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,

Darchula

September 2013

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

DARCHULA

Ref. No: 195

Date: August, 2013

Foreword

It is my pleasure to introduce this District Transport Master Plan (DTMP) of Darchula district. I believe that this document will be helpful in backstopping to Rural Transport Infrastructure Sector through sustainable planning, resources 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, RTI Sector Maintenance Pilot / DoLIDAR 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 Darchula district.

I would like to thank to Er Madan Raj Joshi District 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 - Er. Hare Ram Shrestha, Project Director, Er. Dikendra Katwal, Team Leader, Er. Raghunath Rimal, Engineer and Binod Dhakal, GIS expert for their continuous dedication, and cooperation in bringing this DTMP to final stage.

My special thank goes to all the representatives of political parties and other DPCC 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.

Badrinath Adhikari
Local Development Officer
District Development Committee
Darchula, Nepal

ACKNOWLEDGEMENT

Final report on the Preparation of District Transport Master Plan (DTMP) of Darchula District has been prepared under the contract agreement between RTI Sector Maintenance Pilot, DoLIDAR 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 heartfelt gratitude to the District Development Committee (DDC) Darchula for providing cooperation to carry out this task.

SIDeF would like to express our gratitude to Mr.Badrinath Adhikari, Local Development Officer, Er. Madan Raj Joshi, District Engineer, and all the DDC and DTO 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.

Thank goes to our team of Er. Dikendra Katwal, Team Leader, Er. Raghunath Rimal, Engineer, Binod Dhakal, GIS expert who continuously worked to finalize the DTMP.

Hare Ram Shrestha

Project Director
On behalf of
SIDeF

EXECUTIVE SUMMARY

Darchula district is located in Mahakali Zone of Far Western Development Region of Nepal. It Boarders with Bajhang district to the east, Baitadi to the West, Tibet to the North and India to the south. The district consists 41 VDCs. Topographic location of Darchula district is 29^0 $36^{'}$ to 30^0 $15^{'}$ north longitude and 80^0 $22^{'}$ to 81^0 $09^{'}$ east latitude. Total area of Darchula district is 2322 Km^2. Elevation above mean sea level ranges from 518 m. (min.) to 7132 m. (max.). The average maximum temperature is 18.6°C and the minimum temperature is 7.7°C and average annual rainfall is 2129mm

The main sources of occupations and livelihood of the district population are agriculture, livestock, small to medium industries, tourism industry and trading etc. The total population size is 133274 (male 63605, female69669). The population density of the District is 57.39 per sq. km. The Average household size is 5.41 persons. The literacy rate of the district population is 41.9%. Darchula district has multi ethnicity and the composition: majorities are Brahmin 17.32%, Byasi 1.25%, Chhetri 63%, Dalit 11.85%, Gurung 0.04%, Newar 0.04%,Janajati 0.14%, Musalman 0.01%, Thakuri 6.36%. The major languages spoken in the Darchula district are: Nepali, Gurung, Newari, and their local language.

Darchula district headquarter is Khalanga which is connected by Mahakali Rajmarg (Gokuleshwor- Khalanga Road).

In the Darchula district total length of road is 153.56 km where 75 km is SRN roads, 78.56 km is DRCN roads all DRCN roads are earthen.

The total length of DDC approved DRCN road is 72.56 Km all of them are earthen road. The table ES1 gives overall picture of road inventory of Darchula district.

Table ES1.

Road Class	Total length	Black Top	Gravel	Earthen
Strategic road network	75.00	71.00	-	4.00
Urban roads	-	-	-	-
District road core network	72.56	-	-	72.56
Village roads	6.00	-	-	6.00
Total	**153.56**	**71.00**	**-**	**82.56**

The total estimated cost for conservation, improvement and new construction for selected DRCN road is Rs 2,396,446,000. The cost for conservation is Rs 108,842,000, cost for improvement is Rs 2,396,446,000 and that for new construction is Rs 1,998,894,000.

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Table ES2.

Improvement type	Requirement		Cost (NPR)
Bridges	383	m	21,000,000
Slab culverts	0	m	-
Causeways	163	m	16,300,000
Hume pipes	12	units	120,000
Masonry retaining walls	1419	m^3	14,190,000
Gabion retaining walls	1550	m^3	6,200,000
Lined drains	71266	m	71,266,000
Widening	0	m	-
Rehabilitation	0.3	km	240,000
Gravelling	72.561	km	159,634,200
Blacktopping	0	km	-
New construction	288.24	km	1,998,894,200
Total			**2,287,844,400**

For 5-years planning the total estimated budget is Rs 437,621,000.00. As per the DDC decision 80% of the total road sector budget has to be taken for DRCN roads which come to be Rs 350,097,000 where as the total estimated cost of DRCN road is Rs 2,396,446,000. This clearly shows that budget allocation is not sufficient for all interventions. Hence, budget allocation is done based on the ranking priority as conservation, improvement and new construction.
Since budget is not sufficient to allocate for all the inventions for DRCN roads as estimated, budget has been allocated as table 6.2.1(AUTO).

For 5-years DTMP, the total budget allocated for conservation is Rs 137297,000 and Rs 212,800,000 for improvement.

At the end of DTMP period, the percentage changes of road condition are seen. The fair weather road length is reduced from 100% to 32%, all weather gravel road is improved from 0% to 68% and remained are unchanged. 17 VDC were not accessed by road at the start and at the end of DTMP. Likewise, 10 VDCs (40% of population) were accessed to fair weather road at the start of DTMP and all 10 VDC will accessed by all weather gravel road at the end of DTMP.

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
DTO	District Technical Office
DRCN	District Road Core Network
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
ARMP	Annual Road Maintenance Plan
DRILIP	Decentralized Rural Infrastructure and Livelihood Project
PAF	Poverty Alleviation Fund
RCIW	Rural community Infrastructure Work

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1. INTRODUCTION

Darchula district is located in Mahakali Zone of Far Western Development Region of Nepal. It Boarders with Bajhang district to the east, Baitadi to the West, Tibet to the North and India to the south. The district consists 41 VDCs. Topographic location of Darchula district is 29^0 36' to 30^0 15' north longitude and 80^0 22' to 81^0 09' east latitude. Total area of Darchula district is 2322 Km^2. Elevation above mean sea level ranges from 518 m. (min.) to 7132 m. (max.). The average maximum temperature is 18.6°C and the minimum temperature is 7.7°C and average annual rainfall is 2129mm.

Figure 1 Location of the Darchula district

The main sources of occupations and livelihood of the district population are agriculture, livestock, small to medium industries, tourism industry and trading etc. The Darchula district is rich in water resources, Herbal resources and other important resources and places like Api Mountain, Byas Gufa, way to man sarobar. The total population size is 133274 (male 63605, female69669). The population density of the District is 57.39 per sq. km. The Average household size is 5.41 persons. The literacy rate of the district population is 41.9%. Darchula district has multi ethnicity and the composition: majorities are Brahmin 17.32%, Byasi 1.25%, Chhetri 63%, Dalit 11.85%, Gurung 0.04%, Newar 0.04%,Janajati 0.14%, Musalman 0.01%, Thakuri 6.36%. The major languages spoken in the Darchula district are: Nepali, Gurung, Newari, and their local language.

Darchula district headquarter is Khalanga which is connected by Mahakali Rajmarg (Gokuleshwor- Khalanga Road). The town has an Indian counterpart to its northwest, named Dharcula. The split between the two towns is just virtual as the traditions, culture, and lifestyle of the people living across both the regions are quite similar

2. DISTRICT ROAD CORE NETWORK (DRCN)

In the course of DTMP preparation, the entire road inventory existing in the district has been taken. A minimum network of rural roads that provides access to all VDC headquarters linking directly with district headquarter or to the SRN roads are identified to form the district road core network (DRCN). In the process of selecting DRCN, some DRCN roads are extended beyond the VDC headquarters and some roads are added to provide access to agriculturally potential areas as well as tourism potential areas as DDC members insisted to incorporate some extra roads in DRCN even if the VDC is already linked with DRCN.

The total length of SRN road is 75 km and rural road is 78.56 km among which 72.56 is DRCN, approved by DTICC Darchula.

Table 2.1.1 Total road length (km)

Road Class	Total length	Black Top	Gravel	Earthen
Strategic roads	75.00	71.00	-	4.00
Urban roads	-	-	-	-
Rural roads	78.56			78.56
Total	**153.56**	**71.00**	**-**	**82.56**

2.1 NATIONAL HIGHWAYS AND FEEDER ROAD

The total length of existing SRN road within Darchula district is 75 km, where 71 km is blacktop and 4 km is earthen standard. The main highway is Mahakali Rajmarg (Gokuleshwor-Khaalanga Road) of 71 Km and Darchula – Tinkar road of 4km.

Table 2.1.1 National Highways and Feeder Roads (km)

Code	Name of Road	Total length	Black Top	Gravel	Earthen
H14	Mahakali Rajmarg (Gokuleshwor-Darchula)	**71.00**	71.00		
H14 Extension	Darchula – Tinkar	**4.00**			4.00
Total		**75.00**	**71.00**	**0.00**	**4.00**

2.2 DISTRICT ROAD CORE NETWORK

We developed inventory map using GIS software. After preparation of the inventory map for the identification of DRCN based on the criteria set out by DTMP Guidelines, DRCN was selected in consultation with DTO engineers and the technicians. Second meeting of DDC was called by DDC Darchula on the 02 August 2013 for approval of DRCN. Some of the roads were extended and some of the roads were added in the proposed DRCN list as per the suggestions of political parties present in the meeting of DDC. Finally the DRCN was approved by DDC with some additions. The Approved List of the DRCN road is shown in the table below containing 18 nos. of roads.

The total length of approved DRCN road (existing) was 72.56 Km and new construction road was 288.24. All of the existing DRCN roads are earthen.

Table 2.2.1 Total road length (km)

Road Class	Total length	Black Top	Gravel	Earthen
Strategic road network	**75.00**	**71.00**	**-**	**4.00**
Highways	75.00	71.00		4.00
Feeder roads	-			
Urban roads	**-**	**-**	**-**	**-**
	-			
	-			
	-			
District road core network	**72.56**	-	-	72.56
Village roads	**6.00**	-	-	6.00
Total	**153.56**	**71.00**	**-**	**82.56**

Table 2.2.2 District road core network (km)

Code	Discription	Total length	Black Top	Gravel	Earthen	All weather	Fair weather
75DR001	Lali-Kharkada-Sarmauli	**-**				-	-
75DR002	Shankarpur-Hunainath-Dandakot-Lali	**0.17**			0.17	-	0.17
75DR003	Erichhana-Rithachaupata-Sarmauli	**0.32**			0.32	-	0.32
75DR004	Gokuleshwor-Rithachaupata	**2.00**			2.00	-	2.00
75DR005	Gokuleshwor-Bohorigaun-Panebaj	**0.43**			0.43	-	0.43
75DR006	Dhap-Nisil-Gwani (Bagara)	**1.10**			1.10	-	1.10
75DR007	Dethala-Ranishikhar-Gwani	**-**				-	-
75DR008	Bangabad-Birendraban-Galfe	**2.37**			2.37	-	2.37
75DR009	Khalanga-Dethala	**52.00**			52.00	-	52.00
75DR010	Shikhar-Balach(Baril)-Dethala	**1.30**			1.30	-	1.30
75DR011	Dungri-Chhapari-Brahmadev-Dhari	**0.58**			0.58	-	0.58
75DR012	Hopari-Sipti-Seri-Tapoban	**-**				-	-
75DR013	Khar-Eyarkot	**-**				-	-
75DR014	Sipti-Sitaula	**-**				-	-
75DR015	Bitule-Latinath-Paribagad-Khandeshwori	**12.30**			12.30	-	12.30
75DR016	Paribagad-Guljar-Bungal(Bajhang)	**-**				-	-
75DR017	Hikila-Siddhatopi	**-**				-	-
75DR018	Makarigad-Ghusa	**-**				-	-
Total		**72.56**			**72.56**	**-**	**72.56**

As per the discussion with DDC in the second meeting they suggested the following roads to list out as district perspective important roads besides the DRCN roads. These roads are also important in Darchula district and are recommended as part of the planning which are as follows:

No.	Name of Roads	Status
1	Shreebagad- Tusradi- Huti- Dhaulakot- Sunsera	New construction
2	Huti- Pantauli- Malikarjun Mandir	New construction
3	Hikila- Brahmalek- Sina- Tusarapani	New construction
4	Uku- Dharampani- Shankarpur	New construction
5	Khar- Nagu- Sina	New construction
6	Malikarjun- Gadkhola- Bhartaula	New construction
7	Malikarjun- Naulpani- Dattu	New construction

2.3 VILLAGE ROADS

After the identification of DRCN roads, all other roads that do not belong to the DRCN roads and urban roads are classified as village roads and fall under the responsibility of the VDCs. The planning for these roads is not included in the DTMP, as they are not the responsibility of the district development committee. The management of these roads will be the responsibility of the VDC and any planned interventions will be included in the annual work programme of the VDCs. Funding for these interventions will come from VDC grant, community contributions and the additional funding (20% as decided by DDC meeting) made available from DDC through rural roads project. VDCs will be responsible for emergency and routine/recurrent maintenance of these roads.

Figure 2 Total road inventory

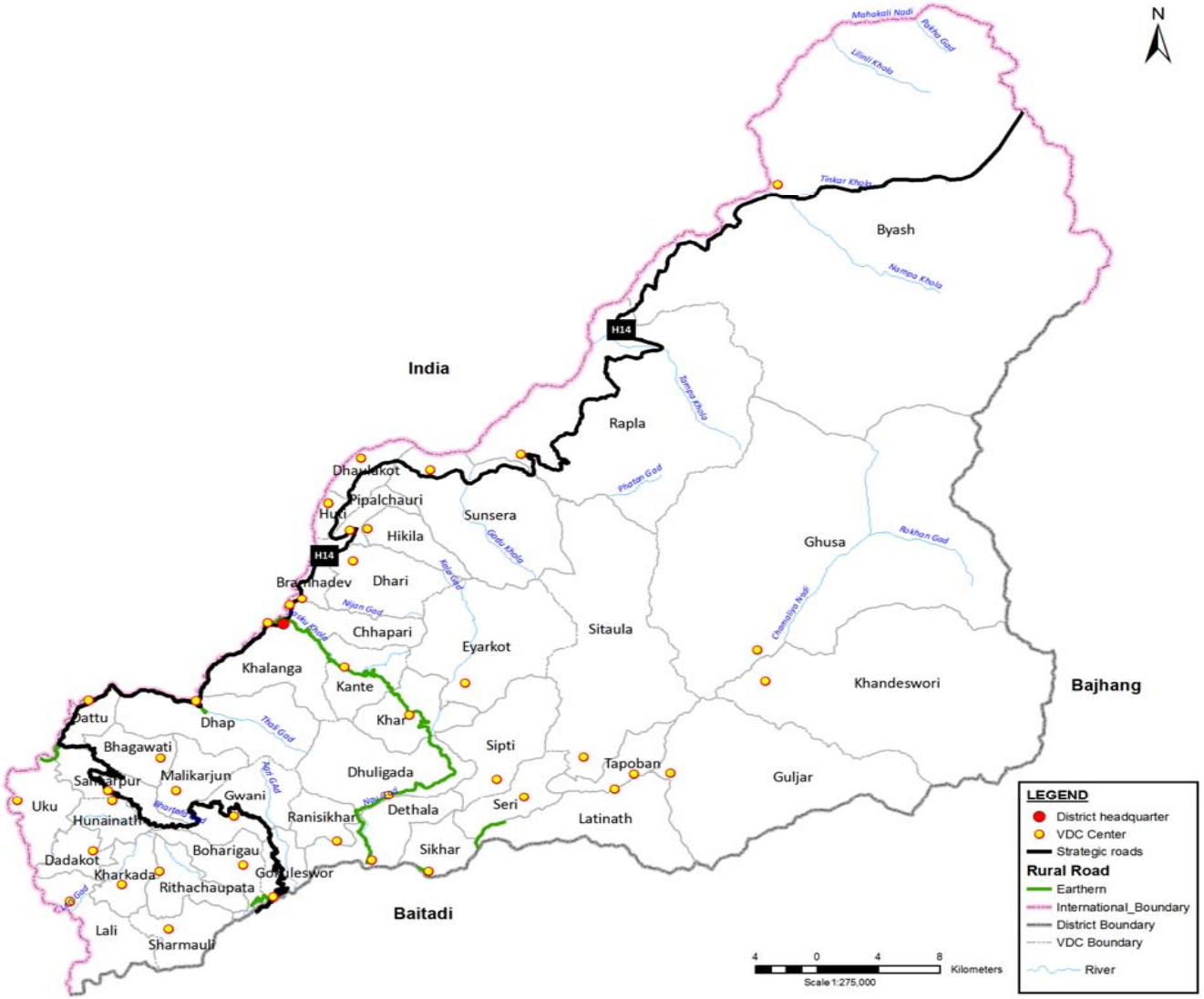
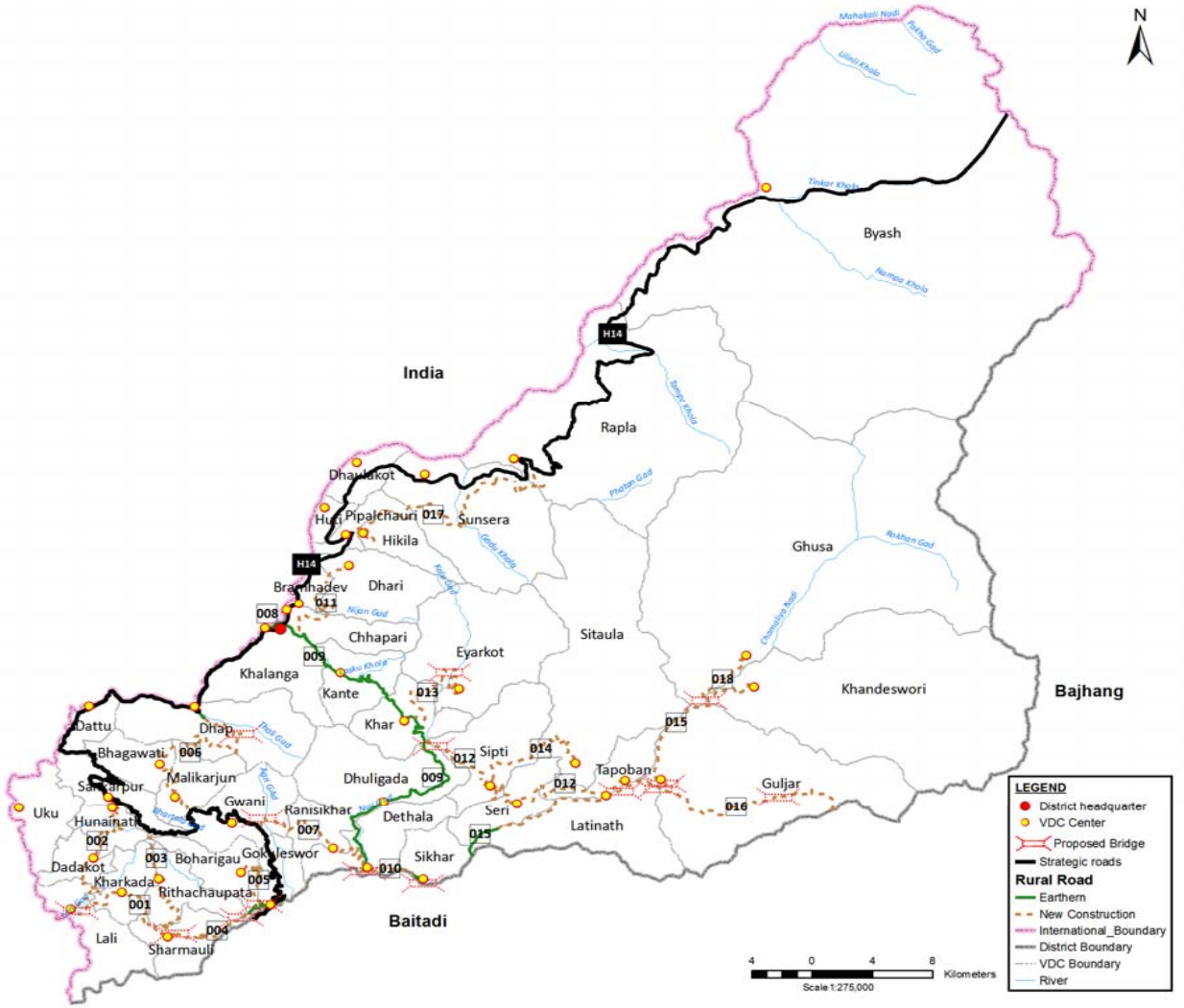


Figure 3 District Road Core Network (DRCN)



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

The need for conservation applies to the entire DRCN in existence, for as far as it is in maintainable condition and does not require rehabilitation first. A table is prepared to show the length of DRCN roads that require conservation, differentiating between emergency, routine, recurrent and periodic maintenance. For all conservation types the full length (in km) of the DRCN roads in maintainable standard is entered into Table 3.1.1. Even though the roads will only require emergency and periodic maintenance in some of the years, for DTMP planning purposes an average requirement and cost are applied to the entire network. The specific roads to receive emergency and periodic maintenance each year are determined in the ARMP.

Table 3.1.1 Conservation requirements

Code	Emergency maintenance (km)	Routine maintenance (km)	Recurrent maintenance (km)	Periodic maintenance (km)
75DR001	-	-	-	-
75DR002	0.17	0.17	0.17	0.17
75DR003	0.32	0.32	0.32	0.32
75DR004	2.00	2.00	2.00	2.00
75DR005	0.43	0.43	0.43	0.43
75DR006	1.10	1.10	1.10	1.10
75DR007	-	-	-	-
75DR008	2.37	2.37	2.37	2.37
75DR009	52.00	52.00	52.00	52.00
75DR010	1.30	1.30	1.30	1.30
75DR011	0.58	0.58	0.58	0.58
75DR012	-	-	-	-
75DR013	-	-	-	-
75DR014	-	-	-	-
75DR015	12.30	12.30	12.30	12.30
75DR016	-	-	-	-
75DR017	-	-	-	-
75DR018	-	-	-	-
Total	**72.561**	**72.561**	**72.561**	**72.561**

3.2 IMPROVEMENT

For the road improvements, separate tables are prepared to show the required interventions for rehabilitation, gravelling (upgrading to gravel standard), cross drainage, protective structures, widening and blacktopping. For this purpose, the Tables 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5 and 3.2.6 are prepared.

3.2.1 REHABILITATION

Rehabilitation and upgrading refer to the existing road network where the roads are found to be in poor condition, to require technical improvement (curves, gradients, etc) or to require an improved road surface. During field survey the rehabilitation works to be carried out.

Table 3.2.1 Sections of the district road core network requiring rehabilitation

Code	Name of Road	Total length (km)	Rehabilitation (km)
75DR001	Lali-Kharkada-Sarmauli	-	
75DR002	Shankarpur-Hunainath-Dandakot-Lali	0.17	
75DR003	Erichhana-Rithachaupata-Sarmauli	0.32	
75DR004	Gokuleshwor-Rithachaupata	2.00	
75DR005	Gokuleshwor-Bohorigaun-Panebaj	0.43	
75DR006	Dhap-Nisil-Gwani (Bagara)	1.10	0.30
75DR007	Dethala-Ranishikhar-Gwani	-	
75DR008	Bangabad-Birendraban-Galfe	2.37	
75DR009	Khalanga-Dethala	52.00	
75DR010	Shikhar-Balach(Baril)-Dethala	1.30	
75DR011	Dungri-Chhapari-Brahmadev-Dhari	0.58	
75DR012	Hopari-Sipti-Seri-Tapoban	-	
75DR013	Khar-Eyarkot	-	
75DR014	Sipti-Sitaula	-	
75DR015	Bitule-Latinath-Paribagad-Khandeshwori	12.30	
75DR016	Paribagad-Guljar-Bungal(Bajhang)	-	
75DR017	Hikila-Siddhatopi	-	
75DR018	Makarigad-Ghusa	-	
Total		**72.56**	**0.30**

3.2.2 GRAVELLING

To improve the surface condition of the existing earthen roads considered in DRCN, Out of 72.56, 49.56 km will have to be converted into gravel standard to maintain as all weather condition.

Table 3.2.2 Sections of the district road core network requiring gravelling

Code	Name of Road	Total length (km)	Gravelling (km)
75DR001	Lali-Kharkada-Sarmauli	-	-
75DR002	Shankarpur-Hunainath-Dandakot-Lali	0.17	0.17
75DR003	Erichhana-Rithachaupata-Sarmauli	0.32	0.32
75DR004	Gokuleshwor-Rithachaupata	2.00	2.00
75DR005	Gokuleshwor-Bohorigaun-Panebaj	0.43	0.43
75DR006	Dhap-Nisil-Gwani (Bagara)	1.10	1.10
75DR007	Dethala-Ranishikhar-Gwani	-	-
75DR008	Bangabad-Birendraban-Galfe	2.37	2.37
75DR009	Khalanga-Dethala	52.00	52.00
75DR010	Shikhar-Balach(Baril)-Dethala	1.30	1.30
75DR011	Dungri-Chhapari-Brahmadev-Dhari	0.58	0.58
75DR012	Hopari-Sipti-Seri-Tapoban	-	-
75DR013	Khar-Eyarkot	-	-
75DR014	Sipti-Sitaula	-	-
75DR015	Bitule-Latinath-Paribagad-Khandeshwori	12.30	12.30
75DR016	Paribagad-Guljar-Bungal(Bajhang)	-	-
75DR017	Hikila-Siddhatopi	-	-
75DR018	Makarigad-Ghusa	-	-
Total			**72.56**

3.2.3 CROSS DRAINAGE

To maintain the road in all weather condition, the required cross drainage structures are listed during the DRCN survey. The required cross drainage structure is shown in table below.

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)
75DR001	Lali-Kharkada-Sarmauli					
75DR002	Shankarpur-Hunainath-Dandakot-Lali			12		
75DR003	Erichhana-Rithachaupata-Sarmauli					
75DR004	Gokuleshwor-Rithachaupata	15		24		
75DR005	Gokuleshwor-Bohorigaun-Panebaj			24		1
75DR006	Dhap-Nisil-Gwani (Bagara)			12		
75DR007	Dethala-Ranishikhar-Gwani					
75DR008	Bangabad-Birendraban-Galfe					
75DR009	Khalanga-Dethala			45		10
75DR010	Shikhar-Balach(Baril)-Dethala			12		
75DR011	Dungri-Chhapari-Brahmadev-Dhari	15		10		1
75DR012	Hopari-Sipti-Seri-Tapoban					
75DR013	Khar-Eyarkot					
75DR014	Sipti-Sitaula					
75DR015	Bitule-Latinath-Paribagad-Khandeshwori			24		
75DR016	Paribagad-Guljar-Bungal(Bajhang)					
75DR017	Hikila-Siddhatopi					
75DR018	Makarigad-Ghusa					
Total		**30**	**-**	**163**	**-**	**12**

3.2.4 PROTECTIVE STRUCTURES

To maintain the road in all weather condition, the required protective structures are listed during the DRCN survey. The required protective structure is shown in table below.

Table 3.2.4 Required protective structures

Code	Name of Road	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)
75DR001	Lali-Kharkada-Sarmauli			
75DR002	Shankarpur-Hunainath-Dandakot-Lali		100	170
75DR003	Erichhana-Rithachaupata-Sarmauli	108	200	320
75DR004	Gokuleshwor-Rithachaupata	70		2,000
75DR005	Gokuleshwor-Bohorigaun-Panebaj	50	200	430
75DR006	Dhap-Nisil-Gwani (Bagara)	324	550	1,100
75DR007	Dethala-Ranishikhar-Gwani			
75DR008	Bangabad-Birendraban-Galfe			2,369
75DR009	Khalanga-Dethala	95		52,000
75DR010	Shikhar-Balach(Baril)-Dethala			
75DR011	Dungri-Chhapari-Brahmadev-Dhari	572		577
75DR012	Hopari-Sipti-Seri-Tapoban			
75DR013	Khar-Eyarkot			
75DR014	Sipti-Sitaula			
75DR015	Bitule-Latinath-Paribagad-Khandeshwori	200	500	12,300
75DR016	Paribagad-Guljar-Bungal(Bajhang)			
75DR017	Hikila-Siddhatopi			
75DR018	Makarigad-Ghusa			
Total		**1,419**	**1,550**	**71,266**

3.2.5 WIDENING

To maintain the road in all weather condition, the required widening of each DRCN roads are listed during the DRCN survey. The required widening lengths to overcome the necking of the roads are shown in table below.

Table 3.2.5 Sections of the district road core network requiring widening

Code	Name of Road	Total length (km)	VPD	Widening (m)
75DR001	Lali-Kharkada-Sarmauli	-	-	-
75DR002	Shankarpur-Hunainath-Dandakot-Lali	0.17	-	-
75DR003	Erichhana-Rithachaupata-Sarmauli	0.32	-	-
75DR004	Gokuleshwor-Rithachaupata	2.00	2.00	-
75DR005	Gokuleshwor-Bohorigaun-Panebaj	0.43	-	-
75DR006	Dhap-Nisil-Gwani (Bagara)	1.10	-	-
75DR007	Dethala-Ranishikhar-Gwani	-	-	-
75DR008	Bangabad-Birendraban-Galfe	2.37	2.00	-
75DR009	Khalanga-Dethala	52.00	7.00	-
75DR010	Shikhar-Balach(Baril)-Dethala	1.30	-	-
75DR011	Dungri-Chhapari-Brahmadev-Dhari	0.58	-	-
75DR012	Hopari-Sipti-Seri-Tapoban	-	-	-
75DR013	Khar-Eyarkot	-	-	-
75DR014	Sipti-Sitaula	-	-	-
75DR015	Bitule-Latinath-Paribagad-Khandeshwori	12.30	-	-
75DR016	Paribagad-Guljar-Bungal(Bajhang)	-	-	-
75DR017	Hikila-Siddhatopi	-	-	-
75DR018	Makarigad-Ghusa	-	-	-
Total		**72.56**		**-**

3.2.6 BLACKTOPPING

To improve the surface condition of the DRCN roads based on the PCU greater than 100, the required blacktopping of DRCN roads are listed during the DRCN survey. The required blacktopping length of the roads is shown in table below.

Table 3.2.6 Sections of the district road core network requiring blacktopping

				PCU	100
Code	**Name of Road**	**Total length (km)**	**Blacktop (km)**	**Traffic (PCU)**	**Blacktopping (km)**
75DR001	Lali-Kharkada-Sarmauli	-	-	-	-
75DR002	Shankarpur-Hunainath-Dandakot-Lali	0.17	-	-	-
75DR003	Erichhana-Rithachaupata-Sarmauli	0.32	-	-	-
75DR004	Gokuleshwor-Rithachaupata	2.00	-	4	-
75DR005	Gokuleshwor-Bohorigaun-Panebaj	0.43	-	-	-
75DR006	Dhap-Nisil-Gwani (Bagara)	1.10	-	-	-
75DR007	Dethala-Ranishikhar-Gwani	-	-	-	-
75DR008	Bangabad-Birendraban-Galfe	2.37	-	3	-
75DR009	Khalanga-Dethala	52.00	-	7	-
75DR010	Shikhar-Balach(Baril)-Dethala	1.30	-	-	-
75DR011	Dungri-Chhapari-Brahmadev-Dhari	0.58	-	-	-
75DR012	Hopari-Sipti-Seri-Tapoban	-	-	-	-
75DR013	Khar-Eyarkot	-	-	-	-
75DR014	Sipti-Sitaula	-	-	-	-
75DR015	Bitule-Latinath-Paribagad-Khandeshwori	12.30	-	-	-
75DR016	Paribagad-Guljar-Bungal(Bajhang)	-	-	-	-
75DR017	Hikila-Siddhatopi	-	-	-	-
75DR018	Makarigad-Ghusa	-	-	-	-
Total		**72.56**			**-**

3.3 NEW CONSTRUCTION

In Darchula District one VDC headquarter is not connected with road network and some of other road are not completed that are selected in DRCN. Hence those roads are proposed for new construction, which are shown in the table below.

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)
75DR001	Lali-Kharkada-Sarmauli	Lali, Kharkada, Sarmauli	-	12.00	12
75DR002	Shankarpur-Hunainath-Dandakot-Lali	Hunainath, Dandakot, Lali	0.17	35.00	
75DR003	Erichhana-Rithachaupata-Sarmauli	Hunainath,Rithachaupata, Sarmauli	0.32	30.00	
75DR004	Gokuleshwor-Rithachaupata	Rithachaupata	2.00	6.00	87
75DR005	Gokuleshwor-Bohorigaun-Panebaj	Bohorigaun, Gwani	0.43	14.00	
75DR006	Dhap-Nisil-Gwani (Bagara)	Gwani	1.10	14.00	15
75DR007	Dethala-Ranishikhar-Gwani	Dethala,Ranishikhar, Gwani	-	10.00	30
75DR008	Bangabad-Birendraban-Galfe		2.37	0.24	
75DR009	Khalanga-Dethala		52.00		
75DR010	Shikhar-Balach(Baril)-Dethala	Dethala	1.30	11.00	52
75DR011	Dungri-Chhapari-Brahmadev-Dhari	Chhapari, Brahmadev, Dhari	0.58	10.00	
75DR012	Hopari-Sipti-Seri-Tapoban	Khar,Sipti, Seri, Tapoban	-	20.00	15
75DR013	Khar-Eyarkot	Khar, Eyarkot	-	16.00	25
75DR014	Sipti-Sitaula	Sipti,Sitaula	-	10.00	
75DR015	Bitule-Latinath-Paribagad-Khandeshwori	Guljar, Khandeshwori	12.30	50.00	75
75DR016	Paribagad-Guljar-Bungal(Bajhang)	Latinath, Guljar	-	20.00	12
75DR017	Hikila-Siddhatopi	Hikila, Rapla	-	20.00	
75DR018	Makarigad-Ghusa	Khandeshwori, Ghusa	-	10.00	30
Total			**72.56**	**288.24**	**353**

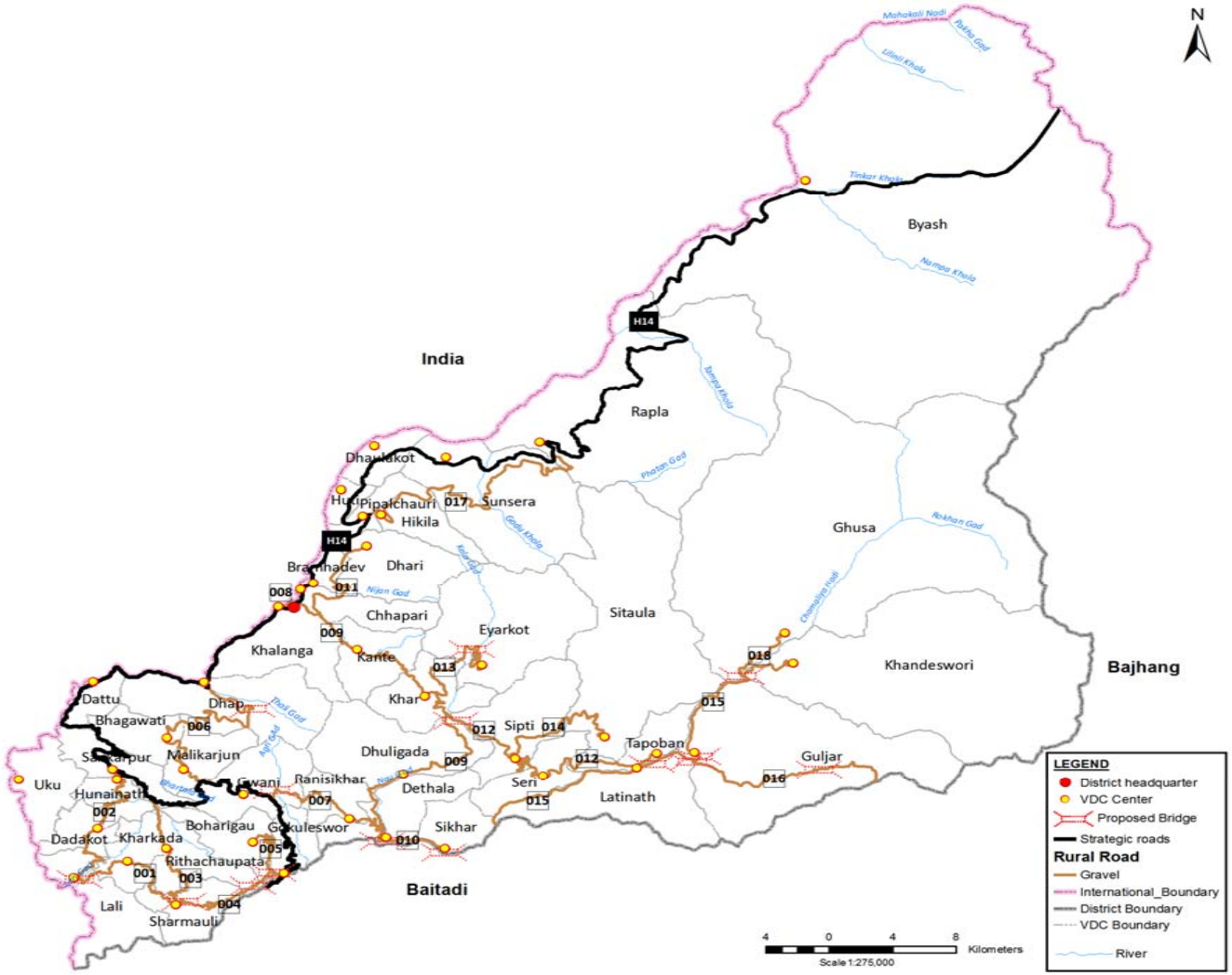
3.4 DISTRICT TRANSPORT PERSPECTIVE PLAN

The list of all the 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 are identified. 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 are worked out. The list of all the perspective interventions required are listed in the table 3.4.1 as listed below.

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)
75DR001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.00
75DR002	0.17	0.17	0.17	0.17	-	0.17	-	-	-	-	12.00	-	-	-	100.00	170.00	35.00
75DR003	0.32	0.32	0.32	0.32	-	0.32	-	-	-	-	-	-	-	108.00	200.00	320.00	30.00
75DR004	2.00	2.00	2.00	2.00	-	2.00	-	-	102.00	-	24.00	-	-	70.00	-	2,000.00	6.00
75DR005	0.43	0.43	0.43	0.43	-	0.43	-	-	-	-	24.00	-	1.00	50.00	200.00	430.00	14.00
75DR006	1.10	1.10	1.10	1.10	0.30	1.10	-	-	15.00	-	12.00	-	-	324.00	550.00	1,100.00	14.00
75DR007	-	-	-	-	-	-	-	-	30.00	-	-	-	-	-	-	-	10.00
75DR008	2.37	2.37	2.37	2.37	-	2.37	-	-	-	-	-	-	-	-	-	2,369.00	0.24
75DR009	52.00	52.00	52.00	52.00	-	52.00	-	-	-	-	45.00	-	10.00	95.00	-	52,000.00	-
75DR010	1.30	1.30	1.30	1.30	-	1.30	-	-	52.00	-	12.00	-	-	-	-	-	11.00
75DR011	0.58	0.58	0.58	0.58	-	0.58	-	-	15.00	-	10.00	-	1.00	572.00	-	577.00	10.00
75DR012	-	-	-	-	-	-	-	-	15.00	-	-	-	-	-	-	-	20.00
75DR013	-	-	-	-	-	-	-	-	25.00	-	-	-	-	-	-	-	16.00
75DR014	-	-	-	-	--	-	-	-	-	-	-	-	-	-	-	-	10.00
75DR015	12.30	12.30	12.30	12.30	-	12.30	-	-	75.00	-	24.00	-	-	200.00	500.00	12,300.00	50.00
75DR016	-	-	-	-	-	-	-	-	12.00	-	-	-	-	-	-	-	20.00
75DR017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.00
75DR018	-	-	-	-	-	-	-	-	30.00	-	-	-	-	-	-	-	10.00
Total	**72.56**	**72.56**	**72.56**	**72.56**	**0.30**	**72.56**	**-**	**-**	**383**	**-**	**163**	**-**	**12**	**1,419**	**1,550**	**71,266**	**288.24**

figure 4 District Transport Perspective Plan (DTPP)



4. COST ESTIMATION

The required interventions are determined from detailed survey of the DRCN roads. The costs necessary for conservation, improvement and new construction are calculated separately using actual average standard costs of the district.

4.1 CONSERVATION

The conservation costs are calculated for the first year to arrive at the amount of funding required. The costs are calculated by multiplying the lengths of roads requiring conservation by the relevant standard costs for different types of surfaces and type of maintenance. The Standard unit costs for conservation are listed in table 4.1.1 as below.

Table 4.1.1 Standard unit costs for conservation

Activity	Unit	Unit cost (NPR)
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 cost for the first year is Rs 21,768,000. Consequently the 5-year cost is Rs 108,842,000. This calculation is shown in the table 4.1.2 as below. These costs for later year will vary slightly due to changes to the road network in terms of upgrading and new construction.

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
75DR001	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR002	0.17	-	-	0.17	5	3	-	-	43	-	-	**51**	**255**
75DR003	0.32	-	-	0.32	9	6	-	-	79	-	-	**95**	**473**
75DR004	2.00	-	-	2.00	60	40	-	-	500	-	-	**600**	**3,000**
75DR005	0.43	-	-	0.43	13	9	-	-	108	-	-	**129**	**645**
75DR006	1.10	-	-	1.10	33	22	-	-	275	-	-	**330**	**1,650**
75DR007	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR008	2.37	-	-	2.37	71	47	-	-	592	-	-	**711**	**3,554**
75DR009	52.00	-	-	52.00	1,560	1,040	-	-	13,000	-	-	**15,600**	**78,000**
75DR010	1.30	-	-	1.30	39	26	-	-	325	-	-	**390**	**1,950**
75DR011	0.58	-	-	0.58	17	12	-	-	144	-	-	**173**	**866**
75DR012	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR013	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR014	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR015	12.30	-	-	12.30	369	246	-	-	3,075	-	-	**3,690**	**18,450**
75DR016	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR017	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR018	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**72.56**	**-**	**-**	**72.56**	**2,177**	**1,451**	**-**	**-**	**18,140**	**-**	**-**	**21,768**	**108,842**

4.2 IMPROVEMENT

The improvement costs are calculated by multiplying the standard costs as given in table 4.2.1 with the intervention lengths and volumes as shown in next table 4.2.2 as below.

Table 4.2.1 Standard unit costs for improvement activities

Activity	Unit	Unit cost (NPR)
Rehabilitation	Km	800,000
Widening	M	25,000
Gravelling	Km	2,200,000
Blacktopping	Km	5,700,000
Bridge construction	M	700,000
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	4,000
Lined drain construction	M	1,000

The estimated cost for the improvement of the existing DRCN is the cost to maintain the DRCN to a maintainable all-weather standard. The total cost for improvement is Rs 288,950,000 as shown in table 4.2.2 as 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
75DR001	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
75Dr002	0.17	-	-	374	-	-	-	1,200	-	-	-	400	170	**2,144**
75DR003	0.32	-	-	693	-	-	-	-	-	-	1,080	800	320	**2,893**
75DR004	2.00	-	-	4,400	-	10,500	-	2,400	-	-	700	-	2,000	**20,000**
75DR005	0.43	-	-	946	-	-	-	2,400	-	10	500	800	430	**5,086**
75DR006	1.10	240	-	2,420	-	-	-	1,200	-	-	3,240	2,200	1,100	**10,400**
75DR007	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
75DR008	2.37	-	-	5,212	-	-	-	-	-	-	-	-	2,369	**7,581**
75DR009	52.00	-	-	114,400	-	-	-	4,500	-	100	950	-	52,000	**171,950**
75DR010	1.30	-	-	2,860	-	-	-	1,200	-	-	-	-	-	**4,060**
75DR011	0.58	-	-	1,269	-	10,500	-	1,000	-	10	5,720	-	577	**19,076**
75DR012	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
75DR013	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
75DR014	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
75DR015	12.30	-	-	27,060	-	-	-	2,400	-	-	2,000	2,000	12,300	**45,760**
75DR016	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
75DR017	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
75DR018	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
Total	**72.56**	**240**	**-**	**159,634**	**-**	**21,000**	**-**	**16,300**	**-**	**120**	**14,190**	**6,200**	**71,266**	**288,950**

4.3 NEW CONSTRUCTION

The cost for new construction is calculated by using standard unit costs as given in table 4.3.1 as given below.

Table 4.3.1 Standard unit costs for new construction

Activity	Unit	Unit cost (NPR)
Track opening	Km	4,000,000
Gravelling	Km	2,200,000
Bridge construction	M	600,000

The new construction required to complete the DRCN is identified. In Darchula 17 VDCs are not accessed by road network before DTMP.

The new construction cost calculated is Rs 1,998,894,000 with required interventions of bridge, which is shown in table 4.3.2 as below.

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)
75DR001	Lali-Kharkada-Sarmauli	12.00	48,000	26,400	7,200	**81,600**
75Dr002	Shankarpur-Hunainath-Dandakot-Lali	35.00	140,000	77,000	-	**217,000**
75DR003	Erichhana-Rithachaupata-Sarmauli	30.00	120,000	66,000	-	**186,000**
75DR004	Gokuleshwor-Rithachaupata	6.00	24,000	13,200	52,200	**89,400**
75DR005	Gokuleshwor-Bohorigaun-Panebaj	14.00	56,000	30,800	-	**86,800**
75DR006	Dhap-Nisil-Gwani (Bagara)	14.00	56,000	30,800	9,000	**95,800**
75DR007	Dethala-Ranishikhar-Gwani	10.00	40,000	22,000	18,000	**80,000**
75DR008	Bangabad-Birendraban-Galfe	0.24	964	530	-	**1,494**
75DR009	Khalanga-Dethala	-	-	-	-	**-**
75DR010	Shikhar-Balach(Baril)-Dethala	11.00	44,000	24,200	31,200	**99,400**
75DR011	Dungri-Chhapari-Brahmadev-Dhari	10.00	40,000	22,000	-	**62,000**
75DR012	Hopari-Sipti-Seri-Tapoban	20.00	80,000	44,000	9,000	**133,000**
75DR013	Khar-Eyarkot	16.00	64,000	35,200	15,000	**114,200**
75DR014	Sipti-Sitaula	10.00	40,000	22,000	-	**62,000**
75DR015	Bitule-Latinath-Paribagad-Khandeshwori	50.00	200,000	110,000	45,000	**355,000**
75DR016	Paribagad-Guljar-Bungal(Bajhang)	20.00	80,000	44,000	7,200	**131,200**
75DR017	Hikila-Siddhatopi	20.00	80,000	44,000	-	**124,000**
75DR018	Makarigad-Ghusa	10.00	40,000	22,000	18,000	**80,000**
Total	**0**	**288.24**	**1,152,964**	**634,130**	**211,800**	**1,998,894**

4.4 DTPP COSTS

The DTPP cost is the required cost for long list of conservation, improvement and new construction for DRCN selected in the district. Projected 5-year Budget will not be sufficient to meet all the cost. The total DTPP cost calculated is Rs 2,396,686,000 which is shown in the table 4.4.1 as below.

Table 4.4.1 DTPP costs (NPR '000)

Code	Conservation	Improvement	New construction	Total
75DR001	-	-	81,600	81,600
75Dr002	255	2,144	217,000	219,399
75DR003	473	2,893	186,000	189,366
75DR004	3,000	20,000	89,400	112,400
75DR005	645	5,086	86,800	92,531
75DR006	1,650	10,400	95,800	107,850
75DR007	-	-	80,000	80,000
75DR008	3,554	7,581	1,494	12,629
75DR009	78,000	171,950	-	249,950
75DR010	1,950	4,060	99,400	105,410
75DR011	866	19,076	62,000	81,942
75DR012	-	-	133,000	133,000
75DR013	-	-	114,200	114,200
75DR014	-	-	62,000	62,000
75DR015	18,450	45,760	355,000	419,210
75DR016	-	-	131,200	131,200
75DR017	-	-	124,000	124,000
75DR018	-	-	80,000	80,000
Total	**108,842**	**288,950**	**1,998,894**	**2,396,686**

5. RANKING

Ranking of the DRCN roads are based on the cost calculation of the intervention and population served basis. Prioritization is done according to the cost per capita and raking is carried out for conservation, improvement and new construction. The cost of all the interventions under conservation, improvement , new construction is added up for each roads and this total cost is divided by the population served by the road.The population data for the VDCs linked by the road concerned are shown in Annex 2.

5.1 CONSERVATION

The ranking for conservation is based on per capita cost for conservation cost. The ranking for conservation is shown in table 5.1.1 as below.

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)
75DR001	-	-	-	-	-	-	-	-	-	10,133	-
75DR007	-	-	-	-	-	-	-	-	-	11,296	-
75DR012	-	-	-	-	-	-	-	-	-	13,360	-
75DR013	-	-	-	-	-	-	-	-	-	6,808	
75DR014	-	-	-	-	-	-	-	-	-	7,695	-
75DR016	-	-	-	-	-	-	-	-	-	8,947	-
75DR017	-	-	-	-	-	-	-	-	-	4,046	-
75DR018	-	-	-	-	-	-	-	-	-	4,683	-
75Dr002	0.17	5	3	-	-	43	-	-	51	9,368	5
75DR003	0.32	9	6	-	-	79	-	-	95	13,706	7
75DR011	0.58	17	12	-	-	144	-	-	173	17,326	10
75DR005	0.43	13	9	-	-	108	-	-	129	12,802	10
75DR006	1.10	33	22	-	-	275	-	-	330	9,830	34
75DR010	1.30	39	26	-	-	325	-	-	390	6,707	58
75DR004	2.00	60	40	-	-	500	-	-	600	8,372	72
75DR008	2.37	71	47	-	-	592	-	-	711	8,577	83
75DR015	12.30	369	246	-	-	3,075	-	-	3,690	12,098	305
75DR009	52.00	1,560	1,040	-	-	13,000	-	-	15,600	24,137	646

5.2 IMPROVEMENT

The ranking for improvement is based on per capita cost for improvement cost. The ranking for improvement is shown in table 5.2.1 as below.

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)
75DR001	-	-	-	-	10,133	-
75DR007	-	-	-	-	11,296	-
75DR012	-	-	-	-	13,360	-
75DR013	-	-	-	-	6,808	-
75DR014	-	-	-	-	7,695	-
75DR016	-	-	-	-	8,947	-
75DR017	-	-	-	-	4,046	-
75DR018	-	-	-	-	4,683	-
75DR003	0.32	0.32	-	2,893	13,706	211
75Dr002	0.17	0.17	-	2,144	9,368	229
75DR005	0.43	0.43	-	5,086	12,802	397
75DR010	1.30	1.30	-	4,060	6,707	605
75DR008	2.37	2.37	-	7,581	8,577	884
75DR006	1.10	1.10	-	10,400	9,830	1,058
75DR011	0.58	0.58	-	19,076	17,326	1,101
75DR004	2.00	2.00	-	20,000	8,372	2,389
75DR015	12.30	12.30	-	45,760	12,098	3,782
75DR009	52.00	52.00	-	171,950	24,137	7,124

5.3 NEW CONSTRUCTION

The ranking for new construction is based on per capita cost for new construction cost. The ranking for new construction is shown in table 5.3.1 as below.

Table 5.3.1 Ranking of new construction works (NPR '000)

Code	Length (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
75DR009	-	-	24,137	-
75DR008	0.24	1,494	8,577	174
75DR011	10.00	62,000	17,326	3,578
75DR005	14.00	86,800	12,802	6,780
75DR007	10.00	80,000	11,296	7,082
75DR001	12.00	81,600	10,133	8,053
75DR014	10.00	62,000	7,695	8,057
75DR006	14.00	95,800	9,830	9,746
75DR012	20.00	133,000	13,360	9,955
75DR004	6.00	89,400	8,372	10,678
75DR003	30.00	186,000	13,706	13,571
75DR016	20.00	131,200	8,947	14,664
75DR010	11.00	99,400	6,707	14,820
75DR013	16.00	114,200	6,808	16,774
75DR018	10.00	80,000	4,683	17,083
75Dr002	35.00	217,000	9,368	23,164
75DR015	50.00	355,000	12,098	29,344
75DR017	20.00	124,000	4,046	30,648

6. DISTRICT TRANSPORT MASTER PLAN (DTMP)

In the process of preparing DTMP, 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 DTMP period are worked out.

6.1 FIVE YEAR PROJECTED FINANCIAL RESOURCES

The estimation of the financial resources available at district level for investments in the road sector has been carried out which is shown in Table 6.1.1 below. The expected fund for next five year is worked out by projecting the last year available budget at an average of 10% increment of the budget.

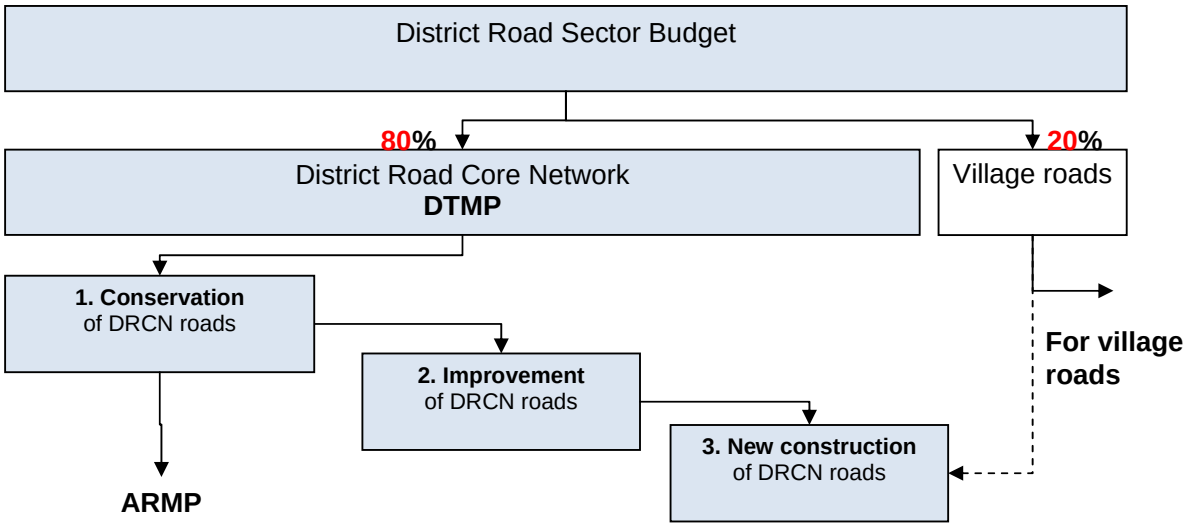
Table 6.1.1 Estimated funding levels (roads) for next five years (in NPR '000)

Funding source	2070/71	2071/72	2072/73	2073/74	2074/75
RCIW	12,243	13,467	14,814	16,295	17,925
Agricultural Road	10,120	11,132	12,245	13,470	14,817
Road Repair & Maintenance	110	121	133	146	161
Central Road Program	3,238	3,562	3,918	4,310	4,741
Karnali & Karnali Periphery Program	8,580	9,438	10,382	11,420	12,562
DRILIP	37,390	41,129	45,242	49,766	54,742
Total	**71,681**	**78,849**	**86,734**	**95,408**	**104,948**
Grand total	**437,621**				

6.2 BUDGET ALLOCATION

The percentage of budget allocation for DRCN road is 80% and 20% is allocated in village roads as decided by DTICC/DDC meeting held in the district.

Figure 5 District road sector budget allocation



The budget allocation for next five year is done based on the ranking of the road and the priority given by DDC authority. Due to budget constraint, full budget for conservation of DRCN roads could not be allocated. Some roads are subjected to improve into gravel surface condition then budget is allocated to complete new construction which will complete the DRCN. The detail of allocation of budget for next five year is shown in the table 6.2.1 as below.

Table 6.2.1 DTMP investment plan

Item				Year														
Fiscal year				2070/71			2071/72			2072/73			2073/74			2074/75		
Total budget				71,681			78,849			86,734			95,408			104,948		
Village roads				14,336			15,770			17,347			19,082			20,990		
Core road network budget (DTMP)				57,345			63,079			69,387			76,326			83,959		
Core network length (km)				72.56			72.56			72.56			72.56			72.56		
Blacktop (km)				-			-			-			-			-		
Gravel (km)				-			5.79			9.16			21.02			34.98		
Earthen (km)				72.56			66.77			63.40			51.54			37.58		
Conservation (NRs)				21,768			24,083			25,431			30,178			35,760		
Emergency				2,177			2,177			2,177			2,177			2,177		
Routine				1,451			1,451			1,451			1,451			1,451		
Recurrent (blacktop)				-			-			-			-			-		
Recurrent (gravel)				-			2,315			3,663			8,409			13,992		
Recurrent (earthen)				18,140			16,693			15,851			12,884			9,395		
Periodic (blacktop)				-			-			-			-			-		
Periodic (gravel)				-			1,447			2,289			5,256			8,745		
Improvement	Cost	BT	GR	35,577	BT	GR	38,996	BT	GR	43,956	BT	GR	46,148	BT	GR	48,199	BT	GR
75DR001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75DR003	2,893	-	0.32	2,893	-	0.32	-	-	-	-	-	-	-	-	-	-	-	-
75Dr002	2,144	-	0.17	2,144	-	0.17	-	-	-	-	-	-	-	-	-	-	-	-
75DR005	5,086	-	0.43	5,086	-	0.43	-	-	-	-	-	-	-	-	-	-	-	-
75DR010	4,060	-	1.30	4,060	-	1.30	-	-	-	-	-	-	-	-	-	-	-	-
75DR008	7,581	-	2.37	7,581	-	2.37	-	-	-	-	-	-	-	-	-	-	-	-
75DR006	10,400	-	1.10	10,400	-	1.10	-	-	-	-	-	-	-	-	-	-	-	-
75DR011	19,076	-	0.58	3,413	-	0.10	15,664	-	0.47	-	-	-	-	-	-	-	-	-
75DR004	20,000	-	2.00	-	-	-	20,000	-	2.00	-	-	-	-	-	-	-	-	-
75DR015	45,760	-	12.30	-	-	-	3,333	-	0.90	42,427	-	11.40	-	-	-	-	-	-
75DR009	171,950	-	52.00	-	-	-	-	-	-	1,529	-	0.46	46,148	-	13.96	48,199	-	14.58
Total improvement				**35,577**	**-**	**5.79**	**38,996**	**-**	**3.37**	**43,956**	**-**	**11.87**	**46,148**	-	**13.96**	**48,199**	**-**	**14.58**
														-				
														-				

Table 6.2.1 DTMP investment plan contd…..

Item			Year									
Fiscal year			2070/71		2071/72		2072/73		2073/74		2074/75	
Constrction	Cost	GR	-	GR	-	GR	-	GR	-	GR	-	GR
75DR009	-	-										
75DR008	1,494	0.24										
75DR011	62,000	10.00										
75DR005	86,800	14.00										
75DR007	80,000	10.00										
75DR001	81,600	12.00										
75DR014	62,000	10.00										
75DR006	95,800	14.00										
75DR012	133,000	20.00										
75DR004	89,400	6.00										
75DR003	186,000	30.00										
75DR016	131,200	20.00										
75DR010	99,400	11.00										
75DR013	114,200	16.00										
75DR018	80,000	10.00										
75Dr002	217,000	35.00										
75DR015	355,000	50.00										
75DR017	124,000	20.00										
Total new construction												
Remaining budget												

6.3 DTMP OUTPUTS

The output of the DTMP will be of conservation 72.56 km and improvement to gravel will be 49.56 km as shown in table 6.3.1 below.

Table 6.3.1 DTMP output

Conservation	Improvement gravel	Improvement blacktop	New construction
72.56	49.56		

The budget allocated for next five years is; Rs 137,220,000 for conservation and Rs 212,876,000 for improvement.

6.4 DTMP OUTCOME

After the DTMP, fair weather roads are decreased from 100% to 32%, all weather gravel roads are increased from 0% to 68%, which is shown in the table 6.4.1 as below.

Table 6.4.1 Standard of DRCN roads

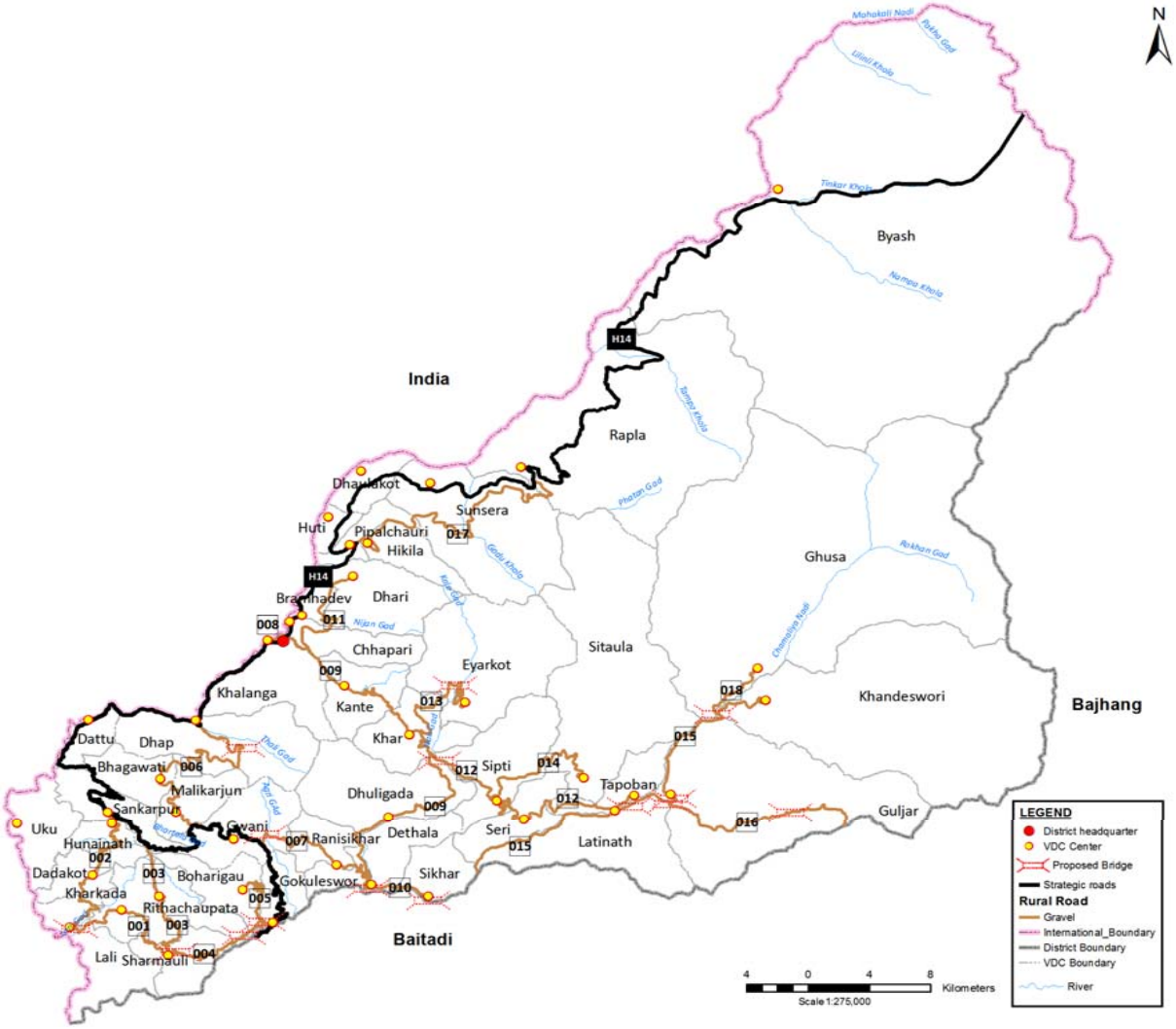
	Total length	Fair-weather		All-weather gravel		All-weather blacktop	
	Km	km	%	Km	%	km	%
Start of DTMP	72.56	72.56	100%	-	0%	-	0%
End of DTMP	72.56	23.01	32%	49.56	68%	-	0%
Difference		- 49.56	-68%	49.56	68%	-	0%

17 VDC were not accessed by road at the start and end of DTMP due to insufficient budget. Likewise, 10 VDCs (33% of population) were accessed to fair weather road, will be reduced to 0 VDC (0% of population). 0 VDCs (0 % of population) were accessed to all weather roads will be accessed to 10 VDCs (33% of population) at the end of DTMP. After DTMP the access condition to VDC population is presented in table 6.4.2 below.

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	18	56,677	43%	17	52,686	40%	10	43,252	33%	0	-	0%
End of DTMP	18	56,677	43%	17	52,686	40%	0	-	0%	10	43,252	33%
Difference			0%	-	-	0%	-10	-43,252	-33%	10	43,252	33%

Figure 6 District Transport Master Plan (DTMP)



ANNEX 1 TRAFFIC DATA

ANNEX 1 TRAFFIC DATA

Table A1.2 Traffic Data

Code	Description	Total Length (km)	Motorcycle	Car-Jeep-Minibus	Tractor	Truck-Bus	PCU	VPD
75DR001	Lali-Kharkada-Sarmauli	0.00					-	-
75Dr002	Shankarpur-Hunainath-Dandakot-Lali	0.17					-	-
75DR003	Erichhana-Rithachaupata-Sarmauli	0.32					-	-
75DR004	Gokuleshwor-Rithachaupata	2.00	4	2			**4**	**2**
75DR005	Gokuleshwor-Bohorigaun-Panebaj	0.43					-	-
75DR006	Dhap-Nisil-Gwani (Bagara)	1.10					-	-
75DR007	Dethala-Ranishikhar-Gwani	0.00					-	-
75DR008	Bangabad-Birendraban-Galfe	2.37	2	2			**3**	**2**
75DR009	Khalanga-Dethala	52.00		7			**7**	**7**
75DR010	Shikhar-Balach(Baril)-Dethala	1.30					-	-
75DR011	Dungri-Chhapari-Brahmadev-Dhari	0.58					-	-
75DR012	Hopari-Sipti-Seri-Tapoban	0.00					-	-
75DR013	Khar-Eyarkot	0.00					-	-
75DR014	Sipti-Sitaula	0.00					-	-
75DR015	Bitule-Latinath-Paribagad-Khandeshwori	12.30					-	-
75DR016	Paribagad-Guljar-Bungal(Bajhang)	0.00					-	-
75DR017	Hikila-Siddhatopi	0.00					-	-
75DR018	Makarigad-Ghusa	0.00					-	-
Total		**72,56**					-	-

ANNEX 2 POPULATION SERVED

Table A2.1 Population Served

#	VDC / Municipality	Population	Road																		
			75DR001	75Dr002	75DR003	75DR004	75DR005	75DR006	75DR007	75DR008	75DR009	75DR010	75DR011	75DR012	75DR013	75DR014	75DR015	75DR016	75DR017	75DR018	SRN
1	Bhagabati	3018																			X
2	Boharigau	4211					X														
3	Bramhadev	1752											X								X
4	Byash	556																			X
5	Chhapari	2822											X								X
6	Dadakot	1907		X																	
7	Dattu	2186																			X
8	Dethala	3821							X		X	X									
9	Dhap	4906						X													X
10	Dhari	4175											X								X
11	Dhaulakot	2573																			X
12	Dhuligada	4727									X										
13	Eyarkot	2536													X						
14	Ghusa	1532																		X	
15	Gokuleswor	3667				X	X														X
16	Guljar	4272															X	X			
17	Gwani	4924					X	X	X												X
18	Hikila	2859																	X		X
19	Hunainath	1672		X	X																
20	Huti	2594																			X
21	Kante	2740									X										
22	Khalanga	8577								X	X		X								X
23	Khandeswori	3151															X			X	
24	Khar	4272									X			X	X						
25	Kharkada	2977	X																		
26	Lali	2808	X	X																	
27	Latinath	4675															X	X			
28	Malikarjun	2431																			X
29	Pipalchauri	2032																			X
30	Ranisikhar	2551							X												
31	Rapla	1187																	X		X
32	Rithachaupata	4705			X	X															
33	Shankarpur	2981		X	X																X
34	Seri	2456												X							
35	Sharmauli	4348	X		X																
36	Sikhar	2886										X									
37	Sipti	4339												X		X					
38	Sitaula	3356														X					
30	Sunsera	3437																			X
40	Tapoban	2293												X							
41	Uku	3572																			
	Total population	**132,484**	10,133	9,368	13,706	8,372	12,802	9,830	11,296	8,577	24,137	6,707	17,326	13,360	6,808	7,695	12,098	8,947	4,046	4,683	56,677
	Total VDCs /municipalities	**41**	**3**	**4**	**4**	**2**	**3**	**2**	**3**	**1**	**5**	**2**	**4**	**4**	**2**	**2**	**3**	**2**	**2**	**2**	**18**

Source: *Population census 2012*

ANNEX 3 LOCATION OF PROPOSED INTERVENTIONS

Table A3.1 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)	Causeway (m)	Pipe culvert (units)	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)
75DR001	Lali-Kharkada-Sarmauli		0+000	0+000		0										
75Dr002	Shankarpur-Hunainath-Dandakot-Lali	0.17	0+000	0+170		0.17					12				100	170
75DR003	Erichhana-Rithachaupata-Sarmauli	0.315	0+000	0+315		0.315								108	200	320
75DR004	Gokuleshwor-Rithachaupata	2	0+000	2+000		2			15		24			70		2,000
75DR005	Gokuleshwor-Bohorigaun-Panebaj	0.43	0+000	0+430		0.43					24		1	50	200	430
75DR006	Dhap-Nisil-Gwani (Bagara)	1.1	0+000	1+100		1.1					12			324	550	1,100
75DR007	Dethala-Ranishikhar-Gwani		0+000	0+000		0										
75DR008	Bangabad-Birendraban-Galfe	2.369	0+000	2+369		2.369										2,369
75DR009	Khalanga-Dethala	52	0+000	52+000		52					45		10	95		52,000
75DR010	Shikhar-Balach(Baril)-Dethala	1.3	0+000	1+300		1.3					12					
75DR011	Dungri-Chhapari-Brahmadev-Dhari	0.577	0+000	0+577		0.577			15		10		1	572		577
75DR012	Hopari-Sipti-Seri-Tapoban		0+000	0+000		0										
75DR013	Khar-Eyarkot		0+000	0+000		0										
75DR014	Sipti-Sitaula		0+000	0+000		0										
75DR015	Bitule-Latinath-Paribagad-Khandeshwori	12.3	0+000	12+300		12.3					24			200	500	12,300
75DR016	Paribagad-Guljar-Bungal(Bajhang)		0+000	0+000		0										
75DR017	Hikila-Siddhatopi		0+000	0+000		0										
75DR018	Makarigad-Ghusa		0+000	0+000		0										
Total		**72.56**			**0**	**72.561**	**0**	**0**	**30**	**0**	**163**	**0**	**12**	**1419**	**1550**	**71266**

ANNEX 4 LIST OF INVENTORY ROADS

ANNEX 4 LISTS OF INVENTORY ROADS

Table A4.1 Overall Road Inventory

S.N.	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	Condition -Permanently Impassable
1	Shankarpur-Hunainath-Dandakot-Lali	0.17	0+000	0+170			0.17		0.17	0.17			
2	Erichhana-Rithachaupata-Sarmauli	0.315	0+000	0+315			0.315		0.315		0.315	0.315	
3	Gokuleshwor-Rithachaupata	2	0+000	2+000			2		2	2			
4	Gokuleshwor-Bohorigaun-Panebaj	0.43	0+000	0+430			0.43		0.43	0.43			
5	Dhap-Nisil-Gwani (Bagara)	1.1	0+000	1+100			1.1		1.1	0.5	0.6	0.6	
6	Bangabad-Birendraban-Galfe	2.369	0+000	2+369			2.369		2.369	2.369			
7	Khalanga-Dethala	52	0+000	52+000			52		52	52			
8	Shikhar-Balach(Baril)-Dethala	1.3	0+000	1+300			1.3		1.3	0.7	0.6	0.6	
9	Dungri-Chhapari-Brahmadev-Dhari	0.577	0+000	0+577			0.577		0.577	0.577			
10	Bitule-Latinath-Paribagad-Khandeshwori	12.3	0+000	12+300			12.3		12.3	12.3		0.3	
11	Bhartaula-Joljibi-Uku- Lalisera	6	0+000	6+000			6		6	6			

Note: Bhartaula- Joljibi-Uku-Lalisera Road has just taken by department of road from DDC Darchula and code number as a feeder road has not been assigned till date, which touches the VDC Headquarter of Uku VDC so this road is not selected as DRCN road as per DTICC discussion.