.50
70DR 006	64.37	64.37	64.37	64.37	-	62.92	-	-	160.00	-	484.00	-	2.00	1,113.00	5,105.00	53,620.00	-
70DR 007	4.21	4.21	4.21	4.21	-	4.21	-	-	-	-	19.00	-	-	50.00	260.00	3,310.00	17.00
70DR 008	6.52	6.52	6.52	6.52	1.90	6.52	-	-	-	-	-	105.00	1.00	540.00	1,300.00	3,220.00	18.50
70DR 009	20.24	20.24	20.24	20.24	0.23	20.24	-	-	-	-	27.00	291.00	2.00	810.00	7,014.00	13,630.00	10.00
Total	**230.11**	**230.11**	**230.11**	**230.11**	**12.13**	**228.66**		**-**	**423**	**8**	**906**	**396**	**5**	**6,153**	**23,493**	**186,970**	**25.00**

Figure 3 District Transport Perspective Plan (DTPP)



4. COST ESTIMATION

With the DTPP providing the full list of required interventions to bring the DRCN to a maintainable all-weather standard and keep it there, the costs of these interventions is calculated using the standard costs determined.

The conservation, improvement, new construction costs are calculated for the first year as an indication of the amount of funding required. The costs are estimated by multiplying the length of roads requiring conservation, improvement, new construction by the relevant standard cost, taking into account the surface type for recurrent and periodic maintenance. These estimated costs reflect the costs for the first year of keeping the existing DRCN in good condition. A cost for later years varies due to changes to the road network in terms of upgrading and new construction.

4.1 CONSERVATION

The conservation costs are calculated by multiplying the total length of roads requiring conservation by the standard cost provided by Doti DTO, taking into account the surface type for recurrent and periodic maintenance.

Table 4.1.1 Standard unit costs for conservation

Activity	Unit	Unit cost (NPR/km)
Emergency maintenance	km	30,000
Routine maintenance	km	20,000
Recurrent maintenance (blacktop)	km	500,000
Recurrent maintenance (gravel)	km	400,000
Recurrent maintenance (earthen)	km	250,000
Periodic maintenance (blacktop)	km	200,000
Periodic maintenance (gravel)	km	250,000

The total conservation costs for the first year is Rs 69,661,000 the total estimated conservation cost for the five year is Rs 371,968,000. Due to the road length and road surface, the cost will be changed in later year.

Table 4.1.2 Estimated conservation costs for the first year (NPR '000)

Code	Total length (km)	Blacktop (km)	Gravel (km)	Earthen (km)	Emergency	Routine	Recurrent (blacktop)	Recurrent (gravel)	Recurrent (earthen)	Periodic (blacktop)	Periodic (gravel)	Total annual cost	Total 5-year cost
70DR001	43.00	-	-	43.00	1,290	860	-	-	10,750	-	-	**12,900**	**64,500**
70DR002	3.35	-	-	3.35	101	67	-	-	838	-	-	**1,005**	**5,025**
70DR003	66.00	-	-	66.00	1,980	1,320	-	-	16,500	-	-	**19,800**	**99,000**
70DR004	9.96	-	-	9.96	299	199	-	-	2,490	-	-	**2,988**	**14,940**
70DR005	12.46	-	-	12.46	374	249	-	-	3,115	-	-	**3,738**	**18,690**
70DR006	64.37	0.95	0.50	62.92	1,931	1,287	475	200	15,730	-	125	**19,749**	**98,743**
70DR007	4.21	-	-	4.21	126	84	-	-	1,053	-	-	**1,263**	**6,315**
70DR008	6.52	-	-	6.52	196	130	-	-	1,630	-	-	**1,956**	**9,780**
70DR009	20.24	-	-	20.24	607	405	-	-	5,060	-	-	**6,072**	**30,360**
Total	**230.11**	**0.95**	**0.50**	**228.66**	**6,903**	**4,602**	**475**	**200**	**57,165**	**-**	**125**	**69,471**	**347,353**

4.2 IMPROVEMENT

The improvement costs are calculated by multiplying the length of roads requiring to the standard cost provided by the DDC Doti, taking into account the surface type for recurrent and periodic maintenance.

Table 4.2.1 Standard unit costs for improvement activities

Activity	Unit	Unit cost (NPR)
Rehabilitation	km	3,041,791
Widening	m	25,000
Gravelling	km	2,200,000
Blacktopping	km	5,700,000
Bridge construction	m	600,000
Slab culvert construction	m	150,000
CC Causeway construction	m	100,000
Stone Causeway construction	m	10,000
Pipe culvert placement	unit	10,000
Masonry wall construction	m^3	10,000
Gabion wall construction	m^3	2,500
Lined drain construction	m	1,000

The total estimated cost for the different improvement measure for the DRCN roads of Doti is Rs. 1,196,776,000

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
70DR001	43.00	30,418	-	94,600	-	31,800	-	2,000	-	-	8,500	9,045	35,000	**211,363**
70DR002	3.35	-	-	7,370	-	-	-	-	-	-	4,400	1,950	3,350	**17,070**

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
70DR003	66.00	-	-	145,200	-	126,000	1,200	31,300	-	-	5,200	7,200	57,750	**373,850**
70DR004	9.96	-	-	21,912	-	-	-	-	-	-	12,850	3,800	8,630	**47,192**
70DR005	12.46	-	-	27,412	-	-	-	4,300	-	-	5,450	2,540	8,460	**48,162**
70DR006	64.37	-	-	138,424	-	96,000	-	48,400	-	20	11,130	12,763	53,620	**360,357**
70DR007	4.21	-	-	9,262	-	-	-	1,900	-	-	500	650	3,310	**15,622**
70DR008	6.52	5,779	-	14,344	-	-	-	-	1,050	10	5,400	3,250	3,220	**33,053**
70DR009	20.24	684	-	44,528	-	-	-	2,700	2,910	20	8,100	17,535	13,630	**90,107**
Total	**230.11**	**36,882**	**-**	**503,052**	**-**	**253,800**	**1,200**	**90,600**	**3,960**	**50**	**61,530**	**58,733**	**186,970**	**1,196,776**

4.3 NEW CONSTRUCTION

The costs for new construction are calculated by multiplying the standard costs with the estimated new construction length.

Table 4.3.1 Standard unit costs for new construction

Activity	Unit	Unit cost (NPR)
Opening up	Km	6,549,263
Gravelling	Km	2,200,000
Bridge construction	M	600,000

The total new construction costs for five year is Rs. 1,968,584,000

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

Code	Description	Length (km)	Opening up	Gravelling	Bridges	Total cost
70DR001	Budar (chhatiwan) laxminagar - Sarswotinagar - Mudbhara - Talkot	25.00	163,732	55,000	-	**218,732**
70DR002	Durgamandu - Satpheri - Lanakedareshwor – Bagchheda	55.00	360,209	121,000	-	**481,209**
70DR003	Rajpur - Ranagau - Durgamandu - Basudevi - Tikhatar - Gagauda - Chamara chautara - Kedara khada - Kanachaur – Beni	32.00	209,576	70,400	-	**279,976**
70DR004	(BP nagar - Barchain - Khadeuli - Bachheda) - Bachheda - Sunalek - Ghangal - Simichaur - Kedarakhada – Lodeghat	45.00	294,717	99,000	-	**393,717**
70DR005	Satnali - Lamikhal - Mahadevsthan - Banjhakakani (syule)	22.50	147,358	49,500	-	**196,858**
70DR006	Dipayal - Bajhkakani - Dahakalikasthan - Daud – Patihalne	-	-	-	-	**-**

70DR007	Dobanj - Dahakalikasthan - Chhapali - Deura (pipalkot)	17.00	111,337	37,400	-	**148,737**
70DR008	Silgadi - Kalena – Mellekh	18.50	121,161	40,700	-	**161,861**
70DR009	Santinagar - Ladagada - Dang – Tikhatar	10.00	65,493	22,000	-	**87,493**
Total	**0**	**225.00**	**1,473,584**	**495,000**	**-**	**1,968,584**

4.4 DTPP COSTS

The total estimated cost for all DTPP interventions is Rs 3,512,713,000 for the DRCN roads of Doti.

Table 4.4.1 DTPP costs (NPR '000)

Code	Conservation	Improvement	New construction	Total
70DR001	64,500	211,363	218,732	494,594
70DR002	5,025	17,070	481,209	503,304
70DR003	99,000	373,850	279,976	752,826
70DR004	14,940	47,192	393,717	455,849
70DR005	18,690	48,162	196,858	263,710
70DR006	98,743	360,357	-	459,099
70DR007	6,315	15,622	148,737	170,674
70DR008	9,780	33,053	161,861	204,695
70DR009	30,360	90,107	87,493	207,960
Total	**347,353**	**1,196,776**	**1,968,584**	**3,512,713**

5. RANKING

The roads are ranked according to priority. Prioritization is according to the cost per capita, whereby a separate ranking is carried out for conservation, improvement and new construction. The cost of all the interventions under conservation, improvement or new construction is summed up for each road, and this total cost is divided by the population served by the road. The population served is defined as the total population of all VDCs linked by the road (excluding VDCs of which the headquarters are linked directly to the strategic road network)

5.1 CONSERVATION

For ranking of conservation, “Cost/person” and selecting “Sort smallest to largest”, the roads will be ranked in order of increasing cost per capita. The road with the highest priority (most benefit in relation to cost) will be at the top and the road with the lowest priority at the bottom. Then actual allocation to the different maintenance types will be determined in the ARMP

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)
70DR008	6.52	196	130	-	-	1,630	-	-	1,956	36,852	53
70DR002	3.35	101	67	-	-	838	-	-	1,005	15,628	64
70DR004	9.96	299	199	-	-	2,490	-	-	2,988	14,734	203
70DR005	12.46	374	249	-	-	3,115	-	-	3,738	17,531	213
70DR007	4.21	126	84	-	-	1,053	-	-	1,263	5,618	225
70DR003	66.00	1,980	1,320	-	-	16,500	-	-	19,800	52,302	379
70DR009	20.24	607	405	-	-	5,060	-	-	6,072	12,875	472
70DR006	64.37	1,931	1,287	475	200	15,730	-	125	19,749	29,763	664
70DR001	43.00	1,290	860	-	-	10,750	-	-	12,900	16,834	766

5.2 IMPROVEMENT

For ranking of improvement, “Cost/person” and selecting “Sort smallest to largest”, the roads are ranked in order of increasing cost per capita. The road with the highest priority is at the top and the road with the lowest priority at the bottom. The actual allocation to the different maintenance types will be determined in the ARMP.

Table 5.2.1 Ranking of improvement works (NPR '000)

Code	Total length (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
70DR008	6.52	33,053	36,852	897
70DR002	3.35	17,070	15,628	1,092
70DR005	12.46	48,162	17,531	2,747
70DR007	4.21	15,622	5,618	2,781
70DR004	9.96	47,192	14,734	3,203
70DR009	20.24	90,107	12,875	6,999
70DR003	66.00	373,850	52,302	7,148
70DR006	64.37	360,357	29,763	12,108
70DR001	43.00	211,363	16,834	12,556

5.3 NEW CONSTRUCTION

For ranking of new construction, "Cost/person" and selecting "Sort smallest to largest", the roads will be ranked in order of increasing cost per capita. The road with the highest priority will be at the top and the road with the lowest priority at the bottom

Table 5.3.1 Ranking of construction works (NPR '000)

Code	Length (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
70DR006	-	-	29,763	-
70DR008	18.50	161,861	36,852	4,392
70DR009	10.00	87,493	12,875	6,796
70DR003	32.00	279,976	52,302	5,353
70DR005	22.50	196,858	17,531	11,229
70DR001	25.00	218,732	16,834	12,993
70DR007	17.00	148,737	5,618	26,475
70DR004	45.00	393,717	14,734	26,722
70DR002	55.00	481,209	15,628	30,791

6. DISTRICT TRANSPORT MASTER PLAN (DTMP)

The balancing of the available budget and the estimated costs of the required interventions, to determine which interventions can be carried out in the 5-year is the district transport master plan (DTMP). The 80% budget is allocated for the DRCN roads of Doti District and left 20% budget is allocated for village roads.

In the allocation of the DTMP budget, priority is given to conservation works, followed by improvement works and finally new construction. That is to say, any DTMP funding is first allocated to conservation, and remaining funds is allocated for improvement of the existing DRCN roads for maintainable all weather standards, and remaining allocated for new construction of DRCN roads, if there is still funding left over at the end of this process, this may be allocated to village roads. But in case of Doti district expected outcomes cannot be reach due to insufficient funding source. At the end of DTMP 50% of roads become maintainable all weather gravel standards.

6.1 FIVE YEAR PROJECTED FINANCIAL RESOURCES

The financial resource is projected by taking the growth rate in particular funding source from the last three- year's budget. The total estimated amount is Rs. 644,661,000 for the 5-years DTMP period.

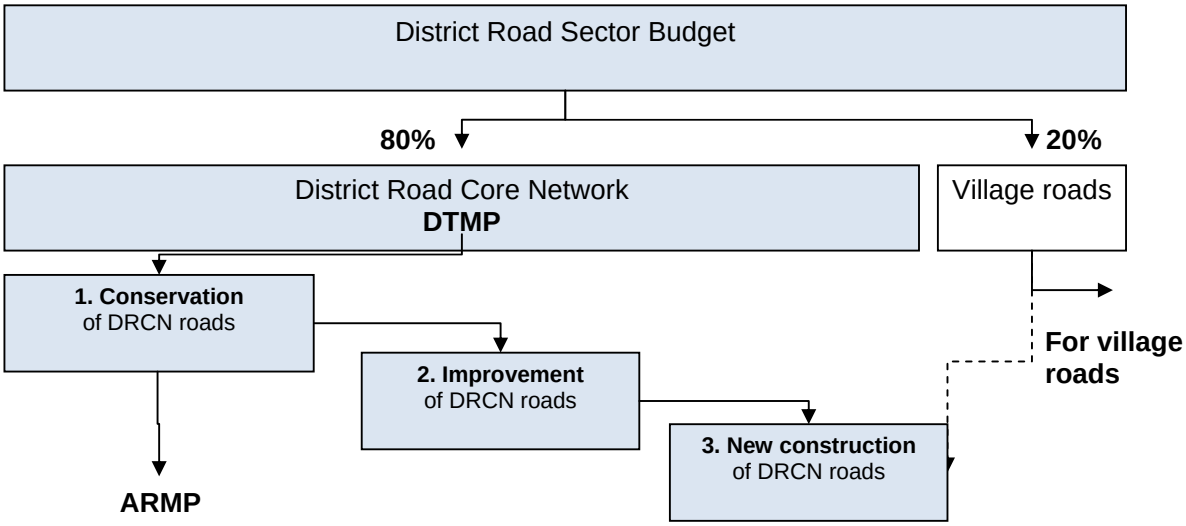
Table 6.1.1 Estimatedfunding levels (roads) for next five years (in NPR '000)

Funding source					
Road Board Nepal	3,129	3,442	3,786	4,165	4,581
Rap Office	86,121	86,121	86,121	86,121	86,121
Revenue	224	224	224	224	224
Rap through DDC	3,100	3,410	3,751	4,539	4,993
DDC Grant	13,875	15,262	16,788	18,467	20,314
People participatary Development Programm	2,112	3,168	4,752	7,128	10,692
Central Grant	5,336	5,336	5,336	5,336	5,336
Local Transportation Infractructure Area Development program	5,100	6,400	7,040	7,744	8,518
Total	**118,997**	**123,363**	**127,798**	**133,724**	**140,779**
Grand total	**644,661**				

6.2 BUDGET ALLOCATION

In the Doti district, 80% of the total estimated budget is allocated for the DRCN roads for the DTMP and rest 20% of the total budget is allocated for the village roads.

Figure 4 District road sector budget allocation



The DTMP completed with knowing costs of the different interventions, the roads can be ranked according to priority. Prioritization is according to the cost per capita, whereby a separate ranking is carried out for conservation, improvement and new construction. For the first year Rs. 95,198,000 budget is allocated for the DRCN roads and similarly Rs.98,690,000, Rs. 102,238,000, Rs. 106,979,000, Rs. 112,623,000 for consequent year for the different intervention. For conservation Rs. 371,968,000 and for improvement Rs. 116,747,000 is allocated in five- year DTMP period

Table 6.2.1 DTMP investment plan

Item				**Year**														
Fiscal year				**2070/71**			**2071/72**			**2072/73**			**2073/74**			**2074/75**		
Total budget				118,997			123,363			127,798			133,724			140,779		
Village roads				23,799			24,673			25,560			26,745			28,156		
Core road network budget (DTMP)				**95,198**			**98,690**			**102,238**			**106,979**			**112,623**		
Core network length (km)				**230.11**			**230.11**			**230.11**			**230.11**			**230.11**		
Blacktop (km)				0.95			0.95			0.95			0.95			0.95		
Gravel (km)				0.50			5.54			11.00			18.34			26.29		
Earthen (km)				228.66			223.62			218.16			210.82			202.87		
Conservation (NRs)				**69,661**			**71,675**			**73,860**			**76,797**			**79,975**		
Emergency				6,903			6,903			6,903			6,903			6,903		
Routine				4,602			4,602			4,602			4,602			4,602		
Recurrent (blacktop)				475			475			475			475			475		
Recurrent (gravel)				200			2,215			4,399			7,336			10,515		
Recurrent (earthen)				57,165			55,906			54,540			52,705			50,718		
Periodic (blacktop)				190			190			190			190			190		
Periodic (gravel)				125			1,384			2,750			4,585			6,572		
Improvement	**Cost**	**BT**	**GR**	**25,537**	**BT**	**GR**	**27,015**	**BT**	**GR**	**28,379**	**BT**	**GR**	**30,183**	**BT**	**GR**	**32,648**	**BT**	**GR**
70DR008	33,053	-	6.52	25,537	-	5.04	7,516	-	1.48	-	-	-	-	-	-	-	-	-
70DR002	17,070	-	3.35	-	-	-	17,070	-	3.35	-	-	-	-	-	-	-	-	-
70DR005	48,162	-	12.46	-	-	-	2,429	-	0.63	28,379	-	7.34	17,354	-	4.49	-	-	-
70DR007	15,622	-	-	-	-	-	-	-	-	-	-		12,828	-	3.46	2,794	-	0.75
70DR004	47,192	-	9.96	-	-	-	-	-	-	-	-	-	-	-	-	29,854	-	6.30
70DR009	90,107	-	20.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

70DR003	373,850	-	66.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70DR006	360,357	-	62.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70DR001	211,363	-	43.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total improvement				**25,537**	**-**	**5.04**	**27,015**	**-**	**5.46**	**28,379**	**-**	**7.34**	**30,183**	**-**	**7.95**	**32,648**	**-**	**7.05**
Construction	**Cost**	**GR**		**-**	**GR**		**-**	**GR**		**-**	**GR**		**-**	**GR**		**-**	**GR**	
70DR006	-	-		-	-		-	-		-	-		-	-		-	-	
70DR008	161,861	18.50		-	-		-	-		-	-		-	-		-	-	
70DR003	279,976	32.00		-	-		-	-		-	-		-	-		-	-	
70DR009	87,493	10.00		-	-		-	-		-	-		-	-		-	-	
70DR005	196,858	22.50		-	-		-	-		-	-		-	-		-	-	
70DR001	218,732	25.00		-	-		-	-		-	-		-	-		-	-	
70DR007	148,737	17.00		-	-		-	-		-	-		-	-		-	-	
70DR004	393,717	45.00		-	-		-	-		-	-		-	-		-	-	
70DR002	481,209	55.00		-	-		-	-		-	-		-	-		-	-	
Total new construction				-	-		-	-		-	-		-	-		-	-	
Remaining budget				-	-		-	-		-	-		-	-		-	-	

6.3 DTMP OUTPUTS

The 230.11 km of the DRCN roads is conserved during DTMP and 228.66 Km is improved to gravel. Due to insufficient funding no new construction is allocated.

Table 6.3.1 DTMP output

Conservation	Improvement gravel	Improvement blacktop	New construction
230.11	32.84	-	-

The total budget for the five- years DTMP period for DRCN roads of Doti is Rs.644,661,000, Rs For conservation Rs. 371,968,000 and for improvement Rs. 116,747,000 is allocated in five- year DTMP period.

6.4 DTMP OUTCOME

At the end of DTMP works, 14% of DRCN roads will be all weather gravel roads.

Table 6.4.1 Standard of DRCN roads

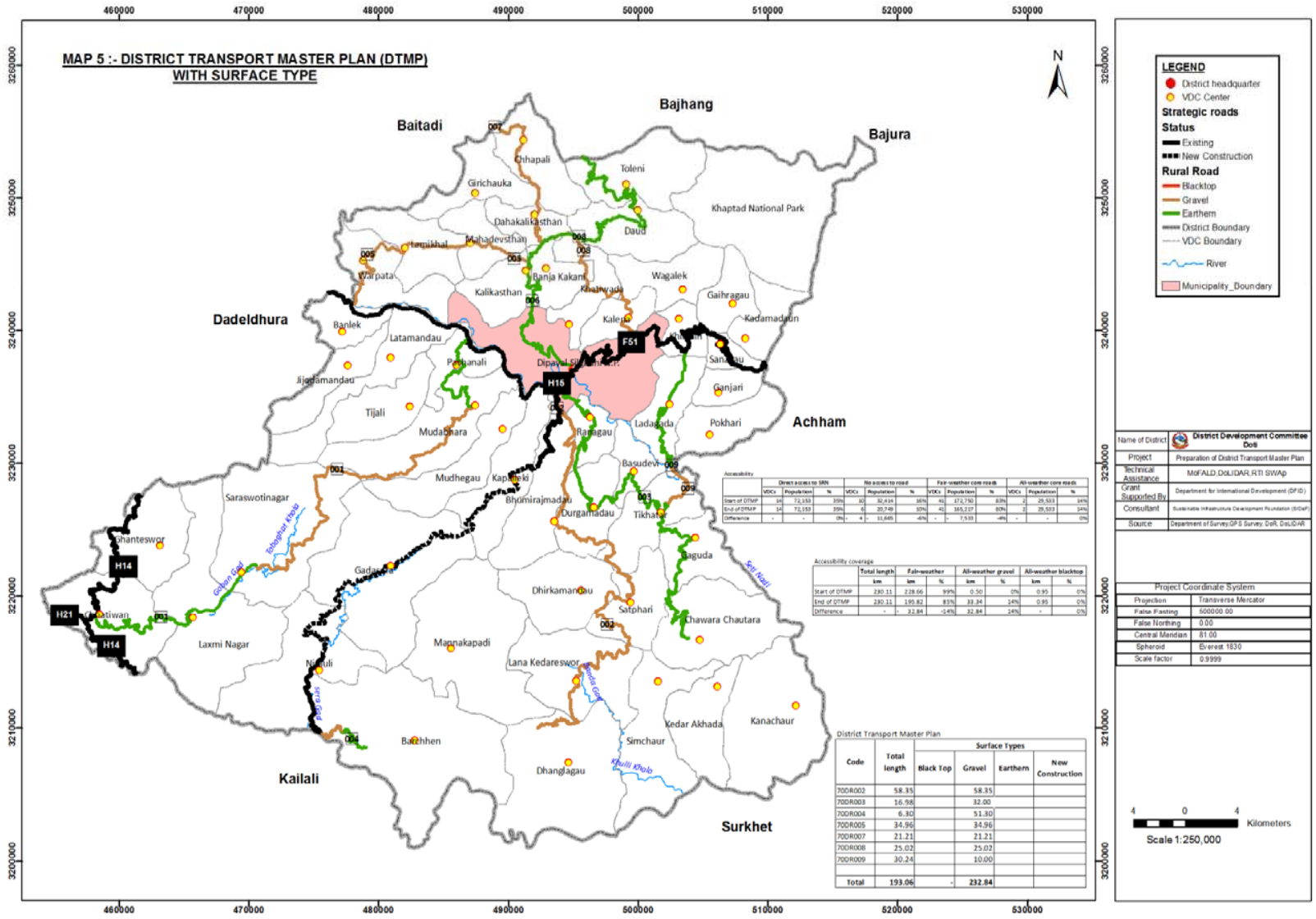
	Total length	Fair-weather		All-weather gravel		All-weather blacktop	
	Km	km	%	Km	%	km	%
Start of DTMP	230.11	228.66	99%	0.50	0%	0.95	0%
End of DTMP	230.11	195.82	85%	33.34	14%	0.95	0%
Difference	-	- 32.84	-14%	32.84	14%	-	0%

14 VDCs are accessible through SRN roads which serves 35% of total population and 14% (2 VDCs) at the start of DTMP and 14% (two VDC) at the end of DTMP accessible through the all weather DRCN roads of Doti. But six no of VDCs will not accessible after DTMP.

Table 6.4.2 Population with access to road network

	Direct access to SRN			Access to fair-weather DRCN roads			Access to all-weather DRCN roads			No access to DRCN		
	VDCs	Population	%	VDCs	Population	%	VDCs	Population	%	VDCs	Population	%
Start of DTMP	14	72,153	35%	41	172,750	83%	2	29,533	14%	10	32,414	16%
End of DTMP	14	72,153	35%	41	165,217	80%	2	29,533	14%	6	20,749	10%
Difference	-	-	0%	-	- 7,533	-4%	-	-	0	- 4	- 11,665	-6%

Figure 5 District Transport Master Plan (DTMP)



ANNEX 1 TRAFFIC DATA

Code	Description	Total length (km)	Motor-cycle	Car-Jeep-Minibus	Tractor	Truck-Bus	PCU
70DR001	Budar (chhatiwan) laxminagar - Sarswotinagar - Mudbhara - Talkot	43.00	10	4	3		**15**
70DR002	Durgamandu - Satpheri - Lanakedareshwor - Bagchheda	3.35					**-**
70DR003	Rajpur - Ranagau - Durgamandu - Basudevi - Tikhatar - Gagauda - Chamara chautara - Kedarakhada - Kanachaur – Beni	66.00	5	3	6		**18**
70DR004	(BP nagar - Barchain - Khadeuli - Bagchheda) - Bagchheda - Sunalek - Ghangal - Simchaur - Kedarakhada – Lodeghat	9.96					**-**
70DR005	Satnali - Lamikhal - Mahadevsthan - Banjhkakani (syule)	12.46	4	4	3		**12**
70DR006	Dipayal - Bajhkakani - Dahakalikasthan - Daud - Patihalne	64.37	10	20	10		**45**
70DR007	Dobanj - Dahakalikasthan - Chhapali - Deura (pipalkot)	4.21	2	2			**3**
70DR008	Silgadi - Kalena - Mellekh	6.52	2		1		**3**
70DR009	Santinagar - Ladagada - Dang - Tikhatar	20.24	8	1	4		**13**
Total		**230.11**	**41**	**34.0**	**27**		**109**

ANNEX 2 POPULATION SERVED

#	VDC/municipality	Population	Road									
			70DR001	70DR002	70DR003	70DR004	70DR005	70DR006	70DR007	70DR008	70DR009	SRN
1	Bajkakani	4,162					X	X				
2	Banlekh	4,895								X		X
3	Barchen	5,743				X						X
4	Basudevi	3,344		X	X							
5	Bhumirajmandu	4,857										
6	Chawarachautara	2,896			X							
7	Chhapali	3,244							X			
8	Chhatiwan	4,001	X									X
9	Dahakalikasthan	2,374						X	X			
10	Daud	6,117						X				
11	Dhirkamandu	1,890		X								
12	Durgamandu	3,942		X	X							X
13	Dipayal-Silgadi Muni.	23,416			X					X		X
14	Ghangal	3,980				X						
15	Gadsera	2,975										
16	Gaguda	3,058			X							
17	Gairagaun	3,377										
18	Ganjari	2,390										
19	Ghanteshwor	2,736										
20	Ghirichauka	4,040										
21	Jijadamandu	1,953										X
22	Kadamandu	3,788										X
23	Kalena	2,729								X		
24	Kalikasthan	5,121					X	X				
25	Kanachaur	2,086			X							
26	Kapallekhi	3,845										X
27	Kedarakhada	1,839			X	X						
28	Khatiwada	5,812						X		X		
29	Khirsain	2,836									X	X
30	Ladagada	4,169									X	
31	Lamikhal	4,294					X					
32	Lanakedareswor	3,491		X								
33	Latamandu	5,028										X
34	Laxminagar	4,846	X									
35	Mahadevsthan	3,954					X					
36	Manakapadi	3,506										
37	Mudvara	4,758	X									

38	Mudegaun	2,367										
39	Nirauli	3,037										X
40	Panchnali	3,001										X
41	Pokhari	4,252										
42	Ranagaun	2,890			X							
43	Sanagaun	2,467										X
44	Saraswatinagar	3,229	X									
45	Satpheri	2,961		X	X							
46	Simchaur	3,172				X						
47	Tijali	2,134										
48	Tikhatar	5,870			X						X	
49	Toleni	6,177						X				
50	Waglek	4,201										X
51	Warpata	3,820										
	Total population	**207,070**	16,834	15,628	52,302	14,734	17,531	29,763	5,618	36,852	12,875	72,153
	Total VDCs/municipalities	**51**	**4**	**5**	**10**	**4**	**4**	**6**	**2**	**4**	**3**	**14**

Source: www.cbs.gov.np

ANNEX 3 LOCATION OF PROPOSED INTERVENTIONS

Road code	Road Name	Length (km)	Start chainage (km) or X-coordinate	End chainage (km) or Y-coordinate	Rehabilitation (km)	Gravelling (km)	Blacktopping (km)	Widening (m)	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway (m)	Pipe culvert (units)	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)
70DR001	Budar (chhatiwan) laxminagar - Sarswotinagar - Mudbhara - Talkot	43.00	0+000	43+000	10.00			1,800	53		20			850	3,618	35,000
70DR002	Durgamandu - Satpheri - Lanakedareshwor - Bagchheda	3.35	0+000	3+350				3,350						440	780	3,350
70DR003	Rajpur - Ranagau - Durgamandu - Basudevi - Tikhatar - Gagauda - Chamara chautara - Kedara khada - Kanachaur - Beni	66.00	0+000	66+000					210	8	313			520	2,880	57,750
70DR004	(BP nagar - Barchain - Khadeuli - Bachheda) - Bachheda - Sunalek - Ghangal - Simichaur - Kedarakhada - Lodeghat	9.96	0+000	9+960				1,090						1,285	1,520	8,630
70DR005	Satnali - Lamikhal - Mahadevsthan - Banjhakakani (syule)	12.46	0+000	12+460							43			545	1,016	8,460
70DR006	Dipayal - Bajhkakani - Dahakalikasthan - Daud - Patihalne	64.37	0+000	64+370					160		484		2	1,113	5,105	53,620
70DR007	Dobanj - Dahakalikasthan - Chhapali - Deura (pipalkot)	4.21	0+000	4+210							19			50	260	3,310
70DR008	Sigadi - Kalena - Mellekh	6.52	0+000	6+520	1.9			2,005				105	1	540	1,300	3,220
70DR009	Santinagar - Ladagada - Dang - Tikhatar	20.24	0+000	20+240	0.225			8,654			27	291	2	810	7,014	13,630
Total		**230.11**			**12.13**	**0**	**0**	**16899**	**423**	**8**	**906**	**396**	**5**	**6153**	**23493**	**186,970**