Government of Nepal

District Transport Master Plan (DTMP)

Ministry of Federal Affairs and Local Development

Department of Local Infrastructure Development and Agricultural Roads (DOLIDAR)

District Development Committee, Kaski

Volume I: Main Report

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Prepared by Rural Infrastructure Developers Consultant P. Ltd (RIDC) for the District Development Committee (DDC) and District Technical Office (DTO) Kaski 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

Government of Nepal

Ministry of Federal Affairs and Local Development

Office of District Development Committee

Kaski

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FOREWORD

It is my great pleasure to introduce this revised District Transport Master Plan (DTMP) of Kaski district which was concurred by the district stakeholder's meeting and District Core Road Network selected by same meeting held on 16th April, 2014 and approved by DDC Board on 21th May 2014. Based on DTMP guideline 2012, All District Core Road Networks (DRCN) aiming to connect all Village Development Committee (VDC) headquarters with the district headquarters, either directly or through highway and strategic road networks have been selected.

It is believed the document will be helpful for sustainable planning, resource mobilization, implementation and monitoring of the rural road development. The document is anticipated to lineout 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 Rural Access Program (RAP 3) for financial and technical support. Secondly, my thanks go to Er. Laxmi Prasad Bhandari, Er. Dayaram Adhikari,Er.Raju Regmi and other 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 felt 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.

Narayan Prasad Shrestha

Chief District Engineer / Acting District Development Officer

Acknowledgement

The District Transport Master Plan (DTMP) of District has been prepared for District Development Kaski with the funding support from Rural Access Programme 3 (RAP3) under the Contract Agreement between RAP3 and Rural Infrastructure Developers' Consultant (P) Ltd. (Contract No: RTI Sector DTMP/001/2012 amendment no. 2) to carry out the task of preparing of DTMP of Kaski District of Nepal. We would like to convey our indebtedness to RTI Sector Maintenance Pilot and RAP3 for entrusting us the responsibility to carry out the task of preparing of DTMP of District.

We would like to express our sincere gratitude to the Project Coordinator Mr. Ganga Bahadur Basnet (SDE) of DoLIDAR, and Program Manager Mr. Michael Green, Deputy Programme Manager Mr. Dilli Prakash Sitaula and Central Asset Management Engineer Mr. Laxman Bhakta Dahi Shrestha of RAP3, whose valuable co-operation and suggestions guided us to accomplish the agreed task to this level. We would also like to express our sincere thanks to Acting LDO of DDC/ DTO Chief Mr. Narayan Shrestha (SDE), Engineer Laxmi Prasad Bhandari, Er Dayaram Adhikari , Er Raju Regmi as well Planning Officer, Program Officer, Information Officer, Sub-engineers and other staffs of DDC and DTO Office for their extended help and regular support and coordination at different levels while working at the field level.

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

Finally, we would like to thanks the DTMP team members for their hard working and valuable efforts to bring the study report in this stage.

Radha Ranabhat
Managing Director
Rural Infrastructure Developers Consultants P. Ltd

Executive summary

Kaski District is located in Gandaki Zone of the Western Development Region of Nepal. It borders with Syangja district to the South, Parbat and Myagdi districts to the West, Manang district to the North and Lamjung and Tanahun districts to the East. The district is divided into four electoral constituency level, thirteen Ilakas, one sub metropolitan city, one municipality and forty-three Village Development Committees. The total area of the district is 2017 km^2. Geographically the district is divided into three distinct regions from north to south, viz Higher Himalayan region, Higher Mountain and Mid Mountains. The elevation of the district is range from 450 m to 8091 m from the mean sea level. The major rivers in the district are Madi, Seti and Modi.

The main economic activity of the Kaski is tourism, agriculture and livelihood, where more than 52% of the district population depends on the agriculture. Paddy, Maize, Millet and Wheat are the usual cereal crops; potato, bean and vegetable products are the cash crops.

The district inventory identified about 750.65 km of roads including 112.96 km of strategic roads, 100 km urban roads and 537.69 km of rural roads. In coordination with the DTICC and DDC, 26 rural roads with a length of 402.47 km were identified as making up the district road core network (DRCN), and the remaining 135.21 km were classified as village roads. The existing DRCN roads link up 37 of the 45 VDC headquarters. Out of these 26 roads under DRCN, 8 roads are in all weather and 18 roads are earthen fair-weather. The DRCN length is increased by 7.22 km by extending 2 existing roads to cover all VDCs headquarters of the district in DRCN, thereby making 26 roads in DRCN with total length of 409.69 km.

Road Class	Total length	Black Top	Gravel	Earthen	New Construction
Strategic road network	**112.96**	**87.46**	**5.00**	**20.50**	**-**
Highways	35.40	35.40			
Feeder roads	77.56	52.06	5.00	20.50	
Urban roads	**100.00**	**100.00**	**-**	**-**	**-**
	100.00	100.00			
District road core network	**409.47**	54.99	70.41	277.07	7.00
Village roads	**135.21**	10.50	26.39	98.32	
Total	**757.64**	**252.95**	**101.80**	**395.89**	**7.00**

Annual conservation cost of 26 roads with 402.47 km length (except new construction) is estimated to NPR 57.142 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 285.71 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 and provide them with a proper road surface in light of existing traffic volumes. The required improvements and their estimated costs are listed below.

Improvement type	Requirement		Cost (NPR)
Bridges	147	m	132,300,000
Slab culverts	214	m	64,200,000
Causeways	128	m	12,800,000
Hume pipes	-		-
Masonry retaining walls	-		-
Gabion retaining walls	40610	m^3	162,440,000
Lined drains	53550	m	160,650,000
Widening	1000	m	3,000,000
Rehabilitation	-		-
Gravelling	277.07	km	544,140,000
Blacktopping	176,59	km	706,360,000
New construction	7.00	Km	24,500,000
Total			**1,810,309,000**

The available budget for the road sector for the coming five years (fiscal year 2070/71 to 2074/75) is estimated to be NPR 1779.8 million. Allocation to the district road core network was set at 80% 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 improvement and new construction. However, it allows all conservation requirements to be covered throughout the DTMP period and improvement works of 19 roads to be completed within the DTMP period. The remaining improvement works of 104.45 km and new construction works of 7.00 km will be carried out in the next DTMP.

Within the DTMP period 89.04 km of road will be black topped, 170.40km of roads will be gravelled, resulting in being brought to a maintainable all-weather standard. VDC headquarters with access to all-weather DRCN roads or the SRN will increase from 18 to 36, while the percentage of the district population with such access will increase from 83.7% to 95.5%.

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
MLD	Ministry of Local Development
RAP	Rural Access Programme
SWAp	Sector Wide Approach
VDC	Village Development Committee

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1. Introduction

Kaski district is situated in Gandaki zone of the Western Development Region. The total area of the district is 2017 sq. km. The district is surrounded by Lamjung and Tanahun districts in the East; Syangja and Parbat districts in the West; Manang and Myagdi districts in the North; and Syangja and Tanahu districts in the South. The district is situated in Longitude between 83°40' east to 84°12' East longitude and 28°06' north to 28°36' North latitude. Five types of climate are found in this district, sub-tropical, temperate, temperate cold, alpine and tundra climate. The rainfall of district is measured maximum to 1701.7 mm in 2009 August and similarly, the maximum temperature is recorded 32°C in summer and 2.2°C in winter season. The temperature is always influenced with variation in altitude. The lowest elevation point is 450 meter and highest elevation point is 8091 meter from mean sea level of the district.

The main economic activity of the Kaski is agriculture and livelihood as well tourism where more than 85% of the district population depends on the agriculture. Paddy, Maize, Millet, Wheat and Barley are the usual cereal crops and apple, potato, bean, oil seed and herbal products are the cash crops.

The living standard of rural people could not be improved despite of the top priority given to the agriculture sector due to the lack of rural infrastructures such as roads, market centers, electrification and communication etc.

The district is divided into four electoral constituencies' level, thirteen Ilakas, one Municipality Lekhnath, one sub metropolitan city Pokhara and forty three VDCs.

Land Use pattern of the district:

The District has 185500 hac, area of which 105270 hactare is feasible for cultivation. The 52116 hectares area in the district is irrigated land. Kaski district has approximately 75263 hectare (37.3 %) land is covered with forest and mainly Sal, Guransh, Chap, Chilaune, Utish, Katus, Salla, Gobre Salla/Teak, Kadam. Sal is a popular for Timber verities and it is found in lower land

Rivers and Lakes in the district:

There are various rivers and streams which are Seti, Madi, Modi, Bijayapur, Kotre, Edi, Kali, Sardi, Harpan, Fusre, Kahun, Mardi and Suikhet. There are many natural lakes in the district like Fewa, Begnas, Rupa, Maidi, Dipang, Khaste, Niureni, Gude and Kamalpokhari are important lakes of historical and cultural point of view in the district. There is also a fall named Patale Chango popularly known as Devi's Fall.

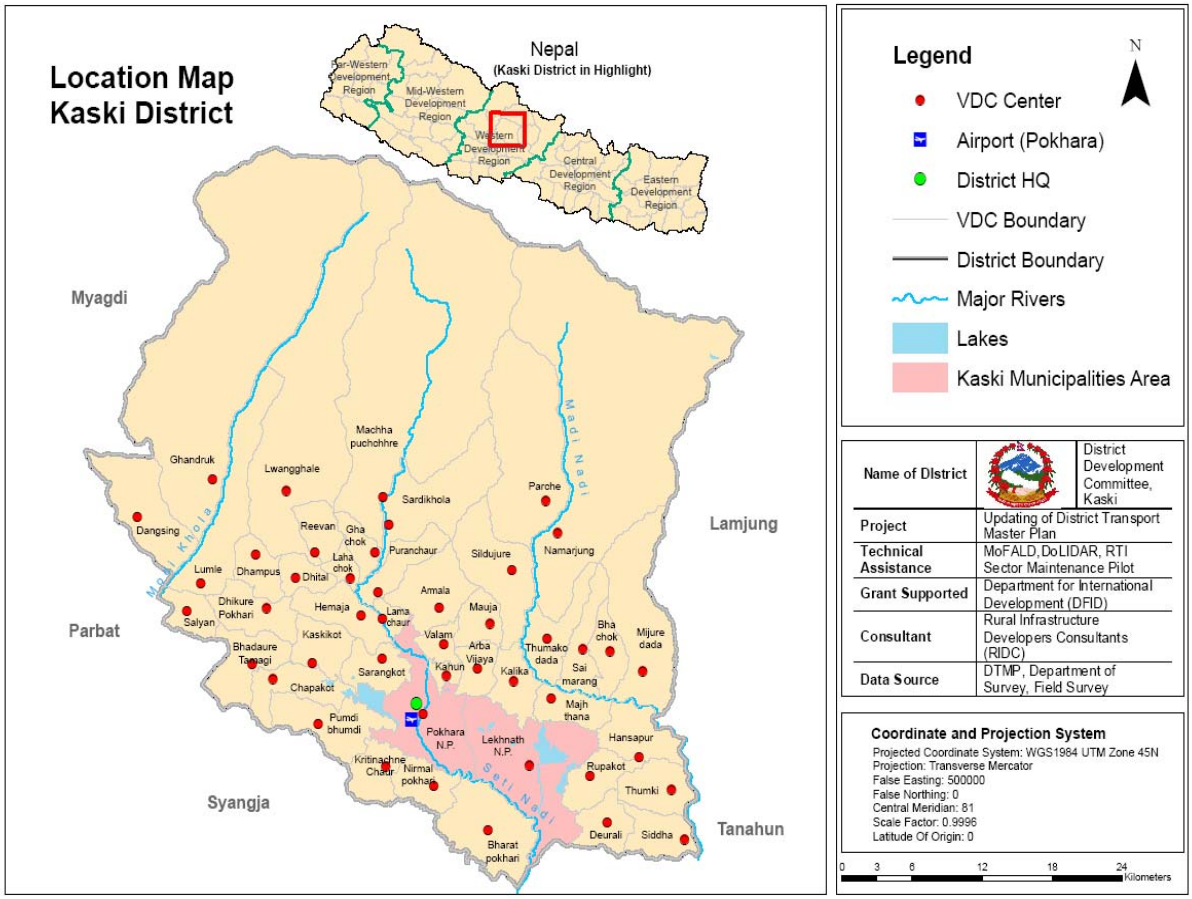
Natural Plants:

Kaski district has approximately 75263 hectare (37.3 %) land is covered with forest and mainly Sal, Guransh, Chap, Chilaune, Utish, Katus, Salla, Gobre Salla/Teak, Kadam. Sal is a popular for Timber verities and it is found in lower land.

Religious and Tourism area:

Kaski district is very famous for religious, tourism and historical place. There are many myth explaining how this district is named as Kaski. One myth is that there live people who were yellow cloths and people who wear yellow cloths are called 'Kasayaki' hence named as Kaski. BindhyaBasini Temple, Dharmashila Buddha Bihar, Tal Barahi Temple, Ram Mandir, Arba Tapu, Sunpadalai Shivalaya mandir, Chandisthan, Armalakot Mandir, Baudha Gumba, Kaal Bhairabhi Mandir, Bhume Kalika Mandir, Chisa Khola, Bageshowri Mandir are famous Historical and Religious Places. Some of famous natural tourism places are: Gorge Section of Seti River, Chamero Gufa, Patle Chango, Mahendra Gufa, Gupteshowr Mahadev Gufa, Naudada View Top, Chakal Dada, Pokhara View Point, Machhapuchre View Point, Sarangkot View Tower etc.

Figure 1 Map of Nepal indicating Kaski District



Kaski district has twenty third highest populations in Nepal where the population of district is increasing rapidly due to immigration of people from hill districts (Syangja, Parpat, Baglung, Mustang, Myagdi etc). The population growth rate is projected as 2.9 % according to census 2011.The population of the district according to census 2011 is 492089 with composition of 236385 male and 255713 female clustered in 126073 households. Average population is 3.9 people per households. The district has multi ethnic composition; majorities are Brahaman, Gurung, Chhetri, Kami, Magar, Newar, Damai, Sarki, Tamang, Thakuri, Bhujel, etc

2. District Road Core Network (DRCN)

This chapter gives an overview of the existing roads in Kaski 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 Road Network

Kaski district has an estimated road network of 750.65 km, including 112.96 km of strategic roads managed by DOR, 100 km urban road and 537.69 km of rural roads managed by Kaski DDC and the VDCs. All the strategic roads and urban roads are black top as well some rural roads are black top. A map of the total road network in Kaski district is shown in Figure at the end of this chapter.

Table 2.1.1 Road length in Kaski district (km)

Road Class	Total length	Black Top	Gravel	Earthen
Strategic roads	112.96	87.46	5.00	20.50
Urban roads	100.00	100.00	-	-
Rural roads	537.69	61.99	96.80	378.90
Total	**750.65**	**249.45**	**101.80**	**399.40**

2.2 National Highways and Feeder Roads

Kaski district has three highways and five feeder roads totaling to 112.96 km length. Among these three highways, the Mid Hill is planned for construction in near future.

Table 2.2.1 National highways and feeder roads in Kaski district (km)

Code	Name of Road	Total length	Black Top	Gravel	Earthen
H04	Prithvi Rajmarg	**18.89**	18.89		
H10	Siddhartha Rajmarg	**16.51**	16.51		
	Mid Hill Highway (Puspalal Marg)	**-**			
F042	Pokhara-Baglung Road	**43.76**	43.76		
F041	Pokhara-Sarangkot	**4.80**	4.80		
F129	Talchok-Khudimuhan	**3.50**	3.50		
F164	Gagangaunda-Begnastal	**2.00**		1.00	1.00
F162	Begnasta-Ram Bazar	**23.50**		4.00	19.50
Total		**112.96**	**87.46**	**5.00**	**20.50**

2.3 District Road Core Network

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

The resulting District Road Core Network of this district is shown in Figure at the end of this chapter. The DRCN consists of 26 district roads with a total length of 409.69 km, including 7.22 km proposed for new construction. The remaining 128.22 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 complete list of the DRCN roads and their characteristics is provided in Table 2.3..

Table 2.3.1 Road length in Kaski District (km)

Road Class	Total length	Black Top	Gravel	Earthen	New Construction
Strategic road network	**112.96**	**87.46**	**5.00**	**20.50**	**-**
Highways	35.40	35.40			
Feeder roads	77.56	52.06	5.00	20.50	
Urban roads	**100.00**	**100.00**	**-**	**-**	**-**
	100.00	100.00			
District road core network	**409.47**	54.99	70.41	277.07	7.00
Village roads	**135.22**	7.00	26.39	101.83	
Total	**757.65**	**249.45**	**101.80**	**399.40**	**7.00**

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

Code	Name of Road	Total length	Black Top	Gravel	Earthen	All weather	Fair weather
40DR022	Rakhi-Mijure-Gahate-Poshi	**18.84**	10.84		8.00	10.84	8.00
40DR009	Lamachaur-Machhapuchhre-Karuwa	**18.51**	15.60		2.91	15.60	2.91
40DR018	Kahu Khola-Dudhpokhari	**35.16**	3.00	4.00	28.16	7.00	28.16
40DR012	Baidam-Pame-Sidane-Panchase	**28.24**	5.14	7.10	16.00	12.24	16.00
40DR025	Sisuwa-Polangtar	**26.15**	10.40		15.75	10.40	15.75
40DR016	Chhorepatan-kristi-Nirmalpokhari-Bharatpokhari	**22.51**	0.80	21.71		22.51	-
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding	**15.11**	3.15	8.57	3.39	11.72	3.39
40DR026	Saatmuhane-Rupakot-Thumki	**21.94**	1.54		20.40	1.54	20.40
40DR011	Sarangkot-Kaskikot-Naudada	**11.40**		11.40		11.40	-
40DR020	Kaseri-Bhainse-Thumakodada	**17.91**		1.50	16.41	1.50	16.41
40DR002	Birethati-Chane	**10.09**			10.09	-	10.09
40DR001	Nayapul-Birethati-Tikhedhunda	**9.86**			9.86	-	9.86
40DR019	Kaure-Jyamdung-Tanting	**17.32**		6.50	10.82	6.50	10.82
40DR006	Melbot-Dhital-Dhampus	**11.58**	0.40		11.18	0.40	11.18
40DR017	Kahu Khola-Arba-Mauja	**16.09**		2.84	13.25	2.84	13.25
40DR003	Kande-Bhadaure-Salyan	**10.20**	1.00		9.20	1.00	9.20
40DR015	Fulbari-Kahu Tower	**6.18**	3.12	3.06		6.18	-
40DR013	Mahendra Gufa-Armalakot-Aatighar-	**17.64**		0.50	17.14	0.50	17.14

	Mauja						
40DR008	Mardipul-Lahachowk-Machhapuchhre	**12.61**		3.23	9.38	3.23	9.38
40DR014	Bhalam-Ryalechaur-Mauja Bisauna	**13.01**			13.01	-	13.01
40DR007	Mardipul-Samibagar-Rivan-Saideghatta	**12.45**			12.45	-	12.45
40DR010	Ghatichina-Makawanpur-Bhanjyang	**8.22**			8.22	-	8.22
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada	**13.08**			13.08	-	13.08
40DR004	Ghatte Khola-Dhampus-Khani Gaun	**11.29**			11.29	-	11.29
40DR023	Thumsikot-Bhachok	**8.58**			8.58	-	8.58
40DR021	Milanchok-Bhagwatitar-Saimarang	**8.50**			8.50	-	8.50
Total		**402.47**	**54.99**	**70.41**	**277.07**	**125.40**	**277.07**

2.4 Village Roads

The 128.22 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 concerned VDCs of the 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 an average each VDC will thus be responsible for 2.85 km of village roads. It is recommended that the VDCs shall organise maintenance workers to carry out the emergency and routine/recurrent maintenance of these roads to ensure their accessibility. 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 these roads passable.

Figure 2 Total Road Inventory Map of Kaski District

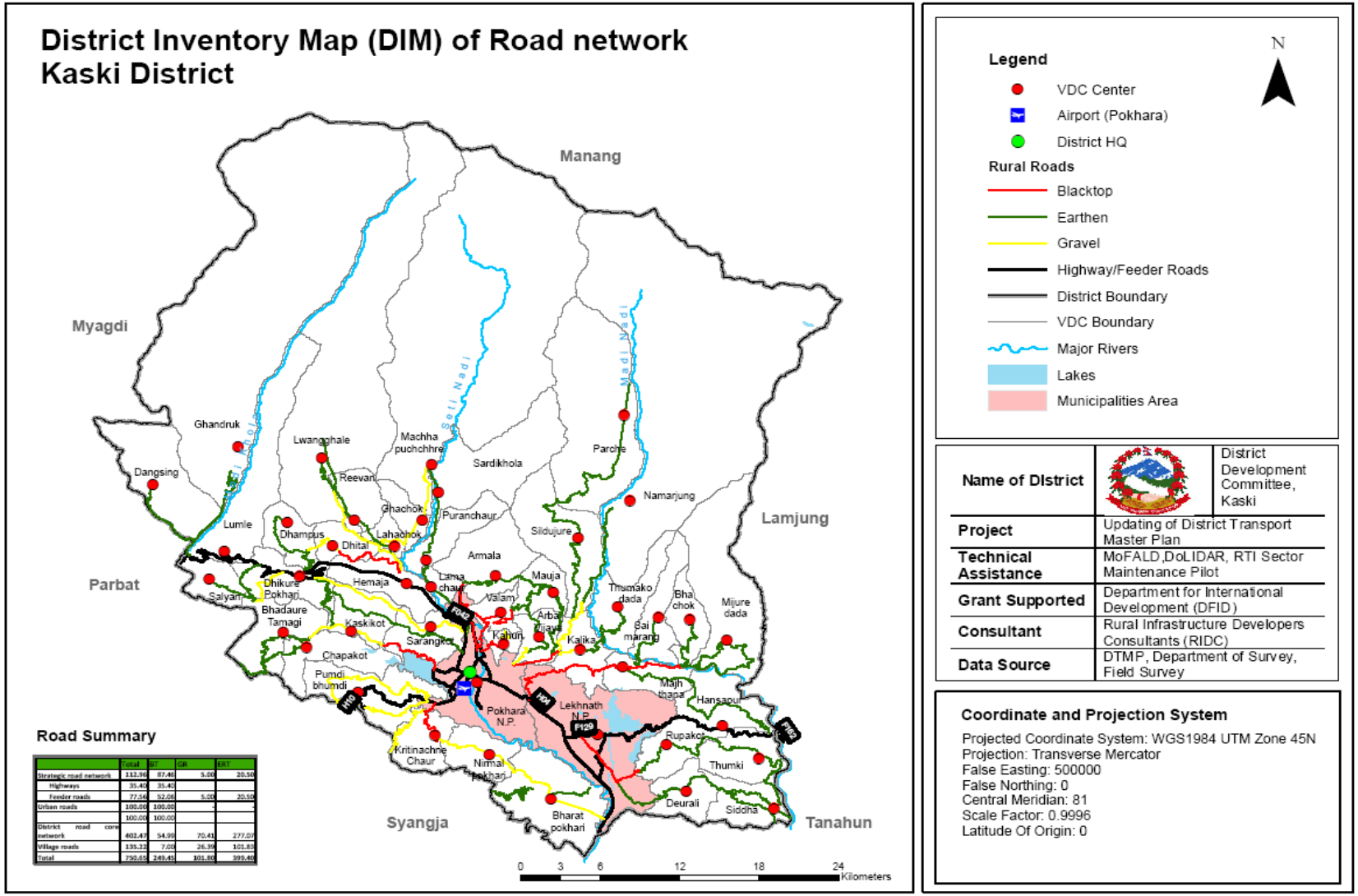
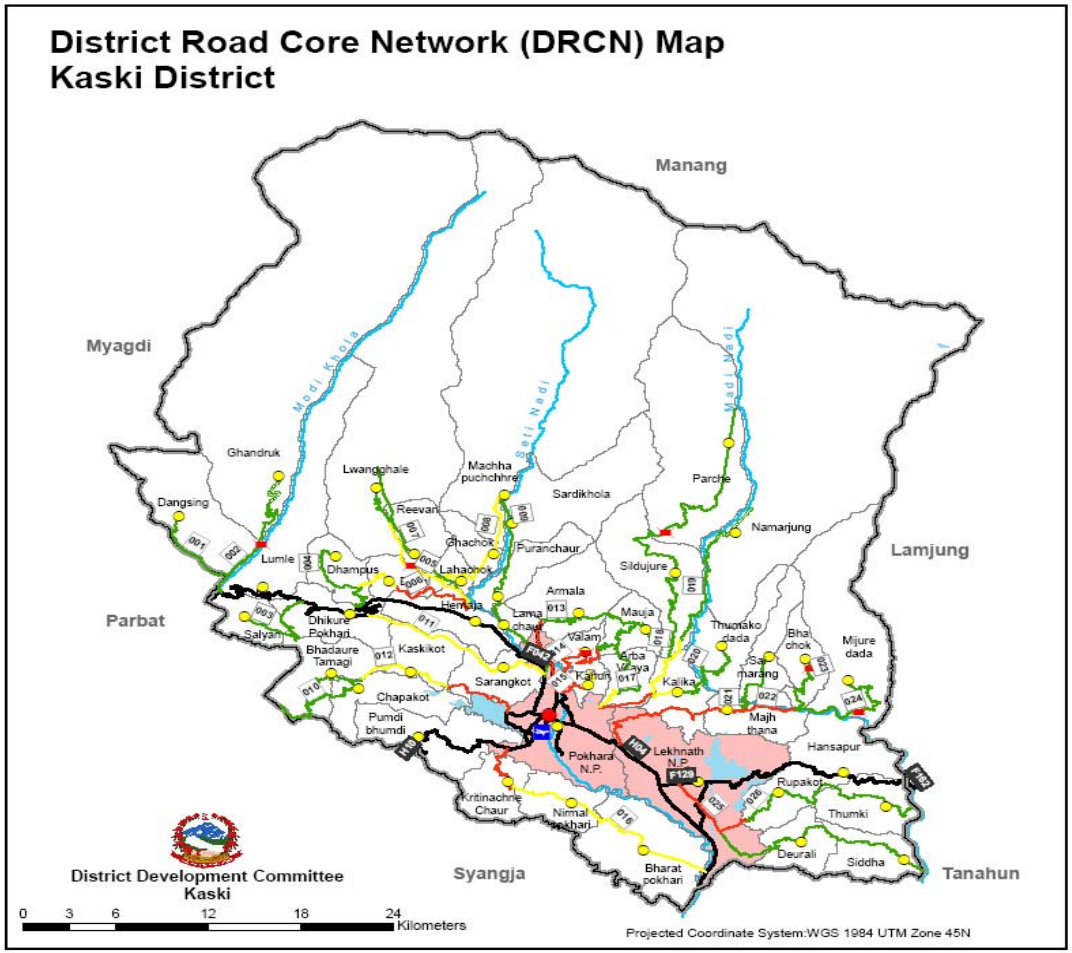


Figure 3 District Road Core Network (DRCN) Map



DRCN Roads

Code	Name of Road	Total length	Black Top	Gravel	Earthen	New
40DR001	Nayapul-Birethati-Tikhedhunda	9.86			9.86	
40DR002	Birethati-Chane	19.09			10.09	3.00
40DR003	Kande-Bhadaure-Salyan	10.20	1.00		9.20	
40DR004	Ghatte Khola-Dhampus-Khani Gaun	11.29			11.29	
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding	16.11	3.15	8.58	3.38	
40DR006	Melbot-Chital-Dhampus	11.58	0.40		11.18	
40DR007	Mardipul-Sambagar-Rivan-Saldeghatta	12.46			12.46	
40DR008	Mardipul-Lahachowk-Machhapuchhre	12.81		3.22	9.39	
40DR009	Lamachaur-Machhapuchhre-Karuwa	18.61	15.51		3.00	
40DR010	Ghatichina-Makawanpur-Bhantyang	8.22			8.22	
40DR011	Sarangkot-Kaskikot-Naudada	11.40		11.40		
40DR012	Baldam-Parne-Sidane-Panchase	28.24	5.24	7.10	15.90	
40DR013	Mahendra Gufa-Armalakot-Katighar-Mauja	17.84		0.50	17.14	
40DR014	Bhalam-Ryalechaur-Mauja Bisauna	19.01			13.01	
40DR015	Pulbari-Kahu Tower	6.18	3.12	3.06		
40DR016	Chhorepatan-kristi-Nirmalpokhari-Bharatpokhari	22.61	0.80	21.71		
40DR017	Kahu Khola-Arba-Mauja	18.09		2.83	13.26	
40DR018	Kahu Khola-Dudhpokhari	36.16	3.00	4.00	28.16	
40DR019	Kaure-Jyamdung-Tanding	21.32		6.50	10.82	4.00
40DR020	Kaseri-Bhainse-Thumakodada	17.91		1.50	16.41	
40DR021	Milanchok-Bhagwattar-Salmarang	8.50			8.50	
40DR022	Rakhi-Mijure-Gahate-Poshi	18.84	10.84		8.00	
40DR023	Thumsikot-Bhachok	8.68			8.68	
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada	19.08			13.08	
40DR025	Sisuwa-Polangtar	26.16	10.40		15.76	
40DR026	Saatmuhane-Rupakot-Thumki	21.84	1.50		20.44	
Total		409.47	64.96	70.40	277.11	7.00

3. District Transport Perspective Plan (DTPP)

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

3.1 Conservation

Conservation refers to the actions required to repair a road and keep it in good and passable condition. For DTMP planning purposes standard costs per kilometre for each maintenance type are applied to the entire district road core network, whereby for certain maintenance type's 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:

1. Emergency maintenance - Basic repairs aimed at removing landslides and repairing damage to the road that inhibit the proper use of the road and make it impassable. This mainly takes place during and after the rainy season. A provisional lump-sum is reserved for the entire district road core network based on the network length. Allocation to specific road sections is based on the actual need for clearing landslides or repairing washouts and cuts in the road.
2. 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.
3. 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.
4. Periodic maintenance - Larger repairs to the road largely aimed at renewing the road surface through re-gravelling, resealing or overlays. It is generally carried out with several years interval. Although periodic maintenance is only required for specific sections of the district road core network, a lump sum allocation is made for the entire district road core network based on average annual requirements, distinguishing between different surface types. The specific periodic maintenance requirements are determined on an annual basis through the annual road condition survey and defined in the ARMP.

The length of roads to be included under each conservation type for the first year is indicated below. This is basically the entire district road core network 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)
40DR022	18.84	18.84	18.84	18.84
40DR009	18.51	18.51	18.51	18.51
40DR018	35.16	35.16	35.16	35.16
40DR012	28.24	28.24	28.24	28.24
40DR025	26.15	26.15	26.15	26.15
40DR016	22.51	22.51	22.51	22.51
40DR005	15.11	15.11	15.11	15.11
40DR026	21.94	21.94	21.94	21.94
40DR011	11.40	11.40	11.40	11.40
40DR020	17.91	17.91	17.91	17.91
40DR002	10.09	10.09	10.09	10.09
40DR001	9.86	9.86	9.86	9.86
40DR019	17.32	17.32	17.32	17.32
40DR006	11.58	11.58	11.58	11.58
40DR017	16.09	16.09	16.09	16.09
40DR003	10.20	10.20	10.20	10.20
40DR015	6.18	6.18	6.18	6.18
40DR013	17.64	17.64	17.64	17.64
40DR008	12.61	12.61	12.61	12.61
40DR014	13.01	13.01	13.01	13.01
40DR007	12.45	12.45	12.45	12.45
40DR010	8.22	8.22	8.22	8.22
40DR024	13.08	13.08	13.08	13.08
40DR004	11.29	11.29	11.29	11.29
40DR023	8.58	8.58	8.58	8.58
40DR021	8.50	8.50	8.50	8.50
Total	**402.47**	**402.47**	**402.47**	**402.47**

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 Kaski are described in more detail in the subsequent sections.

1. 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.
2. Gravelling - Placement of a gravel layer to make it all-weather and ensure that the road remains passable during the rainy season.
3. 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
4. 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.
5. Blacktopping - Placement of a blacktop layer in roads with traffic volumes exceeding 50 passenger car units (PCU) to reduce damage to the road surface

6. 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.

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. Out of 402.47 lengths, 277.07 km road is required for gravelling.

Table 3.2.2 Sections of the district road core network requiring gravelling

Code	Name of Road	Total length (km)	Gravelling (km)
40DR022	Rakhi-Mijure-Gahate-Poshi	18.84	8.00
40DR009	Lamachaur-Machhapuchhre-Karuwa	18.51	2.91
40DR018	Kahu Khola-Dudhpokhari	35.16	28.16
40DR012	Baidam-Pame-Sidane-Panchase	28.24	16.00
40DR025	Sisuwa-Polangtar	26.15	15.75
40DR016	Chhorepatan-kristi-Nirmalpokhari-Bharatpokhari	22.51	-
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding	15.11	3.39
40DR026	Saatmuhane-Rupakot-Thumki	21.94	20.40
40DR011	Sarangkot-Kaskikot-Naudada	11.40	-
40DR020	Kaseri-Bhainse-Thumakodada	17.91	16.41
40DR002	Birethati-Chane	10.09	10.09
40DR001	Nayapul-Birethati-Tikhedhunda	9.86	9.86
40DR019	Kaure-Jyamdung-Tanting	17.32	10.82
40DR006	Melbot-Dhital-Dhampus	11.58	11.18
40DR017	Kahu Khola-Arba-Mauja	16.09	13.25
40DR003	Kande-Bhadaure-Salyan	10.20	9.20
40DR015	Fulbari-Kahu Tower	6.18	-
40DR013	Mahendra Gufa-Armalakot-Aatighar-Mauja	17.64	17.14
40DR008	Mardipul-Lahachowk-Machhapuchhre	12.61	9.38
40DR014	Bhalam-Ryalechaur-Mauja Bisauna	13.01	13.01
40DR007	Mardipul-Samibagar-Rivan-Saideghatta	12.45	12.45
40DR010	Ghatichina-Makawanpur-Bhanjyang	8.22	8.22
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada	13.08	13.08
40DR004	Ghatte Khola-Dhampus-Khani Gaun	11.29	11.29
40DR023	Thumsikot-Bhachok	8.58	8.58
40DR021	Milanchok-Bhagwatitar-Saimarang	8.50	8.50
Total			**277.07**

3.2.3 Cross Drainage

The need for cross drainage was identified for the different DRCN roads. A total of 6 bridges with a total length of 147 m, 14 slab culverts with total length of 214 m, 2 cement concrete causeways with total length of 128 m, and 196 pipe culverts 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)
40DR022	Rakhi-Mijure-Gahate-Poshi	-	6			5
40DR009	Lamachaur-Machhapuchhre-Karuwa					2
40DR018	Kahu Khola-Dudhpokhari	18	44			22
40DR012	Baidam-Pame-Sidane-Panchase			100		15
40DR025	Sisuwa-Polangtar					4
40DR016	Chhorepatan-kristi-Nirmalpokhari-Bharatpokhari					3
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding	50	18			4
40DR026	Saatmuhane-Rupakot-Thumki		12			7
40DR011	Sarangkot-Kaskikot-Naudada					2
40DR020	Kaseri-Bhainse-Thumakodada		20			16
40DR002	Birethati-Chane	18	22			3
40DR001	Nayapul-Birethati-Tikhedhunda		32			3
40DR019	Kaure-Jyamdung-Tanting					6
40DR006	Melbot-Dhital-Dhampus		8			6
40DR017	Kahu Khola-Arba-Mauja		6			16
40DR003	Kande-Bhadaure-Salyan		14			4
40DR015	Fulbari-Kahu Tower					
40DR013	Mahendra Gufa-Armalakot-Aatighar-Mauja		6			8
40DR008	Mardipul-Lahachowk-Machhapuchhre					7
40DR014	Bhalam-Ryalechaur-Mauja Bisauna	18				7
40DR007	Mardipul-Samibagar-Rivan-Saideghatta		6			6
40DR010	Ghatichina-Makawanpur-Bhanjyang		20	28		18
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada	18				11
40DR004	Ghatte Khola-Dhampus-Khani Gaun					9
40DR023	Thumsikot-Bhachok	25				9
40DR021	Milanchok-Bhagwatitar-Saimarang	-				3
Total		**147**	**214**	**128**	**-**	**196**

3.2.4 Protective Structures

Based on the road survey carried out in Kaski, 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)
40DR022	Rakhi-Mijure-Gahate-Poshi		745	850
40DR009	Lamachaur-Machhapuchhre-Karuwa		235	400
40DR018	Kahu Khola-Dudhpokhari		1,250	3,000
40DR012	Baidam-Pame-Sidane-Panchase		1,150	600
40DR025	Sisuwa-Polangtar		685	450
40DR016	Chhorepatan-kristi-Nirmalpokhari-Bharatpokhari		900	350
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding		640	450
40DR026	Saatmuhane-Rupakot-Thumki		765	1,000
40DR011	Sarangkot-Kaskikot-Naudada		480	550
40DR020	Kaseri-Bhainse-Thumakodada		1,025	500
40DR002	Birethati-Chane		2,100	2,700
40DR001	Nayapul-Birethati-Tikhedhunda		1,800	2,100
40DR019	Kaure-Jyamdung-Tanting		3,450	5,100
40DR006	Melbot-Dhital-Dhampus		2,150	2,100
40DR017	Kahu Khola-Arba-Mauja		3,200	4,100
40DR003	Kande-Bhadaure-Salyan		2,950	3,250
40DR015	Fulbari-Kahu Tower		1,250	3,700
40DR013	Mahendra Gufa-Armalakot-Aatighar-Mauja		3,550	5,200
40DR008	Mardipul-Lahachowk-Machhapuchhre		2,150	3,700
40DR014	Bhalam-Ryalechaur-Mauja Bisauna		2,100	2,900
40DR007	Mardipul-Samibagar-Rivan-Saideghatta		525	1,800
40DR010	Ghatichina-Makawanpur-Bhanjyang		1,550	2,400
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada		1,920	2,400
40DR004	Ghatte Khola-Dhampus-Khani Gaun		650	1,150
40DR023	Thumsikot-Bhachok		2,650	1,900
40DR021	Milanchok-Bhagwatitar-Saimarang		740	900
Total		**-**	**40,610**	**53,550**

3.2.5 Widening

Widening of the district road core network in Kaski is required only in specific locations to bring it up to the minimum standard and to ensure sufficient space in the curves. Additional widening to a higher standard is required for only one road.

Table 3.2.5 Widening

Code	Name of Road	Total length (km)	VPD	Widening (m)
40DR022	Rakhi-Mijure-Gahate-Poshi	18.84	75.00	-
40DR009	Lamachaur-Machhapuchhre-Karuwa	18.51	105.00	1,000
40DR018	Kahu Khola-Dudhpokhari	35.16	55.00	-
40DR012	Baidam-Pame-Sidane-Panchase	28.24	95.00	-
40DR025	Sisuwa-Polangtar	26.15	55.00	-
40DR016	Chhorepatan-kristi-Nirmalpokhari-Bharatpokhari	22.51	53.00	-
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding	15.11	90.00	-
40DR026	Saatmuhane-Rupakot-Thumki	21.94	57.00	-
40DR011	Sarangkot-Kaskikot-Naudada	11.40	85.00	-
40DR020	Kaseri-Bhainse-Thumakodada	17.91	73.00	-
40DR002	Birethati-Chane	10.09	13.00	-
40DR001	Nayapul-Birethati-Tikhedhunda	9.86	16.00	-
40DR019	Kaure-Jyamdung-Tanting	17.32	20.00	-
40DR006	Melbot-Dhital-Dhampus	11.58	15.00	-
40DR017	Kahu Khola-Arba-Mauja	16.09	17.00	-
40DR003	Kande-Bhadaure-Salyan	10.20	11.00	-
40DR015	Fulbari-Kahu Tower	6.18	22.00	-
40DR013	Mahendra Gufa-Armalakot-Aatighar-Mauja	17.64	17.00	-
40DR008	Mardipul-Lahachowk-Machhapuchhre	12.61	17.00	-
40DR014	Bhalam-Ryalechaur-Mauja Bisauna	13.01	13.00	-
40DR007	Mardipul-Samibagar-Rivan-Saideghatta	12.45	15.00	-
40DR010	Ghatichina-Makawanpur-Bhanjyang	8.22	13.00	-
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada	13.08	12.00	-
40DR004	Ghatte Khola-Dhampus-Khani Gaun	11.29	66.00	-
40DR023	Thumsikot-Bhachok	8.58	13.00	-
40DR021	Milanchok-Bhagwatitar-Saimarang	8.50	12.00	-
Total				**1,000**

3.2.6 Black Topping

An analysis of the traffic data for the different roads making up the district road core network shows that following network require blacktopping.

Table 3.2.6 Blacktopping

Code	Name of Road	Total length (km)	Blacktop (km)	Traffic (PCU)	Blacktopping (km)
40DR022	Rakhi-Mijure-Gahate-Poshi	18.84	10.84	174	8.00
40DR009	Lamachaur-Machhapuchhre-Karuwa	18.51	15.60	265	2.91
40DR018	Kahu Khola-Dudhpokhari	35.16	3.00	143	32.16
40DR012	Baidam-Pame-Sidane-Panchase	28.24	5.14	218	23.10
40DR025	Sisuwa-Polangtar	26.15	10.40	145	15.75
40DR016	Chhorepatan-kristi-Nirmalpokhari-Bharatpokhari	22.51	0.80	120	21.71
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding	15.11	3.15	222	11.96
40DR026	Saatmuhane-Rupakot-Thumki	21.94	1.54	124	20.40
40DR011	Sarangkot-Kaskikot-Naudada	11.40	-	210	11.40
40DR020	Kaseri-Bhainse-Thumakodada	17.91	-	185	17.91
40DR002	Birethati-Chane	10.09	-	36	-
40DR001	Nayapul-Birethati-Tikhedhunda	9.86	-	40	-
40DR019	Kaure-Jyamdung-Tanting	17.32	-	46	-
40DR006	Melbot-Dhital-Dhampus	11.58	0.40	41	-
40DR017	Kahu Khola-Arba-Mauja	16.09	-	45	-
40DR003	Kande-Bhadaure-Salyan	10.20	1.00	32	-
40DR015	Fulbari-Kahu Tower	6.18	3.12	45	-
40DR013	Mahendra Gufa-Armalakot-Aatighar-Mauja	17.64	-	39	-
40DR008	Mardipul-Lahachowk-Machhapuchhre	12.61	-	46	-
40DR014	Bhalam-Ryalechaur-Mauja Bisauna	13.01	-	38	-
40DR007	Mardipul-Samibagar-Rivan-Saideghatta	12.45	-	42	-
40DR010	Ghatichina-Makawanpur-Bhanjyang	8.22	-	33	-
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada	13.08	-	37	-
40DR004	Ghatte Khola-Dhampus-Khani Gaun	11.29	-	185	11.29
40DR023	Thumsikot-Bhachok	8.58	-	39	-
40DR021	Milanchok-Bhagwatitar-Saimarang	8.50	-	31	-
0	0	-	-	-	-
Total					**176.59**

3.3 New Construction

New construction of DRCN roads is required to connect the remaining VDC headquarters. Only two roads required new construction.

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)
40DR022	Rakhi-Mijure-Gahate-Poshi	Kalika, Majhthana	18.84		
40DR009	Lamachaur-Machhapuchhre-Karuwa	Lamachaur, Puranchaur, Sardikhola	18.51		
40DR018	Kahu Khola-Dudhpokhari	Sildujure, Parche	35.16		
40DR012	Baidam-Pame-Sidane-Panchase	Sarankot, Bhadaure Tamagi	28.24		
40DR025	Sisuwa-Polangtar	Deurali, Siddha	26.15		
40DR016	Chhorepatan-kristi-Nirmalpokhari-Bharatpokhari	Kristi, Bharat P, Nirmal P	22.51		
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding	Lwanghalel	15.11		
40DR026	Saatmuhane-Rupakot-Thumki	Rupakot, Thumki	21.94		
40DR011	Sarangkot-Kaskikot-Naudada	Kaskikot	11.40		
40DR020	Kaseri-Bhainse-Thumakodada	Thumakodada	17.91		
40DR002	Birethati-Chane	Ghandruk	10.09	3.00	
40DR001	Nayapul-Birethati-Tikhedhunda	Dansing	9.86		
40DR019	Kaure-Jyamdung-Tanting	Namarjung	17.32	4.00	
40DR006	Melbot-Dhital-Dhampus	Dhital	11.58		
40DR017	Kahu Khola-Arba-Mauja	Arba Bijaya, Mauja	16.09		
40DR003	Kande-Bhadaure-Salyan	Salyan	10.20		
40DR015	Fulbari-Kahu Tower	Kahun	6.18		
40DR013	Mahendra Gufa-Armalakot-Aatighar-Mauja	Armala	17.64		
40DR008	Mardipul-Lahachowk-Machhapuchhre	Lahachok, Ghachok, Machhapuchhre	12.61		
40DR014	Bhalam-Ryalechaur-Mauja Bisauna	Bhalaam	13.01		
40DR007	Mardipul-Samibagar-Rivan-Saideghatta	Rivan	12.45		
40DR010	Ghatichina-Makawanpur-Bhanjyang	Chapakot	8.22		
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada	Mijuredanda	13.08		
40DR004	Ghatte Khola-Dhampus-Khani Gaun	Dhampus	11.29		
40DR023	Thumsikot-Bhachok	Bhachok	8.58		
40DR021	Milanchok-Bhagwatitar-Saimarang	Saimarang	8.50		
Total			**402.47**	**7.00**	**-**

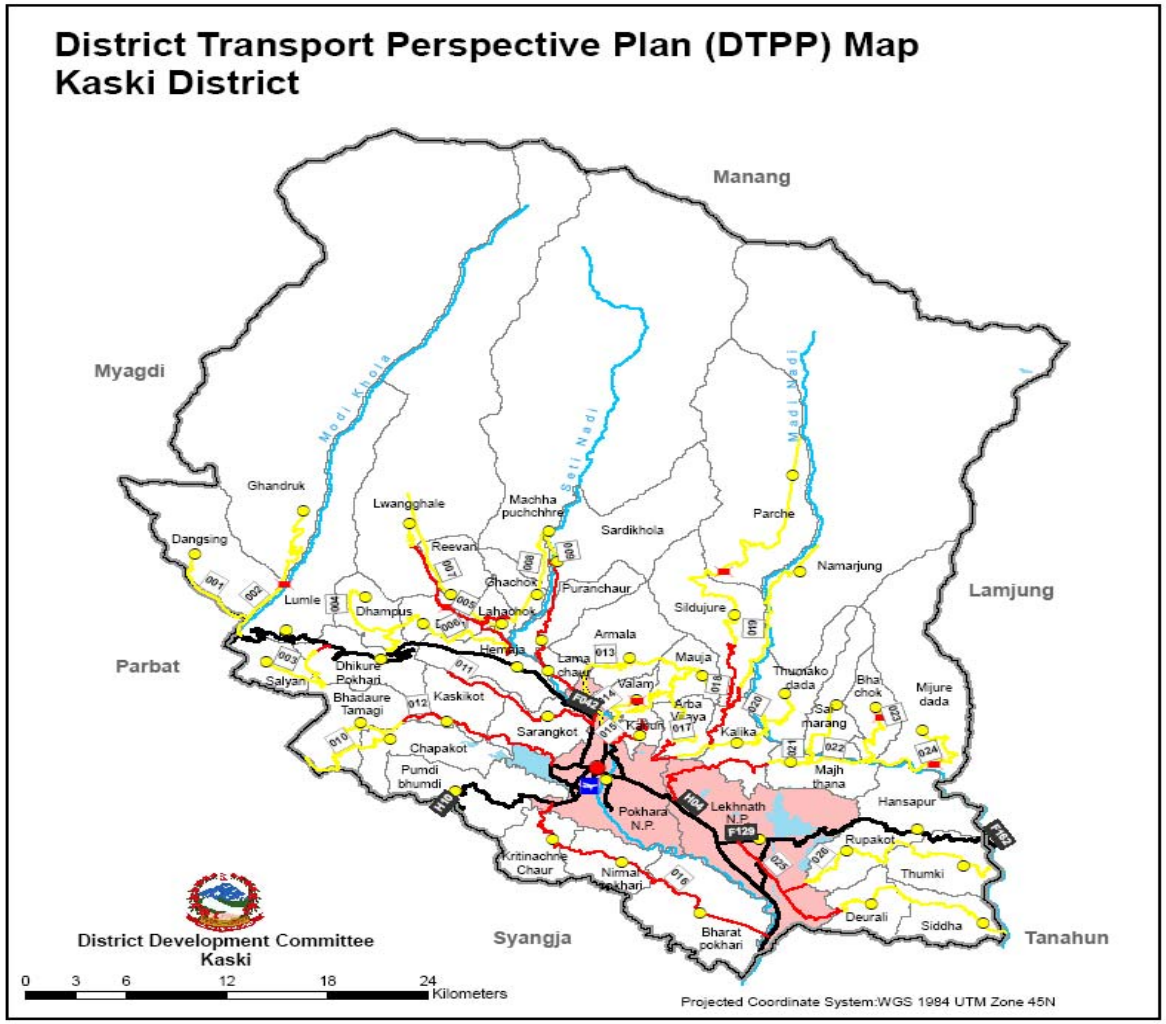
3.4 District Transport Perspective Plan

The DTPP foresees bringing the entire existing district road core network to maintainable all-weather status, and expanding it to provide access to an additional 2 VDC headquarters. For this purpose, all DRCN roads will be gravelled and a number of different cross drainage and protective structures will be constructed. A further 7.22 km of new road will be constructed to maintainable all-weather gravel standard providing access to 2 additional VDC HQs. The district road core network will subsequently consist of 409.69 km of maintainable all-weather roads. The following table lists the required interventions, while the proposed network is shown in the DTPP map.

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)
40DR022	18.84	18.84	18.84	18.84	-	8.00	8.00	-	-	6.00	-	-	5.00	-	745.00	850.00	-
40DR009	18.51	18.51	18.51	18.51	-	2.91	2.91	1,000.00	-	-	-	-	2.00	-	235.00	400.00	-
40DR018	35.16	35.16	35.16	35.16	-	28.16	32.16	-	18.00	44.00	-	-	22.00	-	1,250.00	3,000.00	-
40DR012	28.24	28.24	28.24	28.24	-	16.00	23.10	-	-	-	100.00	-	15.00	-	1,150.00	600.00	-
40DR025	26.15	26.15	26.15	26.15	-	15.75	15.75	-	-	-	-	-	4.00	-	685.00	450.00	-
40DR016	22.51	22.51	22.51	22.51	-	-	21.71	-	-	-	-	-	3.00	-	900.00	350.00	-
40DR005	15.11	15.11	15.11	15.11	-	3.39	11.96	-	50.00	18.00	-	-	4.00	-	640.00	450.00	-
40DR026	21.94	21.94	21.94	21.94	-	20.40	20.40	-	-	12.00	-	-	7.00	-	765.00	1,000.00	-
40DR011	11.40	11.40	11.40	11.40	-	-	11.40	-	-	-	-	-	2.00	-	480.00	550.00	-
40DR020	17.91	17.91	17.91	17.91	-	16.41	17.91	-	-	20.00	-	-	16.00	-	1,025.00	500.00	-
40DR002	10.09	10.09	10.09	10.09	-	10.09	-	-	18.00	22.00	-	-	3.00	-	2,100.00	2,700.00	3.00
40DR001	9.86	9.86	9.86	9.86	-	9.86	-	-	-	32.00	-	-	3.00	-	1,800.00	2,100.00	-
40DR019	17.32	17.32	17.32	17.32	-	10.82	-	-	-	-	-	-	6.00	-	3,450.00	5,100.00	4.00
40DR006	11.58	11.58	11.58	11.58	-	11.18	-	-	-	8.00	-	-	6.00	-	2,150.00	2,100.00	-
40DR017	16.09	16.09	16.09	16.09	-	13.25	-	-	-	6.00	-	-	16.00	-	3,200.00	4,100.00	-
40DR003	10.20	10.20	10.20	10.20	-	9.20	-	-	-	14.00	-	-	4.00	-	2,950.00	3,250.00	-
40DR015	6.18	6.18	6.18	6.18	-	-	-	-	-	-	-	-	-	-	1,250.00	3,700.00	-
40DR013	17.64	17.64	17.64	17.64	-	17.14	-	-	-	6.00	-	-	8.00	-	3,550.00	5,200.00	-
40DR008	12.61	12.61	12.61	12.61	-	9.38	-	-	-	-	-	-	7.00	-	2,150.00	3,700.00	-
40DR014	13.01	13.01	13.01	13.01	-	13.01	-	-	18.00	-	-	-	7.00	-	2,100.00	2,900.00	-
40DR007	12.45	12.45	12.45	12.45	-	12.45	-	-	-	6.00	-	-	6.00	-	525.00	1,800.00	-
40DR010	8.22	8.22	8.22	8.22	-	8.22	-	-	-	20.00	28.00	-	18.00	-	1,550.00	2,400.00	-
40DR024	13.08	13.08	13.08	13.08	-	13.08	-	-	18.00	-	-	-	11.00	-	1,920.00	2,400.00	-
40DR004	11.29	11.29	11.29	11.29	-	11.29	11.29	-	-	-	-	-	9.00	-	650.00	1,150.00	-
40DR023	8.58	8.58	8.58	8.58	-	8.58	-	-	25.00	-	-	-	9.00	-	2,650.00	1,900.00	-
40DR021	8.50	8.50	8.50	8.50	-	8.50	-	-	-	-	-	-	3.00	-	740.00	900.00	-
0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**402.47**	**402.47**	**402.47**	**402.47**	**-**	**277.07**	**176.59**	**1,000**	**147**	**214**	**128**	**-**	**196**	**-**	**40,610**	**53,550**	**7.00**

Figure 4 District Transport Perspective Plan (DTPP)



DTPP Roads

Code	Name	Length (Km)
40DR001	Nayapul-Birethati-Tikhedhunda	9.86
40DR002	Birethati-Chane	13.09
40DR003	Kande-Bhadaure-Salyan	10.20
40DR004	Ghatte Khola-Dhampus-Khani Gaun	11.29
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding	15.11
40DR006	Melbot-Dhital-Dhampus	11.58
40DR007	Mardipul-Samlbagar-Rivan-Saldeghatta	12.45
40DR008	Mardipul-Lahachowk-Machhapuchhre	12.61
40DR009	Lamachaur-Machhapuchhre-Karuwa	18.51
40DR010	Ghatichina-Makawanpur-Bhanjyang	8.22
40DR011	Sarangkot-Kaskikot-Naudada	11.40
40DR012	Baldam-Pame-Sidane-Panchase	28.24
40DR013	Mahendra Gufa-Armalakot-Aatighar-Mauja	17.64
40DR014	Bhalam-Ryalechaur-Mauja Bisauna	13.01
40DR015	Fulbari-Kahu Tower	6.18
40DR016	Chhorepatan-Kriss-Nirmalpokhari-Bharatpokhari	22.51
40DR017	Kahu Khola-Arba-Mauja	16.09
40DR018	Kahu Khola-Dudhpokhari	35.16
40DR019	Kaure-Jyamdung-Tanting	21.32
40DR020	Kaseri-Bhainse-Thumakodada	17.91
40DR021	Milanchok-Bhagwatitar-Saimarang	8.50
40DR022	Rakhi-Mijure-Gahate-Poshi	18.84
40DR023	Thumsikot-Bhachok	8.58
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada	13.08
40DR025	Sisuwa-Polangtar	26.15
40DR026	Saatmuhane-Rupakot-Thumki	21.94
Total		409.47

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 this result 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	15,000
Routine maintenance	km	30,000
Recurrent maintenance (blacktop)	km	80,000
Recurrent maintenance (gravel)	km	75,000
Recurrent maintenance (earthen)	km	70,000
Periodic maintenance (blacktop)	km	125,000
Periodic maintenance (gravel)	km	100,000

For the first year the estimated costs for conservation of the DRCN come to NPR 57.142 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 285.71 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
40DR022	18.84	10.84	-	8.00	283	565	867	-	560	1,355	-	**3,630**	**18,150**
40DR009	18.51	15.60	-	2.91	278	555	1,248	-	204	1,560	-	**3,845**	**19,223**
40DR018	35.16	3.00	4.00	28.16	527	1,055	240	300	1,971	-	400	**4,493**	**22,467**
40DR012	28.24	5.14	7.10	16.00	424	847	411	533	1,120	-	710	**4,045**	**20,223**
40DR025	26.15	10.40	-	15.75	392	785	832	-	1,103	-	-	**3,111**	**15,556**
40DR016	22.51	0.80	21.71	-	338	675	64	1,628	-	-	2,171	**4,876**	**24,381**
40DR005	15.11	3.15	8.57	3.39	227	453	252	643	237	-	857	**2,669**	**13,345**
40DR026	21.94	1.54	-	20.40	329	658	123	-	1,428	-	-	**2,539**	**12,693**
40DR011	11.40	-	11.40	-	171	342	-	855	-	-	1,140	**2,508**	**12,540**
40DR020	17.91	-	1.50	16.41	269	537	-	113	1,149	-	150	**2,217**	**11,086**
40DR002	10.09	-	-	10.09	151	303	-	-	706	-	-	**1,160**	**5,802**
40DR001	9.86	-	-	9.86	148	296	-	-	690	-	-	**1,134**	**5,670**
40DR019	17.32	-	6.50	10.82	260	520	-	488	757	-	650	**2,674**	**13,372**
40DR006	11.58	0.40	-	11.18	174	347	32	-	783	-	-	**1,336**	**6,679**
40DR017	16.09	-	2.84	13.25	241	483	-	213	928	-	284	**2,149**	**10,743**
40DR003	10.20	1.00	-	9.20	153	306	80	-	644	-	-	**1,183**	**5,915**
40DR015	6.18	3.12	3.06	-	93	185	250	230	-	-	306	**1,063**	**5,316**
40DR013	17.64	-	0.50	17.14	265	529	-	38	1,200	-	50	**2,081**	**10,406**
40DR008	12.61	-	3.23	9.38	189	378	-	242	657	-	323	**1,789**	**8,947**
40DR014	13.01	-	-	13.01	195	390	-	-	911	-	-	**1,496**	**7,481**
40DR007	12.45	-	-	12.45	187	374	-	-	872	-	-	**1,432**	**7,159**
40DR010	8.22	-	-	8.22	123	247	-	-	575	-	-	**945**	**4,727**
40DR024	13.08	-	-	13.08	196	392	-	-	916	-	-	**1,504**	**7,521**
40DR004	11.29	-	-	11.29	169	339	-	-	790	-	-	**1,298**	**6,492**
40DR023	8.58	-	-	8.58	129	257	-	-	601	-	-	**987**	**4,934**
40DR021	8.50	-	-	8.50	128	255	-	-	595	-	-	**978**	**4,888**
0	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**
Total	**402.47**	**54.99**	**70.41**	**277.07**	**6,037**	**12,074**	**4,399**	**5,281**	**19,395**	**2,915**	**7,041**	**57,142**	**285,710**

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	50,000
Widening	m	3,000
Gravelling	km	2,000,000
Blacktopping	km	4,000,000
Bridge construction	m	900,000
Slab culvert construction	m	300,000
CC Causeway construction	m	100,000
Stone Causeway construction	m	2,000
Pipe culvert placement	unit	100,000
Masonry wall construction	m^3	7,000
Gabion wall construction	m^3	4,000
Lined drain construction	m	3,000

The resulting estimated costs come to NPR 1815.49 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
40DR022	18.84	-	-	16,000	32,000	-	1,800	-	-	500	-	2,980	2,550	**55,830**
40DR009	18.51	-	3,000	5,820	11,640	-	-	-	-	200	-	940	1,200	**22,800**
40DR018	35.16	-	-	56,320	128,640	16,200	13,200	-	-	2,200	-	5,000	9,000	**230,560**
40DR012	28.24	-	-	32,000	92,400	-	-	10,000	-	1,500	-	4,600	1,800	**142,300**
40DR025	26.15	-	-	31,500	63,000	-	-	-	-	400	-	2,740	1,350	**98,990**
40DR016	22.51	-	-	-	86,840	-	-	-	-	300	-	3,600	1,050	**91,790**
40DR005	15.11	-	-	6,780	47,840	45,000	5,400	-	-	400	-	2,560	1,350	**109,330**
40DR026	21.94	-	-	40,800	81,600	-	3,600	-	-	700	-	3,060	3,000	**132,760**
40DR011	11.40	-	-	-	45,600	-	-	-	-	200	-	1,920	1,650	**49,370**
40DR020	17.91	-	-	32,820	71,640	-	6,000	-	-	1,600	-	4,100	1,500	**117,660**
40DR002	10.09	-	-	20,180	-	16,200	6,600	-	-	300	-	8,400	8,100	**59,780**
40DR001	9.86	-	-	19,720	-	-	9,600	-	-	300	-	7,200	6,300	**43,120**
40DR019	17.32	-	-	21,640	-	-	-	-	-	600	-	13,800	15,300	**51,340**
40DR006	11.58	-	-	22,360	-	-	2,400	-	-	600	-	8,600	6,300	**40,260**
40DR017	16.09	-	-	26,500	-	-	1,800	-	-	1,600	-	12,800	12,300	**55,000**
40DR003	10.20	-	-	18,400	-	-	4,200	-	-	400	-	11,800	9,750	**44,550**
40DR015	6.18	-	-	-	-	-	-	-	-	-	-	5,000	11,100	**16,100**
40DR013	17.64	-	-	34,280	-	-	1,800	-	-	800	-	14,200	15,600	**66,680**
40DR008	12.61	-	-	18,760	-	-	-	-	-	700	-	8,600	11,100	**39,160**
40DR014	13.01	-	-	26,020	-	16,200	-	-	-	700	-	8,400	8,700	**60,020**
40DR007	12.45	-	-	24,900	-	-	1,800	-	-	600	-	2,100	5,400	**34,800**
40DR010	8.22	-	-	16,440	-	-	6,000	2,800	-	1,800	-	6,200	7,200	**40,440**
40DR024	13.08	-	-	26,160	-	16,200	-	-	-	1,100	-	7,680	7,200	**58,340**
40DR004	11.29	-	-	22,580	45,160	-	-	-	-	900	-	2,600	3,450	**74,690**
40DR023	8.58	-	-	17,160	-	22,500	-	-	-	900	-	10,600	5,700	**56,860**
40DR021	8.50	-	-	17,000	-	-	-	-	-	300	-	2,960	2,700	**22,960**
0	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
Total	**402.47**	**-**	**3,000**	**554,140**	**706,360**	**132,300**	**64,200**	**12,800**	**-**	**19,600**	**-**	**162,440**	**160,650**	**1,815,490**

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	1,500,000
Gravelling	km	2,000,000
Bridge construction	m	900,000

The resulting estimated costs for new construction come to NPR 25.27 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)
40DR022	Rakhi-Mijure-Gahate-Poshi	-	-	-	-	-
40DR009	Lamachaur-Machhapuchhre-Karuwa	-	-	-	-	-
40DR018	Kahu Khola-Dudhpokhari	-	-	-		-
40DR012	Baidam-Pame-Sidane-Panchase	-	-	-	-	-
40DR025	Sisuwa-Polangtar	-	-	-	-	-
40DR016	Chhorepatan-kristi-Nirmalpokhari-Bharatpokhari	-	-	-	-	-
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding	-	-	-	-	-
40DR026	Saatmuhane-Rupakot-Thumki	-	-	-	-	-
40DR011	Sarangkot-Kaskikot-Naudada	-	-	-	-	-
40DR020	Kaseri-Bhainse-Thumakodada	-	-	-	-	-
40DR002	Birethati-Chane	3.00	4,500	6,000	-	**10,500**
40DR001	Nayapul-Birethati-Tikhedhunda	-	-	-	-	-
40DR019	Kaure-Jyamdung-Tanting	4.00	6,000	8,000	-	**14,000**
40DR006	Melbot-Dhital-Dhampus	-	-	-	-	-
40DR017	Kahu Khola-Arba-Mauja	-	-	-	-	-
40DR003	Kande-Bhadaure-Salyan	-	-	-	-	-
40DR015	Fulbari-Kahu Tower	-	-	-	-	-
40DR013	Mahendra Gufa-Armalakot-Aatighar-Mauja	-	-	-	-	-
40DR008	Mardipul-Lahachowk-Machhapuchhre	-	-	-	-	-
40DR014	Bhalam-Ryalechaur-Mauja Bisauna	-	-	-	-	-
40DR007	Mardipul-Samibagar-Rivan-Saideghatta	-	-	-	-	-
40DR010	Ghatichina-Makawanpur-Bhanjyang	-	-	-	-	-
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada	-	-	-	-	-
40DR004	Ghatte Khola-Dhampus-Khani Gaun	-	-	-	-	-
40DR023	Thumsikot-Bhachok	-	-	-	-	-
40DR021	Milanchok-Bhagwatitar-Saimarang	-	-	-	-	-
Total		**7.00**	**10,500**	**14,000**	**-**	**24,500**

4.4 DTPP Costs

The total costs for the District Transport Perspective Plan come to NPR 2126.47 million as indicated in the table below. These costs will change slightly as the roads are improved and the standard conservation costs change, especially due to change in conservation costs.

Table 4.4.1 DTPP costs (NPR '000)

Code	Conservation	Improvement	New construction	Total
40DR022	18,150	55,830	-	73,980
40DR009	19,223	22,800	-	42,023
40DR018	22,467	230,560	-	253,027
40DR012	20,223	142,300	-	162,523
40DR025	15,556	98,990	-	114,546
40DR016	24,381	91,790	-	116,171
40DR005	13,345	109,330	-	122,675
40DR026	12,693	132,760	-	145,453
40DR011	12,540	49,370	-	61,910
40DR020	11,086	117,660	-	128,746
40DR002	5,802	59,780	10,500	76,082
40DR001	5,670	43,120	-	48,790
40DR019	13,372	51,340	14,000	78,712
40DR006	6,679	40,260	-	46,939
40DR017	10,743	55,000	-	65,743
40DR003	5,915	44,550	-	50,465
40DR015	5,316	16,100	-	21,416
40DR013	10,406	66,680	-	77,086
40DR008	8,947	39,160	-	48,107
40DR014	7,481	60,020	-	67,501
40DR007	7,159	34,800	-	41,959
40DR010	4,727	40,440	-	45,167
40DR024	7,521	58,340	-	65,861
40DR004	6,492	74,690	-	81,182
40DR023	4,934	56,860	-	61,794
40DR021	4,888	22,960	-	27,848
0	-	-	-	-
Total	**285,710**	**1,815,490**	**24,500**	**2,125,700**

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)
40DR008	12.61	189	378	-	242	657	-	323	1,789	7,565	237
40DR016	22.51	338	675	64	1,628	-	-	2,171	4,876	18,896	258
40DR002	10.09	151	303	-	-	706	-	-	1,160	4,265	272
40DR009	18.51	278	555	1,248	-	204	1,560	-	3,845	14,066	273
40DR003	10.20	153	306	80	-	644	-	-	1,183	3,541	334
40DR010	8.22	123	247	-	-	575	-	-	945	2,637	358
40DR001	9.86	148	296	-	-	690	-	-	1,134	3,058	371
40DR013	17.64	265	529	-	38	1,200	-	50	2,081	5,328	391
40DR024	13.08	196	392	-	-	916	-	-	1,504	3,787	397
40DR017	16.09	241	483	-	213	928	-	284	2,149	5,322	404
40DR026	21.94	329	658	123	-	1,428	-	-	2,539	6,286	404
40DR011	11.40	171	342	-	855	-	-	1,140	2,508	5,892	426
40DR015	6.18	93	185	250	230	-	-	306	1,063	2,378	447
40DR006	11.58	174	347	32	-	783	-	-	1,336	2,781	480
40DR004	11.29	169	339	-	-	790	-	-	1,298	2,537	512
40DR022	18.84	283	565	867	-	560	1,355	-	3,630	6,873	528
40DR014	13.01	195	390	-	-	911	-	-	1,496	2,623	570
40DR025	26.15	392	785	832	-	1,103	-	-	3,111	5,355	581
40DR005	15.11	227	453	252	643	237	-	857	2,669	4,211	634
40DR023	8.58	129	257	-	-	601	-	-	987	1,511	653
40DR022	35.16	527	1,055	240	300	1,971	-	400	4,493	6,873	654
40DR020	17.91	269	537	-	113	1,149	-	150	2,217	2,765	802
40DR021	8.50	128	255	-	-	595	-	-	978	1,171	835
40DR007	12.45	187	374	-	-	872	-	-	1,432	1,332	1,075
40DR012	28.24	424	847	411	533	1,120	-	710	4,045	3,257	1,242
40DR019	17.32	260	520	-	488	757	-	650	2,674	1,104	2,422

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.

1. Emergency maintenance
2. Routine maintenance
3. Recurrent maintenance paved roads
4. Recurrent maintenance gravel roads
5. Recurrent maintenance gravel roads
6. Periodic maintenance blacktop roads
7. 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)
40DR009	18.51	2.91	2.91	22,800	14,066	1,621
40DR016	22.51	-	21.71	91,790	18,896	4,858
40DR008	12.61	9.38	-	39,160	7,565	5,176
40DR015	6.18	-	-	16,100	2,378	6,770
40DR022	18.84	8.00	8.00	55,830	6,873	8,123
40DR011	11.40	-	11.40	49,370	5,892	8,379
40DR017	16.09	13.25	-	55,000	5,322	10,334
40DR013	17.64	17.14	-	66,680	5,328	12,515
40DR003	10.20	9.20	-	44,550	3,541	12,581
40DR002	10.09	10.09	-	59,780	4,265	14,016
40DR001	9.86	9.86	-	43,120	3,058	14,101
40DR006	11.58	11.18	-	40,260	2,781	14,477
40DR010	8.22	8.22	-	40,440	2,637	15,336
40DR024	13.08	13.08	-	58,340	3,787	15,405
40DR025	26.15	15.75	15.75	98,990	5,355	18,486
40DR021	8.50	8.50	-	22,960	1,171	19,607
40DR026	21.94	20.40	20.40	132,760	6,286	21,120
40DR014	13.01	13.01	-	60,020	2,623	22,882
40DR005	15.11	3.39	11.96	109,330	4,211	25,963
40DR007	12.45	12.45	-	34,800	1,332	26,126
40DR004	11.29	11.29	11.29	74,690	2,537	29,440
40DR023	8.58	8.58	-	56,860	1,511	37,631
40DR020	17.91	16.41	17.91	117,660	2,765	42,553
40DR012	28.24	16.00	23.10	142,300	3,257	43,691
40DR019	17.32	10.82	-	51,340	1,104	46,504
40DR018	35.16	28.16	32.16	230,560	4,912	46,938

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 new construction works (NPR '000)

Code	Length (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
40DR022	-	-	6,873	-
40DR009	-	-	14,066	-
40DR012	-	-	3,257	-
40DR025	-	-	5,355	-
40DR016	-	-	18,896	-
40DR005	-	-	4,211	-
40DR026	-	-	6,286	-
40DR011	-	-	5,892	-
40DR020	-	-	2,765	-
40DR001	-	-	3,058	-
40DR006	-	-	2,781	-
40DR017	-	-	5,322	-
40DR003	-	-	3,541	-
40DR015	-	-	2,378	-
40DR013	-	-	5,328	-
40DR004	-	-	2,537	-
40DR021	-	-	1,171	-
40DR018	-	-	4,912	-
40DR024	-	-	3,787	-
40DR023	-	-	1,511	-
40DR008	-	-	7,565	-
40DR014	-	-	2,623	-
40DR007	-	-	1,332	-
40DR010	-	-	2,637	-
40DR002	3.00	10,500	4,265	2,462
40DR019	4.00	14,000	1,104	12,681

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 1779.8 million for the five-year period.

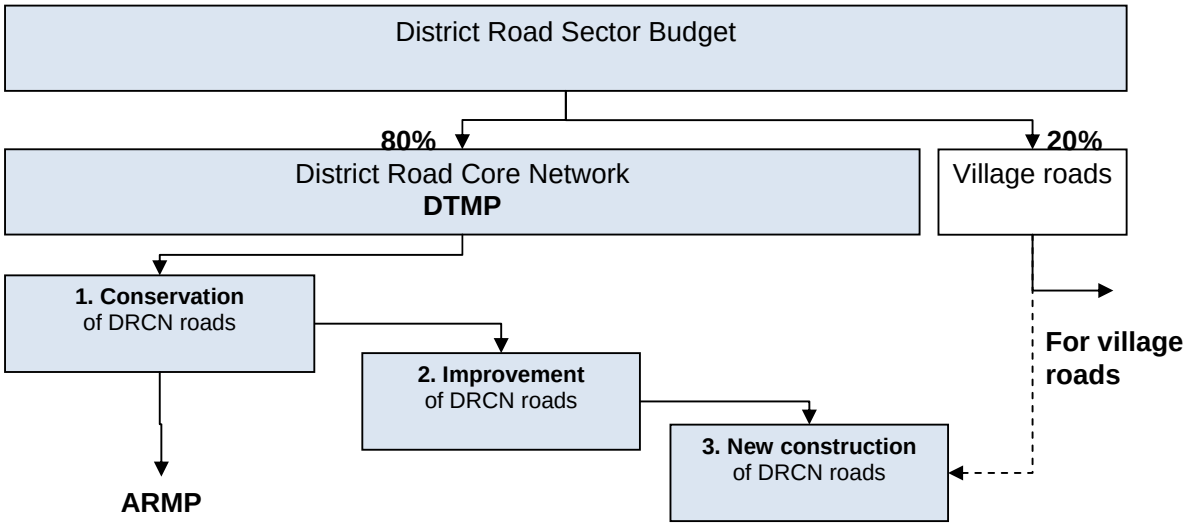
Table 6.1.1 Estimated funding levels (roads) for next five years (in NPR '000)

Funding source	2070/71	2071/72	2072/73	2073/74	2074/75
DDC grant (20% of total)	9,240	10,164	11,180	12,298	13,528
DDC internal revenue (20% of total)	10,304	11,334	12,468	13,715	15,086
RAIDP	151,000	166,100	182,710	200,981	221,079
Agricultural Roads (80% of total)	24,400	26,840	29,524	32,476	35,724
Roads Board Nepal	6,000	6,600	7,260	7,986	8,785
Member of Parliament (50% of total)	6,000	6,600	7,260	7,986	8,785
VDC fund (40% of total)	36,000	39,600	43,560	47,916	52,708
Peoples contribution (20% of total)	48,589	53,448	58,792	64,672	71,139
Total	**291,533**	**320,686**	**352,755**	**388,030**	**426,833**
Grand total	**1,779,837**				

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, 80% of the total budget is reserved for the district road core network. The remaining 20% is to be used by the DDC for the village roads, giving priority to emergency maintenance and routine/recurrent maintenance. Alternatively, this 20% may be used for the new construction of DRCN roads where this is considered a priority by the district. The 80% 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.

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	Item				Year														
A	Fiscal year				2070/71			2071/72			2072/73			2073/74			2074/75		
	Total budget				291,533			320,686			352,755			388,030			426,833		
	Village roads				58,307			64,137			70,551			77,606			85,367		
	Core road network budget (DTMP)				**233,226**			**256,549**			**282,204**			**310,424**			**341,467**		
B	**Core network length (km)**				**402.47**			**402.47**			**402.47**			**402.47**			**402.47**		
	Blacktop (km)				54.99			80.29			96.10			96.10			117.47		
	Gravel (km)				70.41			58.08			74.89			121.24			147.20		
	Earthen (km)				277.07			264.10			231.48			185.13			137.80		
C	**Conservation (NRs)**				**61,101**			**63,222**			**67,121**			**71,988**			**77,599**		
	Emergency				6,037			6,037			6,037			6,037			6,037		
	Routine				12,074			12,074			12,074			12,074			12,074		
	Recurrent (blacktop)				4,399			6,423			7,688			7,688			9,398		
	Recurrent (gravel)				5,281			4,356			5,617			9,093			11,040		
	Recurrent (earthen)				19,395			18,487			16,204			12,959			9,646		
	Periodic (blacktop)				6,874			10,037			12,013			12,013			14,684		
	Periodic (gravel)				7,041			5,808			7,489			12,124			14,720		
D	**Improvement**	**Cost**	**BT**	**GR**	**172,125**	**BT**	**GR**	**193,327**	**BT**	**GR**	**215,083**	**BT**	**GR**	**238,436**	**BT**	**GR**	**263,867**	**BT**	**GR**
	40DR009	-	2.91	2.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40DR016	91,790	21.71	-	91,790	21.71	-	-	-	-	-	-	-	-	-	-	-	-	-
	40DR008	39,160	-	9.38	39,160	-	9.38	-	-	-	-	-	-	-	-	-	-	-	-
	40DR015	16,100	-	-	16,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40DR022	55,830	8.00	8.00	25,075	3.59	3.59	30,755	4.41	4.41	-	-	-	-	-	-	-	-	-
	40DR011	49,370	11.40	-	-	-	-	49,370	11.40	-	-	-	-	-	-	-	-	-	-
	40DR017	55,000	-	13.25	-	-	-	55,000	-	13.25	-	-	-	-	-	-	-	-	-
	40DR013	66,680	-	17.14	-	-	-	58,202	-	14.96	8,478	-	2.18	-	-	-	-	-	-
	40DR003	44,550	-	9.20	-	-	-	-	-	-	44,550	-	9.20	-	-	-	-	-	-
	40DR002	59,780	-	10.09	-	-	-	-	-	-	59,780	-	10.09	-	-	-	-	-	-
	40DR001	43,120	-	9.86	-	-	-	-	-	-	43,120	-	9.86	-	-	-	-	-	-
	40DR006	40,260	-	11.18	-	-	-	-	-	-	40,260	-	11.18	-	-	-	-	-	-
	40DR010	40,440	-	8.22	-	-	-	-	-	-	18,895	-	3.84	21,545	-	4.38	-	-	-
	40DR024	58,340	-	13.08	-	-	-	-	-	-	-	-	-	58,340	-	13.08	-	-	-
	40DR025	98,990	15.75	15.75	-	-	-	-	-	-	-	-	-	98,990	15.75	15.75	-	-	-
	40DR021	22,960	-	8.50	-	-	-	-	-	-	-	-	-	22,960	-	8.50	-	-	-
	40DR026	132,760	20.40	20.40	-	-	-	-	-	-	-	-	-	36,601	5.62	5.62	96,159	14.78	14.78
	40DR014	60,020	-	13.01	-	-	-	-	-	-	-	-	-	-	-	-	60,020	-	13.01
	40DR005	109,330	11.96	3.39	-	-	-	-	-	-	-	-	-	-	-	-	107,689	11.78	3.34
	40DR007	34,800	-	12.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40DR004	74,690	11.29	11.29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40DR023	56,860	-	8.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40DR020	117,660	17.91	16.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40DR012	142,300	23.10	16.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	40DR019	51,340	-	10.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40DR018	230,560	32.16	28.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total improvement				**172,125**	**25.30**	**12.97**	**193,327**	**15.81**	**32.62**	**215,083**	**-**	**46.35**	**238,436**	**21.37**	**47.33**	**263,867**	**26.56**	**31.12**
E	**Construction**	**Cost**	**GR**		**-**	**GR**		**-**	**GR**		**-**	**GR**		**-**	**GR**		**-**	**GR**	
	40DR022	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR009	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR012	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR025	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR016	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR005	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR026	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR011	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR020	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR001	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR006	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR017	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR003	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR015	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR013	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR004	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR021	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR018	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR024	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR023	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR008	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR014	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR007	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR010	-	-		-	-		-	-		-	-		-	-		-	-	
	40DR002	10,500	3.00		-	-		-	-		-	-		-	-		-	-	
	40DR019	14,000	4.00		-	-		-	-		-	-		-	-		-	-	
	Total new construction				**-**	**-**		**-**	**-**		**-**	**-**		**-**	**-**		**-**	**-**	
F	**Remaining budget**				**-**			**-**			**-**			**-**			**-**		

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 172.62 km improved to gravel and 89.51 km improved to black top standard inclusive of cross drainage and protective structures required to make them maintainable all-weather roads. The remaining 104.45 km of earthen roads at the end of the DTMP period will be improved in the next DTMP. The same goes for the new construction of 7.22 km road 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 through VDC funding).

Table 6.3.1 DTMP output

Conservation	Improvement gravel	Improvement blacktop	New construction
402.47	170.40	89.04	-

Of the total DTMP budget, NPR 340.573 million will be spent on conservation, NPR 1083.297 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 by 20.6% from 70.41 km to 153.52 km from fair weather to all weather gravel and 22.2% from 54.99 km to 144.50 km blacktop.

Table 6.4.1 Standard of DRCN roads

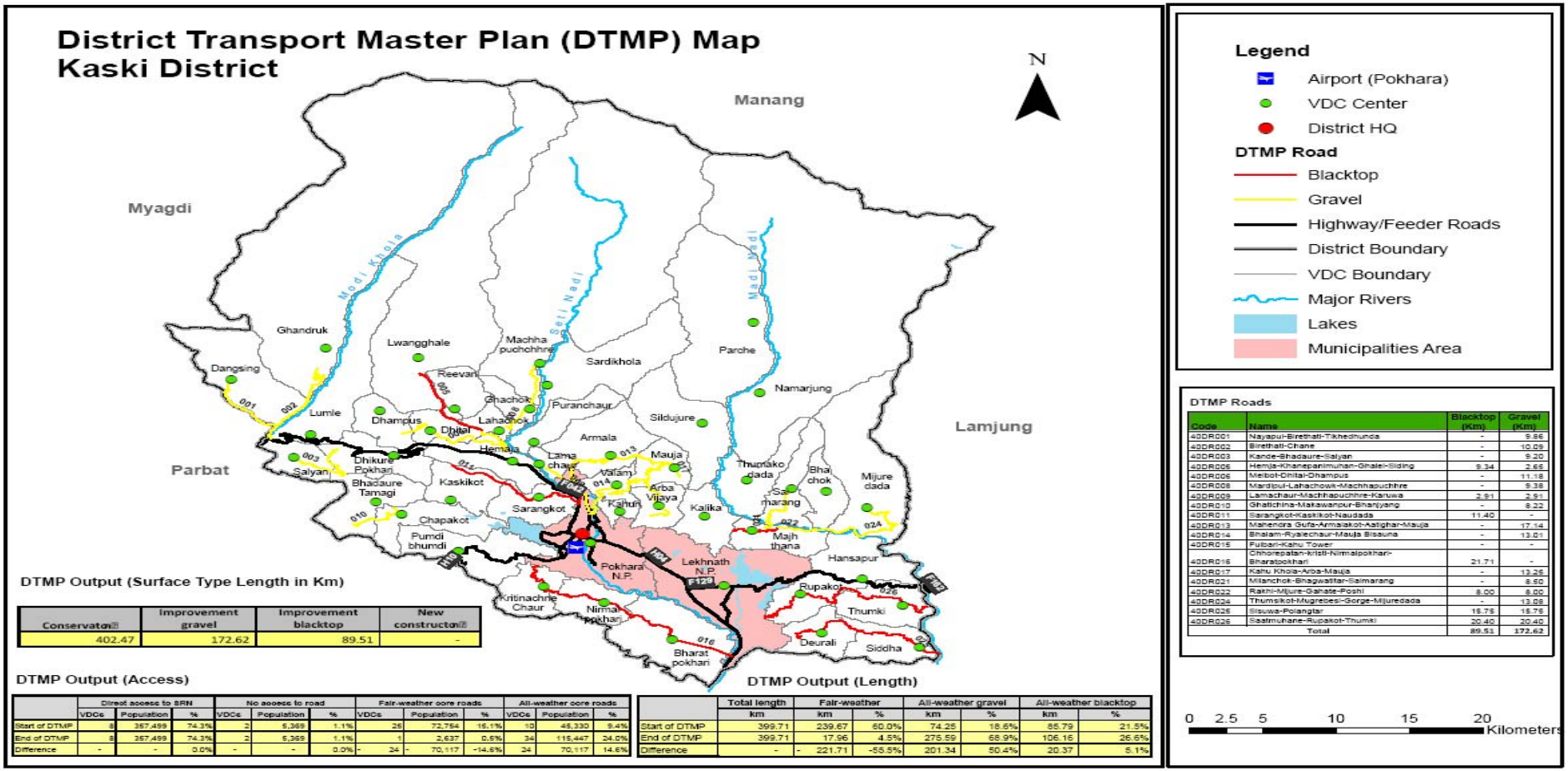
	Total length	Fair-weather		All-weather gravel		All-weather blacktop	
	km	km	%	km	%	km	%
Start of DTMP	402.47	277.07	68.8%	70.41	17.5%	54.99	13.7%
End of DTMP	402.47	96.67	24.0%	161.77	40.2%	144.03	35.8%
Difference	-	- 180.40	-44.8%	91.36	22.7%	89.04	22.1%

The number of VDC headquarters with access to the SRN or all-weather DRCN roads will increase from 18 to 36 and the district population with access to the SRN or all-weather DRCN roads will increase from 83.8% to 95.5%. The number of VDC headquarters with no access to DRCN roads will remain at 2, while the percentage of the district population with no access to DRCN roads will remain at 1.1%.

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	357,499	74.3%	2	5,369	1.1%	25	72,754	15.1%	10	45,330	9.4%
End of DTMP	8	357,499	74.3%	2	5,369	1.1%	7	16,314	3.4%	28	101,770	21.2%
Difference	-	-	0.0%	-	-	0.0%	-18	-56,440	-11.7%	18	56,440	11.7%

Figure 6 District Transport Master Plan (DTMP)



DTMP Roads

Code	Name	Blacktop (Km)	Gravel (Km)
40DR001	Nayapul-Birethati-Tikhedhunda	-	9.86
40DR002	Birethati-Chane	-	10.09
40DR003	Kande-Bhadaure-Salyan	-	9.20
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding	9.34	2.65
40DR006	Meibot-Dhital-Dhampus	-	11.18
40DR008	Mardipul-Lahachowk-Machhapuchhre	-	9.38
40DR009	Lamachaur-Machhapuchhre-Karuwa	2.91	2.91
40DR010	Ghatichina-Makawanpur-Bhanjyang	-	6.22
40DR011	Sarangkot-Kaskikot-Naudada	11.40	-
40DR013	Mahendra Gufa-Armalakot-Aatighar-Mauja	-	17.14
40DR014	Bhalam-Ryalechaur-Mauja Bisauna	-	13.01
40DR015	Fulbari-Kahu Tower	-	-
40DR016	Chhorepatan-Kristi-Nirmalpokhari-Bharatpokhari	21.71	-
40DR017	Kahu Khola-Arba-Mauja	-	13.25
40DR021	Milanchok-Bhagwatitar-Salmarang	-	8.50
40DR022	Rakhi-Mijure-Gahate-Poshi	8.00	8.00
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada	-	13.08
40DR025	Sisuwa-Polanglar	15.75	15.75
40DR026	Saatmuhane-Rupakot-Thumki	20.40	20.40
	Total	89.51	172.62

DTMP Output (Surface Type Length in Km)

Conservation	Improvement gravel	Improvement blacktop	New construction
402.47	172.62	89.51	-

DTMP Output (Access)

	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	357,499	74.3%	2	5,369	1.1%	25	72,754	15.1%	10	45,330	9.4%
End of DTMP	8	357,499	74.3%	2	5,369	1.1%	1	2,637	0.5%	34	115,447	24.0%
Difference	-	-	0.0%	-	-	0.0%	- 24	- 70,117	-14.6%	24	70,117	14.6%

DTMP Output (Length)

	Total length	Fair-weather		All-weather gravel		All-weather blacktop	
	km	km	%	km	%	km	%
Start of DTMP	399.71	239.67	60.0%	74.25	18.6%	85.79	21.5%
End of DTMP	399.71	17.96	4.5%	275.59	68.9%	106.16	26.6%
Difference	-	- 221.71	-55.5%	201.34	50.4%	20.37	5.1%

Annexes

Annex 1: DDC Letter

नेपाल सरकार
संघीय मामिला तथा स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय
कास्की

प.सं.०७०/७१
च.नं ३०१८

मिति: २०७१/०२/०७

विषय: कार्यसम्पादन भएको बारे

श्री टिम लिडर

ग्रामिण यातायात पूर्वाधार क्षेत्रगत कार्यक्रम, ललितपुर

प्रस्तुत विषयमा यस कास्की जिल्लाको जिल्ला यातायात गुरुयोजना तयारी पार्ने क्रममा खटिईआएका परामर्शदातृ संस्था आर.आई.डि.सी.प्रा.लि. का परामर्शदाताहरुबाट कार्य सम्पादन शर्तनामा तथा निर्देशिका बमोजिम मुख्य जिल्ला सडक संजाल छनौट गोष्ठि तथा छनोट भएका सडकहरुको फिल्ड अध्ययन कार्यसम्पादन र ड्राफ्ट प्रतिवेदन प्रस्तुती गोष्ठि सम्पन्न भएको व्याहोरा अवगत गराईन्छ ।

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०७१/२/१३

लि. स्थानीय विकास अधिकारी

Annex 2: Traffic Data

Code	Total Length (km)	Motorcycle	Car-Jeep-Minibus	Tractor	Truck-Bus	PCU	VPD
40DR022	18.84	78	35	30	10	**174**	**75**
40DR009	18.51	90	40	40	25	**265**	**105**
40DR018	35.16	46	20	20	15	**143**	**55**
40DR012	28.24	95	60	15	20	**218**	**95**
40DR025	26.15	90	30	15	10	**145**	**55**
40DR016	22.51	45	25	20	8	**120**	**53**
40DR005	15.11	52	34	31	25	**222**	**90**
40DR026	21.94	35	22	28	7	**124**	**57**
40DR011	11.40	90	45	20	20	**210**	**85**
40DR020	17.91	48	23	31	19	**185**	**73**
40DR002	10.09	10	3	6	4	**36**	**13**
40DR001	9.86	15	6	7	3	**40**	**16**
40DR019	17.32	18	7	11	2	**46**	**20**
40DR006	11.58	12	3	8	4	**41**	**15**
40DR017	16.09	10	4	8	5	**45**	**17**
40DR003	10.20	17	3	6	2	**32**	**11**
40DR015	6.18	23	15	5	2	**45**	**22**
40DR013	17.64	12	7	7	3	**39**	**17**
40DR008	12.61	14	5	7	5	**46**	**17**
40DR014	13.01	9	1	8	4	**38**	**13**
40DR007	12.45	11	4	6	5	**42**	**15**
40DR010	8.22	7	1	10	2	**33**	**13**
40DR024	13.08	19	3	6	3	**37**	**12**
40DR004	11.29	88	29	18	19	**185**	**66**
40DR023	8.58	13	2	7	4	**39**	**13**
40DR021	8.50	9	4	5	3	**31**	**12**
Total	**402.47**						

Annex 3: Population Served

#	VDC/municipality	Population	Road																										
			40DR022	40DR009	40DR018	40DR012	40DR025	40DR016	40DR005	40DR026	40DR011	40DR020	40DR002	40DR001	40DR019	40DR006	40DR017	40DR003	40DR015	40DR013	40DR008	40DR014	40DR007	40DR010	40DR024	**40DR004**	**40DR023**	**40DR021**	**SRN**
1	Arba Vijaya	3,923															x												
2	Armala	5,328																		x									
3	Bhachok	1,511																									x		
4	Bhadaure Tamagi	3,257				x																							
5	Bharat Pokhari	9,806						x																					
6	Chapakot	2,637																						x					
7	Dansing	3,058												x															
8	Deurali	2,373					x																						
9	Dhampus	2,537																								x			
10	Dhikur Pokhari	7,318																											x
11	Dhital	2,781														x													
12	Ghachok	2,707																			x								
13	Ghandruk	4,265											x																
14	Hansapur	3,635																											x
15	Hemja	12,262																											x
16	Kahun	2,378																	x										
17	Kalika	3,880	x																										
18	Kaskikot	5,892									x																		
19	Kritinachne Chaur	5,063						x																					
20	Lahachok	3,129																			x								
21	Lamachaur	7,027		x																									
22	lekhnath Municipality	58,816																											x
23	Lumle	4,258																											x
24	Lwangghalel	4,211							x																				

25	Machhapuchchhre	1,729																			x									
26	Majhthana	2,993	x																											
27	Mauja	1,399															x													
28	Mijuredada	3,787																							x					
29	Namarjung	1,104													x															
30	Nirmal Pokhari	4,027						x																						
31	Parche	2,418			x																									
32	Pokhara Sub-Metropolitan City	255,465																												x
33	Pumdibhumdi	7,391																												x
34	Puranchaur	3,597		x																										
35	Ribhan	1,332																					x							
36	Rupakot	2,958								x																				
37	Saimarang	1,171																											x	
38	Salyan	3,541																x												
39	Sarangkot	8,354																												x
40	Sardikhola	3,442		x																										
41	Siddha	2,982					x																							
42	Sildujure	2,494			x																									
43	Thumakodada	2,765										x																		
44	Thumki	3,328								x																				
45	Valam	2,623																				x								
	Total population	**480,952**	6,873	14,066	4,912	3,257	5,355	18,896	4,211	6,286	5,892	2,765	4,265	3,058	1,104	2,781	5,322	3,541	2,378	5,328	7,565	2,623	1,332	2,637	3,787	2,537	1,511	1,171	357,499
	Total VDCs/municipalities	**45**	**2**	**3**	**2**	**1**	**2**	**3**	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**1**	**1**	**1**	**3**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**8**

Annex 4 : Photographs

	
DRCN Workshop	
	
Draft Report Presentation	Phewa Lake
	
View of existing Road	Permanent crossing required

Annex 5 Overall Road Inventory

Road code	Road Name	Length (km)	Start chainage (km) or XY-coordinate	End chainage (km) or XY-coordinate	Surface Type: Black Top	Surface Type : Gravel	Surface Type : Earth	All Weather	Fair Weather	Conditiom - Good/ Fair	Condition - Poor	Condition - Temporarily Impassable	Permanently Impassable
40DR022	Rakhi-Mijure-Gahate-Poshi	18.84	0+000	18+840	10.84		8.00	10.84	8.00	10.84	2.84		
40DR009	Lamachaur-Machhapuchhre-Karuwa	18.51	0+000	18+510	15.60		2.91	15.60	2.91	15.60	2.91		
40DR018	Kahu Khola-Dudhpokhari	35.16	0+000	35+160	3.00	4.00	28.16	7.00	28.16		28.16	6.00	
40DR012	Baidam-Pame-Sidane-Panchase	28.24	0+000	28+240	5.14	7.10	16.00	12.24	16.00		16.00	3.00	
40DR025	Sisuwa-Polangtar	26.15	0+000	26+150	10.40		15.75	10.40	15.75		15.75	4.00	
40DR016	Chhorepatan-kristi-Nirmalpokhari-Bharatpokhari	22.51	0+000	22+510	0.80	21.71		22.51	0.00	22.51			
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding	15.11	0+000	15+110	3.15	8.57	3.39	11.72	3.39		3.39	2.00	
40DR026	Saatmuhane-Rupakot-Thumki	21.94	0+000	21+940	1.54		20.40	1.54	20.40		20.4	5.00	
40DR011	Sarangkot-Kaskikot-Naudada	11.4	0+000	11+400		11.40		11.40	0.00		0.00	1.00	
40DR020	Kaseri-Bhainse-Thumakodada	17.91	0+000	17.+910		1.50	16.41	1.50	16.41		16.41	5.00	
40DR002	Birethati-Chane	10.09	0+000	10+090			10.09	0.00	10.09		10.09	4.00	
40DR001	Nayapul-Birethati-Tikhedhunda	9.86	0+000	9+860			9.86	0.00	9.86		9.86	3.00	
40DR019	Kaure-Jyamdung-Tanting	17.32	0+000	17+320		6.50	10.82	6.50	10.82	6.50	10.82	6.00	
40DR006	Melbot-Dhital-Dhampus	11.58	0+000	11+580	0.40		11.18	0.40	11.18	11.58			
40DR017	Kahu Khola-Arba-Mauja	16.09	0+000	16+090		2.84	13.25	2.84	13.25	2.84	13.25	4.50	
40DR003	Kande-Bhadaure-Salyan	10.2	0+000	10+200	1.00		9.20	1.00	9.20		9.20	2.00	
40DR015	Fulbari-Kahu Tower	6.18	0+000	6+180	3.12	3.06		6.18	0.00	6.18			
40DR013	Mahendra Gufa-Armalakot-Aatighar-Mauja	17.64	0+000	17+640		0.50	17.14	0.50	17.14	0.50	17.14	5.00	
40DR008	Mardipul-Lahachowk-Machhapuchhre	12.61	0+000	12+610		3.23	9.38	3.23	9.38		9.38	3.23	
40DR014	Bhalam-Ryalechaur-Mauja Bisauna	13.01	0+000	13+010			13.01	0.00	13.01		13.01	1.60	
40DR007	Mardipul-Samibagar-Rivan-Saideghatta	12.45	0+000	12+450			12.45	0.00	12.45		12.45	2.00	

40DR010	Ghatichina-Makawanpur-Bhanjyang	8.22	0+000	8+220			8.22	0.00	8.22		8.22	1.50	
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada	13.08	0+000	13+080			13.08	0.00	13.08		13.08	4.00	
40DR004	Ghatte Khola-Dhampus-Khani Gaun	11.29	0+000	11+290			11.29	0.00	11.29		11.29	11.25	
40DR023	Thumsikot-Bhachok	8.58	0+000	8+580			8.58	0.00	8.58		8.58	8.76	
40DR021	Milanchok-Bhagwatitar-Saimarang	8.5	0+000	8+500			8.50	0.00	8.50		8.50	2.00	
40VR001	Baglung Buspark- Sarangkot-Dhikurpokhari Raod	14.81				1.50	13.31						
40VR002	Chisapani - Sigarebash – Danlin Road	10.63					10.63						
40VR003	Chorepatan-Khalse-Kubinde Road	6.94			0.80	1.50	4.63						
40VR004	Chorepatan-Shantistupa-Bhumdi-Ulleri-Kuvinde Road	17.90				10.20	7.70						
40VR005	Chorepatan Kristi Nirmalpokhari Bharatpokhari	4.16			0.80	3.36							
40VR006	Fursekhola-Ramdi-Matthikhan Road	9.84			0.10	0.20	9.54						
40VR007	Gahatedada-Lamakhet-Mauja Road	9.63				0.40	9.23						
40VR008	Gairepokhari-Khalte-Shisaghat	4.43				1.36	3.07						
40VR009	Lumle-Chandrakot-Tanchowk-Landruk Road	5.17					5.17						
40VR010	Naudada- AdhakariDada- KarkiTahara Road	3.12					3.12						
40VR011	Pulchowk-Sishaghat	6.09					6.09						
40VR012	RaniPauwa-Bhalam-Batulechaur	2.48			1.80	0.68							
40VR013	Sagrabash -Kyolene -Madhbesi Road	9.14			3.50		9.14						
40VR014	Saurya-Lippani-Ramkot-Hanshpur-Thulabesi Road	23.81			3.50	2.20	21.61						
40VR015	Talbesi - Lippani - Chamare Odar Road	2.08					2.08						
40VR016	Thumsikot-GhahateDada-Mijuredada	4.99				4.99							

Annex 6 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)
40DR022	Rakhi-Mijure-Gahate-Poshi	18.84	0+000	18+840	-	8.00	8.00	-	-	6	-	-	5.00	-	745	850
40DR009	Lamachaur-Machhapuchhre-Karuwa	18.51	0+000	18+510	-	2.91	2.91	1,000	-	-	-	-	2.00	-	235	400
40DR018	Kahu Khola-Dudhpokhari	35.16	0+000	35+160	-	28.16	32.16	-	18	44	-	-	22.00	-	1,250	3,000
40DR012	Baidam-Pame-Sidane-Panchase	28.24	0+000	28+240	-	16.00	23.10	-	-	-	100	-	15.00	-	1,150	600
40DR025	Sisuwa-Polangtar	26.15	0+000	26+150	-	15.75	15.75	-	-	-	-	-	4.00	-	685	450
40DR016	Chhorepatan-kristi-Nirmalpokhari-Bharatpokhari	22.51	0+000	22+510	-	-	21.71	-	-	-	-	-	3.00	-	900	350
40DR005	Hemja-Khanepanimuhan-Ghalel-Siding	15.11	0+000	15+110	-	3.39	11.96	-	50	18	-	-	4.00	-	640	450
40DR026	Saatmuhane-Rupakot-Thumki	21.94	0+000	21+940	-	20.40	20.40	-	-	12	-	-	7.00	-	765	1,000
40DR011	Sarangkot-Kaskikot-Naudada	11.4	0+000	11+400	-	-	11.40	-	-	-	-	-	2.00	-	480	550
40DR020	Kaseri-Bhainse-Thumakodada	17.91	0+000	17.+910	-	16.41	17.91	-	-	20	-	-	16.00	-	1,025	500
40DR002	Birethati-Chane	10.09	0+000	10+090	-	10.09	-	-	18	22	-	-	3.00	-	2,100	2,700
40DR001	Nayapul-Birethati-Tikhedhunda	9.86	0+000	9+860	-	9.86	-	-	-	32	-	-	3.00	-	1,800	2,100
40DR019	Kaure-Jyamdung-Tanting	17.32	0+000	17+320	-	10.82	-	-	-	-	-	-	6.00	-	3,450	5,100
40DR006	Melbot-Dhital-Dhampus	11.58	0+000	11+580	-	11.18	-	-	-	8	-	-	6.00	-	2,150	2,100
40DR017	Kahu Khola-Arba-Mauja	16.09	0+000	16+090	-											

						13.25	-	-	-	6	-	-	16.00	-	3,200	4,100
40DR003	Kande-Bhadaure-Salyan	10.2	0+000	10+200	-	9.20	-	-	-	14	-	-	4.00	-	2,950	3,250
40DR015	Fulbari-Kahu Tower	6.18	0+000	6+180	-	-	-	-	-	-	-	-	-	-	1,250	3,700
40DR013	Mahendra Gufa-Armalakot-Aatighar-Mauja	17.64	0+000	17+640	-	17.14	-	-	-	6	-	-	8.00	-	3,550	5,200
40DR008	Mardipul-Lahachowk-Machhapuchhre	12.61	0+000	12+610	-	9.38	-	-	-	-	-	-	7.00	-	2,150	3,700
40DR014	Bhalam-Ryalechaur-Mauja Bisauna	13.01	0+000	13+010	-	13.01	-	-	18	-	-	-	7.00	-	2,100	2,900
40DR007	Mardipul-Samibagar-Rivan-Saideghatta	12.45	0+000	12+450	-	12.45	-	-	-	6	-	-	6.00	-	525	1,800
40DR010	Ghatichina-Makawanpur-Bhanjyang	8.22	0+000	8+220	-	8.22	-	-	-	20	28	-	18.00	-	1,550	2,400
40DR024	Thumsikot-Mugrebesi-Gorge-Mijuredada	13.08	0+000	13+080	-	13.08	-	-	18	-	-	-	11.00	-	1,920	2,400
40DR004	Ghatte Khola-Dhampus-Khani Gaun	11.29	0+000	11+290	-	11.29	11.29	-	-	-	-	-	9.00	-	650	1,150
40DR023	Thumsikot-Bhachok	8.58	0+000	8+580	-	8.58	-	-	25	-	-	-	9.00	-	2,650	1,900
40DR021	Milanchok-Bhagwatitar-Saimarang	8.5	0+000	8+500	-	8.50	-	-	-	-	-	-	3.00	-	740	900
Total		**402.47**				277.07	176.59	1,000	147	214	128		196.00		40,610	53,550