DTMP
Report

Dailekh

2012

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Office of the District Development Committee
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FOREWORD

It is my great pleasure to introduce this revised District Transport Master Plan (DTMP) of Dailekh district which was passed by DDC board meeting on 30 January 2013. It will be approved by DDC council shortly. Based on the DTMP Guideline 2012, District Road Core Network (DRCN) aiming to connect all Village Development Committee (VDC) headquarters with the district headquarters, either directly or through strategic road network (SRN) has been selected. By bringing the DRCN to a maintainable and all-weather standard, year-round access to all VDCs headquarters can be ensured.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.

I believe that this document will be helpful in backstopping to Rural Transport Infrastructure Sector through sustainable planning, resources mobilization, implementation and monitoring and evaluation of the rural road sub-sector development. It is crucialto make existing district roads more systematic and all weather rather than expanding. Conservation and upgrading of existing district roads are considered as first priority. New construction is done only after conservation and upgrading are accomplished. Considering these aspects, DDC Dailekh has prepared revised DTMP by focusing conservation and upgrading of all DRCN roads with all possible financial resources. This document will be very important in lobbying the donor agencies through government system. Furthermore, this document will be supportive in avoiding pervasive duplication approach in resources allocation under the rural road network development sector of this district.

I would, firstly like to express my gratitude to RTI Sector Maintenance Pilot for financial and technical support. My thanks go to Mr Bhakti Ram Marasini (Planning, Monitoring and Administrative Officer), Mr Rabindra Kumar Sharma (DTO chief), Mr Padam Bahadur Sapkota (Programme Officer), Mr Shamsher Bahadur Shahi (Programme Officer), and other DDC and DTO staffs. Equally, I would like to thank Mr Prithbi Man Thapa (District Asset Management Engineer) and Mr Prakash Bikram Shahi (Sub Asset Management Engineer) for their continuous dedication and hard work and bringing this Revised DTMP document in this stage. My special thank goes to all the representatives of political parties, who played crucial role in providing constructive feedbacks and valuable support in preparing this document successfully.

At last, but not least, I would like to express my heartfelt gratitude to the Ministry of Federal Affairs and Local Development (MoFALD), Department of Infrastructure Development and Agriculture Road (DoLIDAR) and RTI Swap Central team for their valuable support to produce this report.Any innovative and constructive suggestions regarding this document will be highly appreciated.

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We would also like to thank Mr Bhupendra Bahadur Basnet, Director General of DOLIDAR, members of the DOLIDAR Technical Committee, including Mr. Ganga Bahadur Basnet, Coordinator of RTI SWAp, Mr Jeevan Guragain, Mr Kumar Thapa, Mr Krishna Bahadur Katwal, and Mr Manoj Krishna Shrestha (RTI Planning and Infrastructure Specialist), as well as Serge Cartier Van Dissel (RTI Rural Roads Engineering Specialist), Mr Michael Green (RTI Team Leader) and all of whom were instrumental in shaping the new, “slim “version of the DTMP.

The DTMP for Dailekh was prepared by Mr Prithbi Man Thapa (RTI Pilot District Asset Management Engineer) with full assistance ship of Mr Prakash Bikram Shahi (RTI Pilot Sub Asset Management Engineer). The author is grateful to all the local people and leaders who have rendered their valuable assistance to the team during the preparation of the DTMP.

EXECUTIVE SUMMARY

Dailekh District is located in Bheri Zone of the Mid-western Development Region of Nepal. It borders with Jajarkot district to the East, Achham district of Seti Zone to the West, Kalikot of Karnali Zone to the North and Surkhet of Bheri Zone to the South. The district has 1 municipality, 55 VDCs, 11 Ilakas and 2 constituency areas. The total area of the district is 1,502 km^2. The district lies in the *Mid-Hill*. The lowest elevation point is 544 meter and the highest elevation point is 4,168 meter from mean sea level. Subsistence agriculture farming, mainly small scale livestock is the main source of occupation and livelihood of the majority of the population, with 79% of the population active in this sector. Due to low level of agricultural production, the majority of the households face acute food shortages for a large part of the year.

The district inventory identified just over 848 km of roads, including 244km of strategic roads, 117 Km of Urban roads and 487 km of rural roads. In coordination with the DTICC and DDC, 34 rural roads with a length of 442 km were identified as making up the district road core network (DRCN). The existing DRCN roads link up 33 of the 55 VDC headquarters. All of the DRCN roads are earthen fair-weather roads.

Road Class	Total length	Black Top	Gravel	Earthen
Strategic road network	244.23	101.88	30.48	111.87
Urban roads	117	-	-	117
District road core network	341.5	-	-	341.5
Village roads	145.28	-	-	145.28
Total	**848.01**	**101.88**	**30.48**	**715.65**

Annual conservation costs are estimated at NPR 54 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 548 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	367	m	220,200,000
Slab culverts	-	m	-
Causeways	967	m	15,430,000
Hume pipes	157	units	1,570,000
Masonry retaining walls	1,676	m^3	16,755,000
Gabion retaining walls	14,928	m^3	37,320,000
Lined drains	49,700	m	49,700,000
Widening	37000	m	925,000,000
Rehabilitation	-	km	-
Gravelling	342	km	751,300,000
Blacktopping	-	km	-
New construction	72	km	666,600,000
Total			**2,683,875,000**

The available budget for the road sector for the coming five years (fiscal year 2069/70 to 2073/74) is estimated to be NPR 1,206 million. Allocation to the district road core network

was set at 95% of the total road sector budget, which was subsequently allocated firstly to the annual maintenance needs, secondly to the improvement needs and lastly to new construction. This budget is insufficient to cover all the estimated costs of conservation, improvement and new construction. However, it allows all conservation requirements to be covered throughout the DTMP period and almost all improvement works to be completed before the end of the DTMP period. The remaining improvement works will be carried out in the next DTMP. New construction is not possible within this DTMP period and will also be carried out under the next DTMP.

Within the DTMP period 136 km of roads will be gravelled (40%) in a total of 342 km being brought to a maintainable all-weather standard. VDC headquarters with access to all-weather DRCN roads or the SRN will increase from 15 to 43, while the percentage of the district population with such access will increase from 34% to 70%.

ABBREVIATIONS

ARMP	Annual Repair and Maintenance Plan
DDC	District Development Committee
DIM	District Inventory Map
DoLIDAR	Department of Local Infrastructure Development and Agriculture Road
DOR	Department of Road
DRCN	District Road Core Network
DTICC	District Transport Infrastructure Coordination Committee
DTMP	District Transport Master Plan
DTPP	District Transport Perspective Plan
GIS	Geographical Information system
GPS	Global Positioning System
GoN	Government of Nepal
LGCDP	Local Governance and Community Development Programme
LRBP	Local Road Bridge Programme
MFALD	Ministry of Federal Affairs and Local Development
RAP	Rural Access Programme
SWAp	Sector Wide Approach
VDC	Village Development Committee

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1. INTRODUCTION

Dailekh District is located in Bheri Zone of the Mid-western Development Region of Nepal. It borders with Jajarkot district to the East, Achham district of Seti Zone to the West, Kalikot of Karnali Zone to the North and Surkhet of Bheri Zone to the South. The district has 1 municipality, 55 VDCs, 11 Ilakas and 2 constituency areas. The total area of the district is 1,502 km^2. The district lies in the *Mid-Hill* and some part in the Higher Mountain. The lowest elevation point is 544 meter and the highest elevation point is 4,168 meter from mean sea level. As a result of the elevation differences, the district has three different types of climate: tropical up to 1,000 m (16% of area), subtropical from 1,000-2,000 m (69%) and temperate above 2,000 m (15%). The annual rainfall is about 2,500 mm and temperatures vary from 7.5 ºC to 32 ºC. Subsistence agriculture farming, mainly small scale livestock is the main source of occupation and livelihood of the majority of the population, with 79% of the population active in this sector. Due to low level of agricultural production, the majority of the households face acute food shortages for a large part of the year.

Figure 1 Map of Nepal indicating Dailekh district

According to the National Census 2011, the total population of the district are 261,770 comprising 126,990 female (48%) and 134,780 male (52%) residing in 48,915 households. Dailekh district has an average population density of around 174 people per square km. The average family size is 5.35. Life expectancy of the people is 58 years. The average literacy rate is about 48% (32% female and 65% male are literate). Dailekh district has a multi ethnic composition with Chhetri, Kami, Thakuri, Brahman, Magar, Damai, Sarki, Newar, and Sanyashi (Giri and Puri). The common language is Nepali (97.4%) followed by Magar (1.8%) and Tamang (0.1 %).

Although accessibility to Dailekh is limited, this is improving rapidly. The district has access to the Karnali Highway (Surkhet-Jumla) which is currently being upgraded to bituminous standard by DOR. A 67 km feeder road between the district headquarters and Surkhet is currently also being upgraded to bituminous standard by DOR. The Mid-Hill highway is under construction and will run almost parallel to the Karnali Highway, also linking to the district headquarters.

2. DISTRICT ROAD CORE NETWORK (DRCN)

This chapter gives an overview of the existing roads in Dailekh 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

Dailekh district has an estimated road network of 848 kilometres, including 244 km of strategic roads managed by DOR, 117 Km of urban roads developed by Narayan Municipality and 487 km of rural roads managed by Dailekh DDC, Narayan Municipality and the VDCs. Most of the strategic roads and all of the rural roads have an earthen surface. A map of the total road network in Dailekh district is shown in Figure 2 at the end of this chapter.

Table 2.1.1 Total road length (km)

Road Class	Total length	Black Top	Gravel	Earthen
Strategic roads	244.23	101.88	30.48	111.87
Urban roads	117	-	-	117
Rural roads	486.78	-	-	486.78
Total	**848.01**	**101.88**	**30.48**	**715.65**

2.2 NATIONAL HIGHWAYS AND FEEDER ROADS

Dailekh district has 2 highways (Karnali Highway and the Midhill Highway) and three feeder roads totalling 244 km. The Karnali Highway has already been largely blacktopped by DOR, while the Mid-Hill Highway is partly still under construction by DOR. The Mid-Hill Highway is foreseen to incorporate 2 district roads that will be upgraded to national highway and are therefore treated as strategic roads in this DTMP.

Table 2.2.1 National Highways and Feeder Roads (km)

Code	Description	Total length	Black Top	Gravel	Earthen
H13	Karnali Highway	**86.00**	62.68	20.26	3.06
H18	Mid-Hill Highway	**87.00**			87.00
F048	Surkhet - Dailekh road	**45.01**	39.2	2	20.31
F144	Tallodungeswor-Mathillo Dungeswor	**8.22**		8.22	
F182	Tallodungeswor-Dullu	**18.00**			18.00
Total		**244.23**	**101.88**	**30.48**	**111.87**

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 in Dailekh district is shown in Figure 3 at the end of this chapter. The DRCN consists of 34 district roads with a total length of 342 km. All DRCN roads are currently earthen roads and are considered fair-weather only (see Table 2.3.1). A complete list of the DRCN roads and their characteristics is provided in

Table 2.3.2.

Table 2.3.1 Total road length (km)

Road Class	Total length	Black Top	Gravel	Earthen
Strategic road network	**244.23**	**101.88**	**30.48**	**111.87**
Highways	173.00	62.68	20.26	90.06
Feeder roads	71.23	39.20	10.22	21.81
Urban roads	**117**	**-**	**-**	**117**
Narayan Municipality	117	-	-	117
District road core network	**341.5**	-	-	344.35
Village roads	**145.28**			**145.28**
Total	**848.01**	**101.88**	**30.48**	**715.65**

Table 2.3.2 District road core network (km)

Code	Description	Total length	Black Top	Gravel	Earthen	All weather	Fair weather
60DR001	H13- Ramaghat - Singasain - Pipalkot	40.00			40.00		40.00
60DR002	Daha Tilepata	6.00			6.00		6.00
60DR003	H18- Pulbazaar - Bisalla	12.50			12.50		12.50
60DR004	H13- Sangetada - Chamunda	16.00			16.00		16.00
60DR005	Kusapani Gairasau	0.25			0.25		0.25
60DR006	H18- Kholibazaar - Basi - Kasikandh	25.00			25.00		25.00
60DR007	H18- Bhirket - Kharigaira - Raniban	14.90			14.90		14.90
60DR008	Dungri Eiradi Badakhola	3.00			3.00		3.00
60DR009	F048- Deshigade Mahabu	16.00			16.00		16.00
60DR010	F48- Dailekh - Naumule	18.00			18.00		18.00
60DR011	Naumule - Rapat Bhurunge - Dwari	2.50			2.50		2.50
60DR012	Naumule - Kalika	9.00			9.00		9.00
60DR013	Dailekh - Thandada - Salleri	25.00			25.00		25.00
60DR014	Naumule - Salleri - Mehaltoli	6.00			6.00		6.00
60DR015	F48- Chupra - Simada - Mehaltolee	17.50			17.50		17.50
60DR016	H18- Lohare - Badabhairab	5.00			5.00		5.00
60DR017	Hulaktakura Paganath	5.00			5.00		5.00
60DR018	Khopa Ruma	5.00			5.00		5.00
60DR019	H18- Santada - Ghumne	1.00			1.00		1.00
60DR020	H18- Bestada - Katti	2.00			2.00		2.00
60DR021	F182- Dullu- Shantibazaar - Pipalghari	7.00			7.00		7.00
60DR022	Shantibazaar - Patikanla - Kaphalpani	5.00			5.00		5.00
60DR023	Puranobazaar - Shreesthan - Gamaudi	12.85			12.85		12.85
60DR024	Shreesthan - Navisthan - Gamaudi	5.00			5.00		5.00
60DR025	Navisthan Koteshwar Rawatkot	3.50			3.50		3.50
60DR026	F182- Dullu - Baik	9.00			9.00		9.00
60DR027	F048- Chupra - Kalbhairab - Gauri - Malika	10.00			10.00		10.00
60DR028	F048- Gurase - Patikanla - Deutithan	13.00			13.00		13.00
60DR029	Dobato Seri	4.00			4.00		4.00
60DR030	F048 Chisapani Ratikhola	5.00			5.00		5.00
60DR031	F48- Mathillo Dungeshwar - Dadaparajul - Awalparajul	12.50			12.50		12.50
60DR032	F48- Mathillodungeshwar - Biurakhet - Lalikanda	13.00			13.00		13.00
60DR033	Aago Dhuwaune Goganpani	6.00			6.00		6.00
60DR034	Bhimchula Bagaura	6.00			6.00		6.00
Total		**341.5**			**341.5**		**341.5**

2.4 VILLAGE ROADS

The 145.28 km of remaining roads that do not form part of the identified district road core network (DRCN) are classified as village roads and are under the responsibility of the 55 VDCs in Dailekh district. These are roads of a lower importance that do not form the main link between the VDC headquarters and the district headquarters or strategic road network. Instead they provide additional access to other parts of the VDCs.

On average each VDC will thus be responsible for 2.65 km of village roads. It is recommended that the VDCs organise maintenance workers to carry out the emergency and routine/recurrent maintenance of these roads to ensure they remain accessible. Any upgrading or new construction of village roads falls outside the scope of this DTMP and is the responsibility of the VDCs.

Funding for these roads will mainly come from the VDC grants. Some district funding will also be allocated to the village roads (see also chapter 6). However, this district funding will be mainly for maintenance, especially emergency maintenance and routine/recurrent maintenance to keep the village roads open.

Figure 2 Total Road Inventory Map for Dailekh District

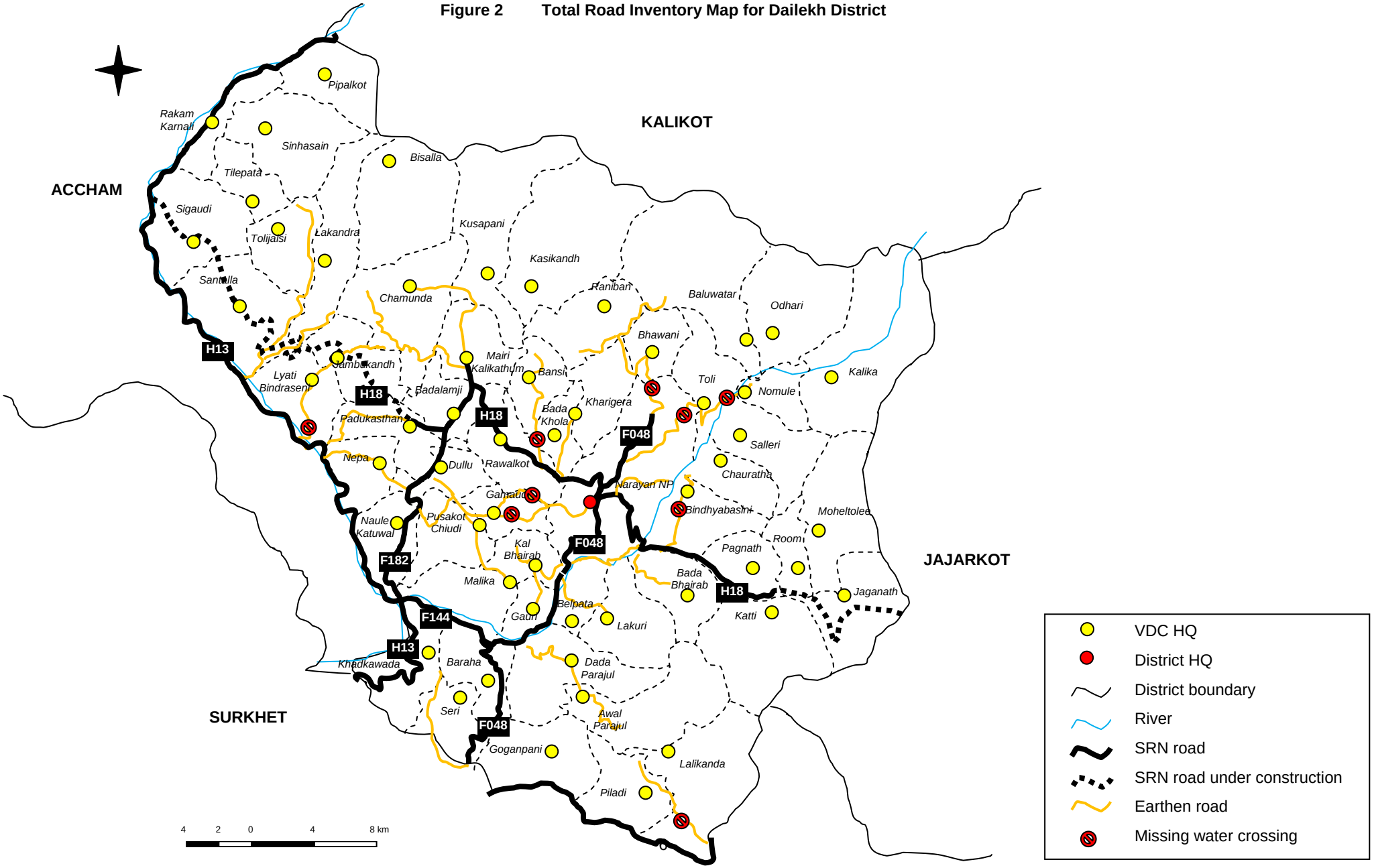
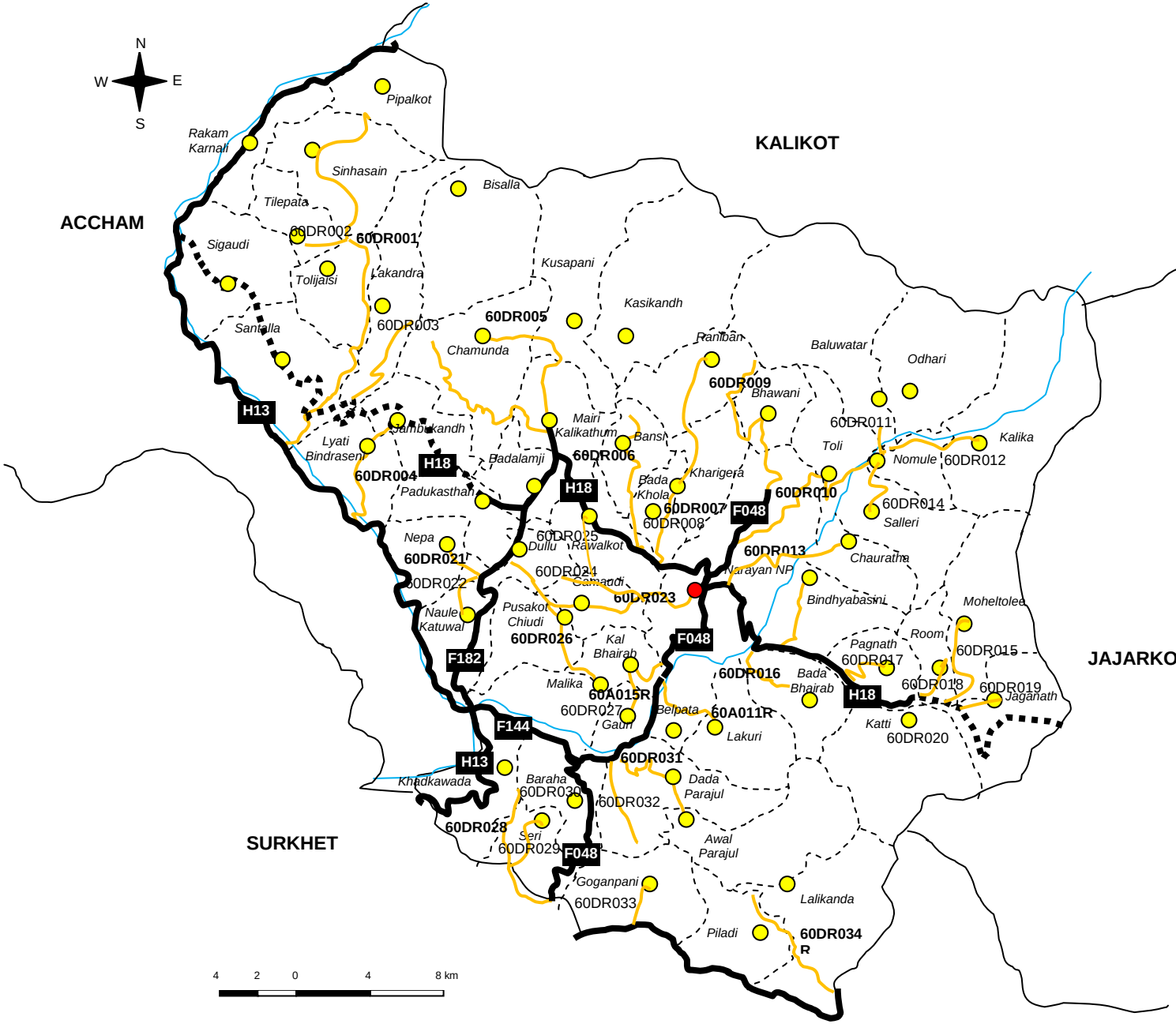


Figure 3 District Road Core Network (DRCN)



Code	Total length	Black Top	Gravel	Earthen
60DR001	40.00			40.00
60DR002	6.00			6.00
60DR003	12.50			12.50
60DR004	16.00			16.00
60DR005	0.25			0.25
60DR006	25.00			25.00
60DR007	14.90			14.90
60DR008	3.00			3.00
60DR009	16.00			16.00
60DR010	18.00			18.00
60DR011	2.50			2.50
60DR012	9.00			9.00
60DR013	25.00			25.00
60DR014	6.00			6.00
60DR015	17.50			17.50
60DR016	5.00			5.00
60DR017	5.00			5.00
60DR018	5.00			5.00
60DR019	1.00			1.00
60DR020	2.00			2.00
60DR021	7.00			7.00
60DR022	5.00			5.00
60DR023	12.85			12.85
60DR024	5.00			5.00
60DR025	3.5			3.5
60DR026	9.00			9.00
60DR027	10.00			10.00
60DR028	13.00			13.00
60DR029	4.00			4.00
60DR030	5.00			5.00
60DR031	12.50			12.50
60DR032	13.00			13.00
60DR033	6.00			6.00
60DR034	6.00			6.00
Total	**341.5**	**-**	**-**	**341.5**

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 types distinction is made according to the surface type of the road. Identification of the actual maintenance requirements of each road is made annually in the ARMP. Conservation activities include:

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)
60DR001	40.00	40.00	40.00	40.00
60DR002	3.00	3.00	3.00	3.00
60DR003	12.50	12.50	12.50	12.50
60DR004	16.00	16.00	16.00	16.00
60DR005	2.00	2.00	2.00	2.00
60DR006	25.00	25.00	25.00	25.00
60DR007	15.00	15.00	15.00	15.00
60DR008	3.00	3.00	3.00	3.00
60DR009	16.00	16.00	16.00	16.00
60DR010	18.00	18.00	18.00	18.00
60DR011	2.50	2.50	2.50	2.50
60DR012	9.00	9.00	9.00	9.00
60DR013	32.00	32.00	32.00	32.00
60DR014	6.00	6.00	6.00	6.00
60DR015	17.50	17.50	17.50	17.50
60DR016	5.00	5.00	5.00	5.00
60DR017	5.00	5.00	5.00	5.00
60DR018	5.00	5.00	5.00	5.00
60DR019	1.00	1.00	1.00	1.00
60DR020	2.00	2.00	2.00	2.00
60DR021	7.00	7.00	7.00	7.00
60DR022	5.00	5.00	5.00	5.00
60DR023	12.85	12.85	12.85	12.85
60DR024	5.00	5.00	5.00	5.00
60DR025	3.50	3.50	3.50	3.50
60DR026	9.00	9.00	9.00	9.00
60DR027	10.00	10.00	10.00	10.00
60DR028	13.00	13.00	13.00	13.00
60DR029	4.00	4.00	4.00	4.00
60DR030	5.00	5.00	5.00	5.00
60DR031	12.50	12.50	12.50	12.50
60DR032	13.00	13.00	13.00	13.00
60DR033	6.00	6.00	6.00	6.00
60DR034	6.00	6.00	6.00	6.00
Total	**341.5**	**341.5**	**341.5**	**341.5**

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 Dailekh 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 100 passenger car units (PCU) in hills 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.

Table 3.2.1 Sections of the district road core network requiring rehabilitation

Code	Description	Total length (km)	Gravelling (km)
		-	-
		-	-
Total		**0.00**	**0.00**

3.2.2 GRAVELLING

As the entire district road core network needs to be brought to an all-weather status, gravelling of the road surface is required for all the earthen sections in the DRCN. For Dailekh this concerns the total of 342 km of DRCN roads.

Table 3.2.2 Sections of the district road core network requiring gravelling

Code	Description	Total length (km)	Gravelling (km)
60DR001	H13- Ramaghat - Singasain - Pipalkot	40	40
60DR002	Daha Tilepata	3	3
60DR003	H18- Pulbazaar - Bisalla	12.5	12.5
60DR004	H13- Sangetada - Chamunda	16	16
60DR005	Kusapani Gairasau	2	2
60DR006	H18- Kholibazaar - Basi - Kasikandh	25	25
60DR007	H18- Bhirket - Kharigaira - Raniban	15	15
60DR008	Dungri Eiradi Badakhola	3	3
60DR009	F048- Deshigade Mahabu	16	16
60DR010	F48- Dailekh - Naumule	18	18
60DR011	Naumule - Rapat Bhurunge - Dwari	2.5	2.5
60DR012	Naumule - Kalika	9	9
60DR013	Dailekh - Thandada - Salleri	32	32
60DR014	Naumule - Salleri - Mehaltoli	6	6
60DR015	F48- Chupra - Simada - Mehaltolee	17.5	17.5
60DR016	H18- Lohare - Badabhairab	5	5
60DR017	Hulaktakura Paganath	5	5
60DR018	Khopa Ruma	5	5
60DR019	H18- Santada - Ghumne	1	1
60DR020	H18- Bestada - Katti	2	2
60DR021	F182- Dullu- Shantibazaar - Pipalghari	7	7
60DR022	Shantibazaar - Patikanla - Kaphalpani	5	5
60DR023	Puranobazaar - Shreesthan - Gamaudi	12.85	12.85
60DR024	Shreesthan - Navisthan - Gamaudi	5	5
60DR025	Navisthan - Koteshwar Rawatkot	3.5	3.5
60DR026	F182- Dullu - Baik	9	9
60DR027	F048- Chupra - Kalbhairab - Gauri - Malika	10	10
60DR028	F048- Gurase - Patikanla - Deutithan	13	13
60DR029	Dobato Seri	4	4
60DR030	F048 Chisapani Ratikhola	5	5
60DR031	F48- Mathillo Dungeshwar - Dadaparajul -	12.5	12.5

	Awalparajul		
60DR032	F48- Mathillodungeshwar - Biurakhet - Lalikanda	13	13
60DR033	Aago Dhuwaune Goganpani	6	6
60DR034	Bhimchula Bagaura	6	6
Total		**341.5**	**341.5**

3.2.3 CROSS DRAINAGE

Table 3.2.3 Required cross drainage structures

Code	Description	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway (m)	Pipe culvert (units)
60DR001	H13- Ramaghat - Singasain - Pipalkot	12			36	3
60DR002	Daha Tilepata				8	1
60DR003	H18- Pulbazaar - Bisalla	25		8	30	6
60DR004	H13- Sangetada - Chamunda				20	5
60DR005	Kusapani Gairasau				12	2
60DR006	H18- Kholibazaar - Basi - Kasikandh	20			20	4
60DR007	H18- Bhirket - Kharigaira - Raniban				32	9
60DR008	Dungri Eiradi Badakhola				18	2
60DR009	F048- Deshigade Mahabu				12	4
60DR010	F48- Dailekh - Naumule	25		10	20	17
60DR011	Naumule - Rapat Bhurunge - Dwari				38	4
60DR012	Naumule - Kalika	20		12	30	8
60DR013	Dailekh - Thandada - Salleri	80			89	12
60DR014	Naumule - Salleri - Mehaltoli				32	3
60DR015	F48- Chupra - Simada - Mehaltolee			8	22	2
60DR016	H18- Lohare - Badabhairab				28	5
60DR017	Hulaktakura Paganath				22	1
60DR018	Khopa Ruma				24	2
60DR019	H18- Santada - Ghumne				22	2
60DR020	H18- Bestada - Katti	30			12	2
60DR021	F182- Dullu- Shantibazaar - Pipalghari				38	3
60DR022	Shantibazaar - Patikanla - Kaphalpani				26	3
60DR023	Puranobazaar- Shreesthan - Gamaudi	80			20	8
60DR024	Shreesthan - Navisthan - Gamaudi	15			16	2
60DR025	Navisthan - Koteshwar Rawatkot				24	4
60DR026	F182- Dullu - Baik				22	4
60DR027	F048-Chupra-Kalbhairab-Gauri-Malika	60		16	44	10
60DR028	F048- Gurase - Patikanla - Deutithan				24	3
60DR029	Dobato Seri				24	2
60DR030	F048 Chisapani Ratikhola				28	3
60DR031	F48-MathilloDungeshwar-Dadaparajul - Awalparajul			10	16	3
60DR032	F48- Mathillodungeshwar - Biurakhet - Lalikanda				48	11
60DR033	Aago Dhuwaune Goganpani				22	4
60DR034	Bhimchula Bagaura				24	3
Total		**367**	**-**	**64**	**903**	**157**

3.2.4 PROTECTIVE STRUCTURES

Based on the road survey carried out in Dailekh, 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	Description	Masonry walls (m^3)	Gabion walls (m^3)	Lined drain (m)
60DR001	H13- Ramaghat - Singasain - Pipalkot	194	527	1,200
60DR002	Daha Tilepata	58	220	1,000
60DR003	H18- Pulbazaar - Bisalla	126	400	420
60DR004	H13- Sangetada - Chamunda	52	513	2,910
60DR005	Kusapani Gairasau		160	660
60DR006	H18- Kholibazaar - Basi - Kasikandh	92	813	8,500
60DR007	H18- Bhirket - Kharigaira - Raniban	42	500	2,260
60DR008	Dungri Eiradi Badakhola		500	840
60DR009	F048- Deshigade Mahabu	40	220	1,800
60DR010	F48- Dailekh - Naumule	128	614	1,080
60DR011	Naumule - Rapat Bhurunge - Dwari	75	600	1,140
60DR012	Naumule - Kalika	142	550	1,240
60DR013	Dailekh - Thandada - Salleri	148	338	1,310
60DR014	Naumule - Salleri - Mehaltoli		290	1,200.00
60DR015	F48- Chupra - Simada - Mehaltolee	84	951	1,460
60DR016	H18- Lohare - Badabhairab	60	400	520
60DR017	Hulaktakura Paganath		480	1,000.00
60DR018	Khopa Ruma		320	1,500.00
60DR019	H18- Santada - Ghumne		330	400.00
60DR020	H18- Bestada - Katti		250	820
60DR021	F182- Dullu- Shantibazaar - Pipalghari	44	614	1,140
60DR022	Shantibazaar - Patikanla - Kaphalpani		280	1,800.00
60DR023	Puranobazaar - Shreesthan - Gamaudi	68	482	600
60DR024	Shreesthan - Navisthan - Gamaudi	56	200	200
60DR025	Navisthan - Koteshwar Rawatkot		50	840
60DR026	F182- Dullu - Baik		500	840
60DR027	F048- Chupra - Kalbhairab - Gauri - Malika	42	684	440
60DR028	F048- Gurase - Patikanla - Deutithan	52	400	1,120
60DR029	Dobato Seri		220	1,100.00
60DR030	F048 Chisapani Ratikhola		300	2,200.00
60DR031	F48- Mathillo Dungeshwar - Dadaparajul - Awalparajul	90	890	2,220
60DR032	F48- Mathillodungeshwar - Biurakhet - Lalikanda	83	692	1,740
60DR033	Aago Dhuwaune Goganpani		400	2,400.00
60DR034	Bhimchula Bagaura		240	1,800.00
Total		**1,676**	**14,928**	**49,700**

3.2.5 WIDENING

Widening of the district road core network in Dailekh 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 not required because traffic volumes remain very low.

Table 3.2.5 Sections of the district road core network requiring widening

Code	Description	Total length (km)	Widening (m)
60DR001	H13- Ramaghat - Singasain - Pipalkot	40	1200
60DR002	Daha Tilepata	3	1400
60DR003	H18- Pulbazaar - Bisalla	12.5	800
60DR004	H13- Sangetada - Chamunda	16	1200
60DR005	Kusapani Gairasau	2	
60DR006	H18- Kholibazaar - Basi - Kasikandh	25	1800

60DR007	H18- Bhirket - Kharigaira - Raniban	15	1200
60DR008	Dungri Eiradi Badakhola	3	400
60DR009	F048- Deshigade Mahabu	16	200
60DR010	F48- Dailekh - Naumule	18	1200
60DR011	Naumule - Rapat Bhurunge - Dwari	2.5	1200
60DR012	Naumule - Kalika	9	1000
60DR013	Dailekh - Thandada - Salleri	32	2100
60DR014	Naumule - Salleri - Mehaltoli	6	1300
60DR015	F48- Chupra - Simada - Mehaltolee	17.5	400
60DR016	H18- Lohare - Badabhairab	5	1100
60DR017	Hulaktakura Paganath	5	1300
60DR018	Khopa Ruma	5	900
60DR019	H18- Santada - Ghumne	1	800
60DR020	H18- Bestada - Katti	2	1,000
60DR021	F182- Dullu- Shantibazaar - Pipalghari	7	2,000
60DR022	Shantibazaar - Patikanla - Kaphalpani	5	1,400
60DR023	Puranobazaar - Shreesthan - Gamaudi	12.85	1,200
60DR024	Shreesthan - Navisthan - Gamaudi	5	1,500
60DR025	Navisthan - Koteshwar Rawatkot	0.5	500
60DR026	F182- Dullu - Baik	9	1,600
60DR027	F048- Chupra - Kalbhairab - Gauri - Malika	10	1,400
60DR028	F048- Gurase - Patikanla - Deutithan	13	1,200
60DR029	Dobato Seri	4	800
60DR030	F048 Chisapani Ratikhola	5	800
60DR031	F48- Mathillo Dungeshwar - Dadaparajul - Awalparajul	12.5	1,800
60DR032	F48- Mathillodungeshwar - Biurakhet - Lalikanda	13	1,100
60DR033	Aago Dhuwaune Goganpani	6	100
60DR034	Bhimchula Bagaura	6	1,100
Total		**341.5**	**37,000**

3.2.6 BLACKTOPPING

An analysis of the traffic data for the different roads making up the district road core network (see **Annex 1**) shows that there are no any roads that are eligible for blacktopping (traffic volume exceeds 100 PCU). In the context of the district, no length will be blacktopped because of low traffic volume (traffic volume <100PSU). The blacktopping of these roads will be treated as a second phase of improvement after they have been gravelled and traffic volume is increased.

Table 3.2.6 Sections of the district road core network requiring blacktopping

Code	Description	Total length (km)	Blacktop (km)	Traffic (VPD)	Blacktopping (km)
Total		**341.5**	**-**		**-**

3.3 NEW CONSTRUCTION

New construction of DRCN roads is required to connect the remaining VDC headquarters. A list of proposed roads for new construction is provided below. These roads provide access to 13 VDC HQs that do not currently have road access with total of 72 Km. 10 DRCN roads require construction of bridges, while 15 roads require new construction as extension.

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

Code	Description	New VDCs	Existing length	New length	Bridge (m)
60DR001	H13- Ramaghat - Singasain - Pipalkot	Pipalkot	40.00	8.00	12
60DR003	H18- Pulbazaar - Bisalla	Bishalla	12.50	3.00	25
60DR005	Kusapani Gairasau	Kusapani	0.25	2.00	
60DR006	H18- Kholibazaar - Basi - Kasikandh	Kasikandh	25.00	5.00	20
60DR010	F48- Dailekh - Naumule		18.00		25
60DR011	Naumule - Rapat Bhurunge - Dwari	Baluwatar, Dwari	2.50	12.00	
60DR012	Naumule - Kalika		9.00		20
60DR013	Dailekh - Thandada - Salleri		25.00		80
60DR014	Naumule - Salleri - Mehaltoli	Salleri	6.00	10.00	
60DR019	H18- Santada - Ghumne	Jaganath	1.00	2.50	
60DR020	H18- Bestada - Katti	Katti	2.00	2.00	30
60DR023	Puranobazaar - Shreesthan - Gamaudi		12.85		80
60DR024	Shreesthan - Navisthan - Gamaudi	Gamaudi	5.00	1.50	15
60DR025	Navisthan - Koteshwar Rawatkot	Rawatkot	0.50	2.50	
60DR026	F182- Dullu - Baik	Gauri	9.00	3.50	
60DR027	F048- Chupra - Kalbhairab - Gauri - Malika		10.00		60
60DR029	Dobato Seri	Seri	4.00	5.00	
60DR032	F48- Mathillodungeshwar - Biurakhet - Lalikanda	Lalikanda	13.00	9.00	
60DR033	Aago Dhuwaune Goganpani		6.00	3.00	
60DR034	Bhimchula Bagaura		6.00	3.00	
Total			**341.5**	**72**	**367**

3.4 DISTRICT TRANSPORT PERSPECTIVE PLAN

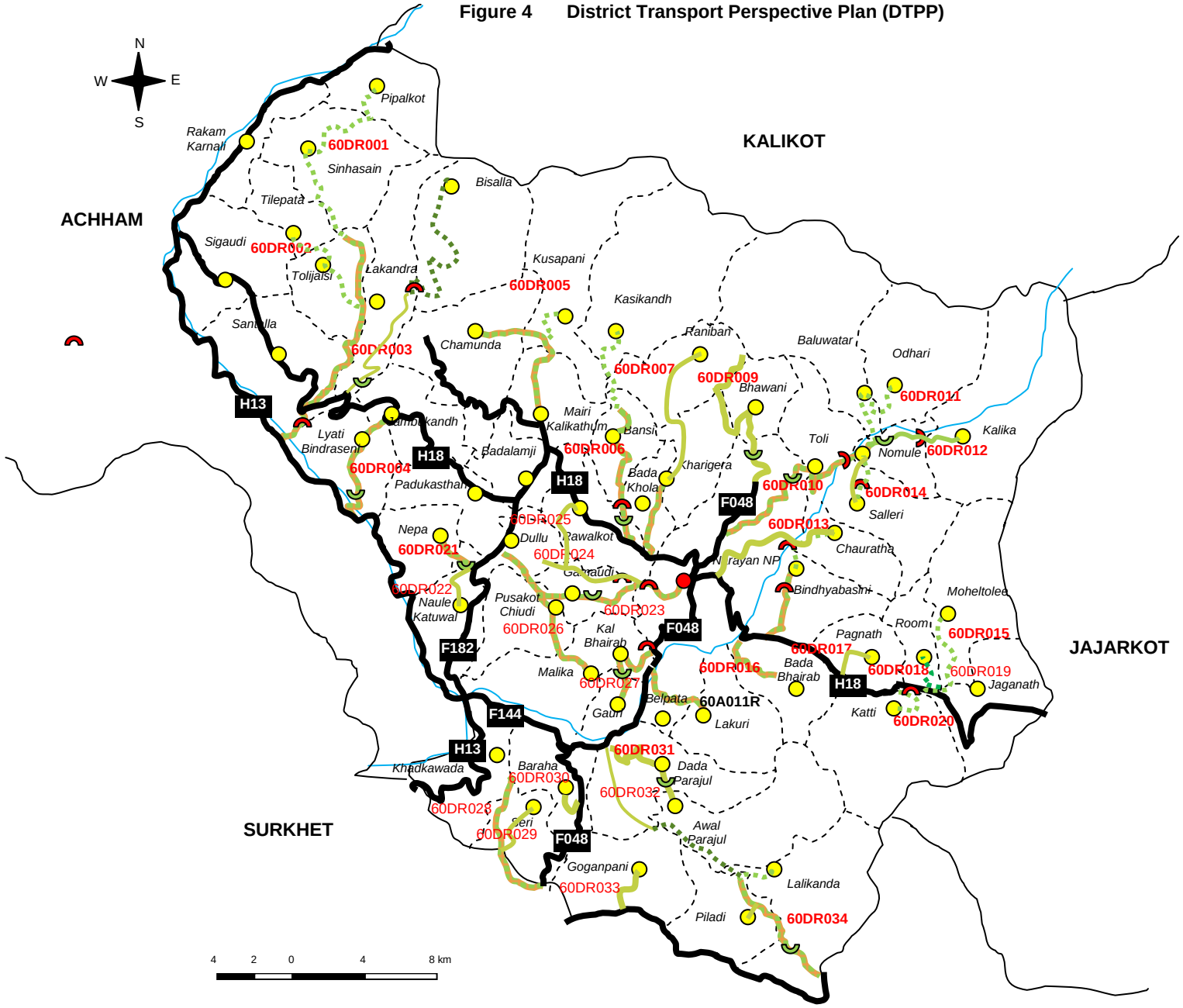
The DTPP foresees bringing the entire existing district road core network to maintainable all-weather status, and expanding it to provide access to an additional 13 VDC headquarters. For this purpose, 136 km will be gravelled and a number of different cross drainage and protective structures will be constructed. 72 km of new road will be constructed to maintainable all-weather gravel standard providing access to 13 additional VDC HQs only in next DTMP period. The district road core network will subsequently consist of 342 km of maintainable all-weather roads. The following table lists the required interventions, while the proposed network is shown in the DTPP map in Figure 4.

Table 3.4.1 District Transport Perspective Plan

Code	Emergency maintenance (km)	Routine maintenance (km)	Recurrent maintenance (km)	Periodic maintenance (km)	Rehabilitation (km)	Gravelling (km)	Blacktopping (km)	Widening (m)	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway (m)	Pipe culvert (units)	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)	New construction (km)
60DR001	40	40	40	40		40	0	1200	24	0	0	36	3	194	527	1200	8
60DR002	6	6	6	6		6	0	1400	0	0	0	8	1	58	220	1000	0
60DR003	12.5	12.5	12.5	12.5		12.5	0	800	50	0	8	30	6	126	400	420	3
60DR004	16	16	16	16		16	0	1200	0	0	0	20	5	52	513	2910	0
60DR005	0.25	0.25	0.25	0.25		0.25	0	0	0	0	0	12	2	0	160	660	2
60DR006	25	25	25	25		25	0	1800	40	0	0	20	4	92	813	8500	5
60DR007	14.9	14.9	14.9	14.9		14.9	0	1200	0	0	0	32	9	42	500	2260	0
60DR008	3	3	3	3		3	0	400	0	0	0	18	2	0	500	840	0
60DR009	16	16	16	16		16	0	200	0	0	0	12	4	40	220	1800	0
60DR010	18	18	18	18		18	0	1200	50	0	10	20	17	128	614	1080	0
60DR011	2.5	2.5	2.5	2.5		2.5	0	1200	0	0	0	38	4	75	600	1140	12
60DR012	9	9	9	9		9	0	1000	40	0	12	30	8	142	550	1240	0
60DR013	25	25	25	25		25	0	2100	160	0	0	89	12	148	338	1310	0
60DR014	6	6	6	6		6	0	1300	0	0	0	32	3	0	290	1200	10
60DR015	17.5	17.5	17.5	17.5		17.5	0	400	0	0	8	22	2	84	951	1460	0
60DR016	5	5	5	5		5	0	1100	0	0	0	28	5	60	400	520	0
60DR017	5	5	5	5		5	0	1300	0	0	0	22	1	0	480	1000	0
60DR018	5	5	5	5		5	0	900	0	0	0	24	2	0	320	1500	0
60DR019	1	1	1	1		1	0	800	0	0	0	22	2	0	330	400	2.5
60DR020	2	2	2	2		2	0	1000	60	0	0	12	2	0	250	820	2
60DR021	7	7	7	7		7	0	2000	0	0	0	38	3	44	614	1140	0
60DR022	5	5	5	5		5	0	1400	0	0	0	26	3	0	280	1800	0
60DR023	12.85	12.85	12.85	12.85		12.85	0	1200	160	0	0	20	8	68	482	600	0
60DR024	5	5	5	5		5	0	1500	30	0	0	16	2	56	200	200	1.5
60DR025	3.5	3.5	3.5	3.5		3.5	0	500	0	0	0	24	4	0	50	840	2.5

60DR026	9	9	9	9		9	0	1600	0	0	0	22	4	0	500	840	3.5
60DR027	10	10	10	10		10	0	1400	120	0	16	44	10	42	684	440	0
60DR028	13	13	13	13		13	0	1200	0	0	0	24	3	52	400	1120	0
60DR029	4	4	4	4		4	0	800	0	0	0	24	2	0	220	1100	5
60DR030	5	5	5	5		5	0	800	0	0	0	28	3	0	300	2200	0
60DR031	12.5	12.5	12.5	12.5		12.5	0	1800	0	0	10	16	3	90	890	2220	9
60DR032	13	13	13	13		13	0	1100	0	0	0	48	11	82.5	692	1740	0
60DR033	6	6	6	6		6	0	100	0	0	0	22	4	0	400	2400	3
60DR034	6	6	6	6		6	0	1100	0	0	0	24	3	0	240	1800	3
Total	**341.50**	**341.50**	**341.50**	**341.50**	**-**	**341.50**	**-**	**37,000**	**734**	**-**	**64**	**903**	**157**	**1,676**	**14,928**	**49,700**	**72**

Figure 4 District Transport Perspective Plan (DTPP)



Code	Total length	Black Topping	Gravelling	New construction
60DR001				12.00
60DR002				3.00
60DR003				3.00
60DR004				
60DR005				1.00
60DR006				5.00
60DR007				
60DR008				
60DR009				
60DR010				
60DR011				12.00
60DR012				
60DR013				
60DR014				10.00
60DR015				
60DR016				
60DR017				
60DR018				
60DR019				2.50
60DR020				2.00
60DR021				
60DR022				
60DR023				
60DR024				1.50
60DR025				
60DR026				
60DR027				3.50
60DR028				
60DR029				
60DR030				5.00
60DR031				
60DR032				9.00
60DR033				
60DR034				3.00
Total	**341.5**	**-**	**341.5**	**72**

4. COST ESTIMATION

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

4.1 CONSERVATION

The costs of the required conservation measures have been calculated using the following standard costs. These standard costs have been applied to the entire district road core network, whereby distinction is made based on the surface type in the case of recurrent and periodic maintenance. It must be noted here that the standard costs for periodic maintenance are the average annual costs, but that the cost for applying periodic maintenance in a specific section every several years will be higher (the cumulative cost of several years). The estimated costs for the first year are presented below, while the costs for subsequent years will vary slightly as road surface types change as a result of improvements. Detailed cost estimations for the actual maintenance needs in any given year will be presented in the ARMP.

Table 4.1.1 Standard unit costs for conservation

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

For the first year the estimated costs for conservation of the DRCN come to NPR 102 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 512 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	Routine	Recurrent (blacktop)	Recurrent (gravel)	Recurrent (earthen)	Periodic (blacktop)	Periodic (gravel)	Total annual cost	Total 5-year cost
60DR001	40	-	-	40	1200	800	-	-	10000	-	-	12000	60000
60DR002	6	-	-	6	180	120	-	-	1500	-	-	1800	9000
60DR003	12.5	-	-	12.5	375	250	-	-	3125	-	-	3750	18750
60DR004	16	-	-	16	480	320	-	-	4000	-	-	4800	24000
60DR005	0.25	-	-	0.25	7.5	5	-	-	62.5	-	-	75	375
60DR006	25	-	-	25	750	500	-	-	6250	-	-	7500	37500
60DR007	14.9	-	-	14.9	447	298	-	-	3725	-	-	4470	22350
60DR008	3	-	-	3	90	60	-	-	750	-	-	900	4500
60DR009	16	-	-	16	480	320	-	-	4000	-	-	4800	24000
60DR010	18	-	-	18	540	360	-	-	4500	-	-	5400	27000
60DR011	2.5	-	-	2.5	75	50	-	-	625	-	-	750	3750
60DR012	9	-	-	9	270	180	-	-	2250	-	-	2700	13500
60DR013	25	-	-	25	750	500	-	-	6250	-	-	7500	37500
60DR014	6	-	-	6	180	120	-	-	1500	-	-	1800	9000
60DR015	17.5	-	-	17.5	525	350	-	-	4375	-	-	5250	26250
60DR016	5	-	-	5	150	100	-	-	1250	-	-	1500	7500
60DR017	5	-	-	5	150	100	-	-	1250	-	-	1500	7500
60DR018	5	-	-	5	150	100	-	-	1250	-	-	1500	7500
60DR019	1	-	-	1	30	20	-	-	250	-	-	300	1500
60DR020	2	-	-	2	60	40	-	-	500	-	-	600	3000
60DR021	7	-	-	7	210	140	-	-	1750	-	-	2100	10500
60DR022	5	-	-	5	150	100	-	-	1250	-	-	1500	7500
60DR023	12.85	-	-	12.85	385.5	257	-	-	3212.5	-	-	3855	19275
60DR024	5	-	-	5	150	100	-	-	1250	-	-	1500	7500
60DR025	3.5	-	-	3.5	105	70	-	-	825	-	-	1050	5250
60DR026	9	-	-	9	270	180	-	-	2250	-	-	2700	13500
60DR027	10	-	-	10	300	200	-	-	2500	-	-	3000	15000
60DR028	13	-	-	13	390	260	-	-	3250	-	-	3900	19500
60DR029	4	-	-	4	120	80	-	-	1000	-	-	1200	6000
60DR030	5	-	-	5	150	100	-	-	1250	-	-	1500	7500
60DR031	12.5	-	-	12.5	375	250	-	-	3125	-	-	3750	18750
60DR032	13	-	-	13	390	260	-	-	3250	-	-	3900	19500
60DR033	6	-	-	6	180	120	-	-	1500	-	-	1800	9000
60DR034	6	-	-	6	180	120	-	-	1500	-	-	1800	9000
Total	**341.5**	**-**	**-**	**341.5**	**10,245**	**6,830**	**-**	**-**	**85,375**	**-**	**-**	**102,450**	**512,250**

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	800,000
Widening	m	25,000
Gravelling	km	2,200,000
Blacktopping	km	5,700,000
Bridge construction	m	600,000
Slab culvert construction	m	150,000
CC Causeway construction	m	100,000
Stone Causeway construction	m	10,000
Pipe culvert placement	unit	10,000
Masonry wall construction	m^3	10,000
Gabion wall construction	m^3	2,500
Lined drain construction	m	1,000

The resulting estimated costs for different improvement types came to NPR 2,017 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
60DR001	40		30000	88000		7200		0	360	30	1940	1317.5	1200	130047.5
60DR002	6		35000	13200		0		0	80	10	580	550	1000	50420
60DR003	12.5		20000	27500		15000		800	300	60	1260	1000	420	66340
60DR004	16		30000	35200		0		0	200	50	520	1282.5	2910	70162.5
60DR005	0.25		0	550		0		0	120	20	0	400	660	1750
60DR006	25		45000	55000		12000		0	200	40	920	2032.5	8500	123692.5
60DR007	14.9		30000	32780		0		0	320	90	420	1250	2260	67120
60DR008	3		10000	6600		0		0	180	20	0	1250	840	18890
60DR009	16		5000	35200		0		0	120	40	400	550	1800	43110
60DR010	18		30000	39600		15000		1000	200	170	1280	1535	1080	89865
60DR011	2.5		30000	5500		0		0	380	40	750	1500	1140	39310
60DR012	9		25000	19800		12000		1200	300	80	1420	1375	1240	62415
60DR013	25		52500	55000		48000		0	890	120	1480	845	1310	160145
60DR014	6		32500	13200		0		0	320	30	0	725	1200	47975
60DR015	17.5		10000	38500		0		800	220	20	840	2377.5	1460	54217.5
60DR016	5		27500	11000		0		0	280	50	600	1000	520	40950
60DR017	5		32500	11000		0		0	220	10	0	1200	1000	45930
60DR018	5		22500	11000		0		0	240	20	0	800	1500	36060
60DR019	1		20000	2200		0		0	220	20	0	825	400	23665
60DR020	2		25000	4400		18000		0	120	20	0	625	820	48985
60DR021	7		50000	15400		0		0	380	30	440	1535	1140	68925
60DR022	5		35000	11000		0		0	260	30	0	700	1800	48790
60DR023	12.85		30000	28270		48000		0	200	80	680	1205	600	109035
60DR024	5		37500	11000		9000		0	160	20	560	500	200	58940
60DR025	3.5		12500	1100		0		0	240	40	0	125	840	14845
60DR026	9		40000	19800		0		0	220	40	0	1250	840	62150
60DR027	10		35000	22000		36000		1600	440	100	420	1710	440	97710
60DR028	13		30000	28600		0		0	240	30	520	1000	1120	61510
60DR029	4		20000	8800		0		0	240	20	0	550	1100	30710
60DR030	5		20000	11000		0		0	280	30	0	750	2200	34260
60DR031	12.5		45000	27500		0		1000	160	30	900	2225	2220	79035
60DR032	13		27500	28600		0		0	480	110	825	1730	1740	60985
60DR033	6		2500	13200		0		0	220	40	0	1000	2400	19360
60DR034	6		27500	13200		0		0	240	30	0	600	1800	43370
Total	**341.5**		**925,000**	**751,300**		**220,200**		**6,400**	**9,030**	**1,570**	**16,755**	**37,320**	**49,700**	**2,017,275**

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)
Opening up	km	4,000,000
Gravelling	km	2,200,000
Bridge construction	m	600,000

The resulting estimated costs for new construction come to NPR 666 million.

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

Code	Description	Length (km)	Opening up	Gravelling	Bridges	Total cost
60DR001	H13- Ramaghat - Singasain - Pipalkot	8	32000	17600	7200	56800
60DR003	H18- Pulbazaar - Bisalla	3	12000	6600	15000	33600
60DR005	Kusapani Gairasau	2	8000	4400	0	12400
60DR006	H18- Kholibazaar - Basi - Kasikandh	5	20000	11000	12000	43000
60DR010	F48- Dailekh - Naumule	0	0	0	15000	15000
60DR011	Naumule - Rapat Bhurunge - Dwari	12	48000	26400	0	74400
60DR012	Naumule - Kalika	0	0	0	12000	12000
60DR013	Dailekh - Thandada - Salleri	0	0	0	48000	48000
60DR014	Naumule - Salleri - Mehaltoli	10	40000	22000	0	62000
60DR019	H18- Santada - Ghumne Tursu	2.5	10000	5500	0	15500
60DR020	H18- Bestada - Katti	2	8000	4400	18000	30400
60DR023	Puranobazaar-Shreesthan-Gamaudi	0	0	0	48000	48000
60DR024	Shreesthan - Navisthan - Gamaudi	1.5	6000	3300	9000	18300
60DR025	Navisthan - Koteshwar Rawatkot	2.5	10000	5500	0	15500
60DR026	F182- Dullu - Baik	3.5	14000	7700	0	21700
60DR027	F048- Chupra - Kalbhairab - Gauri - Malika	0	0	0	36000	36000
60DR029	Dobato Seri	5	20000	11000	0	31000
60DR031	F48- Mathillo Dungeshwar - Dadaparajul - Awalparajul	9	36000	19800	0	55800
60DR033	Aago Dhuwaune Goganpani	3	12000	6600	0	18600
60DR034	Bhimchula Bagaura	3	12000	6600	0	18600
Total		**72**	**288,000**	**158,400**	**220,200**	**666,600**

4.4 DTPP COSTS

The total costs for the District Transport Perspective Plan came to NPR 2,986 million as indicated in the table below.

Table 4.4.1 DTPP costs (NPR '000)

Code	Conservation	Improvement	New construction	Total
60DR001	60000	130047.5	56800	246847.5
60DR002	9000	50420	0	59420
60DR003	18750	66340	33600	118690
60DR004	24000	70162.5	0	94162.5
60DR005	375	1750	12400	14525

Code	Conservation	Improvement	New construction	Total
60DR006	37500	123692.5	43000	204192.5
60DR007	22350	67120	0	89470
60DR008	4500	18890	0	23390
60DR009	24000	43110	0	67110
60DR010	27000	89865	15000	131865
60DR011	3750	39310	74400	117460
60DR012	13500	62415	12000	87915
60DR013	37500	160145	48000	245645
60DR014	9000	47975	62000	118975
60DR015	26250	54217.5	0	80467.5
60DR016	7500	40950	0	48450
60DR017	7500	45930	0	53430
60DR018	7500	36060	0	43560
60DR019	1500	23665	15500	40665
60DR020	3000	48985	30400	82385
60DR021	10500	68925	0	79425
60DR022	7500	48790	0	56290
60DR023	19275	109035	48000	176310
60DR024	7500	58940	18300	84740
60DR025	5250	21445	15500	42195
60DR026	13500	62150	21700	97350
60DR027	15000	97710	36000	148710
60DR028	19500	61510	0	81010
60DR029	6000	30710	31000	67710
60DR030	7500	34260	0	41760
60DR034	18750	79035	55800	153585
Total	**474,750**	**1,893,560**	**629,400**	**2,997,710**

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. This data is presented in **Annex 2**.

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)
60DR005*	0.25	7.5	5			62.5			75	5117	14.65
60DR019*	1	30	20			250			300	2803	107.02
60DR020*	2	60	40			500			600	5253	114.22
60DR011*	2.5	75	50			625			750	6205	120.87
60DR009	16	480	320			4000			4800	31264	153.53
60DR023	12.85	385.5	257			3212.5			3855	23303	165.42
60DR004	16	480	320			4000			4800	26149	183.56
60DR025*	3.5	105	70			875			1050	5243	200.26
60DR015	17.5	525	350			4375			5250	21723	241.67
60DR013	25	750	500			6250			7500	30573	245.31
60DR003	12.5	375	250			3125			3750	12601	297.59
60DR010	18	540	360			4500			5400	17933	301.12
60DR002	6	180	120			1500			1800	5594	321.77
60DR008	3	90	60			750			900	2775	324.32
60DR022	5	150	100			1250			1500	4416	339.67
60DR026	9	270	180			2250			2700	7522	358.94
60DR030	5	150	100			1250			1500	3863	388.29
60DR007	14.9	447	298			3725			4470	11186	399.60
60DR021	7	210	140			1750			2100	5233	401.29
60DR031	12.5	375	250			3125			3750	9322	402.27
60DR027	10	300	200			2500			3000	6971	430.35
60DR001	40	1200	800			10000			12000	27705	433.13
60DR014	6	180	120			1500			1800	4008	449.10
60DR024	5	150	100			1250			1500	3203	468.31
60DR016	5	150	100			1250			1500	2995	500.83472
60DR032	13	390	260			3250			3900	7768	502.05
60DR028	13	390	260			3250			3900	7182	543.02
60DR017	5	150	100			1250			1500	2697	556.17
60DR033	6	180	120			1500			1800	3220	559.00

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)
60DR029	4	120	80			1000			1200	2143	559.96
60DR034	6	180	120			1500			1800	3115	577.84
60DR018	5	150	100			1250			1500	2444	613.74
60DR006	25	750	500			6250			7500	11977	626.20
60DR012	9	270	180			2250			2700	4240	636.79

Road codes in table 5.1.1 marked with asterisk actually are not ranked as per real situation. This is only based on the calculation total conservation cost per person. Total conservation cost is appeared low because of its less existing length. In fact, new construction is required in these roads. It is worthy to take ranking after avoiding marked roads.

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 earthen 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)	Total cost (NPR '000)	Population served	Cost/person (NPR)
60DR005*	0.25	1,750	5,117	342
60DR009	16.00	43,110	31,264	1,379
60DR015	17.50	54,218	21,723	2,496
60DR004	16.00	70,163	26,149	2,683
60DR025*	3.50	21,445	5,243	4,090
60DR023	12.85	109,035	23,303	4,679
60DR001	40.00	130,048	27,705	4,694
60DR010	18.00	89,865	17,933	5,011
60DR013	25.00	160,145	30,573	5,238
60DR003	12.50	66,340	12,601	5,265
60DR007	14.90	67,120	11,186	6,000
60DR033	6.00	19,360	3,220	6,012
60DR011	2.50	39,310	6,205	6,335
60DR008	3.00	18,890	2,775	6,807

60DR032	13.00	60,985	7,768	7,851
60DR026	9.00	62,150	7,522	8,262
60DR019	1.00	23,665	2,803	8,443
60DR031	12.50	79,035	9,322	8,478
60DR028	13.00	61,510	7,182	8,564
60DR030	5.00	34,260	3,863	8,869
60DR002	6.00	50,420	5,594	9,013
60DR020	2.00	48,985	5,253	9,325
60DR006	25.00	123,693	11,977	10,328
60DR022	5.00	48,790	4,416	11,048
60DR014	6.00	47,975	4,008	11,970
60DR021	7.00	68,925	5,233	13,171
60DR016	5.00	40,950	2,995	13,673
60DR034	6.00	43,370	3,115	13,923
60DR027	10.00	97,710	6,971	14,017
60DR029	4.00	30,710	2,143	14,330
60DR012	9.00	62,415	4,240	14,721
60DR018	5.00	36,060	2,444	14,755
60DR017	5.00	45,930	2,697	17,030
60DR024	5.00	58,940	3,203	18,401

5.3 NEW CONSTRUCTION

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

Table 5.3.1 Ranking of construction works (NPR '000)

Code	Length (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
60DR010	0	15000	17933	836
60DR013	0	48000	30573	1,570
60DR001	8	56800	27705	2,050
60DR023	0	48000	23303	2,060
60DR005	2	12400	5117	2,423
60DR003	3	33600	12601	2,666
60DR012	0	12000	4240	2,830
60DR026	3.5	21700	7522	2,885
60DR025	2.5	15500	5243	2,956
60DR006	5	43000	11977	3,590
60DR027	0	36000	6971	5,164
60DR019	2.5	15500	2803	5,530
60DR024	1.5	18300	3203	5,713
60DR033	3	18600	3220	5,776
60DR020	2	30400	5253	5,787
60DR034	3	18600	3115	5,971
60DR031	9	55800	9322	5,986
60DR011	12	74400	6205	11,990
60DR029	5	31000	2143	14,466
60DR014	10	62000	4008	15,469
Total	**72**	**666,600**		

In the first two rows, road length for new construction seems to be zero. In fact, there is no new length for construction but requires bridge construction.

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 1,620 million for the five-year period.

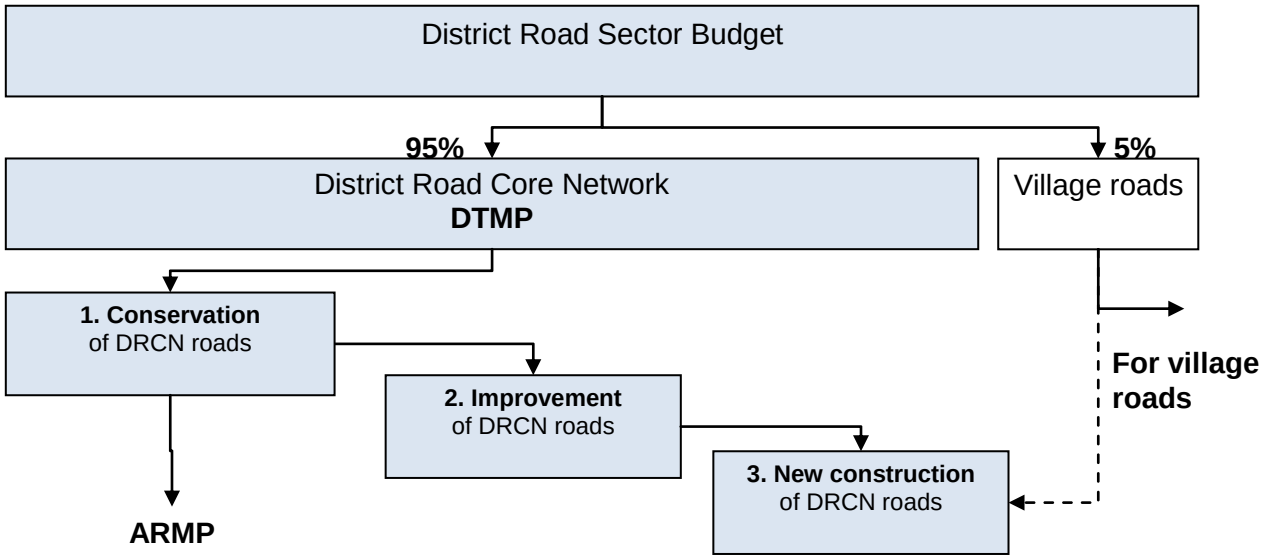
Table 6.1.1 Estimated funding levels (roads) for next five years (in NPR '000)

Funding source					
DDC Internal Budget (33% of total)	1050	1155	1271	1398	1537
Local Agricultural Road Programme	1700	1870	2057	2263	2489
SWAp Budget	15850	17435	19179	21096	23206
Road Maintenance Fund (RBN)	1500	1650	1815	1997	2196
Fund of Members of Parliament	-	-	-	-	-
RAP+Other	10300	134400	147840	162624	178886
LGCDP	-	-	-	-	-
VDC (40% of total)	-	-	-	-	-
Local Road Bridge Program	14000	15400	16940	18634	20497
Peoples' participation (direct from ministry)	3000	34382	37820	41602	45762
Peoples' contribution (20% of total of above)	9480	41258	45384	49923	54915
Total	**56,880**	**247,550**	**272,305**	**299,536**	**329,490**
Grand total	**1,205,761**				

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, 95% of the total budget is reserved for the district road core network. The remaining 5% is to be used by the DDC for the village roads, giving priority to emergency maintenance and routine/recurrent maintenance. Alternatively, this 5% may be used for the new construction of DRCN roads where this is considered a priority by the district. The 95% 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 DTMP investment plan

Item				Year														
Fiscal year				2069/70			2070/71			2071/72			2072/73			2073/74		
Total budget				56,880			247,550			272,305			299,536			329,490		
Non-DRCN roads				2,844			12,378			13,615			14,977			16,474		
DRCN budget				**54,036**			**235,173**			**258,690**			**284,559**			**313,015**		
Core network length (km)				**341.5**			**341.5**			**341.5**			**341.5**			**341.5**		
Blacktop (km)				-			-			-			-			-		
Gravel (km)				-			-			41.57			61.86			106.98		
Earthen (km)				341.5			341.5			299.93			279.64			234.52		
Conservation (NPR '000)				**54,036**			**102,450**			**119,079**			**127,192**			**145,243**		
Emergency				10,245			10,245			10,245			10,245			10,245		
Routine				6,830			6,830			6,830			6,830			6,830		
Recurrent (blacktop)																		
Recurrent (gravel)										16,629			24,742			42,793		
Recurrent (earthen)				36,961			85,375			74,982			69,911			58,629		
Periodic (blacktop)																		
Periodic (gravel)										10,393			15,464			26,746		
Improvement	**Cost**	**BT**	**GR**	**0**	**BT**	**GR**	**132,723**	**BT**	**GR**	**139,612**	**BT**	**GR**	**157,367**	**BT**	**GR**	**167,772**	**BT**	**GR**
60DR009	43110		16.0															
60DR015	54218		17.5				43,110	0	16									
60DR004	70163		16.0				54,218	0	17.5									
60DR023	109035		12.9				35,395	0	8.07									
60DR001	130048		40.0							34,767	0	7.93						
60DR010	89865		18.0							104,845	0	12.36	4,191	0	0.49			
60DR013	160145		25.0										130,048	0	40.0			
60DR003	66340		12.5										23,128	0	4.63	66,736		13.37
60DR007	67120		14.9													101,036		15.77
60DR026	62150		9.0															
60DR031	79035		12.5															
Total improvement									**41.57**			**20.29**			**45.12**			**29.14**

Construction	Cost	GR		GR		GR		GR		GR		GR
Total new construction												

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 136 km will be improved to gravel standard. All of these roads will also receive the cross drainage and protective structures required to make them maintainable all-weather roads. The remaining 206 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 which will only take place after the existing DRCN roads have been improved to maintainable all weather standards (some of these roads may be constructed using VDC funding).

Table 6.3.1 DTMP output

Conservation	Improvement gravel	Improvement blacktop	New construction
341.5 Km	136.12 Km	-	-

Of the total DTMP budget, NPR 548 million will be spent on conservation and NPR 598 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 40% from 0 km to 136 km, with 60% (206 km) remaining fair weather.

Table 6.4.1 Standard of DRCN roads

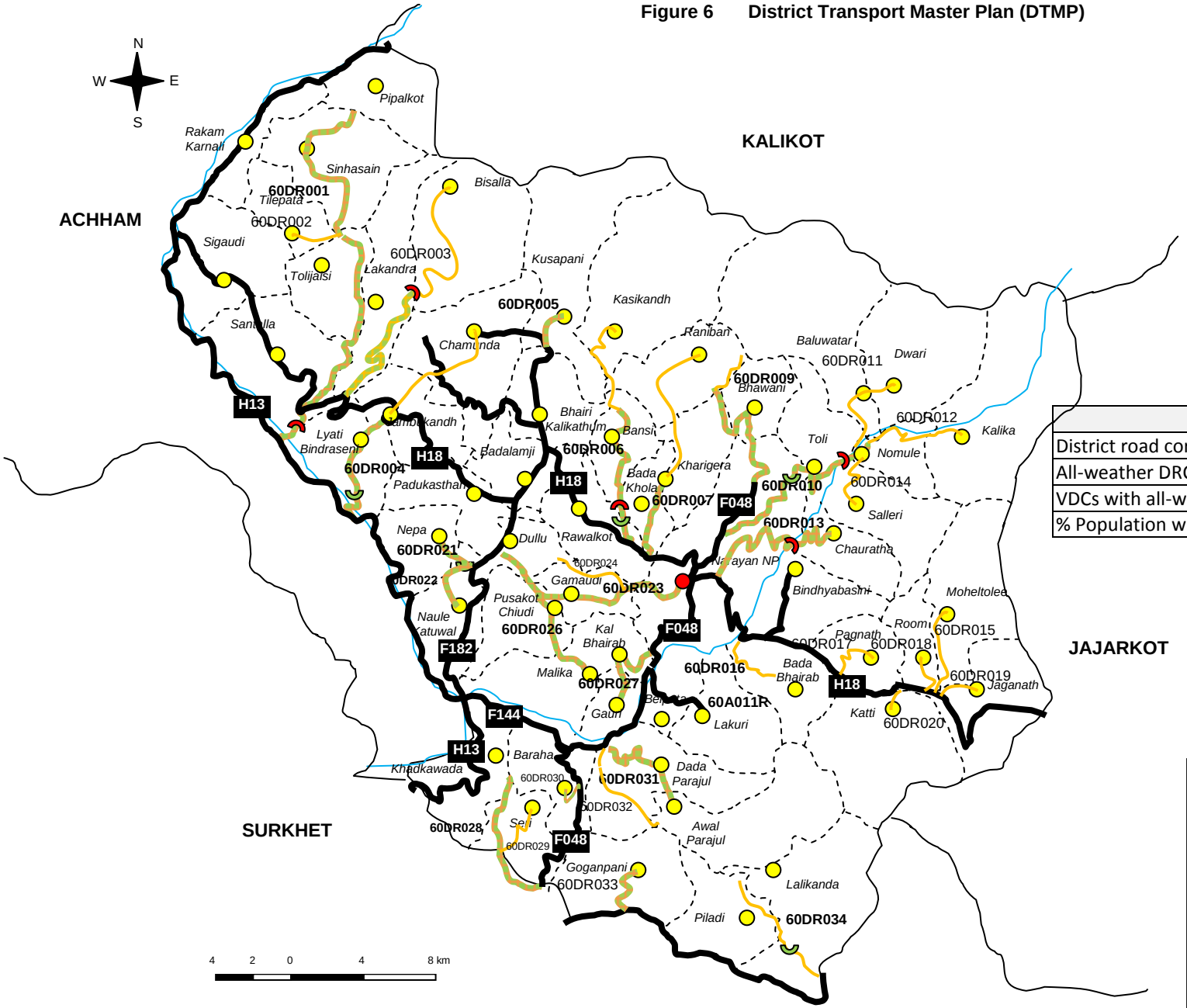
	Total length	Fair-weather		All-weather gravel		All-weather blacktop	
	km	km	%	km	%	km	%
Start of DTMP	341.50	341.5	100	0	0	0	0
End of DTMP	341.50	205.38	60	136.12	40	0	0
Difference	0	-136.12	-40	136.12	40	0	0

The number of VDC headquarters with access to the SRN or all-weather DRCN roads will increase from 13 to 43 and the district population with access to the SRN or all-weather DRCN roads will increase from 34% to 70%. The number of VDC headquarters with no access to DRCN roads will not remain, and 23 percent of the district population with no access to DRCN roads will have road access.

Table 6.4.2 Population with access to road network

	Direct access to SRN			No access to DRCN			Access to fair-weather DRCN roads			Access to all-weather DRCN roads		
	VDCs	Population	%	VDCs	Population	%	VDCs	Population	%	VDCs	Population	%
Start of DTMP	15	88265	34	13	60861	23	33	136951	53	-	-	-
End of DTMP	15	88265	-	-	-	-	-	-	-	43	181,830	70
Difference	-	-	-34	-13	-60861	-23	-33	-136951	-53	43	181,830	70

Figure 6 District Transport Master Plan (DTMP)



Indicator	Start	End
District road core network length	341.5	341.5
All-weather DRCN roads	0.00	195.79
VDCs with all-weather/SRN access	15	30
% Population with all-weather/SRN access	33%	66%

- VDC HQ
- District HQ
- District boundary
- River
- SRN road
- Road for blacktopping
- Road for gravelling
- Earthen road
- Bridge for construction
- Causeway for construction

ANNEX 1 TRAFFIC DATA

Based on the traffic survey carried out in each of the DRCN roads, road wise traffic data is presented in table

Code	Description	Total length (km)	Motor-cycle	Car-Jeep-Minibus	Tractor	Truck-Bus	PCU
60DR001	H13- Ramaghat - Singasain - Pipalkot	40.00	20	15	10	3	**57**
60DR002	Daha Tilepata	6.00	2	1	1		**4**
60DR003	H18- Pulbazaar - Bisalla	12.50	5	5	4		**16**
60DR004	H13- Sangetada - Chamunda	16.00	5	2	3		**11**
60DR005	Kusapani Gairasau	0.25	2	2	1		**5**
60DR006	H18- Kholibazaar - Basi - Kasikandh	25.00	6	3	4	3	**26**
60DR007	H18- Bhirket - Kharigaira - Raniban	14.90	4	4	3		**12**
60DR008	Dungri Eiradi Badakhola	3.00	2	2	1		**5**
60DR009	F048- Deshigade Mahabu	16.00	12	5	6	2	**31**
60DR010	F48- Dailekh - Naumule	18.00	15	4	8	4	**44**
60DR011	Naumule - Rapat Bhurunge - Dwari	2.50	2	2	2		**7**
60DR012	Naumule - Kalika	9.00	4	4	3		**12**
60DR013	Dailekh - Thandada - Salleri	25.00	8	5	6		**21**
60DR014	Naumule - Salleri - Mehaltoli	6.00	3	3	3		**11**
60DR015	F48- Chupra - Simada - Mehaltolee	17.50	10	3	12	5	**52**
60DR016	H18- Lohare - Badabhairab	5.00	1	1	2		**6**
60DR017	Hulaktakura Paganath	5.00	4	4	2		**10**
60DR018	Khopa Ruma	5.00	2	2	2		**7**
60DR019	H18- Santada - Ghumne Tursu	1.00	1		2		**5**
60DR020	H18- Bestada - Katti	2.00	4	4	2		**10**
60DR021	F182- Dullu- Shantibazaar - Pipalghari	7.00	5	2	2		**9**
60DR022	Shantibazaar - Patikanla - Kaphalpani	5.00	5	2	1		**7**
60DR023	Puranobazaar - Shreesthan - Gamaudi	12.85	12	5	2		**15**
60DR024	Shreesthan - Navisthan - Gamaudi	5.00	5	2	2		**9**
60DR025	Navisthan - Koteshwar Rawatkot	3.50	1		1		**3**
60DR026	F182- Dullu - Baik	9.00	3	3	2	3	**21**
60DR027	F048- Chupra - Kalbhairab - Gauri - Malika	10.00	5	1	4		**12**
60DR028	F048- Gurase - Patikanla - Deutithan	13.00	6	8	6		**23**
60DR029	Dobato Seri	4.00	3	1	1		**5**
60DR030	F048 Chisapani Ratikhola	5.00	2	1.0	1		**4**
60DR031	F48- Mathillo Dungeshwar - Dadaparajul - Awalparajul	12.50	5	3	5		**16**
60DR032	F48- Mathillodungeshwar - Biurakhet - Lalikanda	13.00	1	2	3		**9**
60DR033	Aago Dhuwaune Goganpani	6.00	2	1	1		**4**
60DR034	Bhimchula Bagaura	6.00	2	2	2		**7**
Total		**341.5**					

ANNEX 2 POPULATION SERVED

	VDC	Population	DRCN roads																																		SRN
			60DR001	60DR002	60DR003	60DR004	60DR005	60DR006	60DR007	60DR008	60DR009	60DR010	60DR011	60DR012	60DR013	60DR014	60DR015	60DR016	60DR017	60DR018	60DR019	60DR020	60DR021	60DR022	60DR023	60DR024	60DR025	60DR026	60DR027	60DR028	60DR029	60DR030	60DR031	60DR032	60DR033	60DR034	
1	Awalparajul	4213																															x				
2	Badabhairab	2995															x	x																			
3	Badakhola	2775						x	x	x																											
4	Badalamji	6325																																			x
5	Baluwatar	3524									x	x	x																								
6	Bansi	4005						x																													
7	Baraha	3863																														x					x
8	Belpata	2721																																			x
9	Bhairikalikathum	5892																																			x
10	Bhawani	2197									x																										
11	Bindhyabasini	2945															x																				x
12	Bisalla	6707			x																																
13	Chamunda	11783				x																															
14	Chauratha	2869													x																						
15	Chhiudipusakot	4887																							x			x									
16	Dadaparajul	5109																															x				
17	Dullu	4178																																			x
18	Dwari	2681										x	x																								
19	Gamaudi	3203																							x	x											
20	Gauri	2635																										x	x								
21	Goganpani	3220																																	x		
22	Jaganath	2803															x				x																
23	Jambukandh	6724				x																															x
24	Kalbhairab	4336																											x								
25	Kalika	2460										x		x																							
26	Kasikandh	5197						x																													

	VDC	Population	DRCN roads																																				SRN
			60DR001	60DR002	60DR003	60DR004	60DR005	60DR006	60DR007	60DR008	60DR009	60DR010	60DR011	60DR012	60DR013	60DR014	60DR015	60DR016	60DR017	60DR018	60DR019	60DR020	60DR021	60DR022	60DR023	60DR024	60DR025	60DR026	60DR027	60DR028	60DR029	60DR030	60DR031	60DR032	60DR033	60DR034	
27	Katti	5253															x					x																
28	Khadkabada	5039																												x								
29	Kharigaira	3978							x																													
30	Kusapani	5117					x																															
31	Lakandra	5894	x		x																																	
32	Lakuri	3840																																				x
33	Lalikanda	4653																																x				
34	Lyati Bindrasaini	7642				x																																
35	Malika	5564																							x													
36	Mehaltoli	2586													x		x																					
37	Narayan NP	21110									x																											x
38	Naulekatuwal	4416																						x	x													
39	Nepa	5233																					x		x													
40	Naumule	1780										x		x																								
41	Padukasthan	5418																																				x
42	Paganath	2697															x		x																			
43	Piladi	3115																																x		x		
44	Pipalkot	3213	x																																			
45	Rakamkarnali	2814																																				x
46	Raniban	4433							x		x																											
47	Rawatkot	5243																									x											x
48	Ruma	2444															x			x																		
49	Salleri	4008										x			x	x																						
50	Sattala	4865																																				x
51	Seri	2143																												x	x							
52	Sigaudi	6032																																				x
53	Singhasain	6709	x																																			
54	Tilepata	5594	x	x																																		
55	Toli	3480										x																										
56	Tolijaisi	6295	x																																			x

	VDC	Population	DRCN roads																																			SRN
			60DR001	60DR002	60DR003	60DR004	60DR005	60DR006	60DR007	60DR008	60DR009	60DR010	60DR011	60DR012	60DR013	60DR014	60DR015	60DR016	60DR017	60DR018	60DR019	60DR020	60DR021	60DR022	60DR023	60DR024	60DR025	60DR026	60DR027	60DR028	60DR029	60DR030	60DR031	60DR032	60DR033	60DR034	
	Total population	**260855**	**27705**	**5594**	**12601**	**26149**	**5117**	**11977**	**11186**	**2775**	**31264**	**17933**	**6205**	**4240**	**9463**	**4008**	**21723**	**2995**	**2697**	**2444**	**2803**	**5253**	**5233**	**4416**	**23303**	**3203**	**5243**	**7522**	**6971**	**7182**	**2143**	**3863**	**9322**	**7768**	**3220**	**3115**	**88265**
	Total VDCs/municipalities	**56**	**5**	**1**	**2**	**3**	**1**	**3**	**3**	**1**	**4**	**6**	**2**	**2**	**3**	**1**	**7**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**5**	**1**	**1**	**2**	**2**	**2**	**1**	**1**	**2**	**2**	**1**	**1**	**15**

Source: Census 2011

District Population is only 260,885; however the total population of the district is 261,770 including institutional population

ANNEX 3 LOCATION OF PROPOSED INTERVENTIONS

Road code	Road Name	Length (km)	Start chainage (km) or X-coordinate	End chainage (km) or Y-coordinate	Rehabilitation (km)	Gravelling (km)	Blacktopping (km)	Widening (m)	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway (m)	Pipe culvert (units)	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)
60DR001	H13-Ramaghat-Singasain - Pipalkot	40	0+000	40+000	0	40	0	1200	12	0	0	36	3	194	527	1200
60DR002	Daha Tilepata	6	0+000	3+000	0	6	0	1400	0	0	0	8	1	58	220	1000
60DR003	H18-Pulbazaar - Bisalla	12.5	0+000	12+500	0	12.5	0	800	25	0	8	30	6	126	400	420
60DR004	H13-Sangetada- Chamunda	16	0+000	16+000	0	16	0	1200	0	0	0	20	5	52	513	2910
60DR005	Kusapani Gairasau	0.25	0+000	2+000	0	0.25	0	0	0	0	0	12	2	0	160	660
60DR006	H18- Kholibazaar - Basi - Kasikandh	25	0+000	25+000	0	25	0	1800	20	0	0	20	4	92	813	8500
60DR007	H18- Bhirket - Kharigaira - Raniban	14.9	0+000	15+000	0	14.9	0	1200	0	0	0	32	9	42	500	2260
60DR008	Dungri Eiradi Badakhola	3	0+000	3+000	0	3	0	400	0	0	0	18	2	0	500	840
60DR009	F048- Deshigade Mahabu	16	0+000	16+000	0	16	0	200	0	0	0	12	4	40	220	1800
60DR010	F48- Dailekh - Naumule	18	0+000	18+000	0	18	0	1200	25	0	10	20	17	128	614	1080
60DR011	Naumule - Rapat Bhurunge - Dwari	2.5	0+000	2+500	0	2.5	0	1200	0	0	0	38	4	75	600	1140
60DR012	Naumule - Kalika	9	0+000	9+000	0	9	0	1000	20	0	12	30	8	142	550	1240
60DR013	Dailekh - Thandada - Salleri	25	0+000	32+000	0	25	0	2100	80	0	0	89	12	148	338	1310
60DR014	Naumule - Salleri - Mehaltoli	6	0+000	6+000	0	6	0	1300	0	0	0	32	3	0	290	1200
60DR015	F48- Chupra - Simada - Mehaltolee	17.5	0+000	17+500	0	17.5	0	400	0	0	8	22	2	84	951	1460
60DR016	H18- Lohare - Badabhairab	5	0+000	5+000	0	5	0	1100	0	0	0	28	5	60	400	520
60DR017	Hulaktakura Paganath	5	0+000	5+000	0	5	0	1300	0	0	0	22	1	0	480	1000
60DR018	Khopa Ruma	5	0+000	5+000	0	5	0	900	0	0	0	24	2	0	320	1500
60DR019	H18- Santada - Ghumne Tursu	1	0+000	1+000	0	1	0	800	0	0	0	22	2	0	330	400
60DR020	H18- Bestada - Katti	2	0+000	2+000	0	2	0	1000	30	0	0	12	2	0	250	820
60DR021	F182- Dullu- Shantibazaar - Pipalghari	7	0+000	7+000	0	7	0	2000	0	0	0	38	3	44	614	1140
60DR022	Shantibazaar - Patikanla - Kaphalpani	5	0+000	5+000	0	5	0	1400	0	0	0	26	3	0	280	1800

60DR023	Puranobazaar - Shreesthan - Gamaudi	12.85	0+000	12+500	0	12.85	0	1200	80	0	0	20	8	68	482	600
60DR024	Shreesthan - Navisthan - Gamaudi	5	0+000	5+000	0	5	0	1500	15	0	0	16	2	56	200	200
60DR025	Navisthan - Koteshwar Rawatkot	3.5	0+000	0+500	0	0.5	0	500	0	0	0	24	4	0	50	840
60DR026	F182- Dullu - Baik	9	0+000	9+000	0	9	0	1600	0	0	0	22	4	0	500	840
60DR027	F048- Chupra - Kalbhairab - Gauri - Malika	10	0+000	10+000	0	10	0	1400	60	0	16	44	10	42	684	440
60DR028	F048- Gurase - Patikanla - Deutithan	13	0+000	13+000	0	13	0	1200	0	0	0	24	3	52	400	1120
60DR029	Dobato Seri	4	0+000	4+000	0	4	0	800	0	0	0	24	2	0	220	1100
60DR030	F048 Chisapani Ratikhola	5	0+000	5+000	0	5	0	800	0	0	0	28	3	0	300	2200
60DR031	F48- Mathillo Dungeshwar - Dadaparajul - Awalparajul	12.5	0+000	12+500	0	12.5	0	1800	0	0	10	16	3	90	890	2220
60DR032	F48- Mathillodungeshwar - Biurakhet - Lalikanda	13	0+000	13+000	0	13	0	1100	0	0	0	48	11	82.5	692	1740
60DR033	Aago Dhuwaune Goganpani	6	0+000	6+000	0	6	0	100	0	0	0	22	4	0	400	2400
60DR034	Bhimchula Bagaura	6	0+000	6+000	0	6	0	1100	0	0	0	24	3	0	240	1800
Total		**341.5**			**0**	**341.5**	**0**	**37000**	**367**	**0**	**64**	**903**	**157**	**1675.5**	**14928**	**49700**

ANNEX 4 TOTAL ROAD INVENTORY

Road code	Road Name	Length (km)	Start chainage (km) or X-coordinate	End chainage (km) or Y-coordinate	Surface Type: Black topped	Surface Type: Gravel	Surface Type: Earthen	All Weather	Fair weather	Condition- Good/Fair	Condition- Poor	Condition- Temporarily Impassable	Permanently Impassable
60DR001	H13-Ramaghat-Singasain - Pipalkot	40	0+000	40+000			√		√	Fair			
60DR002	Daha Tilepata	6	0+000	3+000			√		√	Fair			
60DR003	H18-Pulbazaar - Bisalla	12.5	0+000	12+500			√		√	Fair			
60DR004	H13-Sangetada- Chamunda	16	0+000	16+000			√		√	Fair			
60DR005	Kusapani Gairasau	0.25	0+000	2+000			√		√		Poor	√	
60DR006	H18- Kholibazaar - Basi - Kasikandh	25	0+000	25+000			√		√	Fair			
60DR007	H18- Bhirket - Kharigaira - Raniban	14.9	0+000	15+000			√		√	Fair			
60DR008	Dungri Eiradi Badakhola	3	0+000	3+000			√		√	Fair			
60DR009	F048- Deshigade Mahabu	16	0+000	16+000			√		√	Fair			
60DR010	F48- Dailekh - Naumule	18	0+000	18+000			√		√	Fair			
60DR011	Naumule - Rapat Bhurunge - Dwari	2.5	0+000	2+500			√		√		Poor	√	
60DR012	Naumule - Kalika	9	0+000	9+000			√		√		Poor	√	
60DR013	Dailekh - Thandada - Salleri	25	0+000	32+000			√		√	Fair			
60DR014	Naumule - Salleri - Mehaltoli	6	0+000	6+000			√		√		Poor	√	
60DR015	F48- Chupra - Simada - Mehaltolee	17.5	0+000	17+500			√		√	Fair			
60DR016	H18- Lohare - Badabhairab	5	0+000	5+000			√		√	Fair			
60DR017	Hulaktakura Paganath	5	0+000	5+000			√		√		Poor	√	
60DR018	Khopa Ruma	5	0+000	5+000			√		√		Poor		
60DR019	H18- Santada - Ghumne Tursu	1	0+000	1+000			√		√		Poor	√	
60DR020	H18- Bestada - Katti	2	0+000	2+000			√		√	Fair			
60DR021	F182- Dullu- Shantibazaar - Pipalghari	7	0+000	7+000			√		√	Fair			
60DR022	Shantibazaar - Patikanla - Kaphalpani	5	0+000	5+000			√		√	Fair			
60DR023	Puranobazaar - Shreesthan - Gamaudi	12.85	0+000	12+500			√		√	Fair			

60DR024	Shreesthan - Navisthan - Gamaudi	5	0+000	5+000			√		√	Fair			
60DR025	Navisthan - Koteshwar Rawatkot	3.5	0+000	0+500			√		√		Poor	√	
60DR026	F182- Dullu - Baik	9	0+000	9+000			√		√	Fair			
60DR027	F048- Chupra - Kalbhairab - Gauri - Malika	10	0+000	10+000			√		√		Poor	√	
60DR028	F048- Gurase - Patikanla - Deutithan	13	0+000	13+000			√		√	Fair			
60DR029	Dobato Seri	4	0+000	4+000			√		√		Poor	√	
60DR030	F048 Chisapani Ratikhola	5	0+000	5+000			√		√		Poor	√	
60DR031	F48- Mathillo Dungeshwar - Dadaparajul - Awalparajul	12.5	0+000	12+500			√		√	Fair			
60DR032	F48- Mathillodungeshwar - Biurakhet - Lalikanda	13	0+000	13+000			√		√		Poor	√	
60DR033	Aago Dhuwaune Goganpani	6	0+000	6+000			√		√	Fair			
60DR034	Bhimchula Bagaura	6	0+000	6+000			√		√	Fair			
Total		**341.5**											