



# Government of Nepal



## District Transport Master Plan (DTMP)

### VOLUME- I

### MAIN REPORT

Ministry of Federal Affairs  
and Local Development

Department of Local Infrastructure  
Development and Agricultural  
Roads (DOLIDAR)

District Development Committee,

**Kailali**

June 2014



Submitted by: Sustainable Infrastructure Development Foundation (SIDeF), Sinamangal, Kathmandu, for the District Development Committee (DDC) and District Technical Office (DTO), Kailali with Technical Assistance from the Department of Local Infrastructure and Agricultural Roads (DOLIDAR) Ministry of Federal Affairs and Local Development and grant supported by DFID



Ref. No:

## **FOREWORD**

## **ACKNOWLEDGEMENT**

Final report on the Preparation of District Transport Master Plan (DTMP) of Kailali District has been prepared under the contract agreement between RAP-3 and SIDeF, Kathmandu.

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

We would like to extend our heartfelt gratitude to the District Development Committee (DDC) Kailali for providing cooperation to carry out this task.

SIDeF would like to express our gratitude to Ram Datta Pandey, Local Development Officer, Er. Prem Dutt Bhatt, DTO Chief, Er. Dataram Joshi, DTO Engineer and all the DDC and DTO staffs for their valuable suggestions and co-operation for the preparation of this report.

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

Thank goes to our team of Er. Chuda Mani Ghimire, Team Leader, Er. Raghunath Rimal, Engineer and GIS expert who continuously worked to finalize the DTMP.

Er. Hare Ram Shrestha

Project Director  
On behalf of  
SIDeF

## EXECUTIVE SUMMARY

Kailali district is located in Seti Zone, Far Western Development Region of Nepal. It Boarders with Bardiya and Surkhet district to the east, Kanchanpur and Dadeldhura to the West, Doti to the North and India to the south. The newly formed Attariya municipality consists Malakheti, Geta and Shripur VDCs and Lamki Chuha municipality consists Baliya and Chuha VDCs. Now Kailali district has altogether 36 VDCs and four municipalities. Topographic location of Kailali district is  $28^{\circ} 22'$  to  $30^{\circ} 5'$  north longitude and  $80^{\circ} 30'$  to  $81^{\circ} 18'$  east latitude. Total area of Kailali district is 3235 Km<sup>2</sup>. Elevation above mean sea level ranges from 109 m. (min.) to 1950 m. (max.). The average maximum temperature is 43°C and the minimum temperature is 5°C and average annual rainfall is 1840mm.

The main sources of occupation and livelihood of the district population are agriculture, livestock, business, small to medium industries, tourism industry and trading etc. The total population size is 775709 (male 378417, female 397292). The population density of the District is 239.79 per sq. km. The Average household size is 5.44 persons. The literacy rate of the district population is 52.06%. Kailali district has multi ethnicity and composition, majorities are Brahmin 10.73%, Magar 3.88%, Chhetri 17.42%, Dalit 8.13%, Tharu 43.7%, Thakuri 2.94%, and others 12.41%. The major languages spoken in Kailali district are: Nepali, Tharu, and their local language.

The district headquarter of Kailali is Dhangadhi which is 15 Km south from Attariya and connected to East-West highway by Dhangadhi- Dadeldhura Rajmarg.

Total lengths of road in Kailali district is 2034.75km, among them 309.6 km is SRN.

The total length of DRCN road is 466.17 Km, approved by Kailali DTICC in 10 baisakh, 2071, given in **Annex 5**. where 34.7Km Blacktop (Otta seal), 261.70km gravel and 169.77Km is earthen road The table ES1 below presents overall picture of road inventory of Kailali district.

**Table ES1.**

Road Class	Total length	Black Top	Gravel	Earthen
Strategic road network	309.60	171.35	74.25	64.00
Urban roads	835.00	835.00	-	-
District road core network	466.17	34.70	261.70	169.77
Village roads	423.98	-	249.44	174.54
<b>Total</b>	<b>2,034.75</b>	<b>1,041.05</b>	<b>585.39</b>	<b>408.31</b>

The total estimated cost for conservation, improvement and new construction for selected DRCN road is Rs 3,138,309,000. The cost for conservation is Rs 1,031,004,000, cost for improvement is Rs 1,879,308,000 and that for new construction is Rs 227,997,000. Table ES2 below shows summary of the costs for improvement and new construction.

**Table ES2.**

Improvement type	Requirement	Cost (NPR)
Bridges	1835 M	1,468,000,000
Slab culverts	179 M	40,275,000
Causeways	424 M	5,080,000
Hume pipe Culverts	36 Units	1,080,000
Gabion retaining walls	8220 m <sup>3</sup>	16,440,000
Lined drains	33742 M	33,742,000
Rehabilitation	13 Km	9,100,000
Gravelling	169.77 Km	305,590,735
New construction	36.19 Km	227,997,000
<b>Total</b>		<b>2,107,304,735</b>

For 5-years planning (2071/072 to 2075/076) the total estimated budget is Rs 697,905,000.00. As per the DDC's decision, 80% of the total road sector budget has to be taken for DRCN roads planning, which comes to be Rs 558,324,000. Whereas, the total estimated cost required for DRCN road is Rs 3,138,309,000. This clearly shows that probable budget allocation is not sufficient for all interventions. Hence, budget allocation for five years planning is done based on the ranking priority as conservation, improvement and new construction. Budget has been allocated as table **6.2.1(AUTO)** in this report.

For 5-years DTMP, total budget allocated for conservation is Rs 558,324,000. Due to insufficient budget, no budget planning has been done for improvement and new construction of the selected DRCN.

At the end of five year period, there will be no any change regarding improvement and new construction due to insufficient budget, i.e., the probable budget is sufficient only for conservation of selected DRCN.

## **ABBREVIATIONS**

ARMP	Annual Road Maintenance Plan
CC	Cement Concrete
DDC	District Development Committee
DOLIDAR	Department of Local Infrastructure Development and Agriculture Road
DOR	Department of Road
DRCN	District Road Core Network
DTICC	District Transport Infrastructure Coordination Committee
DTMP	District Transport Master Plan
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
MoFALD	Ministry of Federal Affairs and Local Development
SWAp	Sector Wide Approach
VDC	Village Development Committee
VPD	Vehicle per Day

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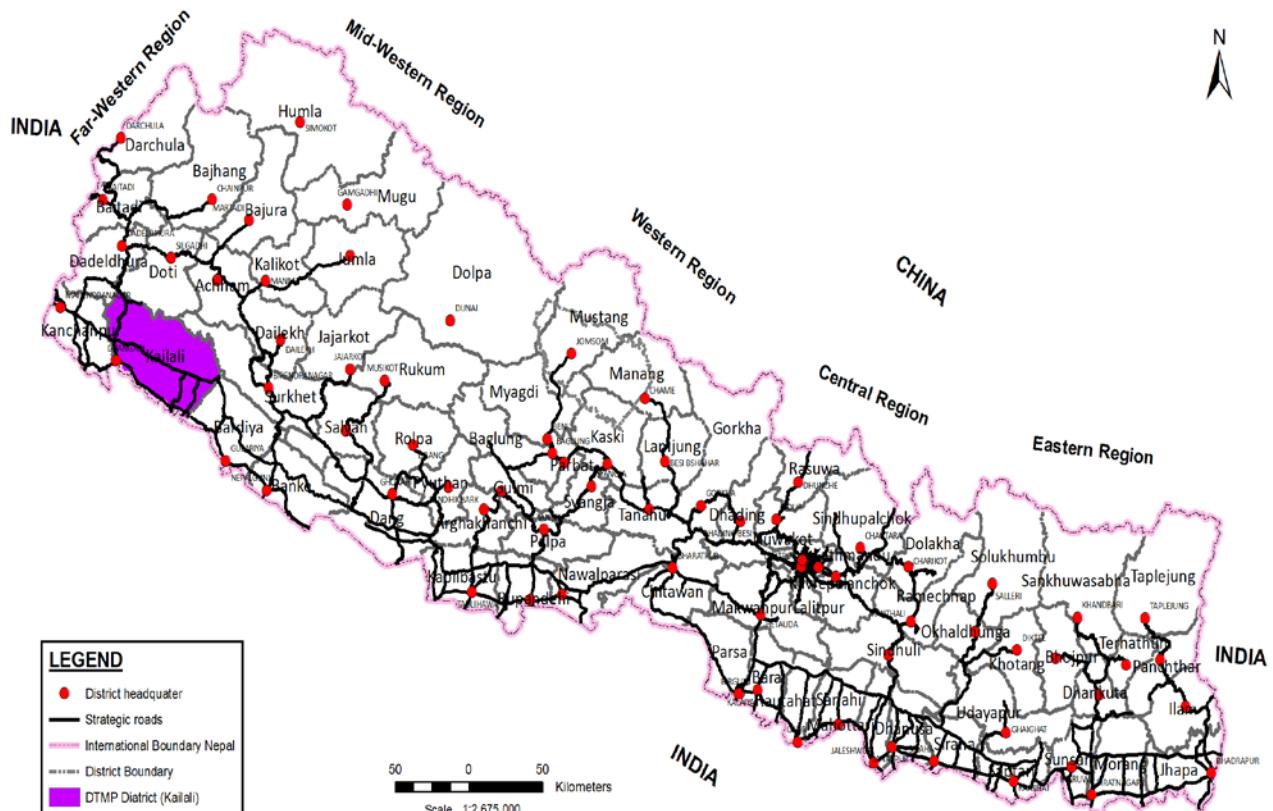
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# 1. INTRODUCTION

Kailali district is located in Seti Zone, Far Western Development Region of Nepal. It borders with Bardiya and Surkhet district to the east, Kanchanpur and Dadeldhura to the West, Doti to the North and India to the south. The newly formed Attariya municipality consists Malakheti, Geta and Shripur VDCs and Lamki Chuha municipality consists Baliya and Chuha VDCs. Now Kailali district has altogether 36 VDCs and four municipalities. Topographic location of Kailali district is  $28^{\circ} 22'$  to  $30^{\circ} 5'$  north longitude and  $80^{\circ} 30'$  to  $81^{\circ} 18'$  east latitude. Total area of Kailali district is 3235 Km<sup>2</sup>. Elevation above mean sea level ranges from 109 m. (min.) to 1950 m. (max.). The average maximum temperature is 43°C and the minimum temperature is 5°C and average annual rainfall is 1840mm.

Figure 1 Location of the Kailali district



Main sources of occupation and livelihood of the district population are agriculture, livestock, business, small to medium industries, tourism industry and trading etc. The total population size is 775709 (male 378417, female 397292). The population density of the District is 239.79 per sq. km. The Average household size is 5.44 persons. The literacy rate of the district population is 52.06%. Kailali district has multi ethnicity and composition, majorities are Brahmin 10.73%, Magar 3.88%, Chhetri 17.42%, Dalit 8.13%, Tharu 43.7%, Thakuri 2.94%, and others 12.41%. The major languages spoken in Kailali district are: Nepali, Tharu, and their local language.

The district headquarter of Kailali is Dhangadhi which is 15 Km south from Attariya and connected to East-West highway by Dhangadhi- Dadeldhura Rajmarg. Dhangadhi, Tikapur, Joshipur, Bhajani, Attariya, Durgauli, Sukhad, Lamki, Chaumala, Sadepani, Pahalmanpur, Chisapani are major towns of Kailali district.

## 2. DISTRICT ROAD CORE NETWORK (DRCN)

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

The total length of SRN road is 309.6 km and rural road except municipal road is 890.15 km among which 466.17 is DRCN which was approved by DTICC meeting of Kailali district held on 2071/01/10 given in **Annex 5**.

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

Road Class	Total length	Black Top	Gravel	Earthen
Strategic roads	309.60	171.35	74.25	64.00
Urban roads	835.00	835.00	-	-
Rural roads	890.15	34.70	511.14	344.31
<b>Total</b>	<b>2,034.75</b>	<b>1,041.05</b>	<b>585.39</b>	<b>408.31</b>

### 2.1 NATIONAL HIGHWAYS AND FEEDER ROAD

The total length of existing SRN road within Kailali district is 309.6 km. Surface type of the SRN Road is tabulated in Table 2.2.1 below.

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

Code	Name of Road	Total length	Black Top	Gravel	Earthen
H01	Karnali- Junga	<b>14.48</b>	14.48		
H01	Junga- Sukhad Choraha	<b>34.08</b>	34.08		
H01	Sukkhad Choraha- Atariya	<b>29.79</b>	29.79		
H01	Attariya- Mohana River	<b>4.25</b>	4.25		
H14	Mohana bridge (IB)- Boradandi	<b>6.23</b>	6.23		
H14	Boradandi- Atariya	<b>8.32</b>	8.32		
H14	Atariya- Faltunde	<b>53.63</b>	53.63		
F017	Junction- Junction, road to Tikapur	<b>13.85</b>	0.60	13.25	
F017	Junction, road to Tikapur- Sati	<b>8.27</b>	8.27		
F017	Sati- Rajpur	<b>6.00</b>	6.00		
F147	Sati(Khairipur)- Kharkaula	<b>5.00</b>		5.00	
F148	Muda(MRM)- Bhajani- Lalbojhi	<b>18.85</b>		18.85	
F148	Lalbojhi- Gulariyaghat(IB)	<b>2.15</b>		2.15	
F149	Sahajpur-B. P. Nagar	<b>28.00</b>			28.00
F192	Daulatpur- Sati	<b>6.00</b>		6.00	
F195	Tikapur- Muda (MRM)	<b>14.00</b>		4.00	10.00
F195	Muda(MRM)- Khimadi- Karnali R(District Border)	<b>17.00</b>		9.00	8.00
F204	Khutiya- B.P. Nagar - Gadhsera	<b>4.00</b>			4.00
H17	Satti- Lalbojhi- Hasuliya (Postal)	-	-		-
H17	Hasulia- Dhangadhi (Postal)	<b>35.70</b>	5.70	16.00	14.00
<b>Total</b>		<b>309.60</b>	<b>171.35</b>	<b>74.25</b>	<b>64.00</b>

## 2.2 DISTRICT ROAD CORE NETWORK

The inventory map developed using GIS software in the previous DTMP has been used for the identification of DRCN based on the criteria set out by DTMP Guidelines; Firstly DRCN was selected in consultation with DTO engineers and the technicians. Second meeting of DTICC was called by DDC Kailali on 10 Baisakh, 2071 BS for approval of DRCN. Some of the roads were extended and some of the roads were added in the proposed DRCN list as per the suggestions of political parties present in the meeting of DTICC. Finally the DRCN was approved by DTICC with some additions. The Approved List of the DRCN road is shown in the table below containing 28 nos. of road.

The total length of approved DRCN road is 502.36Km, among which existing road length is 466.17 Km and new construction road is 36.19Km. Among the whole length of DRCN 34.70 Km is blacktop, 261.7 Km is gravel and 169.77 Km is earthen. The table 2.3.1 and 2.3.2 shows overall picture of Kailali district which is presented as below.

**Table 2.3.1 Total road length (km)**

Road Class	Total length	Black Top	Gravel	Earthen
<b>Strategic road network</b>	<b>309.60</b>	<b>171.35</b>	<b>74.25</b>	<b>64.00</b>
Highways	309.60	171.35	74.25	64.00
Feeder roads	-			
<b>Urban roads</b>	<b>835.00</b>	<b>835.00</b>	-	-
Dhangadhi Municipality	530.00	530.00		
Tikapur Municipality	305.00	305.00		
<b>District road core network</b>	<b>466.17</b>	34.70	261.70	169.77
<b>Village roads</b>	<b>423.98</b>		249.44	174.54
<b>Total</b>	<b>2,034.75</b>	<b>1,041.05</b>	<b>585.39</b>	<b>408.31</b>

*Source: DoR and Municipality*

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

Code	Name of Road	Total length Excluding New construction	Black Top (Otta Seal)	Gravel	Earthen	All weather	Fair weather	New con struction	Name of Settlements on Road
71DR001	Sahajpur- Nigali Road	<b>20.83</b>			20.83	-	20.83	-	Sahajpur, Thali, Ghatkhoor, Alad, Ghothar, Jena, pakhari, Nigali
71DR002	Malakheti- Bandrekhal- Hallude- Faltude Road	<b>14.81</b>	0.29	8.09	6.44	8.38	6.44	-	Chaukidanda, Chakle khola Gaun, Byangal, Godawari, bandrekhal, Kolmuna
71DR003	Geta- Murkatti Road	<b>11.86</b>		11.86		11.86	-	-	Geta pas, Baskheda, Beladevipur, Shehari, murkatti
71DR004	Khutiya-Matihari- Hasanpur Road	<b>10.16</b>	10.16			10.16	-	-	Khutiya, Majgaun, Jonapur, Beladevipur, Hotsawa, Dhunge, Dhangadhi
71DR005	Kanari- Ghasita-Behadababa- Chaumala Road	<b>18.38</b>		18.38		18.38	-	-	Kanari, Urmi, Ghasita, Dhaka tole, Rampur, Ambakiya, Chaumala, Jhil
71DR006	Chaumala- Putaliselauna- Khairala Road	<b>16.22</b>		5.57	10.65	5.57	10.65	6.24	Chaumala, pagi, Gobga, Kharepani, Katunje, Khairala
71DR007	Rajipur-Baluwagadh- Khaniyatal Road	<b>15.57</b>		10.22	5.34	10.22	5.34	11.57	Rajipur, Baluwa khola Gaun, Ambasha, Khaniyatal
71DR008	Rajipur- Gadariya- Phulbari Road	<b>22.40</b>		22.40		22.40	-	-	Chaumala, Purpuriya, Gadariya, Bankattiya, Kharatti, Kaduwakhera, Dharampur, Pachhis Ghar
71DR009	Badaipur- Udashipur- Hasuliya Road	<b>19.78</b>		19.78		19.78	-	-	Churmi, Ranabudha, Basauti, kailali, Benauli, prithwipur, Jhagala, Badaipur
71DR010	Loharpur- Kukurbhukka- Manau- Sadakpur- Pabera- Ratanpur Road	<b>11.65</b>		2.80	8.86	2.80	8.86	3.91	Sadakpur, Manau, Kukurbhukka, Basauti, Ujelisimraha, Tedhi, Loharpur
71DR011	Sajha-Jhanjatpur-Majhara Road	<b>17.53</b>		17.53		17.53	-	-	Masuriya bazaar, Aithal, Sitpur, Chamariya, Jhanjatpur, Tedhi, pratappur, Rampur, Kukurbhukka
71DR012	Pahalmanpur(Gausala Chok)- Ambasa- Lalbojhi Road	<b>36.21</b>		26.34	9.87	26.34	9.87	-	Gausala chok, Pahalmanpur bazaar, Lathiya, Sisaya, Ambasha, Murgahuwa, Tappa, Jabalpur, Kota, Trbeni Bazaar, Sitpur, Pachmudiya, Dorgpur, Ambari, Pahalwan, Siradhani, Lalbojhi, Gulariya ghat
71DR013	Sitalpur- Simali- Pandaun Road	<b>24.56</b>		4.39	20.17	4.39	20.17	14.47	Sitalpur, Ganeshpur, Ratipur, Phalakhet, Tharun, Ramgadh, Simali, Badikharka, Pandaun
71DR014	Sukkhad- Khailad- Bhajani Road	<b>24.25</b>	24.25			24.25	-	-	Bhajani, Tudi, Dhanaura, Khailad,Milanchok, Jhaljhaliya, Bijuliya, Kirtipur,Harinagar, Nindi, Janakpur, Sundarpur, Sukkhad
71DR015	Sadepani (Bishal Chowk)- Jutpani- Chorati- Baguliya Road	<b>6.48</b>			6.48	-	6.48	-	Chorati, jutpani, Sahipur, Sadepani
71DR016	Mudha- Tulsipur Road	<b>4.66</b>		4.66		4.66	-	-	Mudha, Dododhara, Baskoti, Rampur, prithwipur
71DR017	Sadakpur- Joshipur- Bhajani Road	<b>23.00</b>		23.00		23.00	-	-	Bhajani,Khada, Kadahi, Mahanpur, Mahadevi, Masan khan, Lakkad, Mankapur, Joshipur, Muddhi, Gadhi, Bhagapur, Simari Bazaar, Jagatpur, Bhuruwa

71DR018	Kanari- Gadaraya- Ujelisimraha- Khailad-Joshipur Road	<b>38.90</b>		7.38	31.52	7.38	31.52	-	Urmi, Simrana, Lamki Fata, Benauli, Kota, Rajipur, Salle Bazaar, Joshipur
71DR019	Prithiwipur- Simranaha- Urmi- Beli Road	<b>5.26</b>		0.49	4.78	0.49	4.78	-	Koilehi, Prithwipur
71DR020	Bauniya(Seti Lok Marga)-Phallebisauna-Kayajuwa Road	<b>11.18</b>		9.13	2.05	9.13	2.05	-	Jhagarpur, Phalle Bisauna
71DR021	Seti Lokmarga- Nawalpur- Mariyaghāt Road	<b>22.84</b>		22.84		22.84	-	-	Beluwa, Gankatta, simrana, Kharchuwa, Kamalpur, Dahaberiya, Lakadmandi, Kutarkoti, Nawalpur, Khaireni, Krishna Nagar, Kusumghat Border
71DR022	Durgauli- Kalakunda Road	<b>17.34</b>		0.88	16.46	0.88	16.46	-	Durgauli, Chilam Chauraha, Belauri, Belawa, Bandipur, Devipur, Baidi, Kalakunda
71DR023	Gulara- Pratappur- Manuwa Road	<b>15.50</b>		15.50		15.50	-	-	Gulara, Durgauli, Khamariya, Pratappur, Chakubadi, Khaireni, Manuwa
71DR024	Sati- Chaugurdi- Dhansinghpur Road	<b>4.58</b>		4.58		4.58	-	-	Suryapur, Gaudi, Chaugurdi
71DR025	Tikapur - Manuwa- Joshipur Road	<b>9.86</b>		9.86		9.86	-	-	Tikapur, Okharpur, Manuwa, Joshipur Bazaar
71DR026	East Lamki- Bebastit Nagar-Pahadipur Road	<b>8.90</b>		4.16	4.73	4.16	4.73	-	East Lamki, Bharuwa,Kunde khet, Pahadipur
71DR027	Dudejhari-Tikapur Road	<b>11.86</b>		11.86		11.86	-	-	Tikapur, Bhirkuti chok, Pul bazaar, Dudejhari
71DR028	Chisapani-Solta Road	<b>21.59</b>			21.59	-	21.59	-	Chisapani, Picnic Chok, Hawa lagne danda, Banga, Pachali Baseri, Pine, Kuine, Badigaun, Chiple, Solta
<b>Total</b>		<b>466.17</b>	<b>34.70</b>	<b>261.70</b>	<b>169.77</b>	<b>296.40</b>	<b>169.77</b>	<b>36.19</b>	

*Kailali DTICC proposed 28 DRCN road listed as above. Besides those 28 roads, Kailali DTICC suggested to list some other important roads in the draft report presentation meeting which are listed as below:*

1. Ramshikharjala (Doke Bazar)- Deuraliya- Chiumaliya- Sariya- Rajipur Road
2. Masuriya- Likma- Matkauna- Kailashpur Road
3. Gujeruwa- Nawalpur- Paranipur-Khaireni Road
4. Sahajpur-Solta
5. Chaumala (Kuchaini)-Khairala(Jagati)- Danda ban Road
6. Pratappur- Chakabaji- Chauri Dunde- Lamki Road
7. Campus Road- Urma (pathhari)- Behadababa- Chaumala (jhil)

## **2.3 VILLAGE ROADS**

After the identification of DRCN roads, all other roads that do not belong to the SRN road, DRCN roads and urban roads are classified as village roads. These roads fall under the responsibility of VDCs. The total length of village road is 423.98 Km in Kailali district. Planning for these roads is not included in the DTMP, as they are not the responsibility of District Development Committee. The management of these roads will be the responsibility of the VDCs and any planned interventions will be included in the annual work programme of the VDCs. Funding for these interventions will come from VDC grant, community contributions and additional funding (20% as decided by DTICC meeting of the district) which will be available from DDC through rural roads project. VDCs will be responsible for emergency and routine / recurrent maintenances of these roads.

**Figure 2      Total Road inventory**

**Figure 3      District Road Core Network (DRCN)**

### **3. DISTRICT TRANSPORT PERSPECTIVE PLAN (DTPP)**

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

#### **3.1 CONSERVATION**

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

**Table 3.1.1 Conservation requirements**

<b>Code</b>	<b>Emergency maintenance (km)</b>	<b>Routine maintenance (km)</b>	<b>Recurrent maintenance (km)</b>	<b>Periodic maintenance (km)</b>
71DR001	20.83	20.83	20.83	20.83
71DR002	14.81	14.81	14.81	14.81
71DR003	11.86	11.86	11.86	11.86
71DR004	10.16	10.16	10.16	10.16
71DR005	18.38	18.38	18.38	18.38
71DR006	16.22	16.22	16.22	16.22
71DR007	15.57	15.57	15.57	15.57
71DR008	22.40	22.40	22.40	22.40
71DR009	19.78	19.78	19.78	19.78
71DR010	11.65	11.65	11.65	11.65
71DR011	17.53	17.53	17.53	17.53
71DR012	36.21	36.21	36.21	36.21
71DR013	24.56	24.56	24.56	24.56
71DR014	24.25	24.25	24.25	24.25
71DR015	6.48	6.48	6.48	6.48
71DR016	4.66	4.66	4.66	4.66
71DR017	23.00	23.00	23.00	23.00
71DR018	38.90	38.90	38.90	38.90
71DR019	5.26	5.26	5.26	5.26
71DR020	11.18	11.18	11.18	11.18
71DR021	22.84	22.84	22.84	22.84
71DR022	17.34	17.34	17.34	17.34
71DR023	15.50	15.50	15.50	15.50
71DR024	4.58	4.58	4.58	4.58
71DR025	9.86	9.86	9.86	9.86
71DR026	8.90	8.90	8.90	8.90
71DR027	11.86	11.86	11.86	11.86
71DR028	21.59	21.59	21.59	21.59
<b>Total</b>	<b>466.17</b>	<b>466.17</b>	<b>466.2</b>	<b>466.17</b>

## 3.2 IMPROVEMENT

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

### 3.2.1 REHABILITATION

Rehabilitation and upgrading refer to the existing road network where the roads are found to be in poor condition, to require technical improvement (curves, gradients, etc) or to require an improved road surface. During field survey the rehabilitation works to be carried out, presented in table 3.2.1 as below

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

Code	Name of Road	Total length (km)	Rehabilitation (km)
71DR001	Sahajpur- Nigali Road	20.83	3.00
71DR002	Malakheti- Bandrekhal- Hallude- Faltude Road	14.81	0.50
71DR006	Chaumala- Putaliselauna- Khairala Road	16.22	4.00
71DR007	Rajipur-Baluwagadha- Khaniyatal Road	15.57	0.50
71DR013	Sitalpur- Simali- Pandaun Road	24.56	5.00
<b>Total</b>		<b>466.17</b>	<b>13.00</b>

### 3.2.2 GRAVELLING

To improve the surface condition of the existing earthen roads considered in DRCN, 169.77 km will have to be converted into gravel standard to maintain as all weather condition.

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

Code	Name of Road	Total length (km)	Gravelling (km)
71DR001	Sahajpur- Nigali Road	20.83	20.83
71DR002	Malakheti- Bandrekhal- Hallude- Faltude Road	14.81	6.44
71DR006	Chaumala- Putaliselauna- Khairala Road	16.22	10.65
71DR007	Rajipur-Baluwagadha- Khaniyatal Road	15.57	5.34
71DR010	Loharpur- Kukurbhukka- Manau- Sadakpur- Pabera – Ratanpur Road	11.65	8.86
71DR012	Pahalmanpur(Gausala Chok)- Ambasa- Lalbojhi Road	36.21	9.87
71DR013	Sitalpur- Simali- Pandaun Road	24.56	20.17
71DR015	Sadepani (Bishal Chowk)- Jutpani- Chorati- Baguliya Road	6.48	6.48
71DR018	Kanari- Gadariya- Ujelisimraha- Khailad- Joshipur Road	38.90	31.52
71DR019	Prithiwipur- Simranaha- Urmi- Beli Road	5.26	4.78
71DR020	Bauniya(Seti Lok Marga)-Phallebisauna- Kayajuwa Road	11.18	2.05
71DR022	Durgauli- Kalakunda Road	17.34	16.46
71DR026	East Lamki- Bebastit Nagar-Pahadipur Road	8.90	4.73
71DR028	Chisapani-Solta Road	21.59	21.59
<b>Total</b>			<b>169.77</b>

### 3.2.3 CROSS DRAINAGE

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

**Table 3.2.3 Required cross drainage structures**

<b>Code</b>	<b>Name of Road</b>	<b>Bridge (m)</b>	<b>Slab culvert (m)</b>	<b>CC Causeway (m)</b>	<b>Stone Causeway (m)</b>	<b>Pipe culvert (units)</b>
71DR001	Sahajpur- Nigali Road		24		90	
71DR002	Malakheti- Bandrekhal- Hallude- Faltude Road		8		12	2
71DR003	Geta- Murkatti Road					
71DR004	Khutiya-Matihari- Hasanpur Road		2			
71DR005	Kanari- Ghasita-Behadababa- Chaumala Road					3
71DR006	Chaumala- Putaliselauna- Khairala Road	140	8			6
71DR007	Rajipur-Baluwagadha- Khaniyatal Road	215	16		72	
71DR008	Rajipur- Gadariya- Phulbari Road	50				
71DR009	Badaipur- Udashipur- Hasuliya Road					
71DR010	Loharpur- Kukurbhukka- Manau- Sadakpur- Pabera – Ratanpur Road					1
71DR011	Sajha-Jhanjatpur-Majhara Road	150	8			3
71DR012	Pahalmanpur(Gausala Chok)- Ambasa- Lalbojhi Road		4	12		1
71DR013	Sitalpur- Simali- Pandaun Road	135	8		40	3
71DR014	Sukkhad- Khailad- Bhajani Road					
71DR015	Sadepani (Bishal Chowk)- Jutpani- Chorati- Baguliya Road		9			1
71DR016	Mudha- Tulsipur Road					
71DR017	Sadakpur- Joshipur- Bhajani Road					
71DR018	Kanari- Gadariya- Ujelisimraha- Khailad- Joshipur Road	390	30			2
71DR019	Prithiwipur- Simranaha- Urmi- Beli Road		6			2
71DR020	Bauniya(Seti Lok Marga)- Phallebisauna- Kayajuwa Road		6		12	1
71DR021	Seti Lokmarga- Nawalpur- Mariyaghāt Road	40				1
71DR022	Durgauli- Kalakunda Road	40	8			
71DR023	Gulara- Pratappur- Manuwa Road					
71DR024	Sati- Chaugurdi- Dhansinghpur Road					
71DR025	Tikapur - Manuwa- Joshipur Road	70				
71DR026	East Lamki- Bebastit Nagar-Pahadipur Road		70			
71DR027	Dudejhari-Tikapur Road	30	6			
71DR028	Chisapani-Solta Road	505	36		186	10
<b>Total</b>		<b>1,835</b>	<b>179</b>	<b>12</b>	<b>412</b>	<b>36</b>

### 3.2.4 PROTECTIVE STRUCTURES

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

**Table 3.2.4 Required protective structures**

Code	Name of Road	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)
71DR001	Sahajpur- Nigali Road		1,520	2,083
71DR006	Chaumala- Putaliselauna- Khairala Road		2000	9,000
71DR007	Rajipur-Baluwagadha- Khaniyatal Road		2,080	8,000
71DR013	Sitalpur- Simali- Pandaun Road		2,020	12,500
71DR028	Chisapani-Solta Road		600	2,159
<b>Total</b>		-	<b>8,220</b>	<b>33,742</b>

### 3.2.5 WIDENING

To maintain the road in all weather condition, the required widening based on the basis of VPD greater than 100 of each DRCN roads are listed during the DRCN survey. The required widening lengths to overcome the necking of the roads are shown in table below

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

Code	Name of Road	Total length (km)	VPD	Widening (m)
71DR001	Sahajpur- Nigali Road	20.83	8.00	
71DR002	Malakheti- Bandrekhal- Hallude- Faltude Road	14.81	31.00	
71DR003	Geta- Murkatti Road	11.86	16.00	
71DR004	Khutiya-Matihari- Hasanpur Road	10.16	8.00	
71DR005	Kanari- Ghasita-Behadababa- Chaumala Road	18.38	20.00	
71DR006	Chaumala- Putaliselauna- Khairala Road	16.22	8.00	
71DR007	Rajipur-Baluwagadha- Khaniyatal Road	15.57	12.00	
71DR008	Rajipur- Gadariya- Phulbari Road	22.40	12.00	
71DR009	Badaipur- Udashipur- Hasuliya Road	19.78	14.00	
71DR010	Loharpur- Kukurbhukka- Manau- Sadakpur- Pabera – Ratanpur Road	11.65	10.00	
71DR011	Sajha-Jhanjatpur-Majhara Road	17.53	16.00	
71DR012	Pahalmanpur(Gausala Chok)- Ambasa- Lalbojhi Road	36.21	28.00	
71DR013	Sitalpur- Simali- Pandaun Road	24.56	5.00	
71DR014	Sukkhad- Khailad- Bhajani Road	24.25	30.00	
71DR015	Sadepani (Bishal Chowk)- Jutpani- Chorati- Baguliya Road	6.48	6.00	
71DR016	Mudha- Tulsipur Road	4.66	16.00	
71DR017	Sadakpur- Joshipur- Bhajani Road	23.00	28.00	
71DR018	Kanari- Gadariya- Ujelisimraha- Khailad- Joshipur Road	38.90	14.00	
71DR019	Prithiwipur- Simranaha- Urmi- Beli Road	5.26	4.00	
71DR020	Bauniya(Seti Lok Marga)-Phalleisauna- Kayajuwa Road	11.18	8.00	
71DR021	Seti Lokmarga- Nawalpur- Mariyaghata Road	22.84	10.00	
71DR022	Durgauli- Kalakunda Road	17.34	8.00	
71DR023	Gulara- Pratappur- Manuwa Road	15.50	8.00	
71DR024	Sati- Chaugurdhi- Dhansinghpur Road	4.58	10.00	
71DR025	Tikapur - Manuwa- Joshipur Road	9.86	26.00	
71DR026	East Lamki- Bebastit Nagar-Pahadipur Road	8.90	6.00	
71DR027	Dudejhari-Tikapur Road	11.86	18.00	
71DR028	Chisapani-Solta Road	21.59	14.00	
<b>Total</b>		<b>466.17</b>		-

### 3.2.6 BLACKTOPPING

To improve the surface condition of the DRCN roads based on the PCU greater than 150, the required blacktopping of DRCN roads are listed during the DRCN survey. The required blacktopping length of the roads is shown in table below.

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

Code	Name of Road	Total length (km)	Blacktop (km)	Traffic (PCU)	150
71DR001	Sahajpur- Nigali Road	20.83	-	24	-
71DR002	Malakheti- Bandrekhal- Hallude- Faltude Road	14.81	0.29	74	-
71DR003	Geta- Murkatti Road	11.86	-	37	-
71DR004	Khutiya-Matihari- Hasanpur Road	10.16	10.16	20	-
71DR005	Kanari- Ghasita-Behadababa- Chaumala Road	18.38	-	63	-
71DR006	Chaumala- Putaliselauna- Khairala Road	16.22	-	19	-
71DR007	Rajipur-Baluwagadha- Khaniyatal Road	15.57	-	31	-
71DR008	Rajipur- Gadariya- Phulbari Road	22.40	-	28	-
71DR009	Badaipur- Udashipur- Hasuliya Road	19.78	-	32	-
71DR010	Loharpur- Kukurbhukka- Manau- Sadakpur- Pabera – Ratanpur Road	11.65	-	23	-
71DR011	Sajha-Jhanjatpur-Majhara Road	17.53	-	38	-
71DR012	Pahalmanpur(Gausala Chok)- Ambasa- Lalbojhi Road	36.21	-	72	-
71DR013	Sitalpur- Simali- Pandaun Road	24.56	-	15	-
71DR014	Sukkhad- Khailad- Bhajani Road	24.25	24.25	83	-
71DR015	Sadepani (Bishal Chowk)- Jutpani- Chorati- Baguliya Road	6.48	-	18	-
71DR016	Mudha- Tulsipur Road	4.66	-	43	-
71DR017	Sadakpur- Joshipur- Bhajani Road	23.00	-	74	-
71DR018	Kanari- Gadariya- Ujelisimraha- Khailad- Joshipur Road	38.90	-	30	-
71DR019	Prithiwipur- Simranaha- Urmi- Beli Road	5.26	-	7	-
71DR020	Bauniya(Seti Lok Marga)-Phalleisauna- Kayajuwa Road	11.18	-	20	-
71DR021	Seti Lokmarga- Nawalpur- Mariyaghata Road	22.84	-	25	-
71DR022	Durgauli- Kalakunda Road	17.34	-	20	-
71DR023	Gulara- Pratappur- Manuwa Road	15.50	-	22	-
71DR024	Sati- Chaugurdi- Dhansinghpur Road	4.58	-	24	-
71DR025	Tikapur - Manuwa- Joshipur Road	9.86	-	68	-
71DR026	East Lamki- Bebastit Nagar-Pahadipur Road	8.90	-	16	-
71DR027	Dudejhari-Tikapur Road	11.86	-	45	-
71DR028	Chisapani-Solta Road	21.59	-	38	-
<b>Total</b>		<b>466.17</b>	<b>34.70</b>		-

### 3.3 NEW CONSTRUCTION

In Kailali district, three VDC headquarter (khairala, pandaun and Mohanyal) are not connected with road network and some of other road are not completed that are selected in DRCN. Hence those roads are proposed for new construction, which are shown in the table below.

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

Code	Name of Road	New VDCs	Existing length	New Construction	Bridge (m)
71DR001	Sahajpur- Nigali Road		20.83		
71DR002	Malakheti- Bandrekhal- Hallude- Faltude Road		14.81		
71DR003	Geta- Murkatti Road		11.86		
71DR004	Khutiya-Matihari- Hasanpur Road		10.16		
71DR005	Kanari- Ghasita-Behadababa- Chaumala Road		18.38		
71DR006	Chaumala- Putaliselauna- Khairala Road	Khairala	16.22	6.24	
71DR007	Rajipur-Baluwagadha- Khaniyatal Road	Mohanyal	15.57	11.57	
71DR008	Rajipur- Gadariya- Phulbari Road		22.40		
71DR009	Badaipur- Udashipur- Hasuliya Road		19.78		
71DR010	Loharpur- Kukurbhukka- Manau- Sadakpur- Pabera – Ratanpur Road	Pabera	11.65	3.91	
71DR011	Sajha-Jhanjatpur-Majhara Road		17.53		
71DR012	Pahalmanpur(Gausala Chok)- Ambasa- Lalbojhi Road		36.21		
71DR013	Sitalpur- Simali- Pandaun Road	Pandaun	24.56	14.47	
71DR014	Sukkhad- Khailad- Bhajani Road		24.25		
71DR015	Sadepani (Bishal Chowk)- Jutpani- Chorati- Baguliya Road		6.48		
71DR016	Mudha- Tulsipur Road		4.66		
71DR017	Sadakpur- Joshipur- Bhajani Road		23.00		
71DR018	Kanari- Gadariya- Ujelisimraha- Khailad- Joshipur Road		38.90		
71DR019	Prithiwipur- Simranaha- Urmi- Beli Road		5.26		
71DR020	Bauniya(Seti Lok Marga)-Phallebisauna- Kayajuwa Road		11.18		
71DR021	Seti Lokmarga- Nawalpur- Mariyaghata Road		22.84		
71DR022	Durgauli- Kalakunda Road		17.34		
71DR023	Gulara- Pratappur- Manuwa Road		15.50		
71DR024	Sati- Chaugurdi- Dhansinghpur Road		4.58		
71DR025	Tikapur - Manuwa- Joshipur Road		9.86		
71DR026	East Lamki- Bebastit Nagar-Pahadipur Road		8.90		
71DR027	Dudejhari-Tikapur Road		11.86		
71DR028	Chisapani-Solta Road		21.59		
<b>Total</b>			<b>466.17</b>	<b>36.19</b>	-

### 3.4 DISTRICT TRANSPORT PERSPECTIVE PLAN

The list of all the interventions that are necessary to bring the roads to a maintainable all-weather standard and keep them there, as well as the construction of any new roads considered necessary to complete the DRCN are identified. The interventions identified which are required to improve the road to the proper standard as well as the conservation requirements to keep the roads at this standard are worked out. The lists of all the perspective interventions required are listed in the table 3.4.1.

**Table 3.4.1 District Transport Perspective Plan**

<b>Code</b>	<b>Emergency maintenance (km)</b>	<b>Routine maintenance (km)</b>	<b>Recurrent maintenance (km)</b>	<b>Periodic maintenance (km)</b>	<b>Rehabilitation (km)</b>	<b>Gravelling (km)</b>	<b>Blacktopping (km)</b>	<b>Widening (m)</b>	<b>Bridge (m)</b>	<b>Slab culvert (m)</b>	<b>CC Causeway (m)</b>	<b>Stone Causeway (m)</b>	<b>Pipe culvert (units)</b>	<b>Masonry walls (m³)</b>	<b>Gabion walls (m³)</b>	<b>Lined drain (m)</b>	<b>New construction (km)</b>
71DR001	20.83	20.83	20.83	20.83	3.00	20.83	-	-	-	24	-	90	-	-	1,520	2,083	-
71DR002	14.81	14.81	14.81	14.81	0.50	6.44	-	-	-	8	-	12	2	-	-	-	-
71DR003	11.86	11.86	11.86	11.86	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR004	10.16	10.16	10.16	10.16	-	-	-	-	-	2	-	-	-	-	-	-	-
71DR005	18.38	18.38	18.38	18.38	-	-	-	-	-	-	-	-	3	-	-	-	-
71DR006	16.22	16.22	16.22	16.22	4.00	10.65	-	-	140	8	-	-	6	-	2,000	9,000	6
71DR007	15.57	15.57	15.57	15.57	0.50	5.34	-	-	215	16	-	72	-	-	2,080	8,000	12
71DR008	22.40	22.40	22.40	22.40	-	-	-	-	50	-	-	-	-	-	-	-	-
71DR009	19.78	19.78	19.78	19.78	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR010	11.65	11.65	11.65	11.65	-	8.86	-	-	-	-	-	-	1	-	-	-	4
71DR011	17.53	17.53	17.53	17.53	-	-	-	-	150	8	-	-	3	-	-	-	-
71DR012	36.21	36.21	36.21	36.21	-	9.87	-	-	-	4	12	-	1	-	-	-	-
71DR013	24.56	24.56	24.56	24.56	5.00	20.17	-	-	135	8	-	40	3	-	2,020	12,500	14
71DR014	24.25	24.25	24.25	24.25	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR015	6.48	6.48	6.48	6.48	-	6.48	-	-	-	9	-	-	1	-	-	-	-
71DR016	4.66	4.66	4.66	4.66	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR017	23.00	23.00	23.00	23.00	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR018	38.90	38.90	38.90	38.90	-	31.52	-	-	390	30	-	-	2	-	-	-	-
71DR019	5.26	5.26	5.26	5.26	-	4.78	-	-	-	6	-	-	2	-	-	-	-
71DR020	11.18	11.18	11.18	11.18	-	2.05	-	-	-	6	-	12	1	-	-	-	-
71DR021	22.84	22.84	22.84	22.84	-	-	-	-	40	-	-	-	1	-	-	-	-
71DR022	17.34	17.34	17.34	17.34	-	16.46	-	-	40	8	-	-	-	-	-	-	-
71DR023	15.50	15.50	15.50	15.50	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR024	4.58	4.58	4.58	4.58	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR025	9.86	9.86	9.86	9.86	-	-	-	-	-	70	-	-	-	-	-	-	-
71DR026	8.90	8.90	8.90	8.90	-	4.73	-	-	70	-	-	-	-	-	-	-	-
71DR027	11.86	11.86	11.86	11.86	-	-	-	-	-	30	6	-	-	-	-	-	-
71DR028	21.59	21.59	21.59	21.59	-	21.59	-	-	505	36	-	186	10	-	600	2,159	-
<b>Total</b>	<b>466.17</b>	<b>466.17</b>	<b>466.17</b>	<b>466.17</b>	<b>13.00</b>	<b>169.77</b>	-	-	<b>1,835</b>	<b>179</b>	<b>12</b>	<b>412</b>	<b>36</b>	-	<b>8,220</b>	<b>33,742</b>	<b>36.19</b>

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

## 4. COST ESTIMATION

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

### 4.1 CONSERVATION

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

Table 4.1.1 Standard unit costs for conservation

Activity	Unit	Unit cost (NPR)
Emergency maintenance	km	45,000
Routine maintenance	km	25,000
Recurrent maintenance (blacktop)	km	750,000
Recurrent maintenance (gravel)	km	200,000
Recurrent maintenance (earthen)	km	175,000
Periodic maintenance (blacktop)	km	500,000
Periodic maintenance (gravel)	km	250,000

The total conservation cost for the first year is Rs 206,201,000. Consequently the 5-year cost is Rs 1,031,004,000. This calculation is shown in the table 4.1.2 as below. These costs for later year will vary slightly due to changes to the road network in terms of upgrading and new construction.

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

Code	Total length (km)	Blacktop (km)	Gravel (km)	Earthen (km)	Emergency maintenance	Routine maintenance	Recurrent maintenance (blacktop)	Recurrent maintenance (gravel)	Recurrent maintenance (earthen)	Periodic maintenance (blacktop)	Periodic maintenance (gravel)	Total first year cost	Total 5-year cost
71DR001	20.83	-	20.83	937	521	-	-	3,645	-	-	5,103	25,517	
71DR002	14.81	0.29	8.09	6.44	667	370	214	1,618	1,127	71	2,023	6,089	30,447
71DR003	11.86	-	11.86	-	534	297	-	2,372	-	-	2,965	6,167	30,836
71DR004	10.16	10.16	-	-	457	254	7,620	-	-	-	-	8,331	41,656
71DR005	18.38	-	18.38	-	827	460	-	3,676	-	-	4,595	9,558	47,788
71DR006	16.22	-	5.57	10.65	730	406	-	1,114	1,864	-	1,393	5,507	27,536
71DR007	15.57	-	10.22	5.34	700	389	-	2,045	935	-	2,556	6,625	33,125
71DR008	22.40	-	22.40	-	1,008	560	-	4,480	-	-	5,600	11,648	58,240
71DR009	19.78	-	19.78	-	890	495	-	3,956	-	-	4,945	10,286	51,428
71DR010	11.65	-	2.80	8.86	524	291	-	559	1,550	-	699	3,624	18,118
71DR011	17.53	-	17.53	-	789	438	-	3,506	-	-	4,383	9,116	45,578
71DR012	36.21	-	26.34	9.87	1,629	905	-	5,268	1,727	-	6,585	16,115	80,576
71DR013	24.56	-	4.39	20.17	1,105	614	-	878	3,531	-	1,097	7,225	36,123
71DR014	24.25	24.25	-	-	1,091	606	18,188	-	-	-	-	19,885	99,425
71DR015	6.48	-	-	6.48	292	162	-	-	1,134	-	-	1,588	7,938
71DR016	4.66	-	4.66	-	210	117	-	932	-	-	1,165	2,423	12,116
71DR017	23.00	-	23.00	-	1,035	575	-	4,600	-	-	5,750	11,960	59,800
71DR018	38.90	-	7.38	31.52	1,751	973	-	1,476	5,516	-	1,845	11,560	57,802
71DR019	5.26	-	0.49	4.78	237	132	-	98	836	-	122	1,424	7,120
71DR020	11.18	-	9.13	2.05	503	280	-	1,826	360	-	2,282	5,250	26,251
71DR021	22.84	-	22.84	-	1,028	571	-	4,568	-	-	5,710	11,877	59,384
71DR022	17.34	-	0.88	16.46	780	433	-	176	2,880	-	220	4,490	22,448
71DR023	15.50	-	15.50	-	698	388	-	3,100	-	-	3,875	8,060	40,300
71DR024	4.58	-	4.58	-	206	115	-	916	-	-	1,145	2,382	11,908
71DR025	9.86	-	9.86	-	444	247	-	1,972	-	-	2,465	5,127	25,636
71DR026	8.90	-	4.16	4.73	400	222	-	833	829	-	1,041	3,325	16,625
71DR027	11.86	-	11.86	-	534	297	-	2,372	-	-	2,965	6,167	30,836
71DR028	21.59	-	-	21.59	972	540	-	-	3,778	-	-	5,290	26,448
<b>Total</b>	<b>466.17</b>	<b>34.70</b>	<b>261.70</b>	<b>169.77</b>	<b>20,978</b>	<b>11,654</b>	<b>26,021</b>	<b>52,340</b>	<b>29,710</b>	<b>71</b>	<b>65,426</b>	<b>206,201</b>	<b>1,031,004</b>

## 4.2 IMPROVEMENT

The improvement costs are calculated by multiplying the standard costs as given in table 4.2.1(Provided by Kailali DDC/DTO) with the intervention lengths and volumes as shown in next table 4.2.2 as below.

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

Activity	Unit	Unit cost (NPR)
Rehabilitation	Km	700,000
Widening	M	15,000
Gravelling	Km	1,800,000
Blacktopping	Km	4,500,000
Bridge construction	M	800,000
Slab culvert construction	M	225,000
CC Causeway construction	M	80,000
Stone Causeway construction	M	10,000
Pipe culvert placement	Unit	30,000
Masonry wall construction	m <sup>3</sup>	7,000
Gabion wall construction	m <sup>3</sup>	2,000
Lined drain construction	M	1,000

The estimated cost for the improvement of the existing DRCN is the cost to maintain the DRCN to a maintainable all-weather standard. The total cost for improvement is Rs. 1,879,308,000 as shown in table 4.2.2 as below.

**Table 4.2.2 Cost estimate for improvement measures (NPR '000)**

<b>Code</b>	<b>Total length (km)</b>	<b>Rehabilitation</b>	<b>Widening</b>	<b>Gravelling</b>	<b>Blacktopping</b>	<b>Bridges</b>	<b>Slab culverts</b>	<b>CC causeways</b>	<b>Stone causeways</b>	<b>Pipe culvert</b>	<b>Masonry walls</b>	<b>Gabion walls</b>	<b>Lined drains</b>	<b>Total cost</b>
71DR001	20.83	2,100	-	37,494	-	-	5,400	-	900	-	-	3,040	2,083	<b>51,017</b>
71DR002	14.81	350	-	11,588	-	-	1,800	-	120	60	-	-	-	<b>13,918</b>
71DR003	11.86	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR004	10.16	-	-	-	-	-	450	-	-	-	-	-	-	<b>450</b>
71DR005	18.38	-	-	-	-	-	-	-	-	90	-	-	-	<b>90</b>
71DR006	16.22	2,800	-	19,174	-	112,000	1,800	-	-	180	-	4,000	9,000	<b>148,954</b>
71DR007	15.57	350	-	9,617	-	172,000	3,600	-	720	-	-	4,160	8,000	<b>198,447</b>
71DR008	22.40	-	-	-	-	40,000	-	-	-	-	-	-	-	<b>40,000</b>
71DR009	19.78	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR010	11.65	-	-	15,940	-	-	-	-	-	30	-	-	-	<b>15,970</b>
71DR011	17.53	-	-	-	-	120,000	1,800	-	-	90	-	-	-	<b>121,890</b>
71DR012	36.21	-	-	17,763	-	-	900	960	-	30	-	-	-	<b>19,653</b>
71DR013	24.56	3,500	-	36,315	-	108,000	1,800	-	400	90	-	4,040	12,500	<b>166,645</b>
71DR014	24.25	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR015	6.48	-	-	11,664	-	-	2,025	-	-	30	-	-	-	<b>13,719</b>
71DR016	4.66	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR017	23.00	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR018	38.90	-	-	56,734	-	312,000	6,750	-	-	60	-	-	-	<b>375,544</b>
71DR019	5.26	-	-	8,598	-	-	1,350	-	-	60	-	-	-	<b>10,008</b>
71DR020	11.18	-	-	3,698	-	-	1,350	-	120	30	-	-	-	<b>5,198</b>
71DR021	22.84	-	-	-	-	32,000	-	-	-	30	-	-	-	<b>32,030</b>
71DR022	17.34	-	-	29,622	-	32,000	1,800	-	-	-	-	-	-	<b>63,422</b>
71DR023	15.50	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR024	4.58	-	-	-	-	-	-	-	-	-	-	-	-	-
71DR025	9.86	-	-	-	-	56,000	-	-	-	-	-	-	-	<b>56,000</b>
71DR026	8.90	-	-	8,523	-	56,000	-	-	-	-	-	-	-	<b>64,523</b>
71DR027	11.86	-	-	-	-	24,000	1,350	-	-	-	-	-	-	<b>25,350</b>
71DR028	21.59	-	-	38,862	-	404,000	8,100	-	1,860	300	-	1,200	2,159	<b>456,481</b>
<b>Total</b>	<b>466.17</b>	<b>9,100</b>	-	<b>305,591</b>	-	<b>1,468,000</b>	<b>40,275</b>	<b>960</b>	<b>4,120</b>	<b>1,080</b>	-	<b>16,440</b>	<b>33,742</b>	<b>1,879,308</b>

### 4.3 NEW CONSTRUCTION

The cost for new construction is calculated by using standard unit costs as given in table 4.3.1 provided by kailali DDC/ DTO.

**Table 4.3.1 Standard unit costs for new construction**

Activity	Unit	Unit cost (NPR)
Track opening	km	4,500,000
Gravelling	km	1,800,000
Bridge construction	m	800,000

New construction required to complete the DRCN is identified. In Kailali 3 VDC Head Quarters are not accessed by road network before DTMP.

The new construction cost calculated is Rs 222,997,000 with required interventions of bridge, which is shown in table 4.3.2 as below.

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

Code	Name of Road	New length (km)	Opening up (NPR)	Gravelling (NPR)	Bridges (NPR)	Total cost (NPR)
71DR006	Chaumala- Putaliselauna- Khairala Road	6.24	2,808	11,232		39,312
71DR007	Rajipur-Baluwagadha- Khaniyatal Road	11.57	5,207	20,826		72,891
71DR010	Loharpur- Kukurbhukka- Manau- Sadakpur- Pabera – Ratanpur Road	3.91	1,760	7,038		24,633
71DR013	Sitalpur- Simali- Pandaun Road	14.47	6,512	26,046		91,161
<b>Total</b>		<b>36.19</b>	<b>16,286</b>	<b>65,142</b>		<b>227,997</b>

#### 4.4 DTPP COSTS

The DTPP cost is the required cost for long list of conservation, improvement and new construction for DRCN selected in the district. Projected 5-year Budget will not be sufficient to meet all the cost. The total DTPP cost calculated is Rs 3,138,309, 000 which is shown in the table 4.4.1 as below.

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

<b>Code</b>	<b>Conservation</b>	<b>Improvement</b>	<b>New construction</b>	<b>Total</b>
71DR001	25,517	51,017	-	76,534
71DR002	30,447	13,918	-	44,365
71DR003	30,836	-	-	30,836
71DR004	41,656	450	-	42,106
71DR005	47,788	90	-	47,878
71DR006	27,536	148,954	39,312	215,802
71DR007	33,125	198,447	72,891	304,462
71DR008	58,240	40,000	-	98,240
71DR009	51,428	-	-	51,428
71DR010	18,118	15,970	24,633	58,721
71DR011	45,578	121,890	-	167,468
71DR012	80,576	19,653	-	100,228
71DR013	36,123	166,645	91,161	293,929
71DR014	99,425	-	-	99,425
71DR015	7,938	13,719	-	21,657
71DR016	12,116	-	-	12,116
71DR017	59,800	-	-	59,800
71DR018	57,802	375,544	-	433,346
71DR019	7,120	10,008	-	17,127
71DR020	26,251	5,198	-	31,449
71DR021	59,384	32,030	-	91,414
71DR022	22,448	63,422	-	85,870
71DR023	40,300	-	-	40,300
71DR024	11,908	-	-	11,908
71DR025	25,636	56,000	-	81,636
71DR026	16,625	64,523	-	81,148
71DR027	30,836	25,350	-	56,186
71DR028	26,448	456,481	-	482,929
<b>Total</b>	<b>1,031,004</b>	<b>1,879,308</b>	<b>227,997</b>	<b>3,138,309</b>

## **5. RANKING**

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

## 5.1 CONSERVATION

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

**Table 5.1.1 Ranking of conservation works (NPR '000)**

Code	Total length (km)	1. Emergency	2. Routine	3. Recurrent (paved)	4. Recurrent (gravel)	5. Recurrent (earth)	6. Periodic (blacktop)	7. Periodic (gravel)	Total cost (NPR '000)	Population served	Cost/person (NPR)
71DR026	8.90	400	222	-	833	829	-	1,041	3,325	58,857	56
71DR015	6.48	292	162	-	-	1,134	-	-	1,588	24,892	64
71DR016	4.66	210	117	-	932	-	-	1,165	2,423	32,683	74
71DR027	11.86	534	297	-	2,372	-	-	2,965	6,167	72,540	85
71DR028	21.59	972	540	-	-	3,778	-	-	5,290	55,429	95
71DR017	23.00	1,035	575	-	4,600	-	-	5,750	11,960	109,002	110
71DR024	4.58	206	115	-	916	-	-	1,145	2,382	19,957	119
71DR022	17.34	780	433	-	176	2,880	-	220	4,490	36,446	123
71DR019	5.26	237	132	-	98	836	-	122	1,424	11,104	128
71DR018	38.90	1,751	973	-	1,476	5,516	-	1,845	11,560	82,239	141
71DR025	9.86	444	247	-	1,972	-	-	2,465	5,127	34,116	150
71DR002	14.81	667	370	214	1,618	1,127	71	2,023	6,089	39,386	155
71DR020	11.18	503	280	-	1,826	360	-	2,282	5,250	33,795	155
71DR023	15.50	698	388	-	3,100	-	-	3,875	8,060	51,425	157
71DR011	17.53	789	438	-	3,506	-	-	4,383	9,116	57,632	158
71DR009	19.78	890	495	-	3,956	-	-	4,945	10,286	62,901	164
71DR010	11.65	524	291	-	559	1,550	-	699	3,624	21,486	169
71DR006	16.22	730	406	-	1,114	1,864	-	1,393	5,507	32,149	171
71DR007	15.57	700	389	-	2,045	935	-	2,556	6,625	36,830	180
71DR008	22.40	1,008	560	-	4,480	-	-	5,600	11,648	59,198	197
71DR003	11.86	534	297	-	2,372	-	-	2,965	6,167	30,729	201
71DR005	18.38	827	460	-	3,676	-	-	4,595	9,558	42,774	223
71DR021	22.84	1,028	571	-	4,568	-	-	5,710	11,877	50,155	237
71DR004	10.16	457	254	7,620	-	-	-	-	8,331	29,378	284
71DR013	24.56	1,105	614	-	878	3,531	-	1,097	7,225	21,420	337
71DR001	20.83	937	521	-	-	3,645	-	-	5,103	14,361	355
71DR012	36.21	1,629	905	-	5,268	1,727	-	6,585	16,115	38,287	421
71DR014	24.25	1,091	606	18,188	-	-	-	-	19,885	44,525	447

## 5.2 IMPROVEMENT

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

**Table 5.2.1 Ranking of improvement works (NPR '000)**

<b>Code</b>	<b>Total length (km)</b>	<b>Gravelling (km)</b>	<b>Blacktopping (km)</b>	<b>Total cost (NPR '000)</b>	<b>Population served</b>	<b>Cost/person (NPR)</b>
71DR005	18.38	-	-	90	42,774	2
71DR004	10.16	-	-	450	29,378	15
71DR020	11.18	2.05	-	5,198	33,795	154
71DR027	11.86	-	-	25,350	72,540	349
71DR002	14.81	6.44	-	13,918	39,386	353
71DR012	36.21	9.87	-	19,653	38,287	513
71DR015	6.48	6.48	-	13,719	24,892	551
71DR021	22.84	-	-	32,030	50,155	639
71DR008	22.40	-	-	40,000	59,198	676
71DR010	11.65	8.86	-	15,970	21,486	743
71DR019	5.26	4.78	-	10,008	11,104	901
71DR026	8.90	4.73	-	64,523	58,857	1,096
71DR025	9.86	-	-	56,000	34,116	1,641
71DR022	17.34	16.46	-	63,422	36,446	1,740
71DR011	17.53	-	-	121,890	57,632	2,115
71DR001	20.83	20.83	-	51,017	14,361	3,552
71DR018	38.90	31.52	-	375,544	82,239	4,566
71DR006	16.22	10.65	-	148,954	32,149	4,633
71DR007	15.57	5.34	-	198,447	36,830	5,388
71DR013	24.56	20.17	-	166,645	21,420	7,780
71DR028	21.59	21.59	-	456,481	55,429	8,235

## 5.3 NEW CONSTRUCTION

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

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

<b>Code</b>	<b>Length (km)</b>	<b>Total cost (NPR '000)</b>	<b>Population served</b>	<b>Cost/person (NPR)</b>
71DR010	3.91	24,633	21,486	1,146
71DR006	6.24	39,312	32,149	1,223
71DR007	11.57	72,891	36,830	1,979
71DR013	14.47	91,161	21,420	4,256

## 6. DISTRICT TRANSPORT MASTER PLAN (DTMP)

In the process of preparing DTMP, balancing of the available budget and the estimated costs of the required interventions to determine which interventions can be carried out in the 5-year DTMP period are worked out.

### 6.1 FIVE YEAR PROJECTED FINANCIAL RESOURCES

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

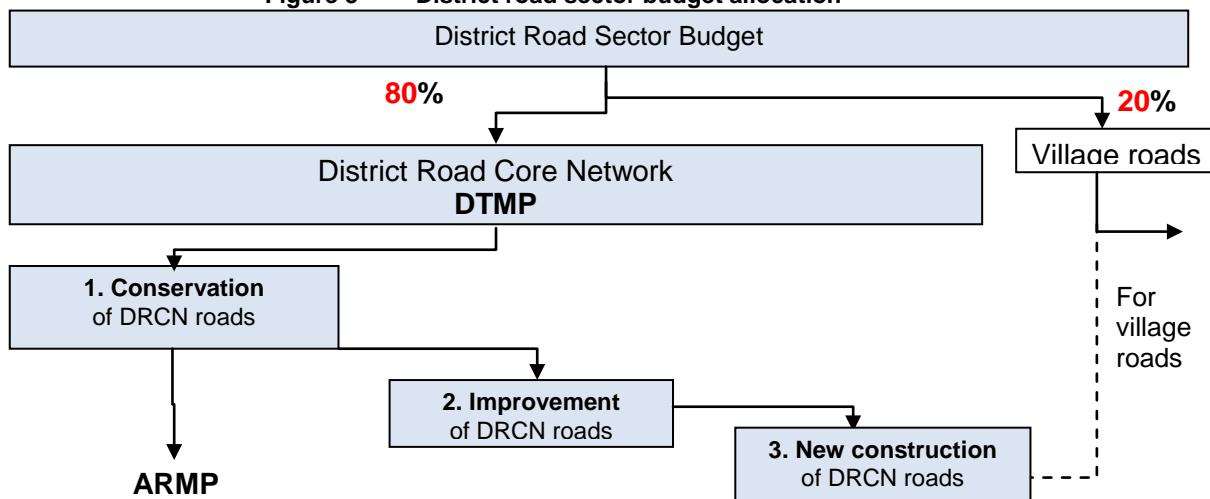
**Table 6.1.1 Estimated funding levels (roads) for next five years (in NPR '000)**

Funding source	2071/72	2072/73	2073/74	2074/75	2075/76
DDC Internal Sources	10,277	12,332	14,799	17,758	21,310
DDC Grant	8,525	9,378	10,315	11,347	12,481
Road Board	9,000	10,800	12,960	15,552	18,662
RTISWAP	13,225	15,209	17,490	20,114	23,131
RAIDP	46,000	52,900	60,835	69,960	80,454
LGCDP	4,435	4,879	5,367	5,903	6,494
Terai Madhesh Special Program	1,210	1,331	1,464	1,611	1,772
Central Level Road Program	8,003	8,803	9,683	10,651	11,716
People Participation Basis Program	1,210	1,331	1,464	1,611	1,772
Election Area Development Program	2,028	2,231	2,454	2,700	2,970
<b>Total</b>	<b>103,913</b>	<b>119,193</b>	<b>136,831</b>	<b>157,206</b>	<b>180,762</b>
<b>Grand total</b>			<b>697,905</b>		

### 6.2 BUDGET ALLOCATION

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

**Figure 5 District road sector budget allocation**



The budget allocation for next five year is done based on the ranking of the road and the priority on the basis of cost/ person. Due to budget constraint, full budget is allocated for conservation of DRCN roads. Some roads are subjected to improve into gravel surface condition but due to limitation of budget no improvement and no new construction will be seen in this planning due to limitation of the budget. 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		2071/72		2072/73		2073/74		2074/75		2075/76	
Total budget		103,913		119,193		136,831		157,206		180,762	
Village roads		20,783		23,839		27,366		31,441		36,152	20% Village roads
Core road network budget (DTMP)		83,130		95,354		109,465		125,765		144,609	80% DRCN roads
<b>Core network length (km)</b>		<b>466.17</b>		<b>466.17</b>		<b>466.17</b>		<b>466.17</b>		<b>466.17</b>	DRCN length
Blacktop (km)		34.70		34.70		34.70		34.70		34.70	Blacktop
Gravel (km)		261.70		261.70		261.70		261.70		261.70	Gravel
Earthen (km)		169.77		169.77		169.77		169.77		169.77	Earthen
<b>Conservation (NRs)</b>		<b>83,130</b>		<b>95,354</b>		<b>109,465</b>		<b>125,765</b>		<b>144,609</b>	<b>558,324</b> Conservation
Emergency		20,978		20,978		20,978		20,978		20,978	
Routine		11,654		11,654		11,654		11,654		11,654	
Recurrent (blacktop)		26,021		26,021		26,021		26,021		26,021	
Recurrent (gravel)		24,477		36,701		50,812		52,340		52,340	
Recurrent (earthen)		-		-		-		14,771		29,710	
Periodic (blacktop)		-		-		-		-		3,905	
Improvement	Cost	BT	GR	BT	GR	BT	GR	BT	GR	BT	GR
71DR005	90	-	-	-	-	-	-	-	-	-	-
71DR004	450	-	-	-	-	-	-	-	-	-	-
71DR020	5,198	-	2.05	-	-	-	-	-	-	-	-
71DR027	25,350	-	-	-	-	-	-	-	-	-	-
71DR002	13,918	-	6.44	-	-	-	-	-	-	-	-
71DR012	19,653	-	9.87	-	-	-	-	-	-	-	-
71DR015	13,719	-	6.48	-	-	-	-	-	-	-	-
71DR021	32,030	-	-	-	-	-	-	-	-	-	-
71DR008	40,000	-	-	-	-	-	-	-	-	-	-
71DR010	15,970	-	8.86	-	-	-	-	-	-	-	-
71DR019	10,008	-	4.78	-	-	-	-	-	-	-	-
71DR026	64,523	-	4.73	-	-	-	-	-	-	-	-
71DR025	56,000	-	-	-	-	-	-	-	-	-	-
71DR022	63,422	-	16.46	-	-	-	-	-	-	-	-
71DR011	121,890	-	-	-	-	-	-	-	-	-	-
71DR001	51,017	-	20.83	-	-	-	-	-	-	-	-
71DR018	375,544	-	31.52	-	-	-	-	-	-	-	-
71DR006	148,954	-	10.65	-	-	-	-	-	-	-	-
71DR007	198,447	-	5.34	-	-	-	-	-	-	-	-
71DR013	166,645	-	20.17	-	-	-	-	-	-	-	-
71DR028	456,481	-	21.59	-	-	-	-	-	-	-	-
<b>Total improvement</b>			-	-	-	-	-	-	-	-	- Improvement
Construction	Cost	GR	GR		GR		GR		GR		
71DR010	24,633	3.91	-		-		-		-		
71DR006	39,312	6.24	-		-		-		-		
71DR007	72,891	11.57	-		-		-		-		
71DR013	91,161	14.47	-		-		-		-		
<b>Total new construction</b>			-		-		-		-		- New construction
<b>Remaining budget</b>			-		-		-		-		- Remaining

### 6.3 DTMP OUTPUTS

The output of the DTMP will be of conservation 466.17 km, no improvement gravel, blacktop and new construction will be seen.

**Table 6.3.1 DTMP output**

Conservation	Improvement gravel	Improvement blacktop	New construction
466.17	-	-	-

The budget allocated for next five years is; Rs 558,324,000 for conservation.

### 6.4 DTMP OUTCOME

Change after the DTMP, which is shown in the table 6.4.1 as below.

**Table 6.4.1 Standard of DRCN roads**

	Total length	Fair-weather		All-weather gravel		All-weather blacktop	
		km	Km	%	km	%	Km
Start of DTMP	466.17	169.77	36%	261.70	56%	34.70	7%
End of DTMP	466.17	169.77	36%	261.70	56%	34.70	7%
Difference	-	-	0%	-	0%	-	0%

26 VDC are direct access from the SRN Roads and 7 VDC are access from the fair weather DRCN road at the start of DTMP and 32 VDC are accessible from all weather DRCN roads at the start of DTMP. No change will be seen at the end of DTMP due to insufficient budget. After DTMP the access condition to VDC population is presented in table 6.4.2 below.

**Table 6.4.2 Population with access to road network**

	Direct access to SRN			No access to road			Fair-weather core roads			All-weather core roads		
	VDCs	Population	%	VDCs	Population	%	VDCs	Population	%	VDCs	Population	%
Start of DTMP	26	558,847	73%	0	-	0%	7	65,869	9%	32	509,371	66%
End of DTMP	26	558,847	73%	0	-	0%	7	65,869	9%	32	509,371	66%
Difference	-	-	0%	-	-	0%	-	-	0%	-	-	0%



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

## ANNEX – 1      TRAFFIC DATA

**Table A1.2      Traffic Data**

<b>Code</b>	<b>Total Length (km)</b>	<b>Motorcycle</b>	<b>Car-Jeep- Minibus</b>	<b>Tractor</b>	<b>Truck-Bus</b>	<b>PCU</b>	<b>VPD</b>
71DR001	20.83	4	2	2	4	<b>24</b>	<b>8</b>
71DR002	14.81	20	10	15	6	<b>74</b>	<b>31</b>
71DR003	11.86	10	8	4	4	<b>37</b>	<b>16</b>
71DR004	10.16	8	4	2	2	<b>20</b>	<b>8</b>
71DR005	18.38	25	6	6	8	<b>63</b>	<b>20</b>
71DR006	16.22	2	2	4	2	<b>19</b>	<b>8</b>
71DR007	15.57	6	4	4	4	<b>31</b>	<b>12</b>
71DR008	22.40	12	6	4	2	<b>28</b>	<b>12</b>
71DR009	19.78	8	4	8	2	<b>32</b>	<b>14</b>
71DR010	11.65	2	2	6	2	<b>23</b>	<b>10</b>
71DR011	17.53	8	6	6	4	<b>38</b>	<b>16</b>
71DR012	36.21	16	8	12	8	<b>72</b>	<b>28</b>
71DR013	24.56	4	1	2	2	<b>15</b>	<b>5</b>
71DR014	24.25	30	12	8	10	<b>83</b>	<b>30</b>
71DR015	6.48	4		4	2	<b>18</b>	<b>6</b>
71DR016	4.66	18	6	6	4	<b>43</b>	<b>16</b>
71DR017	23.00	12	8	10	10	<b>74</b>	<b>28</b>
71DR018	38.90	8	6	6	2	<b>30</b>	<b>14</b>
71DR019	5.26	2	2	2	0	<b>7</b>	<b>4</b>
71DR020	11.18	4	2	4	2	<b>20</b>	<b>8</b>
71DR021	22.84	10	4	4	2	<b>25</b>	<b>10</b>
71DR022	17.34	4	2	4	2	<b>20</b>	<b>8</b>
71DR023	15.50	8	2	4	2	<b>22</b>	<b>8</b>
71DR024	4.58	8	4	4	2	<b>24</b>	<b>10</b>
71DR025	9.86	16	8	10	8	<b>68</b>	<b>26</b>
71DR026	8.90	4	2	2	2	<b>16</b>	<b>6</b>
71DR027	11.86	10	8	4	6	<b>45</b>	<b>18</b>
71DR028	21.59	8	2	8	4	<b>38</b>	<b>14</b>
<b>Total</b>	<b>466.17</b>						

## ANNEX – 2 POPULATION SERVED

Table A2.1 Population Served

VDC/ municipality	Population	Road																									SRN		
		71DR001	71DR002	71DR003	71DR004	71DR005	71DR006	71DR007	71DR008	71DR009	71DR010	71DR011	71DR012	71DR013	71DR014	71DR015	71DR016	71DR017	71DR018	71DR019	71DR020	71DR021	71DR022	71DR023	71DR024	71DR025	71DR026	71DR027	71DR028
Baliya	41,461																												X
Basauti	6,347									X	X	X																	
Bauniya	13,899																			X									
Beladevipur	11,400		X	X																									
Bhajani	14,917																		X	X									X
Chaumala	27,586					X	X	X	X																				X
Chuha	19,891																												X
Darakh	17,623																	X											
Dhangadhi Municipality	101,970																												X
Dhansingpur	8,750																												X
Dododhara	19,827																		X	X		X							X
Durgali	13,683																												X
Gadariya	11,104							X	X											X	X								X
Geta	19,329		X																										X
Godawari	15,572	X																											X
Hasuliya	14,129								X	X																			X
Janakinagar	5,905																												X
Joshipur	22,560																		X	X		X						X	
Khailad	11,985													X	X				X										
Khairala	4,563						X	X																					
Kotatulsipur	12,856																	X	X										
Lalbojhi	11,247											X						X											X
Malakheti	23,814	X																											X

Masuriya	22,017						X	X														X	
Mohanyal	4,681					X																	
Manuwa	11,556																X	X	X				
Narayanpur	11,207																	X	X				X
Nigali	6,027	X																					X
Pabera	5,835							X	X														X
Pahalwanpur	15,055								X							X							X
Pandaun	3,404									X													
Partappur	14,073																	X					
Patharaiya	17,396																		X	X			
Phoolbari	20,508					X																	X
Ramsikharjhala	18,016								X														X
Ratanpur	6,979																						X
Sadepani	24,892									X													X
Sahajpur	8,334	X																					X
Shirpur	17,978			X																			X
Sugarkhal	13,968																	X					
Thapapur	13,696																		X				X
Tikapur Municipality	56,127																			X			X
Udasipur	9,304							X	X	X													
Urma	15,188				X																		
<b>Total population</b>	<b>766,659</b>	14,361	2	39,386	2	30,729	2	29,378	2	42,774		32,149		36,830	3	59,198	5	62,901	3	21,486	5	57,632	
<b>Total VDCs / municipalities</b>	<b>44</b>		2	2	2	2	2	2	2														<b>558,847</b>

Source: Population census 2012

Note: Malakheti, Geta and Shripur VDCs are now included in Attariya municipality; Baliya and chuha VDCs are included in Lamki Chuha municipality

**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
1	Baliya				X	X	X	
2	Basauti				X	X		
3	Bauniya				X	X		
4	Beladevipur				X	X		
5	Bhajani				X	X	X	
6	Chaumala				X	X	X	
7	Chuha				X	X	X	
8	Darakh				X	X		
9	Dhangadhi Municipality							X
10	Dhansingpur				X	X	X	
11	Dododhara				X	X	X	
12	Durgali				X	X	X	
13	Gadariya				X	X		
14	Geta				X	X	X	
15	Godawari				X	X	X	
16	Hasuliya				X	X	X	
17	Janakinagar				X	X		
18	Joshipur				X	X		
19	Khailad				X	X		
20	Khairala		X	X				
21	Kotatulsipur				X	X		
22	Lalbojhi				X	X	X	
23	Malakheti				X	X	X	
24	Masuriya				X	X	X	

25	Mohanyal			X	X				
26	Manuwa					X	X		
27	Narayanpur					X	X	X	
28	Nigali			X	X				X
29	Pabera								X
30	Pahalwanpur					X	X	X	
31	Pandaun			X	X				
32	Partappur					X	X		
33	Patharaiya					X	X		
34	Phoolbari								X
35	Ramsikharjhala					X	X	X	
36	Ratanpur								X
37	Sadepani			X	X				X
38	Sahajpur			X	X				X
39	Shirpur					X	X	X	
40	Sugarkhal			X	X				
41	Thapapur					X	X	X	
42	Tikapur Municipality								X
43	Udasipur					X	X		
44	Urma					X	X		
	<b>Total population</b>		'	65,869	65,869	509,371	509,371		558,847
	<b>Total VDCs</b>	0	0	7	7	32	32	26	

**Note:** Malakheti, Geta and Shripur VDCs are now included in Attariya municipality; Baliya and chuha VDCs are included in Lamki Chuha municipality

## ANNEX – 3      LOCATION OF PROPOSED INTERVENTIONS

**Table A3.1      Location of proposed Interventions**

Road code	Road Name	Length (km)	Start chainage (km) or X-coordinate	End chainage (km) or Y-coordinate	Rehabilitation (km)	Gravelling (km)	Blacktopping (km)	Widening (m)	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway (m)	Pipe culvert (units)	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)
71DR001	Sahajpur- Nigali Road	20.830	0+000	20+83	3	20.83	0	0	0	24	0	90	0	0	1520	2083
71DR002	Malakheti- Bandrekhal- Hallude- Faltude Road	14.813	0+000	14+813	0.5	6.44	0	0	0	8	0	12	2	0	0	0
71DR003	Geta- Murkatti Road	11.860	0+000	11+860	0	0.00	0	0	0	0	0	0	0	0	0	0
71DR004	Khutiya-Matihari- Hasanpur Road	10.160	0+000	10+160	0	0.00	0	0	0	2	0	0	0	0	0	0
71DR005	Kanari- Ghasita-Behadababa- Chaumalai Road	18.380	0+000	18+380	0	0.00	0	0	0	0	0	0	3	0	0	0
71DR006	Chaumala- Putaliselauna- Khairala Road	16.224	0+000	16+224	4	10.65	0	0	140	8	0	0	6	0	2000	9000
71DR007	Rajipur-Baluwagadha- Khaniyatal Road	15.566	0+000	15+566	0.5	5.34	0	0	215	16	0	72	0	0	2080	8000
71DR008	Rajipur- Gadariya- Phulbari Road	22.400	0+000	22+400	0	0.00	0	0	50	0	0	0	0	0	0	0
71DR009	Badaipur- Udashipur- Hasuliya Road	19.780	0+000	19+780	0	0.00	0	0	0	0	0	0	0	0	0	0
71DR010	Loharpur- Kukurbhukka- Manau- Sadakpur- Pabera- Ratanpur Road	11.652	0+000	11+652	0	8.86	0	0	0	0	0	0	1	0	0	0
71DR011	Sajha-Jhanjatpur-Majhara Road	17.530	0+000	17+530	0	0.00	0	0	150	8	0	0	3	0	0	0
71DR012	Pahalmanpur(Gausala Chok)- Ambasa- Lalbojhi Road	36.209	0+000	36+209	0	9.87	0	0	0	4	12	0	1	0	0	0

71DR013	Sitalpur- Simali- Pandaun Road	24.563	0+000	24+563	5	20.17	0	0	135	8	0	40	3	0	2020	12500
71DR014	Sukkhad- Khailad- Bhajani Road	24.250	0+000	24+250	0	0.00	0	0	0	0	0	0	0	0	0	0
	Sadepani (Bishal Chowk)- Jutpani- Chorati-															
71DR015	Baguliya Road	6.480	0+000	6+480	0	6.48	0	0	0	9	0	0	1	0	0	0
71DR016	Mudha- Tulsipur Road	4.660	0+000	4+660	0	0.00	0	0	0	0	0	0	0	0	0	0
71DR017	Sadakpur- Joshipur- Bhajani Road	23.000	0+000	23+000	0	0.00	0	0	0	0	0	0	0	0	0	0
	Kanari- Gadariya- Ujelisimraha- Khailad- Joshipur															
71DR018	Road	38.900	0+000	38+900	0	31.52	0	0	390	30	0	0	2	0	0	0
71DR019	Prithiwipur- Simranaha- Urmi- Beli Road	5.264	0+000	5+264	0	4.78	0	0	0	6	0	0	2	0	0	0
	Bauniya(Seti Lok Marga)-Phallebisauna- Kayajuwa															
71DR020	Road	11.183	0+000	11+183	0	2.05	0	0	0	6	0	12	1	0	0	0
71DR021	Seti Lokmarga- Nawalpur- Mariyaghata Road	22.840	0+000	22+840	0	0.00	0	0	40	0	0	0	1	0	0	0
71DR022	Durgauli- Kalakunda Road	17.337	0+000	17+337	0	16.46	0	0	40	8	0	0	0	0	0	0
71DR023	Gular- Pratappur- Manuwa Road	15.500	0+000	15+500	0	0.00	0	0	0	0	0	0	0	0	0	0
71DR024	Sati- Chaugurdi- Dhansinghpur Road	4.580	0+000	4+580	0	0.00	0	0	0	0	0	0	0	0	0	0
71DR025	Tikapur - Manuwa- Joshipur Road	9.860	0+000	9+860	0	0.00	0	0	70	0	0	0	0	0	0	0
71DR026	East Lamki- Bebastit Nagar-Pahadipur Road	8.898	0+000	8+898	0	4.73	0	0	70	0	0	0	0	0	0	0
71DR027	Dudejhari-Tikapur Road	11.860	0+000	11+860	0	0.00	0	0	30	6	0	0	0	0	0	0
71DR028	Chisapani-Solta Road	21.590	0+000	21+590	0	21.59	0	0	505	36	0	186	10	0	600	2159
<b>Total</b>		<b>466.170</b>			<b>13</b>	<b>169.77</b>	<b>0</b>	<b>0</b>	<b>1835</b>	<b>179</b>	<b>12</b>	<b>412</b>	<b>36</b>	<b>0</b>	<b>8220</b>	<b>33742</b>

## ANNEX – 4      OVERALL INVENTORY

**Table A4.1      Overall Inventory List**

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
71DR001	Sahajpur- Nigali Road	20.830	0+000	20+83	0.00	0.00	20.83	0.00	20.83	20.83			
71DR002	Malakheti- Bandrekhal- Hallude- Faltude Road	14.813	0+000	14+813	0.29	8.09	6.44	8.38	6.44	14.81			
71DR003	Geta- Murkatti Road	11.860	0+000	11+860	0.00	11.86	0.00	11.86	0.00	11.86			
71DR004	Khutiya-Matihari- Hasanpur Road	10.160	0+000	10+160	10.16	0.00	0.00	10.16	0.00	10.16			
71DR005	Kanari- Ghasita-Behadababa- Chaumalai Road	18.380	0+000	18+380	0.00	18.38	0.00	18.38	0.00	18.38			
71DR006	Chaumala- Putaliselauna- Khairala Road	16.224	0+000	16+224	0.00	5.57	10.65	5.57	10.65	16.22			
71DR007	Rajipur-Baluwagadha- Khaniyatal Road	15.566	0+000	15+566	0.00	10.22	5.34	10.22	5.34	15.57			
71DR008	Rajipur- Gadariya- Phulbari Road	22.400	0+000	22+400	0.00	22.40	0.00	22.40	0.00	22.40			
71DR009	Badaipur- Udashipur- Hasuliya Road	19.780	0+000	19+780	0.00	19.78	0.00	19.78	0.00	19.78			
71DR010	Loharpur- Kukurbhukka- Manau- Sadakpur- Pabera- Ratanpur Road	11.652	0+000	11+652	0.00	2.80	8.86	2.80	8.86	11.65			
71DR011	Sajha-Jhanjatpur-Majhara Road	17.530	0+000	17+530	0.00	17.53	0.00	17.53	0.00	17.53			
71DR012	Pahalmanpur(Gausala Chok)- Ambasa- Lalbojhi Road	36.209	0+000	36+209	0.00	26.34	9.87	26.34	9.87	36.21			
71DR013	Sitalpur- Simali- Pandaun Road	24.563	0+000	24+563	0.00	4.39	20.17	4.39	20.17	24.56			
71DR014	Sukkhad- Khailad- Bhajani Road	24.250	0+000	24+250	24.25	0.00	0.00	24.25	0.00	24.25			
71DR015	Sadepani (Bishal Chowk)- Jutpani- Chorati- Baguliya Road	6.480	0+000	6+480	0.00	0.00	6.48	0.00	6.48	6.48			
71DR016	Mudha- Tulsipur Road	4.660	0+000	4+660	0.00	4.66	0.00	4.66	0.00	4.66			
71DR017	Sadakpur- Joshipur- Bhajani Road	23.000	0+000	23+000	0.00	23.00	0.00	23.00	0.00	23.00			
71DR018	Kanari- Gadariya- Ujelisimraha- Khailad- Joshipur Road	38.900	0+000	38+900	0.00	7.38	31.52	7.38	31.52	38.90			
71DR019	Prithiwipur- Simranaha- Urmi- Beli Road	5.264	0+000	5+264	0.00	0.49	4.78	0.49	4.78	5.26			
71DR020	Bauniya(Seti Lok Marga)-Phallebisauna- Kayajuwa Road	11.183	0+000	11+183	0.00	9.13	2.05	9.13	2.05	11.18			
71DR021	Seti Lokmarga- Nawalpur- Mariyaghata Road	22.840	0+000	22+840	0.00	22.84	0.00	22.84	0.00	22.84			
71DR022	Durgauli- Kalakunda Road	17.337	0+000	17+337	0.00	0.88	16.46	0.88	16.46	17.34			
71DR023	Gular- Pratappur- Manuwa Road	15.500	0+000	15+500	0.00	15.50	0.00	15.50	0.00	15.50			
71DR024	Sati- Chaugurdi- Dhansinghpur Road	4.580	0+000	4+580	0.00	4.58	0.00	4.58	0.00	4.58			
71DR025	Tikapur - Manuwa- Joshipur Road	9.860	0+000	9+860	0.00	9.86	0.00	9.86	0.00	9.86			
71DR026	East Lamki- Bebastit Nagar-Pahadipur Road	8.898	0+000	8+898	0.00	4.16	4.73	4.16	4.73	8.90			
71DR027	Dudejhari-Tikapur Road	11.860	0+000	11+860	0.00	11.86	0.00	11.86	0.00	11.86			
71DR028	Chisapani-Solta Road	21.590	0+000	21+590	0.00	0.00	21.59	0.00	21.59	21.59			
71VR031	Amouri- Bhoksee- Khairiphata	6.181	0+000	6+181	0.00	0.00	6.18	0.00	6.18	6.18			

71VR009	Attariya-Tallobankhet-Chaitanyapur-Khairana	7.492	0+000	7+492	0.00	0.00	7.49	0.00	7.49	7.49		
71VR021	Badaipur-Dankot-Baluwagad Khanayatal	19.160	0+000	19+160	0.00	0.00	19.16	0.00	19.16	19.16		
71VR037	Batanpur-Khakraula- Kalakunda	0.000	0+000	0+000	0.00	0.00	0.00	0.00	0.00	0.00		
71VR008	Gadariya bazar-Kanariya	9.605	0+000	9+605	0.00	0.00	9.61	0.00	9.61	9.61		
71VR010	Haraiya-Khaireni-Khairana	6.474	0+000	6+474	0.00	0.00	6.47	0.00	6.47	6.47		
71VR029	Khailad-Sonaphata sadak	0.000	0+000	0+000	0.00	0.00	0.00	0.00	0.00	0.00		
71VR006	Majhara - Rana Muda – Hasuliya	3.429	0+000	3+429	0.00	0.00	3.43	0.00	3.43	3.43		
71VR042	Mudabazar- Tallapani	17.003	0+000	17+003	0.00	0.00	17.00	0.00	17.00	17.00		
71VR007	Nimdi - Chouratti- Jokahi – Jagatpur	4.251	0+000	4+251	0.00	0.00	4.25	0.00	4.25	4.25		
71VR039	Phulbari-Bhartal-Bhada	12.274	0+000	12+274	0.00	0.00	12.27	0.00	12.27	12.27		
71VR022	Rajipur-Baluwagad-Khaniyatal	9.497	0+000	9+497	0.00	0.00	9.50	0.00	9.50	9.50		
71VR043	Rampur-Beluwa-Muddhi sadak	10.537	0+000	10+537	0.00	0.00	10.54	0.00	10.54	10.54		
71VR052	Sadepani- BasantaTaranagar	5.099	0+000	5+099	0.00	0.00	5.10	0.00	5.10	5.10		
71VR036	Seukaliya-Deukaliya-Bandargaudi –Harinagar	12.434	0+000	12+434	0.00	0.00	12.43	0.00	12.43	12.43		
71VR035	Simali-Pandaun-Khimadi	13.830	0+000	13+830	0.00	0.00	13.83	0.00	13.83	13.83		
71VR025	Sugarkhal-Bhuruwa-Pratappur sadak	13.742	0+000	13+742	0.00	0.00	13.74	0.00	13.74	13.74		
71VR034	Syaule Bazar Tilkha-Chainpur sadak	12.842	0+000	12+842	0.00	0.00	12.84	0.00	12.84	12.84		
71VR045	Tikapur-Bhajani sadak	10.692	0+000	10+692	0.00	0.00	10.69	0.00	10.69	10.69		
71VR032	Attariya- Baskota	8.391	0+000	8+391	0.00	8.39	0.00	8.39	0.00	8.39		
71VR026	Badeipur Bazar--Udasipur- Nakulipur Dudhiya-bankhandari-Urma	6.630	0+000	6+630	0.00	6.63	0.00	6.63	0.00	6.63		
71VR015	Baliya-pratappur-Joshipur sadak	14.818	0+000	14+818	0.00	14.82	0.00	14.82	0.00	14.82		
71VR041	Banbehada - Dhurjanna - Kanari- Urma- Gadariya	12.879	0+000	12+879	0.00	12.88	0.00	12.88	0.00	12.88		
71VR044	Batanpur-Masanghat	3.863	0+000	3+863	0.00	3.86	0.00	3.86	0.00	3.86		
71VR033	Chaukidada - Khamaura – Olani	7.319	0+000	7+319	0.00	7.32	0.00	7.32	0.00	7.32		
71VR020	Choukidada-Kolmoda	1.572	0+000	1+572	0.00	1.57	0.00	1.57	0.00	1.57		
71VR048	Durgauli-Kanchanpur-Badhariya-Janakinagar-Simarana-Bauniya	2.514	0+000	2+514	0.00	2.51	0.00	2.51	0.00	2.51		
71VR038	Eye hospital-Lalpur	5.274	0+000	5+274	0.00	5.27	0.00	5.27	0.00	5.27		
71VR049	Eye hospital-Jonapur	6.159	0+000	6+159	0.00	6.16	0.00	6.16	0.00	6.16		
71VR001	Gadariya – Dharmapur	13.818	0+000	13+818	0.00	13.82	0.00	13.82	0.00	13.82		
71VR011	Ghodsuwa-Bela	4.580	0+000	4+580	0.00	4.58	0.00	4.58	0.00	4.58		
71VR012	Gobrala-Pabera-Paliya	4.922	0+000	4+922	0.00	4.92	0.00	4.92	0.00	4.92		
71VR013	Gulara-Bagmara	3.798	0+000	3+798	0.00	3.80	0.00	3.80	0.00	3.80		
71VR050	Harinagar- Bhagatpur	8.266	0+000	8+266	0.00	8.27	0.00	8.27	0.00	8.27		
71VR014	Jadai-Sukad	9.329	0+000	9+329	0.00	9.33	0.00	9.33	0.00	9.33		
71VR046	Jokahi-Bakariya-Lokhari-Dhusari-Rajipur-Katanpur-Rajawara-Bhajani sadak	7.895	0+000	7+895	0.00	7.89	0.00	7.89	0.00	7.89		
71VR024	Joshipur-Khailad-kanari	21.112	0+000	21+112	0.00	21.11	0.00	21.11	0.00	21.11		
71VR047	Joshipur-Lalbojhi	5.605	0+000	5+605	0.00	5.60	0.00	5.60	0.00	5.60		
71VR051	Kauwapur- Chauri Sadak	4.451	0+000	4+451	0.00	4.45	0.00	4.45	0.00	4.45		
71VR005	Khadgauli-Badhariya-Munuwa	5.693	0+000	5+693	0.00	5.69	0.00	5.69	0.00	5.69		
71VR028	Khairipur –Pathariya	2.592	0+000	2+592	0.00	2.59	0.00	2.59	0.00	2.59		
71VR003	Lokhari-Pakariya-Simari-Kumaribag-Bauniya school-Bankatta	7.404	0+000	7+404	0.00	7.40	0.00	7.40	0.00	7.40		
71VR027	Motipur-Chauri school Chakawadi	10.414	0+000	10+414	0.00	10.41	0.00	10.41	0.00	10.41		
71VR040	Pabera- Bangalipur	6.291	0+000	6+291	0.00	6.29	0.00	6.29	0.00	6.29		

71VR017	Sadepani bazaar- Nimdi	6.475	0+000	6+475	0.00	6.47	0.00	6.47	0.00	6.47		
71VR018	Sadepani-Basanta	5.123	0+000	5+123	0.00	5.12	0.00	5.12	0.00	5.12		
71VR019	Sajha Bazar-Tal band -Katauje – Khanyatal	13.162	0+000	13+162	0.00	13.16	0.00	13.16	0.00	13.16		
71VR023	Syaule-Hatkholi-Shivnagar	7.456	0+000	7+456	0.00	7.46	0.00	7.46	0.00	7.46		
71VR004	Thakalipur-Lamki-Amouri	11.302	0+000	11+302	0.00	11.30	0.00	11.30	0.00	11.30		
71VR030	Thapapur- Nawalpur-Mohanpur-Bhajani	3.973	0+000	3+973	0.00	3.97	0.00	3.97	0.00	3.97		
71VR002	Thapapur-Tikapur sadak	12.109	0+000	12+109	0.00	12.11	0.00	12.11	0.00	12.11		
71VR016	Udasipur-Basauti 6,5,1-Hasuliya hulaki sadak	4.251	0+000	4+251	0.00	4.25	0.00	4.25	0.00	4.25		
<b>Total</b>		<b>890.15</b>			<b>34.70</b>	<b>511.14</b>	<b>344.32</b>	<b>545.84</b>	<b>344.32</b>	<b>890.15</b>	<b>0</b>	<b>0</b>

**ANNEX – 5**

**MINUTE OF MEETINGS**