Government of Nepal

# District Transport Master Plan (DTMP)

Ministry of Federal Affairs and Local Development

Department of Local Infrastructure Development and Agricultural Roads (DOLIDAR)

District Development Committee, Arghakhanchi

## Volume I : Report

**January 2016**

Prepared by Rural Infrastructure Developers Consultant P. Ltd (RIDC) for the District Development Committee (DDC) and District Technical Office (DTO) Arghakhanchi 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 through Rural Access Programme 3 (RAP 3)

# FOREWORD

Government of Nepal
Ministry of Federal Affairs & Local Development
**District Development Committee**
**Arghakhanchi**

Date: November 5, 2015

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**FOREWORD**

It is my great pleasure to introduce this revised District Transport Master Plan (DTMP) of Arghakhanchi district which was concurred by the district stakeholder's meeting and District Road Core Network (DRCN) selected by same meeting on July 5, 2015 and approved by DDC Board on November 5, 2015. Based on DTMP guideline 2012, all District Road Core Networks aiming to connect all Village Development Committee (VDC) with the district headquarters, either directly or through highway and Strategic Road Network (SRN) have been selected.

I believe this document will be helpful for sustainable planning, resources mobilization, implementation and monitoring of the road development. The document is anticipated to generate substantial employment opportunities for rural people conservation, improvement and new construction activities of the existing road network. DRCN plays an important role to strengthen and promote overall economic growth of the district through established and improved year round transport services reinforcing intra and inter district linkages. It is most crucial to expand DRCN in a planned way as per the DTMP recommendation by considering the framework of available resource of DDC. This document is very essential in lobbying the donor agencies through central government to attract fund gap. Furthermore, this document will be supportive in avoiding prevailing duplication in resource allocation in road network development by considering basket fund approach.

I would like to express my gratitude to Rural Access Programme (RAP3) for financial and technical support. Secondly, my thanks go to Er. Shiva Man Shrestha (Chief District Engineer, DTO Arghakhanchi), Er. Balkrishna Aryal (Engineer, DTO) and other DDC/DTO staffs for their efforts to organize and make succeed the workshops as well as collecting data.

Last but not least, I would like to express my heartfelt gratitude to Ministry of Federal Affairs and Local Development (MFALD) and Department of Local Infrastructure Development and Agriculture Road (DOLIDAR/MFALD) for providing valuable suggestions and cooperation to produce this report. Any pioneering and constructive suggestions regarding this document will be highly appreciated.

Laxmi Pandey (Gautam)
Local Development Officer, DDC Arghakhanchi

# ACKNOWLEDGEMENT

We would like to express gratitude to Rural Access Programme (RAP III) for entrusting us on preparation of District Transport Master Plan of Arghakhanchi District.

We would also like to express our sincere thanks to Ms.Laxmi Pandey (Gautam), Local Development Officer and Er. Shiva Man Shrestha, Chief District Engineer, DTO Arghakhanchi and all the staffs of DDC and DTO, Arghakhanchi for their regular support and coordination.

We thank the DTMP team who has worked very hard to bring this report at this stage and successful completion of the assignment.

We are grateful to the local people, political parties and leaders, members of Government organizations and non-government organizations of Arghakhanchi District who have rendered their valuable suggestion and support for the successful completion of the job.

Radha Rana Bhat
Managing Director
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## Executive summary

Arghakhanchi is one of the districts of Lumbini Zone in Nepal's Western Development Region. The district headquarter is at Sandhikharka. It lies between 27° 45' N and 28° 6' N latitude, and 82° 45' E to 83° 20' E longitude. Arghakanchi is surrounded by Palpa district to the east, Gulmi to the north, and Kapilbastu and Rupandehi to the south, while Pyuthan and Dang districts are to the west. The district covers an area of 1193 sq. km. About 68% of the district is in the Mountainous Mahabharat Range and the rest in the Siwalik Hills. Elevation rage from 305-2575 m above sea level. About 40% of the total area is forest[1]. The district is administratively divided into 2 electoral constituencies and 11 illakas that consist of one municipality and 35 VDCs in total. Municipality and VDCs are further divided into small administrative units called wards. Major streams in the district include Bangi khola, Bangsari Khola, Mathurabesi Khola, Banganga Khola, Durga khola, Sita Khola, Khakabesi Khola, Rangsing Khola, Ratne Khola, Jhimruk Khola and Khankbesi Khola etc. Lakes in the district are Thadalake and Senglenglake[2].

According to the national census 2011[3], the total population of the district is 197,632 comprising 86,266 male and 111.366 female. Besides the agriculture farming, small scale livestock is the main source of occupation and livelihood of the majority of the population.

Arghakhanchi district is well known for religious and historical places where many people visit. One of famous religious place of the nation called Supa Deurali temple.

The district inventory identified nearly732.65 km of roads, including 128.91km of existing strategic roads, and 603.74km of rural roads. In coordination with the DTICC and DDC, 20 rural roads with a length of 416.21km including 412.31km existing roads and 3.9 km new roads were identified as making up the district road core network (DRCN). The total rural road inventory survey was not under the scope of this assignment so, these road statistics were obtained from previous DTMP report. Further these information were updated based on information provided by DDC/DTO during field visit. However, selected DRCNs were tracked using GPS to identify their length, width and existing condition along with necessary major structures in this study. The existing SRN and DRCN roads link up all the VDCs (35 VDCs) headquarters and a municipality. Out of these 412.31km DRCN roads, only 58.65 km road is all weather and reaming 353.66km road is fair-weather. During DTMP period all the353.66km earthen and 58.65 blacktop/gravel road will be conserved and additional 96.56 km earthen road to gravel and 18.6 km gravel road into blacktop (Ottaseal) will be improved.

Table ES1: Summary of road networks

| Road Class | Total length | Black Top | Gravel | Earthen |
|---|---|---|---|---|
| Strategic road network | 128.91 | 60.91 | - | 68.00 |
| Urban roads | - | - | - | - |
| District road core network | 412.31 | 2.59 | 56.06 | 353.66 |
| Village roads | 191.43 | 0.00 | 0.00 | 191.43 |
| **Total** | **732.65** | **63.50** | **56.06** | **613.09** |

[1]Old DTMP Report, DDC Arghakhanchi
[2]ibid
[3]CBS, 2011, Central Bureau of Statistics

Annual conservation costof20 roads with 412.31km length is estimated toNPR 81.27 million based on the first year, and will be updated in the ARMP based on actual annual maintenance needs as determined in the annual road condition survey. For the full five-year period the conservation costs will come to NPR 406.35 million. An analysis of the road network identified the need for improvement of all the DRCN roads in order to bring them to a maintainable all-weather standard and provide them with a proper road surface in light of existing traffic volumes. The required improvements and their estimated costs are listed below.

Table ES2: Summary of required improvements and their estimated costs

| Improvement type | Requirement | | Cost (NPR) |
|---|---|---|---|
| Bridges | 454 | m | 363,200,000 |
| Slab culverts | 42 | m | 6,300,000 |
| Causeways | 121 | m | 12,100,000 |
| Hume pipes | 129 | units | 1,290,000 |
| Masonry retaining walls | 290 | $m^3$ | 2,900,000 |
| Gabion retaining walls | 5,378 | $m^3$ | 13,443,750 |
| Lined drains | 1,960 | m | 1,960,000 |
| Widening | 895 | m | 2,237,500 |
| Rehabilitation | - | km | - |
| Gravelling | 353.66 | km | 707,322,000 |
| Blacktopping | 18.60 | km | 93,000,000 |
| New construction | 3.90 | km | 19,500,000 |
| **Total** | | | **1,223,253,250** |

The total district budget for the road sector for the five-year period (fiscal year 2072/73 to 2076/77) is NPR 796.16 million including 550 million SNRTP fund and 91.56 million LRBP fund. LRBP fund is used for only bridges of specified DRCN and most of the SNRTP fund also has been already allocated for specified roads prior to preparation of this DTMP. Fortunately, almost all the roads selected for SNRTP are very important district roads and has come at the top of ranking table of this DTMP report. Allocation to the district road core network was set at 95% of the total road sector budget, which was subsequently allocated firstly to the annual maintenance needs, secondly to the improvement needs and lastly to new construction.

The budget allows all conservation requirements of all the existing roads to be covered throughout the DTMP period. Similarly96.56 km earthen roads into gravel and 18.6 km gravel road into blacktop (Otta seal) will be improved inclusive of cross drainage and protective structures required respectively to make them maintainable all-weather roads. The remaining length of improvement workswillbe carried out in the next DTMP.As a result of the activities planned in this DTMP, the length of all-weather maintainable DRCN roads increases from 58.65 km to 155.2 km, with 257.11 km remaining fair weather. During this DTMP period, blacktop road will be increased from 2.59 km to 21.19 km. At the same time, 96.56 km earthen road will be changed to gravel standard.

The number of VDC headquarters and municipality with direct access to the SRN is 8 with 38% district population. Similarly, the number of VDC headquarters with access to all-weather DRCN roads and district population with access to the all-weather DRCN roads will increase 5 to 12 and 14,442 to 29,346 respectively while 13 VDCs HQ will remain with access to fair-weather DRCN roads during first DTMP period.

## Abbreviations

| | |
|---|---|
| AAMP | Annual Asset Management Plan |
| ARMP | Annual Road Maintenance Plan |
| BT | Black Top |
| DDC | District Development Committee |
| DIM | District Inventory Map |
| DOLIDAR | Department of Local Infrastructure Development and Agriculture Road |
| DOR | Department of Road |
| DRCN | District Core Road Network |
| DTICC | District Transport Infrastructure Coordination Committee |
| DTMP | District Transport Master Plan |
| DTPP | District Transport Perspective Plan |
| GIS | Geographical Information system |
| GPS | Global Positioning System |
| GON | Government of Nepal |
| GR | Gravel |
| Km | Kilometre |
| SNRTP | Strengthening National Rural Transport Project |
| LRBP | Local Road Bridge Project |
| MLD | Ministry of Local Development |
| NPR | Nepali Rupees |
| PCU | Passenger Car Unit |
| RAP | Rural Access Programme |
| RBN | Roads Board Nepal |
| RTI | Rural Transport Infrastructure |
| SSRN | Statistics of Strategic Road Network |
| SWAp | Sector Wide Approach |
| VDC | Village Development Committee |
| VPD | Vehicle per Day |
| LGCDP | Local Governance and Community Development Programme |
| MoFALD | Ministry of Federal Affairs and Local Development |

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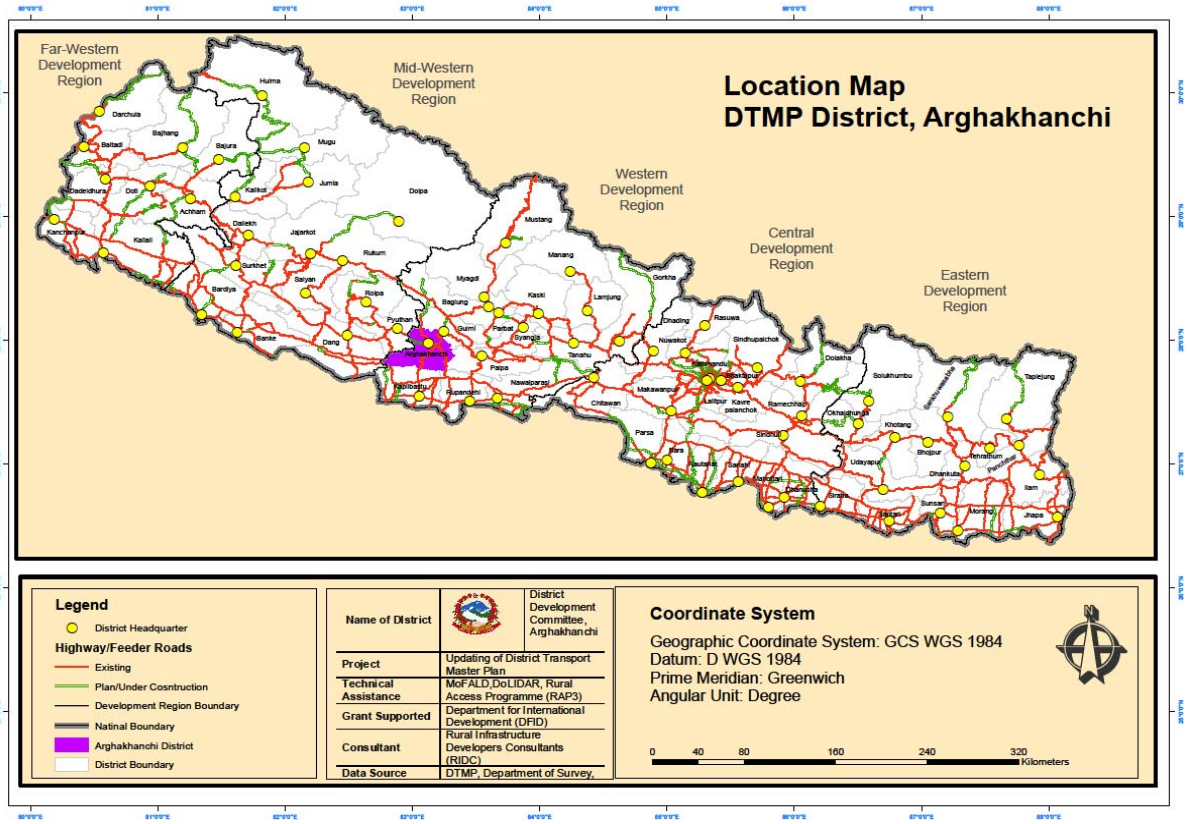
# 1. Introduction

Arghakhanchi is one of the districts of Lumbini Zone in Nepal's Western Development Region. The district headquarter is at Sandhikharka. It lies between 27' 45"N and 28'6"N latitude, and 82'45''E to 83'20"E longitude. Arghakanchi is surrounded by Palpa district to the east, Gulmi to the north, and Kapilbastu and Rupandehi to the south, while Pyuthan and Dang districts are to the west. The district covers an area of 1193 sq. km.About68% of the district is in the Mountainous Mahabharat Range and the rest in the Siwalik Hills. Elevation rage from 305-2575m above sea level. About 40% of the total area is forest[4]. The district is administratively divided into 2 electoral constituencies and 11 illakas that consist of one municipality and 35 VDCs in total. Municipality and VDCs are further divided into small administrative units called wards. Major streams in the district include Bangi Khola, Bangsari Khola, Mathurabesi Khola, Banganga Khola, Durga khola, Sita Khola, Khakabesi Khola, Rangsing Khola, Ratne Khola, Jhimruk Khola and Khankbesi Khola etc. Lakes in the district are Thadalake and Senglenglake[5].

According to the national census 2011[6], the total population of the district is 197,632comprising 86,266 male and 111,366 female. Besides the agriculture farming, small scale livestock is the main source of occupation and livelihood of the majority of the population.

Arghakhanchi district is well known for religious and historical places where many people visit. One of famous religious place of the nation called Supa Deurali temple. Other famous places are Argha Mahakali,Chetradev,Argha Durbar, Khanchi Rajsthal, Narpani, Kissankot and Ranipokhari[7].

**Figure 1 Map of Nepal indicating Arghakhanchi District**




[4]Old DTMP Report, DDC Arghakhanchi
[5]ibid
[6]CBS, 2011, Central Bureau of Statistics
[7]Same as foot note 2

The district is served by surface transport facilities linking the district with the(F011) Pattharkot-Sandhikharka feeder road and others, 20 District Road Core Networks and many morevillage level roads. The network of feeder roads, district roads and village roads are increasing significantly in the district. However, the district and village roads including a few Feeder roads are mostly in poor conditions which require upgrading/rehabilitation and proper maintenance.

# 2. District Road Core Network (DRCN)

This chapter gives an overview of the existing roads in Arghakhanchi district, distinguishing between strategic roads and rural roads. It goes on to identify those rural roads that make up the district road core network (DRCN) that will form the basis for this DTMP. The remaining rural roads are classified as village roads.

## 2.1 Total Road Network

Arghakhanchi district has an estimated road network of 732.65 km, including 128.91km of strategic roads managed by DOR and remaining of urban and rural roads managed by DDC Arghakhanchi, VDCs and municipality. Of total 160.43km strategic road networks, only 60.91km is blacktop surfaced. In case of rural road networks, majority of rural roads are an earthen surface. Among 603.74km rural roads, only 2.59 km and 56.06 km are blacktop and gravel respectively. While, remaining 353.66 km is an earthen surface. The total rural road inventory survey was not under the scope of this assignment so, these road statistics were obtained from previous DTMP report and data provided by DDC/DTO. However, selected DRCNs were tracked using GPS to identify their length, width and existing condition along with necessary major structures in this study. A map of the total road network in Arghakhanchi district is shown in Figure 2 at the end of this chapter.

**Table 2.1.1 Road length in Arghakhanchi district (km)**

| Road Class | Total length | Black Top | Gravel | Earthen |
|---|---|---|---|---|
| Strategic roads | 128.91 | 60.91 | - | 68.00 |
| Urban roads | - | - | - | - |
| Rural roads | 603.74 | 2.59 | 56.06 | 545.09 |
| **Total** | **732.65** | **63.50** | **56.06** | **613.09** |

## 2.2 National Highways and Feeder Roads

According to latest information provided by DoR, Arghakhanchi district has one highway and two feeder roadstotallingto128.91 km length as shown in Table 2.2.1. Among these strategic road networks, 60.91km is blacktopped whereas 68 km is earthen surfaced.

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

| Code | Name of Road | Total length | Black Top | Gravel | Earthen |
|---|---|---|---|---|---|
| H01 | RamsinghKhola- Rapti River | **4.12** | 4.12 | - | - |
| F011 | Kapilbastu district border - Sandhikharka | **56.79** | 56.79 | - | - |
| F194 | Badahare (District border) - Sandhikharka - Sautamare | **68.00** | - | - | 68.00 |
| **Total** | | **128.91** | **60.91** | **0.00** | **68.00** |

Source: SSRN 2013/14;DoR

Although F134 (Netagaon- Sandhikharka- Asurkot-Lamdanda road ) with 75 km (48 earthen and 33 planning status) has been listed in SRN in SSRN 2014 of DoR, the status of this road has been now changed to DRCN (51DR002 and 51DR010) category under request of DDC Arghakhanchi. This road is being improved under SNRTP project now. So, this road has been removed from the list of

SRN in the table 2.2.1. The part of F134 isbeing also improved under SNRTP funds in Pyuthan district and not listed as SRN in DTMP report of Pyuthan district.

## 2.3 District Road Core Network

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

The resulting District Road Core Network of thisdistrict is shown in Figure at the end of this chapter. The DRCN consists of 20 district roads with a total length of 412.31 km. The remaining191.43km of existing rural roads are not considered to be DRCN roads and are classified as village roads under the responsibility of the VDCs/Municipality. Because of newly created a municipality in Arghakhanchi district in 2014, part of these rural roads are contained within this municipality and status has become so-called municipal roads. Among 412.31 km DRCN, 74.21 km roads falls under this category. Due to newly formed municipality, it is however not able to maintain/upgrade these roads due to their lack of technical and financial capacity. So, DTO/DDC Arghakhanchi will be responsible to look after the part of DRCN within municipal boundary at least in this first DTMP period. Later, these roads shall be upgraded/maintained as per municipal road standards and municipality would be responsible to do this. Most of DRCN roads are currently earthen surface and thus considered as fair weather. Only 58.65 km is considered as all weather. The type of existing roads and their length is given in Table 2.3.1. Similarly, a complete list of the DRCN roads and their characteristics is provided in Table 2.3.2.

**Table2.3.1 Road length in Arghakhanchi district (km)**

| Road Class | Total length | Black Top | Gravel | Earthen |
|---|---|---|---|---|
| **Strategic road network** | **128.91** | **60.91** | **-** | **68.00** |
| Highways | 4.12 | 4.12 | - | - |
| Feeder roads | 124.79 | 56.79 | | 68.00 |
| **Urban roads** | **-** | **-** | **-** | **-** |
| **District road core network** | **412.31** | 2.59 | 56.06 | 353.66 |
| **Village roads** | **191.43** | 0.00 | 0.00 | 191.43 |
| **Total** | **732.65** | **63.50** | **56.06** | **613.09** |

**Table 2.3.2 District road core network in Arghakhanchi district (km)**

| Code | Name of Road | Total length | Black Top | Gravel | Earthen | All weather | Fair weather | DRCN within Municipality |
|---|---|---|---|---|---|---|---|---|
| | **Total** | **412.31** | **2.59** | **56.06** | **353.66** | **58.65** | **353.66** | **74.21** |
| | **Percentage** | | 1% | 14% | 86% | 14% | 86% | 18% |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari-Pyuthan | **24.39** | | 7.23 | 17.16 | 7.23 | 17.16 | 6.99 |
| 51DR002+ | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | **33.66** | | 23.32 | 10.33 | 23.32 | 10.33 | 11.52 |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gofunga | **14.82** | | | 14.82 | - | 14.82 | |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | **16.60** | | | 16.60 | - | 16.60 | 12.13 |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | **4.40** | | | 4.40 | - | 4.40 | 0.12 |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | **23.69** | | | 23.69 | - | 23.69 | 9.03 |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | **19.37** | | | 19.37 | - | 19.37 | 11.66 |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | **8.71** | | | 8.71 | - | 8.71 | 1.77 |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | **12.78** | | | 12.78 | - | 12.78 | 5.35 |
| 51DR010+ | Sandikharka-Balkot-Neta-Gulmi | **37.13** | | 25.50 | 11.62 | 25.50 | 11.62 | 13.0 |
| 51DR011 | Khagadi-Dundruk-Balkot | **7.52** | | | 7.52 | - | 7.52 | |
| 51DR012 | Ghumti-Tingire-Palpa | **29.98** | 2.59 | | 27.39 | 2.59 | 27.39 | |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | **10.26** | | | 10.26 | - | 10.26 | |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | **9.29** | | | 9.29 | - | 9.29 | |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | **23.71** | | | 23.71 | - | 23.71 | |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | **11.81** | | | 11.81 | - | 11.81 | |
| 51DR017 | Bhedamare-Simalpani-Pawara | **18.46** | | | 18.46 | - | 18.46 | |
| 51DR018 | Amarai-Jukena | **7.97** | | | 7.97 | - | 7.97 | |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | **41.95** | | | 41.95 | - | 41.95 | |
| 51DR020 | Gachhe-Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | **55.81** | | | 55.81 | - | 55.81 | 2.64 |

+ Two roads 51DR002 & 51DR010 were previously as Feeder Road with Code F13402 & F13403 in SSRN 2013/14.

## 2.4 Village Roads

The 191.43km 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 Sandhikharka Municipality and concerned VDCs of the district. These are roads of a lower importance that do not form the main link between the VDC headquarters and the district headquarter or strategic road network. Instead they provide additional access to other parts of the VDCs. A parts of these roads, lie within municipalities are categorised as municipal roads, which shall be upgraded/improved as per municipal road standards. In case of village roads, it is recommended that the municipality &VDCs shall organize maintenance workers to carry out the emergency and routine/recurrent maintenance of these roads to ensure their accessibility. Any upgrading or new construction of village roads falls outside the scope of this DTMP and is the responsibility of the municipality &VDCs.

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

**Figure 2Total Road Inventory Map ofArghakhanchiDistrict**

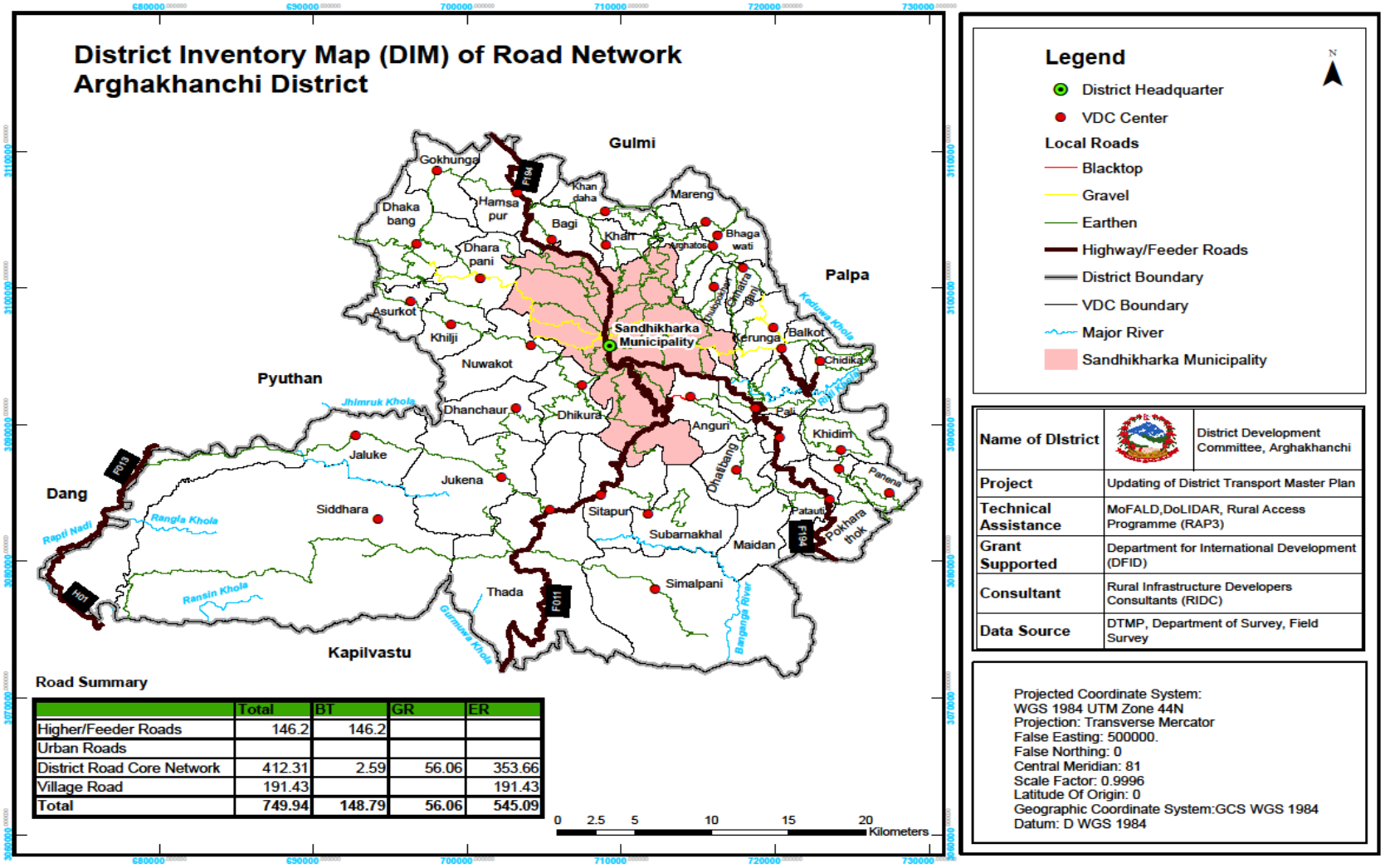
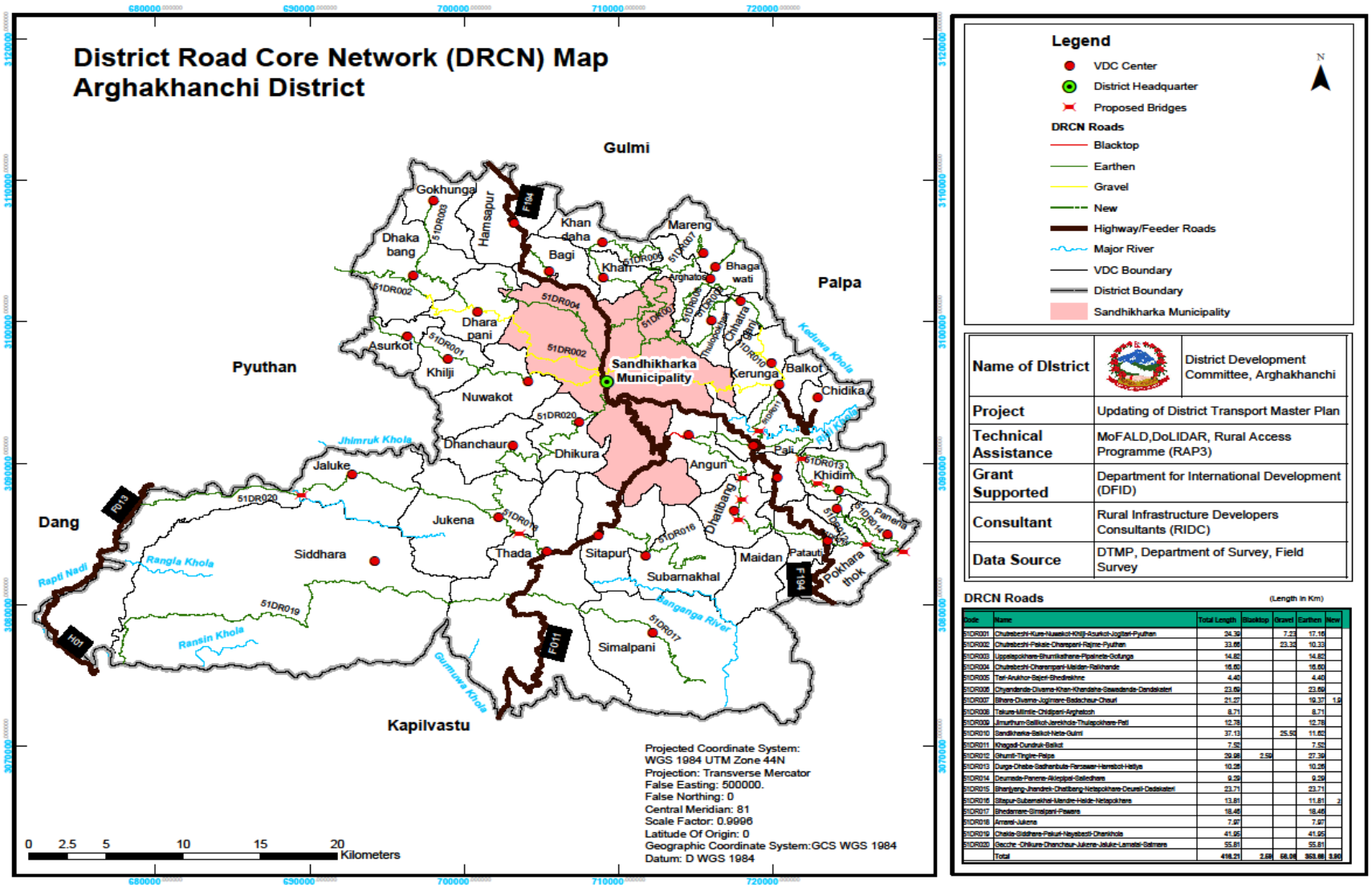


**Figure 3District Road Core Network (DRCN) Map**



# 3. District Transport Perspective Plan (DTPP)

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

## 3.1 Conservation

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

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

The length of roads to be included under each conservation type for the first year is indicated below. This is basically the entire district road core network in as far as it does not require rehabilitation.

**Table 3.1.1 Conservation requirements**

| Code | 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** | | **412.31** | **2.59** | **56.06** | **353.66** | **412.31** | **412.31** | **2.59** | **56.06** | **353.66** | **2.59** | **56.06** |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari-Pyuthan | **24.39** | - | 7.23 | 17.16 | 24.39 | 24.39 | - | 7.23 | 17.16 | - | 7.23 |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | **33.66** | - | 23.32 | 10.33 | 33.66 | 33.66 | - | 23.32 | 10.33 | - | 23.32 |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gofunga | **14.82** | - | - | 14.82 | 14.82 | 14.82 | - | - | 14.82 | - | - |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | **16.60** | - | - | 16.60 | 16.60 | 16.60 | - | - | 16.60 | - | - |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | **4.40** | - | - | 4.40 | 4.40 | 4.40 | - | - | 4.40 | - | - |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | **23.69** | - | - | 23.69 | 23.69 | 23.69 | - | - | 23.69 | - | - |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | **19.37** | - | - | 19.37 | 19.37 | 19.37 | - | - | 19.37 | - | - |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | **8.71** | - | - | 8.71 | 8.71 | 8.71 | - | - | 8.71 | - | - |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | **12.78** | - | - | 12.78 | 12.78 | 12.78 | - | - | 12.78 | - | - |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | **37.13** | - | 25.50 | 11.62 | 37.13 | 37.13 | - | 25.50 | 11.62 | - | 25.50 |
| 51DR011 | Khagadi-Dundruk-Balkot | **7.52** | - | - | 7.52 | 7.52 | 7.52 | - | - | 7.52 | - | - |
| 51DR012 | Ghumti-Tingire-Palpa | **29.98** | 2.59 | - | 27.39 | 29.98 | 29.98 | 2.59 | - | 27.39 | 2.59 | - |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | **10.26** | - | - | 10.26 | 10.26 | 10.26 | - | - | 10.26 | - | - |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | **9.29** | - | - | 9.29 | 9.29 | 9.29 | - | - | 9.29 | - | - |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | **23.71** | - | - | 23.71 | 23.71 | 23.71 | - | - | 23.71 | - | - |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | **11.81** | - | - | 11.81 | 11.81 | 11.81 | - | - | 11.81 | - | - |
| 51DR017 | Bhedamare-Simalpani-Pawara | **18.46** | - | - | 18.46 | 18.46 | 18.46 | - | - | 18.46 | - | - |
| 51DR018 | Amarai-Jukena | **7.97** | - | - | 7.97 | 7.97 | 7.97 | - | - | 7.97 | - | - |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | **41.95** | - | - | 41.95 | 41.95 | 41.95 | - | - | 41.95 | - | - |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | **55.81** | - | - | 55.81 | 55.81 | 55.81 | - | - | 55.81 | - | - |

## 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 Arghakhanchi are described in more detail in the subsequent sections.

1. Rehabilitation - Significant repairs required to bring a very poor road back to a maintainable standard. This does not include any changes to the original surface type.
2. Gravelling - Placement of a gravel layer to make it all-weather and ensure that the road remains passable during the rainy season.
3. Cross drainage - Placement of suitable cross-drainage structures with the aim of making the road all-weather and ensuring that the road remains passable even during the rainy season
4. Protective structures - Placement of retaining walls and lined side drains to avoid excessive damage to the road during the rainy season and bring it to a maintainable standard.
5. Blacktopping - Placement of a blacktop layer in roads with traffic volumes exceeding 50 passenger car units (PCU) to reduce damage to the road surface
6. Widening - Increase of the road width in roads with traffic volumes exceeding 500 passenger car units (PCU) to ensure the proper flow of traffic. However, widening is required in specific locations to bring it up to the minimum standard and to ensure sufficient space in the curves even in case of less than 500 PCU.

### 3.2.1 Rehabilitation

No rehabilitation needs were identified in the district road core network.

**Table 3.2.1 Rehabilitation**

| Code | Name of Road | Total length (km) | Rehabilitation (km) |
|---|---|---|---|
| | **Total** | **12.31** | **-** |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari-Pyuthan | 24.39 | |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | 33.66 | |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gofunga | 14.82 | |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | 16.60 | |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | 4.40 | |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | 23.69 | |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | 19.37 | |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | 8.71 | |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | 12.78 | |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | 37.13 | |
| 51DR011 | Khagadi-Dundruk-Balkot | 7.52 | |
| 51DR012 | Ghumti-Tingire-Palpa | 29.98 | |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | 10.26 | |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | 9.29 | |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | 23.71 | |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | 11.81 | |
| 51DR017 | Bhedamare-Simalpani-Pawara | 18.46 | |
| 51DR018 | Amarai-Jukena | 7.97 | |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | 41.95 | |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | 55.81 | |

### 3.2.2 Gravelling

As the entire district road core network needs to be brought to an all-weather status, gravelling of the road surface is required for all the earthen sections in the DRCN. This district concerns the total of 353.66 for gravelling.

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

| Code | Name of Road | Total length (km) | Gravelling (km) |
|---|---|---|---|
| | **Total** | **412.31** | **353.66** |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari-Pyuthan | 24.39 | 17.16 |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | 33.66 | 10.33 |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gofunga | 14.82 | 14.82 |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | 16.60 | 16.60 |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | 4.40 | 4.40 |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | 23.69 | 23.69 |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | 19.37 | 19.37 |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | 8.71 | 8.71 |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | 12.78 | 12.78 |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | 37.13 | 11.62 |
| 51DR011 | Khagadi-Dundruk-Balkot | 7.52 | 7.52 |
| 51DR012 | Ghumti-Tingire-Palpa | 29.98 | 27.39 |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | 10.26 | 10.26 |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | 9.29 | 9.29 |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | 23.71 | 23.71 |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | 11.81 | 11.81 |
| 51DR017 | Bhedamare-Simalpani-Pawara | 18.46 | 18.46 |
| 51DR018 | Amarai-Jukena | 7.97 | 7.97 |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | 41.95 | 41.95 |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | 55.81 | 55.81 |

### 3.2.3 Cross Drainage

The need for cross drainage was identified for the different DRCN roads. A total of 15 bridges with 454mlength, 6 slab culverts with 42m length, 16 concrete causeway with 121 m, and 129 pipe culverts were identified as being required.

**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 (m) | Pipe culvert (units) |
|---|---|---|---|---|---|---|---|
| **Total** | | **412.31** | **454** | **42** | **121** | **-** | **129** |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari | 24.39 | | | 18 | | 17 |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | 33.66 | 112 | 12 | 9 | | 14 |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gokhunga | 14.82 | 54 | | | | 3 |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | 16.60 | | | 16 | | 3 |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | 4.40 | | 8 | 8 | | 1 |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | 23.69 | | 6 | 8 | | 6 |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | 19.37 | | 8 | 10 | | 1 |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | 8.71 | | | | | 1 |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | 12.78 | 48 | | | | 5 |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | 37.13 | | | | | |
| 51DR011 | Khagadi-Dundruk-Balkot | 7.52 | 60 | | | | 2 |
| 51DR012 | Ghumti-Tingire-Palpa | 29.98 | | | | | 6 |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | 10.26 | | | | | 3 |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | 9.29 | 12 | | 8 | | 12 |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | 23.71 | 72 | | 34 | | 16 |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | 11.81 | | 8 | 10 | | 5 |
| 51DR017 | Bhedamare-Simalpani-Pawara | 18.46 | | | | | 10 |
| 51DR018 | Amarai-Jukena | 7.97 | 36 | | | | 8 |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | 41.95 | | | | | 10 |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | 55.81 | 60 | | | | 6 |

### 3.2.4 Protective Structures

Based on the road survey carried out in Arghakhanchi, a total of 290 cubic meter masonry walls, 5378 cubic meter gabion walls has been proposed as protective structures. In total 20 DRCNs, 1960 m lined drain has been proposed. The following Table 3.2.4 shows the required retaining structures 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 (m3) | Gabion walls (m3) | Lined drain (m) |
|---|---|---|---|---|---|
| **Total** | | **412.31** | **290** | **5,378** | **1,960** |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari | 24.39 | 290 | 750 | 250 |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | 33.66 | | 260 | 90 |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gokhunga | 14.82 | | 165 | 60 |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | 16.60 | | | 40 |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | 4.40 | | 140 | 20 |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | 23.69 | | 420 | 120 |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | 19.37 | | 140 | 150 |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | 8.71 | | 140 | 20 |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | 12.78 | | 320 | 80 |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | 37.13 | | | |
| 51DR011 | Khagadi-Dundruk-Balkot | 7.52 | | 140 | 20 |
| 51DR012 | Ghumti-Tingire-Palpa | 29.98 | | 412.5 | 80 |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | 10.26 | | 270 | 60 |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | 9.29 | | 590 | 250 |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | 23.71 | | 800 | 300 |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | 11.81 | | | 50 |
| 51DR017 | Bhedamare-Simalpani-Pawara | 18.46 | | 140 | 100 |
| 51DR018 | Amarai-Jukena | 7.97 | | 270 | 50 |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | 41.95 | | 420 | 100 |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | 55.81 | | | 120 |

### 3.2.5 Widening

Widening of the district road core network in Arghakhanchi is required only in specific locations to bring it up to the minimum standard and to ensure sufficient space in the curves. Additional widening to a higher standard is not required because traffic volumes remain very low.

**Table 3.2.5 Widening**

| Code | Name of Road | Total length (km) | VPD | Widening (m) |
|---|---|---|---|---|
| **Total** | | **412.31** | | **895** |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari | 24.39 | 25 | 100 |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | 33.66 | 37 | 55 |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gokhunga | 14.82 | 7 | 30 |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | 16.60 | 9 | 35 |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | 4.40 | 5 | 20 |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | 23.69 | 24 | 70 |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | 19.37 | 1 | 55 |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | 8.71 | 5 | 25 |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | 12.78 | 11 | 30 |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | 37.13 | 47 | 60 |
| 51DR011 | Khagadi-Dundruk-Balkot | 7.52 | 5 | 25 |
| 51DR012 | Ghumti-Tingire-Palpa | 29.98 | 36 | 30 |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | 10.26 | 9 | 40 |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | 9.29 | 10 | 35 |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | 23.71 | 6 | 45 |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | 11.81 | 9 | 30 |
| 51DR017 | Bhedamare-Simalpani-Pawara | 18.46 | 6 | 50 |
| 51DR018 | Amarai-Jukena | 7.97 | 6 | 25 |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | 41.95 | 6 | 60 |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | 55.81 | 3 | 75 |

### 3.2.6 Black Topping

An analysis of the traffic data for the different roads making up the district road core network shows thatonly51DR010 require blacktopping as this road meets threshold of 100 PCU.In total 18.6 km road needs to be blacktopped during this DTMP.

**Table 3.2.6 Blacktopping**

| | | | | PCU threshold | 100 |
|---|---|---|---|---|---|
| **Code** | **Name of Road** | **Total length (km)** | **Blacktop (km)** | **Traffic (PCU)** | **Blacktopping (km)** |
| **Total** | | **412.31** | **2.59** | | **18.60** |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari | 24.39 | - | 57 | - |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | 33.66 | - | 89 | - |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gokhunga | 14.82 | - | 16 | - |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | 16.60 | - | 17 | - |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | 4.40 | - | 12 | - |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | 23.69 | - | 63 | - |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | 19.37 | - | 3 | - |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | 8.71 | - | 11 | - |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | 12.78 | - | 26 | - |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | 37.13 | - | 106 | 18.60 |
| 51DR011 | Khagadi-Dundruk-Balkot | 7.52 | - | 12 | - |
| 51DR012 | Ghumti-Tingire-Palpa | 29.98 | 2.59 | 82 | - |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | 10.26 | - | 19 | - |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | 9.29 | - | 23 | - |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | 23.71 | - | 16 | - |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | 11.81 | - | 23 | - |
| 51DR017 | Bhedamare-Simalpani-Pawara | 18.46 | - | 17 | - |
| 51DR018 | Amarai-Jukena | 7.97 | - | 16 | - |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | 41.95 | - | 17 | - |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | 55.81 | - | 8 | - |

## 3.3 New Construction

New construction of DRCN roads is required to connect the remaining VDC headquarters. All the VDCs HQ have been already connected by road in this district. However, a few km road has been proposed for a few DRCN to extend these roads upto another linkages or settlements. A list of proposed roads for new construction is provided below.

**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** | | | **412.31** | **3.90** | **-** |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari-Pyuthan | | 24.39 | | |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | | 33.66 | | |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gofunga | | 14.82 | | |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | | 16.60 | | |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | | 4.40 | | |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | | 23.69 | | |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | Mareng | 19.37 | 1.90 | |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | | 8.71 | | |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | | 12.78 | | |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | | 37.13 | | |
| 51DR011 | Khagadi-Dundruk-Balkot | | 7.52 | | |
| 51DR012 | Ghumti-Tingire-Palpa | | 29.98 | | |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | | 10.26 | | |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | | 9.29 | | |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | | 23.71 | | |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | Pattauti | 11.81 | 2.00 | |
| 51DR017 | Bhedamare-Simalpani-Pawara | | 18.46 | | |
| 51DR018 | Amarai-Jukena | | 7.97 | | |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | | 41.95 | | |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | | 55.81 | | |

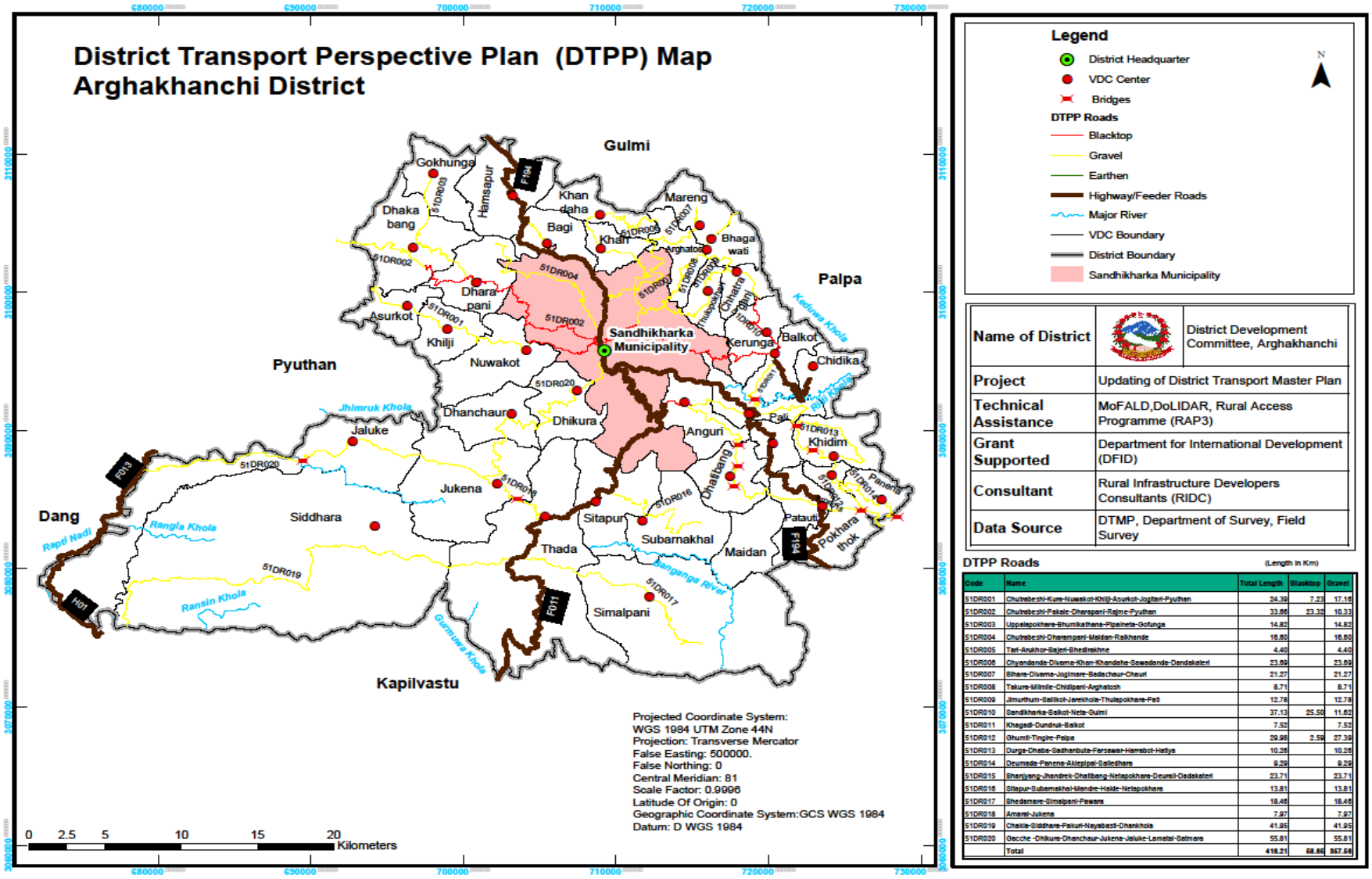
## 3.4 District Transport Perspective Plan

The DTPP foresees bringing the entire existing district road core network to maintainable all-weather status,to provide access to all VDC headquarters. For this purpose, all 353.66 km will be gravelled and a number of different cross drainage and protective structures will be constructed. The existing gravel and blacktop roads are conserved. A further 3.90 km of new road will be constructed to maintainable all-weather gravel standard for connecting another district linkages or settlements. The following table lists the required interventions, while the proposed network is shown in the DTPP map.

**Table 3.4.1 District Transport Perspective Plan**

| Code | Emergency maintenance (km) | Routine maintenance (km) | Recurrent maintenance (km) | Periodic maintenance (km) | Rehabilitation (km) | Gravelling (km) | Blacktopping (km) | Widening (m) | Bridge (m) | Slab culvert (m) | CC Causeway (m) | Stone Causeway (m) | Pipe culvert (units) | Masonry walls (m3) | Gabion walls (m3) | Lined drain (m) | New construction (km) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **412.31** | **412.31** | **2.59** | **2.59** | **-** | **353.66** | **18.60** | **895** | **454** | **42** | **121** | **-** | **129** | **290** | **5,378** | **1,960** | **3.90** |
| 51DR001 | 24.39 | 24.39 | - | - | - | 17.16 | - | 100 | - | - | 18 | - | 17 | 290 | 750 | 250 | - |
| 51DR002 | 33.66 | 33.66 | - | - | - | 10.33 | - | 55 | 112 | 12 | 9 | - | 14 | - | 260 | 90 | - |
| 51DR003 | 14.82 | 14.82 | - | - | - | 14.82 | - | 30 | 54 | - | - | - | 3 | - | 165 | 60 | - |
| 51DR004 | 16.60 | 16.60 | - | - | - | 16.60 | - | 35 | - | - | 16 | - | 3 | - | - | 40 | - |
| 51DR005 | 4.40 | 4.40 | - | - | - | 4.40 | - | 20 | - | 8 | 8 | - | 1 | - | 140 | 20 | - |
| 51DR006 | 23.69 | 23.69 | - | - | - | 23.69 | - | 70 | - | 6 | 8 | - | 6 | - | 420 | 120 | - |
| 51DR007 | 19.37 | 19.37 | - | - | - | 19.37 | - | 55 | - | 8 | 10 | - | 1 | - | 140 | 150 | 1.90 |
| 51DR008 | 8.71 | 8.71 | - | - | - | 8.71 | - | 25 | - | - | - | - | 1 | - | 140 | 20 | - |
| 51DR009 | 12.78 | 12.78 | - | - | - | 12.78 | - | 30 | 48 | - | - | - | 5 | - | 320 | 80 | - |
| 51DR010 | 37.13 | 37.13 | - | - | - | 11.62 | 18.60 | 60 | - | - | - | - | - | - | - | - | - |
| 51DR011 | 7.52 | 7.52 | - | - | - | 7.52 | - | 25 | 60 | - | - | - | 2 | - | 140 | 20 | - |
| 51DR012 | 29.98 | 29.98 | 2.59 | 2.59 | - | 27.39 | - | 30 | - | - | - | - | 6 | - | 413 | 80 | - |
| 51DR013 | 10.26 | 10.26 | - | - | - | 10.26 | - | 40 | - | - | - | - | 3 | - | 270 | 60 | - |
| 51DR014 | 9.29 | 9.29 | - | - | - | 9.29 | - | 35 | 12 | - | 8 | - | 12 | - | 590 | 250 | - |
| 51DR015 | 23.71 | 23.71 | - | - | - | 23.71 | - | 45 | 72 | - | 34 | - | 16 | - | 800 | 300 | - |
| 51DR016 | 11.81 | 11.81 | - | - | - | 11.81 | - | 30 | - | 8 | 10 | - | 5 | - | - | 50 | 2.00 |
| 51DR017 | 18.46 | 18.46 | - | - | - | 18.46 | - | 50 | - | - | - | - | 10 | - | 140 | 100 | - |
| 51DR018 | 7.97 | 7.97 | - | - | - | 7.97 | - | 25 | 36 | - | - | - | 8 | - | 270 | 50 | - |
| 51DR019 | 41.95 | 41.95 | - | - | - | 41.95 | - | 60 | - | - | - | - | 10 | - | 420 | 100 | - |
| 51DR020 | 55.81 | 55.81 | - | - | - | 55.81 | - | 75 | 60 | - | - | - | 6 | - | - | 120 | - |

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




| | | |
|---|---|---|
| Name of District | | District Development Committee, Arghakhanchi |
| Project | Updating of District Transport Master Plan | |
| Technical Assistance | MoFALD,DoLIDAR, Rural Access Programme (RAP3) | |
| Grant Supported | Department for International Development (DFID) | |
| Consultant | Rural Infrastructure Developers Consultants (RIDC) | |
| Data Source | DTMP, Department of Survey, Field Survey | |

**DTPP Roads** (Length in Km)

| Code | Name | Total Length | Blacktop | Gravel |
|---|---|---|---|---|
| 51DR001 | Chutrabeshi-Kure-Nuwakot-Khilji-Asurkot-Jogitari-Pyuthan | 24.39 | 7.23 | 17.16 |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | 33.66 | 23.33 | 10.33 |
| 51DR003 | Uppalpokhare-Bhumikathana-Pipalneta-Gofunga | 14.82 | | 14.82 |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | 16.60 | | 16.60 |
| 51DR005 | Tari-Arukhor-Bajeni-Bhedlekhne | 4.40 | | 4.40 |
| 51DR006 | Chyandanda-Divama-Khan-Khandaha-Sawadanda-Dandakaleni | 23.69 | | 23.69 |
| 51DR007 | Bihare-Divama-Jogimare-Badachaur-Chauri | 21.27 | | 21.27 |
| 51DR008 | Takure-Milimile-Chidipani-Arghatosh | 8.71 | | 8.71 |
| 51DR009 | Jimurthum-Salikot-Jarekhola-Thulapokhare-Pali | 12.78 | | 12.78 |
| 51DR010 | Sandikharka-Salkot-Neta-Gulmi | 37.13 | 25.50 | 11.63 |
| 51DR011 | Khagadi-Dundruk-Balkot | 7.52 | | 7.52 |
| 51DR012 | Ghumti-Tingire-Palpa | 29.98 | 2.59 | 27.39 |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harebot-Hatiya | 10.26 | | 10.26 |
| 51DR014 | Deumada-Panena-Aklepipal-Saileshare | 9.29 | | 9.29 |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhare-Deurali-Dadakaleni | 23.71 | | 23.71 |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Haide-Netapokhare | 13.81 | | 13.81 |
| 51DR017 | Bhedamare-Simalpani-Pawara | 18.46 | | 18.46 |
| 51DR018 | Amarai-Jukena | 7.97 | | 7.97 |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | 41.95 | | 41.95 |
| 51DR020 | Gacche -Dhikure-Dhanchaur-Jukena-Jaluke-Lamatal-Balmare | 55.81 | | 55.81 |
| | Total | 418.21 | 58.86 | 357.58 |

# 4. Cost Estimation

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

## 4.1 Conservation

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

**Table 4.1.1 Standard unit costs for conservation**

| Activity | Unit | DTMP proposed unit cost (NPR) | DTMP actual unit cost (NPR) |
|---|---|---|---|
| Emergency maintenance | km | 30,000 | 25,000 |
| Routine maintenance | km | 20,000 | 15,000 |
| Recurrent maintenance (blacktop) | km | 500,000 | 200,000 |
| Recurrent maintenance (gravel) | km | 400,000 | 130,000 |
| Recurrent maintenance (earthen) | km | 250,000 | 120,000 |
| Periodic maintenance (blacktop) | km | 200,000 | 200,000 |
| Periodic maintenance (gravel) | km | 250,000 | 250,000 |

For the first year the estimated costs for conservation of the DRCN come to NPR 81.27 million. Based on this cost for the first year, the costs for conservation of the DRCN for the next 5 years are estimated at NPR 406.35 million. These costs will change slightly as the roads are improved and the standard conservation costs change. This will be updated in the ARMP on an annual basis.

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

| Code | Total length (km) | Blacktop (km) | Gravel (km) | Earthen (km) | Emergency maintenance | Routine maintenance | Recurrent maintenance (blacktop) | Recurrent maintenance (gravel) | Recurrent maintenance (earthen) | Periodic maintenance (blacktop) | Periodic maintenance (gravel) | Total first year cost | Total 5-year cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **412.31** | **2.59** | **56.06** | **353.66** | **10,308** | **6,185** | **518** | **7,288** | **42,439** | **518** | **14,015** | **81,270** | **406,349** |
| 51DR001 | 24.39 | - | 7.23 | 17.16 | 610 | 366 | - | 940 | 2,059 | - | 1,809 | **5,783** | **28,916** |
| 51DR002 | 33.66 | - | 23.32 | 10.33 | 841 | 505 | - | 3,032 | 1,240 | - | 5,831 | **11,450** | **57,248** |
| 51DR003 | 14.82 | - | - | 14.82 | 371 | 222 | - | - | 1,778 | - | - | **2,371** | **11,856** |
| 51DR004 | 16.60 | - | - | 16.60 | 415 | 249 | - | - | 1,992 | - | - | **2,656** | **13,282** |
| 51DR005 | 4.40 | - | - | 4.40 | 110 | 66 | - | - | 527 | - | - | **703** | **3,516** |
| 51DR006 | 23.69 | - | - | 23.69 | 592 | 355 | - | - | 2,843 | - | - | **3,791** | **18,954** |
| 51DR007 | 19.37 | - | - | 19.37 | 484 | 291 | - | - | 2,324 | - | - | **3,099** | **15,496** |
| 51DR008 | 8.71 | - | - | 8.71 | 218 | 131 | - | - | 1,045 | - | - | **1,394** | **6,968** |
| 51DR009 | 12.78 | - | - | 12.78 | 320 | 192 | - | - | 1,534 | - | - | **2,045** | **10,227** |
| 51DR010 | 37.13 | - | 25.50 | 11.62 | 928 | 557 | - | 3,315 | 1,395 | - | 6,375 | **12,570** | **62,851** |
| 51DR011 | 7.52 | - | - | 7.52 | 188 | 113 | - | - | 903 | - | - | **1,204** | **6,019** |
| 51DR012 | 29.98 | 2.59 | - | 27.39 | 749 | 450 | 518 | - | 3,286 | 518 | - | **5,521** | **27,605** |
| 51DR013 | 10.26 | - | - | 10.26 | 257 | 154 | - | - | 1,232 | - | - | **1,642** | **8,210** |
| 51DR014 | 9.29 | - | - | 9.29 | 232 | 139 | - | - | 1,115 | - | - | **1,487** | **7,433** |
| 51DR015 | 23.71 | - | - | 23.71 | 593 | 356 | - | - | 2,845 | - | - | **3,794** | **18,970** |
| 51DR016 | 11.81 | - | - | 11.81 | 295 | 177 | - | - | 1,417 | - | - | **1,889** | **9,447** |
| 51DR017 | 18.46 | - | - | 18.46 | 461 | 277 | - | - | 2,215 | - | - | **2,953** | **14,766** |
| 51DR018 | 7.97 | - | - | 7.97 | 199 | 120 | - | - | 956 | - | - | **1,275** | **6,376** |
| 51DR019 | 41.95 | - | - | 41.95 | 1,049 | 629 | - | - | 5,034 | - | - | **6,712** | **33,560** |
| 51DR020 | 55.81 | - | - | 55.81 | 1,395 | 837 | - | - | 6,697 | - | - | **8,930** | **44,649** |

## 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 | 5,000,000 |
| 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 | $m^3$ | 10,000 | 10,000 |
| Gabion wall construction | $m^3$ | 2,500 | 2,500 |
| Lined drain construction | m | 1,000 | 1,000 |

Based on standard unit costs and the identified improvement requirements, the resulting estimated costs come to NPR 1203.75 million as indicated in the table below.

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

| Code | Total length (km) | Rehabilitation | Widening | Gravelling | Blacktopping | Bridges | Slab culverts | CC causeways | Stone causeways | Pipe culvert | Masonry walls | Gabion walls | Lined drains | Total cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **412.31** | **-** | **2,238** | **707,322** | **93,000** | **363,200** | **6,300** | **12,100** | **-** | **1,290** | **2,900** | **13,444** | **1,960** | **1,203,753** |
| 51DR001 | 24.39 | - | 250 | 34,312 | - | - | - | 1,800 | - | 170 | 2,900 | 1,875 | 250 | **41,557** |
| 51DR002 | 33.66 | - | 138 | 20,668 | - | 89,600 | 1,800 | 900 | - | 140 | - | 650 | 90 | **113,986** |
| 51DR003 | 14.82 | - | 75 | 29,640 | - | 43,200 | - | - | - | 30 | - | 413 | 60 | **73,418** |
| 51DR004 | 16.60 | - | 88 | 33,204 | - | - | - | 1,600 | - | 30 | - | - | 40 | **34,962** |
| 51DR005 | 4.40 | - | 50 | 8,790 | - | - | 1,200 | 800 | - | 10 | - | 350 | 20 | **11,220** |
| 51DR006 | 23.69 | - | 175 | 47,386 | - | - | 900 | 800 | - | 60 | - | 1,050 | 120 | **50,491** |
| 51DR007 | 19.37 | - | 138 | 38,740 | - | - | 1,200 | 1,000 | - | 10 | - | 350 | 150 | **41,588** |
| 51DR008 | 8.71 | - | 63 | 17,420 | - | - | - | - | - | 10 | - | 350 | 20 | **17,863** |
| 51DR009 | 12.78 | - | 75 | 25,568 | - | 38,400 | - | - | - | 50 | - | 800 | 80 | **64,973** |
| 51DR010 | 37.13 | - | 150 | 23,248 | 93,000 | - | - | - | - | - | - | - | - | **116,398** |
| 51DR011 | 7.52 | - | 63 | 15,048 | - | 48,000 | - | - | - | 20 | - | 350 | 20 | **63,501** |
| 51DR012 | 29.98 | - | 75 | 54,772 | - | - | - | - | - | 60 | - | 1,031 | 80 | **56,018** |
| 51DR013 | 10.26 | - | 100 | 20,526 | - | - | - | - | - | 30 | - | 675 | 60 | **21,391** |
| 51DR014 | 9.29 | - | 88 | 18,582 | - | 9,600 | - | 800 | - | 120 | - | 1,475 | 250 | **30,915** |
| 51DR015 | 23.71 | - | 113 | 47,424 | - | 57,600 | - | 3,400 | - | 160 | - | 2,000 | 300 | **110,997** |
| 51DR016 | 11.81 | - | 75 | 23,618 | - | - | 1,200 | 1,000 | - | 50 | - | - | 50 | **25,993** |
| 51DR017 | 18.46 | - | 125 | 36,914 | - | - | - | - | - | 100 | - | 350 | 100 | **37,589** |
| 51DR018 | 7.97 | - | 63 | 15,940 | - | 28,800 | - | - | - | 80 | - | 675 | 50 | **45,608** |
| 51DR019 | 41.95 | - | 150 | 83,900 | - | - | - | - | - | 100 | - | 1,050 | 100 | **85,300** |
| 51DR020 | 55.81 | - | 188 | 111,622 | - | 48,000 | - | - | - | 60 | - | - | 120 | **159,990** |

## 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 | 3,000,000 |
| Gravelling | km | 2,200,000 | 2,000,000 |
| Bridge construction | m | 600,000 | 800,000 |

The resulting estimated costs for new construction come to NPR 19.50 million.

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

| Code | Name of Road | New length (km) | Opening up (NPR) | Gravelling (NPR) | Bridges (NPR) | Total cost (NPR) |
|---|---|---|---|---|---|---|
| **Total** | | **3.90** | **11,700** | **7,800** | **-** | **19,500** |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari | - | - | - | - | **-** |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | - | - | - | - | **-** |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gokhunga | - | - | - | - | **-** |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | - | - | - | - | **-** |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | - | - | - | - | **-** |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | - | - | - | - | **-** |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | 1.90 | 5,700 | 3,800 | - | **9,500** |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | - | - | - | - | **-** |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | - | - | - | - | **-** |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | - | - | - | - | **-** |
| 51DR011 | Khagadi-Dundruk-Balkot | - | - | - | - | **-** |
| 51DR012 | Ghumti-Tingire-Palpa | - | - | - | - | **-** |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | - | - | - | - | **-** |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | - | - | - | - | **-** |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | - | - | - | - | **-** |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | 2.00 | 6,000 | 4,000 | - | **10,000** |
| 51DR017 | Bhedamare-Simalpani-Pawara | - | - | - | - | **-** |
| 51DR018 | Amarai-Jukena | - | - | - | - | **-** |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | - | - | - | - | **-** |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | - | - | - | - | **-** |

## 4.4 DTPP Costs

The total costs for the District Transport Perspective Plan come to NPR 1629.60 million as indicated in the table below.

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

| Code | Name of Road | Conservation | Improvement | New construction | Total |
|---|---|---|---|---|---|
| **Total** | | **406,349** | **1,203,753** | **19,500** | **1,629,602** |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari | 28,916 | 41,557 | - | 70,473 |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | 57,248 | 113,986 | - | 171,233 |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gokhunga | 11,856 | 73,418 | - | 85,274 |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | 13,282 | 34,962 | - | 48,243 |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | 3,516 | 11,220 | - | 14,736 |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | 18,954 | 50,491 | - | 69,445 |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | 15,496 | 41,588 | 9,500 | 66,584 |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | 6,968 | 17,863 | - | 24,831 |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | 10,227 | 64,973 | - | 75,200 |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | 62,851 | 116,398 | - | 179,249 |
| 51DR011 | Khagadi-Dundruk-Balkot | 6,019 | 63,501 | - | 69,520 |
| 51DR012 | Ghumti-Tingire-Palpa | 27,605 | 56,018 | - | 83,623 |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | 8,210 | 21,391 | - | 29,601 |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | 7,433 | 30,915 | - | 38,347 |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | 18,970 | 110,997 | - | 129,966 |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | 9,447 | 25,993 | 10,000 | 45,440 |
| 51DR017 | Bhedamare-Simalpani-Pawara | 14,766 | 37,589 | - | 52,355 |
| 51DR018 | Amarai-Jukena | 6,376 | 45,608 | - | 51,984 |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | 33,560 | 85,300 | - | 118,860 |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | 44,649 | 159,990 | - | 204,638 |

# 5. Ranking

The ranking of the required interventions determines the order in which they will be carried out. This ranking is done separately for conservation, improvement and new construction. Ranking is done according to the cost per person served, whereby the costs are the estimated costs of the previous chapter. For the calculation of the population served, use is made of the population data for the VDCs linked by the road concerned.

## 5.1 Conservation

Ranking of roads for conservation is based on the total conservation costs per person served by the road. This ranking of roads will be updated each year in the ARMP based on the actual cost estimates for the year concerned. An example ranking is provided in the table below based on standard costs for the first year.

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

| # | Code | Total length (km) | 1. Emergency | 2. Routine | 3. Recurrent (blacktop) | 4. Recurrent (gravel) | 5. Recurrent (earth) | 6. Periodic (blacktop) | 7. Periodic (gravel) | Total cost (NPR '000) | Population served | Cost/person (NPR) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 51DR005 | 4.40 | 110 | 66 | - | - | 527 | - | - | 703 | 2,541 | 277 |
| 18 | 51DR018 | 7.97 | 199 | 120 | - | - | 956 | - | - | 1,275 | 3,524 | 362 |
| 11 | 51DR011 | 7.52 | 188 | 113 | - | - | 903 | - | - | 1,204 | 2,508 | 480 |
| 12 | 51DR012 | 29.98 | 749 | 450 | 518 | - | 3,286 | 518 | - | 5,521 | 10,202 | 541 |
| 8 | 51DR008 | 8.71 | 218 | 131 | - | - | 1,045 | - | - | 1,394 | 2,396 | 582 |
| 15 | 51DR015 | 23.71 | 593 | 356 | - | - | 2,845 | - | - | 3,794 | 5,798 | 654 |
| 20 | 51DR020 | 55.81 | 1,395 | 837 | - | - | 6,697 | - | - | 8,930 | 11,458 | 779 |
| 4 | 51DR004 | 16.60 | 415 | 249 | - | - | 1,992 | - | - | 2,656 | 3,368 | 789 |
| 6 | 51DR006 | 23.69 | 592 | 355 | - | - | 2,843 | - | - | 3,791 | 4,580 | 828 |
| 1 | 51DR001 | 24.39 | 610 | 366 | - | 940 | 2,059 | - | 1,809 | 5,783 | 6,962 | 831 |
| 13 | 51DR013 | 10.26 | 257 | 154 | - | - | 1,232 | - | - | 1,642 | 1,976 | 831 |
| 17 | 51DR017 | 18.46 | 461 | 277 | - | - | 2,215 | - | - | 2,953 | 3,218 | 918 |
| 9 | 51DR009 | 12.78 | 320 | 192 | - | - | 1,534 | - | - | 2,045 | 2,183 | 937 |
| 14 | 51DR014 | 9.29 | 232 | 139 | - | - | 1,115 | - | - | 1,487 | 1,384 | 1,074 |
| 10 | 51DR010 | 37.13 | 928 | 557 | - | 3,315 | 1,395 | - | 6,375 | 12,570 | 15,779 | 797 |
| 16 | 51DR016 | 11.81 | 295 | 177 | - | - | 1,417 | - | - | 1,889 | 1,584 | 1,193 |
| 3 | 51DR003 | 14.82 | 371 | 222 | - | - | 1,778 | - | - | 2,371 | 1,951 | 1,215 |
| 2 | 51DR002 | 33.66 | 841 | 505 | - | 3,032 | 1,240 | - | 5,831 | 11,450 | 19,110 | 599 |
| 7 | 51DR007 | 19.37 | 484 | 291 | - | - | 2,324 | - | - | 3,099 | 2,313 | 1,340 |
| 19 | 51DR019 | 41.95 | 1,049 | 629 | - | - | 5,034 | - | - | 6,712 | 4,564 | 1,471 |

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

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

## 5.2 Improvement

In the case of improvement activities, ranking is again based on the basis of the total cost per person served. The resulting order of the roads is shown in the table below. In the case of roads requiring blacktopping, the improvement of the road has been split into two phases. The first phase includes all improvements to bring the road to a maintainable all-weather standard (gravelling, widening, cross drainage and protective structures), while the second phase only includes the blacktopping. This has been done to avoid unnecessarily delaying the improvement of such roads to all-weather gravel standard due to the additional cost of blacktopping (increasing the cost per person served).

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

| # | Code | Total length (km) | Gravelling (km) | Blacktopping (km) | Total cost (NPR '000) | Population served | Cost/person (NPR) |
|---|---|---|---|---|---|---|---|
| 10 | 51DR010 | 37.13 | 11.62 | 18.60 | 68,398 | 15,779 | 4,335 |
| 5 | 51DR005 | 4.40 | 4.40 | - | 11,220 | 2,541 | 4,416 |
| 12 | 51DR012 | 29.98 | 27.39 | - | 56,018 | 10,202 | 5,491 |
| 2 | 51DR002 | 33.66 | 10.33 | - | 113,986 | 19,110 | 5,965 |
| 1 | 51DR001 | 24.39 | 17.16 | - | 41,557 | 6,962 | 5,969 |
| 8 | 51DR008 | 8.71 | 8.71 | - | 17,863 | 2,396 | 7,455 |
| 4 | 51DR004 | 16.60 | 16.60 | - | 34,962 | 3,368 | 10,380 |
| 13 | 51DR013 | 10.26 | 10.26 | - | 21,391 | 1,976 | 10,825 |
| 6 | 51DR006 | 23.69 | 23.69 | - | 50,491 | 4,580 | 11,024 |
| 17 | 51DR017 | 18.46 | 18.46 | - | 37,589 | 3,218 | 11,681 |
| 18 | 51DR018 | 7.97 | 7.97 | - | 45,608 | 3,524 | 12,942 |
| 20 | 51DR020 | 55.81 | 55.81 | - | 159,990 | 11,458 | 13,963 |
| 16 | 51DR016 | 11.81 | 11.81 | - | 25,993 | 1,584 | 16,410 |
| 7 | 51DR007 | 19.37 | 19.37 | - | 41,588 | 2,313 | 17,980 |
| 19 | 51DR019 | 41.95 | 41.95 | - | 85,300 | 4,564 | 18,690 |
| 15 | 51DR015 | 23.71 | 23.71 | - | 110,997 | 5,798 | 19,144 |
| 14 | 51DR014 | 9.29 | 9.29 | - | 30,915 | 1,384 | 22,337 |
| 11 | 51DR011 | 7.52 | 7.52 | - | 63,501 | 2,508 | 25,319 |
| 9 | 51DR009 | 12.78 | 12.78 | - | 64,973 | 2,183 | 29,763 |
| 3 | 51DR003 | 14.82 | 14.82 | - | 73,418 | 1,951 | 37,631 |

## 5.3 New construction

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

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

| # | Code | Length (km) | Total cost (NPR '000) | Population served | Cost/person (NPR) |
|---|---|---|---|---|---|
| 3 | 51DR003 | - | - | 1,951 | - |
| 5 | 51DR005 | - | - | 2,541 | - |
| 9 | 51DR009 | - | - | 2,183 | - |
| 10 | 51DR010 | - | - | 15,779 | - |
| 17 | 51DR017 | - | - | 3,218 | - |
| 18 | 51DR018 | - | - | 3,524 | - |
| 20 | 51DR020 | - | - | 11,458 | - |
| 12 | 51DR012 | - | - | 10,202 | - |
| 13 | 51DR013 | - | - | 1,976 | - |
| 8 | 51DR008 | - | - | 2,396 | - |
| 2 | 51DR002 | - | - | 19,110 | - |
| 15 | 51DR015 | - | - | 5,798 | - |
| 11 | 51DR011 | - | - | 2,508 | - |
| 14 | 51DR014 | - | - | 1,384 | - |
| 4 | 51DR004 | - | - | 3,368 | - |
| 1 | 51DR001 | - | - | 6,962 | - |
| 19 | 51DR019 | - | - | 4,564 | - |
| 6 | 51DR006 | - | - | 4,580 | - |
| 7 | 51DR007 | 1.90 | 9,500 | 2,313 | 4,107 |
| 16 | 51DR016 | 2.00 | 10,000 | 1,584 | 6,313 |

# 6. District Transport Master Plan (DTMP)

The District Transport Master Plan (DTMP) that covers the next five years is prepared based on the projected financial resources available and the prioritized transport interventions as listed in the DTPP. Year-wise targets are prepared for the different roads and intervention types.

## 6.1 Five Year Projected Financial Resources

The projected financial resources for the next five years are estimated by considering all possible funding sources. The funding levels are based on the existing trend of funding. An annual increase in funding of 10% is assumed for almost all funding sources. The total district budget for the road sector for the five-year period (fiscal year 2072/73 to 2076/77) is NPR 796.16 million including 550 million SNRTP fund and 91.56 million LRBP fund. LRBP fund is used for only bridges of specified DRCN and this fund is therefore not distributed for investment plan. Further, most of the SNRTP fund also had been already allocated for specified roads prior to preparation of this DTMP. Fortunately, almost all the roads selected for SNRTP are very important district roads and has come at the top of ranking table of this DTMP report.

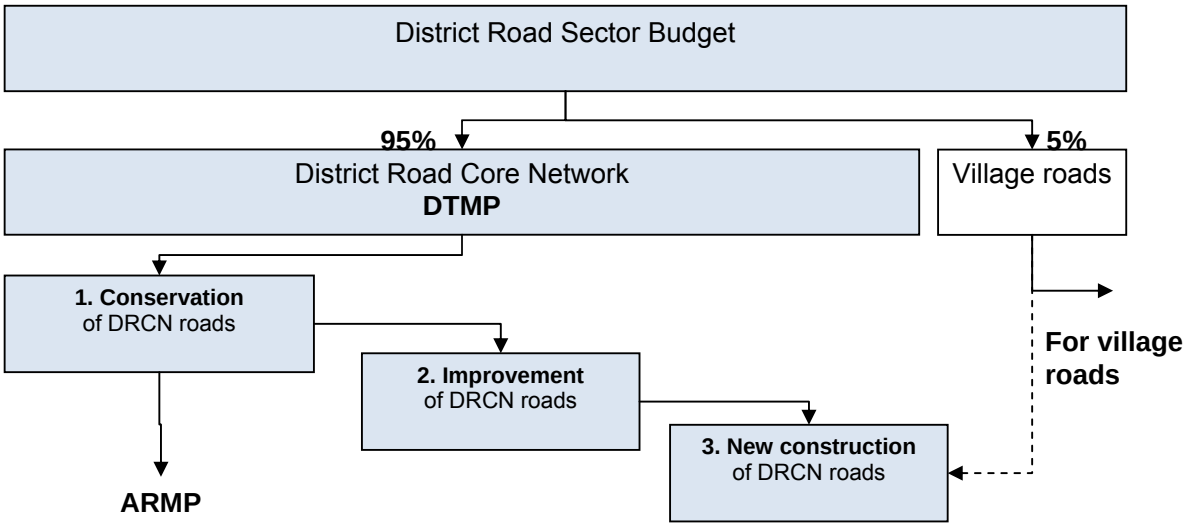
Table 6.1.1 Estimated funding levels (roads) for next five years (in NPR '000)

| **Funding source** | **Fiscal year** | | | | |
|---|---|---|---|---|---|
| | **2072/73** | **2073/74** | **2074/75** | **2075/76** | **2076/77** |
| DDC Capital grant (%) [A] | 1,050 | 1,155 | 1,271 | 1,398 | 1,537 |
| DDC Internal Revenue [B] | 500 | 550 | 605 | 666 | 732 |
| Road Board Nepal [C] | 4,000 | 4,400 | 4,840 | 5,324 | 5,856 |
| SNRTP [D] | 80,000 | 120,000 | 120,000 | 110,000 | 120,000 |
| RTI SWAp [E] | 21,550 | 23,705 | 26,076 | 28,683 | 31,551 |
| LRBP [F] | 15,000 | 16,500 | 18,150 | 19,965 | 21,962 |
| Constitution area Development program [G] | 6,500 | 7,150 | 7,865 | 8,652 | 9,517 |
| People's Participation (20% of A+B+C+E+G) | 6,720 | 7,392 | 8,131 | 8,944 | 9,839 |
| | | | | | |
| **Total** | **120,320** | **164,352** | **168,787** | **163,666** | **179,033** |
| **Grand total** | **796,158** | | | | |

## 6.2 BudgetAllocation

The distribution of the available district road sector budget is indicated in the figure below. Due to the low number of village roads, 95% of the total budget is reserved for the district road core network. The remaining 5% is to be used by the DDC for the village roads, giving priority to emergency maintenance and routine/recurrent maintenance. Alternatively, this 5% may be used for the new construction of DRCN roads where this is considered a priority by the district. The 95% of the district road sector budget for the DTMP is allocated firstly to conservation, secondly improvement, and any remaining funding is allocated to new construction.

**Figure 5 District road sector budget allocation**




Based on this distribution of the estimated budget, the available annual budget for each intervention type and the resulting district road core network length by surface type can be calculated. The results are shown in the following table.

**Table 6.2.1 Investment plan**

| A | Item | | | | Year | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fiscal year | | | | 2072/73 | | | 2073/74 | | | 2074/75 | | | 2075/76 | | | 2076/77 | | | |
| | Total budget | | | | 120,320 | | | 164,352 | | | 168,787 | | | 163,666 | | | 179,033 | | | |
| | Village roads | | | | 6,016 | | | 8,218 | | | 8,439 | | | 8,183 | | | 8,952 | | | |
| | Core road network budget (DTMP) | | | | **114,304** | | | **156,134** | | | **160,348** | | | **155,483** | | | **170,081** | | | |
| **B** | **Core network length (km)** | | | | **412.31** | | | **412.31** | | | **412.31** | | | **412.31** | | | **412.31** | | | |
| | Blacktop (km) | | | | 2.59 | | | 9.44 | | | 21.19 | | | 21.19 | | | 21.19 | | | |
| | Gravel (km) | | | | 56.06 | | | 53.49 | | | 54.61 | | | 80.40 | | | 91.07 | | | |
| | Earthen (km) | | | | 353.66 | | | 349.38 | | | 336.51 | | | 310.72 | | | 300.05 | | | |
| **C** | **Conservation (NRs)** | | | | **71,459** | | | **71,271** | | | **72,307** | | | **74,498** | | | **75,923** | | | |
| | Emergency | | | | 10,308 | | | 10,308 | | | 10,308 | | | 10,308 | | | 10,308 | | | |
| | Routine | | | | 6,185 | | | 6,185 | | | 6,185 | | | 6,185 | | | 6,185 | | | |
| | Recurrent (blacktop) | | | | 518 | | | 1,887 | | | 4,238 | | | 4,238 | | | 4,238 | | | |
| | Recurrent (gravel) | | | | 7,288 | | | 6,954 | | | 7,100 | | | 10,452 | | | 11,839 | | | |
| | Recurrent (earthen) | | | | 42,439 | | | 41,926 | | | 40,381 | | | 37,287 | | | 36,006 | | | |
| | Periodic (blacktop) | | | | 518 | | | | | | | | | | | | 518 | | | |
| | Periodic (gravel) | | | | 4,204 | | | 4,012 | | | 4,096 | | | 6,030 | | | 6,830 | | | |
| **D** | **Improvement** | **Cost** | **BT** | **GR** | **42,845** | **BT** | **GR** | **84,863** | **BT** | **GR** | **88,041** | **BT** | **GR** | **80,984** | **BT** | **GR** | **94,158** | **BT** | **GR** | |
| | 51DR010 | 116,398 | 18.60 | 11.62 | 42,845 | 6.85 | 4.28 | 73,553 | 11.75 | 7.35 | - | - | - | - | - | - | - | - | - | SNRTP funded road |
| | 51DR005 | 11,220 | - | 4.40 | | - | - | | - | - | | - | - | | - | - | | - | - | Not receive funds until F-194 becomes all-weather status |
| | 51DR012 | 56,018 | - | 27.39 | - | - | - | 11,310 | - | 5.53 | 44,708 | - | 21.86 | - | - | - | - | - | - | SNRTP funded road |
| | 51DR002 | 113,986 | - | 10.33 | - | - | - | - | - | - | 43,333 | - | 3.93 | 70,653 | - | 6.41 | - | - | - | SNRTP funded road |
| | 51DR001 | 41,557 | - | 17.16 | - | - | - | | - | - | | - | - | 10,332 | - | 4.27 | 31,225 | - | 12.89 | SNRTP funded road |
| | 51DR008 | 17,863 | - | 8.71 | - | - | - | | - | - | | - | - | - | - | - | 17,863 | - | 8.71 | |
| | 51DR004 | 34,962 | - | 16.60 | - | - | - | | - | - | | - | - | | - | - | 34,962 | - | 16.60 | |
| | 51DR013 | 21,391 | - | 10.26 | - | - | - | | - | - | | - | - | | - | - | | - | - | Not receive funds until DR012 becomes all-weather status |
| | 51DR006 | 50,491 | - | 23.69 | - | - | - | | - | - | | - | - | | - | - | 10,108 | - | 4.74 | |
| | 51DR017 | 37,589 | - | 18.46 | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | |
| | 51DR018 | 45,608 | - | 7.97 | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | |
| | 51DR020 | 159,990 | - | 55.81 | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | |
| | 51DR016 | 25,993 | - | 11.81 | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | |
| | 51DR007 | 41,588 | - | 19.37 | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 51DR019 | 85,300 | - | 41.95 | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | |
| | 51DR015 | 110,997 | - | 23.71 | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | |
| | 51DR014 | 30,915 | - | 9.29 | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | |
| | 51DR011 | 63,501 | - | 7.52 | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | |
| | 51DR009 | 64,973 | - | 12.78 | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | |
| | 51DR003 | 73,418 | - | 14.82 | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | |
| | **Total improvement** | | | | **42,845** | **6.85** | **4.28** | **84,863** | **11.75** | **12.87** | **88,041** | **-** | **25.79** | **80,984** | **-** | **10.67** | **94,158** | **-** | **42.95** | |
| **E** | **Construction** | **Cost** | **GR** | | **-** | **GR** | | **-** | **GR** | | **-** | **GR** | | **-** | **GR** | | **-** | **GR** | | |
| | 51DR003 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR005 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR009 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR010 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR017 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR018 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR020 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR012 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR013 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR008 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR002 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR015 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR011 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR014 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR004 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR001 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR019 | - | - | | - | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR006 | - | - | | | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR007 | 9,500 | 1.90 | | | - | | - | - | | - | - | | - | - | | - | - | | |
| | 51DR016 | 10,000 | 2.00 | | | - | | - | - | | - | - | | - | - | | - | - | | |
| | **Total new construction** | | | | **-** | **-** | | **-** | **-** | | **-** | **-** | | **-** | **-** | | **-** | **-** | | |
| **F** | **Remaining budget** | | | | **-** | | | **-** | | | **-** | | | **-** | | | **-** | | | |

## 6.3 DTMP Outputs

Based on the investment plan presented above, all existing DRCN roads (2.59 km blacktop, 56.06 km gravel and 353.66 km) will be conserved for the duration of the DTMP period. Not only based on ranking (based on cost per person served), other many factors have been considered for preparation of 5 years DTMP. A total of96.56 km earthen roads into gravel and 18.6 km gravel road into blacktop (Otta seal) will be improved inclusive of cross drainage and protective structures required respectively to make them maintainable all-weather roads. The remaining 257.11 km of earthen roads at the end of the DTMP period will be improved in the next DTMP.

**Table6.3.1 DTMP output**

| Conservation | Improvement gravel | Improvement blacktop | New construction |
|---|---|---|---|
| 412.31 | 96.56 | 18.60 | - |

Of the total DTMP budget, NPR 365.46 million will be spent on conservation and NPR 390.89 million on improvement.This will use up the entire DTMP budget for the five-year period.

## 6.4 DTMP Outcome

As a result of the activities planned in this DTMP, the percentage of all-weather maintainable DRCN roads increases from 58.65 km to 155.2 km, with 257.11 km remaining fair weather. During this DTMP period, blacktop road will be increased from 2.59 km to 21.19 km. At the same time, 96.56 km earthen road will be changed to gravel standard.

**Table 6.4.1 Standard of DRCN roads**

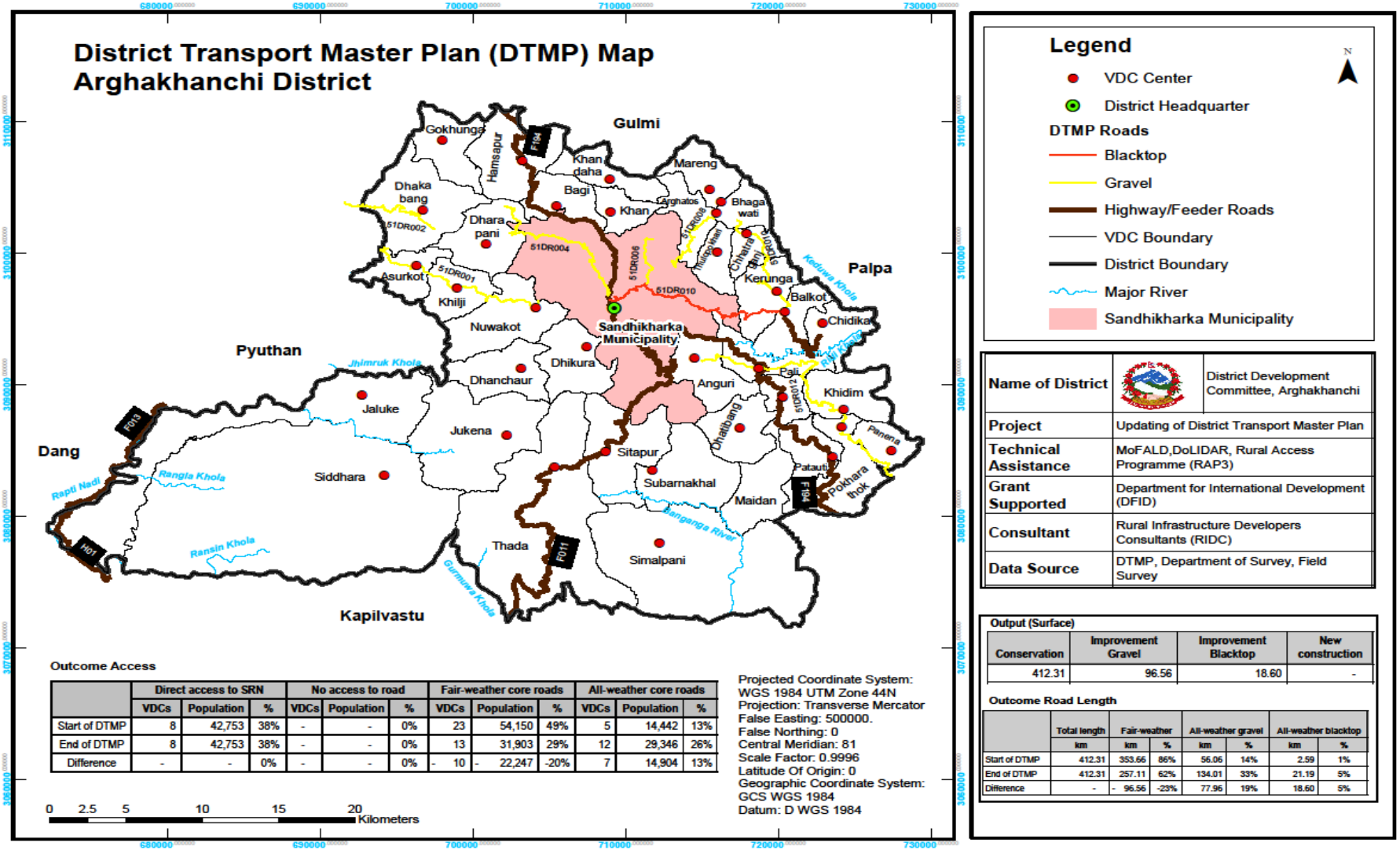
| | Total length | Fair-weather | | All-weather gravel | | All-weather blacktop | |
|---|---|---|---|---|---|---|---|
| | km | km | % | km | % | km | % |
| Start of DTMP | 412.31 | 353.66 | 86% | 56.06 | 14% | 2.59 | 1% |
| End of DTMP | 412.31 | 257.11 | 62% | 134.01 | 33% | 21.19 | 5% |
| Difference | - | - 96.56 | -23% | 77.96 | 19% | 18.60 | 5% |

The number of VDC headquarters with direct access to the SRN is 8 with 38% district population. Similarly, the number of VDC headquarters with access to all-weather DRCN roads and district population with access to the all-weather DRCN roads will increase5 to 12 and 14,442 to 29,346 respectively while 13 VDCs HQ will remain with access to fair-weather DRCN roads during first DTMP period. The number of VDC headquarters with no access to DRCN roads will remain at 0.

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

| | Direct access to SRN | | | No access to road | | | Fair-weather core roads | | | All-weather core roads | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | VDCs | Population | % | VDCs | Population | % | VDCs | Population | % | VDCs | Population | % |
| Start of DTMP | 8 | 42,753 | 38% | - | - | 0% | 23 | 54,150 | 49% | 5 | 14,442 | 13% |
| End of DTMP | 8 | 42,753 | 38% | - | - | 0% | 13 | 31,903 | 29% | 12 | 29,346 | 26% |
| Difference | - | - | 0% | - | - | 0% | - 10 | - 22,247 | -20% | 7 | 14,904 | 13% |

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




**Outcome Access**

| | Direct access to SRN | | | No access to road | | | Fair-weather core roads | | | All-weather core roads | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | VDCs | Population | % | VDCs | Population | % | VDCs | Population | % | VDCs | Population | % |
| Start of DTMP | 8 | 42,753 | 38% | - | - | 0% | 23 | 54,150 | 49% | 5 | 14,442 | 13% |
| End of DTMP | 8 | 42,753 | 38% | - | - | 0% | 13 | 31,903 | 29% | 12 | 29,346 | 26% |
| Difference | - | - | 0% | - | - | 0% | - 10 | - 22,247 | -20% | 7 | 14,904 | 13% |

| | |
|---|---|
| Name of District | District Development Committee, Arghakhanchi |
| Project | Updating of District Transport Master Plan |
| Technical Assistance | MoFALD,DoLIDAR, Rural Access Programme (RAP3) |
| Grant Supported | Department for International Development (DFID) |
| Consultant | Rural Infrastructure Developers Consultants (RIDC) |
| Data Source | DTMP, Department of Survey, Field Survey |

**Output (Surface)**

| Conservation | Improvement Gravel | Improvement Blacktop | New construction |
|---|---|---|---|
| 412.31 | 96.56 | 18.60 | - |

**Outcome Road Length**

| | Total length | Fair-weather | | All-weather gravel | | All-weather blacktop | |
|---|---|---|---|---|---|---|---|
| | km | km | % | km | % | km | % |
| Start of DTMP | 412.31 | 353.66 | 86% | 56.06 | 14% | 2.59 | 1% |
| End of DTMP | 412.31 | 257.11 | 62% | 134.01 | 33% | 21.19 | 5% |
| Difference | - | - 96.56 | -23% | 77.96 | 19% | 18.60 | 5% |

# Annexes

## Annex 1: Traffic Data

| Code | Description | Total Length (km) | Motorcycle | Car-Jeep-Minibus | Tractor | Truck-Bus | PCU | VPD |
|---|---|---|---|---|---|---|---|---|
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari | 24.39 | 22 | 14 | 6 | 5 | **57** | **25** |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | 33.66 | 30 | 18 | 10 | 9 | **89** | **37** |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gokhunga | 14.82 | 10 | 3 | 4 | | **16** | **7** |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | 16.60 | 8 | 5 | 4 | | **17** | **9** |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | 4.40 | 7 | 2 | 3 | | **12** | **5** |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | 23.69 | 35 | 7 | 15 | 2 | **63** | **24** |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | 19.37 | 1 | | 1 | | **3** | **1** |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | 8.71 | 5 | 2 | 3 | | **11** | **5** |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | 12.78 | 10 | 5 | 4 | 2 | **26** | **11** |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | 37.13 | 25 | 25 | 10 | 12 | **106** | **47** |
| 51DR011 | Khagadi-Dundruk-Balkot | 7.52 | 8 | 2 | 3 | | **12** | **5** |
| 51DR012 | Ghumti-Tingire-Palpa | 29.98 | 28 | 18 | 11 | 7 | **82** | **36** |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | 10.26 | 10 | 4 | 5 | | **19** | **9** |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | 9.29 | 10 | 4 | 5 | 1 | **23** | **10** |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | 23.71 | 7 | 2 | 3 | 1 | **16** | **6** |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | 11.81 | 10 | 4 | 3 | 2 | **23** | **9** |
| 51DR017 | Bhedamare-Simalpani-Pawara | 18.46 | 7 | 1 | 4 | 1 | **17** | **6** |
| 51DR018 | Amarai-Jukena | 7.97 | 7 | 2 | 3 | 1 | **16** | **6** |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | 41.95 | 7 | 1 | 4 | 1 | **17** | **6** |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | 55.81 | 7 | 2 | 1 | | **8** | **3** |

## Annex 2: Population Served

| # | VDC/municipality | Population | Connections | SRN | 51DR001 | 51DR002 | 51DR003 | 51DR004 | 51DR005 | 51DR006 | 51DR007 | 51DR008 | 51DR009 | 51DR010 | 51DR011 | 51DR012 | 51DR013 | 51DR014 | 51DR015 | 51DR016 | 51DR017 | 51DR018 | 51DR019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Total population** | **111,345** | | 42,753 | 6,962 | 19,110 | 1,951 | 3,368 | 2,541 | 4,580 | 2,313 | 2,396 | 2,183 | 15,779 | 2,508 | 10,202 | 1,976 | 1,384 | 5,798 | 1,584 | 3,218 | 3,524 | 4,564 |
| | **Total VDCs/municipalities** | 36 | | 8 | 3 | 3 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 5 | 1 | 5 | 1 | 1 | 3 | 1 | 1 | 1 | 1 |
| 1 | Adguri | 2,291 | 2 | | | | | | | | | | | | | X | | | X | | | | |
| 2 | Arghatos | 2,396 | 1 | | | | | | | | | X | | | | | | | | | | | |
| 3 | Asurkot | 1,292 | 1 | | X | | | | | | | | | | | | | | | | | | |
| 4 | Balkot | 2,508 | 2 | | | | | | | | | | | X | X | | | | | | | | |
| 5 | Bangi | 2,541 | 1 | | | | | | X | | | | | | | | | | | | | | |
| 6 | Bhagawati | 2,238 | 1 | | | | | | | | | | | X | | | | | | | | | |
| 7 | Chhatraganj | 1,594 | 1 | | | | | | | | | | | X | | | | | | | | | |
| 8 | Chidika | 1,939 | 2 | X | | | | | | | | | | X | | | | | | | | | |
| 9 | Dhakawang | 3,791 | 1 | | | X | | | | | | | | | | | | | | | | | |
| 10 | Dhanchaur | 2,181 | 1 | | | | | | | | | | | | | | | | | | | | |
| 11 | Dharapani | 3,368 | 2 | | | X | | X | | | | | | | | | | | | | | | |
| 12 | Dhatiwang | 1,074 | 1 | | | | | | | | | | | | | | | | X | | | | |
| 13 | Dhikura | 2,403 | 1 | | | | | | | | | | | | | | | | | | | | |
| 14 | Gorkhunga | 1,951 | 2 | | | X | X | | | | | | | | | | | | | | | | |
| 15 | Hamsapur | 4,508 | 1 | X | | | | | | | | | | | | | | | | | | | |
| 16 | Jukena | 3,524 | 2 | | | | | | | | | | | | | | | | | | | X | |
| 17 | Juluke | 3,350 | 1 | | | | | | | | | | | | | | | | | | | | |
| 18 | Kerunga | 2,500 | 1 | | | | | | | | | | | X | | | | | | | | | |
| 19 | Khana | 2,560 | 1 | | | | | | | X | | | | | | | | | | | | | |
| 20 | Khandaha | 2,020 | 1 | | | | | | | X | | | | | | | | | | | | | |
| 21 | Khidim | 1,976 | 2 | | | | | | | | | | | | | X | X | | | | | | |
| 22 | Khilji | 1,895 | 1 | | X | | | | | | | | | | | | | | | | | | |
| 23 | Maidan | 2,433 | 2 | X | | | | | | | | | | | | | | | X | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | Mareng | 2,313 | 1 | | | | | | | | X | | | | | | | | | | | | | |
| 25 | Nuwakot | 3,775 | 1 | | X | | | | | | | | | | | | | | | | | | | |
| 26 | Pali | 2,433 | 2 | X | | | | | | | | | | | | X | | | | | | | | |
| 27 | Patauti | 1,839 | 1 | X | | | | | | | | | | | | | | | | | | | | |
| 28 | Panena | 1,384 | 2 | | | | | | | | | | | | | X | | X | | | | | | |
| 29 | Pokharathok | 2,118 | 1 | | | | | | | | | | | | | X | | | | | | | | |
| 30 | Sandhikharka | 22,437 | 1 | X | | | | | | | | | | | | | | | | | | | | |
| 31 | Siddhara | 4,564 | 1 | | | | | | | | | | | | | | | | | | | | | X |
| 32 | Simalapani | 3,218 | 1 | | | | | | | | | | | | | | | | | | | X | | |
| 33 | Sitapur | 2,182 | 1 | X | | | | | | | | | | | | | | | | | | | | |
| 34 | Subarnakhal | 1,584 | 1 | | | | | | | | | | | | | | | | | | X | | | |
| 35 | Thada | 4,982 | 1 | X | | | | | | | | | | | | | | | | | | | | |
| 36 | Thulapokhara | 2,183 | 1 | | | | | | | | | | X | | | | | | | | | | | |

## Annex 3: 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 |
|---|---|---|---|---|---|---|---|---|
| | **Total population** | - | - | 54,150 | 31,903 | 14,442 | 29,346 | 42,753 |
| | **Total VDCs** | **0** | **0** | **23** | **13** | **5** | **12** | **8** |
| 1 | Adguri | | | | | X | X | |
| 2 | Arghatos | | | X | X | | | |
| 3 | Asurkot | | | X | | | X | |
| 4 | Balkot | | | | | X | X | |
| 5 | Bangi | | | X | | | | |
| 6 | Bhagawati | | | X | | | X | |
| 7 | Chhatraganj | | | X | | | X | |
| 8 | Chidika | | | | | | | X |
| 9 | Dhakawang | | | X | | | X | |
| 10 | Dhanchaur | | | X | X | | | |
| 11 | Dharapani | | | | | X | X | |
| 12 | Dhatiwang | | | X | X | | | |
| 13 | Dhikura | | | X | X | | | |
| 14 | Gorkhunga | | | X | X | | | |
| 15 | Hamsapur | | | | | | | X |
| 16 | Jukena | | | X | X | | | |
| 17 | Juluke | | | X | X | | | |
| 18 | Kerunga | | | | | X | X | |
| 19 | Khana | | | X | X | | | |
| 20 | Khandaha | | | X | X | | | |
| 21 | Khidim | | | X | | | X | |
| 22 | Khilji | | | X | | | X | |
| 23 | Maidan | | | | | | | X |
| 24 | Mareng | | | X | X | | | |
| 25 | Nuwakot | | | | | X | X | |
| 26 | Pali | | | | | | | X |
| 27 | Patauti | | | | | | | X |
| 28 | Panena | | | X | X | | | |
| 29 | Pokharathok | | | X | | | X | |
| 30 | Sandhikharka | | | | | | | X |
| 31 | Siddhara | | | X | X | | | |
| 32 | Simalapani | | | X | | | | |
| 33 | Sitapur | | | | | | | X |
| 34 | Subarnakhal | | | X | | | | |
| 35 | Thada | | | | | | | X |
| 36 | Thulapokhara | | | X | X | | | |

## Annex 4: Photographs

Presentation By Team Leader

Interaction with participants (orientation workshop)


DRCN Workshop

Draft Report Presentation

## Annex 5: Summary of proposed interventions

| Road code | Road Name | Length (km) | Start chainage (km) or X-coordinate | End chainage (km) or Y-coordinate | Rehabilitation (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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | | **412.31** | | | **-** | **895** | **454** | **42** | **121** | **-** | **129** | **290** | **5,378** | **1,960** |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari-Pyuthan | 24.39 | | | | 100 | | | 18 | | 17 | 290 | 750 | 250 |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | 33.66 | | | | 55 | 112 | 12 | 9 | | 14 | | 260 | 90 |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gofunga | 14.82 | | | | 30 | 54 | | | | 3 | | 165 | 60 |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | 16.60 | | | | 35 | | | 16 | | 3 | | | 40 |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | 4.40 | | | | 20 | | 8 | 8 | | 1 | | 140 | 20 |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | 23.69 | | | | 70 | | 6 | 8 | | 6 | | 420 | 120 |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | 19.37 | | | | 55 | | 8 | 10 | | 1 | | 140 | 150 |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | 8.71 | | | | 25 | | | | | 1 | | 140 | 20 |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | 12.78 | | | | 30 | 48 | | | | 5 | | 320 | 80 |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | 37.13 | | | | 60 | | | | | | | | |
| 51DR011 | Khagadi-Dundruk-Balkot | 7.52 | | | | 25 | 60 | | | | 2 | | 140 | 20 |
| 51DR012 | Ghumti-Tingire-Palpa | 29.98 | | | | 30 | | | | | 6 | | 412.5 | 80 |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | 10.26 | | | | 40 | | | | | 3 | | 270 | 60 |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | 9.29 | | | | 35 | 12 | | 8 | | 12 | | 590 | 250 |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | 23.71 | | | | 45 | 72 | | 34 | | 16 | | 800 | 300 |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | 11.81 | | | | 30 | | 8 | 10 | | 5 | | | 50 |
| 51DR017 | Bhedamare-Simalpani-Pawara | 18.46 | | | | 50 | | | | | 10 | | 140 | 100 |
| 51DR018 | Amarai-Jukena | 7.97 | | | | 25 | 36 | | | | 8 | | 270 | 50 |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | 41.95 | | | | 60 | | | | | 10 | | 420 | 100 |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | 55.81 | | | | 75 | 60 | | | | 6 | | | 120 |

## Annex 6: Overall Road Inventory

| Road code | Road Name | Length (km) | Start chainage (km) or XY- | End chainage (km) or XY- | Surface Type: Black Top | Surface Type : Gravel | Surface Type : Earth | All Weather | Fair Weather | Condition - Good/ Fair | Condition - Poor | Condition - Temporarily | Condition - Permanently Impassable |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | | **412.31** | | | **2.59** | **56.06** | **353.66** | **58.65** | **353.66** | **-** | **-** | **-** | **-** |
| 51DR001 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot-Jogitari-Pyuthan | 24.39 | | | | 7.23 | 17.16 | 7.23 | 17.16 | √ | | | |
| 51DR002 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan | 33.66 | | | | 23.32 | 10.33 | 23.32 | 10.33 | √ | | | |
| 51DR003 | Uppalapokhara-Bhumikathana-Pipalneta-Gofunga | 14.82 | | | | | 14.82 | - | 14.82 | | √ | | |
| 51DR004 | Chutrabeshi-Dharampani-Maidan-Raikhande | 16.60 | | | | | 16.60 | - | 16.60 | | | √ | |
| 51DR005 | Tari-Arukhor-Bajeri-Bhedirakhne | 4.40 | | | | | 4.40 | - | 4.40 | | √ | | |
| 51DR006 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri | 23.69 | | | | | 23.69 | - | 23.69 | | √ | | |
| 51DR007 | Bihara-Divarna-Jogimare-Badachaur-Chauri | 19.37 | | | | | 19.37 | - | 19.37 | | | √ | |
| 51DR008 | Takura-Milmile-Chidipani-Arghatosh | 8.71 | | | | | 8.71 | - | 8.71 | | | √ | |
| 51DR009 | Jimurthum-Sallikot-Jarekhola-Thulapokhara-Pati | 12.78 | | | | | 12.78 | - | 12.78 | | √ | | |
| 51DR010 | Sandikharka-Balkot-Neta-Gulmi | 37.13 | | | | 25.50 | 11.62 | 25.50 | 11.62 | √ | | | |
| 51DR011 | Khagadi-Dundruk-Balkot | 7.52 | | | | | 7.52 | - | 7.52 | | √ | | |
| 51DR012 | Ghumti-Tingire-Palpa | 29.98 | | | 2.59 | | 27.39 | 2.59 | 27.39 | √ | | | |
| 51DR013 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya | 10.26 | | | | | 10.26 | - | 10.26 | | √ | | |
| 51DR014 | Deumada-Panena-Aklepipal-Salledhara | 9.29 | | | | | 9.29 | - | 9.29 | | | √ | |
| 51DR015 | Bhanjyang-Jhandrek-Dhatibang-Netapokhara-Deurali-Dadakateri | 23.71 | | | | | 23.71 | - | 23.71 | | √ | | |
| 51DR016 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara | 11.81 | | | | | 11.81 | - | 11.81 | | | √ | |
| 51DR017 | Bhedamare-Simalpani-Pawara | 18.46 | | | | | 18.46 | - | 18.46 | | √ | | |
| 51DR018 | Amarai-Jukena | 7.97 | | | | | 7.97 | - | 7.97 | | | √ | |
| 51DR019 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola | 41.95 | | | | | 41.95 | - | 41.95 | | √ | | |
| 51DR020 | Gacche -Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara | 55.81 | | | | | 55.81 | - | 55.81 | | | √ | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | | **191.43** | | | **-** | **-** | **191.43** | **-** | **191.43** | **-** | **-** | **-** | **-** |
| 51VR001 | BanchareChheda-Kalleri-Chamre-Dhakabang-Simalchaur-Pyuthan | 11.13 | | | | | 11.13 | | 11.13 | | | | |
| 51VR002 | Pipalneta(Gokhunga)-Dhakabang-Asurkot | 7.05 | | | | | 7.05 | | 7.05 | | | | |
| 51VR003 | Sandhikharka-Hansapur-Gokhunga | 6.39 | | | | | 6.39 | | 6.39 | | | | |
| 51VR004 | Sandhikharka-Dharampani-Mirlingkot-Argha | 10.53 | | | | | 10.53 | | 10.53 | | | | |
| 51VR005 | Gokhada-Sandikharka | 7.03 | | | | | 7.03 | | 7.03 | | | | |
| 51VR006 | Cheprung-Nauolapani | 2.19 | | | | | 2.19 | | 2.19 | | | | |
| 51VR007 | Deurali -Khandaha-Pakhapani-Ratanmare(Hanspur) | 8.78 | | | | | 8.78 | | 8.78 | | | | |
| 51VR008 | Deurali-Khandaha-Dadakateri | 5.52 | | | | | 5.52 | | 5.52 | | | | |
| 51VR009 | Bihara-Kabira-Rampath-Mokhata-Khana | 6.46 | | | | | 6.46 | | 6.46 | | | | |
| 51VR010 | Chyandanda-Divarna-Khana-Khanadaha-Sabdanda-Dandakateri | 3.20 | | | | | 3.2 | | 3.20 | | | | |
| 51VR011 | Chyandanda-Divarna-Khana-Khanadaha-Sabdanda-Dandakateri | 2.51 | | | | | 2.51 | | 2.51 | | | | |
| 51VR012 | Khandaha-Dandakateri-Chauri | 3.08 | | | | | 3.08 | | 3.08 | | | | |
| 51VR013 | Divanrana-Amile-Musamare-Chauri | 1.82 | | | | | 1.82 | | 1.82 | | | | |
| 51VR014 | Divarna-Jogimare-ChidiPani | 1.93 | | | | | 1.93 | | 1.93 | | | | |
| 51VR015 | Sandhikharka(Bus Park)- Ratahale-Ladam-Tumkot-Jhedi | 4.74 | | | | | 4.74 | | 4.74 | | | | |
| 51VR016 | Hatareneta-TuniPokharaWangla | 4.96 | | | | | 4.96 | | 4.96 | | | | |
| 51VR017 | TuniPokhara-DeuraliDanda-KhanchiKhola | 3.88 | | | | | 3.88 | | 3.88 | | | | |
| 51VR018 | Chatrabas-KhachiKhola | 3.07 | | | | | 3.07 | | 3.07 | | | | |
| 51VR019 | Tula Pokhara-Mathurabesi | 3.26 | | | | | 3.26 | | 3.26 | | | | |
| 51VR020 | Wangla-Chauowa-Tula Pokhara | 5.35 | | | | | 5.35 | | 5.35 | | | | |
| 51VR021 | Chhatragunj-Mathurabesi | 7.98 | | | | | 7.98 | | 7.98 | | | | |
| 51VR022 | Mathura-Mathuradada-Amarai | 3.55 | | | | | 3.55 | | 3.55 | | | | |
| 51VR023 | Khagadi-Dundruk-Balkot | 3.55 | | | | | 3.55 | | 3.55 | | | | |
| 51VR024 | Patu-Kabhre-Myaltuppa | 1.90 | | | | | 1.9 | | 1.90 | | | | |
| 51VR025 | Godamuni-Mayaltupa-Khursani Dada-Balkot | 6.60 | | | | | 6.6 | | 6.60 | | | | |
| 51VR026 | Tulakharka-Koldada-Amaldada-Khagade-Pali | 0.87 | | | | | 0.87 | | 0.87 | | | | |
| 51VR027 | Balkot-Kharjyang-Ridi | 6.17 | | | | | 6.17 | | 6.17 | | | | |
| 51VR028 | Sano Chidika-RajuPokhara | 2.12 | | | | | 2.12 | | 2.12 | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51VR029 | Banskarukh-Bahakhor-Maidan-Bharatpur | 3.24 | | | | | 3.24 | | 3.24 | | | | |
| 51VR029 | Tulakharka-Koldada-Amaldada-Khagade-Pali | 0.78 | | | | | 0.78 | | 0.78 | | | | |
| 51VR030 | Sitapur-Swarnakhal | 4.28 | | | | | 4.28 | | 4.28 | | | | |
| 51VR031 | Chakla-Galdha-Durbang-Asurkot | 6.61 | | | | | 6.61 | | 6.61 | | | | |
| 51VR032 | Phudwang-Ghumti | 5.38 | | | | | 5.38 | | 5.38 | | | | |
| 51VR033 | Narapani-Satineta-Bahakhola-Dhatibang ma.bi-Badhunga | 3.58 | | | | | 3.58 | | 3.58 | | | | |
| 51VR034 | Phudwang-Khachikot-Narpani | 11.39 | | | | | 11.39 | | 11.39 | | | | |
| 51VR035 | Narpani-Khachikot-Dhikura-Nuwakot-Pakale-Deurali | 12.39 | | | | | 12.39 | | 12.39 | | | | |
| 51VR036 | Kura -Behore-Duwara-Bhalukhola | 2.97 | | | | | 2.97 | | 2.97 | | | | |
| 51VR037 | Talo Kura-kura | 3.30 | | | | | 3.3 | | 3.30 | | | | |
| 51VR038 | Chakla-Siddhara-Bhalubang | 1.89 | | | | | 1.89 | | 1.89 | | | | |

## Annex 7: Map Projection Parameters

Global Positioning System (GPS) tracking survey was conducted to track the existing road networks and other road related infrastructures within road networks using WGS 1984 geographical co-ordinate system. Finally all map features were projected in to WGS 1984 UTM Zone 44N co-ordinate system using following projection parameters;

| **Projected coordinate system** | |
|---|---|
| Projection | Transverse Mercator |
| False Easting | 500,000.00 |
| False Northing | 0.00 |
| Central Meridian | 81.00 |
| Scale Factor | 0.9996 |
| Latitude of Origin | 0 |
| Geographic Coordinate System | GCS WGS 1984 |
| Datum | D WGS1984 |

## Annex 8: Response of Comments

The corrected and edited texts are given in red color in final DTMP report. The excel temple has been revised to incorporate the comments/suggestions from RAP III officials and concerned DDC/DTO officials as well as feedbacks on draft report from final workshop. The required explanations are also given in excel template regarding investment plan.

The response has been prepared based on comments received for DTMP Pyuthan District. For other two districts; Arghakhanchi and Salyan, it seems the similar general comments/suggestions on excel template and DTMP report. So, itis applicable to other district too.

Excel Sheet

1. Two Excel sheets - appears that only differences are in spelling of VDC names and allocation of funding. Not clear which is the final one - based on report it appears to be "Pyuthan - DTMP_Updated-14Sep-2015", so these comments are based on that file.
    - Now, excel template sheet has been revised and re-submitted.

2. No rehabilitation planned - does this mean that all roads are in maintainable condition?
    - Yes.rehabilitation is not planned.
3. Widening appears to only involve spot improvements - this is ok. Full widening should be avoided as the traffic volumes are low.
    - As the traffic volumes are low in almost all DRCNs, full widening are avoided. However, it is suggested only in specific locations to bring it up to the minimum standard and to ensure sufficient space in the curves in all DRCNs.
4. Table 3.3.1 shows new construction of road #1 to connect Sari VDC, but this is indicated as already being connected in Table A2.2 - please correct.
    - Table A2-2 has been corrected.
5. In Table 3.4.1 (DTPP) the columns regarding recurrent maintenance for GR and ER as well as periodic maintenance for GR have been removed - why? The table now makes it appear as if this is not required.
    - Prepared as per given excel template.
6. Unit costs for recurrent maintenance can be reduced to respectively 200,000/km, 130,000/km and 120,000/km for BT, GR and ER if considered appropriate. If you consider the current rates are appropriate, leave them. But for many districts the proposed unit rates are too high.
    - In case of conservation cost, it's very difficult to get near to actual value from district. However, based on experiences from many district, the revised value considered appropriate and corrected accordingly in final revised excel template.
7. The budgets for future years are simply based on a 10% increase per year. It is unlikely that this will happen. I suggest that this is reviewed with actual expected amounts entered where possible and better estimates of growth percentages in other cases.
    - As DTMP is prepared for 5 years, there is no possibility of high variation in district level annual budget over short period (5 years). So, 10% increase per year has been proposed for planning purpose. However, in final report, 10% increase per year has not proposed in all funding sources. For particular project where total amount for 5 years period has been already known, actual amounts has been entered as much as possible.
8. The allocation of the available budgets does not follow the ranking of the roads. Budgets for specific roads are spread over several years, sprinkled over various roads each year, and allocated to low ranking roads - some of the highest ranking roads are not included at all (#11) or left till the final year.
    - Most of the funds except SNRTP budget will finish for conservation. Although 52DR015 & 52DR017 are not at top in ranking list, these roads have received DTMP funds for improvement as they had been already started for upgrading/improvement under SNRTP funds. In fact, these are very important district roads which connects DRCN of Arghakhanchi. Because of upgrading to BT status, the cost has become high and will not able to come at top of ranking table. All the available budget of any FY could not allocated to a single roads because of lack of sufficient institutional/technical capacity of DDC/DTO and for proportional development of district. Beside these two roads, top ranking road (52DR016) which starts from SRN will be improved to gravel status. Almost double of existing road needs to be new constructed to make 52DR022 all-weather. As new construction of this road is not in priority within this DTMP period, this does not get DTMP fund. So budget goes to next road 52DR004. Without improvement of 52DR008, it does not sense to improve two DRCNs; 52DR010 & 52DR011 for all-weather status and these roads do not also get DTMP fund. So, 52DR006 has been upgraded to Gravel status. DoR has conducted survey and design of

52DR008 under RIP II project. So, it does not get DTMP funds. Please refer final DTMP report and excel temple.

9. In table A2.2, VDCs 14, 24, 29, 30 and 35 do not have their access entered correctly - either no after situation or after situation is SRN while before situation is DRCN.
    - Table A2.2 has been corrected. Please refer final report.
10. In the same table, 4 additional VDCs are connected by road despite no new road construction - please explain
    - In final report all the related tables as well as text in main report has been corrected. Please refer red color text in final report to see corrected or edited text.
11. I am not sure what the purpose is of Table A3.1 since it does not indicate the actual location
    - As per given format, location of each intervention can be entered. But instead, this table indicates the summary of proposed intervention. So, this table has been corrected accordingly. The detail location of intervention could be find in field report and also major intervention can been seen in GIS shape files.
12. Table A4.1 makes very little sense. Roads are marked as being in fair condition and at the same time are permanently impassable; others are in good condition but are temporarily impassable. There are also several roads in poor condition, but there is no rehabilitation planned.
    - This table has been corrected as per field inventory. Please refer final Report.

## Response on other comments raised in main report

1. Regarding the duplication of SRN and DRCN roads
    - Although F134 (Lamdanda-Bhedikhore-Pyuthan) road with 48 km earthen status has been listed in SRN in SSRN 2014, the status of this road has been now changed to DRCN (52DR015) category under request of DDC Arghakhanchi and Pyuthan. This road is being improved under SNRTP project now. So, this road has been removed from the list of SRN. Similarly in Arghakhanchi, the part of F134 (Netagaon- Sandhikharka- Asurkot-Lamdanda road ) with 75 km (48 earthen and 33 planning status) has been listed in SRN in SSRN 2014 of DoR, the status of this road has been now changed to DRCN (51DR002 and 51DR010) category under request of DDC Arghakhanchi. This road is being improved under SNRTP project now. So, this road has been removed from the list of SRN

2. Regarding DRCN within new Municipality
    - Because of newly created a municipality in all project district, part of these rural roads are contained within the municipality and status has become so-called municipal roads. The part of each DRCNs within municipality in all three project districts are given in separate column in final DTMP report. Due to newly formed municipality, it is however not able to maintain/upgrade these roads due to their lack of technical and financial capacity. So, DTO/DDC will be responsible to look after the part of DRCN within municipal boundary at least in this first DTMP period.Later, these roads shall be upgraded/maintained as per municipal road standards and municipality would be responsible to do this.

## Annex 9: Workshop Minutes

आज मिति २०६२।०३।२० गते जिल्ला विकास समितिको हलमा, अर्घाखाँची जिल्लाका स्थानीय विकास अधिकारी श्री हरि प्रसाद शवाली ज्यूको अध्यक्षतमा बैठक बसी यस अर्घाखाँची जिल्लाको यातायात गुरुयोजना (DTMP) परिमार्जन मुख्य सडक सञ्जाल छनोट गोष्ठिमा तपशिल बमोजिमका माननीयहरुको उपस्थितिमा बैठक बसी देहाय बमोजिमको निर्णय गरियो ।

उपस्थिति

१. अध्यक्ष स्थानीय विकास अधिकारी श्री हरि प्रसाद शवाली
२. सहायक प्रमुख जिल्ला अधिकारी श्री खगेन्द्र पौडेल
३. नेपाली कांग्रेस जिल्ला सभापति कमल गुरुङ
४. ने.क.पा एमाले जि.क. उपाध्यक्ष श्री [illegible]
५. ने.क.पा एमाले जिल्ला कमिटी सचिवालय सदस्य श्री जनार्दन खतिवडा
६. ने.क.पा माओवादी जिल्ला समिति अध्यक्ष श्री चन्द्र ब. खड्का
७. राष्ट्रिय जनमोर्चा जिल्ला समिति अध्यक्ष श्री देवी ब. खड्का
८. राष्ट्रिय जनमोर्चा जिल्ला समिति उपाध्यक्ष श्री पशुपति ढकाल
९. राष्ट्रिय जनमुक्ति पार्टी राष्ट्रिय परिषद सदस्य श्री छोप ब [redacted]
१० ने.क.पा - माओवादी जिल्ला इन्चार्ज श्री पिताम्बर आचार्य
११ वरिष्ठ कृषि विकास अधिकृत श्री योग प्रसाद खरेल
१२ शिक्षा अधिकृत श्री बलराम [redacted] जिल्ला शिक्षा कार्यालय
१३. शिवभान श्रेष्ठ प्रमुख जिल्ला इन्जिनियर
१४. बालकृष्ण अर्याल इन्जिनियर
१५. राजेन्द्र भण्डल सब इन्जिनियर
१६. [illegible] पौडेल अं. एं. इ.
१७. विष्णु प्रसाद [illegible] वा. सा. फा. स. सं.
१८. लक्ष्मण [illegible] RAPO, [illegible]

आज मिति २०६२।०३।०९ गते जिल्ला विकास समितिको सभा, अर्घाखाँची जिल्लाका स्थानीय विकास अधिकारी श्री हरि प्रसाद जवाली ज्यूको अध्यक्षतमा बैठक बसी यस अर्घाखाँची जिल्लाको यातायात गुरुयोजना (DTMP) परिमार्जन अभिमुखिकरण गोष्ठीमा तपशील बमोजिमका माननुभावहरुको उपस्थितिमा बैठक बसी सम्पन्न गरियो ।

उपस्थिति

१. अध्यक्ष एवं स्थानीय विकास अधिकारी श्री हरि प्रसाद जवाली
२. सहायक प्रमुख जिल्ला अधिकारी श्री खगेन्द्र पौडेल
३. नेपाली कांग्रेस जिल्ला कार्य समिति सदस्य श्री ज्ञान ब. वि. क
४. जनमोर्चा ने.क.पा. एमाले जिल्ला कमिटी सचिवालय सदस्य श्री जनार्दन भण्डारी
५. ने.क.पा. माओवादी जिल्ला समिति अध्यक्ष श्री चन्द्र बी. खड्का
६. राष्ट्रिय प्रजातन्त्र पार्टी जि.का.स. अध्यक्ष श्री दोर्जे ब. खड्का
७. राष्ट्रिय जनमोर्चा जिल्ला समिति उपाध्यक्ष श्री पशुपति खनाल
८. राष्ट्रिय जनमोर्चा जिल्ला समिति सचिव सदस्य श्री गोप ब. बलाल
९. ने.क.पा. - माओवादी जिल्ला इन्चार्ज श्री फणीराज आचार्य
१०. तालिम कृषि विकास अधिकृत श्री योग प्रसाद खरेल
११. पशुवा अधिकृत श्री बलराम मिश्र जिल्ला शिक्षा कार्यालय
१२. विष्णु प्रसाद भुसाल राष्ट्रिय सारिक्षि अभाङ् महोदय अध्यक्ष
१३. जंग बहादुर खासु SNRTP/DRMSE
१४. श्यामानन्द प्र० गुप्ता SNRTP/DRMS
१५. शिवभार श्रेष्ठ. प्रमुख जिल्ला इन्जिनियर जिल्ला प्राविधिक का.
१६. रविन प्रसाद अधिकारी लो.नि. जि.वि.नि.
16 अशोक पौडेल डि.व.का. शिवपुर
१८ बाल कृष्ण अर्याल जनप्रका अर्घाखाँची
१९ निरज पौडेल सि.वि.व. अर्घाखाँची
२० लक्ष्मण ढकाल RAPS, काठमाडौं ।

निर्णय

- निम्न सडकहरु जिल्ला मुख्य सडक सञ्जाल (DRCN) का लागि छनोट गरियो ।

| S.N. | Road Name |
|---|---|
| 1 | Chakla-Siddhara-Pakuri-Nayabasti-Dhankhola Road |
| 2 | Bhedamare-Simalpani-Pawara Road |
| 3 | Sitapur-Subarnakhal-Mandre-Halde-Netapokhara Road |
| 4 | Gachhe-Dhikura-Dhanchaur-Jukena-Jaluke-Lamatal-Satmara Road |
| 5 | Amarai-Jukena Road |
| 6 | Ghumti-Tingire-Palpa Road |
| 7 | Bhanjyang-Jhandrek-Dhatibang -Netapokhara- Deurali-Dadakateri Road |
| 8 | Chutrabeshi-Kura-Nuwakot-Khilji-Asurkot - Jogitari -Pyuthan Road |
| 9 | Chutrabeshi-Pakale-Dharapani-Rajme-Pyuthan Road |
| 10 | Sandhikharka-Balkot-Neta - Gulmi Road |
| 11 | Takura -Milmile-Chidipani-Arghatosh Road |
| 12 | Jimurthum-Sallikot-Jarekhola-Thulapokhara -Pati Road |
| 13 | Chyandanda-Divarna-Khan-Khandaha-Sawadanda-Dandakateri Road |
| 14 | Chutrabeshi-Dharampani-Maidan ~~Road~~ Raichande Road. |
| 15 | Tari-Aarukhor-Bajeri-Bhedirakhne Road |
| 16 | Durga-Dhaba-Sadhanbuta-Farsawar-Harrabot-Hatiya Road |
| 17 | Deumada-Panena-Aklepipal-Salledhara Road |
| 18 | Bihara-Divarna-Jogimare-Badachaur-Chauri Road |
| 19 | Khagadi-Dundruk-Balkot Road |
| 20 | Uppalapokhara-Bhumikathana-Pipalneta-Gofunga Road |

## Annex 10: Work Completion Certificate

नेपाल सरकार

संघीय मामिला तथा स्थानीय विकास मन्त्रालय

**जिल्ला विकास समितिको कार्यालय**

**सन्धिखर्क, अर्घाखाँची**

प.सं.

च.नं. ६२२

मिति :- २०७२/६/१९

श्री टिम लिडर

ग्रामिण पूर्वाधार कार्यक्रम, ललितपुर

विषय : कार्यसम्पादन भएको बारे ।

प्रस्तुत विषयमा यस अर्घाखाँची जिल्लाको जिल्ला यातायात गुरुयोजना तयारी पार्ने क्रममा खटिई आएका परामर्शदातृ संस्था आर. आई.डि.सी.प्रा.लि. का परामर्शदाताहरुबाट कार्य सम्पादन शर्तनामा तथा निर्देशिका बमोजिम अभिमुखिकरण गोष्ठि, जिल्ला सडक संजाल छनौट गोष्ठि प्रतिवेदन प्रस्तुती गोष्ठि तथा फिल्ड अध्ययन कार्य सम्पादन भएको व्यहोरा अवगत गराईन्छ ।

२०७२/६/१९

लक्ष्मी पाण्डेय(गौतम)

स्थानिय विकास अधिकारी

स्थानिय विकास अधिकारी

# Annex 11: Excel Data