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## FOREWORD

It is my pleasure to introduce this District Transport Master Plan (DTMP) of Dhanusha district. I believe that this document will be helpful in backstopping to rural transport infrastructure sector through sustainable planning, resource mobilization, implementation and monitoring of the rural road sub-sector development. The document is anticipated to generate substantial employment opportunities for rural people through increased and reliable accessibility on 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, RAP3/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 Dhanusha District.

I would like to thanks to Er. Raj Kishore Sah, D.T.O. 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 SDeF team – Er. Hare Ram Shrestha, Project Director, Er. Dikendra Katwal, Team Leader, Er. Sanjay Kumar Jha, Engineer and Binod Dhakal, GIS expert for their continuous dedication, and cooperation in bringing this DTMP to final stage.

My special thanks goes to all the representatives of political parties and other DTICC 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.

.....  
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## ACKNOWLEDGEMENT

The District Transport Master Plan of Dhanusha District has been prepared for the District Development Committee, District Technical Office, Dhanusha, DoLIDAR and Rural Access Programme Phase 3 (RAP3), under the Contract Agreement between Rural Access Programme 3 (RAP3) and Sustainable Infrastructure Development Foundation (SIDeF); Contract ID No: RAP3/2014/014, DTMP01) to carry out the task of preparing of DTMP of Dhanusha District of Nepal. We would like to convey our indebtedness to Rural Access Programme 3 (RAP3) for entrusting us the responsibility to carry out the task of preparing of DTMP of Dhanusha District.

We would like to express our sincere gratitude to the Project Coordinator Mr. Maheshwor Ghimire (SDE) of DoLIDAR and Programme Manager Mr. Michael Green, DTL Mr. Dilli Prakash Sitaula, Engineering Team Leader Mr. Bill Seal, Er. Manoj Krishna Shrestha and Er. Laxman Bhakta Dahi Shrestha of (RAP 3) whose valuable co-operation and suggestions guided us to accomplish this stage of work. We would also like to express our sincere thanks to LDO of Dhanusha DDC Mr. Ram Krishna Upreti DTO Chief Mr. Raj Kishore Shah, (SDE), DTO Er. Mr Mahendra Mahato, Planning Officer, Program Officer, Information Officer, Sub-engineers and other staffs of DDC and DTO Office, Dhanusha for their extended help and regular support.

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

Finally, we would like to thank our DTMP team members Er. Dikendra Katuwal, Team Leader, Er. Sanjay Kumar Jha, Er. Amod Marhatta and Mr. Binod Dhakal, GIS expert for their valuable efforts to bring the study report in this stage.

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Er. Hare Ram Shrestha  
Project Director  
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## EXECUTIVE SUMMARY

Dhanusha district is located in Janakpur zone, Central Development Region of Nepal. It is one of the southern terai district of Nepal. It covers 1190 square kilometers and it borders with Siraha to the East; Mahottari to the West; Sindhuli to the North; and India to the South.

Dhanusha has fertile, Terai, plains, covered with agricultural land and forest. The northernmost part of the district extends into the Churiya or Siwalik Hills. Most of the people living in this district are farmers. The district headquarters is Janakpur. Among the major places to visit in Dhanusha are its famous temples and lakes, mostly situated in Janakpur.

Major languages spoken in the Dhanusha district are: Maithali and Nepali. District is connected by Mahendra highway and district headquarters Janakpur is connected to East- West Highway by Dhalkebar – Janakpur Road.

Total length of road in Dhanusha district is 756.36 km where **203.14** km is SRN roads, rural roads, 303.63 km is DRCN roads approved by Dhanusha DTICC in 27 Ashad 2072, given in **Annex 5** and 249.59 km is Village roads. The table ES1 gives overall picture of road inventory of Dhanusha.

Table ES1.

Road Class	Total length	Black Top	Gravel	Earthen
Strategic road network	203.14	108.14	66.32	28.68
Urban roads	-	-	-	-
District road core network	303.63	4.48	199.99	99.16
Village roads	249.59	22.63	19.26	207.69
<b>Total</b>	<b>756.36</b>	<b>135.25</b>	<b>285.57</b>	<b>335.54</b>

The total estimated cost for conservation, improvement and new construction for selected DRCN road is **NPR 1,607,202,000** as per present condition. The present cost for conservation is **NPR 472, 683,000.00**; cost for improvement is **NPR 1,134,519,000.00** and no cost for new construction is allocated. Budget is worked out for DRCN roads. The cost for conservation may vary in consequent year with respect to improvement of the road. Improvement of blacktop done where the traffic exceeds 150 CPU while traffic surveying.

Table ES2.

Improvement type	Requirement	Cost (NPR)
Bridges	195 m	156,000,000
Slab culverts	- m	-
Causeways	- m	-
Hume pipes	2 units	20,000
Masonry retaining walls	- m <sup>3</sup>	-
Gabion retaining walls	- m <sup>3</sup>	-
Lined drains	13,010 m	19,515,000
Widening	- m	-
Rehabilitation	45.11 km	36,088,000
Gravelling	99.16 km	198,321,460
Blacktopping	127.12 km	724,574,424
New construction	- km	-
<b>Total</b>		<b>1,134,518,884</b>

The available funding resource on road sector for the coming five years (fiscal year 2072/73 to 2076/77) is estimated to be NPR 1,134,518,000.00. Allocation to the district road core network (DRCN) was set at 80% of the total road sector budget, which was subsequently allocated firstly to the annual maintenance needs, secondly to the improvement needs and lastly to new construction. Since DDC/DTICC meeting decided to allocate 80% of total road sector budget which comes to **NPR 1,162,225,000.00**. However, Budget has been allocated as table **6.2.1(MANUAL)** in this report.

Within the DTMP period, the percentage changes of road condition are seen as, 76.44 km blacktopped, 218.71 km gravelled and 8.49 km remains earthen surface. The fair weather road length is reduced from 33% to 6%, all weather blacktop road is improved from 1% to 25.3% and gravel surface from 199.99 km to 218.71 km (6.2% increase). Similarly, the population with all-weather access increases from 26.6% to 32.3% and that the VDCs with fair weather accessibility decrease from 43% to 4%.

## **ABBREVIATIONS**

DDC	District Development Committee
CC	Cement Concrete
DoLIDAR	Department of Local Infrastructure Development and Agriculture Road
DOR	Department of Road
DRCN	District Road Core Network
DRILIP	Decentralized Rural Infrastructure And livelihood Project
DTICC	District Transport Infrastructure Coordination Committee
DTMP	District Transport Master Plan
DTO	District Technical Office
DTPP	District Transport Perspective Plan
GIS	Geographical Information system
GON	Government of Nepal
GPS	Global Positioning System
LGCDP	Local Governance and Community Development Programme
MFALD	Ministry of Federal Affairs and Local Development
PAF	Poverty Alleviation Fund
RAIDP	Rural Access Improvement and Decentralization Project
RCIW	Rural community Infrastructure Work
SWAp	Sector Wide Approach
VDC	Village Development Committee
VPD	Vehicle per Day

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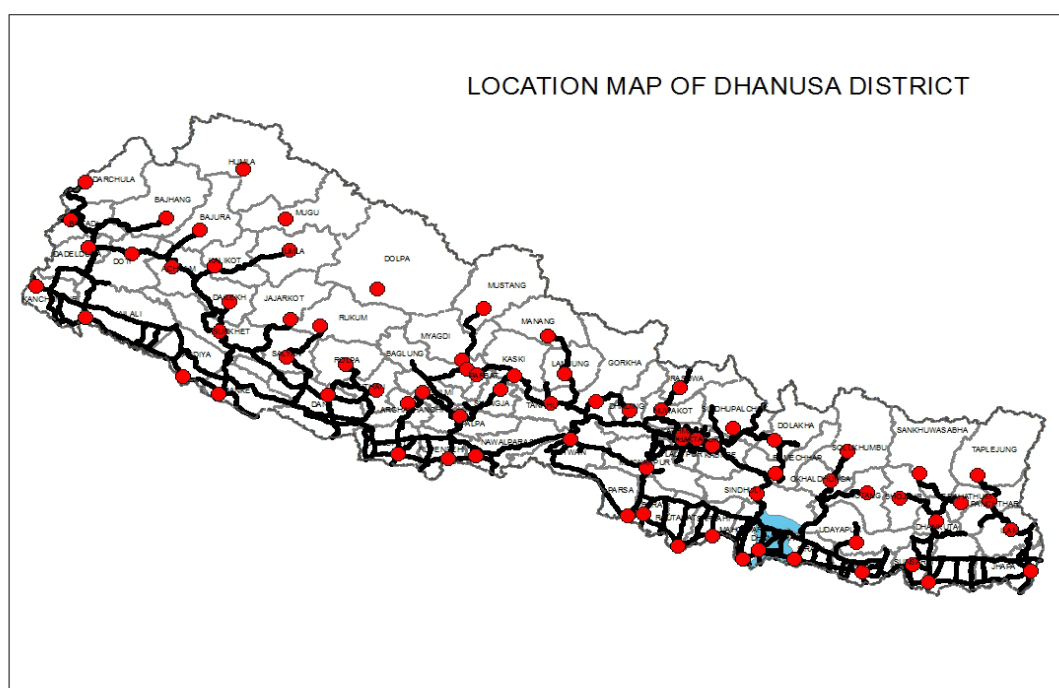
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## 1. INTRODUCTION

Dhanusha district is located in Janakpur zone, Central Region of Nepal. It is one of the southern terai district of Nepal. It covers 1180 square kilometers and it borders with Siraha to the East; Mahottari to the West; Sindhuli to the North; and India to the South.

There are total 7 Electoral Constituencies in Dhanusha named kshetra no:-1 to 7. The district consists 1 Sub-Metropolitan city namely **Janakpur** and 5 municipality namely Dhanushdham municipality, Chireswore municipality, Ganeshman charnath municipality, Mithila municipality and Sabaila municipality and 71 VDCs. Topographic location of Dhanusha district is  $25^{\circ}35'$  -  $27^{\circ}50'$  north longitude and  $85^{\circ}05'$  -  $86^{\circ}02'$  east latitude. Total area of Dhanusha district is 1180 Km<sup>2</sup>.

Among the major places to visit in Dhanusa are its famous temples and lakes, mostly situated in Janakpur. These include the Janaki Temple, Dhanusadham where according to Hindu mythology a part of Shiva's bow that Lord Ram broke is said to have fallen, and the Vivah Mandap where it is believed Ram and Sita were married. A beautiful Mithila Women's Art Center is also a major tourist attraction.



**Figure 1 Location of the Dhanusha District**

According to the National Census 2011, the population of the district is 7, 54,777 comprising 376,239 female (49.40%) and 378,538 male (50.60%) residing in 138,239 households. Dhanusha district has an average population density of 640 people per square kilometer. Dhanusha district has multi-ethnicity with majority of Bramin, Chhetri, Janajati and Dalit. Major languages spoken in the Dhanusha district are Maithali (85%) and Nepali (4.4%). Janakpur is the district headquarter of Dhanusha which is connected to East- West highway by Dhalkebar –Janakpur Feeder Road. Dhanusha district has an airport and the only Railway System of **Nepal** is also situated here which connects Janakpurdham with an Indian town, Jayanagar. Since the roads are already being constructed in the district, all the VDCs are connected with the road network. The main occupation and livelihood of the district population is agriculture, livestock, business, small to medium industries and trading etc.



## 2. DISTRICT ROAD CORE NETWORK (DRCN)

This chapter gives an overview of the existing roads in Dhanusha District, distinguishing between strategic roads, urban roads and rural roads. It goes 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 LENGTH

Dhanusha district has an estimated road network length of 756.36 kilometres, including 203.14 kilometres of strategic roads (SRN) managed by DOR, no urban roads managed by urban roads and 553.22 kilometres of rural roads managed by Dhanusha DDC and almost all VDCs in the district. Almost SRN are either blacktopped or gravelled and few are earthen. Only 54 % of rural roads are either blacktopped or gravelled and 46% are earthen surface. A map of the total road network in Dhanusha is shown in Figure 2 at the end of this chapter.

Of total road length of 756.36km, 303.63 km is DRCN, which was identified and approved by DDC/DTICC meeting of Dhanusha held on dated 2072/03/27 (minutes of meeting are attached in Annex 5).

**Table 2.1.1 Total road length (km)**

Road Class	Total length	Black Top	Gravel	Earthen
Strategic roads	203.14	108.14	66.32	28.68
Urban roads	-	-	-	-
Rural roads	553.22	27.11	219.25	306.86
<b>Total</b>	<b>756.36</b>	<b>135.25</b>	<b>285.57</b>	<b>335.54</b>

### 2.2 NATIONAL HIGHWAYS AND FEEDER ROAD

Dhanusha district has two highway (63.14 km), seven feeder roads (113 km) and postal road (27 km) totalling to 203.14 km. Of which, 108.14 km is blacktop and 66.32 km is gravel and 28.68 km is earthen surface. The SRN (main highway and feeder roads) are listed below:

**Table 2.2.1 National Highways and Feeder Roads (km)**

Code	Name of Road	Total length	Black Top	Gravel	Earthen
H0120	Kamala - Dhalkebar	20.57	20.57	-	-
H0121	Dhalkebar - Ratu	8.01	8.01	-	-
H0603	Dudhmati Bridge - Janakapur Municipality Boundary	6.03	6.03	-	-
H0604	Janakpur Municipality Boundary-Dhalkebar	25.03	25.03	-	-
H0606	Rato River - Chure Temple	3.50	3.50	-	-
F10701	Birendrabazar (MRM)-Yadukuha-Mahinathpur	42.00	-	32.32	9.68
F10801	Janakpur - Yadukuha	18.00	-	18.00	-
F10901	Dharapani (MRM)-Dhanushadham-Janakpur	26.00	26.00	-	-
F11001	Janakpur(H06) - Jatahi	14.00	14.00	-	-
F11201	Janakpur(H06) - Basbitti	3.00	-	3.00	-
F11301	Janakpur - Kurtha - Mahadaiya	4.00	-	4.00	-
F16001	Baldehi-Chandrapur; Janakpur circumamulatory	6.00	-	-	6.00
H1708	Kamala River - Jogiyara (Postal)	11.00	-	-	11.00
H1709	Jogiyada - Janakpur (Postal)	15.00	4.00	9.00	2.00
H1710	Janakpur - Birendrachowk (Postal)	1.00	1.00	-	-
<b>Total</b>		<b>203.14</b>	<b>108.14</b>	<b>66.32</b>	<b>28.68</b>

Source: SSRN 2013/14; DoR

## 2.3 DISTRICT ROAD CORE NETWORK

As a part of the preparation of this DTMP, the District Road Core Network (DRCN) identified together with DTICC/DDC. This DRCN is the minimum network that allows all VDC headquarters to be connected with the strategic road network and the district headquarter, 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.

In the course of DTMP preparation, the entire inventory of existing roads in the district has been listed and consultation meeting conducted with DDC/DTO engineers and technician for the primary workout in identifying list of DRCN. In the process of selecting DRCN, some roads are extended beyond the VDC headquarters and some roads are added to provide access to agriculturally potential areas as well as tourism/culturally potential areas as such DDC/DTICC meeting recommended to incorporate those road length in the DRCN. On 12 July 2015, DDC/DTICC meeting was organized by DDC Dhanusha to finalize DRCN list and approval from the DDC meeting.

The resulting District Road Core Network (DRCN) in Dhanusha district is shown in Figure 3 at the end of this chapter. The DRCN covers all 71 VDCs and the DRCN consists of 23 district roads with a total length of 303.63 km. most of the DRCN roads are either black topped or graveled and some portion of length is earthen surface. The blacktopped and gravel roads are considered as all weather and earthen surface as fair weather roads. (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
<b>Strategic road network</b>	<b>203.14</b>	<b>108.14</b>	<b>66.32</b>	<b>28.68</b>
Highways	90.14	68.14	9.00	13.00
Feeder roads	113.00	40.00	57.32	15.68
<b>Urban roads</b>				
<b>District road core network</b>	<b>303.63</b>	<b>4.48</b>	<b>199.99</b>	<b>99.16</b>
<b>Village roads</b>	<b>249.59</b>	<b>22.63</b>	<b>19.26</b>	<b>207.69</b>
<b>Total</b>	<b>756.36</b>	<b>135.25</b>	<b>285.57</b>	<b>335.54</b>

**Table 2.3.2 District road core network (km)**

Code	Name of Road	Total length	Black Top	Gravel	Earthen	All weather	Fair weather
<b>Total</b>		<b>303.63</b>	<b>4.48</b>	<b>199.99</b>	<b>99.16</b>	<b>204.47</b>	<b>99.16</b>
<b>Percentage</b>			1.47%	65.87%	32.66%	67%	33%
17DR001	Janakpur N.P.-Kurtha - Shantipur-sapahi (Gajariya)- Bateshwor-Jamuni Niwash	<b>26.94</b>	0.55	18.21	8.18	18.76	8.18
17DR002	Hariharpur-Bateswor-Bhuchakrapur-Laxminiwas	<b>10.03</b>		10.03		10.03	-
17DR003	Nagaraeen- BahedaBala-TulsiyahiJabdi	<b>7.90</b>		7.90		7.90	-
17DR004	TulsiyahiJabdi - TulsiyahiNikas-Fulgama - Lagmagadhaguthi	<b>7.22</b>	0.21	7.01		7.22	-
17DR005	Devpora - Ghodghans - Fulgama - Tulsiyahi Road	<b>15.38</b>	0.42	8.07	6.89	8.49	6.89
17DR006	SakhuwaMahendranagar-Parbarta-Ichhapur-NauleBigha-Kisanpur-Laxmipur-Radhapur-Bharatpur	<b>15.51</b>	0.22	13.36	1.93	13.58	1.93
17DR007	Janaki Medical College-Ramdaiya-Sabela-Paterwa-Kamala	<b>22.11</b>	0.01	13.40	8.71	13.41	8.71

Code	Name of Road	Total length	Black Top	Gravel	Earthen	All weather	Fair weather
17DR008	LaxmipurBagewa-Gopalpur-Baniniya-RamdaiyaBhawadi-TarapattiSirsiya	13.44		12.76	0.67	12.76	0.67
17DR009	Pulchowk-Shivpur-Kachuritherra-Parastoki-Harsar-Sakhuwa Mahendranagar	16.14	0.77	8.62	6.75	9.39	6.75
17DR010	DevpuraRupetha-Bahuwarba-Debdiha-Dhanauji	9.32	0.26	4.28	4.77	4.55	4.77
17DR011	Bhadariya-Parbaha Paudeshwor-Dhanusha Dam	12.62		4.35	8.27	4.35	8.27
17DR012	D.Govindapur - Kajarramaul - Jhatiyahi - NaukhorPrasahi - SugaNikas - Sonigama	14.33		7.41	6.92	7.41	6.92
17DR013	Deuriparbaha - Jhojhokatiya - Dhanauji - Devdiha - Ghodghans	11.70		11.70		11.70	-
17DR014	Jankpuur-Manaharpur - Khariyani Kamala Road	28.53	0.05	21.67	6.82	21.72	6.82
17DR015	Duhabi-Giddha-Bafai-HathipurHarbara-Nanupatti	5.15		2.12	3.03	2.12	3.03
17DR016	Bisharbhora - DubarikotHatlekha-Ekrai - Thadijhiya	13.26		3.86	9.40	3.86	9.40
17DR017	Mahuwa(pra.khe.) -Khajurichanha - Machijhitkaiya	4.73	1.98	2.74		4.73	-
17DR018	Ballahagoth-Balahasadhara-Lakkad-Singhyahi Maidan	8.77		6.92	1.85	6.92	1.85
17DR019	Inaruwa-Dubarkot-Narahi-India Border	12.93		12.93		12.93	-
17DR020	Deuri-Parwaha-Paudeswor Road	3.17		3.17		3.17	-
17DR021	Mahuwa-Dhabauli- Yadukoha-Balabakhar- Parterwa- Kiratpur-Barmajhiya- Portaha	24.98			24.98	-	24.98
17DR022	Puspalpur-Ichhapur-Tarapatti	12.09		12.09		12.09	-
17DR023	Dhanushadham-Raghunathpur-Kiratpur-Kamala	7.38		7.38		7.38	-

**Note: Following DRCN Roads lies within various Municipalities as listed and later it will converts to Urban Roads once MTMP prepares and takes responsibility by the respective Municipalities.**

**A) Janakpur Sub-Metropolitan City.**

Road Code	Name of Road	Total Length	Blacktop	Gravel	Earthen	Length@ Municip
17DR001	Janakpur N.P.-Kurtha-Shantipur-sapahi (Gajariya)- Bateshwor-Jamuni Niwash Road	26.94	0.55	11.33	3.06	14.94
17DR005	Devpura-Ghodghans-Fulgama-Tulsiyahi Road	15.38		8.07		8.07
17DR010	DevpuraRupetha-Bahuwarba-Debdiha-Dhanauji	9.32	0.26	4.05		4.31
17DR014	Jankpuur-Manaharpur-Khariyani Kamala Road	28.53		5.28		5.28
	<b>Sub-Total</b>	<b>80.17</b>	<b>0.81</b>	<b>28.72</b>	<b>3.06</b>	<b>32.59</b>

**B) Dhanushadham Municipality:**

Road Code	Name of Road	Total Length	Blacktop	Gravel	Earthen	Length@ Municip
17DR011	Bhadariya-Parbaha Paudeshwor-Dhanusha Dam Road	12.62	1.73	3.18		4.92
17DR012	D.Govindapur- Kajarramaul- Jhatiyahi - NaukhorPrasahi-SugaNikas-Sonigama	14.33		2.23	2.12	4.35
17DR023	Dhanushadham-Raghunathpur-Kiratpur-Kamala Road	7.38		5.10		5.10
	<b>Sub-Total</b>	<b>34.34</b>	<b>1.73</b>	<b>10.51</b>	<b>2.12</b>	<b>14.37</b>

**C) Chhreshwornath Municipality:**

Road Code	Name of Road	Total Length	Blacktop	Gravel	Earthen	Length@ Municip
17DR022	Puspapur-Ichhapur-Tarapatti Road	12.09		12.09		12.09
17DR008	LaxmipurBagewa-Gopalpur-Baniniya-RamdaiyaBhawadi-TarapattiSirsiya raod	13.44		10.35		10.35
17DR009	Pulchowk-Shivpur-Kachuritherra-Parastoki-Harsar-Sakhuwa Mahendranagar Raod	16.14		8.18	6.47	14.65
	<b>Sub-Total</b>	<b>41.66</b>	<b>-</b>	<b>30.62</b>	<b>6.47</b>	<b>37.09</b>

**D) Ganeshman-Charnath Municipality:**

Road Code	Name of Road	Total Length	Blacktop	Gravel	Earthen	Length@ Municip
17DR021	Mahuwa-Dhabauli- Yadukoha- Balabakhar-Parterwa- Kiratpur- Barmajhiya- Portaha	24.98			14.88	14.88
17DR006	SakhuwaMahendranagar-Parbarta-Ichhapur-NauleBigha-Kisanpur-Laxmipur-Radhapur-Bharatpur Road	15.51	0.22	13.36	1.93	15.51
	<b>Sub-Total</b>	<b>40.39</b>	<b>0.22</b>	<b>13.36</b>	<b>16.81</b>	<b>30.39</b>

**E) Mithila Municipality :**

Road Code	Name of Road	Total Length	Blacktop	Gravel	Earthen	Length@ Municip
17DR002	Hariharpur-Bateswor-Bhuchakrapur-Laxminiwas Road	10.03		2.56		2.56
	<b>Sub-Total</b>	<b>10.03</b>	<b>-</b>	<b>2.56</b>	<b>-</b>	<b>2.56</b>

**F) Sabaila Municipality :**

Road Code	Name of Road	Total Length	Blacktop	Gravel	Earthen	Length@ Municip
17DR007	Janaki Medical College-Ramdaiya-Sabela-Paterwa-Kamala Road	22.11	0.01	13.40	8.71	22.11
	<b>Sub-Total</b>	<b>22.11</b>	<b>0.01</b>	<b>13.40</b>	<b>8.71</b>	<b>22.11</b>

As listed above a total of 139.11 km roads lies within the boundry of 1 sub-metropolitan city and other 6 municipalities. Once the Municipal Transport Master Plan (MTMP) of respective municipalities prepares and those roads will be converted into municipal/urban roads and deducts from the DRCN. Then a net DRCN length will be 164.52 km only.

**2.4 VILLAGE ROADS**

The 249.59 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 71 VDCs in Dhanusha district. On average each VDC will thus be responsible for 3.52 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, plus community contribution. Some district funding will also be allocated to the village roads. However, priority will be given to the use of this district funding for maintenance, especially emergency maintenance and routine/recurrent maintenance to keep the village roads open.

Figure 2: Total road inventory

Figure 3 : District Core Road Network (DRCN)

### 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).

The DTPP 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

Conservation refers to the actions required to repair a road and keep it in good and passable condition. For DTMP planning purposes standard costs per kilometre for each maintenance type are applied to the entire district road core network, whereby for certain maintenance type's distinction is made according to the surface type of the road. Identification of the actual maintenance requirements of each road is made annually in the ARMP. Conservation activities include:

1. Emergency maintenance - Basic repairs aimed at removing landslides and repairing damage to the road that inhibit the proper use of the road and make it impassable. This mainly takes place during and after the rainy season. A provisional lump sum is reserved for the entire district road core network based on the network length. Allocation to specific road sections is based on the actual need for clearing landslides or repairing washouts and cuts in the road.
2. Routine maintenance - General maintenance of the road aimed at preventing damage by ensuring the proper working of the different road elements (retaining walls, drainage system, carriageway, etc.) and cutting vegetation. This is carried out each year on a more or less continuous basis. Routine maintenance is required for the entire district road core network. The specific requirements for routine maintenance are determined on an annual basis through the road condition survey and defined in the ARMP.
3. Recurrent maintenance - Repairs of minor damage to the road surface and road structures to bring them back to good condition. This is generally carried out once or twice a year. Recurrent maintenance is required for the entire district road core network, whereby distinction is made according to the surface type. The specific requirements for recurrent maintenance are determined on an annual basis through the road condition survey and defined in the ARMP.
4. Periodic maintenance - Larger repairs to the road largely aimed at renewing the road surface through re-gravelling, resealing or overlays. It is generally carried out with several years interval. Although periodic maintenance is only required for specific sections of the district road core network, a lump sum allocation is made for the entire district road core network based on average annual requirements, distinguishing between different surface types. The specific periodic maintenance requirements are determined on an annual basis through the annual road condition survey and defined in the ARMP.

The length of roads to be included under each conservation type for the first year is indicated below. This is basically the entire district road core network in maintainable condition as far as it does not require rehabilitation. A table (Table 3.1.1) below is prepared to show the length of DRCN roads that require conservation, differentiating between emergency, routine, recurrent and periodic maintenance. The specific roads to receive emergency and periodic maintenance each year are determined in the ARMP

**Table 3.1.1 Conservation requirements**

Code	Name of road	Total length (km)	Black Top (km)	Gravel (km)	Earthen (km)	Emergency maintenance (km)	Routine maintenance (km)	Recurrent maintenance blacktop (km)	Recurrent maintenance gravel (km)	Recurrent maintenance earthen (km)	Periodic maintenance blacktop (km)	Periodic maintenance gravel (km)
Total		303.63	4.48	199.99	99.16	303.63	303.63	4.48	199.99	99.16	4.48	199.99
17DR001	Janakpur N.P.-Kurtha - Shantipur-sapahi (Gajariya)- Bateshwar-Jamuni Niwash	26.94	0.55	18.21	8.18	26.94	26.94	0.55	18.21	8.18	0.55	18.21
17DR002	Hariharpur-Bateswar-Bhuchakrapur-Laxminiwas	10.03	-	10.03	-	10.03	10.03	-	10.03	-	-	10.03
17DR003	Nagaraeen- BahedaBala-TulsiyahiJabdi	7.90	-	7.90	-	7.90	7.90	-	7.90	-	-	7.90
17DR004	TulsiyahiJabdi - TulsiyahiNikas-Fulgama - Lagmagadhaguthi	7.22	0.21	7.01	-	7.22	7.22	0.21	7.01	-	0.21	7.01
17DR005	Devpura - Ghodghans - Fulgama - Tulsiyahi Road	15.38	0.42	8.07	6.89	15.38	15.38	0.42	8.07	6.89	0.42	8.07
17DR006	SakhuwaMahendranagar -Parbarta-Ichhapur-NauleBigha-Kisanpur-Laxmipur-Radhapur-Bharatpur	15.51	0.22	13.36	1.93	15.51	15.51	0.22	13.36	1.93	0.22	13.36
17DR007	Janaki Medical College-Ramdaiya-Sabela-Paterwa-Kamala	22.11	0.01	13.40	8.71	22.11	22.11	0.01	13.40	8.71	0.01	13.40
17DR008	LaxmipurBagewa-Gopalpur-Baniniya-RamdaiyaBhawadi-TarapattiSirsiya	13.44	-	12.76	0.67	13.44	13.44	-	12.76	0.67	-	12.76
17DR009	Pulchowk-Shivpur-Kachuritherra-Parastoki-Harsar-Sakhuwa Mahendranagar	16.14	0.77	8.62	6.75	16.14	16.14	0.77	8.62	6.75	0.77	8.62
17DR010	DevpuraRupetha-Bahuwarba-Debdiha-Dhanauji	9.32	0.26	4.28	4.77	9.32	9.32	0.26	4.28	4.77	0.26	4.28
17DR011	Bhadariya-Parbaha Paudeshwar-Dhanusha Dam	12.62	-	4.35	8.27	12.62	12.62	-	4.35	8.27	-	4.35



Code	Name of road	Total length (km)	Black Top (km)	Gravel (km)	Earthen (km)	Emergency maintenance (km)	Routine maintenance (km)	Recurrent maintenance blacktop (km)	Recurrent maintenance gravel (km)	Recurrent maintenance earthen (km)	Periodic maintenance blacktop (km)	Periodic maintenance gravel (km)
17DR012	D.Govindapur - Kajarramaul - Jhatiyahi - NaukhorPrasahi - SugaNikas - Sonigama	14.33	-	7.41	6.92	14.33	14.33	-	7.41	6.92	-	7.41
17DR013	Deuriparbaha - Jhojhokatiya - Dhanaui - Devdiha - Ghodghans	11.70	-	11.70	-	11.70	11.70	-	11.70	-	-	11.70
17DR014	Jankpuur-Manaharpur - Khariyani Kamala Road	28.53	0.05	21.67	6.82	28.53	28.53	0.05	21.67	6.82	0.05	21.67
17DR015	Duhabi-Giddha-Bafai-HathipurHarbara-Nanupatti	5.15	-	2.12	3.03	5.15	5.15	-	2.12	3.03	-	2.12
17DR016	Bisharbhora - DubarikotHatlekha-Ekrahi - Thadijhijha	13.26	-	3.86	9.40	13.26	13.26	-	3.86	9.40	-	3.86
17DR017	Mahuwa(pra.khe.) - Khajurichanha - Machijhitkaiya	4.73	1.98	2.74	-	4.73	4.73	1.98	2.74	-	1.98	2.74
17DR018	Ballahagoth-Balahasadhara-Lakkad-Singhyahi Maidan	8.77	-	6.92	1.85	8.77	8.77	-	6.92	1.85	-	6.92
17DR019	Inaruwa-Dubarkot-Narahi-India Border	12.93	-	12.93	-	12.93	12.93	-	12.93	-	-	12.93
17DR020	Deuri-Parwaha-Paudeswor Road	3.17	-	3.17	-	3.17	3.17	-	3.17	-	-	3.17
17DR021	Mahuwa-Dhabauli-Yadukoha- Balabakhar-Parterwa- Kiratpur-Barmajhiya- Portaha	24.98	-	-	24.98	24.98	24.98	-	-	24.98	-	-
17DR022	Puspalpur-Ichhapur-Tarapatti	12.09	-	12.09	-	12.09	12.09	-	12.09	-	-	12.09
17DR023	Dhanushadham-Raghunathpur-Kiratpur-Kamala	7.38	-	7.38	-	7.38	7.38	-	7.38	-	-	7.38

### 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 Dhanusha district 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 150passenger car units (PCU) to reduce damage to the road surface.
6. Widening - Increase of the road width in roads with traffic volumes exceeding 500 passenger car units (PCU) to ensure the proper flow of traffic.

For the road improvements, separate tables are prepared to show the required interventions for rehabilitation, gravelling, 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 refers to upgrading the existing road network where the roads are found to be in poor condition, to require technical improvement (curves, gradients, etc.). During field survey/assessment, the rehabilitation of some road sections were identified as listed below in Table 3.2.1

**Table 3.2.1 Sections of the district road core network requiring rehabilitation**

Code	Name of Road	Total length (km)	Rehabilitation (km)
<b>Total</b>		<b>303.63</b>	<b>45.11</b>
17DR001	Janakpur N.P.-Kurtha - Shantipur-sapahi (Gajariya)- Bateshwor- Jamuni Niwash	26.94	3.56
17DR002	Hariharpur-Bateswor-Bhuchakrapur-Laxminiwas	10.03	0.63
17DR003	Nagaraeen- BahedaBala- TulsiyahiJabdi	7.90	1.20
17DR004	TulsiyahiJabdi - TulsiyahiNikas-Fulgama - Lagmagadhaguthi	7.22	0.76
17DR005	Devpora - Ghodghans - Fulgama - Tulsiyahi Road	15.38	0.46
17DR006	SakhuwaMahendranagar-Parbarta-Ichhapur-NauleBigha-Kisanpur-Laxmipur-Radhapur-Bharatpur	15.51	2.27
17DR007	Janaki Medical College-Ramdaiya-Sabela-Paterwa-Kamala	22.11	5.29
17DR008	LaxmipurBagewa-Gopalpur-Baniniya-RamdaiyaBhawadi-TarapattiSirsiya	13.44	3.06
17DR009	Pulchowk-Shivpur-Kachuritherra-Parastoki-Harsar-Sakhuwa Mahendranagar	16.14	2.55
17DR010	DevporaRupetha-Bahuwarba-Debdiha-Dhanauji	9.32	3.77
17DR011	Bhadariya-Parbaha Paudeshwor-Dhanusha Dam	12.62	2.37
17DR012	D.Govindapur - Kajarramaul - Jhatiyahi - NaukhorPrasahi - SugaNikas - Sonigama	14.33	2.21
17DR013	Deuriparbaha - Jhojhokatiya - Dhanauji - Devdiha - Ghodghans	11.70	4.31
17DR014	Jankpuur-Manaharpur - Khariyani Kamala Road	28.53	2.25
17DR015	Duhabi-Giddha-Bafai-HathipurHarbara-Nanupatti	5.15	0.51
17DR016	Bisharbhora - DubarikotHatlekha- Ekrahi - Thadijhiha	13.26	2.44
17DR017	Mahuwa(pra.khe.) -Khajurichanha - Machijhitkaiya	4.73	2.70
17DR018	Ballahagoth-Balahasadhara-Lakkad-Singhyahi Maidan	8.77	0.97
17DR019	Inaruwa-Dubarkot-Narahi-India Border	12.93	1.30
17DR020	Deuri-Parwaha-Paudeswor Road	3.17	0.15
17DR021	Mahuwa-Dhabauli- Yadukoha- Balabakhar- Parterwa- Kiratpur- Barmajhiya- Portaha	24.98	1.20
17DR022	Puspapur-Ichhapur-Tarapatti	12.09	0.50
17DR023	Dhanushadham-Raghunathpur-Kiratpur-Kamala	7.38	0.65

### 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 remaining earthen sections in the DRCN. For Dhanusha, this concerns the total 99.16 km of DRCN roads.

**Table 3.2.2 Sections of the district road core network requiring gravelling**

Code	Name of Road	Total length (km)	Gravelling (km)
<b>Total</b>		<b>303.63</b>	<b>99.16</b>
17DR001	Janakpur N.P.-Kurtha - Shantipur-sapahi (Gajariya)- Bateshwor- Jamuni Niwash	26.94	8.18
17DR002	Hariharpur-Bateswor-Bhuchakrapur-Laxminiwas	10.03	-
17DR003	Nagaraeen- BahedaBala- TulsiyahiJabdi	7.90	-
17DR004	TulsiyahiJabdi - TulsiyahiNikas-Fulgama - Lagmagadhaguthi	7.22	-
17DR005	Devpora - Ghodghans - Fulgama - Tulsiyahi Road	15.38	6.89
17DR006	SakhuwaMahendranagar-Parbarta-Ichhapur-NauleBigha-Kisanpur-Laxmipur-Radhapur-Bharatpur	15.51	1.93
17DR007	Janaki Medical College-Ramdaiya-Sabela-Paterwa-Kamala	22.11	8.71
17DR008	LaxmipurBagewa-Gopalpur-Baniniya-RamdaiyaBhawadi-TarapattiSirsiya	13.44	0.67
17DR009	Pulchowk-Shivpur-Kachuritherra-Parastoki-Harsar-Sakhuwa Mahendranagar	16.14	6.75
17DR010	DevporaRupetha-Bahuwarba-Debdiha-Dhanauji	9.32	4.77
17DR011	Bhadariya-Parbaha Paudeshwor-Dhanusha Dam	12.62	8.27
17DR012	D.Govindapur - Kajarramaul - Jhatiyahi - NaukhorPrasahi - SugaNikas - Sonigama	14.33	6.92
17DR013	Deuriparbaha - Jhojhokatiya - Dhanauji - Devdiha - Ghodghans	11.70	-
17DR014	Jankpuur-Manaharpur - Khariyani Kamala Road	28.53	6.82
17DR015	Duhabi-Giddha-Bafai-HathipurHarbara-Nanupatti	5.15	3.03
17DR016	Bisharbhora - DubarikotHatekha - Ekrahi - Thadijhijha	13.26	9.40
17DR017	Mahuwa(pra.khe.) -Khajurichanha - Machijhitkaiya	4.73	-
17DR018	Ballahagoth-Balahasadhara-Lakkad-Singhyahi Maidan	8.77	1.85
17DR019	Inaruwa-Dubarkot-Narahi-India Border	12.93	-
17DR020	Deuri-Parwaha-Paudeswor Road	3.17	-
17DR021	Mahuwa-Dhabauli- Yadukoha- Balabakhar- Parterwa- Kiratpur-Barmajhiya- Portaha	24.98	24.98
17DR022	Puspapur-Ichhapur-Tarapatti	12.09	-
17DR023	Dhanushadham-Raghunathpur-Kiratpur-Kamala	7.38	-

### 3.2.3 CROSS DRAINAGE

The need for cross drainage was identified during field survey for the different DRCN roads. The total length of 195 m bridge and 2 numbers of pipe culverts were identified as being required which is shown in table below:

**Table 3.2.3 Required cross drainage structures**

Code	Name of Road	Total length (km)	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway	Pipe culvert (units)
<b>Total</b>		<b>303.63</b>	<b>195</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2</b>
17DR001	Janakpur N.P.-Kurtha-Shantipur-sapahi (Gajariya)- Bateshwor-Jamuni Niwash	26.94	40				
17DR002	Hariharpur-Bateswor-Bhuchakrapur-Laxminiwas	10.03					
17DR003	Nagaraeen- BahedaBala- TulsiyahiJabdi	7.90					
17DR004	TulsiyahiJabdi - TulsiyahiNikas-Fulgama - Lagmagadhaguthi	7.22					
17DR005	Devpora - Ghodghans - Fulgama - Tulsiyahi Road	15.38					
17DR006	SakhuwaMahendranagar-Parbarta-Ichhapur-NauleBigha-Kisanpur-Laxmipur-Radhapur-Bharatpur	15.51	90				
17DR007	Janaki Medical College-Ramdaiya-Sabela-Paterwa-Kamala	22.11					
17DR008	LaxmipurBagewa-Gopalpur-Baniniya-RamdaiyaBhawadi-TarapattiSirsiya	13.44					
17DR009	Pulchowk-Shivpur-Kachuritherra-Parastoki-Harsar-Sakhuwa Mahendranagar	16.14					
17DR010	DevporaRupetha-Bahuwarba-Debdiha-Dhanauji	9.32					
17DR011	Bhadariya-Parbaha Paudeshwor-Dhanusha Dam	12.62	15				
17DR012	D.Govindapur-Kajarramaul-Jhatiyahi-NaukhorPrasahi-SugaNikas-Sonigama	14.33					
17DR013	Deuriparbaha - Jhojhokatiya - Dhanauji - Devdiha - Ghodghans	11.70					
17DR014	Jankpuur-Manaharpur - Khariyani Kamala Road	28.53					
17DR015	Duhabi-Giddha-Bafai-HathipurHarbara-Nanupatti	5.15	50				
17DR016	Bisharbhora - DubarikotHatilekha- Ekrahi - Thadijhijha	13.26					
17DR017	Mahuwa(pra.khe.) -Khajurichanha - Machijhitkaiya	4.73					
17DR018	Ballahagoth-Balahasadhara-Lakkad-Singhyahi Maidan	8.77					
17DR019	Inaruwa-Dubarkot-Narahi-India Border	12.93					
17DR020	Deuri-Parwaha-Paudeswor Road	3.17					
17DR021	Mahuwa-Dhabauli- Yadukoha- Balabakhar- Parterwa- Kiratpur- Barmajhiya-Portaha	24.98					
17DR022	Puspalpur-Ichhapur-Tarapatti	12.09					
17DR023	Dhanushadham-Raghunathpur-Kiratpur-Kamala	7.38					

**Note:** In the DRCN:17DR001,17DR006,17DR011,17DR015 a total of 195mbridges are required as above. Costs of these bridge are too high seem beyond the capacity of DDC to construct.Central support is needed,if excluded from the improvement costs.

### 3.2.4 PROTECTIVE STRUCTURES

To maintain the DRCN roads all-weather condition various protective structures might be required. Based on the road survey carried out in Dhanusha, protective structures are required to ensure the protection of the district road core network.

**Table 3.2.4 Required protective structures**

Code	Name of Road	Total length (km)	Masonry walls (m <sup>3</sup> )	Gabion walls (m <sup>3</sup> )	Lined drain (m)
<b>Total</b>		<b>303.63</b>			<b>13,010</b>
17DR001	Janakpur N.P.-Kurtha - Shantipur-sapahi (Gajariya)- Bateshwor-Jamuni Niwash	26.94			2000
17DR002	Hariharpur-Bateswor-Bhuchakrapur-Laxminiwas	10.03			1500
17DR003	Nagaraeen- BahedaBala- TulsiyahiJabdi	7.90			550
17DR004	TulsiyahiJabdi - TulsiyahiNikas-Fulgama - Lagmagadhaguthi	7.22			500
17DR005	Devpora - Ghodghans - Fulgama - Tulsiyahi Road	15.38			1200
17DR006	SakhuwaMahendranagar-Parbarta-Ichhapur-NauleBigha-Kisanpur-Laxmipur-Radhapur-Bharatpur	15.51			450
17DR007	Janaki Medical College-Ramdaiya-Sabela-Paterwa-Kamala	22.11			350
17DR008	LaxmipurBagewa-Gopalpur-Baniniya-RamdaiyaBhawadi-TarapattiSirsiya	13.44			400
17DR009	Pulchowk-Shivpur-Kachuritherra-Parastoki-Harsar-Sakhuwa Mahendranagar	16.14			560
17DR010	DevporaRupetha-Bahuwarba-Debdiha-Dhanauji	9.32			700
17DR011	Bhadariya-Parbaha Paudeshwor-Dhanusha Dam	12.62			650
17DR012	D.Govindapur - Kajarramaul - Jhatiyahi - NaukhorPrasahi - SugaNikas - Sonigama	14.33			800
17DR013	Deuriparbaha-Jhojhokatiya-Dhanauji-Devdiha-Ghodghans	11.70			450
17DR014	Jankpuur-Manaharpur - Khariyani Kamala Road	28.53			150
17DR015	Duhabi-Giddha-Bafai-HathipurHarbara-Nanupatti	5.15			700
17DR016	Bisharbhora - DubarikotHatlekha- Ekrahi - Thadijhijha	13.26			300
17DR017	Mahuwa(pra.khe.) -Khajurichanha - Machijhitkaiya	4.73			200
17DR018	Ballahagoth-Balahasadhara-Lakkad-Singhyahi Maidan	8.77			600
17DR019	Inaruwa-Dubarkot-Narahi-India Border	12.93			100
17DR020	Deuri-Parwaha-Paudeswor Road	3.17			240
17DR021	Mahuwa-Dhabauli- Yadukoha- Balabakhar- Parterwa- Kiratpur-Barmajhiya- Portaha	24.98			140
17DR022	Puspalpur-Ichhapur-Tarapatti	12.09			230
17DR023	Dhanushadham-Raghunathpur-Kiratpur-Kamala	7.38			240

**Note:** in the above roads existing earthen drain seems not stable and sufficient. Hence, lined drains are considered and estimated.

### 3.2.5 WIDENING

Since the existing roads are constructed meeting widths as mentioned in Nepal Rural Roads Standard 2055 B.S. (2<sup>nd</sup> Revision 2071 B.S.) and traffic operation on the roads are not significant (< 500 PCU) therefore none of the traffic roads are eligible for further widening to upper standard.

**Table 3.2.5 Sections of the district road core network requiring widening**

Code	Name of Road	Total length (km)	VPD	Widening (m)
<b>Total</b>		<b>303.63</b>		<b>-</b>

### 3.2.6 BLACKTOPPING

An analysis of the traffic data for the different roads making up the district road core network shows that there are 9 roads that are eligible for blacktopping (i.e. traffic volume exceeds 150 PCU). The maximum traffic (PCU) was noted to 634 and minimum of 152 PCU. Hence, 9 roads are proposed for blacktopping as listed below.

**Table 3.2.6 Sections of the district road core network requiring blacktopping**

Code	Name of Road	Total length	Blacktop (km)	Traffic (PCU)	Blacktopping (km)
<b>Total</b>		<b>303.63</b>	<b>4.48</b>		<b>127.12</b>
17DR001	Janakpur N.P.-Kurtha - Shantipur-sapahi (Gajariya)-Bateswor- Jamuni Niwash	26.94	0.55	193	26.39
17DR002	Hariharpur-Bateswor-Bhuchakrapur-Laxminiwas	10.03		140	-
17DR003	Nagaraeen- BahedaBala- TulsiyahiJabdi	7.90		151	7.90
17DR004	TulsiyahiJabdi-TulsiyahiNikas-Fulgama-Lagmagadhaguthi	7.22	0.21	153	7.01
17DR005	Devpora - Ghodghans - Fulgama - Tulsiyahi Road	15.38	0.42	158	14.95
17DR006	SakhuwaMahendranagar-Parbarta-Ichhapur-NauleBigha-Kisanpur-Laxmipur-Radhapur-Bharatpur	15.51	0.22	70	-
17DR007	Janaki Medical College-Ramdaiya-Sabela-Paterwa-Kamala	22.11	0.01	67	-
17DR008	LaxmipurBagewa-Gopalpur-Baniniya-RamdaiyaBhawadi-TarapattiSirsiya	13.44		159	13.44
17DR009	Pulchowk-Shivpur-Kachuritherra-Parastoki-Harsar-Sakhuwa Mahendranagar	16.14	0.77	39	-
17DR010	DevporaRupetha-Bahuwarba-Debdiha-Dhanauji	9.32	0.26	139	-
17DR011	Bhadariya-Parbaha Paudeshwor-Dhanusha Dam	12.62		130	-
17DR012	D.Govindapur - Kajarramaul - Jhatiyahi - NaukhorPrasahi - SugaNikas - Sonigama	14.33		86	-
17DR013	Deuriparbaha - Jhojhokatiya - Dhanauji - Devdiha - Ghodghans	11.70		152	11.70
17DR014	Jankpuur-Manaharpur - Khariyani Kamala Road	28.53	0.05	634	28.48
17DR015	Duhabi-Giddha-Bafai-HathipurHarbara-Nanupatti	5.15		528	5.15
17DR016	Bisharbhara - DubarikotHatilekha- Ekrahi - Thadijhiha	13.26		122	-
17DR017	Mahuwa(pra.khe.) -Khajurichanha - Machijhitkaiya	4.73	1.98	73	-
17DR018	Ballahagoth-Balahasadhara-Lakkad-Singhyahi Maidan	8.77		143	-
17DR019	Inaruwa-Dubarkot-Narahi-India Border	12.93		126	-
17DR020	Deuri-Parwaha-Paudeswor Road	3.17		112	-
17DR021	Mahuwa-Dhabauli- Yadukoha- Balabakhar- Parterwa-Kiratpur- Barmajhiya- Portaha	24.98		72	-
17DR022	Puspalpur-Ichhapur-Tarapatti	12.09		320	12.09
17DR023	Dhanushadham-Raghunathpur-Kiratpur-Kamala	7.38		112	-

### 3.3 NEW CONSTRUCTION

Since all VDCs and municipalities are already been accessed by existing roads, hence new construction or extension of roads is required. However, the linkage between various VDCs are the matters of issues raised by the political party representatives during DTMP final presentation meeting/workshop.

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

Code	Name of Road	New VDCs	Existing length (km)	New length (km)	Bridge (m)
Total			303.63		

### 3.4 DISTRICT TRANSPORT PERSPECTIVE PLAN

The DTPP foresees bringing the entire existing district road core network to maintainable all-weather status as well as construction of new roads considered necessary to complete the DRCN are identified. For this purpose, 99.16 km will be gravelled and a number of different cross drainage and protective structures will be constructed. The district road core network will subsequently consist of 303.63km 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)	Blacktop; Recurrent maintenance (km)	Gravel; Recurrent maintenance (km)	Earthen; Recurrent maintenance (km)	Blacktop; Periodic maintenance (km)	Gravel; 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)
<b>Total</b>	<b>303.63</b>	<b>303.63</b>	<b>4.48</b>	<b>199.99</b>	<b>99.16</b>	<b>4.48</b>	<b>199.99</b>	<b>45.11</b>	<b>99.16</b>	<b>127.12</b>		<b>195</b>				<b>2</b>			<b>13,010</b>	
17DR001	26.94	26.94	0.55	18.21	8.18	0.55	18.21	3.56	8.18	26.30		40							2000	
17DR002	10.03	10.03		10.03			10.03	0.63											1500	
17DR003	7.90	7.90		7.90			7.90	1.20		7.90									550	
17DR004	7.22	7.22	0.21	7.01		0.21	7.01	0.76		7.01									500	
17DR005	15.38	15.38	0.42	8.07	6.89	0.42	8.07	0.46	6.89	14.95									1200	
17DR006	15.51	15.51	0.22	13.36	1.93	0.22	13.36	2.27	1.93			90							450	
17DR007	22.11	22.11	0.01	13.40	8.71	0.01	13.40	5.29	8.71										350	
17DR008	13.44	13.44		12.76	0.67		12.76	3.06	0.67	13.44									400	
17DR009	16.14	16.14	0.77	8.62	6.75	0.77	8.62	2.55	6.75										560	
17DR010	9.32	9.32	0.26	4.28	4.77	0.26	4.28	3.77	4.77										700	
17DR011	12.62	12.62		4.35	8.27		4.35	2.37	8.27			15							650	
17DR012	14.33	14.33		7.41	6.92		7.41	2.21	6.92										800	
17DR013	11.70	11.70		11.70			11.70	4.31		11.70									450	
17DR014	28.53	28.53	0.05	21.67	6.82	0.05	21.67	2.25	6.82	28.48						2			150	
17DR015	5.15	5.15		2.12	3.03		2.12	0.51	3.03	5.15		50							700	
17DR016	13.26	13.26		3.86	9.40		3.86	2.44	9.40										300	
17DR017	4.73	4.73	1.98	2.74		1.98	2.74	2.70											200	
17DR018	8.77	8.77		6.92	1.85		6.92	0.97	1.85										600	
17DR019	12.93	12.93		12.93			12.93	1.30											100	
17DR020	3.17	3.17		3.17			3.17	0.15											240	
17DR021	24.98	24.98			24.98			1.20	24.98										140	
17DR022	12.09	12.09		12.09			12.09	0.50		12.09									230	
17DR023	7.38	7.38		7.38			7.38	0.65											240	

**Figure 4    Transport Perspective Plan (DTPP)**

**Include**

**corrected**

**DTPP**

**map**

## 4. COST ESTIMATION

For the cost estimation, use has been made of standard costs (data made available from DTO Dhanusha) for the different activities required. For the conservation activities this results in an estimation of annual costs, while for improvement activities this result in an estimation of the total costs required.

### 4.1 CONSERVATION

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

**Table 4.1.1 Standard unit costs for conservation**

Activity	Unit	DTMP proposed unit cost (NPR)	DTMP actual unit cost (NPR)
Emergency maintenance	km	30,000	15,000
Routine maintenance	km	20,000	20,000
Recurrent maintenance (blacktop)	km	500,000	250,000
Recurrent maintenance (gravel)	km	400,000	150,000
Recurrent maintenance (earthen)	km	250,000	120,000
Periodic maintenance (blacktop)	km	200,000	200,000
Periodic maintenance (gravel)	km	250,000	200,000

For the first year the estimated costs for conservation of the DRCN come to NPR 94,537,000. Based on this cost for the first year, the costs for conservation of the DRCN for the next 5 years are estimated at NPR 472,683,000(details in table 4.1.2). These costs will change slightly as the roads are improved and the standard conservation costs change. This will be updated in the ARAMP on an annual basis.

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

Code	Total length (km)	Blacktop (km)	Gravel (km)	Earthen (km)	Emergency maintenance	Routine maintenance	Recurrent maintenance (blacktop)	Recurrent maintenance (gravel)	Recurrent maintenance (earthen)	Periodic maintenance (blacktop)	Periodic maintenance (gravel)	Total first year cost	Total 5-year cost
<b>Total</b>	<b>303.63</b>	<b>4.48</b>	<b>199.99</b>	<b>99.16</b>	<b>4,554</b>	<b>6,073</b>	<b>1,119</b>	<b>29,999</b>	<b>11,899</b>	<b>895</b>	<b>39,998</b>	<b>94,537</b>	<b>472,683</b>
17DR001	26.94	0.55	18.21	8.18	404	539	137	2,732	981	110	3,643	8,546	42,729
17DR002	10.03		10.03		150	201	-	1,504	-	-	2,006	3,861	19,303
17DR003	7.90		7.90		119	158	-	1,185	-	-	1,580	3042	15210
17DR004	7.22	0.21	7.01		108	144	52	1,052	-	42	1,402	2,801	14,003
17DR005	15.38	0.42	8.07	6.89	231	308	106	1,210	826	85	1,614	4,379	21,896
17DR006	15.51	0.22	13.36	1.93	233	310	55	2,004	232	44	2,672	5,549	27,747
17DR007	22.11	0.01	13.40	8.71	332	442	2	2,010	1,045	2	2,680	6,512	32,558
17DR008	13.44		12.76	0.67	202	269	-	1,914	81	-	2,552	5,018	25,089
17DR009	16.14	0.77	8.62	6.75	242	323	193	1,293	810	154	1,724	4,739	23,695
17DR010	9.32	0.26	4.28	4.77	140	186	66	643	573	52	857	2,516	12,582
17DR011	12.62		4.35	8.27	189	252	-	653	993	-	870	2,957	14,786
17DR012	14.33		7.41	6.92	215	287	-	1,112	831	-	1,482	3,926	19,630
17DR013	11.70		11.70		176	234	-	1,756	-	-	2,341	4,506	22,532
17DR014	28.53	0.05	21.67	6.82	428	571	13	3,250	818	10	4,334	9,423	47,117
17DR015	5.15		2.12	3.03	77	103	-	318	363	-	424	1,286	6,428
17DR016	13.26		3.86	9.40	199	165	-	579	1,128	-	772	2,942	14,710
17DR017	4.73	1.98	2.74		71	95	496	412	-	396	549	2,018	10,088
17DR018	8.77		6.92	1.85	132	175	-	1,038	222	-	1,384	2,951	14,754
17DR019	12.93		12.93		194	259	-	1,939	-	-	2,585	4,977	24,883
17DR020	3.17		3.17		48	63	-	475	-	-	633	1,219	6,097
17DR021	24.98			24.98	375	500	-	-	2,998	-	-	3,872	19,360
17DR022	12.09		12.09		181	242	-	1,813	-	-	2,417	4,654	23,268
17DR023	7.38		7.38		111	148	-	1,108	-	-	1,477	2,843	14,216

## 4.2 IMPROVEMENT

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

**Table 4.2.1 Standard unit costs for improvement activities**

Activity	Unit	DTMP proposed unit cost (NPR)	DTMP actual unit cost (NPR)
Rehabilitation	km	800,000	800,000
Widening	m	25,000	2,500
Gravelling	km	2,200,000	2,000,000
Blacktopping	km	5,700,000	5,700,000
Bridge construction	m	600,000	800,000
Slab culvert construction	m	150,000	150,000
CC Causeway construction	m	100,000	100,000
Stone Causeway construction	m	10,000	10,000
Pipe culvert placement	unit	10,000	10,000
Masonry wall construction	m <sup>3</sup>	10,000	10,000
Gabion wall construction	m <sup>3</sup>	2,500	3,000
Lined drain construction	m	1,000	1,500

The resulting estimated costs come to NPR 1,134,519,000as indicated in the table 4.2.2 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
<b>Total</b>	<b>303.63</b>	<b>36,088</b>	-	<b>198,321</b>	<b>724,574</b>	<b>156,000</b>	-	-	-	<b>20</b>	-	-	<b>19,515</b>	<b>1,134,519</b>
17DR001	26.94	2,848	-	16,351	150,425	32,000	-	-	-	-	-	-	3,000	<b>204,624</b>
17DR002	10.03	504	-	-	-	-	-	-	-	-	-	-	2,250	<b>2,754</b>
17DR003	7.90	960	-	-	45,038	-	-	-	-	-	-	-	825	<b>46,823</b>
17DR004	7.22	608	-	-	39,963	-	-	-	-	-	-	-	750	<b>41,321</b>
17DR005	15.38	368	-	13,773	85,243	-	-	-	-	-	-	-	1,800	<b>101,184</b>
17DR006	15.51	1,816	-	3,867	-	72,000	-	-	-	-	-	-	675	<b>78,358</b>
17DR007	22.11	4,232	-	17,411	-	-	-	-	-	-	-	-	525	<b>22,168</b>
17DR008	13.44	2,448	-	1,346	76,582	-	-	-	-	-	-	-	600	<b>80,977</b>
17DR009	16.14	2,040	-	13,492	-	-	-	-	-	-	-	-	840	<b>16,372</b>
17DR010	9.32	3,106	-	9,544	-	-	-	-	-	-	-	-	1050	<b>13,610</b>
17DR011	12.62	1,896	-	16,547	-	12,000	-	-	-	-	-	-	975	<b>31,418</b>
17DR012	14.33	1,768	-	13,844	-	-	-	-	-	-	-	-	1200	<b>16,812</b>
17DR013	11.70	3,448	-	-	66,718	-	-	-	-	-	-	-	675	<b>70,841</b>
17DR014	28.53	1,800	-	13,631	162,362	-	-	-	-	-	-	-	225	<b>178,038</b>
17DR015	5.15	408	-	6,056	29,345	40,000	-	-	-	-	-	-	1050	<b>76,859</b>
17DR016	13.26	1,952	-	18,797	-	-	-	-	-	-	-	-	450	<b>21,199</b>
17DR017	4.73	2,160	-	-	-	-	-	-	-	-	-	-	300	<b>2,460</b>
17DR018	8.77	776	-	3,699	-	-	-	-	-	-	-	-	900	<b>5,375</b>
17DR019	12.93	1,040	-	-	-	-	-	-	-	-	-	-	150	<b>1,190</b>
17DR020	3.17	120	-	-	-	-	-	-	-	-	-	-	360	<b>480</b>
17DR021	24.98	960	-	49,962	-	-	-	-	-	-	-	-	210	<b>51,132</b>
17DR022	12.09	400	-	-	68,898	-	-	-	-	-	-	-	345	<b>69,643</b>
17DR023	7.38	520	-	-	-	-	-	-	-	-	-	-	360	<b>880</b>

### 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	DTMP proposed unit cost (NPR)	DTMP actual unit cost (NPR)
Track opening	km	4,000,000	4,000,000
Gravelling	km	2,200,000	2,000,000
Bridge construction	m	600,000	800,000

No new construction is required in Dhanusha District for DTMP. So new construction cost is not calculated, as shown in table 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)
<b>Total</b>						

### 4.4 DTPP COSTS

The total costs for the District Transport Perspective Plan come to NPR 1,607,202,000.00 as indicated in the table below.

**Table 4.4.1 DTPP costs (NPR '000)**

Code	Name of Road	Conservation	Improvement	New construction	Total
<b>Total</b>		<b>472,683</b>	<b>1,134,519</b>	<b>-</b>	<b>1,607,202</b>
17DR001	Janakpur N.P.-Kurtha - Shantipur-sapahi (Gajariya)- Bateshor- Jamuni Niwash	42,729	204,624	-	247,353
17DR002	Hariharpur-Bateswor-Bhuchakrapur-Laxminiwas	19,303	2,754	-	22,057
17DR003	Nagaraeen- BahedaBala- TulsiyahiJabdi	15,210	46,823	-	62,034
17DR004	TulsiyahiJabdi - TulsiyahiNikas-Fulgama - Lagmagadhaguthi	14,003	41,321	-	55,324
17DR005	Devpora - Ghodghans - Fulgama - Tulsiyahi Road	21,896	101,184	-	123,080
17DR006	SakhuwaMahendranagar-Parbarta-Ichhapur-NauleBigga-Kisanpur-Laxmipur-Radhapur-Bharatpur	27,747	78,358	-	106,105
17DR007	Janaki Medical College-Ramdaiya-Sabela-Paterwa-Kamala	32,558	22,168	-	54,727
17DR008	LaxmipurBagewa-Gopalpur-Baniniya-RamdaiyaBhawadi-TarapattiSirsiya	25,089	80,977	-	106,066
17DR009	Pulchowk-Shivpur-Kachuritherra-Parastoki-Harsar-Sakhuwa Mahendranagar	23,695	16,372	-	40,066
17DR010	DevporaRupetha-Bahuwarba-Debdiha-Dhanauji	12,582	13,610	-	26,192

Code	Name of Road	Conservation	Improvement	New construction	Total
17DR011	Bhadariya-Parbaha Paudeshwor-Dhanusha Dam	14,786	31,418	-	46,203
17DR012	D.Govindapur - Kajarramaul - Jhatiyahi - NaukhorPrasahi - SugaNikas - Sonigama	19,630	16,812	-	36,442
17DR013	Deuriparbaha - Jhojhokatiya - Dhanauji - Devdiha - Ghodghans	22,532	70,841	-	93,373
17DR014	Jankpuur-Manaharpur - Khariyani Kamala Road	47,117	178,038	-	225,155
17DR015	Duhabi-Giddha-Bafai-HathipurHarbara-Nanupatti	6,428	76,859	-	83,287
17DR016	Bisharbhora - DubarikotHatlekha- Ekrahi - Thadijhijha	14,710	21,199	-	35,910
17DR017	Mahuwa(pra.khe.) -Khajurichanha - Machijhitkaiya	10,088	2,460	-	12,548
17DR018	Ballahagoth-Balahasadhara-Lakkad-Singhyahi Maidan	14,754	5,375	-	20,129
17DR019	Inaruwa-Dubarkot-Narahi-India Border	24,883	1,190	-	26,073
17DR020	Deuri-Parwaha-Paudeswor Road	6,097	480	-	6,577
17DR021	Mahuwa-Dhabauli- Yadukoha- Balabakhar- Parterwa- Kiratpur- Barmajhiya- Portaha	19,360	51,132	-	70,492
17DR022	Puspalpur-Ichhapur-Tarapatti	23,268	69,643	-	92,911
17DR023	Dhanushadham-Raghunathpur-Kiratpur-Kamala	14,216	880	-	15,096

## 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. However, the ranking based on these criteria has been modified with the consultation with DDC/DTO and other stakeholders during DTMP workshops to make more practical and implementable DTMP. For the calculation of the population served, use is made of the population data for the VDCs linked by the road concerned.

### 5.1 CONSERVATION

Ranking of roads for conservation is based on the total conservation costs per person served by the road. This ranking of roads will be updated each year in the ARMP based on the actual cost estimates for the year concerned. An example ranking is provided in the table below based on standard costs for the first year. 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 (blacktop)	4. Recurrent (gravel)	5. Recurrent (earth)	6. Periodic (blacktop)	7. Periodic (gravel)	Total cost (NPR '000)	Population served	Cost/person (NPR)	Ranking
1	17DR001	26.94	404	539	137	2,732	981	110	3,643	8,546	519653	16	1
10	17DR010	10.03	140	186	66	643	573	52	857	2,516	117755	21	2
2	17DR002	7.90	150	201	-	1,504	-	-	2,006	3,861	144369	27	3
15	17DR015	7.22	77	103	-	318	963	-	424	1,286	45046	29	4
11	17DR011	15.38	189	252	-	653	993	-	870	2,957	100648	29	5
20	17DR020	15.51	48	63	-	475	-	-	633	1,219	28534	43	6
12	17DR012	22.11	215	287	-	1,112	831	-	1,482	3,926	79799	49	7
6	17DR006	13.44	233	310	55	2,004	232	44	2,672	5,549	110625	50	8
23	17DR023	16.14	111	148	-	1,108	-	-	1,477	2,843	56143	51	9
3	17DR003	9.32	119	158	-	1,185	-	-	1,580	3,042	50070	61	10
13	17DR013	12.62	176	234	-	1,756	-	-	2,341	4,506	70194	64	11
8	17DR008	14.33	202	269	-	1,914	81	-	2,552	5,018	77822	64	12
7	17DR007	11.70	332	442	2	2,010	1,045	2	2,680	6,512	77289	84	13
17	17DR017	28.53	71	95	496	412	-	396	549	2,018	23817	85	14
4	17DR004	5.15	108	144	52	1,052	-	42	1,402	2,801	21519	130	15
22	17DR022	13.26	181	242	-	1,813	-	-	2,417	4,654	32301	144	16
18	17DR018	4.73	132	175	-	1,038	222	-	1,384	2,951	20104	147	17
16	17DR016	8.77	199	265	-	579	1,128	-	772	2,942	19919	148	18
5	17DR005	12.93	231	308	106	1,210	826	85	1,614	4,379	27864	157	19
19	17DR019	3.17	194	259	-	1,939	-	-	2,585	4,977	21660	230	20
14	17DR014	24.98	428	571	13	3,250	818	10	4,334	9,423	30254	311	21
21	17DR021	12.09	375	500	-	-	2,998	-	-	3,872	10378	373	22
9	17DR009	7.38	242	323	193	1,293	810	154	1,724	4,739	11478	413	23

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

1. Emergency maintenance
2. Routine maintenance
3. Recurrent maintenance paved roads
4. Recurrent maintenance gravel roads
5. Recurrent maintenance gravel roads
6. Periodic maintenance blacktop roads
7. Periodic maintenance gravel roads

## **5.2 IMPROVEMENT**

In the case of improvement activities, ranking is again based on the basis of the total cost per person served. The resulting order of the roads is shown in the table below. In the case of roads requiring blacktopping, the improvement of the road has been split into two phases. The first phase includes all improvements to bring the road to a maintainable all-weather standard (gravelling, widening, cross drainage and protective structures), while the second phase only includes the blacktopping. This has been done to avoid unnecessarily delaying the improvement of such roads to all-weather gravel standard due to the additional cost of blacktopping (increasing the cost per person served). 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)	Ranking
23	17DR023	7.38	-	-	880	56143	16	1
20	17DR020	3.17	-	-	480	28534	17	2
2	17DR002	10.03	-	-	2,754	144369	19	3
19	17DR019	12.93	-	-	1,190	21660	55	4
17	17DR017	4.73	-	-	2,460	23817	103	5
10	17DR010	9.32	4.77	-	13,610	117755	116	6
12	17DR012	14.33	6.92	-	16,812	79799	211	7
18	17DR018	8.77	1.85	-	5,375	20104	267	8
7	17DR007	22.11	8.71	-	22,168	77289	287	9
11	17DR011	12.62	8.27	-	31,418	100648	312	10
1	17DR001	26.94	8.18	26.39	204,624	519653	394	11
6	17DR006	15.51	1.93	-	78,358	110625	708	12
3	17DR003	7.90	-	7.90	46,823	50070	935	13
13	17DR013	11.70	-	11.70	70,841	70194	1,009	14
8	17DR008	13.44	0.67	13.44	80,977	77822	1,041	15
16	17DR016	13.26	9.40	-	21,199	19919	1,064	16
9	17DR009	16.14	6.75	-	16,372	11478	1,426	17
15	17DR015	5.15	3.03	5.15	76,859	45046	1,706	18
4	17DR004	7.22	-	7.01	41,321	21519	1,920	19
22	17DR022	12.09	-	12.09	69,643	32301	2,156	20
5	17DR005	15.38	6.89	14.95	101,184	27864	3,631	21
21	17DR021	24.98	24.98	-	51,132	10378	4,927	22
14	17DR014	28.53	6.82	28.48	178,038	30254	5,885	23

### 5.3 NEW CONSTRUCTION

For the road proposed for new construction, ranking is also according to the cost per person served by the new road. There is no DRCN road requiring new construction in Dhanusha as all VDCs/Municipalities have already road access.

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

#	Code	Length (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)	Ranking

## 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 (make available by DDC). The funding levels are based on the existing trend of funding. The total district budget for the road sector is NPR 1,452,781,000 for the five-year period as shown in the table 6.1.1 below.

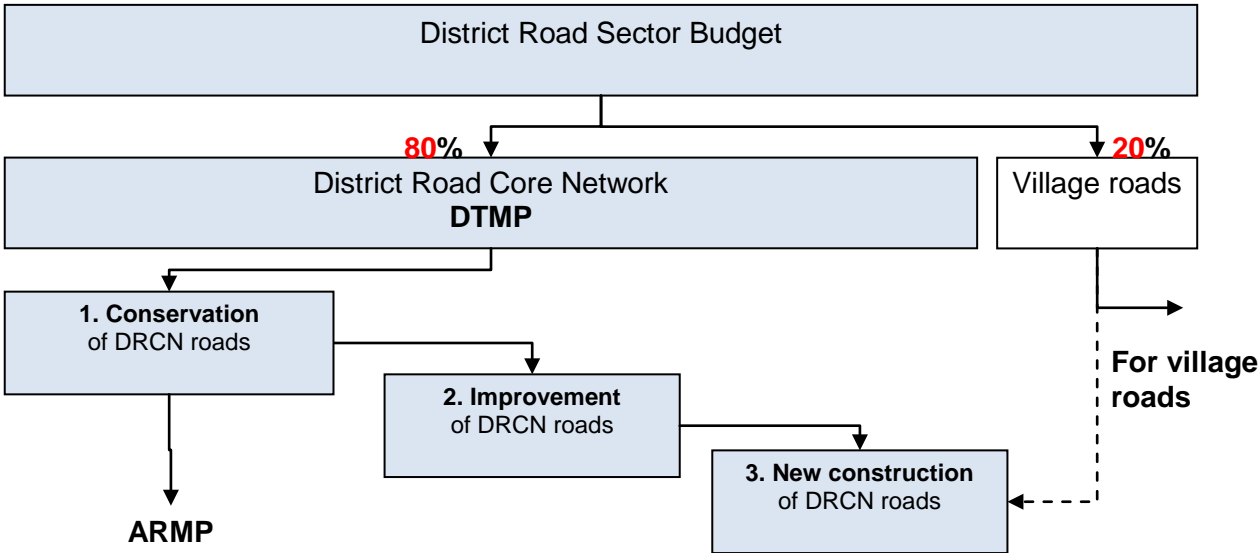
**Table 6.1.1 Estimated funding levels (roads) for next five years (in NPR '000)**

Funding source	Fiscal year				
	2072/73	2073/74	2074/75	2075/76	2076/77
SNRTP Funds	40,000	60,000	90,000	135,000	202,500
RTI SWAp Fundings	12,700	13,970	15,367	16,904	18,594
Rural Road Bridge Project (LRBP)*	40,000	44,000	48,400	53,240	58,564
DDC Grant (Allocation for Roads)	10,543	11,597	12,757	14,033	15,436
DDC Internal revenue	11,100	12,210	13,431	14,774	16,251
Roads Board Nepal	2,274	2,501	2,751	3,026	3,329
Constituency Area Development Funds	64,800	71,280	78,408	86,249	94,874
People's Contribution	10,142	11,156	12,272	13,499	14,849
<b>Total</b>	<b>191,559</b>	<b>226,714</b>	<b>273,386</b>	<b>336,725</b>	<b>424,397</b>
<b>Grand total</b>	<b>1,452,781</b>				

6.2 BUDGET ALLOCATION

The distribution of the available district road sector budget is indicated in the figure below. From the Total Budget 20% is allocated for Village roads and 80% is allocated for DRCN Roads. The 80% of the district road sector budget for the DTMP is allocated firstly to conservation, secondly improvement, and any remaining funding is allocated to new construction.

Figure 5 : District road sector budget allocation



The budget allocation for next five year is done based on the ranking of the road and the priority on the basis of cost/ person. Due to budget constraint, firstly budget is allocated for conservation of DRCN roads in this planning then budget is allocated to improvement of road (earthen to gravel and gravel to black top surface). No new construction of DRCN is required and budget allocation. 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				2072/73			2073/74			2074/75			2075/76			2076/77			
Total budget				191,559			226,714			273,386			336,725			424,397			
Village roads				38,312			45,343			54,677			67,345			84,879			20%
Core road network budget (DTMP)				153,247			181,371			218,709			269,380			339,518			80%
Core network length (km)				303.63			303.63			303.63			303.63			303.63			303.63
Blacktop (km)				4,48			7.83			18.78			32.38			56.26			78.43
Gravel (km)				199.99			206.61			214.25			212.01			208.00			218.71
Earthen (km)				99.16			89.18			70.60			59.23			39.37			8.49
Conservation (NRs)				94,537			54,278			98,780			57,632			113,468			418,695
Emergency				4,554			4,554			4,554			4,554			4,554			22,772
Routine				6,073			6,073			6,073			6,073			6,073			30,363
Recurrent (blacktop)				1,119			1,119			1,119			1,119			1,119			29,930
Recurrent (gravel)				29,999			30,992			32,137			31,802			31,200			156,130
Recurrent (earthen)				11,899			10,702			8,472			7,108			4,724			42,906
Periodic (blacktop)				895			-			-			-			11,252			12,147
Periodic (gravel)				39,998						42,850						41,600,			124,448
Improv ement	Cost	BT	GR	58,710	BT	GR	127,031	BT	GR	119,491	BT	GR	211,749	BT	GR	226,061	BT	GR	Allocation
17DR023	880	-		880	-	-	-	-	-	-	-	-	-	-	-	-	-	-	880
17DR020	480	-		480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480
17DR002	2,754	-		2,754	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,754
17DR019	1190	-		1,190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1190
17DR017	2460	-		2,460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2460
17DR010	13610	-	4.77	-	-	-	-	-	-	-	-	-	-	-	-	13610	-	4.77	13610
17DR012	16,812	-	6.92	-	-	-	-	-	-	-	-	-	-	-	-	16,812		6.92	16,812
17DR018	5,375	-	1.85		-		-	-	-	5,375	-	1.85	-	-	-	-	-	-	5,375
17DR007	22,168	-	8.71	10,000	-	3.93	12,168	-	4.78	-	-	-	-	-	-	-	-	-	22,168
17DR011	31,418	-	8.27	10,000	-	2.63	21,418	-	5.64	-	-	-	-	-	-	-	-	-	31,418
17DR001	204,624	26.39	8.18	10,946	1.41	0.44	33,822	4.36	1.35	48,500	6.26	1.94	58,669	7.57	2.34	52,687	6.80	2.11	204,624

17DR006	78,358	-	1.93	-	-	-	-	-	-	-	-	-	-	-	-	25,000	-	0.62	25,000
17DR003	46,823	7.90	-	-	-	-	-	-	-	-	-	-	-	-	-	20,000	3.38	-	20,000
17DR013	70,841	11.70	-	-	-	-	-	-	-	-	-	-	-	-	-	22,000	3.64	-	22,000
17DR008	80,977	13.44	0.67	-	-	-	-	-	-	-	-	-	-	-	-	38,369	6.37	0.32	38,369
17DR016	21,199	-	9.40	-	-	-	-	-	-	-	-	-	-	-	-	21,199	-	9.40	21,199
17DR009	16,372	-	6.75	-	-	-	-	-	-	-	-	-	-	-	-	16,372	-	6.75	16,372
17DR015	76,859	5.15	3.03	5,000	0.33	0.20	14,296	0.96	0.56	14,947	1.00	0.59	42,616	2.85	1.68	-	-	-	76,859
17DR004	41,321	7.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17DR022	69,643	12.09	-	5,000	0.87	-	15,389	2.67	-	17,000	2.95	-	32,254	5.60	-	-	-	-	69,643
17DR005	101,184	14.95	6.89	5,000	0.74	0.34	20,000	2.96	1.36	23,000	3.40	1.57	53,184	7.86	3.62	-	-	-	101,184
17DR021	51,132	-	24.98	5,000	-	2.44	10,000	-	4.89	11,107	-	5.43	25,025	-	12.23	-	-	-	51,132
17DR014	178,083	28.48	6.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total improvement</b>				58,710	3.35	9.98	127,093	10.95	10.58	119,929	23.88	11.37	211,748	23.96	19.41	226,061	22.67	22.46	743,530
<b>Construction</b>	<b>Cost</b>	<b>GR</b>	-	<b>GR</b>	-	<b>GR</b>	-	<b>GR</b>	-	<b>GR</b>	-	<b>GR</b>	-	<b>GR</b>	-	<b>GR</b>	-	<b>GR</b>	
<b>Total new construction</b>																			
<b>Remaining budget</b>																			

### 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 90.67km will be improved to gravel standard and 91.96 km improved to black top standard. All of these roads will also receive the cross drainage and protective structures required to make them maintainable all-weather roads. The blacktopping of remaining roads (followed by gravelling) goes in the next DTMP.

**Table6.3.1 DTMP output**

Conservation	Improvement gravel	Improvement blacktop	New construction
303.63	90.67	71.96	-

Total budget allocation for DTMP is NPR 1,162,225,000 and out of the total DTMP budget, NPR 418,695,000 will be spent on conservation; NPR 743,530,000 will be spent on improvement and no investment on new construction. 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 fair weather roads are decreased from 33% to 3%, which is shown in the table 6.4.1 as below.

**Table6.4.1 Standard of DRCN roads**

	Total length	Fair-weather		All-weather gravel		All-weather blacktop	
	km	km	%	km	%	km	%
Start of DTMP	303.63	99.16	33%	199.99	66%	4.48	1%
End of DTMP	303.63	8.49	3%	218.71	72%	76.43	25%
Difference	-	- 90.67	- 30%	18.72	6%	71.96	24%



The number of VDC headquarters with direct access to the SRN is same with respect to district population. There will be change in number of VDC headquarters with access to all-weather DRCN roads and district population with access to the all-weather DRCN roads (i.e. 17 VDCs and 26.6% to 20 VDCs and 32.3% respectively). 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	34	519,653	69%	-	-	0	42	325,379	43%	17	200,024	27%
End of DTMP	34	519,653	69%	-	-	0	3	29,146	4%	20	243,386	32%
Difference	-	-	0%	-	-	0	-	-	-	3	43,362	6%

**Figure 6: District Transport Master Plan (DTMP)**

**Include**

**corrected**

**DTMP**

**map**

## ANNEX 1 TRAFFIC DATA

Table A1.2 Traffic Data

Code	Description	Total Length; km	Motorcycle	Car-Jeep-Minibus	Tractor	Truck-Bus	PCU	VPD
		<b>303.63</b>						
17DR001	Janakpur N.P.-Kurtha - Shantipur-sapahi (Gajariya)-Bateswor- Jamuni Niwash	26.94	250	8	20	5	193	33
17DR002	Hariharpur-Bateswor-Bhuchakrapur-Laxminiwas	10.03	120	10	25	5	140	40
17DR003	Nagaraeen- BahedaBala-TulsiyahiJabdi	7.90	130	12	25	6	151	43
17DR004	TulsiyahiJabdi - TulsiyahiNikas-Fulgama - Lagmagadhaguthi	7.22	150	10	30	2	153	42
17DR005	Devpora - Ghodghans - Fulgama - Tulsiyahi Road	15.38	170	5	30	2	158	37
17DR006	SakhuwaMahendranagar-Parbarta-Ichhapur-NauleBigha-Kisanpur-Laxmipur-Radhapur-Bharatpur	15.51	40	0	25	0	70	25
17DR007	Janaki Medical College-Ramdaiya-Sabela-Paterwa-Kamala	22.11	70	2	15	0	67	17
17DR008	LaxmipurBagewa-Gopalpur-Baniniya-RamdaiyaBhawadi-TarapattiSirsiya	13.44	160	5	25	6	159	36
17DR009	Pulchowk-Shivpur-Kachuritherra-Parastoki-Harsar-Sakhuwa Mahendranagar	16.14	25	0	13	0	39	13
17DR010	DevporaRupetha-Bahuwarba-Debdiha-Dhanauji	9.32	150	4	30	0	139	34
17DR011	Bhadariya-Parbaha Paudeshwor-Dhanusha Dam	12.62	160	0	25	0	130	25
17DR012	D.Govindapur - Kajarramaul - Jhatiyahi - NaukhorPrasahi - SugaNikas - Sonigama	14.33	90	1	20	0	86	21
17DR013	Deuriparbaha - Jhojhokatiya - Dhanauji - Devdiha - Ghodghans	11.70	120	6	35	4	152	45
17DR014	Jankpuur-Manaharpur - Khariyani Kamala Road	28.53	1000	30	40	6	634	76
17DR015	Duhabi-Giddha-Bafai-HathipurHarbara-Nanupatti	5.15	750	25	40	12	528	77
17DR016	Bisharbhora - DubarikotHatlekha- Ekrahi - Thadijhihja	13.26	200	2	10	0	122	12
17DR017	Mahuwa(pra.khe.) - Khajurichanha - Machijhitkaiya	4.73	80	3	15	0	73	18
17DR018	Ballahagoth-Balahasadhara-Lakkad-Singhyahi Maidan	8.77	150	10	25	2	143	37
17DR019	Inaruwa-Dubarkot-Narahi-India Border	12.93	200	6	10	0	126	16
17DR020	Deuri-Parwaha-Paudeswor Road	3.17	180	4.0	9	0	112	13
17DR021	Mahuwa-Dhabauli- Yadukoha-Balabakhar- Parterwa-Kiratpur- Barmajhiya- Portaha	24.98	90	7.0	10	0	72	17
17DR022	Puspapur-Ichhapur-Tarapatti	12.09	400	20	40	5	320	65
17DR023	Dhanushadham-Raghunathpur-Kiratpur-Kamala	7.38	125	5	16	3	112	24

## Annex 2 POPULATIONS served

Table A2.1 Population Served

#	VDC/municipality	Population	Connections	SRN	17DR001	17DR002	17DR003	17DR004	17DR005	17DR006	17DR007	17DR008	17DR009	17DR010	17DR011	17DR012	17DR013	17DR014	17DR015	17DR016	17DR017	17DR018	17DR019	17DR020	17DR021	17DR022	17DR023
	<b>Total population</b>	<b>753,004</b>		<b>519,653</b>	<b>519,653</b>	<b>144,369</b>	<b>50,070</b>	<b>21,519</b>	<b>27,864</b>	<b>110,625</b>	<b>77,289</b>	<b>77,822</b>	<b>11,478</b>	<b>117,755</b>	<b>100,648</b>	<b>79,799</b>	<b>70,194</b>	<b>30,254</b>	<b>45,046</b>	<b>19,919</b>	<b>23,817</b>	<b>20,104</b>	<b>21,660</b>	<b>28,534</b>	<b>10,378</b>	<b>32,301</b>	<b>56,143</b>
	<b>Total VDC/municipalities</b>	<b>76</b>		<b>34</b>	<b>34</b>	<b>6</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>8</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>5</b>	<b>6</b>	<b>2</b>	<b>5</b>	<b>4</b>
1	Andupatti	3503	1																x								
2	Aurahi	5589	2	x	x																						
3	Bafai	2921	1																	x							
4	Bagchaura	5888	1													x											
5	BahedaBala	6983	2					x		x																	
6	Bahuarba	5068	1												x												
7	Balabakhar	7820	-																							x	
8	BalahaKathal	3405	2																				x	x			
9	BalahaSadhara	4030	4	x	x																		x	x			
10	Ballagoth	4283	2																				x	x			
11	Baniniya	3646	2									x	x														
12	Bateswor	6752	2			x	x																				
13	Bhuchakrapur	5176	1				x																				
14	Bhutahipaterwa	4848	2	x	x																						x
15	Bisarbhora	4907	1																		x						
16	Chakkar	6611	2	x	x																						
17	Chhireswornath Municipality	32281	5	x	x						x	x		x													X
18	ChoraKoilpur	4713	1																x								
19	Debadiha	7008	2												x			x									
20	DeuriParbaha	4308	2															x							x		
21	Dhabouli	7292	-																							x	
22	Dhanauji	8928	2												x			x									
23	Dhanushadham	45008	5	x	x						x					x	x										

#	VDC/municipality	Population	Connections	SRN	17DR001	17DR002	17DR003	17DR004	17DR005	17DR006	17DR007	17DR008	17DR009	17DR010	17DR011	17DR012	17DR013	17DR014	17DR015	17DR016	17DR017	17DR018	17DR019	17DR020	17DR021	17DR022	17DR023
	Municipality																										
24	DubarikotHathalekha	6874	2																		x			x			
25	Duhabi	7021	3	x	x															x							
26	Ekarahi	4744	1																		x						
27	Fulgama	12143	2						x	x																	
28	Ganeshman Singh Charnath Municipality	34770	2	x	x																						
29	Ghodghans	5658	4	x	x					x								x									
30	Giddha	5287	3	x	x															x							
31	GothKohelpur	5231	1																x								
32	HansapurKathpula	9449	1													x											
33	Harine	4139	1																x								
34	Hathipurharbara	3337	2	x	x																						
35	Inarwa	5001	2																				x	x			
36	Itaharwa	97776	2	x	x																						
37	Janakpur Sub-Metropolitan	79644	6	x	x	x				x				x	x												
38	Jhatiyahi	5110	1														x										
39	JhojhiKataiya	4352	1															x									
40	Kachurithera	5830	3	x	x									x													
41	KajaraRamaul	5218	2													x	x										
42	KhajuriChanha	5974	1																				x				
43	Khariyani	9998	3	x	x														x								
44	Lagmagadhaguthi	5330	1						x																		
45	Lakhouri	3047	-																								
46	Lakkad	4091	2	x	x																						
47	Laxminiwas	3617	1				x																				
48	Mahuwa(Pra.Khe)	4852	1																			x				x	
49	Manshingpatti	4385	3	x	x														x								
50	Marchaijhitakaiya	9278	3	x	x																	x					

#	VDC/municipality	Population	Connections	SRN	17DR001	17DR002	17DR003	17DR004	17DR005	17DR006	17DR007	17DR008	17DR009	17DR010	17DR011	17DR012	17DR013	17DR014	17DR015	17DR016	17DR017	17DR018	17DR019	17DR020	17DR021	17DR022	17DR023
51	Mithila Municipality	34525	4	x	x	x	x																				
52	Mithileswormauwahi	3863	3	x	x							x															
53	Mithileswornikas	7154	3	x	x											x											
54	Mukhiyapattimusharg	6197	1							x																	
55	Nagaraeen	8543	3	x	x			x																			
56	Nanupatti	4690	3	x	x														x								
57	NauwakhorPrashahi	3777	2														x		x								
58	Pachaharwa	3487	2	x	x																						
59	Patanuka	4941	2																				x	x			
60	Paterwa	6070	2									x													x	x	x
61	Paudeswor	2594	3	x	x											x											
62	Puspalpur	12944	2	x	x																						x
63	Raghunathpur	7066	3	x	x							X															
64	Sabela Municipality	24896	3	x	x							x															
65	Sapahi	9017	3	x	x	x																					
66	Shantipur	5985	3	x	x	x																					
67	SingyahiMaidan	9300	1																x								
68	Sinurjoda	8446	3	x	x	x																					
69	Sonigama	6902	3	x	x												x										
70	SugaMadhukarahi	4488	1													x											
71	Suganikash	4179	1														x										
72	TarapattiSirsiya	7832	3	x	x								x														
73	ThadiJhijha	7292	1																		x						
74	Tulsichauda	5301	-																								
75	TulsiyahiNikas	4398	1						x																		
76	TulsiyaniJabdi	5993	2					x	x																		
77	Yadukush	6267	2	x	x																					x	

Source: CBS; Population census 2011

**Table A2.2 - Level of Access**

#	VDC/municipality	No access DRCN start DTMP	No access DRCN end DTMP	Fair-weather DRCN start DTMP	Fair-weather DRCN end DTMP	All-weather DRCN start DTMP	All-weather DRCN end DTMP	Direct access to SRN
	<b>Total population</b>	-	-	325,379	29,146	200,024	243,386	519,653
	<b>Total VDCs</b>	<b>0</b>	<b>0</b>	<b>42</b>	<b>3</b>	<b>17</b>	<b>20</b>	<b>34</b>
1	Andupatti					x		
2	Aurahi			x				x
3	Bafai			x				
4	Bagchaura			x				
5	BahedaBala						x	
6	Bahuarba			x				
7	Balabakhar			x				
8	BalahaKathal					x		
9	BalahaSadhara					x		x
10	Ballagoth					x		
11	Baniniya			x				
12	Bateswor						x	
13	Bhuchakrapur			x				
14	Bhutahipaterwa					x		x
15	Bisarbhora			x				
16	Chakkar			x				x
17	Chhireswornath Municipality						x	x
18	ChoraKoilpur			x				
19	Debadiha			x				
20	DeuriParbaha			x				
21	Dhabouli			x				
22	Dhanauji						x	
23	Dhanushadham Municipality						x	x
24	DubarikotHathalekha					x	x	
25	Duhabi			x				x
26	Ekarahi			x				
27	Fulgama					x	x	
28	Ganeshman Singh Charnath Municipality						x	x
29	Ghodghans						x	x
30	Giddha					x		x
31	GothKohelpur			x				
32	HansapurKathpula					x		
33	Harine			x				
34	Hathipurharbara			x				x
35	Inarwa					x	x	
36	Itaharwa			x				x
37	Janakpur Sub-Metropolitan					x		x

#	VDC/municipality	No access DRCN start DTMP	No access DRCN end DTMP	Fair-weather DRCN start DTMP	Fair-weather DRCN end DTMP	All-weather DRCN start DTMP	All-weather DRCN end DTMP	Direct access to SRN
38	Jhatiyahi			X				
39	JhojhiKataiya			X				
40	Kachurithera			X				X
41	KajaraRamaul					X		
42	KhajuriChanha			X				
43	Khariyani			X				X
44	Lagmagadhaguthi						X	
45	Lakhouri			X				
46	Lakkad			X				X
47	Laxminiwas						X	
48	Mahuwa(Pra.Khe)			X				
49	Manshingpatti					X		X
50	Marchaijhitakaiya			X			X	X
51	Mithila Municipality					X		X
52	Mithileswormauwahi						X	X
53	Mithileswornikas							X
54	Mukhiyapattimusharg						X	
55	Nagaraeen					X		X
56	Nanupatti			X			X	X
57	NauwakhorPrashahi			X				
58	Pachaharwa			X				X
59	Patanuka			X				
60	Paterwa			X				
61	Paudeswor			X				X
62	Puspalpur				X			X
63	Raghunathpur			X				X
64	Sabela Municipality						X	X
65	Sapahi			X				X
66	Shantipur			X				X
67	SingyahiMaidan				X			
68	Sinurjoda			X				X
69	Sonigama				X			X
70	SugaMadhukarahi					X		
71	Suganikash			X				
72	TarapattiSirsiya			X			X	X
73	ThadiJhijha						X	
74	Tulsichauda			X				
75	TulsiyahiNikas					X		
76	TulsiyaniJabdi						X	
77	Yadukush			X				X



### ANNEX3 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)	Stone Causeway (m)	Pipe culvert (units)	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)
<b>Total</b>		<b>303.63</b>	<b>-</b>	<b>-</b>	<b>45.11</b>	<b>99.16</b>	<b>127.12</b>	<b>-</b>	<b>195</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>13,010</b>
17DR001	Janakpur N.P.-Kurtha - Shantipur-sapahi (Gajariya)- Bateswor- Jamuni Niwash	26.94	0+000	27+000	3.56	8.18	26.39		40				-			2,000
17DR002	Hariharpur- Bateswor- Bhuchakrapur- Laxminiwas	10.03	0+000	10+100	0.63	-	-		-				-			1,500
17DR003	Nagaraeen- BahedaBala- TulsiyahiJabdi	7.90	0+000	7+950	1.20	-	7.90		-				-			550
17DR004	TulsiyahiJabdi - TulsiyahiNikas- Fulgama - Lagmagadhaguthi	7.22	0+000	7+300	0.76	-	7.01		-				-			500
17DR005	Devpura - Ghodghans - Fulgama - Tulsiyahi Road	15.38	0+000	15+400	0.46	6.89	14.95		-				-			1,200
17DR006	SakhuwaMahendran agar-Parbarta- Ichhapur- NauleBigha-Kisanpur- Laxmipur-Radhapur- Bharatpur	15.51	0+000	15+650	2.27	1.93	-		90				-			450
17DR007	Janaki Medical College-Ramdaiya- Sabela-Paterwa- Kamala	22.11	0+000	22+200	5.29	8.71	-		-				-			350
17DR008	LaxmipurBagewa- Gopalpur-Baniniya- RamdaiyaBhawadi- TarapattiSirsiya	13.44	0+000	13+500	3.06	0.67	13.44		-				-			400

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)
17DR009	Pulchowk-Shivpur-Kachuritherra-Parastoki-Harsar-Sakhuwa Mahendranagar	16.14	0+000	16+200	2.55	6.75	-		-				-			560
17DR010	DevpuraRupetha-Bahuwarba-Debdiha-Dhanauji	9.32	0+000	9+400	3.77	4.77	-		-				-			700
17DR011	Bhadariya-Parbaha Paudeshwor-Dhanusha Dam	12.62	0+000	12+700	2.37	8.27	-		15				-			650
17DR012	D.Govindapur - Kajarramaul - Jhatiyahi - NaukhorPrasahi - SugaNikas - Sonigama	14.33	0+000	14+400	2.21	6.92	-		-				-			800
17DR013	Deuriparbaha - Jhojhokatiya - Dhanauji - Devdiha - Ghodghans	11.70	0+000	11+800	4.31	-	11.70		-				-			450
17DR014	Jankpuur-Manaharpur - Khariyani Kamala Road	28.53	0+000	28+600	2.25	6.82	28.48		-				2			150
17DR015	Duhabi-Giddha-Bafai-HathipurHarbara-Nanupatti	5.15	0+000	5+200	0.51	3.03	5.15		50				-			700
17DR016	Bisharbhora - DubarikotHatlekha-Ekrahi - Thadijhijha	13.26	0+000	13+300	2.44	9.40	-		-				-			300
17DR017	Mahuwa(pra.khe.) - Khajurichanha - Machijhitkaiya	4.73	0+000	4+800	2.70	-	-		-				-			200
17DR018	Ballahagoth-Balahasadhara-Lakkad-Singhyahi Maidan	8.77	0+000	8+800	0.97	1.85	-		-				-			600
17DR019	Inaruwa-Dubarkot-Narahi-India Border	12.93	0+000	13+000	1.30	-	-		-				-			100

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)
17DR020	Deuri-Parwaha-Paudeswor Road	3.17	0+000	3+200	0.15	-	-		-				-			240
17DR021	Mahuwa-Dhabauli-Yadukoha-Balabakhar-Parterwa- Kiratpur-Barmajhiya- Portaha	24.98	0+000	25+000	1.20	24.98	-		-				-			140
17DR022	Puspalpur-Ichhapur-Tarapatti	12.09	0+000	12+100	0.50	-	12.09		-				-			230
17DR023	Dhanushadham-Raghunathpur-Kiratpur-Kamala	7.38	0+000	7+400	0.65	-	-		-				-			240

ANNEX4: OVERALL INVENTORY

**Table A4.1 Overall Inventory lists**

Road code	Road Name	Length (km)	Start chainage (km) or XY-coordinate	End chainage (km) or XY-coordinate	Surface Type: Black Top	Surface Type : Gravel	Surface Type : Earth	All Weather	Fair Weather	Condition - Good/ Fair	Condition - Poor	Condition - Temporarily Impassable	Condition - Permanently Impassable
<b>Total</b>		<b>553.22</b>			<b>27.11</b>	<b>219.25</b>	<b>306.86</b>	<b>246.36</b>	<b>306.86</b>	-	-	-	-
17DR001	Janakpur N.P.-Kurtha - Shantipur-sapahi (Gajariya)- Bateswor- Jamuni Niwash	<b>26.94</b>	0+000	27+000	0.55	18.21	8.18	18.76	8.18	Good, Fair			
17DR002	Hariharpur-Bateswor-Bhuchakrapur-Laxminiwas	<b>10.03</b>	0+000	10+100		10.03		10.03	-	Fair			
17DR003	Nagaraeen- BahedaBala-TulsiyahiJabdi	<b>7.90</b>	0+000	7+950		7.90		7.90	-	Fair			
17DR004	TulsiyahiJabdi - TulsiyahiNikas-Fulgama - Lagmagadhaguthi	<b>7.22</b>	0+000	7+300	0.21	7.01		7.22	-	Fair			
17DR005	Devpora - Ghodghans - Fulgama - Tulsiyahi Road	<b>15.38</b>	0+000	15+400	0.42	8.07	6.89	8.49	6.89	Good			
17DR006	SakhuwaMahendranagar-Parbarta-Ichhapur-NauleBigha-Kisanpur-Laxmipur-Radhapur-Bharatpur	<b>15.51</b>	0+000	15+650	0.22	13.36	1.93	13.58	1.93	Fair			
17DR007	Janaki Medical College-Ramdaiya-Sabela-Paterwa-Kamala	<b>22.11</b>	0+000	22+200	0.01	13.40	8.71	13.41	8.71	Fair			
17DR008	LaxmipurBagewa-Gopalpur-Baniniya-RamdaiyaBhawadi-TarapattiSirsiya	<b>13.44</b>	0+000	13+500		12.76	0.67	12.76	0.67	Fair			
17DR009	Pulchowk-Shivpur-Kachuritherra-Parastoki-Harsar-Sakhuwa Mahendranagar	<b>16.14</b>	0+000	16+200	0.77	8.62	6.75	9.39	6.75		Poor	√	
17DR010	DevporaRupetha-Bahuwarba-Debdiha-Dhanauji	<b>9.32</b>	0+000	9+400	0.26	4.28	4.77	4.55	4.77		Poor	√	
17DR011	Bhadariya-Parbaha Paudeshwor-Dhanusha Dam	<b>12.62</b>	0+000	12+700		4.35	8.27	4.35	8.27		Poor	√	
17DR012	D.Govindapur - Kajarramaul - Jhatiyahi - NaukhorPrasahi - SugaNikas - Sonigama	<b>14.33</b>	0+000	14+400		7.41	6.92	7.41	6.92		Poor	√	
17DR013	Deuriparbaha - Jhojhokatiya - Dhanauji - Devdiha - Ghodghans	<b>11.70</b>	0+000	11+800		11.70		11.70	-	Fair			

Road code	Road Name	Length (km)	Start chainage (km) or XY- coordinate	End chainage (km) or XY- coordinate	Surface Type: Black Top	Surface Type : Gravel	Surface Type : Earth	All Weather	Fair Weather	Condition - Good/ Fair	Condition - Poor	Condition - Temporarily Impassable	Condition - Permanently Impassable
17DR014	Jankpuur-Manaharpur - Khariyani Kamala Road	28.53	0+000	28+600	0.05	21.67	6.82	21.72	6.82	Fair			
17DR015	Duhabi-Giddha-Bafai- HathipurHarbara-Nanupatti	5.15	0+000	5+200		2.12	3.03	2.12	3.03	Fair			
17DR016	Bisharbhora - DubarikotHathlekha- Ekrahi - Thadijhijha	13.26	0+000	13+300		3.86	9.40	3.86	9.40	Fair			
17DR017	Mahuwa(pra.khe.) -Khajurichanha - Machijhitkaiya	4.73	0+000	4+800	1.98	2.74		4.73	-		Poor	√	
17DR018	Ballahagoth-Balahasadhara-Lakkad- Singhyahi Maidan	8.77	0+000	8+800		6.92	1.85	6.92	1.85	Fair			
17DR019	Inaruwa-Dubarkot-Narahi-India Border	12.93	0+000	13+000		12.93		12.93	-	Fair			
17DR020	Deuri-Parwaha-Paundeswor Road	3.17	0+000	3+200		3.17		3.17	-	Fair			
17DR021	Mahuwa-Dhabauli- Yadukoha- Balabakhar- Parterwa- Kiratpur- Barmajhiya- Portaha	24.98	0+000	25+000			24.98	-	24.98	Fair			
17DR022	Puspalpur-Ichhapur-Tarapatti	12.09	0+000	12+100		12.09		12.09	-		Poor	√	
17DR023	Dhanushadham-Raghunathpur- Kiratpur-Kamala	7.38	0+000	7+400		7.38		7.38	-	Fair			
	0							-	-	Fair			
	<b>Total of DRCN Roads =</b>	<b>303.63</b>			<b>4.48</b>	<b>199.99</b>	<b>99.16</b>	<b>204.47</b>	<b>99.16</b>				
	<b>Village Roads</b>												
17VR001	Bahuarwa-Campus Chowk	2.58	0+000	2+600			2.583	-	2.583	Fair			
17VR002	Bahurwa-Lohona Chowk-Mahuwa- Kanakpatti-Sahidpath	3.88	0+000	3+900			3.883	-	3.883		Poor	√	
17VR003	Baidehi-Aurahi-Balganga-Suganikas- Dhanusha Dham	7.30	0+000	7+400			7.302	-	7.302		Poor	√	
17VR004	Baira Chowk-Baira Village	1.00	0+000	1+100	1.002			1.002	-		Poor	√	

Road code	Road Name	Length (km)	Start chainage (km) or XY-coordinate	End chainage (km) or XY-coordinate	Surface Type: Black Top	Surface Type : Gravel	Surface Type : Earth	All Weather	Fair Weather	Condition - Good/ Fair	Condition - Poor	Condition - Temporarily Impassable	Condition - Permanently Impassable
17VR005	Baira Village Road	0.72	0+000	0+800			0.717	-	0.717		Poor	√	
17VR006	Bairiya Bazar-Tulsiyahi	2.49	0+000	2+500			2.494	-	2.494		Poor	√	
17VR007	Balha Gotha-Saghara-Lakkar	8.14	0+000	8+200			8.136	-	8.136		Poor	√	
17VR008	Benga Piprari Chowk-Dharman Tole-Janakpur	1.02	0+000	1+100			1.016	-	1.016		Poor	√	
17VR009	Bengadawar-Bhuchrapur-Sitapur	9.90	0+000	9+950			9.900	-	9.900		Poor	√	
17VR010	Bhadariya-Parwaha-Paudeswor-Dhanusha Dham Road	0.92	0+000	1+000			0.923	-	0.923		Poor	√	
17VR011	Biredraba Bazar-Mahinathpur	6.00	0+000	6+100			5.998	-	5.998		Poor	√	
17VR012	Birendra Bazar -Dhanusadham	7.29	0+000	7+300			7.295	-	7.295		Poor	√	
17VR013	Devapura Village Road	1.87	0+000	1+900			1.869	-	1.869		Poor	√	
17VR014	Devpura-Basaiya-Bindhi	7.18	0+000	7+200			7.176	-	7.176		Poor	√	
17VR015	Dewapura-Bahuarwa-Khirkhriya-Lagma	4.75	0+000	4+800			4.749	-	4.749		Poor	√	
17VR016	Dhalkebar Village	3.53	0+000	3+600			3.528	-	3.528		Poor	√	
17VR017	Dhanushadham-Maknaha-Matahi-Sabaila	5.09	0+000	5+100			5.085	-	5.085		Poor	√	
17VR018	Digambarpur-Mahadev Math-Durgatol	3.42	0+000	3+500		3.425		3.425	-		Poor	√	
17VR019	Ganguli-Navatoli-Lagma Gadthaguthi	2.96	0+000	3+000			2.958	-	2.958		Poor	√	
17VR020	Godar Village	3.48	0+000	3+500			3.477	-	3.477	Fair			
17VR021	Hariharpur Highway-Durgatol-	6.55	0+000	6+600		6.550		6.550	-	Fair			

Road code	Road Name	Length (km)	Start chainage (km) or XY-coordinate	End chainage (km) or XY-coordinate	Surface Type: Black Top	Surface Type : Gravel	Surface Type : Earth	All Weather	Fair Weather	Condition - Good/ Fair	Condition - Poor	Condition - Temporarily Impassable	Condition - Permanently Impassable
	Mahendranagar												
17VR022	Janakpur-Paudeswar-Singyahimadan (Sahidpath)	2.79	0+000	2+800			2.787	-	2.787	Fair			
17VR023	Juri-Kumaratol-Godar-Chisapani	6.86	0+000	6+900			6.864	-	6.864		Poor	√	
17VR024	Kamala Nadi-Inruwa- India Boder	2.01	0+000	2+100			2.006	-	2.006		Poor	√	
17VR025	Khajuri-Machi-Parsha-Mangrana	3.56	0+000	3+600			3.560	-	3.560		Poor	√	
17VR026	Khajuri Village	0.32	0+000	0+400			0.320	-	0.320		Poor	√	
17VR027	Kumarol Chowk-Pakdiya Tole	2.58	0+000	2+600		2.581		2.581	-		Poor		
17VR028	Kurtha-Shiba Chowk Janankpur	0.00	0+000	0+100			0.003	-	0.003		Poor	√	
17VR029	Lagma Boder-Nagarain-Phulgama	3.79	0+000	3+800			3.795	-	3.795		Poor	√	
17VR030	Lakhauri-Baidehi	4.25	0+000	4+300			4.250	-	4.250		Poor	√	
17VR031	Lakkar-Dhabauli	5.46	0+000	5+500			5.457	-	5.457		Poor	√	
17VR032	Laxminiya Village Road	2.03	0+000	2+100			2.030	-	2.030		Poor	√	
17VR033	Lohana-Jhoji-Dhanauji-Lakhauri	6.71	0+000	6+800		6.708		6.708	-		Poor	√	
17VR034	Mahendra Nagar-Gajariya	6.85	0+000	6+900			6.852	-	6.852		Poor	√	
17VR035	Mahendranagar-Kanchanban	3.95	0+000	4+000			3.952	-	3.952		Poor	√	
17VR036	Mahendranagar-Sakhuwa-Sapahi	6.61	0+000	6+700			6.610	-	6.610		Poor	√	
17VR037	Mahuawa-Lagma	2.48	0+000	2+500			2.476	-	2.476		Poor	√	

Road code	Road Name	Length (km)	Start chainage (km) or XY-coordinate	End chainage (km) or XY-coordinate	Surface Type: Black Top	Surface Type : Gravel	Surface Type : Earth	All Weather	Fair Weather	Condition - Good/ Fair	Condition - Poor	Condition - Temporarily Impassable	Condition - Permanently Impassable
17VR038	Mujeliya-Tarapatti-Dhanushadham-Bhagwanpur-Dharapani Chowk	3.92	0+000	4+00	3.923			3.923	-		Poor	√	
17VR039	Murli Chowk-Basbiti-Bindi	1.37	0+000	1+400			1.373	-	1.373		Poor	√	
17VR040	Nagarain-Phulgama-Pheche-Tulsiyahi Jabadi	5.21	0+000	5+300			5.209	-	5.209		Poor	√	
17VR041	Naktajhijh-Bijayapur	4.81	0+000	4+900			4.810	-	4.810		Poor	√	
17VR042	Nanupatti-Harwara-Baphai-Dubahi	6.64	0+000	6+700			6.644	-	6.644		Poor	√	
17VR043	Nataji Kriśi Farm-Bhuchrapur-Sitapur	1.89	0+000	1+900			1.887	-	1.887		Poor	√	
17VR044	Patunka-Sundarpur	2.25	0+000	2+300			2.252	-	2.252		Poor	√	
17VR045	Pulchowk-Shivaur-Thera-Chauharwa-Dhanusadham Road	5.10	0+000	5+200			5.101	-	5.101	Fair			
17VR046	Purnadaha-Ichhapur	4.81	0+000	4+900			4.809	-	4.809	Fair			
17VR047	Puspapur-Digambarrpur	5.64	0+000	5+700			5.644	-	5.644		Poor	√	
17VR048	Sabaila-Nanupatti	8.38	0+000	8+400			8.377	-	8.377		Poor	√	
17VR049	Sabaila-Paterwa	0.02	0+000	0+100			0.021	-	0.021		Poor	√	
17VR050	Shantipur Village Road	2.66	0+000	2+700			2.664	-	2.664		Poor	√	
17VR051	Tara Tole-Khajuri-Mahuawa	5.29	0+000	5+300			5.288	-	5.288		Poor	√	
17VR052	Tarapatti-Paureshwar	6.79	0+000	6+800			6.791	-	6.791		Poor	√	
17VR053	Tulsiyahi-Bela Chowk	2.16	0+000	2+200			2.161	-	2.161		Poor	√	
17VR054	Tulsiyahi-Phechcha-Bashiya-Janakpur	17.71	0+000	17+800	17.708			17.708	-		Poor	√	



Road code	Road Name	Length (km)	Start chainage (km) or XY-coordinate	End chainage (km) or XY-coordinate	Surface Type: Black Top	Surface Type : Gravel	Surface Type : Earth	All Weather	Fair Weather	Condition - Good/ Fair	Condition - Poor	Condition - Temporarily Impassable	Condition - Permanently Impassable
17VR055	Yadukoha-Nathpatti-Singyai Madan	<b>6.70</b>	0+000	6+800			6.704	-	6.704		Poor	√	
17VR056	Yadukuha-Dumariya-Jagirtole	<b>7.91</b>	0+000	8+000			7.911	-	7.911		Poor	√	
	<b>Total of Village Roads =</b>	<b>249.59</b>			<b>22.63</b>	<b>19.26</b>	<b>207.69</b>	<b>41.90</b>	<b>207.69</b>				

**Include all meeting/workshop minutes, Letter/s of DDC/DTOs, Photographs (Meeting/workshop/discussions plus Field work i.e. Condition survey, status of roads, settlemnts, bazaar etc.). Do not left over the entire events on DTMP preparation.**