Environmental Assessment Document

Initial Environmental Examination

Grant Number: 0093 NEP

May 2010

Nepal: Rural Reconstruction and Rehabilitation Sector Development Program

Sunkhani-Kyanpa District Road Subproject, Dolakha District

Prepared by the Government of Nepal

Government of Nepal
Ministry of Local Development
Department of Local Infrastructure Development and Agricultural Roads
Rural Reconstruction and Rehabilitation Sector Development Program
Grant 0093-NEP

Initial Environmental Examination (IEE)
of
Sunkhani-Kyanpa District Road
(Dolakha District, Nepal)

Submitted to:
Ministry of Local Development
Government of Nepal

Proponent:
Office of District Development Committee/
District Technical Office
Dolakha

Prepared by:
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May, 2010

Table of Contents

List of Tables

List of Figures

Appendixes

Acronyms

ADB Asian Development Bank
amsl Above mean sea level
AP Affected Person
BG Building Group
CBO Community Based Organization
CDC Compensation Determination Committee
CF Community Forest
CFUG Community Forest Users Group
Ch Chainage
CISC Central Implementation Support Consultants
CITES Convention on International Trade in Endangered Species of Flora and Fauna
DADO District Agriculture Development Office
DDC District Development Committee
DFO District Forest Office/Officer
DIST District Implementation Support Consultants
DoLIDAR Department of Local Infrastructure Development and Agricultural Roads
DPO District Project Office
DSCO District Soil Conservation Office
DTMP District Transport Master Plan
DTO District Technical Office
EIA Environmental Impact Assessment
EMP Environmental Management Plan
EMS Environmental Management Section
EPA Environmental Protection Act
EPR Environmental Protection Rules
ESD Environment Screening Document
FGD Focus Group Discussion
GIS Geographical Information System
GoN Government of Nepal
ha Hectare
Hh Household
IEE Initial Environmental Examination
Km Kilometer
LDO Local Development Officer
LEP Labour based, environment friendly and participatory
LRMP Land Resource Management Project
m meter
MLD Ministry of Local Development
MoE Ministry of Environment
MoPE Ministry of Population and Environment
NGO Non-Governmental Organization
NRs Nepali Rupees
NTFP Non timber forest products
PAM Project Administrative Memorandum
PCUProject Coordination Unit
RBG Road Building Groups
RP Resettlement Plan
RRRSDP Rural Reconstruction and Rehabilitation Sector Development Program
RS Resettlement Survey
SDC Swiss Agency for Development and Cooperation
TA Technical Assistance
ToR Terms of Reference
TWS Technical Walkover Survey
VDC Village Development Committee
VICCC Village Infrastructure Construction Coordination Committee
ZoI Zone of Influence

INITIAL ENVIRONMENTAL EXAMINATION (IEE)

oF

SUNKHANI – KYANPA ROAD SUBPROJECT

Name and Address of the Proponent Preparing the Report

Name of the Proposal

The name of the Proposal (also referred to as Sub-project) under this study is 'Rehabilitation of Sunkhani – Kyanpa road subproject in Dolakha District'.

This IEE Report has been prepared for the rehabilitation of 27.39 km long fair weather district road with earthen surface connecting Bhadaure bazaar (Sisa Golai) of Sunkhani VDC to Kyanpa of Kalinchowk VDC to all weather gravel standard. The District Development Committee (DDC)/District Technical Office (DTO), Dolakha are the implementing agencies at the district level and the Proponent of the Initial Environmental Examination (IEE) study for the Proposal

Address of the Proponent
District Development Committee (DDC)/
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सुनखानी-क्यान्पा सडक उपआयोजना को प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन कार्यकारी सारांश[1]

प्रस्ताव/प्रस्तावक:
यो प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन दोलखा जिल्लाको सुनखानी गा.वि.सको भदौरे बजार (सिसा गोलाई) हुँदै कालिन्चोक गा.वि.स.को क्यान्पामा जोड्ने २७.३९ कि.मी. लामो पुर्ननिर्माण तथा पुर्नस्थापना गरी सबै मौसममा (बर्ष भरी) चल्ने जिल्ला सडक बनाउन तयार पारिएको हो । ग्रामीण पुर्ननिर्माण तथा पुर्नस्थापना कार्यक्रम (RRRSDP) अन्तरगत जिल्लामा कार्यान्वयन निकायको जिम्मेवारी जिल्ला विकास समिति र जिल्ला प्राविधिक कार्यालय दोलखा को भएकोले सुनखानी-क्यान्पा सडक उप-आयोजनाको प्रारम्भिक वातावरणीय परीक्षणको प्रस्तावक पनि जिल्ला विकास समिति / जिल्ला प्राविधिक कार्यालय दोलखा रहेको छ ।

पृष्ठभूमि:
ग्रामीण पुर्ननिर्माण तथा पुर्नस्थापना आयोजना (RRRSDP) नेपाल सरकार, एशियाली विकास वैंक (ADB), अन्तराष्ट्रिय विकास सहयोग नियोग (DFID) र स्वीस विकास सहयोग नियोग (SDC) को संयुक्त आर्थिक अनुदान सहयोगमा र ओपेकको ऋण सहयोगमा संचालित कार्यक्रम हो । आयोजनाको मुख्य उद्देश्य सडक संजाल विस्तार गर्नु, आर्थिक र रोजगारीको अवसरलाई वृदि गर्नु, ग्रामिण क्षेत्रमा बजार तथा सामाजिक सेवाको पहुंचमा वृद्धि गर्नु रहेको छ ।

उद्देश्य:
प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन अध्ययनको मुख्य उद्देश्य उपआयोजना क्षेत्रको भौतिक, जैविक, सामाजिक, आर्थिक तथा सांस्कृतिक वातावरणमा पर्ने प्रभावहरु पत्ता लागाउनु हो । अन्य उद्देश्यहरु निम्नानुसार छन् :

- उपआयोजना क्षेत्रमा गरिने विभिन्न निर्माण कार्यहरुले गर्दा भौतिक, जैविक, सामाजिक, आर्थिक तथा सांस्कृतिक वातावरणमा पर्ने मुख्य असरहरु पत्ता लगाउनु ।
- वातावरणमा पर्ने नकारात्मक प्रभावको न्यूनिकरणका उपायहरु र सकारात्मक प्रभाव बढाउने उपायहरु बारे सुझाव दिनुका साथै वातावरणीय अनुगमन योजना बनाई कार्यान्वयन गराउनु ।
- प्रस्तावित सडक आयोजनाको लागि प्रारम्भिक वातावरणीय परीक्षण गरे पुग्छ भन्ने कुराको यकिन गर्न ।
- उपआयोजना क्षेत्रको वातावरणको बारेमा आधारभुत तथ्याङ्कहरु उपलब्ध गराउनु ।

प्रस्तावको सार्न्दभिकता :
लामोसाधुँ-जिरी सडक दोलखा जिल्ला सदरमुकाम चरिकोट भएर गएको छ र यस सडकसंग सदरमुकाम चरिकोट लगायत अन्य बजार केन्द्रहरु शाखा सडकले जोडिएका छन् साथै जिल्लाको दक्षिण पश्चिमी क्षेत्र लाइ दोलखा–सिङ्गटी सडकले लामोसाधुँ-जिरी सडक सगँ जिल्ला सदरमुकामा जोडेको छ । प्रस्तवित सडकको निर्माण पुरा भएपछि सदरमुकाम चरिकोट लगायत अन्य बजार केन्द्रहरु (लापिलाङ्ग, भदौरे, सिंगटी) र विशेष गरी दक्षिण पश्चिमी क्षेत्रलाई राजधानी काठमाडौंसम्मको बजार र यातायातको सुबिधामा सहज पहुचँ पुऱ्याउन मद्दत गर्नेछ । यसले समयको बचत हुनुका साथै आय आर्जनका संभावनाहरु बढ्नजाने तथा बजारसम्मको पहुँच सजिलो भई व्यवसायका अवसरहरु बढनेछन् । सडक निर्माण हुँदा स्थानीय वासिन्दाले छोटो अवधिको लागि रोजगारीका अवसर पाउने छन् । यस्ता प्रत्यक्ष फाइदा दिने कार्यक्रमवाट त्यस क्षेत्रको आर्थिक गतिविधि बढनुको साथै अन्य रोजगारीका अवसरहरु श्रृजना हुने छन् ।

वातावरणीय संरक्षण ऐन २०५३, वातावरणीय संरक्षण नियमावली २०५४ तथा एशियाली विकाश वैंक को वातावरणीय मार्गदर्शन २००३ र सेफगाई पोलेसी स्टेटमेन्ट २००९ अनुसार जिल्ला सडक को निर्माण गर्न प्रारम्भिक वातावरणीय परीक्षण आवश्यकता पर्दछ । यो प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन स्थानीय विकास

[1] This is Executive Summary of the IEE report in Nepali language and an English version is given in page xii.

मन्त्रालयको मिति २०६५।१२।०४ सचिव स्तर निर्णयबाट स्वीकृत कार्यसूची समेतलाई आधार बनाई तयार गरिएको छ ।

आयोजनाको विवरण:

प्रस्तावित सुनखानी-क्यान्पा सडक उपआयोजना नेपालको मध्यमान्चल विकास क्षेत्रको जनकपुर अन्चल अन्तर्गत दोलखा जिल्लाको दक्षिण पश्चिम क्षेत्रमा पर्दछ । यो सडक उपआयोजना सुनखानी गा.वि.स. अर्न्तगत भदौरे बजार (सिसा गोलाई) बाट सुरु भई कालिन्चौक गा.वि.स.को क्यान्पामा गएर टुन्ङ्गिछ । यस सडकको महत्वलाई दृष्टिगत गरी जिल्ला परिषदले उच्च प्राथमिकता दिएर ग्रामीण पुननिर्माण तथा पुर्नस्थापना कार्यक्रम (RRRSDP) अन्तर्गत पुर्ननिर्माणको लागि प्रस्तावित गरेको छ । आयोजनामा सिसागोलाई, कातिके, सित्का, पाटागाउँ, ल्याप्टुन, गुर्जपा, लापिलाङ, लकाईगाउँ, गुमु, पोखरे, पाण्डेटोल, भीरमुनी, घारापानी, फुस्रा, डाडागाउँ, डम्फा, कुतिस्याङ, र ट्वाफ मूख्य वस्तीहरु पर्दछन । भदौरे र लप्पिलाङ्ग यस क्षेत्रका मूख्य बजारहरु हुन ।

प्रस्तावित सुनखानी-क्यान्पा सडक जिल्ला सडक अन्तर्गत बर्गीकृत गरिएको छ । जसलाई राम्रो मौसममा चल्ने बाट सबै मौसममा (बर्ष भरी) चल्नेमा स्तरोन्नति तथा निर्माण गर्न प्रस्ताव गरिएको छ । यस उपआयोजनामा कुल २७.३९ कि.मि. सडक फराकिलो तथा मजबुत पार्ने, पुलपुलेसाहरु फेर्ने, पहिरोग्रस्त क्षेत्र सुधार्ने कार्यहरु पर्छन् । स्तरोन्नति कार्य विद्यमान ५मी. चौडाइको सडक मार्गमा सिमित हुनेछ । सबै किसिमका कार्यमा गरी कुल २९५,२२२.९७ घन मी. माटोको कार्य गर्नुपर्नेछ । यस उप-आयोजनाको कूल लागत करीब नेरु २०९,०९९,५०१.७६ र प्रति कि.मी नेरु.७,६३४,१५४.८७ रहने अनुमान गरिएको छ ।

उपआयोजना को निमार्ण कार्य सन् २०१० भित्र शुरु भई एक वर्षका लागि जारी रहने अपेक्षा गरिएको छ ।

अध्ययन प्रकृया

अप्रिल, २००९ (चैत्र २०६५) मा फिल्ड सर्वेक्षणवाट लिइएका तथ्याङ्क तथा अन्य उपलब्ध तथ्याङ्कहरुको साथै सामाजिक तथा प्राविधिक टोलीवाट पुर्नवास कार्यको सर्भेक्षणको लागि संकलन गरेका तथ्याङ्कहरु केलाएर प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन तयार गरी निष्कर्ष तथा सुझावहरु दिइएका छन् । सार्वजनिक छलफल २०६५।१२।२४ देखि २६ गते सम्म प्रभावित गा.वि.स.का बस्तीहरुमा मा गाउँस्तरीय निर्माण तथा समन्वय समितीका सदस्य, स्थानिय व्यक्ति, शिक्षक आदि संग गरिएको थियो ।

विद्यमान स्थिति:

भौगोलिक रुपमा सडक उपयोजना मध्य पहाडी खण्डमा अवस्थित छ । यो प्रस्तावित सडक सुनखानी गा.वि.स.को भदौरे सिसा गोलाई बजारमा समुद्री सतहदेखि १,४८६ मी. को उचाईबाट शुरु भएर समुद्री सतहदेखि १,७८२ मी. उचाइमा कालिन्चोक गा.वि.स.को क्यान्पामा गएर टुन्गिन्छ । प्रस्तावित सडक उपोष्ण जलवायू भएको क्षेत्रमा रहेको छ । उपयोजना क्षेत्रको तापक्रम अधिकतम र न्यूनतम क्रमश २८ से र ७ सेल्सीयस रहेको छ भने औसत वार्षिक वर्षा १,६१५ मी मी रहेको छ । यो सडक खेती गरिएको जमीन, बाँझो जग्गा बस्ती र वन भएर जान्छ । भु–उपयोगको हिसाबले यस सडकवाट खेती गरीने जमीन (२.३ हे), बस्ती (०.१७ हे) पाखो जमीन (०.१२ हे) र जँगल (०.२६ हे) नोक्सानी हुन जानेछ ।

यस सडक खण्डमा विभिन्न प्रकारका चट्टानहरु जस्तै क्वार्टजाइट, फिलाइट, सिष्ट पाईन्छन् । एलुभियल, कोलुभियल तथा रेजीड्यूयल प्रकारका माटोहरु सडक खण्डमा पाइन्छन् । सडक खण्डमा पानीका मूख्य श्रोतहरुमा विभिन्न खहरे खोला सहित ३३ वटा पानीका स्रोत रहेका छन् । प्रस्ताविक सडक क्षेत्रको वायु तथा पानी को स्तर सफा नै रहेको देखिन्छ साथै ध्वनि प्रदुषणको समस्या छैन ।

यस सडक खण्डको प्रभावित क्षेत्रमा पाइने रुखहरुको प्रजातिहरुमा उत्तिस, चिलाउन , कटुस, सल्ला आदि तथा गैऱ्ह काष्ठ वन पैदावारमा अमला, चुत्रो, टिमुर, चिराइतो आदि पर्दछन् । यो सडक ३ वटा सामुदायिक वनक्षेत्रबाट गुज्रिन्छ । चितुवा, स्याल, दुम्सी, भालू बाँदर वन्य जन्तुका साथै काग, कालिज पंक्षीहरु यो सडक भएर जाने वनमा पाइन्छन् । यो सडक संरक्षित वा मध्यवर्ती क्षेत्रमा पर्दैन ।

यो सडक खण्डको प्रभावित क्षेत्र भित्र सुनखानी, लापिलाङ्ग, लामिडाँडा बावरे र कालिन्चौक गा.वि.स. को १७ वटा प्रमुख वस्तीहरु पर्दछन । यहाँ जम्मा घरधुरी संख्या २,६८४ वटा र जनसंख्या १५,५६४ रहेको छ र

सरदर परिवार संख्या ५.७९ छ । यहाँ वसोवास गर्ने विभिन्न जात जातिका मानिसहरुमा मुख्य गरी बाहुन, क्षेत्री, थामी (आदिबासी जनजाती), तामाङ्ग दमाई कामी आदि पर्दछन् ।

यहाँका बासिन्दाहरुको मुख्य पेसा कृषि र पशुपालन हो । यातायातको राम्रो सुविधा नभएको तथा पहाडी क्षेत्र भएकोले कृषि उब्जनीले मात्र जीवन निर्वाहका लागि पर्याप्त नहुने हुँदा यहाँका अधिकाशं मानिसहरु अन्य पेशामा मजदुरी तथा भरियाको रुपमा काम गर्ने (८२.५२%), केहि मानिसहरु सरकारी तथा अन्य संस्थामा काम गर्ने (८.७%), थोरै मानिसहरुले (२.२३%) व्यापार व्यवसाय गर्ने गर्दछन् । साथै जनसंख्याको उल्लेखनीय प्रतिशत मानिसहरु खेतीपातीको काम नहुने समयमा काठमांडौ तथा भारतका विभिन्न ठांउमा रोजगारीको लागि जाने गर्दछन् जुन जीविकोपार्जनको मुख्य आधार हो ।

सकारात्मक प्रभाव:
यातायातको सुविधाले स्थानिय बासिन्दाहरुको जीवनमा थुप्रै सकारात्मक प्रभाव पर्दछन् । सडक निर्माण गर्दा स्थानीय वासिन्दाहरुले श्रमिकको रुपमा रोजगारीका (१८,९४० दक्ष श्रमिक दिन र २७०,८७९ अदक्ष श्रमिक दिन) अवसरहरु प्राप्त गर्ने र प्राविधिक सीप तथा ज्ञान समेत प्राप्त गर्ने छन् ।

सडक निर्माण भई संचालनको अवस्थामा त्यस क्षेत्रमा खाद्यानको आपूर्ति सुचारु हुन गई आर्थिक तथा सामाजिक स्थायित्व बढ्न जानेछ । साथै सडक यातायातले गर्दा ग्रामीण भेगवाट बजार क्षेत्र र बजार क्षेत्रवाट ग्रामीण भेगमा सेवा तथा सामानहरुको ओसार पसार छिटो, छरितो, सुलभ तथा सस्तो हुन जानेछ । बजारमा पहुँच भएको कारण कृषि उत्पादन बढाउन कृषकहरु उत्साही हुनेछन् । यस्ले गर्दा उत्पादकत्वमा वृद्धि भई अन्ततोगत्वा ग्रामीण भेगका बासिन्दाको जीवनस्तरमा सुधार हुन जाने छ ।

सडक संचालन हुँदा व्यापार व्यवसायमा वृद्धि हुन जानेछ । त्यस क्षेत्रमा बजार लगायतका वस्तीमा व्यापार क्षेत्रको विकास भई यहाँका बासिन्दाहरुको जीवन स्तरमा सुधार हुन जानेछ । बजार क्षेत्रको विकासले गर्दा जग्गाको मूल्यमा समेत वृद्धि हुन जानेछ ।

नकारात्मक प्रभाव:
सडक पुननिर्माण गर्दा भौतिक वातावरणमा पर्ने नकारात्मक प्रभावहरुमा भू स्वामित्वको प्रयोगमा वदलाव, भिरालो जग्गामा पहिरो जाने, वायु तथा पानीमा प्रदुषण, खनेको माटो फालिंदा पर्ने प्रभावहरु मुख्य छन् । यस्तै प्रकार जैविक प्रभाव अन्तरगत ०.२६ हेक्टर वन क्षेत्र र विभिन्न जातका गरी करिब ४६६ बटा रुखहरु सामुदायिक वनक्षेत्रबाट र निजी जमीन बाट १,३९० बाट काटिनेछन् । साथै सडक निर्माण क्रियाकलापबाट जीवजन्तुलाई असर पर्न जानेछ । आर्थिक तथा सामाजिक प्रभाव अन्तरगत सडक पुर्ननिर्माण गर्दा २.३ हेक्टर खेती गरिने जमीन नोक्सानी पर्नुका साथै अन्य सम्पत्ति समेतको नोक्सानी हुन जानेछ । यसका साथै श्रमिक तथा अन्य बासिन्दाहरुको स्वास्थ्यमा सडक निर्माण हुँदा प्रतिकुल असर पर्न जानेछ । प्रस्तावित सडकमा व्यक्तीका सात वटा घर (चे. २+६४०, चे. ४+२००, चे. ६+०३२, चे. ७+१००, चे. १०+९२० चे. १७+०६४ र चे २२+८३५), ३ वटा बाख्रा बाध्ने टहरा (चे. २+६४०, चे. ६+०३२ र चे २२+३९०), एउटा ट्वाईलेट (चे. १० +९२०), एउटा पसल (चे. १४ +०३५) र एउटा कुटानी पिसानीको मिल (चे. १३ +६७०) हटाउनु पर्ने हुन्छ । साथै सार्वजनिक स्थलमा रहेका एउटा प्रतिक्षालय (चे. १२ +९००) र धार्मिक स्थल अन्तरगत एउटा मन्दिर (चे. २२ +४०५) हटाउनु पर्ने हुन्छ ।

सडक संचालनको दौरान भौतिक वातावरणमा पर्ने नकारात्मक असरहरुमा भिरालोपनको स्थायित्व र यसको व्यवस्थापन, वायु तथा ध्वनि प्रदुषण तथा सडक सुरक्षाका समस्याहरु पर्दछन् । यसै प्रकार जैविक प्रभावमा वन्य श्रोत घट्नु, वन्यजन्तुहरुलाई अप्ठेरो पर्ने हुन् भने सामाजिक तथा आर्थिक प्रभावहरुमा नयाँ वस्ती र बजारको अव्यवस्थित विस्तार, सामाजिक व्यवहारमा परिवर्तन हुनु आदि पर्दछन् ।

सकारात्मक प्रभाव बढाउने तथा नकारात्मक प्रभाव न्यूनिकरणका उपाय
यस सडकको निर्माणवाट सकारात्मक तथा नकारात्मक दुवै प्रकारका प्रभावहरु पर्ने देखिन्छन् । सकारात्मक प्रभाव बढाउने उपायहरु तथा नकारात्मक प्रभाव न्यूनिकरण गर्ने उपायहरुको प्रभावकारी कार्यान्वयनले गर्दा सकारात्मक प्रभाव वढ्न जानुका साथै नकारात्मक प्रभाव न्यून गर्न सकिने वा हटाउन सकिने छन् । प्रभावहरुको आकलनको आधारमा सडक निर्माण तथा संचालन दुवै चरणमा सकारात्मक प्रभाव बढ्ने उपाय र नकारात्मक प्रभाव घटाउने उपायहरु उल्लेख गरिएका छन् ।

सकारात्मक प्रभाव बढाउने उपाय

कामदार तथा निर्माण समूहका सदस्यहरुको जीविकोपार्जन सुधार गर्नको लागि विभिन्न शीपमूलक तालिमहरु (आय आर्जन, इन्जिनियरिगं संरचनाको निर्माण तथा जैविक प्रविधिका कामहरु सम्बन्धी) दिईने छन् । सहकारीको विकास गर्न तथा वित्तिय संस्था तथा बैंक संग व्यवसाय विस्तार गर्न , खेतीबाट भएको उब्जनी वृद्धिको लागी थप कृषि विकासका कार्यक्रम गर्न र बजार संगको सम्बन्ध विस्तार गर्न जागरण ल्याउने कार्य गरिनेको छ । साथै बजार क्षेत्रमा ढल निकास तथा अन्य आधारभूत सुविधा हरुको विस्तारको लागि सहयोग गरिने छ । सडक निर्माणका क्रममा ५०% महिला सहभागिता गराईने छ ।

नकारात्मक प्रभाव न्यूनिकरणका उपायः

श्रममा आधारित, बाताबरणीय मैत्री तथा सहभागीता मूलक अवधारणा को अवलम्बन गरी वाताबरणमा पर्ने प्रभावहरुको न्यूनिकरण गरिने छ । यस अनुरुप खन्ने र पुर्ने माटोको आयतनमा सन्तुलन मिलाउनु को साथै खनीएका बस्तुहरुको पुनः प्रयोग तथा जैविक प्रविधि (वायो इन्जिनियरिगं) को प्रयोग गरिने छ । भिरालो जग्गाको व्यवस्थापनको लागि पर्याप्त प्रावधानहरु सडक उपआयोजनाको डिजाईनमा राखिने छन् । खानी संचालन अस्थिर (कमजोर) क्षेत्रहरु, भूक्षय हुने क्षेत्रहरु, वन, बस्तीहरु तथा उर्वरा जमीनमा गैरिने छैन ।

स्थानीय वासिन्दालाई आफ्नो निजी जग्गामा वृक्षारोपण गराउन प्रोत्साहन गराईने छ । यसै प्रकार, सामुदायिक वन लाइं १२,८१५ रुखहरु र स्थानीय वासिन्दालाई ४,१७० रुखहरु (अनुमानित लागत ने रु ५७६,६७५।०० र ने रु ६९३०५।४०) वृक्षारोपण गराउन गर्न सहयोग दिइनेछ जसले गर्दा रुखहरुको क्षती लाई परिपूर्ति गर्न सकिने छ । वन्य जन्तु र चराहरुलाई कम मात्रामा अवरोध होस भन्नाको लागि वनको छेउ छाउमा निर्माण कार्य गर्दा व्यवस्थित तरिकाले गरिने छ । सडकमा परेको जग्गा तथा अन्य संरचना, सम्पतीको प्राप्ती तथा क्षतिपूर्ति सम्वन्धि कुराहरुलाई समेट्न छुट्टै पुर्नवास योजना बनाइएको छ ।

कामदारहरुलाई कामको प्रकृति अनुसार सुरक्षाका साधनहरु (हेल्मेट, मास्क, मफल्स) दिईने छ र कामदारको लागि खानेपानी को आपूर्ति तथा अस्थाई खाल्टे चर्पी हरु बनाइने छन् । साथै पानीको श्रोत मा खनिएको माटो फालिने छैन । कामदारहरुको लागि औषधी तथा दुर्घटना बीमाको व्यवस्था गरिने छ ।

सडक संचालनको अवस्थामा साना साना पहिरो तथा माटोका खसेका ढिस्काहरुलाई तुरुन्तै उचित प्रविधिबाट सफा गरिने छ । सामुदायिक वन उपभोक्ता समूहरु लाई वनको कार्ययोजना अनुसार संरक्षण र व्यवस्थापन गर्न सघाउ पुर्याइने छ । साथै उन्नत चुल्हो बनाउन प्रोत्साहन गरिने छ । ड्राइभरहरुलाइ सचेत गराउन वन, स्कूल र आवास क्षेत्रमा हर्न बजाउन निषेध गरिएका साइनबोर्डहरु राखिनेछन् । व्यवस्थीत बस्ती विकासको लागि जनचेतना जगाउने कार्यक्रम संचालन गरिनेछन । साथै संभावित दुर्घटना बाट जोगाउन उपयुक्त सडक सुरक्षाका उपायहरु अवलम्बन गरिनेछन् ।

वातावरणीय व्यवस्थापन योजना

सकारात्मक असरहरुलाई बढाउने र नकारात्मक असरहरुलाई घटाउन वातावरणीय व्यवस्थापन योजना एउटा महत्वपूर्ण उपाय हो । यसले गर्दं आवश्यकीय सूचनाहरु प्राप्त भई प्रभाव न्यूनिकरणका उपायहरुको कार्यान्वयनमा सुधार गर्न सकिन्छ । यसको लागि जिल्ला विकास समिति र जिल्ला प्राविधिक कार्यालय, दोलखाले अनुगमन प्रणालीको विकास गरी वातावरणीय सुधारमा आफ्नो प्रतिबद्धता देखाउने छ । यस कामको लागि जि.वि.स. लाई जिल्लामा रहेको योजना कार्यान्वयन कार्यालय र जिल्ला कार्यान्वयन सहयोग परामर्शदाताहरु र केन्द्रीय कार्यान्वयन सहयोग परार्मशदाताको वातावरणीय टोलीले वातावरणीय अनुगमन गर्न सहयोग पुऱ्याउने छन् ।

निष्कर्ष तथा सुझावहरुः

सुनखानी-क्यान्पा सडक खण्डको प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदनले सकारात्मक प्रभावहरु नकारात्मक प्रभावको तुलनामा वढी महत्वपूर्ण रहेको र लामो समयसम्म रहने र नकारात्मक प्रभावहरु न्यूनिकरण गर्न सकिने कुरा देखाउँछ, । साथै सार्वजानिक छलफलमा उठेका सान्दर्भिक सुझावहरु लाई समेटीएको छ । यो सडक उपआयोजनाको स्वीकृतिको लागि प्रारम्भिक वातावरणीय परीक्षण प्रर्याप्त रहेको छ । प्रभावहरुको न्यूनिकरण र संलग्न वातावरणीय अनुगमन योजना कार्यान्वयन गरी प्रस्तावित उपआयोजना कार्यान्वयनको लागि सिफारिस गरिन्छ ।

EXECUTIVE SUMMARY OF INITIAL ENVIRONMENTAL EXAMINATION (IEE) OF SUNKHANI – KYANPA ROAD SUBPROJECT

Proposal / Project Proponent

This Initial Environmental Examination (IEE) Report has been prepared for the rehabilitation and reconstruction of 27.39 km long all weather district road connecting Bhadaure (Sisagolai) of Sunkhani VDC to Kyanpa of Kalinchowk VDC in Dolakha District.The District Development Committee (DDC)/District Technical Office, Dolakha is the executing agency at the district level under RRRSDP and the proponent of the IEE study for this road sub-project.

Background

The Rural Reconstruction and Rehabilitation Sector Development Programme (RRRSDP) is financed by grant assistance from the Government of Nepal (GoN), Asian Development Bank (ADB), Department for International Development (DFID), and Swiss Agency for Development and Cooperation (SDC) and loan assistance of OPEC Fund for International Development (OFID).The main objective of this programme is to improve the connectivity, enhance economic and employment opportunities, increase access to market and social services from rural communities.

Objective

The main objective of the IEE study is to identify the impacts of physical, biological, socio-economic and cultural environment of the Subproject area. The other objectives of the proposed IEE study include to:

- Identify the major issues that may arise as a result of proposed works on bio-physical, socio-economic and cultural environment of the project area,
- recommend practical and site specific environmental mitigation and enhancement measures, prepare and implement environmental monitoring plan for the sub-project,
- make sure that IEE is sufficient for the proposed road sub-project, and
- provide information on the general environmental setting of the sub-project area as baseline data.

Relevancy of the Proposal

Lamosanghu-Jiri Road passes through Dolakha district and district headquarter, Charikot and connects to other market centres of Dolakha by branch roads, whrereas south west part of the district is connected with earthen road coming from Charikot to Singati. After the completion of the proposed road, it will provide accessibility to district headquater Charikot, and Kathmandu with other market centres like Lapilang, Bhadaure, Singhati Bazar and especially for south western part of the district. This road will save considerable travel time and improve income generation potentials, enhance commercial opportunities and improve market accessibility to local people. This road will also provide short term employment opportunity by engaging the rural poor people in construction of the road. Such people based development efforts will reinstall economic activities in the area by creating employment and other opportunities.

Preparation of IEE report for district road is mandatory according to Environmental Protection Act, 1997 and Environmental Protection Regulation, 1997, ADB Environmental Guideline, 2003 and Safeguard Policy statement 2009. This IEE report of Sunkhani-Kyanpa Road sub-project in Dolakha district is prepared based on the Terms of Reference (ToR) approved on 17 March 2009 AD (2065/12/4 BS) by the Secretary level decision of the Ministry of Local Development (MLD).

Project Description

The proposed Sunkhani-Kyanpa road subproject lies in Dolakha district in Janakpur zone of central development region of Nepal. This road subproject starts from Bhadaure bazaar (Sisa Golai) of Sunkhani VDC and passess through Lapilang, Lamidada, Babare VDCs and ends at Kyanpa of Kalinchowk VDC. Considering the importance of this road, District Council has given high priority to this road and it has been proposed for the rehabilitation under Rural Reconstruction and Rehabilitation Sector Development Program (RRRSDP). Major settlements along the alignment are Si.Sa. Golae (Bhadaure), Katike, Sithka, Pata Gaun, Laptung, Gujarpa, Lapilang, Lakiegaun, Gumu, Pokhere, Pandey Tol, Bhirmuni, Dharapani, Fusra, Dada Gaun, Damfa, Kutisyang and Tuwapa. Bhaduare and Lapilang are main market center of this area.

The proposed Sunkhani-Kyanpa Road subproject is classified as a District Road (DR) with a status of "fair weather" and is being proposed for gravelling/upgrading to "all weather" DR. The total length of proposed road sub-project is 27.39 km long and the road formation width is 5m. The sub-project will involve road widening, carriageway strengthening as well as culvert replacement and landslide rehabilitation. The main working width will be 5 m centered over the existing carriageway. Rehabilitation works will require more than 295,222.97 cubic meters (m^3) of earthworks for all construction activities. The total subproject cost is NRs 209,099,501.76 and per km cost is NRs. 7,634,154.87

This sub-project is expected to commence within 2010 with actual work continuing for one year.

Methodology

The findings and conclusions of the report are based on the analysis of the information collected from the field during April, 2009 by undertaking a walk-through environmental survey along the proposed route and secondary information supplemented by information collected by the social and technical teams working on the resettlement survey and detail survey. Public consultation was done from 5 to 7 Apirl 2009 AD in affected VDCs settlements with the member of VICCC, local people, teacher.

Existing Condition

Physiographically, the proposed road subproject lies in midhills region. The road starts from Bhadaure Bazar at an elevation of 1,486 m a sml of Sunkhani VDC and ends at Kyanpa in Kalinchowk VDC at an elevation of 1,782 m amsl. This sub-project lies in subtropical region. The average maximum and minimum temperature of the district is 28ºC and 7ºC respectively. The average annual rainfall in the district is 2043.5 mm. The road mainly passes through cultivated land, barren land, forest and settlements. Approximately 2.3 ha cultivated land 0.26 ha forest areas, 0.122 ha barren lands and 0.17 ha built up area has to be acquired during the road construction.

The road section comprises of different types of rocks like, quartzites, phylites and schists. In general, soil type along the road can be classified as alluvial, colluvial and residual. There are 33 small and large streams(including dry streams) across the road alignment as water resources. Ambient air and water quality in the proposed project area is found to be good and there's also no noise pollution.

The dominant forest and fodder species reported in the road alignment are Chilaune (*Schima wallichii)*, Katus *(Castanopsis indica*), Uttis (*Alnus nepalensis*), Salla (*Pinus roxburghi*) and the main NTFP species found along the road alignments are Amala (*Emblica officinalis) Chutro (Berberis aristata),* Chiraito *(Swertia chirayita)*, *Timur (Zanthoxylum armatum)* etc. There are altogether 3 community forests along the alignment. Chituwa *(Panthera pardus)*, Syaal (*Canis aurieus)*, Dumsi *(Hystrix indica*), Bhalu (*Ursus thibetanus*),

Monkey (*Macaca mulatta)* are the wild animals reported in the proposed road area. Similarly, birds in the forest along the road alignment are Kalij (*Lophura leucomelana*), Crow (*Corvus splendus*). The road does not fall under any protected or buffer zone area.

There are 17 major settlements along the ZoI of the proposed road alignment in Sunkhani, Lapilang, Lamidada, Babare and Kalinchowk VDCs with total population of 15,564 persons (2,684 households) and average family size of 5.79. Diverse ethnic groups such as Brahmin, Tamang, Thami (indigenous community), Chhetri, occupational caste (Damai, Kami) live along the ZoI of road alignment. Occupational caste households are distributed in almost all the settlements.

The main occupation of the people residing in the ZoI of the proposed road alignment is agriculture and livestock. Due to the lack of transportation facilities and mountainous terrain, agriculture farming is not enough for subsistence level. Therefore, people are carrying out other economic activities like employment as labor (82.52%), working in government and non government organizations (8.7%), business and cottage industries (2.23%). Moreover, significant section of the economically active male population also migrates to various places including Kathmandu and India seasonally during slack farming season for employment which is the source of livelihood.

Beneficial Impacts
The development efforts particularly the development of transportation network will have multifold beneficial impacts. During the road construction, local people will get employment as lobour (18,940 skilled and 270,879 unskilled person days) and other technical knowledge and skill.

During operation stage, an improved road access will bring an improvement of food security situation and overall economic and social stability. The road will also provide cheap, safe and fast transport of goods and services from rural areas to urban centers and vice versa. The farmers will be more interested to increase agricultural production due to market accessibility. This will contribute significantly to increase the productivity in rural areas and eventually improve the overall socio-economic condition of the people.

Once this road is on operation, trade and business activities will be further promoted. There is a possibility of increased economic opportunities and significant growth and extension of the local markets along the road alignment. In addition, construction of road will lead to appreciation of land values particularly near the market and settlement areas.

Adverse Impacts
The physical adverse impacts during construction will be due to change in land use, slope instability and air, dust and water pollution, quarry sites and spoil disposal. The biological impacts during rehabilitation works will be loss of 0.26 hectares (ha) of forest area, 466 no. of tree from community forest, 1,390 no. of trees from the private land and disturbance to wildlife and bird habitat. Socio-economic impacts during the rehabilitation works will be loss of 2.3 ha of agricultural land, loss of private properties, and exposure to health and safety problems during road construction. Seven houses (Ch 2+640, Ch 4+200, Ch 6+032, Ch 7+100, Ch 10+920, Ch 17+064 and Ch 22+835), three goat sheds (Ch 2+640, Ch 6+032 and Ch 22+390), one toilet (Ch 10+920), one mill (Ch 13+670) and one shop (Ch 14+035) have to be acquired of the private owner due to the road construction. Similarly, under community infrastructure Chautari (resting place) at Ch 12+900 has to be acquired and under religious sites one temple at Ch 22+405 has to be shifted during the road construction.

The adverse physical impacts during road operation are slope instability and management, air and noise pollution, and road safety. Likewise, biological impacts are depletion of forest

resources and disturbance to wildlife. Socio-economic impacts are due to new settlement and market center development, change in social behavior horse during road operation.

Benefit Augmentation and Mitigation Measures
Impacts from the proposed road projects can be both beneficial as well as adverse. An effective implementation of benefit maximization measures and adverse impacts mitigation measures would optimize the benefits expected from the project and avoid/minimize the adverse impact from the project. Based on the impact assessment and identification, beneficial augmentation and adverse impact mitigation measures are presented in both constructions as well as in operation stage of the road.

Benefit Augmentation Measures
Life skill training like, income generation activities, construction of soft engineering structures and bioengineering works for workers and members of BGs will be conducted to improve their livelihood. Awarness raising programme for the promotion of co- operatives and linkage with bank and other financial institutions, agricultural support services and market linkages will be conducted. During the road construction more emphasis is given to women workers as at least 50% workers should be women.

Mitigation Measures
Spoils should be safely disposed and managed with minimum environmental damage using LEP approach which includes balanced cut and fill volume, re-use of excavated materials and minimum quantity of earth works and adoption of bio-engineering techniques. Adequate slope stabilization measures will be provisioned in design for the stabilization of slopes. Unstable sites, erosion prone area, dense forest area, settlements, fertile farm land will be avoided for quarrying operation.

Loss of trees will be compensated by encouraging local people to plant trees in their private land. Likewise, CFUGs will be supported for the compensatory plantation of 12,815 trees (estimated cost is NRs. 576,675.00) in community forests. Similarly, 4170 tress (estimated cost is NRs. 69,305.4) will be supported for the compensatory plantation in private area. The construction activities near forest area will be appropriately managed so that there will be least disturbance to the wildlife and birds. A separate Resettlement Plan has been prepared to address land and property acquisition as well as compensation issues.

The workers will be provided with helmets, masks, muffles depending on the nature of the construction work. Drinking water facility and temporary pit latrine will be established and disposal of excavated materials in the water bodies will be avoided. Workers will be provided with medicines and group accidental insurance facility.

During operation stage, minor landslide and mass wasting will be immediately cleared and slope restored with appropriate technology. CFUGs will be supported to conserve and manage their CFs according to operational plans and installation of improved stoves will be promoted. Appropriate sign boards will be erected informing drivers about prohibition of blowing horns in the forest areas and potential areas for wildlife crossing. Appropriate road safety measures with the help of 3-Es i.e. engineering, enforcement and education will be applied.

Environmental Management Plan
Environmental management plan is an important tool to ensure the implementation and monitoring of mitigation measures for minimizing adverse impacts and maximizing the beneficial impacts. Similarly, environmental monitoring generates useful information and improves the quality of implementation of mitigation measures. The proponent, DDC Dolakha will develop monitoring mechanism to show its additional commitment for

environmental improvement and mitigate undesirable environmental changes, if any during construction and operational stage. DDC will be supported by DPO and DIST team in the district and Environmental team from the CISC for the environmental monitoring.

Conclusion and Recommendation

The IEE study of the proposed Sunkhani-Kyanpa sub-project reveals that the benefits from the implementation of the proposed road project are more significant and long term in nature against the adverse impacts most of which could be mitigated or avoided and relevant issues raised during focuss group discussion were also incorporated. Therefore, this IEE is sufficient for approval of the proposed Subproject. This sub-project is recommended for implementation with incorporation of mitigation measures and environmental monitoring plan.

SALIENT FEATURE OF SUNKHANI-KYANPA ROAD SUB-PROJECT

Name of the road subproject	Sunkhani-Kyanpa
Development Region and Zone	Central Development Region and Janakpur
District	Dolakha
VDCs	Sunkhani, Lapilang, Lamidada, Babare and Kalinchowk
Major Settlements and Households	
Major Settlements	Si.Sa. Golae (Bhadaure), Katike, Sithka, Pata Gaun, Laptung, Gujarpa, Lapilang, Lakiegaun, Gumu, Pokhere, Pandya Tol, Bhirmuni, Dharapani, Bhirmuni Fusra, Dada Gaun, Damfa, Kutisyang and Tuwapa
No. of Household	2,684
Total Length	27.39 km
Type of Work	Rehabilitation for upgrading
Geographical Locations	
Start Point	Bhadaure bazaar of Sunkhani VDC
End Point	Kyanpa in Kalinchowk VDC
Geographical Feature	
Terrain	Mid-hills
Alignment	Valley and Ridge
• Altitude Range	1,474m to 1,782 m
• Climate	Sub-tropicall
• Soil	Alluvial soil, colluvial soil
Classification of Road	District Road (Rural Road) Class A
Status of road	Rehabilitatation proposed for all weather
Standard of Pavement	Gravel
Construction Period	270 days
Traffic Forecast	400 vehicles per day in both direction
Design speed	20 km/hr
Cross Section	
• Right of way	10 m each side (center line)
• Formation width	5 m
• Carriageway width	3 m
Lane	Single
Structures	
❖ Retaining Structures	
• Dry Stone Massonary	1,934.00 Cum.
• Gabion Wall	2,870 no.
Cross Structures	
• Causeway	41
• Irrigation Crossing	5
• Pipe culvert	29
• Slab Culvert	15
• Bioengineering	NRs. 4,152,133.30
Earth Work	
• Cutting	269,641.93 Cum
• Filling	25,581.04 Cum
Total project cost (NRs)	209,099,501.76
• Costs per km (NRs.)	7,634,154.87
Employment generation (person days)	
• Skillled	18,940
• Unskilled	270,879
Total employment generation (no. of laborer) for 90 working days	
• Skilled	211
• Unskilled	3,010

CHAPTER 1

1. INTRODUCTION

1.1. Background

1. The Rural Reconstruction and Rehabilitation Sector Development Programme (RRRSDP) is financed by grant assistance from the Government of Nepal (GoN), Asian Development Bank (ADB), Department for International Development (DFID), and Swiss Agency for Development and Cooperation (SDC) and loan assistance of OPEC Fund for International Development (OFID) to improve the connectivity, enhance economic and employment opportunities, increase access to market and social services of rural communities. The (RRRSDP) focuses on immediate post conflict development priorities for accelerated poverty reduction and inclusive development, thereby enhancing the effectiveness and efficiency of the delivery of public services, and improving access of rural people to economic opportunities and social services. The project components include (i) improved rural roads; (ii) developed and improved community-based supplementary rural infrastructures; (iii) enhanced equity, employment and income opportunities for the poor and disadvantaged; (iv) strengthened institutional capacity of the Ministry of Local Development (MLD), the Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR), the District Development Committee (DDC) of project districts; and (v) improved project management.

2. Labor-based, environmentally friendly, and participatory (LEP) approaches will ensure that the investment in reconstruction and rehabilitation[2]of infrastructure results in sustainable, improved access to economic and social services, and enhanced social and financial capital.

3. The District Development Committee (DDC) and District Technical Office (DTO), Dolakha is the executing agency at the district level under RRRSDP and the proponent of the Initial Environmental Examination (IEE) study for the rehabilitation and construction of Sunkhani-Kyanpa road sub-project.

1.2. Relevancy of the proposal

4. The district headquarter, Charikot is linked with Kathmandu by Araniko highway and Lamosanghu-Jiri link road. This road is also linked to Dolakha-Singati road. Main means of transportation for the other remote VDCs in north-western part of the district is trails. Consequently, transportation of goods and services from the market centers to the rural areas and vice-versa has been difficult, insufficient and costly. The proposed road sub-project connects several VDCs of western part of district through Dolakha-Singati road to the district headquarter, Charikot and hence facilitates the easy access to district headquarters of Dolakha. This road will also provide short term employment opportunity by engaging the rural poor people in construction of the road. Such people based development efforts will reinstall economic activities in the area by creating employment and other opportunities

5. The RRRSDP is environmental category according the ADB's Environmental Assessment Guidelines (2003) is Category B[3] therefore an initial environmental

[2] Which may comprise of activities such as '*redesigning*','*realigning*', 'reconstruction' and '*upgrading*'.

[3] Projects are categorized as "B" if they could have some adverse environmental impacts, but of lesser degree or significance than those for category A projects. An initial environmental examination (IEE) is required to

examination (IEE) for the proposed Sunkhani-Kyanpa Road Subproject is necessary to assess the environmental consequences of the proposed Subproject activities and suggest appropriate, practical and site-specific mitigation and enhancement measures.

6. The Sunkhani-Kyanpa Road is a Rural Class "A" District Road[4] (DR) according to National Transport Policy (2058) and *Approach for the Development of Rural and Agricultural Roads* (APPROACH) developed by Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR). By this classification, an IEE is required according to Article 3 of Environmental Protection Act (EPA), 1997 and Rule 3 of the Environmental Protection Rules (EPR) of 1997 which was amended in 2007. Preparation of IEE report by concerned District Development Committee (DDC) and approval of IEE report by the Ministry of Local Development (MLD) according to Nepali legal provision is considered sufficient by the ADB according to Project Administration Memorandum (PAM) subject to prior review of an agreed sample of subproject IEEs by ADB.

7. This IEE Report has been prepared based on the Terms of Reference (ToR) approved on 2065/12/4 (17 March 2009) by the Secretary level decision of the Ministry of Local Development (MLD) as given in **Appendix I**. Rapid Environmental Assesment (REA) Checklist was also considered during IEE report preparation as given in **Appendix II.**

8. The ToR for an IEE has been prepared for 27.00 km[5] portion of the Sunkhani-Kyanpa road. However, the length of the road is found to be 27.39 km after the detailed survey. Therefore, IEE has been prepared for 27.39 km.length.

1.3. Objective

9. The underlying objective of IEE is to gear the project as it evolves and takes shape to "*Make it environmentally sound, tailor it to and help fit in the local environment and assimilate it in the social and instructional context."* The IEE study is to identify the impacts of physical, biological, socioeconomic and cultural environment of the Subproject area. The specific objectives of the proposed IEE study include to:

- Identify the major issues that may arise as a result of proposed works on bio-physical, socio-economic and cultural environment of the project area,
- recommend practical and site specific environmental mitigation and enhancement measures, prepare and implement environmental monitoring plan for the sub-project,
- make sure that IEE is sufficient for the proposed road sub-project, and
- provide information on the general environmental setting of the sub-project area as baseline data.

1.4. Methodology adopted

10. The IEE approach, methodology and procedure were followed according to the provisions of the EPA and EPR. The methodology used for conducting the IEE included review of literature, sample survey/inspections/observations making simple measurements, discussion with communities and other stakeholders, and IEE team

determine whether significant environmental impacts warranting an Environmental Impact Assessment (EIA) are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment.

[4]As per National Transport Policy, 2058, roads in Nepal are classified as: (i) Central Road System; (ii) Local Road System and; (iii) Urban Road System. Local Road System consists of 1.District Roads; 2.Village Roads; 3.Agricultural Roads; 4.Main Trails/Mule Tracks and 5.Village Trails/Mule Tracks. Roads that are not parts of the central road system and where project formulation, construction, maintenance and repair have to be done by local institution shall be classified as the local road system.

[5] The distance of 27.00 km was based on the walk-over survey conducted in 2008.

judgment. Data collection was done in April, 2009 (Baisakh 2066 BS) by the staff of DIST team (Engineer, Social Development Specialist, and Environmental Specialist).

11. Necessary information was generated through field study and literature review to accommodate all issues as included in the approved ToR to analyze environmental impacts on physical, biological, socio-economic and cultural issues. Primary level of information was generated through questionnaires, checklist (**Appendix 3**), photographs ((**Appendix 4**) and data sheets walk-over survey. Secondary information was collected through reports, profiles, maps etc. Furthermore, local people were contacted and interviewed to solicit information. Focus group discussions were held in the various settlements of Project area. The DDCs officials, VDCs and Community groups were also contacted to verify information.

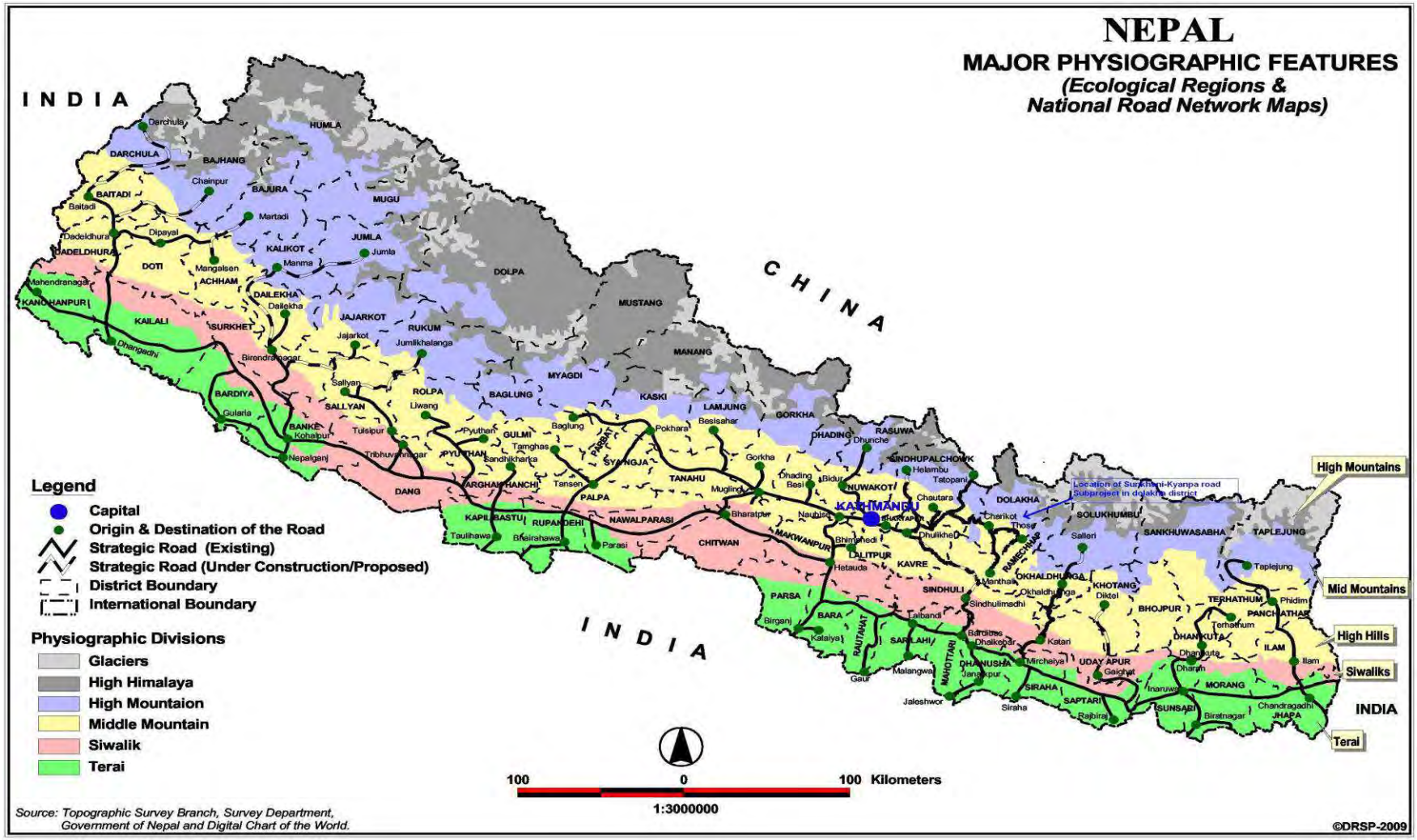
1.5. Description of the proposal

12. Sunkhani-Kyanpa Road is one of the important roads of district which links rural areas of north-western part of Dolakha district to district headquarter, Charikot. The road starts from Bhadaure Bazar at an elevation of 1,486 m above mean sea level (msl) of Sunkhani VDC. Track opening by bulldozer has been completed up to Kyanpa in Kalinchowk VDC at an elevation of 1,666 m above msl which is the end point of the road. The road still cannot be considered as full operation of vehicles due to inadequate engineering design and structures. Up to 2.5 km section, the average road width is 3.5-4.0 m or more at different sections. One bus per day is plying in this road up to 5 km distance. This vehicle is mainly used for transportation of people, agricultural products and other daily commodities. The road passes through Si.Sa. Golae (Bhadaure), Katike, Sithka, Pata Gaun, Laptung, Gujarpa, Lapilang, Lakiegaun, Gumu, Pokhere, Pandya Tol, Bhirmuni, Dharapani, Bhirmuni Fusra, Dada Gaun, Damfa, Kutisyang and Tuwapa settlements of Sunkhani, Lamidanda, Lapilang, Babare and Kalinchok VDCs.

13. The total length and formation width of this road subproject is 27.39km and 5m respectively. This road is proposed for the gravelling. The alignment does not pass through any protected area. The Major portion of the alignment passes through the cultivated land .The initial part of the alignment (Ch 0+500 to 1+600) passes through the forest area. The alignment crosses Gumu Khola at Ch 6+500 and Lapsi khola at Ch 7+750 where bridge of 20m span and 8m span are proposed respectively. The alignment after Gumu Khola traverses through the flat terrain upto Gujarpa where the existing alignment has been washed out due to poor water management and steep grade. After lapsi Khola, The alignment passes through the cultivated land. The alignment from 15+750 to 16+100 also passes through the forest area. After 16+100, the alignment traverses through the cultivated area with few settlement areas.

14. The location and alignment of the road is given in **Figure 1, 2** and **3**. The total project cost is NRs. 209,099,501.76 and per km cost is NRs. 7,634,154.87as shown in **Appendix 5**.

Fig. 1.1 Map of Nepal showing location of Sunkhani-Kyanpa road Subproject in Dolakha District



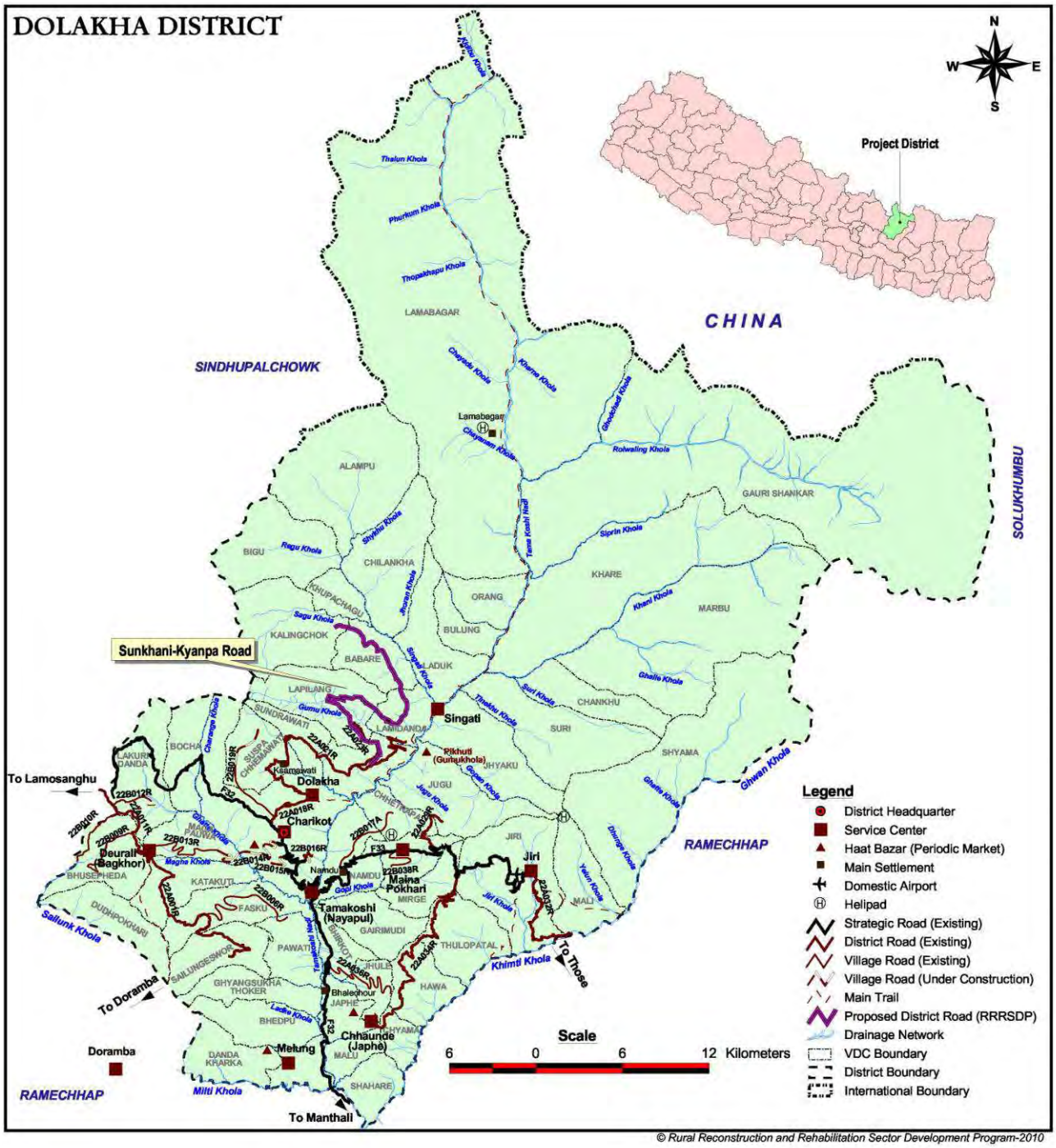


Figure 1.2 Map of Dolakha District Showing Sunkhani-Kyanpa Road Sub-project

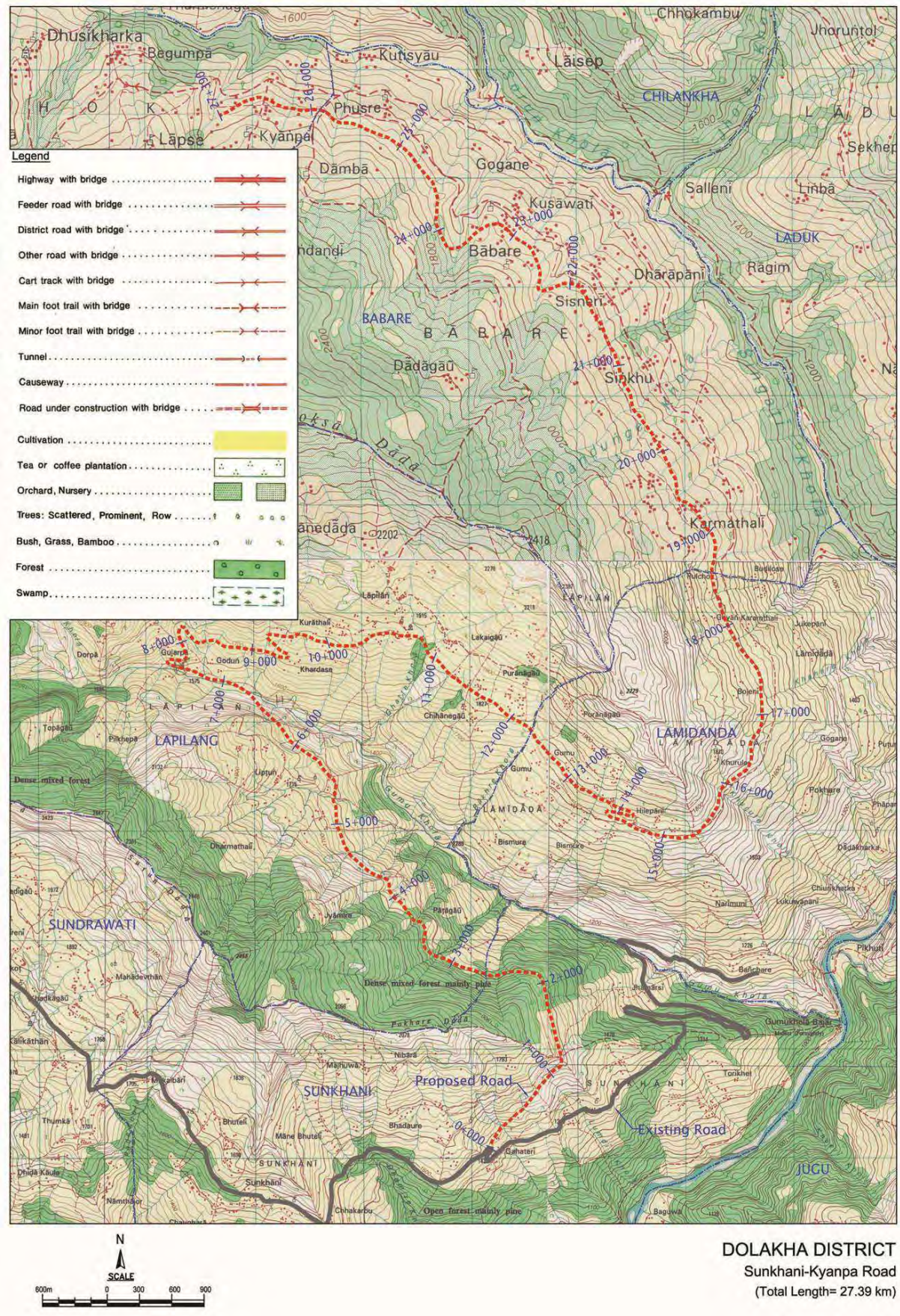


Figure1.3. Topographic map showing the location of Sunkhani-Kyanpa road sub-project in Dolakha district.

1.6. Construction Approach

15. This road will be constructed using the labour-based, environment-friendly and participatory (LEP) approach, the important features of LEP approach are:

- Use of local people as labour, hand tools and small equipment, rather than heavy machinery for construction.
- Balancing cut and fills and reuse of excavated materials as construction materials, and thus not generating excess spoils, as far as possible.
- Use of bio-engineering techniques: integrated use of vegetation, simple civil engineering structures and proper water management systems for slope protection.

16. Contractors will be used in works that cannot be done manually through road building groups. In such works, the construction will be carried by using the equipment and machineries but it will be used in such a way to ensure the minimum environmental damage.

1.7. Proposed Schedule for Implementation of Sub-project

17. Following table shows the proposed implementation schedule for Sunkhani – Kyanpa road sub-project.

Table 1.1: Sub-Project Implementation Schedule

SN	Activity	2008	2009				2010				2011	
		IV	I	II	III	IV	I	II	III	IV	I	II
1	**Detailed survey, design and estimate**											
2	**Preparation of resettlement plan**											
2.1	Life skill and income generation training											
3	**Environment Assessment and implementation**											
3.1	IEE report preparation and approval from MLD/ADB											
3.2	Implementation of EMP											
3.3	Environmental monitoring											
4	**Work implementation**											
4.1	Civil construction work by contractors											
4.2	Civil construction work by RBGs											

Note:

I - July, February, March
II - April, May, June
III - July, August, September
IV - October, November, December

CHAPTER 2

2. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

2.1 Public Consultation

18. In order to ensure the public involvement, the following procedures were followed during IEE report preparation:

- Publication of notice- a 15 days public notice was published on April 2 of 2009 (Chaitra 20, 2065) in the Gorkhapatra, a national daily newspaper (**Appendix 6**) seeking written opinion from concerned VDCs, DDC, schools, health posts and related local organizations. A copy of the public notice was also affixed in the above mentioned organizations and deed of enquiry (*muchulka*) was collected (see **Appendix 7** for deed of inquiry and **Appendix 8** for the names of organizations).

- IEE team also carried out interaction with local communities and related stakeholders like District Forest Office, District Soil Conservation Office, District Agricultural Development Office and others during field survey to collect the public concerns and suggestions (**Appendix 9** for the list of persons consulted). Moreover, focus groups Discussions (FGDs) were conducted to collect and solicit information regarding the bio-physical and socio-economic and cultural aspects of Sunkhani–Kyanpa road subproject. Summary of meeting minutes with local people and meeting minutes in **Appendix 10**. The FGDs were held at different major settlements along the ZoI of the road (refer **Appendix 11a** for the names of settlements) and the data obtained from FGD are mentioned under the chapter 4, Existing Environmental Conditions. Socio-economic data are tabulated in **Appendix 11a, 11b, 11c 11d, 11e, 11f, 11g and 11h.**

- Draft IEE report will be sent to Sunkhani, Lapilang, Lamidada, Babare and Kalinchowk VDC for public disclosure. Recommendation letters were also obtained from above mentioned VDCs as given in **Appendix 12**. Draft IEE will also be kept in information center of DDC Dolakha for public Disclosure. After reviewing draft IEE report and incorporating the suggestions from the concerned stakeholders, final IEE report will be prepared and sent to PCU for approval from MLD and ADB.

2.2 Information Disclosure

19. Draft IEE report will be kept in information center of DDC Dolakha for public disclosure. Information was also disseminated through person to person contacts and interviews and group discussions. However, available institutions at the local level were informed through notice distribution or posting at concerned VDCs, school, health posts and public places within the road alignment corridors. The approved IEE report will be accessible to interested parties and general public through information center of DDC Dolakha and websites of ADB, DoLIDAR and RRRSDP. Following offices will get the IEE report:

1. District Development Committee, Dolakha
2. District Technical Office, Dolakha
3. District Project Office, Dolakha
4. District Implementation Support Team, Dolakha
5. Sunkhani, Lapilang, Lamidada, Babare and Kalinchowk VDCs
6. Ministry of Local Development
7. Department of Local Infrastructure Development and Agricultural Roads
8. Project Coordination Unit, RRRSDP
9. Asian Development Bank, Nepal Resident Mission.

CHAPTER 3

3. DESCRIPTION OF REVIEW OF RELEVANT ACTS, REGULATIONS AND GUIDELINES

20. Government of Nepal has adopted various acts, regulations and guidelines to ensure the integration of development and conservation of environment. The IEE study was being guided by the requirements and provisions of the applicable acts, rules and guidelines as given in Table 3.1.

Table 3.1 Review Of Environmental Acts, Regulations and Guidelines

SN	Environmental Acts, Regulations and Guidelines	Description of Requirements
1	Environmental Protection Act, 2053 BS (1997 AD)	Any development project, before implementation, to pass through environmental assessment, which may be either IEE or an EIA depending upon the location, type and size of the projects.
2	Environmental Protection Rule, 2054 BS (1997 (amendment, 1999 AD)	Obliges the proponent to inform the public on the contents of the proposal in order to ensure the participation of stakeholders.
3	Forest Act, 2049 BS (1993 AD)	Sections 68 of the Forest Act, 1993 empowers the government in case of no alternatives, to provide parts of any types of forests for the implementation of a national priority plan with assurance that it does not adversely affect the environment significantly. Section 49 of the Act prohibits reclaiming lands, setting fires, grazing, removing or damaging forest products, felling trees or plants, wildlife hunting and extracting boulders, sand and soil from the national forest without prior approval from DFO.
4	Forest Rules, 2051 BS (1995 AD)	Elaborate legal measures for the conservation of forests and wildlife. Rule 65 of the Forest Regulation stipulates that in case the execution of any project having national priority in any forest area causes any loss or harm to any local individual or community, the proponent of the project itself shall bear the amount of compensation to be paid.
5	National Park and Wildlife Conservation Act, 2029 BS (1973 AD)	Addresses for conservation of ecologically valuable areas and indigenous wildlife. The Act further prohibits wildlife hunting, construction of houses and huts, damage to plants and animals etc. within the park and reserve, without the written permission of the authorized person.
6	The Labor Act, 2048 BS (1992 AD)	Regulates the working environment, Deals with occupational health and safety.
7	Local Self Governance Act, 2055 BS (1999 AD)	Empowers the local bodies for the conservation of soil, forest and other natural resources and implements environmental conservation activities. Sections 28 and 43 of the Act provide the Village Development Committee (VDC) a legal mandate to formulate and implement programs related to the protection of the environment during the formulation and implementation of the district level plan.
8	Land Acquisition Act, 2034 BS (1977 AD) and Land Acquisition Rules, 2026 BS (1969 AD)	Government can acquire land at any place in any quantity by giving compensation pursuant to the Act for any public purposes or for operation of any development project initiated by government institutions.
9	National Environmental Impact Assessment Guidelines, 1993 (2050 BS)	The guidelines provide guidance to project proponent on integrating environmental mitigation measures, particularly on the management of quarries, borrow pits, stockpiling of materials and spoil disposal, operation of the work camps,

SN	Environmental Acts, Regulations and Guidelines	Description of Requirements
		earthworks and slope stabilization, location of stone crushing plants, etc.
10	APPROACH for the Development of Agricultural and Rural Roads, 1999(2055 BS)	Emphasizes labor based technology and environmental friendly, local resource oriented construction methods to be incorporated actively in rural infrastructure process.
11	Reference Manual for Environmental and Social Aspects of Integrated Road Development, 2003(2060 BS)	This helps to integrate social and environmental considerations, including public involvement strategies, with technical road construction practices. It suggests stepwise process of addressing environmental and social issues alongside the technical, financial and others. The Manual recommends various environmental and social approaches, actions and strategies.
12	Green Roads in Nepal, Best Practices Report: An Innovative Approach for Rural Infrastructure Development in the Himalayas and Other Mountainous Regions, 1999(2055 BS)	Focuses on participatory, labor based and environment friendly technology with proper alignment selection, mass balancing, proper water management, bioengineering and phased construction
13	*Batabaraniya Nirdesika* (Nepali), 2057	The directive is focused in the practical implementation of small rural infrastructures through the minimization of environmental impacts. This directive includes the simple methods of environmental management in the different phases of the project cycle.
14	IEE Rural Access Programme (RAP) Guidelines, 2003(2060 BS)	It clearly indicates the objectives and process of IEE in terms of project screening, preparation of terms of reference, desk review, field work, data analysis and interpretation (identification, prediction and analysis of impacts), mitigation measures, monitoring plan and reporting.
15	ADB Environmental Assessment Guidelines, 2003	Requires that environmental considerations be incorporated into ADB operations where environmental assessment is the primary administrative tool to integrate environmental considerations into decision-making of all types of development initiatives.
16	Resettlement Policy Framework,RRRSDP	It establishes the resettlement and compensastion principles, organizational arrangements and design citeria to be applied to meet the needs of the people who may be affected by the project activities resulting due to land acquisition, loss of shelter, assets or livelihoods, and/or loss of access to economic resources.
17	Three Years Interim Plan, 2007/08 to 2009/10	Requires all projects will be formulated and constructed based on methods that optimally utilize the local skill and resources and generate employment opportunities.
18	The Interim Constitution of Nepal, 2063 (2007 AD).	Provision of right regarding environment and health: Every person shall have the right to live in clean environment and every citizen shall have the right to get basic environmental service free of cost from the state as provided for in the law.
19	Safeguard Policy Statement, 2009, ADB.	ADB's Safeguard Policy Framework consists of three operational policies on the Environment, Indigenous people and Involuntary resettlement. It requires that (i) impacts are identified and assessed early in the project cycle, (ii) plans to avoid, minimize, mitigate or compensate for the potential adverse impacts are developed and implemented and (iii) affected people are informed and consulted during project preparation and implementation

CHAPTER 4

4. EXISTING ENVIRONMENTAL CONDITION

21. Baseline information on the existing physical, biological as well as socio-economic and cultural environment of the proposed sub-project are described here.

4.1 Physical Environment

22. This section describes the physical condition of the area that comes under the ZoI of the road section along its entire length and surrounding area. The data has been collected from both secondary and primary sources.

4.1.1 Alignment

23. The road subproject alignment starts from Sisagolai (Bhadaure bazaar) of Sunkhani VDC on Dolakha–Singati Road (Latitude: 27º 42' 25" and Longitude: 86º 06' 32") and ends at Kyanpa of Kalinchowk VDC (Latitude: 27º 47' 35" and Longitude: 86º 05' 36"). The alignment passes through Sunkhani, Lapilang, Lamidada, Babare and Kalinchowk VDCs. The elevation at the starting point is 1,486 m and at end point is 1,666 m above msl. The algnment passes through forest area, cultivated land, settlement area and barren land.

4.1.2 Topography

24. The sub-project area lies in Mid-hills region of Nepal. This constitutes hills and valleys. The hills are steep and the topography is rugged. The altitudinal variation of the project area ranges between 1,474 m amsl to 1,782 m amsl.The slope varies from 10° to 40°. Major portion of the road passes along the south, and north facing slope. The ZoI of this road lies within 17 settlements of Sunkhani, Lapilang, Lamidada, Babare and Kalinchowk VDCs.

4.1.3 Geology and soil type

25. The road corridor falls in the Higher Himalayan Crystallines rocks mainly gnesissess and migmatites. The common soil types include colluvial, alluvial and residual soils. The detail topography, geology and soil type along the road alignment is presented in the **Table 4.1**.

Table 4.1 Topography, Geology And Soil Type Along The Road

Section	Chainage	Elevation (m)	Aspect	Geology	Soil type
Bhadaure-Liptun	0+000 - 2+000	1486-1515	North	Gneiss, Schist Quartzite,Phyllite	Colluvial
Liptun-Godun	2+000 - 5+100	1510-1593	North-South	Phyllite and Quartzite	Colluvial,,Alluvial, Residual
Godun- Gumu	7+300- 11+400	1606-1782	North	Phyllite and Quartzite	Alluvial and Residual
Gumu- Kyanpa	11+400- 27+39	1782-1666	North-East	Quartzite,Phyllite, Gneiss and Schist	Colluvial, , Alluvial

Source: Field survey, 2009

4.1.4 Climate

26. Climate is dominated by topographical variations. The subproject area experiences the maximum and minimum temperatures at the nearest site (referred from the index station 1103 at Jiri) are taken as 28 ^{o}C (upper limit) and –7 ^{o}C (lower limit). The maximum and minimum monthly relative humidity at the project location is 92 % and 51% respectively.

27. The climate of the subproject area is sub tropical. The maximum annual average rainfall is found to be 2,043.5 mm.

4.1.5 Hydrology and Drainage System

28. There are about 33 small and large stream crossing along the proposed alignment RCC bridges of 20 m span and 8 m span are proposed for Gumu Khola and Lapse Khola respectively.. Name of stream, chainage and their characteristics are given in **Appendix 13** In addition; there are many dry streams along the road alignment. No wetlands are found within the vicinity of the road.

4.1.6 Soil Erosion and Sedimentation

29. The road alignment passes through mid-hills region. The stability of slopes along the road corridor depends upon slope angle, the material constituting the slope, rock discontinuities and hydrological conditions. There are no major landslide and erosion prone areas along the road alignment. However, few small scale slides (slumps at chainage 7+100 to 7+200, 19+500 to 19+600 and 19+000 to 19+650) are observed along the road alignment. The main causes for occurring slides are rock weathering, precipitation and surface runoff.

4.1.7 Land use

30. Land use pattern of the area through which the road passes have been classified into four types: settlement area, agriculture land, forest land and barren land. The existing land use pattern along the road alignment is 0.4385 ha of settlement area, 0.218 ha of barren land, 0.9675 ha of forest and 9.2175 ha of agricultural land. Whereas, the construction of the road will require additional of 0.17 ha of settlement area, 0.122 ha barren land, 0.26 ha forest and 2.3 ha of agriculture land. Detailed of landuse pattern along the alignment is given in **Appendix 14.**

4.1.8 Air, Noise and Water Quality

31. The air quality observed was good and expected to be within national ambient air quality standards of Nepal. Likewise, water quality in the proposed road section is observed to be good since it is free from any kind of pollution. There is no defecation problem observed around the drinking water sources. However, during the monsoon season the quality of water may be polluted due the accumulation of silt, landslide, gully erosion etc. The proposed area does not have any sources of noise nuisance.

4.2 Biological Environment

4.2.1 Vegetation

32. Due to the altitudinal variation, the major forest types according to field survey that are found in the subproject area are Subtropical Broad-leaved forest with the dominancy of *Schima wallichii* and *Castanopsis indica*; Subtropical Pine forest with the dominancy of *Pinus roxburghii* and Lower Temperate Mixed Broad-leaved forest. All the forests are in growing stage with scattered plantation of *Alnus nepalenis* and *Pinus* roxburghii along the alignment of the road. The dominant forest and fodder species reported in the road alignment are Angeri (*Lyonia ovalifolia*), Banjh (*Quercus lanata*), Chilaune (*Schima wallichii)*, Chulethro (*Brassaiopsis hainla)*, Dhudilo (*Ficus nerifolia)*, Dursul (*Ribes sps*.), Phalat *(Quercus lamellose)*, Guras (*Rhododendron arboreum*), Jamun *(Syzygium cumini),* Kafal *(Myrica esculenta*), Katush (*Castanopsis indica),* Khanyo (*Ficus semicordata),* Khote salla (*Pinus roxburghii*), Koiralo (*Bahunia variegate),* Lakuri *(Fraxinus floribunda)*, Okhar (*Juglans regia).* Paiyun *(Prunus cerasoides*), Uttis (*Alnus nepalensis)*, Gogan *(Sauravia nepauensis*), Kagbhalayo (*Semicarpus anacardium*), Kaulo (Persea odoratissima), Jigano (*Eurya acuminate*), Khirro (*Sapium insigne*), Kutmiro *(Litsea monopetala)*, Mauwa *(Bassia latifolia)*, Nemaro *(Ficus auriculata)*, Pahenli (*Listea*

salicifolia), Lapsi (*Choerospondias axillaris*), Maledo *(Macaranga indica),* Lampate *(Duabanga grandifolia).*

33. Beside this, some horticultural plants such as Naspati (*Pyrus communis*), Suntala (*Citrus recticulata*) Nibuwa (*Citrus limonum*), Aaru *(prunus persica),* Kera *(Musa paradisiaca*, Kagati (*Citrus aurantifolia*), Arubhakhada (*Prunus domestica*) are also reported. Gahun (*Triricum aesticum*), Kodo (*Eleusine coracana*), Makai (*Zea mays*) Phapar (*Fagopyrum esculentum)* are commonly grown cereals. Bhatmash (*Giycine max*), Simi(*Phaseolus sps*), Mash (*Phaseolus mungo*) Kerau (*Pisum sativum*) Aalu (*Solanum tuberosum*), Bandagovi (Brassica oleracea), Karela (*Momordica charantia*), Khursani (*Capsicum sps*.), Lasun (*Allium sativum*) Mula (*Raphanus sativus*), Pharsi (*Crcubita maxima*), Pindalu (*Colocasia antiquorum*), Pyaz (*Allium cepa*), Tori (*Brassica compestris*) are commony grown pulses and vegetables in the subproject area.

4.2.2 Non Timber Forest Product (NTFP)

34. Non timber forest products (NTFPs) are defined as any kind of products derived from forest species other than timber and fuel wood. The major NTFP species found in the subproject area are Amala (*Emblica officinalis), Chutro (Berberis aristata), Swertia Chirayita* (Chiraito), Koiralo (*Bahunia variegate), Timur (Zanthoxylum armatum)* Ghodtapre *(Centella asiatica*) and Bojho *(Acorus calamus*) and Majitho *(Rubia manjith*).

4.2.3 Protected Vegetation

35. The protected vegetation found in the subproject area contains one tree species and one herb species (**Table 4.2**). However, none of the species is affected by the upgrading activities of the road.

Table 4.2 Protected Vegetation In The Subproject Area

SN	Local Name	Scientific Name	Remarks		
			IUCN Category	CITES Code	Forest Act and Rules
1.	Okhar	*Juglans regia*	-	Appendix II[6]	Banned for collection, use , sale and transport
2.	Chiraito	*Swertia chirayita*	V		

E= Endangered V= Vulnerable T= Threatened

4.2.4 Community Forest

36. In Dolakha district, there are 289 CFUGs having 32,191.33ha of community forest benefiting 43,089 households. This is about 51.98% of total potential community forest area (DFO, 2007 Dolakha). There are three CFs along the proposed road alignment as given in the **Table 4.3**

Table 4.3 Community Forests (CF) Along Road Alignment

Chainage	Name of Community Forest	Length (m)	Width (m)	Area (ha)	Major Species
0+500-1+600	Janaekata	1,100	4.5	0.49	Chilaune (*Schima wallichii*), Sallo(*Pinus roxburghii*), Uttis(*Alnus nepalensis*)
1+700-2+700	Ramche	1,000	3.5	0.35	Chilaune (*Schima wallichii),* Sallo*(Pinus roxburghii),* Uttis *(Alnus nepalensis),* Gurans *(Rhodendron arboreum),*
15+750-16+100	Thalaripakha	350	3.5	0.122	Chilaune(*Schima wallichii*), Sallo (*Pinus roxburghii*),Uttis(*Alnus nepalensis*)
Total		**2,450**		**0.967**	

Source: Field survey, 2009

[6] Species not yet threatened, but which could become endangered if trade is not controlled

4.2.5 Private forest

37. Local people have planted trees in some patches of their private land. The main tree species is Uttis, Chilaune and other fodder species. These are not registered as a private forest in DFO. People donot uses the private trees for commerical propose.

4.2.6 Religious, Leasehold and Goverment Forest

38. No religious, leasehold and goverment forest are found along the road alignment.

4.2.7 Trees on Farm land

39. Trees have been planted on farm land. The species are mainly fodder species and common species are Gogan, Nimaro, Painyu, etc. The detail of the trees that has to be cut down from farm land is summarised in **Appendix 17 B.**

4.2.8 Terrestrial Wildlife

40. The terrestrial wildlife found in the forests of subproject area includes a number of common as well as rare species **(Table 4.4) .**The road does not fall under any protected or buffer zone area.

Table 4.4 Terrestrial Wildlife In The Subproject Area

S.N.	Local Name	Scientific Name	Remarks	
			IUCN Category	CITES Code
1.	Chituwa	*Panthera pardus*		Appendix I[7]
2.	Mirga	*Cervus duvauceli*	E	Appendix I
3.	Badar	*Macaca mulatta*		Appendix II
4.	Bhalu	*Melursus ursinus*		Appendix I
5.	Syal	*Canis aureus*		Appendix III[8]
6.	Dumsi	*Phptrin indica*		Appendix II

Note: E= Endangered V= Vulnerable T= Threatened *Source: Field survey, 2009*

4.2.9 Birds

41. The types of birds found in the Subproject area are Mayur *(Pavo cristatus),* Kalij (Lophura leucomelanos), Danphe *(Lophophorus impejanus),* Munal *(Tragopan satyra),* Bhyakur *(Turdoides sp.),* Chil *(Milvus migrans),* Titra *(Francolinus francolinus),* Gidha *(Gyps sps),* Gauthali *(Hirundapus caudacutus),* Dhukur *(Streptopelia sp.),* Ban Kukhura *(Gallus gallus),* Kag *(Corvus splendens)* and Chibe (Dicrurus sp.). Among them *Pavo cristatus* and *Lophophorus impejanus* are listed in CITES Appendix I. Similarly, *Tragopan satyra* is listed in CITES III.

4.2.10 Fish, Amphibians and reptiles

42. The major river in the subproject corridor is the Tamakoshi River and Gumu stream. The River is rich in fish diversity. The major species found are Sahar (*Tor* spp.), Eel (*Anguilla bengalensis*), Jalkapoor (*Ompac bimaculatus*), Katle (*Acrossocheilus hexagonolepis*) and Asla (*Schizothorax* spp. & *Schizothoraichthus* spp.).Khasrebhyaguta (*Bufo sp*), Pani Bhyaguta (*Rana tigrina* included in CITES Appendix II*)*, Paha (*Bufo spp.*) and Cheparo, Gohoro (*Varanus* spp.) are recorded amphibians and reptiles respectively in the project area.

43. The road does not fall under any protected or buffer zone area.

[7] Species threntened with extinction.
[8] Species that are protected by individual countries within their borders, and for which co-operation of other convention signatories is sought.

4.3 Socio-economic and Cultural Environment

4.3.1 Population, Household and Ethnicity

44. There are 17 settlements along the ZoI of the proposed road alignment in Sunkhani, Lapilang, Lamidada, Babare and Kalinchowk VDCs with total population of 15,564 persons (2,684 households) and average family size of 5.79 as illustrated in **Appendix 11a**. Diverse ethnic groups such as, Brahmin, Chhetri, Newar, Thami (indigenous ethnic community), Tamang and occupational castes (Damai, Kami) live along the ZoI of road alignment. Occupational caste households are distributed in almost all the settlements.

45. Out of total population within zone of influence (ZoI), the population of Indigenous People (Thami and Majhi) was found to be 5558 attributing to 1087 HHs. Thami IPs were revealed to have settled in entire 5 influenced VDCs along the Sunkhani- Kanpa road corridor whereas the settlement of Majhis was found in only Sunkhani VDC, ward No. 3. Population of Indigenous People (Thami and Majhi) is represented as follows;

VDCs within ZoI	Population distribution by sex		
	Male	Female	Total
Sunkhani	142	140	282
Lapilang	1357	1237	2594
Lamidanda	252	260	512
Babare	826	1062	1888
Kalinchowk	282	206	488
Total	2577	2981	5558

Field survey, 2009

46. The main source of incomes for these groups of Indigenous People (IPs) is agriculture which is not subsuistence in nature. More than three quarters of the Thami and Majhi populations in the VDC can not meet their subsistence requirements from the outputs of their small size land holdings.

47. Thami don't have any distinct occupation related to their ethnicity. But the main occupation of Majhis is fishing and boating. They are depending upon agro-based activities for their livelihood but they don't posses adequate cultivable land. Whatever they grow from their farming is sufficient only for 4-6 months. They visit out of their village for wage labor and some of them have been in foreign land for better earning. They rear goat, pig, poultry and buffaloes for household use only. Adult generation of the community is illiterate and some of the youngsters too have deprived from education. Lack of knowledge on health and sanitation is common phenomenon for them too. All the households are without toilet. They know about immunization, pregnancy check up, delivery at hospital or health center but don't utilize these facilities properly.Majority of the Thami and Majhi (IPs) households in influenced VDCs have land holdings less than 5 ropanies and the family size is 5.35 persons per HH.

4.3.2 Main occupation

48. The main occupation of all people residing within the ZoI of the proposed road alignment is agriculture and livestock. Almost all households (Hhs) are involved in agriculture and livestock along with other occupation. Due to limited transportation facilities, agriculture farming is not enough for subsistence level. Therefore, most of the people are carrying out other economic activities like labour and porters (82.5 %), working in government and non government organizations (8.7%) and small scale business (6.5 %). Details of occupations of the people according to the settlements are shown in **Appendix 11b.**

4.3.3 Market Centres and Business Facilities

49. There is 46 tea stalls available in the ZoI of the proposed road alignment. Sisa golai, Lapilang and Kartike have also some restaurants. Necessity of sewerage/drainage system has been felt in these places. Other smaller market centres with shops of daily commodities are Gumu, Bhirmuni, Godhunga and Kyanpa. Details are given in **Appendix 11c.**

4.3.4 Local Economy

50. The economy of the area is predominantly agriculture based with practicing of a mixture of harvesting of forest products such Uttis timber. Local people are gradually attracted towards cultivation of cash crops and vegtables such as Alainchi (Cardamom), Amliso (Broom grass), Tea, Potatao, Cauli flower, Ginger etc. Dairy production and selling it to the market is also another source of income for local farmers. Over 97% percent of total population is dependent on agricultural activities for their livelihood. With growing closeness of the project area with capital, Kathmandu due to transportaion facility, cultivation of fruits, vegetables in a commercial manner seems to gain momentum. Local people have increasingly engaged in business activities in Kathmandu, Singati, and Charikot area. Seasonal migration to Kathmandu and even different parts of India to earn some money for their livelihood has significant contribution to the local economy.

4.3.5 Farming pattern

51. The dominant crops in the project area are wheat, maize and millet . Other crops that are cultivated in the project area are rice, potato, beans etc. Local peoples are also found to be encouraged in cash crops in recent days. Major cash crops that are grown in the project area are mustard, vegetables, amliso, etc. Details of existing agriculture production of the people according to the settlements are shown in **Appendix 11c.**

4.3.6 Livestock

52. Due to availability good number of fodder trees, the project area has also immense potentiality of cattle as well as goat and poultry farming for dairy production and for meat production respectively. People are not encouraged to produce milk in commercial scale due to time consumption and difficult access. It is expected that the trend will increase in the coming days with the upgradating of the road. Poultry farming can also be encouraged due to easy market access. Details of livestock of the people according to the settlements are shown in **Appendix 11d.**

4.3.7 Industry, Trade and Commerce

53. Some local people are engaged in weaving of bamboo products, making of furniture and tailoring. The area has the potentiality of agrobased industries such as dairy products, juice production, food processing as well as furniture, bamboo products. Goods of daily commodities are major imports in the project area, which includes salt, sugar, packed food items, spices, clothes and other items of daily uses. Similarly, major items exported from the project area are milk, amliso (broom grass), vegetables, fruits, timber especially of Uttis (*Alnus nepalensis*), bamboo products etc. whereas cereal crops such as rice, maize are also export and import items.

4.3.8 Public Services and Infrastructures

54. There are various social sector facilities and infrastructure in different settlements as given below. Details about public services and infrastructures according to the settlements are shown in **Appendix 11e.**

a. Education:- The proposed project area consists of a total of 33 educational institutions ranging from primary level to college level. Primary schools are found in majority of the settlements. In addition, there are total 3 higher secondary level

schools (campus) in Ghumu, Bhirmuni and Kutisalyan settlement and five high schools in Sithka, Laptung, Lapilang, Gurgpa and Pandey Tole sttlement. Local people have realized the importance of education in their life and most of them send their childrens to school. However, female enrollment in schools is still lower than that of male students. Literacy rate in the project area has been estimated around 60 percent.

b. Health Facility:- In health sector, there are 3 sub-health posts along the alignment. Major health problems associated with local people are gastric, water borne diseases, gaeneco related diseases, bath, respiratory diseases, skin, malnutrition, typhoid, worm etc. Sanitation awareness among local people is on the rise and many of them have toilets in their home.

c. Communication:- Regarding communication, most of the settlements have telephone facilities mostly with CDMA connection and there are two post offices in Lapilang and Bhirmuni settlements.

d. Electricity:- National grid line has reached in the Sisa golai and Katike settlements, for electricity supply almost all other settlements depend upon solar, micro and mini hydropower for lighting purpose.

e. Business Facilities:- There are grocery shops and tea stalls available in the almost all settlements except Katike. Number is more in potential market centers like Gumu, Dada Gaun etc. The number of business facilities varies from 3 to 35.

f. Water Supply:- Drinking water supply facility is available to all settlements. The water supply schemes generally use spring sources located at higher altitudes. The water is conveyed by pipes from the sources to the public taps through gravity flow. These taps are located in common places so that each serves a few households. No house has a private connection.

***g.* Irrigation:-** Irrigation facility is available to most of the settlements through gravity fed canals except in some settlements where irrigation is possible only during rainy season.

***h.* Other Infrastructures:-** There are 17 water mills mainly used for grinding purpose. There are 6 suspension bridge and 18 wooden bridges**.**

i. Industries:- There are 23 cottage industries like rice and flour mill, weaving industry located in in various settlements.

j. Financial Institutions:- There are 20 saving and credit cooperatives found in 12 settlements within ZoI.

k. Community Development Facilities:- Community use structures like *ghat* (cremation place), play ground and community centers are found in most of the settlements of Sunkhani, Lapilang, Lamidada, Babare and Kalinchowk VDCs.

4.3.9 Land holding pattern

55. Land holding pattern within the ZoI of the road project demonstrates that most of the population (71%) have 5-20 ropani (approximately 1 ha = 20 ropani) land. Whereas on fifth of Hhs (20%) belong to 1-5 ropani land holding category. Similarly, few Hhs (3%) have less than one ropani land. While very few Hhs (0.26%) are land less. Details about land holding pattern are given in **Appendix 11f**.

4.3.10 Food Security

56. Large percentage of the households is food deficit for varied time period as shown in the table given in **Appendix 11g.** More than half Hhs (52%) have enough food for 3-9 months. Likewise, about one third Hhs (11.27%) have food for less than 3 months. Whereas 14% Hhs have enough food for whole year.

4.3.11 Migration pattern

57. Permanent migration takes place in limited scale towards Charikot and other places like Kathmandu. Likewise, from all the settlements, majority of the people (67%) migrate seasonally during Sharwan to Poush mainly in various parts of Nepal like Kathmandu, Dhulikhel as well as various parts of India like Darjeeling working as coolie, labour and guard. This shows poor economic status of the people in the proposed road corridor. The detailed information about the migration pattern according to settlement is given in **Appendix 11h.**

4.3.12 Potential Development area

58. All 17 settlements of the purposed road subproject have potential areas for the production of vegetables, fruit and broom grass. Likewise, at chainage 15+000 site can be developed as Tourist View point where view of the Gaurishankar Himal and other mountain can be seen.

4.3.13 Religious, Cultural and Historical Sites

59. Religious, Cultural and Historical Sites along the road alignment ZoI of the proposed sub-project area are (outside road alignment and RoW): Devi Than , Mahadevsthan , Setidevi Than ,Sivalaya , Kalika Bhagbati Temple , Trisalyan Temple, Devithan Temple, Sivalya and Mangalthan, Mahadevthan, Bumathan and Aitabarathan, Balambu Sivalaya, Gumasi Bhagwati,SivalayaDevithan,Setidevi,Sivalaya Bhubanshowri-Bhagbati Temple,Mahadevsthan,Ganesh Temple,Kamalamai,Kamala Mai, Jalpashowri Sivalya Temple,,Gagar Mahadev, and Mailidevi Temple,.

60. These sites are visited and used for worship, by the local residents. However, these temples and religious sites don't fall in the proposed road alignment except sivalaya of chainage Ch 22+405 which have to be acquired during road construction.

CHAPTER 5

5. ALTERNATIVE ANALYSIS

61. The aim of proposed subproject is to upgrade the existing road and improve the transportation network for the enhancement of safe and faster connectivity of subproject areas with the rest of the country eventually improving the living condition of people. The various alternatives to achieve the above subproject objective with minimum environmental degradation are discussed in the following sub-sections.

5.1 'No Action' Alternative

62. This alternative prevents the implementation of the Proposal.This Proposal aims to provide links of remote rural areas with other parts of district and than district headquarters, rural accessibility and connectivity, connectivity of rural area to market centre, increase productivity in rural areas, enhance the flow of goods and services from rural area to market centres and visa versa, and eventually increase the living condition of people living in the zone of influence. If the Proposal is not implemented, the condition of existing road proposed for upgrading will further deteriorate thus present conditions of remoteness and isolation will continue to exist. Similarly, cost for upgrading will become much higher later with increased deterioration of the road, ultimately requiring new construction. Also to be noted here is as the road is already existing, requirement for activities generating larger environmental degradation and adverse impacts will be of minimal nature. Only 466 no. of trees needs to be cleared from community froest where plan or geometric improvements are to be done, spoil generation will be less, and unstable slopes will be further stabilized as part of rehabilitation. The do-nothing situation will prevent some of the environmental adverse impacts at the cost of isolation, difficulty in access, remoteness and severe poverty. In balancing the trade-offs with the No-Action Option, this alternative is regarded as not viable.

5.2 Proposal alternatives

63. The people living within the ZoI require an efficient and safe mode of transportation to have the access to the market centre and other service centers. At the same time, there is need to conserve the physical, biological and socio-economic and cultural environment. Therefore, construction of ropeway, airport and road could be the options for achieving the above mentioned objectives.

64. Ropeway can be another mode of transportation to enhance accessibility of the people within ZoI. The ropeway primarily serves to transport goods and it normally does not provide facilities for human mobility except it is built with cable car facilities. It is very costly if built with cable car. Hence, ropeway without cable car will not serve the transportation need.

65. Air connection will be expensive and out of reach for poor people. There is no airport in Dolakha district.

66. Considering other subproject alternatives, the proposed road subproject can be the best option to serve the purpose of efficient transportation requirement.

5.3 Alternative Alignment

67. The alignment of the Sunkhani-Kyanpa Road subproject was finalized and constructed long time back. The Road already exists, although in partly damaged condition, and vehicles are plying in most sections of the road during fair weather. At this point of time, the analysis relating to alternate route with the consideration of environment, construction cost, serviceability etc. is not relevant. However, it is understood that the alignment has been made after thorough investigation in terms of geology, hydrology, socio-economic and topographic aspects. This alternative is therefore not relevant.

5.4 Alternative Design and Construction Approach

68. There are two types of road design and construction methods: Conventional and green road approach. In conventional method, heavy machineries and equipment, use of explosives, heavy concrete structures with the application of bituminous surfacing, side drains, bridges and culverts etc. are extensively involved.

69. Green road approach which is normally referred as a labour based, environment friendly and participatory (LEP) method focuses to conserve the delicate mountain ecology through the protection of vegetation cover and least disturbance to the local geology as means of soil conservation. Under this approach, construction work is done manually from the local labour without using heavy machinery and explosives. Spoil disposal is minimized through balance in cutting and filling. Simple dry stone walls and stone causeways will be used. Preservation of vegetation cover is maintained through application of re-vegetation and stabilization of slopes by bio-engineering.

70. The proposed road has been designed considering the both LEP and contractor approach. The construction work will not be carried by only using the labours but equipment and machineries will also be used where manual work is not possible.

5.5 Alternative schedule and process

71. The construction schedule to be adopted may avoid rainy season as well as agriculture season where all the local people will be engaged in the field. Construction schedule also be sensitive to the period of utilization of natural drainages and waterways extensively by local farmers for irrigating their field. Working during agriculture off-season is more important when the road is to be constructed with labour based approach. The proposed alternative schedules for execution of works will be pursued during slack agriculture period in this subproject.

5.6 Alternative Resources

72. The physical resource requirements include stone for gabions, dry masonry walls, and stone pitching. The subproject will optimally use local labour force and local materials. Stones are available in nearby areas of various sections of the road and Kharidhunga whereas fine aggregates; sand has to be carried out from Tamakoshi River.The pavement construction, earthwork, construction of simple structures such as drains, gabion walls, bio-engineering works etc. will be carried out manually.

CHAPTER 6

6. IDENTIFICATION OF IMPACTS AND BENEFIT AUGUMENTATION / MITIGATION MEASURES

73. The identification and assessment of impacts has been carried out by considering the proposed proposal activities examined in terms of its current condition and likely impacts during construction and subsequent operation phases. Several such impacts have been identified based on site observation, field survey, and information obtained from the stakeholders and few were identified on value judgement. The impact of the activities will be on physical, biological, socio-economic and cultural resources within the ZoI. Impacts from the proposed road sub-project can be both beneficial as well as adverse. Most of the identified impacts have been quantified to the extent possible. The impacts have been predicted in terms of their magnitude, extent and duration. The possible impacts (positive and negative) in construction and operation phase are presented in the following sub-sections.

74. Mitigation refers to the measures that are designed to cope with adverse subproject implementation. Mitigation measures are recommended actions that reduce, avoid or offset the potential adverse environmental consequences of the Subproject activities. The mitigation measures are of curative, preventive and compensatory types. Different measures that have been proposed for the augmentation of beneficial impacts and minimization of the adverse impacts of the proposed road rehabilitation works are described below.

6.1 Mitigation measures during pre-construction phase

75. The mitigation measures adopted during design or pre-construction phases are of preventive in nature with two basic objectives:

(i) Avoiding costly mitigation measures, and

(ii) Increasing awareness among the stakeholders for environmental management of road construction, rehabilitation and operation.

6.1.1 Route selection

76. Since, this is an existing road and proposed for rehabilitation, there is no new route selection rather designing geometrical improvements (as required) and widening of the road formation to the specified width i.e. 5.0m. Local conditions (structures, switchback, lay-byes, mass balancing and safe disposal site for the excess excavated material, community utilities, slopes, sensitive spots etc.) will be taken into due consideration as to which side widening will take place in order to minimize land acquisition from forest, cultivable lands, settlement and cultural properties.

6.1.2 Detailed Survey and Design

77. The road design will follow the rural road standards developed by DOLIDAR. The works will be executed through labor intensive construction method as far as possible and practical in this program. Bio-engineering technique will be applied for stabilization of slopes, which is sustainable, environment friendly and can be done by using local resources and manpower. To improve the transport services for the people living along the alignment and link local area and the main market, acquisition of land would be required. At the detail design stage, several alternatives were explored to avoid and minimize further land requirement by using the existing track. The survey team has selected the least valuable, least agriculturally productive land for the lay-bys and

improvement and took care to avoid the demolition of houses. These changes have been designed and incorporated into the subproject detail design.

6.1.3 Land and Property Acquisition, Compensation and Resettlement

78. ADB Guidelines has also necessary provisions for resettlement assistance including entitlements to replacement of land and other assets and/or compensation in case of involuntary resettlement, compensation cost for houses and other affected structures without deduction for depreciation or salvageable materials. However, the framework of resettlement plan also allows land donations in cases where the donation is made freely in public and without coercion, does not affect household food security and where adequate income restoration support exists for the household. The voluntary contribution will be accepted if the following criteria are met:

- The donation is unforced and not the result of community pressure
- Donated land <20% agricultural holdings
- Food security above 9 months
- Full income restoration measures are in place

79. Land will be obtained through donation under the accepted criteria and acquired by paying compensation for those who comes outside the donation criteria. The structures and crops will be compensated at replacement cost and the lost trees will be compensated at the cost of harvesting (felling and sectioning) and transportation from the site to home. Being a governmental agency, the proponent will assist to form Compensation Determination Committee (CDC) under the Chairmanship of Chief District Officer. The Chief of Land Revenue Office, DDC representative, DTO will be members in the CDC and other representatives from DFO, DADO, Survey Office, VDC and affected person will be invited if needed. The Committee will decide the rates applicable for compensating different types of houses, land, trees and crops in accordance to established market rates. A separate Resettlement Plan has been prepared to address land and property acquisition as well as compensation issues. As per this Plan, Land donation agreement papers have been produced for the loss of land under the 20% of total holding. The compensation for trees has been calculated based on the replacement cost principle. Compensation payments for trees, land and structures will be disbursed by cheque/cash. The concerned households whose land will be acquired for the project were informed about the land donation process and entitlements. Finally, the Memorandum of Understanding (MoU) will be prepared and households donating the land will be signed in a written agreement with DDC

80. Relevant issues raised during public consultaion have been addressed under respective mitigation measures. Therefore, no separate mitigation measures are warranted for the concerns raised by the local people.

6.2 Benefit augmentation measure and beneficial impacts

6.2.1 Construction Phase

a) Employment Generation and Increase in Income

One of the major direct beneficial impacts of the road during construction stage is the creation of employment opportunity to the local community. The road construction will create 270,879 of unskilled and 18,940 skilled person day's work. Total 3,010 skilled and 211 unskilled persons will get employment for 90 days. Employment generation for the local people will minimize seasonal migration to other parts of the country as well as in foreign countries. The amount of money that is earned by the wages will directly enhance the operation of various economic activities and enterprise development. There will be positive impacts in other economic activities in a chain manner creating other income generating

activities. This is one of the direct and significant impacts of the projects but it is of short-term and local in nature.

81. Benefit augmentation measures will be implemented as much as possible through the local Road Building Groups (RBGs). They will be given training to do the job. To utilize their money earned from the project works, RRRSDP will implement life skill training for income generation activities to improve their livelihood. These programmes will generate multiplier effect in the local economy and support significantly to uplift the socioeconomic condition of the local people particularly poor, dalit (occupational caste), ethnic minority and women.

b) Skill Enhancement

82. Although many people in the project area are unskilled at present, the upgrading of road is likely to enhance their skills in construction, and large number of people will get practical or hands on training. Furthermore, the project will also organize training on road construction and maintenance to the Road Building Groups (RBG), Social mobilizers and supervisors. This will enhance the technical skills of local people. The skill and knowledge acquired from the project during construction will enhance employment opportunities such trained manpower can earn livelihoods from similar project in future. This impact is indirect, medium, local and long-term in nature.

83. During the road upgrading and construction works, the local labourers will receive manifold skill training in construction techniques, small engineering structures and bio-engineering works. They will also receive additional knowledge in waste management, material handling and general application of environmental health and social precautionary measures. By augmenting their capacity, local people being involved in the subproject will find it easier to find skilled manpower jobs in the future, thus securing their livelihood as an alternative/additional occupation to agriculture.

c) Enterprise Development and Business Promotion

84. During construction period, different types of commercial activities will come into operation in order to meet the demand of workers. Since they will have good purchasing power, they will regularly demand for different types of food, beverage and other daily necessary items. To meet these demands, many local and outside people may operate a number of small shops and restaurants around the vicinity of the construction sites. Various farm based enterprises including wide range of agricultural and livestock products will also gain momentum as a result of increased demand by labors during construction period. This will increase local trade and business in the area. This impact is also direct, low, local and short terms in nature.

85. The benefit augmentation measures will include awareness raising programme , providing support to local entrepreneurs, promotion of cooperatives and linkage with bank and other financial institutions.

d) Community Empowerment and Ownership

86. During construction period, village road construction coordination committees and road building groups will be constituted in order to proceed and implement the road construction activities. In this process, they will be oriented and trained to build and safeguard community infrastructures which will result in community empowerment and feeling of ownership among them. This impact is also indirect, low, local and short terms in nature.

87. The benefit augmentation measures will include assisting communities in identifying supplementary infrastructure and preparing proposals, facilitating beneficiary

participation, including through public hearings and social audits and building community capacity in maintenance of supplementary infrastructure.

6.2.2 Operational Stage

1. Improvement in accessibility and saving of time and transportation cost

88. Once the road sub-project is completed, the people living within the road corridor will have easy access to district headquater Charikot, Capital city, Kathmandu and others part of Nepal. This will enhance the transaction of goods and services. Furthermore, local people will have safe and fast mobility within the area as well as to the market centre. People from North west VDCs of the district also get benefited due to easy access to market centers after the construction of this road. Due to better accessibility to market centre, mainly in Kathmandu, more people will go to the city for employment opportunities in agriculture slack season. It means there will be increase in flow of remittance from urban to rural area, which will not only strengthen the linkage between rural and urban area, but also improve the overall economic situation of the rural areas and contribute to reduce rural poverty. This is the direct, most significant, regional impacts and will have long-term benefits

89. Regular maintenance of the road will be done by the Proponent.

2. Access to Inputs and Services

90. Access to inputs and services is expensive and not regular at present due to earthen road. Once the road is in operation, people would have cheaper and improved access to many inputs such as seeds, chemical fertilizer and technology leading to increased agricultural production and diversification. The transportation cost is expected to come down heavily for many of the inputs that are used by farmers in the farm and other goods. This will have direct, significant, local and long-term impact within ZoI of the proposed project.

91. Agricultural support services will be improved for the increased income from the farm products.

3. Increase in Trade, Commerce and Development of Market centers

92. There is a possibility of increased economic opportunities and significant growth and extension of the minor local markets along the road like in Sisagolai, Lapilang, Babare, Lamidanda and other places. No. of shops, their business volume and diversity in business type will be also accelerated with improved access facilities. The farmers will be more interested to increase agricultural production due to market accessibility. Similarly, there will be diversification in occupational pattern of local people, who are till now mainly dependent on subsistence farming that will lessen pressure on local natural resources. There will be many non-farm employment opportunities for the growing rural populace especially for occupational caste groups due to extension of market centre and development of small towns. The impact will be indirect, low, local and long term in nature.

93. DDC/VDCs shall manage planned growth with required infrastructure facilities for healthy and hygienic environment in the market areas

4. Appreciation of Land Value

94. The construction of road leads to appreciation of land values particularly near the market and settlement areas. As per talk with local people, existing land value near Sisagolai bazaar (Sunkhani) is already 20-50 thousand per *Ropani*. The land price would increase due to the availability of reliable transportation facilities. There will be rapid

increase in the commercial production of agricultural crops due to road accessibility which is also a major factor to raise the land value. This activity would likely uplift the economic condition of the local people. The impact is indirect, medium, local and long term in nature.

95. Benefit enhancement measures will be promotion of land development activities and control of encroachment within RoW. The local people will be made aware of the fact that high value lands are easily acceptable to the banks and microfinance institutions to provide loans. Local people can start their own business.

5. Increased Crop Productivity and Sale of Farm Products

96. Due to easy and cheaper availability of agricultural inputs and technologies, productivity will be increased along the road. Vegetables, fruits, cash crops (alainchi, tea, amliso), sale of farm and livestock products will be increased in all the settlements along the road corridor. Operation of road will further commercialize the subsistence agriculture of rural area. The economy of rural area will be further monetized and it will help the rural economy to integrate with broader world economy. This is the indirect, significant, local and long term impacts from the proposed road.

97. Promotion of market linkages and networking for better market price will increase sale of farm and livestock products in the settlements along the road corridor. Farmers will be more interested to increase agricultural production due to market accessibility.

6. Enhancement of Community Development Services

98. Due to increase in employment opportunities, trade, business and agricultural income, it is expected that there will be improvement in social service such as education, health, government offices, saving and credits. The improvement can also be expected with more frequent visit of extension workers, longer stay of professionals such as teacher, doctors to their rural duty areas. Similarly, enhanced income level will encourage local people to spend more on health and sanitation, development of education facilities by employing qualified and professional teachers and upgrading the existing health posts. Production of educated manpower will also help to increase the number of employees in government/non government services. This is direct, significant, local and long-term impact of the proposed project.

99. The project will help to enhance this beneficial impact by generating awareness to the people about the ways of enhancing community development activities. Likewise, project will support to promote linkage of social infrastructure services.

7. Promotion of Tourism Activity

100. There are some places of touristic importance such as Ch 15+000 and others as mentioned in existing environmental condition chapter. Lamabagar VDC where Gaurishankar Himal is located is also in the vicinity of the project area. More tourists will visit this area due to easy accessibility. Flow of tourists due to road construction will contribute in the enhancement of economic activities of the area which will increase the living condition of the local people. The impact will be direct, medium, regional and long term in nature.

101. Awarness raising programs will be conducted in collaboration with concerned stakeholders to support the promotion of tourism activity and development of lodges, hotels and restaurants. People will be oriented about village tourism with homestay provision for the tourist especially in the homes ofhighly marginalized Thami community.

8. Women and Indigenous People Empowerment

102. All the people will be benefited from the road construction. However, women and indigenous people in particular may be benefited more from improved access to the market centers and various service providing agencies like health centers, banks, training institutions, women development office etc. Frequency of visit to such agencies will increase awareness level and empower the women and indigeneous people. Thus, the project will have indirect, significant, local and long-term impact in ZoI.

103. For the empowerment of women and indigenous people including Thami people, Mobile and television repairing training , Promotion of poultry farming and marketing training, Training on promotion of horticulture (citrus and other fruits), Promotion of lokta farming and processing, Rural agriculture volunteer, Reproductive health training, Health and sanitation training and Leadership development training have been proposed. Indigenous people development plan (IPDP) of this sub-project has been prepared which includes details about training, cost and other mitigation measures to address their issues and empower them.

6.3 Adverse Impacts Mitigation Measures

6.3.1 Construction Phase

A. Physical Aspects

a) Change in Land Use

104. The land acquired for the implementation of the project can undergo a long-term permanent change in the land use. Changes of land use due to the construction of road are mainly conversion of agricultural land and forest into built up area. Cultivated land (2.3 ha) of the local people will be permanently lost during road construction. Similarly, 0.26 ha of forest will be permanently lost due to road construction work. Similalry, there will be also some change in land use due to expansion of roadside settlements like tea shops, temporary shops and labor camps etc. The impact from changes in land use will be high, direct, local and long term in nature.

105. Following mitigation measures will be adopted:

- Plantation of trees in the community forests
- Improving agricultural extension services
- Applying additional protective measures that the remaining land will not be lost due to erosion.
- Temporary lost vegetation on work site and material storage yards shall be revegetated after the completion of road construction. During re-vegetation, local species identified during the survey shall be used. The spoil sites shall be stabilized with bio-engineering.

b) Spoil Disposal

106. Fresh cuts whenever is required, invites landslides and erosion during the monsoon. The common likely problems from the inappropriate disposal of spoils are: gullying and erosion of spoil tips especially when combined with unmanaged surface water runoff, damage to farm lands, and destruction of vegetation, crops and property at downhill through direct deposition or indirectly as result of mass flow. The impact from spoil disposal will be direct, medium, site specific and short term in nature.

107. Spoils should be safely disposed and managed with minimum environmental damage which includes balanced cut and fill volume, re-use of excavated materials and minimum quantity of earth works. The following mitigation measures will be adopted:

- Wherever possible, surplus spoil will be used to fill eroded gullies, quarries and depressed areas etc.

- Excess spoils will be disposed in specified tipping sites (**Table 6.1)** in a controlled manner and the tipping sites should be covered by vegetation by bio-engineering techniques after surplus material is tipped.
- Spoils should not be disposed on fragile slopes, farmland, marshy land, forest areas, natural drainage path, canals and other infrastructures.
- After the disposal, the site will be provided with proper drainage, vegetation and adequate protection against erosion.
- Necessary toe walls and retaining walls will be provided to protect the disposal of soil.

Table 6.1: Recommended Spoil Disposal Sites

Chainages	Recommended Spoil disposal sites
1+900	At the ridge of the hill within 500m of excavation site. Tipping site lies in Ramche Community Forest (Tipping of Spoil from 2+000)
2+400	At the ridge of the hill within 1km of excavation site. Tipping site lies in Ramche Community Forest (Tipping of Spoil from 3+000 to 3+500)
7+300	At the alluvial fan of Lapsekhola (Confluence of Lapse Khola and Gumu Khola)
8+400	Lapse Khola Bank
15+750	Thalaripakha CF, ridge of hill,
24+500	Private Land (uncultivated Pakha) filling in depression

Source: Field survey, 2009

c) Slope Instability

108. Removal of vegetation and open cuts with exposed soil to rain may cause soil erosion as well as landslide. The road is an existing corridor, and thus the hill slopes will not be disturbed by making large and steep cuttings. Major instability areas are also not present along the road alignment except small scale slides (slumps at chainage 7+100 to 7+200, 19+500 to 19+600 and 19+000 to 19+650). Majority of work will be done manually under LEP approach by RBGs, which is an environment friendly method. The likely impact of slope instability and soil erosion is indirect, medium, site specific and mid-term nature.

109. The following mitigation measures will be adopted during the construction and rehabilitation of the proposed road and cost for these mitigation measures shall be included in detail design and cost estimates of the road sub-project.:

- Ensuring minimum cut slope
- Selecting cut and fill slope at correct angle depending upon the soil type
- Re-vegetation of cut and fill slope or exposed areas as soon as possible by using native plant species
- Adoption of bio-engineering techniques
- Ensuring minimum damage of vegetation during construction
- No construction work during rainy season
- Mass balancing in cut and fill
- Use of check dams, Use of toe wall before disposing spoils on hill slopes

110. Recommended engineering structures necessary at various chainages for slope stabilization have been given in **Appendix 15**.

d) Water Management; spring, Streams, Rain Water (Drainage and cross drainage works etc.)

111. The concentrated water from the road outlet causes erosion and landslide eventually affecting the stability of the road itself. The impact will be indirect, medium, site specific and medium term.

112. Roads usually generate large volumes of concentrated surface runoff. The concentrated water flowing through the road and from the outlets cause erosion and

landslides, eventually affecting the stability of the road itself, in order to avoid this, the following mitigation measures are suggested:

- Provide adequate and appropriate numbers of drainage structures in order to have minimum interference with and impact on natural drainage pattern of the area,
- Avoid surface water discharge into farmland or risky locations,
- Do not divert water away from natural water course unless it is absolutely necessary
- Avoid blockage or diversion of natural channels due to construction of road and disposal of spoils.
- Adopt outward road slope as per green road standard to minimize water accumulation.

113. Details about necessary structures required to mitigate the water induced adverse impacts are as given in **Appendix 16**

e) Air Dust, Noise and Water Pollution

114. Although the air quality of the project area is not measured, the air does not appear to be polluted. During the construction of the road, there is a strong possibility of dust emission. This may affect the local people and workers, agricultural crops, markets, schools and health posts. Contractor may use heavy equipment during surfacing works, which might be source of dust nuisance. Impact on air quality will be direct, low, local and short term in nature. The project area at present does not experience high levels of noise. However, during construction, the increased construction activities may increase the noise level to some extent. The impact of road construction on the noise level will be direct, low, local, reversible and short term in nature.

115. The water quality data within the project area is not tested. Nevertheless the quality of water in the water bodies, within the project area appears to be fairly good, as they are widely utilized households for drinking. During construction these water bodies may be polluted by spoil and construction wastes. The impact will be direct, low, local, short term and reversible in nature.

116. The following mitigation measures will be adopted:

- Use of face mask by the workers working in the areas of high dust generation
- Use of ear muffles to lessen noise pollution during rock breaking and quarrying
- Avoiding the disposal of excavated materials in the water bodies

f) Quarrying

117. The construction of road particularly retaining walls and other structures will require boulders, sand and aggregates. Moreover river bed materials will be needed for the gravelling of the road which will be extracted from the bank of Tamakoshi river. The quarry site for these materials will be largely along the bank of local stream and rocky area near the road alignment as mentioned in **Table 6.2.** The extraction of materials from inappropriate places or in excessive amount can damage the local environment. The potential adverse impacts of quarrying are accelerated erosion, landslides, disturbance in natural drainage patterns, water logging and water pollution. The likely impact from the operation of quarry sites will be direct, low in magnitude, local nature and short term in duration.

118. Following mitigation measures will be adopted:

- Appropriate planning for quarrying and borrowing of materials will be made during construction.
- Unstable sites, erosion prone area, dense forest area, settlements, fertile farm land will be avoided for quarrying operation.
- After the extraction is completed, the quarry site will be rehabilitated to suit the local landscape.

Table 6.2: Recommended Quarry Sites

Description	Site	Distance	Remarks
Gravel	Tamakoshi River at Nayapul	25km Black Topped and 18 km earthen Road	
	Khari Dhunga	30km Black Topped and 18 km earthen Road	
Sand	Tamakoshi River at Nayapul	25km Black Topped and 18 km earthen Road	
	Singati Khola	13 km earthen Road	
Boulder	Gumu Khola and Lapse Khola	At Chainage 7+000	
	Also available at site (by road way cutting)		
Aggregate	Gumu Khola and Lapse Khola	At Chainage 7+000	Crushing of boulder
	roadway cutting at site		

Source: Field survey, 2009

g) Camp Site management

119. Camp will not be required where works are carried out by RBGs. However, in contractor package, contactor will establish camp if he brings labors from outside of the area. Siting of camp may cause encroachment of forest, agriculture land, and alteration of drainage, solid waste and waste water problems. Petrol, diesel and grease required for vehicle to operate and kerosene to workers to cook meals. Spillage of these chemicals also damage soil productivity. Impact will be direct, medium significance, site specific and for short-term.

120. The mitigation measures will be use of local labors to avoid camp; rent local house instead of camp to keep labors; siting camp away from productive lands and forest areas; pay compensation for using private farm or lands for storage or camp.local use of material for camp construction, toilet, water and other basic facility to workers. Appropriate storage of material at camp site will be done. Appropriate camp sites have been observed at Ch 7+000, Ch 13+050 and Ch 18+000.

h) Decline in Aesthetic Value

121. Landscape degradation relates particularly to poorly designed or monitored activities resulting from quarrying operations and from indiscriminate dumping of spoil material. Road induced activities may lead to the generation and mismanagement of wastes in the roadsides and create scars on the landscape. The likely will be direct, low in magnitude, local nature and short term in duration

122. The following mitigation measures will be adopted:

- Indiscriminate dumping of spoil material will be discouraged.
- After the extraction is completed, the quarry site will be rehabilitated to suit the local landscape.
- Plantation of local species along the roadside

B. Biological Aspects

a) Loss or degradation of forests and vegetation

123. Total of 0.26 ha of community forest area will be lost due to road construction work. The proposed road passes through 3 community forests (CFs). From these forests and private cultivated land, total 1,856 numbers (1,390 from private land and 466 from forest area) of various species will be removed during road construction as given in **Appendix 17.** The impacts on vegetation/forest resources have been considered to be high in magnitude, site specific in extent and long term in duration, whereas loss of other

forest resources will be moderate, local and long term in magnitude, extent and duration respectively.

124. The loss of trees can not be minimized; however, it can be compensated by the plantation. According to the Work Procedure for Providing the Forest Land for Other Use, 2063 of Government of Nepal, project has to carry out plantation (with protection for five years) equivalent to the forest area lost from the construction of the road or pay for the plantation and protection cost to the community forest user groups (CFUGs) and District Forest Office. If the trees lost are having more than 10cm diameter than 25 times more trees plus 10% trees for casualty replacement will be planted. **Table 6.3** shows the number of trees to be removed and compensatory plantation cost in the community forests. This cost will be provided to the concerned community forest user groups (CFUGs) by the project. Likewise, for the loss of trees from the private land (i.e. 1,390 trees), plantation at the ratio of 1:3 trees will be done by the project or the seedling and plantation cost will be provided by the project. For the plantation of 4,170 trees, total estimated cost is NRs. 69,305.4 (plantation cost is NRs. 16.62/plant). Location and type of species for the plantation will be selected by the concerned CFUGs and the local people. However, emphasis will be given to endangered, rare and vulnerable local species. The forest products from the CFs will be utilized by the CFUGs according to their operational plans.

Table 6.3 Compensatory Plantation Areas, Number of Trees and Cost

Chainage	Name of Community forest	No. of trees to be removed	Major species	Compensatory plantation nos. in 1:25 ratio plus 10% additional for replacement	Cost NRs @45 per plant
0+500-1+600	Janaekata	307	*Schima wallichii, Pinus roxburghii, Alnus nepalensis.*	8442.5	379912.5
1+700-2+700	Ramche	99	*Schima wallichii, Macaranga indica, Pinus roxburghii.*	2722.5	122512.5
15+750-16+100	Thalaripakha	60	*Schima wallichii, Pinus roxburghii, Alnus nepalensis.*	1650	74250
Total		**466**		**12815**	**576,675**

Source: Field survey, 2009

b) Impact on wildlife including birds due to loss or degradation of habitat, increased hunting and other form of human pressure

125. The proposed area is not significant habitat for wildlife and bird species. However, the construction of road may disturb wildlife and bird species present along the road corridor due to increased noise level. The impact will be indirect, low, local and short term in nature.

126. The following mitigation measures will be adopted:

- When alignment passes through forest area, site clearance for construction shall be limited to the minimum width. No tree or vegetation shall be cut unless absolutely necessary.
- The construction activities near forest area will be appropriately managed so that there will be least disturbance to the wildlife and birds.
- Workers shall be actively discouraged from collecting fuel wood from forest or hunting of birds or animals.
- Coordination with DFO and CFUGs to control the activities like illegal hunting and poaching by enforcing acts and regulations strictly.

c) Impacts on flora and fauna (as listed in CITES and IUCN Red data book)

127. Chituwa *(Panthera pardus)*, Mayur (*Pavo cristatus*) Danphe (*Lophophorus impejanus*) and Bhalu (*Ursus thibetanus*) are listed in CITES Appendix-I. Likewise, Dumsi *(Hystrix indica*), Monkey (*Macaca mulatta)* are listed in CITES Appendix-II. Syal (*Canis aureus*) in Appendix-III Okhar (*Juglans regia*) is protected plant species according to the Forest Rules 2051 B.S.and listed in CITES Appendix-II. Likewise, Chiraito (*Swertia chirayita*) is vulnerable species under IUCN category. Some of these wildfauna and flora will be affected during road construction. The impact will be indirect, low, local and short term in nature.

128. The following mitigation measures will be adopted:

- Construction activities near forest area will be appropriately managed so that there will be least disturbance to the wildlife and birds
- Restriction to wildlife harassment by the workers
- Coordination with DFO and CFUGs to control the activities like illegal hunting, felling and poaching of wild fauna and flora by enforcing acts and regulations strictly
- Conducting conservation awareness program for the construction workers
- Compensatory plantation of felled trees as already included under Loss or degradation of forests and vegetation.

d) Impacts on the local ecology and ecological balance

127. Impacts under this and recommended mitigation measures have already been described under Loss of Forest Vegetation and Disturbance to Wildlife and Bird Habitat. Apart from these, there are no other significant impacts identified on the local ecology and ecological balance. Therefore, no other mitigation measures are warranted.

C. Socio-economic Aspects

a) Loss or degradation of farm land and productivity

129. There will be permanent loss of 2.3 ha of agricultural land due to road construction. This will lead to loss of food grain production among the families losing lands to the project. Moreover, spoils on farm land will also affect the production of agricultural crops. It is clear that the loss of crops from the land acquired by the project will have adverse impact on the financial stability of the affected households who are dependent on the agricultural productivity of their land. This impact is expected to be of high in magnitude, local in extent and of long term in duration.

130. Productive land acquisition for the road alignment will be minimized as far as possible. Compensation for the loss of property will be provided to the affected people. A separate Resettlement Plan will be prepared to address land acquisition and compensation isuues.

b) Loss or degradation of private properties such as houses, farm sheds, and other structures, crops and fodder/ fruit trees

The proposed road alignment passes through nearby the settlements such as Si.Sa. Golai, Katike, Sithka, Pata Gaun, Laptung, Gurgpa, Lapilang, Lakiegaun, Gumu, Pokher, Pandya Tol, Bhirmuni, Dharapani, Fusra, Daeda Gaun, Damfa, Kutisalyan and Tuwapa. Seven houses (Ch 2+640, Ch 4+200, Ch 6+032, Ch 7+100, Ch 10+92, Ch 17+064 and Ch 22+835), three goat shed (Ch 2+640, Ch 6+032 and Ch 22+ 390), one toilet (Ch 10+920), one mill (Ch 13+670) and one shop (Ch 14+035) will be affected of the private people due to the road construction. The impact will be direct, site specific, short term and medium in magnitude. Details about affected structures are described in **Appendix 18a** with demographic profile of a family whose house will be affected and photographs are given in **Appendix 18b.**

131. Productive land acquisition for the road alignment will be minimized as far as possible. Compensation for the loss of property will be provided to the affected people A separate Resettlement Plan up to 9 km section has been prepared and for remaining section it is under preparation to address land and property acquisition as well as compensation issues. In this plan, direct cost of NRs. 660,685.47 (compensation for structures and trees), indirect cost of 620,000.00 (deed transfer etc.), Awareness training cost 169,708 and livelihood enhancement skill training cost of NRs. 2372744.00) has been proposed. Total resettlement cost proposed is NRs. 4014294.37 (including miscellaneous cost).

c) Impact on community infrastructure such as irrigation, water supply, schools, health post, trail and trail bridges etc

132. One temple (Ch 22+405) and one chautari (resting place) (Ch 12+900) will be affected during the road construction as described in **Appendix 18a**. The irrigation canals (kulo) down to road alignment may be affected indirectly during road construction. The impact will be direct, site specific, short term and medium in magnitude.

133. In order to avoid such impacts, the following mitigation measures are suggested:

- Avoid contamination of water resources systems during construction
- Adopt outward slope as per Green Road Standard to minimize water accumulation.
- Schedule the construction activities during crop off-season not to disrupt water bodies being used for irrigation purposes by the road.

d) Impacts on cultural, religious and archeological sites

Jalpashowri Sivalya Temple at Ch 22+405 might be affected due to the construction of the road. This impact is expected to be of low in magnitude, local in extent and of short term in duration.

134. Mitigation measures for this impact are:

- Relocation of temple will be done with local people's consultation and coordination

e) Impacts on health and safety matters

135. During construction, workers will be exposed to various risks and hazards. Potential impacts to health are respiration and eye diseases due to exposure to dust, risk of accident during work. The proper sanitation system should be developed to reduce the air and water pollution otherwise the surrounding environment may be polluted. It affects the health of local people.The lack of proper sanitary measures and increase in waste and water pollution can lead to an outbreak of epidemics, diseases as jaundice, typhoid etc. The most vulnerable will be women and children. This impact is considered to be of the direct, high in magnitude, for the short term and localized.

136. The following measures will be adopted:

- The workers will be provided with helmets, masks, muffles depending on the nature of the construction work.
- Drinking water facility and temporary pit latrine will be established at construction sites to control open defecation and pollution of water bodies by the workers.
- Workers will be provided with first aid and health facilities.
- Group accidental insurance will be done for the workers.
- First aid training will be provided to field staffs like sub-engineer, social mobilizers and supervisors.

6.3.2 Operational phase

A. Physical Aspects

a) Road slope stability and management

137. The destabilization of slope may also be expedited due to human activities in the road neighborhood such as quarrying stones or soil, animal grazing, irrigated cultivation. Similarly, there's also possibility of slope destabilization of road alignment due to opening of branch roads that will connect the road with other village settlements. Most of these roads are/will be opened by local efforts/VDCs/DDC and necessary considerations on technical/environmental aspects have not been made during its route selection, survey, design and construction. This may cause damage to road section, disruption to transportation and other social impacts in the nearby areas. The inadequate maintenance of the road due to the blockage of drains damages the road surface that can lead to slides and slope failure. Sensitive areas for possible road slope stability problems are at Ch 1+400-1+500, Ch 1+700-1+800, Ch 3+000-1+980, Ch 4+300-4+400, Ch 5+000-5+340, Ch 6+100-6+200 ,Ch 0+000-0+400, Ch 2+300-2+400, Ch 7+800-7+900 The impact will be direct, medium local and long term nature.

138. The following mitigation measures will be adopted:

- Rill and gully formations should be regularly monitored and immediately fixed at critical areas;
- Correction of maintenance of the slope protection measures and drainage works
- Minor landslide and mass wasting shall be immediately cleared and slope restored with appropriate technology (bioengineering)
- Soil conservation will be promoted in the right of way and vulnerable areas beyond the road alignment
- CFUG will be promoted to conserve and manage their CFs properly

b) Impact due to air, noise and water pollution

139. During operation period, a number of vehicles will ply along the road and will emit gaseous pollutants. This will increase the pollution level of ambient air along the road corridor. At the same time, as it is an gravelled road, the air pollution is likely from the dusts emitted from the road surface due to movement of vehicles and also from wind. This will also increase air pollution level, which in turn, may cause adverse health impact to the people living in the vicinity. As the road is of district road category and the vehicular movement is not expected to be very high. The overall impact of air pollution will, thus, be direct, low, local and long term.

140. As stated earlier noise level during the operation period will increase due to the movement of vehicles and other activities. However, due to low traffic volume, the impact due to noise pollution will be direct, low, local and long term. During operation period, the disposal of gases and liquid pollutants from vehicles into water bodies may cause water pollution. The disposal of spoil and other construction materials and wastes into water bodies may also degrade the water quality. The impact of this kind will be direct, low, local and long term.

141. Following mitigation measures will be adopted:

- Community and road user awareness program will be organized to enhance public understanding
- Plantation will be done near the settlements
- Use of horns should be restricted near dense forest, health posts, schools and settlements

- For control of dust nuisance, speed limit of vehicle and vegetative barrier of earthen bounds should be designed.

B. Biological Aspects

a) Depletion of Forest Resources

142. The forest resources depletion may occur due to ineffective drainage works, inappropriate spoil disposal and construction practices. The development of market centers may exert pressure on forest and eventually encroach/deplete the forest resources. To meet the increasing needs of the forest products, illegal felling/cutting of poles and trees may occur. Operation of road may increase in timber smuggling due to easy access and easy transportation facilities. The impact will be indirect, medium, local and long term in nature. However, provision of forest products distribution in community forest operational plan will minimize the depletion of forest resources.

143. The pressure on forest resources during road operation is likely to occur. The mitigation measures recommended are:

- CFUGs will be supported to conserve and manage their CFs according to operational plans
- Encourage and support local community for controlling illegal harvesting of forest resources.
- Awareness programmes shall be organized to educate local people on the conservation of forest.

b) Disturbance to the Wildlife and Illegal Hunting

144. Although the wildlife population is reported low, however, they may be disturbed due to the frequent movement of the vehicles. Vehicular flow, horn blowing in the forest area will have impact on the wildlife and bird species. There may occur illegal hunting during operation period by the people from market areas due to easy accessibility. The impact will be indirect, low, local and long term in nature.

145. Wildlife and birds will be disturbed due to the vehicle movement. The mitigation measure for this is to erect appropriate sign boards informing drivers about:

- Prohibition of blowing horns in the dense forest areas and potential areas for wildlife crossing

c) Encroachment of Forest

146. Impacts under this and recommended mitigation measures have already been described under depletion of forest resources. Apart from these, there are no other significant impacts identified. Therefore, no other mitigation measures are warranted.

C. Socio-economic and Cultural Aspects

- **New Settlement and Market Center Development**

147. The existing trend is to settle along the road side for the economic activities. This is primarily attributed to increased opportunities for trade and commerce through the establishment of shops, restaurants, stalls and hotels. So, there is an expansion of settlement area and development of market centers in Sisagolai, Lapilang, Lamidanda , and Babare. This may trigger the practice of encroaching right of way (RoW). Consequently, this will reduce road capacity and increase road accidents. The increasing trend of roadside settlement is likely to increase household waste as well as wastewater on the road. The impact will be direct, medium, local and medium term in nature.

148. The following mitigation measures will be adopted:

- Awareness raising programme through local organizations to plan proper settlements.
- Regulate settlement growth with proper planning/zoning along RoW.
- Plantation of trees along the road.

- **Change in Social behaviour**

149. People may leave their family in their villages to dwell near the new spots for economic incentives. This will ultimately affect the traditional bonds, norms and functions of the family. This will also cause impact on social and cultural transition. However, on the other side, there will be also increased interdependence among diverse social groups and inter-linkage between different geographical areas which will promote the social cohesion and culture of tolerance among people. The impact will be indirect, medium, local and short term in nature

150. The mitigation measures recommended will be facilitating awareness raising programmes to the communities about negative social behavior like gambling, excess use of alcohol.

- **Road safety Measures**

151. Movement of vehicles in the road will invite accidents. Inadequate provisions of road safety measures like no provisions of signals and lack of enforcement of traffic rules during operation period may invite accidents. The impact will be direct, medium, local and long term in nature.

152. The mitigation measures adopted will be:

- Applying appropriate road safety measures with the help of 3-Es i.e. Engineering, Enforcement and Education.
- Appropriate spoil disposal sites should be identified and utilized
- Required safety signs will be used along the road

- **Impact on Livelihood and economic activites**

153. There may be inflation and price hike due to the flow of outside visitors which will affect the subsistence living condtion of the people. Nevertheless, there will be more employment opportunities resulting into increased economic activities. The adverse impact may be overshadowed by the increased working opportunities. Therefore, no mitigation measures are needed. Similarly Total 2.3 ha of agricultural land will be permanently converted into built up area as road. Consequently it will cause adverse impact in the income and livelihood of the local people. However, it is expected that agricultural production in the adjoining area may rise substantially due to easy and increased access to agricultural inputs. Moreover, value of remaining land will also be increased which may nullify the adverse impact related to the loss of agricultural production to a great extent. So, there will be no significant adverse impact in the livelihood of the people.

CHAPTER 7

7. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

154. This Environmental Management Plan (EMP) identifies key issues likely to arise from subproject implementation, and proposes mitigation measures, including monitoring schedule and responsibility.The EMP outlines subproject description, environmental management roles and responsibilities, road design, road construction management of different activities, site supervision, monitoring and reporting, records, audits and corrective measures, improvement proposals, bio-engineering techniques, and cost estimates for mitigation measures (DoR, 1999).Taking into account these considerations, the EMP guides the subproject management in such a way that the environmental protection measures are adequately implemented.

7.1 Institutions and Their Roles

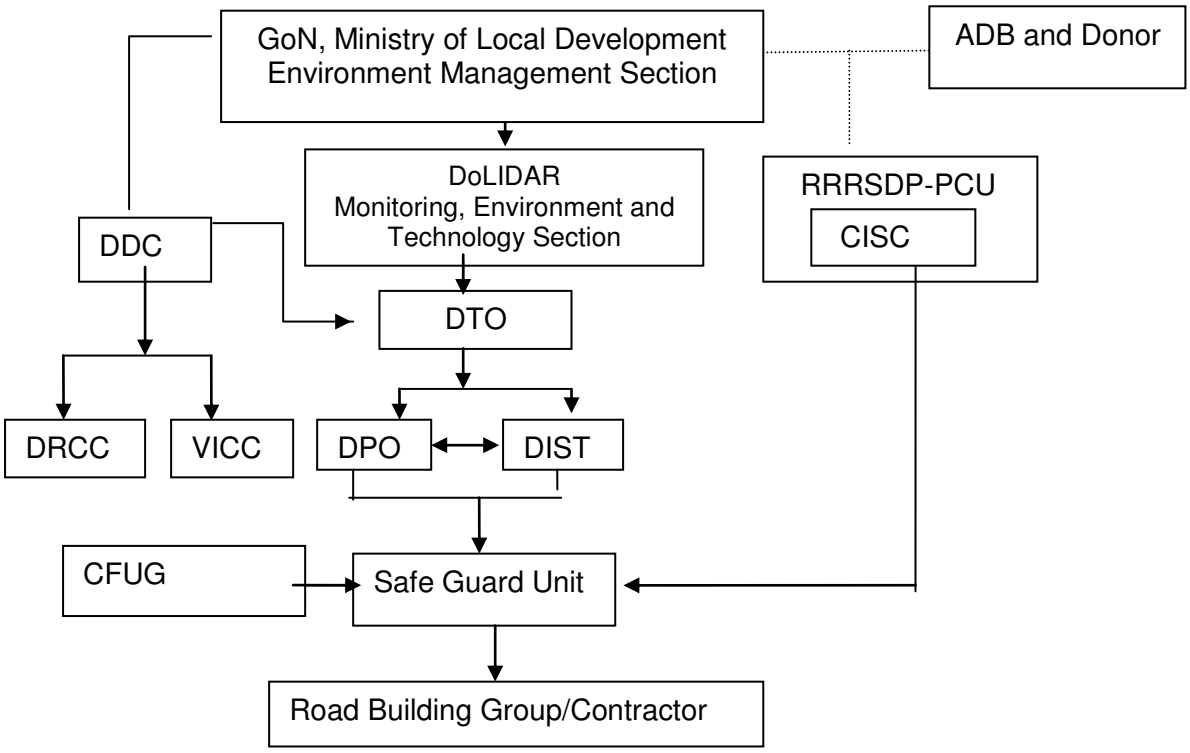
155. Different institutions involved in the IEEs and Environmental Management Plan (EMP) implementation and roles of these institutions are given in **Table 7.1.** The environmental management organizational structure is given in Figure **7.1**.

Table 7.1: Institution and their roles

Institution	Role	Responsibility in the Project	Remark
Ministry of Environment (MoE)	Mandated to formulate and implement environmental policies, plans and programs at national level	Facilitate when needed on environmental safeguards.	No direct responsibility in the project
Ministry of Local Development (MLD)	executive agency and concerned agency as per EPA/EPR. Environment Management Section is responsible to look into safeguard matters for the ministry.	▪ To review IEE ToR and Report, and give approval. ▪ Coordinate with project on safeguard issues. ▪ Conduct environmental monitoring from central level.	
Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR)	Department under MLD responsible to execute infrastructure projects under MLD. Provides back-up support to DDCs in technical matters through DTO.	RRRSDP is being executed under overall coordination and supervision of the Department for the Ministry. It is also supporting DDCs through DTOs to implement the project.	
RRRSDP- Project Coordination Unit	Project specific unit.	Technical Unit to support and coordinate all activities for implementation of RRRSDP. Review, comment, and forward IEE ToR and Report for review to ADB and for approval to MLD	DDG of DoLIDAR has been heading the PCU.
District Development Committee / District Technical Office	DDC/DTO is Project Executing Agency.	▪ Prepare IEE ToR and submit for approval to PCU/MLD ▪ Conduct IEE Study, Public Consultation, and prepare IEE Report ▪ Receive comments from PCU/ADB/MLD and modify accordingly. Get final approval	DTO is the Project Manager

Institution	Role	Responsibility in the Project	Remark
		from MLD. ▪ Conduct environmental safeguard monitoring and Reporting.	
District Project Office	Project implementation office working directly under DDC/DTO.	Responsible for overall activities related to implementation of the works at field level.	
CISC	Support consultants at central level	Technical and management support to PCU	
DIST	Support consultants at district level	Technical and management support to DPO	
District Project Coordination Committee (DPCC)		Sub-committee of the DDC for the implementation of the road construction and operation activities within the district.	
Village Infrastructure Construction Coordination Committee (VICCC)		Coordinates infrastructures issues among beneficiaries and institutions at VDC level	
Road Building Groups Contractors	Road construction and rehabilitation support	Implementation of road construction and rehabilitation works	

156. To support for smooth implementation of the project, there are various district level committees and groups including District Project Coordination Committee (a sub-committee of DDC), Village Infrastructure Construction Coordination Committee (to coordinate at VDC level). Road Building Groups are formed under participation of local people from ZoI. They carryout the construction works tat can be conducted manually. Contractor will be appointed for works requiring higher skill and mechanized support.



_____ Line of command
…… Line of coordination

Figure 7.1: Environnemental Management Organisation Structure

7.2 Reporting and Documentation

157. As part of EMP, reports will be produced at regular time intervals. Three monthly progress reports will be prepared and submitted to the DDC, and DDC will forward it to the PCU and DoLIDAR. Monitoring checklist will be developed as per the Environment Management Action Plan (EMP). The checklist will be used for regular monitoring and included in the Progress Report.

158. The Contract with contractor will clearly state that the DDC/DTO must approve the road building groups/contractor's arrangements for environmental protection, health and safety, waste management and other environment related actions identified during the detailed design phase.

159. The DIST through DPO will inform the DDC/DTO in case of non-compliance and of any other environmental issue that requires immediate attention. The contract will detail the remedies for non-compliance by the Contractor. The 'Naike' (Leader) of RBGs will be given orientation training on ensuring environmental protection measures. Routine monitoring of such measures will be carried-out through supervision staff (environmental, social and technical staff).

160. The monthly reports will be based on recurrent site inspections and will report on the effectiveness of the mitigation measures; the contractor's compliance with the environmental specifications; measures recommended in the events of non-compliance, and recommendations for any other remedial actions.

161. The trimester environment monitoring report will be submitted for the first year of operation of the road by the Proponent to EA, who will forward the report to ADB. This is to ensure that post project monitoring is also carried out at least for one year.

7.3 Implementation of Benefit Augmentation and Mitigation Measures

The DDC/DTO will be responsible for the implementation of Benefit Augmentation mitigation measures proposed in **Chapter 6**. Various agencies including DPO, DIST, Local Bodies and concerned governmental line agencies will support DDC/DTO for the implementation of mitigation measures. The detail action plan for activities to be carried out to augment beneficial impacts and control/mitigate adverse impact produced from the implementation of the proposal, and the responsible implementing and supporting agencies are provided in environmental management plan is shown by **Table 7.2**

Table 7.2: Framework for Implementing Environmental Management Plan (EMP)

Project Activity	Potential Environmental Impacts	Nature	Magnitude	Extent	Duration	Proposed Benefit Augmentation/Mitigation Measures	Institutional Responsibility
Beneficial Impacts and Benefit Augmentation Measures							
Construction Stage							
Construction of road	Employment Generation and Increase in Income (270,879 of unskilled and 18,940 skilled person day's)	D	H	L	ST	Members from target minorities and the disadvantaged groups will have proportional representation in RBGs. At least 50% women participation as workers and women as RBG leaders will be ensured	DPO/DIST
	Skill Enhancement	I	M	L	LT	Training in road construction, soft engineering structures and bioengineering works for members of RBGs.	DDC/DTO/DPO/DIST
	Enterprise Development and Business Promotion	D	L	L	ST	Providing support to local entrepreneurs, promotion of cooperatives and linkage with bank and other financial institutions.	DPO/DIST
	Community Empowerment and Ownership	I	L	L	ST	to strengthen capacity of communities, beneficiary participation, and social cohesion through, among others.awareness raising about the Project and opportunities there under. training of RBGs .assisting communities in identifying supplementary infrastructure and preparing proposals facilitating beneficiary participation.	DDC/DTO/DPO/DIST
Operation stage							
Operation of Road	Improvement in accessibility, saving of time and transportation cost	D	H	R	LT	Improve agricultural support services for the farmers Improvement of foot trails	DDC/DTO/DADO /NGO/local farmers
	Access to Inputs and Services	D	H	Lc	LT	Agricultural support services will be improved for the increased income from the farm products	DDC/DTO/VDC
	Increase in Trade, Commerce and Development of Market centers	I	L	Lc	LT	promote cooperative and provide linkage with bank and other financial institutions for setting up business enterprises Sewerage and other basic facilities will be supported in the market centers	DDC/DTO/VDC
	Appreciation of Land Value	I	M	Lc	LT	Promotion of land development activities and check encroachment within RoW	DDC/DTO/VDC
	Increased Crop Productivity and Sale of Farm Products	I	H	Lc	LT	Improve agricultural support services for the farmers	DDC/DTO/VDC local people
	Enhancement of Community Development Services	D	L	Lc	LT	Support promotion of community development activities and development and linkage of social infrastructure services	DDC/DTO/VDC local people
	Promotion of Tourism Activity	D	M	R	LT	Awarness raising programs will be conducted in collaboration with concerned stakeholders to support the promotion of tourism activity	DDC/DTO/VDC /Nepal Tourism Board
	Women and Indigenous People	I	L	Lc	LT	The Project will target minorities and the disadvantaged for proportional	DDC/DTO/VDC

Project Activity	Potential Environmental Impacts	Nature	Magnitude	Extent	Duration	Proposed Benefit Augmentation/Mitigation Measures	Institutional Responsibility
	Empowerment					representation in BGs, and promote female membership of at least 50% and women as RBG leaders.	
Adverse Impacts and Mitigation Measure							
Construction stage							
Physical Environment							
Construction of road	Change in land use Permanent conversion of cultivated land 2.3 ha and 0.26 ha of forest will be converted to road built up area	D	H	Lc	LT	• Plantation of trees in the community forests, • Improving agricultural extension services • Applying additional protective measures that the remaining land will not be lost due to erosion. • Temporary lost vegetation on work site and material storage yards shall be revegetated after the completion of road construction. • During re-vegetation, local species identified during the survey shall be used. • The spoil sites shall be stabilized with bio-engineering technologies.	DDC/DTO/DADO/NGO/Local farmers
Construction of road (Spoil disposal)	Gullying and erosion Slope failure and mass wasting Disruption of natural drainage pattern, causing scouring, erosion and landslide Damage to irrigation systems and crops through direct deposition or indirectly as result of mass flow Water pollution and degradation of water quality	D	M	St	ST	• Wherever possible, surplus spoil will be used to fill eroded gullies, quarries and depressed areas etc., • Excess spoils will be disposed in specified tipping sites specified tipping sites at Ch (1+900, 2+400, 7+300, 8+400, 15+750, 24+500) in a controlled manner and the tipping sites should be covered by vegetation by bio-engineering techniques after surplus material is tipped. • Spoils should not be disposed on fragile slopes, farmland, marshy land, forest areas, natural drainage path, canals and other infrastructures. • After the disposal, the site will be provided with proper drainage, vegetation and adequate protection against erosion. • Necessary toe walls and retaining walls will be provided to protect the disposal of soil.	DDC/ DTO/DIST/DSCO/RBG/Contractor
Construction of road	Slope instability (Ch 7+100 to 7+200, 19+500 to 19+600 and 19+000 to 19+650)	I	M	Ss	MT	• Ensuring minimum cut slope,Selecting cut and fill slope at correct angle depending upon the soil type, Re-vegetation of cut and fill slope or exposed areas as soon as possible by using native plant species, • Adoption of bio-engineering techniques • Ensuring minimum damage of vegetation during construction, • No construction work during rainy season	DDC/DTO/DIST/DSCO/RBG/ Contractors
	Water Management	I	M	Ss	MT	• Provide adequate and appropriate numbers of drainage structures in order to have minimum interference with and impact on natural drainage pattern of the area,	DDC/DTO/DPO/DIST

Project Activity	Potential Environmental Impacts	Nature	Magnitude	Extent	Duration	Proposed Benefit Augmentation/Mitigation Measures	Institutional Responsibility
						• Avoid surface water Discharge into farmland or risky locations, • Do not divert water away from natural water course unless it is absolutely necessary, • Avoid blockage or diversion of natural channels due to construction of road and disposal of spoils • Adopt outward road slope as per green road standard to minimize water accumulation.	
Construction of road	Air dust, noise and water pollution: (dust emission, water quality deterioration due to disposal of excavated materials and waste by workers)	D	L	Lc	ST	• No heavy equipments will be used during construction minimizing dust emissions • Buffer zones shall be developed in nearby settlements by planting trees on right of way, • Uses of ear muffles and face masks should be maintained. • Avoid the disposal of excavated materials in the water bodies.	DDC/DTO/DPO/DIST
Construction of road	Quarrying	D	L	Lc	ST	• Appropriate planning for quarrying and borrowing of materials will be made during constructionQuarrying in selected sites eg Sand- Singati Khola (13 km) Tamakoshi River at Nayapul (25km Black Topped and 18 km earthen Road), Boulder- Gumu Khola and Lapse Khola (Chainage 7+000), Also available at site (by road cutting), Gravel-Tamakoshi River at Nayapul (25km Black Topped and 18 km earthen Road), Khari Dhunga (30 km Black Topped and 18 km earthen Road), • Unstable sites, erosion prone area, dense forest area, settlements, fertile farm land will be avoided for quarrying operation. • After the extraction is completed, the quarry site will be rehabilitated to suit the local landscape.	DDC/DTO /DPO/DIST
	Location of Camp Sites, Storage Depots	D	M	ss	ST	• Locate camp site away from productive land and forest area (potential sites a Ch 7+000, Ch 13+050 and Ch 18+000). • use local labor and local houses as camp; pay compensation to land owner of camp area,toilet, water and other facility to workers, safe storage of materials at camp.	DDC/DTO/DPO/DIST Contractor
Construction of road	Decline in asthetic value	D	L	Lc	ST	• Indiscriminate dumping of spoil material will be discouraged. • After the extraction is completed, the quarry site will be rehabilitated to suit the local landscape. • Plantation of local plant species along the roadside	DDC/DTO /DPO/CFUG/DFO

Project Activity	Potential Environmental Impacts	Nature	Magnitude	Extent	Duration	Proposed Benefit Augmentation/Mitigation Measures	Institutional Responsibility
Biological Environment							
Construction of road	Loss or degradation of forests and vegetation (0.26 ha forest) total 1,856 tress lost (1,390 from private land and 466 from forest area)	D	M	Lc	LT	• Compensatory plantation (1:25 plus 10% repacement) and protection cost for five years to the District Forest Office as per Work Procedure for Providing the Forest Land for Other Use, 2063 of GoN in CFUG and 1:3 ratio plantation inprivate area. • Concerned CFs will carry out plantation in their community forests and local people carry out plantation in their private land with project support. • The forest products from the CFs will be utilized by the community forest users groups (CFUGs) according to community forest operational plan.	DDC/DTO /CFUG/DFO
Construction of road	Impact on wildlife including birds due to loss or degradation of habitat, increased hunting and other form of human pressure	I	L	Lc	ST	• When alignment passes through forest area, site clearance for construction shall be limited to the minimum width. No tree or vegetation shall be cut unless absolutely necessary. • The construction activities near forest area will be appropriately managed so that there will be least disturbance to the wildlife and birds. • Workers shall be actively discouraged from collecting fuel wood from forest or hunting of birds or animals. • Coordination with DFO and CFUGs to control the activities like illegal hunting and poaching by enforcing acts and regulations strictly.	DDC/DTO /CFUG/DFO
Construction of road	Impacts on flora and fauna (as listed in CITES and IUCN Red data book)	I	L	L	ST	Coordination with DFO and CFUGs to control the activities like illegal hunting and poaching by enforcing acts and regulations strictly.	DDC/DTO /DPO/CFUG/DFO
Socio-economic and Cultural Environment							
Construction of road	Loss or degradation of farm land and productivity (2.3 ha of agricultural land)	D	H	Lc	LT	Improvement of agricultural extension services	DDC/DTO /DPO/DIST
	Loss or degradation of private properties : seven houses (Ch 2+640, Ch 4+200, Ch 6+032, Ch 7+100, Ch 10+92, Ch 17+064 and Ch 22+835), three goat shed (Ch 2+640, Ch 6+032 and Ch 22+ 390), one toilet (Ch 10+920), one mill (Ch 13+670) and one shop (Ch 14+035)	D	M	Ss	ST	• A separate Resettlement Plan will be prepared to address land and property acquisition as well as compensation issues.	DDC/DTO /DPO/DIST/CDO
	Impact on community infrastructure such	I	M	Ss	ST	• Restore all disturbed infrastructures to the condition before disturbance or	DDC/DTO

Project Activity	Potential Environmental Impacts	Nature	Magnitude	Extent	Duration	Proposed Benefit Augmentation/Mitigation Measures	Institutional Responsibility
	as, water supply etc: Chautari (resting place) (Ch 12+900)					improve where appropriate in coordination with local irrigation canal users' committee/water users' committee • Avoid contamination of water resources systems during construction • Adopt outward slope as per Green Road Standard to minimize water accumulation. • Schedule the construction activities during crop off-season not to disrupt water bodies being used for irrigation purposes by the road.	/DPO/DIST
	Impacts on cultural, religious and archeological sites :one temple (Ch 22+405)	D	L	Lc	ST	• Shifting of centre line of road alignment wherever possible • Relocation of temple if it can not be avoided for dismantling • Consultation with local people for appropriate solution	DDC/DTO /DPO/DIST/VICCC
Construction of road	Health and safety matters	D	H	Lc	ST	• The workers will be provided with helmets, masks, muffles depending on the nature of the construction work. • Drinking water facility and temporary pit latrine will be established at construction sites to control open defecation and pollution of water bodies by the workers. • Workers will be provided with first aid and health facilities. • First aid training will be provided to field staffs like sub-engineer, social mobilizers and supervisors. • Insurance for workers for accidents.	DDC/DTO /DPO/DIST
Operational Stage							
Physical Environment							
Operation phase (plying of vehicles)	Slope Instability: Ch 7+100 to 7+200, Ch 19+500 to 19+600 and Ch 9+650.	D	M	Lc	LT	• Correction of maintenance of the slope protection measures and drainage works • Minor landslides and mass wasting will be immediately cleared and slope restored with appropriate technology (bio-engineering) • Soil conservation will be promoted in the right of way and vulnerable areas beyond the road alignment	DDC /DTO
	Air, Noise and Water Pollution	D	L	Lc	LT	• Community and road user awareness program will be organized to enhance public awareness near the settlements. • Speed limit of vehicles will be maintained near the settlements • Use of horns should be restricted near health posts, schools and settlements • Plantation will be done along the Right of Way (RoW) near the settlement	DDC/DTO
Biological Environment							

Project Activity	Potential Environmental Impacts	Nature	Magnitude	Extent	Duration	Proposed Benefit Augmentation/Mitigation Measures	Institutional Responsibility
Operation phase (plying of vehicles)	Forest resource depletion Increase in poaching and illegal trafficking	I	L	Lc	LT	• Encourage and support local CFUG and authorities in controlling illegal harvesting of forest resources. • Awareness programmes shall be organized to educate local people on the conservation of forest. • Workers shall be briefed regularly about the importance and rules and regulation of DFO and in order to make them comply with. • Appropriate sign boards will be erected informing drivers about potential areas for wildlife crossing • Workers shall be briefed regularly about the importance and rules and regulation of DFO and in order to make them comply with. • Awareness programmes shall be organized to educate local people on the conservation of forest.	DDC/DTO
Socio-economic and Cultural Environment							
Operation phase (plying of vehicles)	New settlement, market centre development and population pressure.	D	M	Lc	MT	• Regulate settlement growth with proper planning/zoning along RoW and DISTourage ribbon settlement • Awareness raising programme through local organizations to plan proper settlements • Regulate settlement growth with proper land use planning/zoning along RoW • Plantation of trees along the road.	DDC/DTO
	Change in social behavior	I	M	Lc	ST	• facilitate awareness raising programmes to the communities about negative social behavior like gambling, excess use of alcohol	DDC/DTO
	Road Safety Measures	D	M	Lc	LT	• Applying appropriate road safety measures • Required safety signs will be used along the road • Applying appropriate road safety measures with the help of 3-Es i.e. Engineering, Enforcement and Education.	DDC/DTO

Note:

Magnitude *H=* *High (*60) *M=* *Moderate (20)* *L=* *Low* (depending on the scale or severity of change.) (10)
Extent *R=* *Regional(*60) *L=* *Local (20)* *SS=* *Site specific (10)*
Duration *LT=* *Long term (more than 20 years)* *MT=* *medium term (. 3-20 years)(10)* *ST=* *Short term (more than 3 years)(05)*
Nature *D=* *Direct;* *I=* *Indirect*

Note: The points in the parenthesis are taken from the National EIA Guidelines, 1999

7.4 Matters to be monitored while implementing the Proposal

162. Monitoring of the implementation of environmental protection measures provides a basis for logical comparison for the predicted and actual impacts of a proposal. Environmental monitoring involves the systematic collection of data to determine the actual environmental effects of the Project, compliance of the Project with regulatory standards, and the degree of implementation and effectiveness of the environmental protection. Monitoring must be an integral part of the implementation of the mitigation measures during Project construction, and will generate important information and at the same time should improve the quality of Project implementation.

163. The National EIA Guidelines (1993) and EPR, 1997 require monitoring plans and indicators, schedules and responsibility be identified in the IEE report. The following sub-sections deal with the various components of the monitoring programme in order to promote the full integration of monitoring activities in Project works and implementation.

164. The National EIA Guidelines of 1993, the EIA Guidelines for the Forestry Sector of 1995 propose three stages for monitoring. They are baseline monitoring, compliance monitoring and impact monitoring.

7.4.1 Baseline Monitoring

165. Baseline monitoring helps to determine the baseline condition of the environmental resources. In general, it is carried out if there is a significant time lapse between the preparation of the IEE report and the construction stage or a change in environmental quality is noticeable. This Subproject will proceed for construction immediately after the approval of this IEE report and hence, baseline monitoring is not required for this subproject.

7.4.2 Compliance Monitoring

166. Compliance monitoring is essential in order to ensure that environmental protection measures recommended by this study and other requirements set forth during the approval of the Subproject are complied with. This monitoring is not concerned with determining the actual effect of the subproject activities on the environment

167. Although, environmental monitoring is not the responsibility of the Proponent, under the existing environmental laws, the subproject has included the monitoring for the compliance of the technical specification as an in-built practice. The agencies responsible for monitoring should ensure compliance of activities such as; inclusion of mitigation measures in the design and tender documents, budget allocation for mitigation measures and monitoring, compensation arrangements, operation of burrow pits and spoil disposal sites, storage procedure, arrangement of construction activities etc.

7.4.3 Impact Monitoring

168. Impact monitoring is generally carried out to assess the effectiveness of the environmental mitigation measures and provides actual levels of impacts in the field. Hence an impact monitoring evaluation study is proposed by the end of the Subproject construction phase or within two years of Subproject implementation. Impact monitoring evaluation will focus on each predicted impact and effectiveness of environmental protection measures. This will also focus on the stability of slopes; spoil disposal sites, work camps and labour camps, wastes on the local environment. The utilization of cash compensation to the extent possible, condition of the forest in the vicinity of the Subproject area, water management, damage to human facilities, incremental change in

production of high value commodities, increase in other sources of income, employment generation, road side plantation, social status, impediment to wildlife movement, etc.

7.5 Monitoring Parameters

169. These would be based on the level of site-specific information or existing data series and impacts prediction. Efforts should be made to make the indicators measurable and diagnostic with low natural variability and broad applicability. In this context, the following physical, biological and social indicators will be monitored during the construction and operational stages of the subproject.

7.5.1 Pre-Construction Phase

170. During this phase the Consultant (DIST) bear the main responsibility in ensuring that the environmental and social safeguard considerations are adequately incorporated in the Project design and that the respective clauses to address the identified impacts are sufficiently included in the specifications and work contracts.

7.5.2 Construction Phase

171. In this phase the monitoring focuses on impacts on the environmental and social setting caused by the ongoing subproject. This monitoring checks compliance with the practices, norms, standards and technical solutions prescribed in the design and in the EMP. It specifically controls whether the Environmental Code of Practice is adequately applied in all works, and if the management practices are satisfactory with respect to the prescribed requirements. The specific monitoring tasks will include

- Collecting of data that identify, qualify and quantify distinct impacts on certain receptors (soils, water, habitats, species, local communities, services and utilities), and conduct a cause-effect analysis;
- Verify and quantify the ongoing slope protection measures, and propose rectifying measures as needed;
- Verify and quantify the ongoing activities in quarry operations, and propose rectifying measures as needed;
- Verify and quantify the ongoing/completed tree felling actions;
- Verify and quantify the course of any environmental degradation caused by Project activities, their likely consequences, and propose corrective measures, including the identification of responsibilities and costs;
- Verify and quantify the effects of disposal of spoil and construction wastes and their consequences;
- Verify and quantify the effects of disruption of natural water courses, drainage work, and their consequences;
- Monitor, by utilizing structured checklists and questionnaires, the contractor's full compliance with the health and safety regulations for the work staff;
- Verify and make scheduled proposals for improving the contractor's and VICCC efforts in awareness training both for the work forces and the public general in the affected communities;
- Verify and quantify the effects of losses in wildlife, degradation of forests, illegal extraction of forest products, hunting, wildlife trade and disturbance to wildlife;
- Identify and assess the environmental implications on the people's status of knowledge and awareness in relation to ongoing education campaigns;
- Verify and quantify losses/damage to private property and community facilities;
- Verify and quantify losses/damage to cultural properties;
- Verify and quantify the occurrence and spread of STDs, prostitution, girl/boy trafficking, consumption of drugs and alcohol, and subsequent social conflicts;
- Explore mechanisms to stipulate strict application of the EMP and identify consequences to be born by the contractors in case of non-compliance.

7.5.3 Operation Phase

172. The specific monitoring tasks in this phase will include:

- Assess changes in land-use patterns, development of cottage industries, services and demographic composition that may be caused by the road development;
- Verify and quantify the occurrence of ribbon development, resulting in encroachment and hindrance of traffic on the road;
- Verify all activities for decommissioning work sites and rehabilitation to their former functional stage, as applicable. This refers also to quarry sites and borrow pits, and propose rectifying measures as needed.
- Verify and quantify the adequacy of the executed bio-engineering works for slope protection and erosion control;
- Verify and quantify the adequacy of the drainage structures, functionality of these structures, shortcomings in maintenance, and possible effects on private and communal lands, as well as on aquatic resources;
- Verify and quantify the course of any environmental degradation caused by Project activities, their likely consequences, and propose corrective measures, including the identification of responsibilities and costs;
- Verify and quantify the effects of disruption of natural water courses, drainage work, and their consequences;
- Verify the success/failure of skill development and job opportunities' training carried out ;
- Verify and quantify the effects of losses in wildlife, degradation of forests, induced/accelerated logging, illegal extraction of forest products, hunting, wildlife trade and disturbance to wildlife;
- Verify and quantify damage to private property and community facilities;
- Verify and quantify losses/damage to cultural properties;
- Verify and quantify the occurrence and spread of STDs, prostitution, girl/boy trafficking, consumption of drugs and alcohol, and subsequent social conflicts.

7.6 Monitoring Indicators

173. Monitoring will be carried out in a transparent and credible manner by using established indicators. To ensure that the monitored parameters are replicable, i.e. do not depend on the person or specific methodology used, the selected indicators are easy to be verified and controlled by the agencies where the final monitoring and supervision responsibility remains.

174. It is also foreseen to use standard checklists and formats to be used by the monitoring staff both for site surveys and in the subsequent reports. Much of the monitoring is related to quantifying the observed impacts, and to verify the nature and extent of impacts, photos, parameter tests, collect local accounts of stakeholders and technical/social experts. The monitoring will also include specific cause-effect analyses for the impacts observed. Following Table 7.2 specifies the set of verifiable indicators that will be used for monitoring.

Table 7.3: Monitoring Indicators Selected for this IEE

Monitored Sector	Parameters Selected for Monitoring
Soils, Landslides, Erosion Waste management Sites	▪ Number, location and extent of slope failures ▪ Cause analysis for slope failure natural/man-made ▪ Area (ha.) of land, forest and properties affected ▪ Nos and extent of gully erosions and pavement failures ▪ Nos and extent of road subsiding effects ▪ Suitability of corrective/bio-engineering measures ▪ Nos of days and nature of traffic delays due to slides ▪ Sites and suitability for safe disposal of wastes and garbage

Monitored Sector	Parameters Selected for Monitoring
Bio-engineering	▪ Nos and plant species selected for bio-engineering, disaggregated by protective function
Seismicity	▪ Nos and magnitude of local seismic activities and respective damage to structures, including road
Water Pollution, Water Resourcesand their uses: Surface/ ground water, Irrigation water, Drinking water, Public taps	▪ Nos and extent of water-logging at operative and/or decommissioned construction sites ▪ Blockage of waterways - extent and secondary impacts ▪ Water pollution incidents due to unsafe disposal of waste and spoil, analysing effects on local fisheries ▪ Damage to farm lands due to water shortage or pollution ▪ Use of field kit for drinking water quality, determining pH, particulates, turbidity etc.
Air and Noise Level In relation to traffic volume	▪ Assessment of noise level in site by direct observation and interview with stakeholders ▪ Visual assessment of dust development at selected sites/sensitive spots and interview with local stakeholders ▪ Traffic volume measurements
Road Safety	▪ Speed measurements at selected spots ▪ Nos and type of road accidents recorded in the Traffic Police and in local health service centres ▪ Suitability of local road signs ▪ Records on public and driver road safety awareness campaigns
Wildlife/ Habitat Disturbance Impacts on Forest Resources	▪ Nos and extent of road accidents inflicting wildlife ▪ DFO records of illegal timber extraction and wildlife trade ▪ Observations and handling of invasive species
Socio-economic Development near Road alignment	▪ Demographic, economic and education data ▪ Nos and extent of new settlements /types and ethnic groups ▪ Nos and extent of new businesses ▪ Nos and extent of new services and utilities
Resettled Households and livelihood restoration	▪ Nos of HHs resettled ▪ HH questionnaire to identify livelihood conditions of resettlers ▪ Income situation and opportunities for the resettlers ▪ Verification of compensation and assistance to resettlers
Community awareness programmes relating to environment protection and avoidance of social conflicts	▪ Nos/schedule of campaigns and nos of beneficiaries ▪ Revision of training agenda & propagated information material ▪ Questionnaire evaluation, interviewing selected participants on the impacts of the training provided by associated NGOs and Contractors ▪ Nos of beneficiaries having received awareness training against the spread of HIV/AIDS and girl/boy trafficking ▪ Records from locals and local police concerning social conflicts

175. The following **Table 7.4** identifies the specific **compliance monitoring** activities. Phase-wise/chronological details are provided for the methods, schedules, responsible implementing agency and the responsible monitoring agency. The compliance monitoring refers primarily to the pre-construction and construction stage of the Project.

176. **Table 7.5** details the **impact and effect monitoring** activities envisaged for this Project. As in the previous table, details are provided for the applied methods, schedules, location, responsible implementing agency and the responsible monitoring agency.

7.7 Mitigation cost for Executing the Environmental Management Plan

177. The estimated cost for beneficial augmentation measures like awareness raising program, skill training, promotion of small scale industries, and income generation activities will be covered by the Community Empowerment Component and Livelihood Enhancement Skills Training (LEST) programme of the RRRSDP. Costs for income generation and awareness programme activities for Affected Persons (APs) are included in Resettlement Plan. The design and cost estimate for most of the suggested mitigation measures such as slope stabilization, quarry site management, spoil disposal, supply of face masks, helmets, muffles, accidental insurance, bioengineering measures, plantation, land slide rehabilitation, supporting CFUGs shall be incorporated in the design and cost estimates. Therefore, most of the mitigation measures suggested would be a part of road design and construction without additional cost. All proposed mitigation measures will be integrated in the project design so that these measures may automatically form part of the construction and operational phases of the project.

7.7.1 Specific Cost Details

(1) **Resettlement and Land Acquisition Costs**

178. The costs for land and crops that will be lost due to involuntary acquisition of land will be included under the resettlement. The actual payments to the PAPs loosing such properties will be established by the Compensation Determination Committee. The detail resettlement and land acquisition process and costs will be given in Resettlement Plan of this sub-project.

(2) **Awareness and Training Activities**

179. The project will carry out community awareness programs focusing on skill development, environmental protection, road and work safety and prevention of sexually transmitted diseases. As applicable, the training will also include livelihood opportunities and provision of assistance to vulnerable groups. The detail community awareness and Livelihood activities that will be followed during project implementation and their costs will be given in Resettlement Plan of the Project.

(3) **Environmental Monitoring Activities**

180. Monitoring is an integral part of the subproject proponent so as to know the unlikely impacts and implement corrective measures. The proponent, DDC/DTO Dolakha will develop in-built monitoring mechanism to show its additional commitment for environmental improvement and mitigate undesirable environmental changes, if any during construction and operational stage. DDC/DTO will be supported by District Implementation Team (DPO and DIST) in the district and Environmental Management Specialist from the CISC for environmental monitoring. There is a need to support these organizations to carry out environmental monitoring effectively.

181. According to EPR, 1997, the MLD/DoLIDAR is responsible for monitoring and evaluation of the impact of the implementation of the project. The MLD/DoLIDAR checks whether the DDC/DTO is carrying out monitoring activities as per the IEE, and if the prescribed mitigation measures are being implemented. Total cost estimated for central level environmental monitoring is NRs. 50,000.

Table 7.4: Compliance Monitoring for Sunkhani-Kyanpa Road Subproject.

Parameters/Issues	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
Final alignment selection as per IEE recommendation	DIST	Incorporation of IEE recommendations into alignment selection process and design document	Walkthrough along final road alignment, verifying sensitive areas	Initial stage preconstruction phase	DDC/DTO through PCU-CISC, DoLIDAR
Land and property acquisition and compensation	Proponent with assistance of DIST	Cadastral records, land and properties acquisition procedures; Procedures followed during voluntary donation of Land; Preparation of inventory of infrastructures likely to be affected	Public consultation, photos; geo-referencing; Check inventory against cadastral records and discuss with people	Initial stage pre-construction phase - well ahead of construction	CDC/PCU - CISC/ DOLIDAR
Resettlement, assistance and compensation	Proponent / DIST	Legal provisions by GoN; Compensatons paid	Check compliance to legal procedures	Well ahead of construction	CDC/PCU - CISC/ DOLIDAR
Site selection and preparation of construction logistics	Proponent / VICCC	Project's arrangement for materials storage, and construction activities	Site observation, geo-referencing and photographic documentation	Beginning of construction period	DIST/DTO
Use of local labour, particularly vulnerable groups and women	DICC/ VICCC / DIST	Specifications which obligate the contractors/RBG to observe certain quotas for employing local labour, specially vulnerable groups and women, use of child labour	Records of the NGO that facilitates and coordinates the process for local people's employment, interviews	During the entire period where labour work is contracted, trimester	DDC/DTO
Awareness and orientation training on road construction to technicians, and locally employed labourers	DIST/VICCC	Training programmes for skill development, occupational safety and environmental protection associated with road construction works	Specifications; training records, check training programme reports, assess feedback from participants	Beginning of construction and during construction	DDC/DTO
Compliance to Occupational health and safety matters	DIST / Contractor (if involved)	Health and safety regulations, first aid and medical arrangements, contingency plan, number and type of safety equipments such as mask, helmet, glove, safety belt	Spot checks at work sites, photos, accident records, interviews	throughout construction activities, trimester	DDC/DTO/DPO
Compliance to environmental protection measures, including pollution prevention, water and soil management, slope stabilisation, cut and fill, waste management, spoils, sensitive habitats and critical sites,	Contractor/RBG/DIST	Records and observations on pollution, waste management, spoil deposit. Training programmes for labourers to prevent impacts on wildlife sensitive habitats, forests and fuel wood use.	Site inspection, discussion with Project management, consultants, and local people. Quantifying site-specific impacts, photos, laboratory tests where required. Existing patrol, control and enforcement mechanisms, enforcement records	Before and during construction period	DDC/DTO/DPO

protection of fauna and flora					
Vegetation clearance	Contractor / RBG / DIST	Actual number of trees felled during construction works	Record, inspection and interview with local people and CFUGs	After detail design and before construction work	CFUGs/DTO/DDC/DFO
Measures to avoid pressure on forest and wildlife	Contractor /RBG/DIST	Use of firewood or fossil fuel by construction crew, events of hunting and poaching of wildlife	Inspection, interview with local people and CFUGs	Once a month during construction	DDC/DTO/DFO CFUGs
Measures to protect environment from air & noise pollution	Contractor / RBG/DIST	Dust level and noise level at work sites, major settlements and sensitive spots like health centres and schools	Visual observation and discussion with residents and workers	Once in a month during construction	DDC/DTO
Measures to protect water bodies from pollution	Contractor / RBG/DIST	Visual observation, observation of open defecation and waste disposal around water sources near construction sites	Site inspection, test of site-selected samples of local streams water using standard field kit, interview	Once in a month during construction; upon demand for testing with field kit	DDC/DTO
Restoration, rehabilitation, reconstruction of all infrastructure services damaged by the proposal activities	Contractor/RBG/DIST	Continued services by the facilities and functional public life	Site observation; VDC/DDC records; public consultation meetings; photos	Once in 15 days during construction	DDC/DTO
Adequate technical and environmental supervision	DIST	Adequate number of technicians regularly at site with ability to implement labour based road construction concept	Check number and type of technicians available at site;skill of work carried out;discussion	Twice a month during construction	DDC/DTO
Clean up and reinstatement of the construction sites (camps, quarries)	Contractor/RBG /DIST	Decommissioned sites indicate no adverse/residual environmental impacts, and are rehabilitated to the satisfaction of the supervisor and land owners	Site observation; comparing photos; consultation with land owners and community based organizations	At the end of construction period	DDC/ DTO

Table 7.5: Impact/Effect Monitoring for the Sunkhani-Kyanpa Road Subproject.

Parameters /Issues	Verifiable Indicators	Verification Methods	Location	Schedule	Responsible Implementation and Monitoring Agency
Slope stability and erosion	Inclination, slope failures, causes; drainage facilities such as catch drain, side drains and functionality of cross drainage structures; fresh gullies and erosion; success/failure of bio-engineering solutions	Site observation, photos discussion with people and technicians	Near steep slopes and at landslide areas and sites	Continuously during construction and operation	DIST during construction; DDC/DTO/Soil Conservation Office during operation
Bio-engineering of disturbed slopes	Re-vegetation through bio-engineering application on disturbed slope; establishment of nursery	Site observation; inspection of nursery and its production rate, photos, measurements	Cut slope area, where vegetation is cleared; nursery siyes	During and at the end of project construction	DIST/DDC/DTO
Disposal of spoils	Affected aesthetic value, affected forest and agriculture,	Site observation and interviews,	At specific locations where	During construction	DIST/DDC/DTO

Parameters /Issues	Verifiable Indicators	Verification Methods	Location	Schedule	Responsible Implementation and Monitoring Agency
and construction wastes	initiated land erosion by local blocked drainage, hazard to downhill slope residents and agricultural lands	photos, geo-referencing sites	such sites occur		
Quarrying of construction materials	Initiated erosion, changes in river regime, erosion by river systems, landslide due to quarrying, degradation of vegetation, water logging, waterborne diseases	Site observation, photos, records from local health centres	Quarry site areas	During construction	DIST/DDC/DTO
Disruption of drainage system	Status of rehabilitation, service status of irrigation and water supply system; operation and maintenance requirement	Observation and interviews, photos, records	Irrigation schemes and water supply system	During construction	DIST/DDC/DTO
Loss or degradation of farmland, houses and properties	Status of road side land; Production / yield; Status of road side houses; Status of standing crop along alignment	Observation, data collection and analysis and interview with stakeholders	Road side land and houses	During construction	DDC/DTO/DIST/ VICCC
Water quality	Observation of open defecation and waste disposal around water sources near construction sites	Visual observation, measurement of water sample using field kit	Local streams	During construction; upon demand for testing with field kit	DDC/DTO/DIST/ VICCC
Air quality	Dust level in ambient air	Visual inspection	At construction sites and at sensitive spots (schools, health spots, major settlements)	During construction	DDC/DTO/DIST
Forest and vegetation	Numbers of trees, presence of ground vegetation, signs of illicit logging and extraction of NTFPs	Observations, DFO records, photos; interview with CFUGs members	In and around the construction sites, markets,	During construction and operation	DIST/CFUGs/DFO during construction; CFUGs/DFO/DDC during operation
Wildlife	Wildlife hunting trapping and poaching by work force, trade of wildlife, road accidents inflicting wildlife	Interview with local people/ DFO/CFUGs members, photos, observations	Forest areas at roadside	Twice a year during construction and routine during operation	DIST/DFO/CFUG during construction; CFUGs/DFO/DDC during operation
Change in economy	Numbers of people employed by the project during construction, numbers of women in work forces	Records kept by the project management, discussion with stakeholders	Project area	Trimester during construction phase	DDC/DTO/DIST
Trade and commerce	Numbers of shops increased or decreased, rental of houses and land spaces	Records, interviews, observations, photos	Throughout project area	Once in a year	DDC/DTO/DIST/VDC
Occupational safety and hazard	Type and number of accident occurred during construction; adequacy of occupational safety measured provided; compensation provided in case of fatal accidents or invalidity	Observations, photos, spot checks, contractors' and health centre records interview with workers	Throughout project area	During construction	DIST/DDC/DTO
Change in socio-economic structure	No and extent of new settlements/types and ethnic groups; nos and extent of new businesses; nos and extent of new services and utilities, social conflicts	Observations, interview with local people, DDC Police and VDC records	Throughout project area	During operation	DDC/DTO/VDC
Ribbon settlement	Congestions to road users nos. of accidents, RoW encroachment	Records, observations	Throughout project area	During operation	DDC/DTO/Local administration

182. DDC/DTO with RRRSDP/PCU support will make arrangements for sub-project level monitoring. It will constitute a monitoring team, which must be independent from the implementation team and should consist of relevant persons in the context of a sub-project being monitored, for example persons from the forest, agriculture, social and NGO sectors. The monitoring team will be constituted separately for each monitoring event. Project's district management team will be responsible for forming the monitoring team, financing the monitoring works, providing logistics and other necessary support. Thus, it is recommended that an external team hired by DDC/DTO take responsibility for periodic monitoring of the environmental performance, in addition to the regular supervision and guidance provided by the DIST at the site. During the first year of operation phase, DDC/DTO will prepare and submit trimester environmental monitoring report to MLD who will forward the report to ADB. At least one monitoring in each construction season is necessary.

183. The sub-project level monitoring team should submit its report to RRRSDP district management, which should forward a copy to the RRRSDP-PCU. Total cost of environmental monitoring (field visits, observation, review of reports and report preparation as well as central level monitoring cost) is estimated NRs. 280,000 as given in **Table 7.6**.

Table 7.6: Environmental Monitoring Cost

Description	Duration (month)	Rate (NRs)	Amount (NRs)
District level monitoring			
1. TeamLeader/Environmental Specialist	1	75,000	75,000
2. Engineer	1/2	60,000	30,000
3. Biologist/Forester	1/2	60,000	30,000
4. Socio-economist	1/2	60,000	30,000
5. Support staff	1	25,000	25,000
6. Transportation cost		LS	20,000
7. Report preparation and sampling/lab test		LS	20,000
Central level monitoring(Monitoring by MoLD)			
Monitoring cost		LS	50,000
Total			280,000

(4) Other Costs for Environmental and Social Safeguard Measures

184. The other environmental and social mitigation costs are summarised in Table.7.7

Table7.7: Other Cost of Environmental Mitigation and Social Safeguard Measures

SN.	Environmental Protection Measures	Estimated Budget (NRs.)	Remarks
1. Benefits Augmentation Measures			
1.1	Training to DDC/DTO/DPO/DIST to conduct environmental monitoring and reporting	50,000.00	To be included in project cost
1.2	Training to Naike (about LEP approach) of RBGs	50,000.00	To be included in project cost
1.3	Enhancement in Technical Skills		Will be included in resettlement plan of subproject area.
	Sub-total (1)	**100,000.00**	
2. Adverse Impacts Mitigation Measures			
Construction Stage			
2.1	Bio-engineering	4,152,133.30	Estimated based on Field works.
2.2	Insurance of workers		Will be included in Particular

SN.	Environmental Protection Measures	Estimated Budget (NRs.)	Remarks
			condition of contract for contractor package, for BG it will provided by proponent.
2.3	Information signboard	50,000.00	To be included in BoQ
2.4	Compensation for properties		To be included in Resettlement Plan
2.5	Restoration or relocation of affected infrastructures, spoils disposal site management and rehabilitation, reinstate of quarry etc.	500,000.00	To be included in BoQ
2.7	Compensatory plantation (in CFs and Private Land)	645,980.4	To be included in BoQ
2.8	Health/HIV AIDS/STD prevention awareness; other awareness program such as adult literacy; support to local school etc.		To be included in Social Action Plan under Community Empowerment Component
2.9	Occupational health and safety; first t aid boxes, campsite sanitation (Pit latrine); solid waste management safety measures for workers (helmets gloves, masks, boots, etc.)		Will be included in Particular condition of contract for contractor package, for BG it will be included in project cost.
	Sub-total (2)	**5,348,113.70**	
	Total (1 + 2)	**5,448,113.70**	

CHAPTER 8

8. CONCLUSIONS AND RECOMMENDATIONS

185. The environmental impacts of the proposed subproject for construction and upgrading works of Sunkhani - Kyanpa Road are likely to have minimal detrimental effects. Relevant issues raised during focuss group discussion were also incorporated. Most of the adverse impacts identified and predicted are of minimal and short to medium terms as well as reversible in nature. However gully and soil erosion and small slip failures have been observed on the existing alignment, which need necessary measures to be employed during and after the rehabilitation work. For this, bio-engineering measures have been proposed and included in the Design. Construction and upgrading of Sunkhani - kyanpa Road subproject will have significant beneficial impacts of access to market centers and location of social services will enhance productivity in rural area and improve the quality of life of the people. Furthermore, the subproject will also create employment opportunities during the construction stage and enhance socio-economic development and provide a transportation facility to the people of north-western part of the district. Hence, the proposed Subproject is recommended for implementation with aforesaid mitigation measures.

186. The proposed road upgrading works do not exceed any of the prescribed thresholds by EPA, 1997 and EPR, 1997 (First Amendment, 1999) and other relevant Acts and Rules. Thus, an EIA study for the proposed subproject is not required.

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APPENDIXES

Appendix 1
Appendix 1.1 Approval Letter

नेपाल सरकार
स्थानीय विकास मन्त्रालय
(वातावरण व्यवस्थापन शाखा)

फोन नं. ५५४८५१४
फ्याक्स नं. ०१-५५२२०४५
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श्रीमहल,पुल्चोक,ललितपुर

पत्र संख्या २०६५/६६
चलानी नं. ९८६

मितिः २०६५/१२/६

विषय :- प्रारम्भिक वातावरणीय परीक्षण (IEE) को कार्यसूची स्वीकृत सम्बन्धमा ।

श्री ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना,
आयोजना समन्वय इकाई
जावलाखेल, ललितपुर ।

प्रस्तुत विषयमा त्यहाँबाट टिप्पणी साथ सम्लग्न गरी विभाग(DoLIDAR) मार्फत स्वीकृतिको लागि पठाईएको दोलखा जिल्लामा सञ्चालन हुने सुनखानी क्यान्पा सडक उप-आयोजनाको प्रारम्भिक वातावरणीय परीक्षण (IEE) को कार्यसूची (TOR) आवश्यक कारवाहीको लागि पेश हुँदा वातावरण संरक्षण नियमावली २०५८ को नियम ५(१) बमोजिम नेपाल सरकारको मिति २०६४।१२।१८ को निर्णय (सचिवस्तर) अनुसार स्वीकृत भएकोले स्वीकृत कार्यसूची (TOR) थान-२ (दुई) पत्रै साथ सम्लग्न राखी आवश्यक कार्यार्थ पठाईएको व्यहोरा अनुरोध गरिन्छ ।

(डण्डुराज घिमिरे)
उप-सचिव

बोधार्थ
श्री स्थानीय पूर्वाधार विकास तथा ग्रामीण कृषि सडक विभाग,
(DoLIDAR), जावलाखेल, ललितपुर ।

Appendix 1.2 Terms of Reference

स्वीकृत मिति : २०६२/१२/१८

Terms of Reference (ToR)

for

Initial Environmental Examination (IEE)

of

Sunkhani-Kyanpa Road Sub-Project

Submitted to:

Ministry of Local Development,
Government of Nepal

Proponent:

District Development Committee (DDC)
District Technical Office (DTO)
Dolakha

Telephone No: 049-421144/049-421049
Fax No. 049-421142

January, 2009

TABLE OF CONTENT

ToR for IEE of Sunkhani-Kyanpa Road sub-project, Dolakha

ABBREVIATIONS

ADB	Asian Development Bank
Ch	Chainage
CF	Community Forest
CISC	Central Implementation Support Consultants
CITES	Convention on International Trade in Endangered Species of Flora and Fauna
DDC	District Development Committee
DG	Director General
DIST	District Implementation Support Team
DoLIDAR	Department of Local Infrastructure Development and Agricultural Roads
DPO	District Project Office
DPCC	District Project Coordination Committee
DTO	District Technical Office
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management Section
EPA	Environmental Protection Act
EPR	Environmental Protection Rules
FGD	Focus Group Discussion
GoN	Government of Nepal
IEE	Initial Environmental Examination
IUCN	The World Conservation Union
Km	Kilometer
LEP	Labour based, environment friendly and participatory
MLD	Ministry of Local Development
NGO	Non-Governmental Organization
PAM	Project Administrative Memorandum
PCU	Project Coordination Unit
REA	Rapid Environmental Checklist
RRRSDP	Rural Reconstruction and Rehabilitation Sector Development Project
SF	Social Funding
SDC	Swiss Agency for Development and Cooperation
SDS	Social Development Specialist
SM	Social Mobilizer
SMO	Social Mobilization Officer
TA	Technical Assistance
ToR	Terms of Reference
VDC	Village Development Committee
ZoI	Zone of Influence

ToR for IEE of Sunkhani-Kyanpa Road sub-project, Dolakha

1.0 NAME AND ADDRESS OF THE PROPONENT

The District Development Committee (DDC), District Technical Office (DTO) Dolakha is the executing agency at the district level and the proponent of the Initial Environmental Examination (IEE) study for the rehabilitation of Sunkhani-Kyanpa road sub-project. The Ministry of Local Development (MLD) is the concerned authority for the approval of IEE report.

Address of the Proponent

District Development Committee
District Technical Office, Dolakha
Charikot, Dolakha
Telephone No: 049-421144/049-421049
Fax No. 049-421142

2.0 INTRODUCTION

2.1 GENERAL INTRODUCTION

The Rural Reconstruction and Rehabilitation Sector Development Project (RRRSDP) covers 20 districts spread over the country, which focuses on immediate post conflict development priorities for accelerated poverty reduction and inclusive development, thereby enhancing the effectiveness and efficiency of the delivery of public services, and improving access of rural people to economic opportunities and social services.

RRRSDP is funded by grant assistance from the Asian Development Bank (ADB); loan assistance from OPEC fund for International Development, counterpart fund of GoN and grant from the Swiss Agency for Development and Cooperation (SDC). The coordinating government department is the Department for Local Infrastructure Development and Agricultural Roads (DoLIDAR) under the Ministry of Local Development (MLD).

FRISA/ITECO joint venture (in association with SKAT) on behalf of SDC is District Implementation Support Team (DIST) for RRRSDP and has the responsibility of providing technical assistance in four districts namely Kabhre Palanchowk, Sindhupalchowk, Dolakha and Sindhuli. In order to ensure that the road selected by the DDC for implementation under the project fulfils the road selection criteria as mentioned in the RRRSDP and DIST is engaged to support the DTO.

This Terms of Reference (ToR) is prepared to conduct an IEE study of Sunkhani-Kyanpa road sub-project in Dolakha District.

2.2 BACKGROUND OF THE SUB-PROJECT

Sunkhani-Kyanpa Road is one of the important roads of district which links rural areas of north-western part of Dolakha district to district headquarter, Charikot. The road starts from Bhadaure Bazar at an elevation of 1,486 m above mean sea level (msl) of Sunkhani VDC. Track opening by bulldozer has been completed up to Kyanpa in Kalinchowk VDC at an elevation of 1,666 m above msl which is the end point of the road. The road passes through Sunkhani, Lapilang,

Lamidada, Babare and Kalinchowk VDCs. The major settlements along this road corridor are Bhadaure, Patagau, Thapa tole, Mizar tole, Lakai gau, Thalthale gau, Baniya gau. Main inhabitants within the zone of influence are Chhetri, Brahmin, Janajati and Dalit. Total length of the road is 27 km and it is proposed for the gravelling.

This road lies in the sub-tropical and temperate climatic region and average annual rainfall is above 2,260mm. Soil type along the alignment is basically residual soil and in short section alluvial soil, colluvial soil and exposed bedrock. The road alignment passes through both valley and ridge. The alignment does not pass through any protected area. There are mostly private forest, public land, community forest and cultivated land along the road alignment.

The first 5 km section has the road width of 4 m to 5 m with gentle slope. Only in some portion, the grade exceeds the defined criteria of 12%. There are existing gabion structures and the road surface is also smooth. Remaining part of the road has track opening of 3–4 m. Public vehicles and jeep regularly operate up to 3 km. Landslides which have recently occurred at different chainages have completely blocked the existing track after 3 km. Due to the lack of proper water management and high grade, the road surface is damaged by formation of trenches in various parts of the road. In between Ch 23+300 to 23+400 the track has not been opened due to existence of hard rock. Also at 24+600 km the track needs to be opened for 30 m stretch along the hard rock outcrop section.

This road crosses number of rivers and streams. Among these, major river is Gumu at which 30 m span bridge is needed. There is a small trail bridge in Gumu river. This road crosses Lapse khola at Ch 6+930 and again at Ch 7+750. Some rivers carry debris and boulder, so check dams are suggested. Box culvert is proposed for Lapse khola. Dry stone causeway with gabion wall at downstream is proposed for rest of the rivers and streams. At some portion of the road seepage of water has occurred which has loosened the soil.

Construction and upgrading of this road with gravelling will provide physical and economical access to the people of north-western part of the district with district headquarter and other part of Nepal. The description of project works is given in **Table 1** and the location and alignment of the road is given in **Figure 1 and 2**

Table. 1 Project activities of the proposed Sunkhani-Kyanpa road sub-project

SN	Road section	Chainage	Length (km)	Descriptions
	Bhadaure - patagau	0+000-3+500	3.5	• Average road width of 4m. • Recently occurred landslides of 60m in length. • Community forest (Salla) and private cultivated land. • Gentle slope. • Temple and small reservoir in ROW at ch 3+100. • Andheri khola of span 6m at Ch 3+400.

SN	Road section	Chainage	Length (km)	• Descriptions
2	Patagau- Gumu river	3+000-6+200	3.2	• Average width 3m with blockage at some sections due to landslide. • Landslide at Ch 4+600 and Ch 5+200 • Mostly private cultivated land and small part of private forest. • Major river Gumu khola at 6+200 and Ghatte Khola of span 16m at Ch 4+890. • Two house lies at ROW.
3	Gumu river – Bakhre river	6+200-12+200	6	• Average width of 4m. • Landslide of span 100m at Ch 7+100 due to toe cutting during construction by dozer. • Ghatte khola of span 14m at ch 10+800 ,lapse khola at Ch 9+900 and small streams at different chainage. • Some parts have steep slope. • Private cultivated land.
4	Bakhre khola - Lamidada	12+200-17+000	4.8	• Average width of 3.5m. • Mostly private cultivated land and community forest. • Gentle slope. • Khurle khola at Ch 15+100 and small streams at different sections. • One house lies on the ROW.
5	Lamidada-Sisneri	17+000-22+000	5	• Average width of 3.5m. • Private cultivated land. • Mostly gentle slope. Only some parts have slope greater then 12%. • Andheri khola at Ch 18+700. • One tent like house at 21+000 lies on ROW.
6	Sisneri- Babare	22+000-23+000	1	• Road width of 3.5m. • Cultivated land. • Gentle slope.
7	Babare - Kyanpa	23+000-27+000	4	• Road width 3m at some section. At ch 23+300 track hasn't been opened for 100m by dozer due to hard rock outcrop. • Dampha khola of span 13m at Ch 23+140. • Private cultivated land. • Slope greater than 10% at some parts.

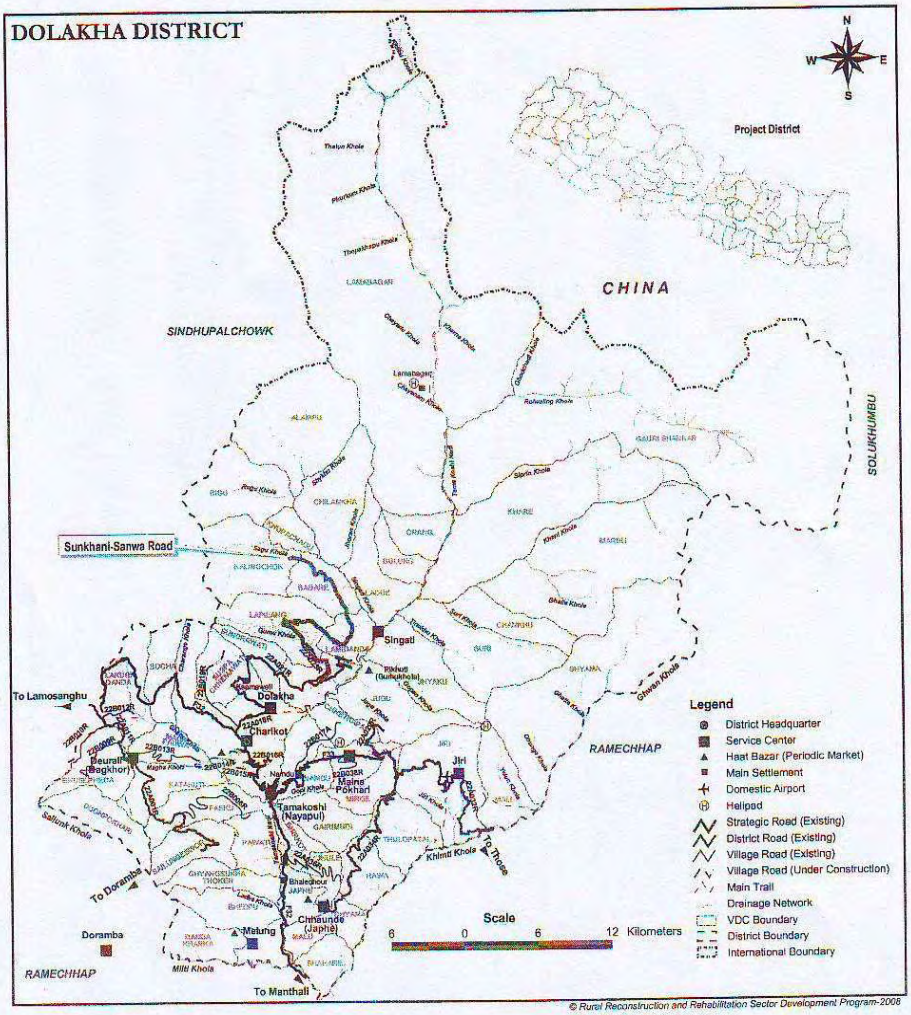


Figure 1. Map of Nepal showing the location of Sunkhani-Kyanpa road sub-project in Dolakha district

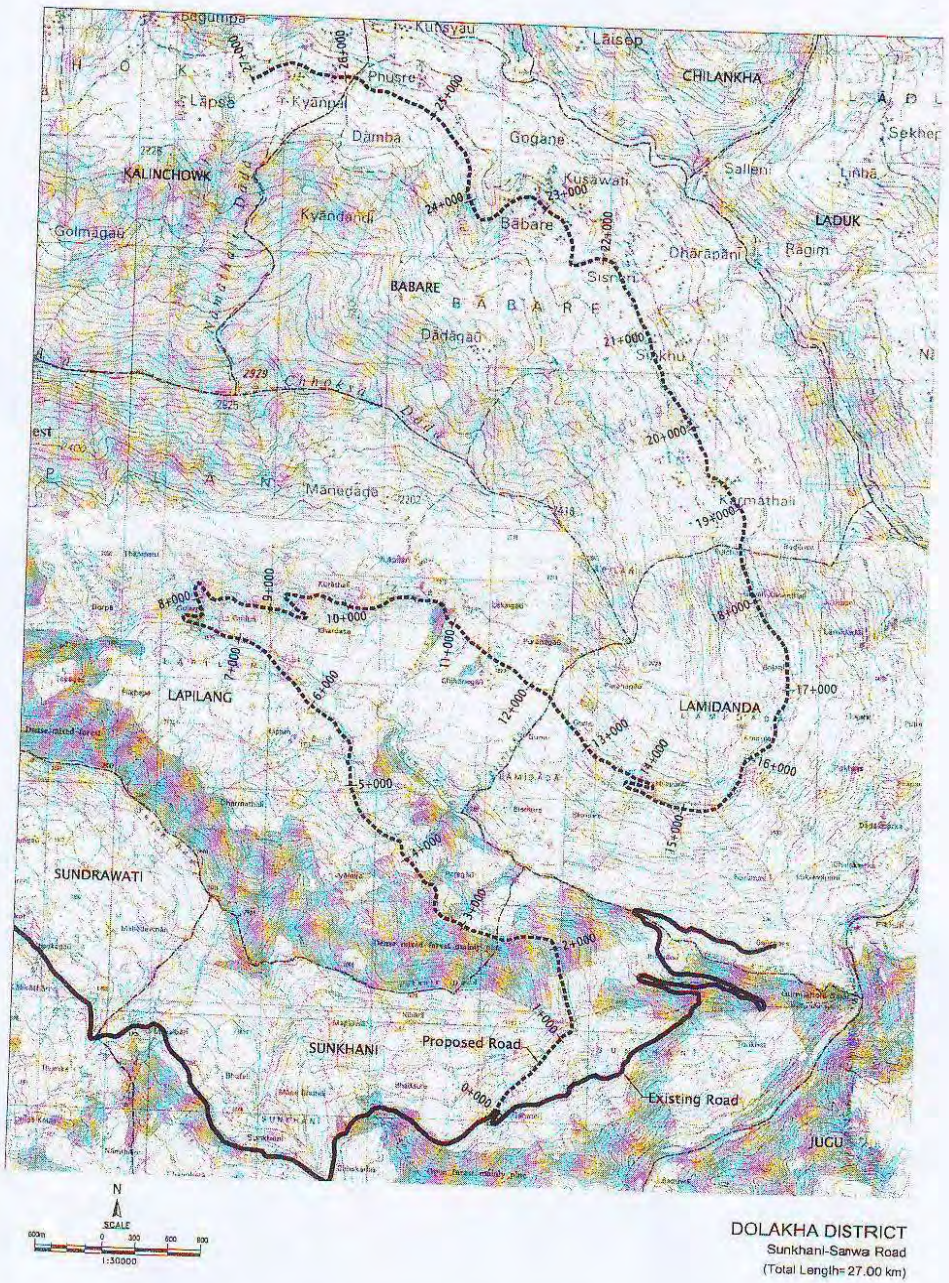


Figure 2. Map showing Sunkhani-Kyanpa road sub-project alignment

2.3 OBJECTIVES

The objectives of the proposed IEE study includes to:

- Identify the major issues that may arise as a result of proposed works on bio-physical, socio-economic and cultural environment of the sub-project area,
- Recommend practical and site specific environmental mitigation and enhancement measures, prepare and implement environmental monitoring plan for the sub-project,
- Provide information on the general environmental setting of the sub-project area as baseline data.
- Make sure that IEE is sufficient for the proposed road sub-project.

2.4 RELEVANCY OF THE SUB-PROJECT

The district headquarter, Charikot is linked with Kathmandu by Araniko highway and Lamosanghu-Jiri link road. This road is also linked to Dolakha - Singati road. Main means of transportation for the other remote VDCs in north-western part of the district is trails. Consequently, transportation of goods and services from the market centers to the rural areas and vice-versa has been difficult, insufficient and costly. The proposed road sub-project connects several VDCs of western part of district through Dolakha - Singati road to the district headquarter, Charikot and hence facilitates the easy access to district headquarters of Dolakha.

An IEE of the proposed road is necessary in order to assess the environmental consequences of the proposed rural road construction activities and suggest appropriate, practical and site specific mitigation and enhancement measures. Since this is a district road, an IEE is a legal requirement according to Environmental Protection Act, 1997 (EPR, 1997) and Environmental Protection Rules, 1997 (EPR, 1997). Preparation of IEE report by concerned District Development Committee/District Technical Office and approval by the Ministry of Local Development (MLD) according to Nepali legal provision is considered sufficient by the ADB. However, rapid environmental assessment (REA) checklist will also be considered during IEE report preparation based on ADB Environmental Guidelines.

3.0 REVIEW OF RELEVANT LAWS, RULES AND GUIDELINES

Government of Nepal has adopted various acts, regulations and guidelines to ensure the integration of development and conservation of environment. The IEE study will be guided by the requirements and provisions of the following acts, rules and guidelines as applicable.

- Environment Protection Act, 1997 and Environment Protection Rules, 1997 (amended 1999)
- Forest Act, 1993 and Forest Rules, 1995
- *Batabaraniya Nirdesika* (Nepal; MLD), 2057
- National Park and Wildlife Conservation Act, 1973
- Local Self Governance Act, 1999 and Local Self Governance Rules, 2000
- Land Acquisition Act, 1977 and Land Acquisition Rules
- National Environmental Impact Assessment Guidelines, 1993
- APPROACH for the Development of Agricultural and Rural Roads, 1999 (DoLIDAR)
- RRRSDP Environmental Assessment & Review Procedures guidelines 2007
- REFERENCE MANUAL for Environmental and Social Aspects of Integrated Road Development, 2003 (Department of Road)

- Green Roads in Nepal, Best Practices Report – An Innovative Approach for Rural Infrastructure Development in the Himalayas and Other Mountainous Regions. GTZ, SDC, 1999.
- ADB Environmental Assessment Guidelines, 2003
- Three Years Interim Plan, 2007/08-2009/10

4.0 PROCEDURE TO BE ADOPTED WHILE PREPARING THE REPORT

The IEE approach, methodology and procedure should generally follow the provisions of the EPA, 1996 and EPR, 1997. In this connection, following approach and methodology will be adopted during the IEE report preparation.

4.1 DESK REVIEW

The following steps will be followed during the desk review:

- Collection and review of secondary sources of information from various sources
- Initial interaction and consultation with the local community and district level stakeholders
- Delineation of geographical boundary of the Zone of Influence (ZoI) on the topographical map
- Preparation of project specific checklist

4.2 PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

The role of public consultation and participation is to ensure the quality, comprehensiveness, effectiveness of IEE as well as to ensure that the public view's are adequately taken into consideration in the decision making process. It is done during the preparation of an IEE. In order to ensure the public involvement, the following procedures will be followed during IEE report preparation:

- Publication of notice- A public notice of 15 days will be published in a national level daily newspaper seeking written opinion from concerned VDCs, DDC, school, health posts and related local organizations. A copy of the public notice will be affixed in the above mentioned organizations and deed of enquiry (*muchulka*) will be collected.
- Recommendation letter from concerned VDCs will also be obtained.
- IEE team will also carryout interaction with local communities and related stakeholders and will also collect the public concerns and suggestions.
- Draft IEE report will be sent to concerned VDCs for information disclosure and feedback collection.
- The approved IEE report will be made accessible to interested parties and general public through information center of DDC and website of RRRSDP.

4.3 FIELD WORK

The IEE team will walk through along the road alignment visiting the significant environmental features in the probable influence corridor, and make necessary measurements, inspect/observe and discuss it with the local stakeholders. The information collection will be made covering physical, biological, socio-economic and cultural aspects of the environment.

5.0 ALTERNATIVES FOR THE IMPLEMENTATION OF THE PROPOSAL

Alternative analysis has been considered as an integral part of IEE study, which involves an alternative ways of achieving the objectives of a proposed sub-project. The aim of alternative

analysis is to arrive at a development option, which maximizes the benefits while minimizing the unwanted impacts.

The study team will conduct alternative analysis considering the following issues:

- No action option
- Project alternatives
- Alternative alignment
- Alternative design and construction approach
- Alternative schedule and process
- Alternative resources

6.0 REQUIREMENT OF THE IEE STUDY

This includes time schedule, estimated budget and appropriate manpower (experts) for conducting IEE study.

6.1 TIME SCHEDULE

IEE report will be completed within eight weeks after the approval of ToR. An indicative time frame for conducting IEE is given in the table 2 below:

Table 2. Proposed work schedule for conducting IEE study

SN	Activities	Week							
		1	2	3	4	5	6	7	8
1	Orientation training to the team								
2	Desk study and review								
3	Public notice publication								
4	Field visit for survey and consultation with community								
5	Collection of suggestions and recommendations from stakeholders								
6	Analysis and interpretation								
7	Draft report preparation								
8	Comments on draft report								
9	Final Report preparation and submission								
10	Approval of the final report.								

6.2 ESTIMATED BUDGET AND STUDY TEAM

Most commonly an IEE of an infrastructure sub-project in the district need expert inputs from the following sectors:

- Landslides, slope stability, Bio engineering and Erosion
- Bio diversity Conservation, Forestry and wildlife
- Hydro -Geology
- Road engineering
- Social, Economic and Culture
- Eco tourism

The IEE will be carried out and prepared by DIST Environmental Specialist, Dolakha assisting by DIST team Dolakha. Environmental Specialist, CISC, RRRSDP and District Project Office (DPO) and DTO Dolakha will support in the preparation of the IEE. CISC with the support of Environmental Specialist CISC and other experts will train the DIST Team Dolakha for quality output of IEE preparation. The activity of IEE preparation will be closely supervised by DPO/DTO. Since, the IEE report will be prepared by the DIST team with the support of the CISC, no separate budget and manpower is required. However, specific subject matter experts will be hired for short term input from DIST as per need.

7.0 ENVIRONMENTAL BASELINE

This will describe environmental setting of the project location and surrounding areas and will contain information on relevant bio-physical, socio-economic and cultural factors and features. The updated, processed and analyzed information and data on each of the relevant bio-physical, socio-economic and cultural aspects will be presented in the IEE study. As far as possible, other environmental features such as, sensitive area, population and settlements, forests, geological features will be shown in the map.

8.0 ANALYSIS AND INTERPRETATION

Both secondary and primary information and data collected will be analyzed and interpreted. The bio-physical information will be tabulated to the extent possible. The socio-economic, cultural and religious information will be cross checked and analyzed.

9.0 IDENTIFICATION, PREDICTION AND EVALUATION OF IMPACT

The identification and prediction of impacts shall be carried out by considering the proposed project actions/activities in terms of rehabilitation and construction of the road project. The impacts of the activities shall be on bio-physical, socio-economic and cultural resources in a defined zone of influence (i.e.1.5 hours walking distance from the road alignment or 5 km distance).

The impacts shall be classified in terms of extent (site specific, local and regional), magnitude (low, medium and high) and duration (short term, medium term and long term) as well as reversible, irreversible, severe, moderate and significant. The likely impact shall be assessed covering both adverse and beneficial ones. The methodology adopted for impact identification and prediction will be checklists and matrix method. The likely impacts of the proposed road construction as well as operation are described in the following sections.

9.1 BENEFICIAL IMPACTS

Beneficial impacts due to the construction of the road shall be assessed by the study team in terms of impacts on physical, biological, socioeconomic and cultural systems of the project area. The impacts shall also be assessed in the category of extent, duration and magnitude. Based on the identification and prediction of the impacts, the suitable enhance measures to maximize the project benefits shall be explored and designed. The largest beneficial impacts will be on the physical and socio-economic environment as given below:

9.1.1 Construction Stage

- Employment Generation and Increase in Income

- Skill Enhancement
- Enterprise Development and Business Promotion
- Community Empowerment and Ownership

9.1.2 Operation Stage

- Access to Inputs and Services
- Development of Market centers
- Land Value
- Increased Crop Productivity and Sale of Farm Products
- Enhancement of Community Development Services
- Promotion of Eco Tourism Activity
- Women and Indigenous People Empowerment

9.2 ADVERSE IMPACTS

The likely adverse impacts during construction and subsequent operation and maintenance in terms of physical, biological, socioeconomic, cultural and religious aspects due to project actions shall be identified, predicted and evaluated. Based on the identified impacts, appropriate mitigation measures shall be recommended with extensive Environmental Management Plan (EMP).

9.2.1 Construction Stage - Though the sub-projects will apply LEP approach to the extent possible during the implementation, it may not be possible to avoid all likely impacts; the study shall take into account the following issues:

Physical environment

The issues and concerns generally related to physical environment typically include, but not necessarily limited to:

- Change in Land Use
- Spoil Disposal
- Slope Instability
- Water Management, spring, streams, Rain water (Drainage and Cross Drainage Works etc)
- Air Dust, Noise and Water Pollution
- Quarrying and Borrow Pit
- Decline in Aesthetic Value
- Road Safety and Eco system, Health and Safety Issues

Biological environment

The issues and concerns generally related to biological environment typically include, but not necessarily limited to:

- Loss or degradation of forests and vegetation. This includes the category of forest all complete information.
- Impact on Bio diversity Conservation, wildlife including birds due to loss or degradation of habitat, increased hunting and other form of human pressure.
- Impacts on flora and fauna (as listed in CITES and IUCN Red data book)
- Impacts on the local ecology and ecological balance/function.

Socio-economic and cultural environment

The issues and concerns generally related to socio-economic and cultural environment typically include, but not necessarily limited to;

- Loss or degradation of farm land and productivity
- Loss or degradation of private properties such as houses, farm sheds, and other structures, crops and fodder/ fruit trees
- Impact on community infrastructure such as irrigation, water supply, schools, health post, trail and trail bridges
- Impacts on cultural, religious and archeological sites
- Impacts on health, sanitation and safety matters.

9.2.2 Operation stage - The following issues will be taken into account during operation and maintenance stage:

Physical environment

- Road slope stability and management
- Impact due to air, noise and water pollution
- Road Safety Measures

Biological environment

- Impact on Forest Resources
- Depletion of Forest Resources
- Disturbance to wild life and illegal hunting
- Encroachment of Forest
- Impact on Ecosystem and Biodiversity

Socio-economic and cultural environment

- New settlement along the road alignment
- Change in social behavior
- Impact on livelihood and economic activities
- Road safety measures

10.0 MITIGATION MEASURES

The IEE study will propose site-specific benefit augmentation and mitigation measures to optimize the benefits expected from the sub-project and minimize/mitigate avoid or control of proposal's adverse impacts. The benefit augmentation and mitigation measures will be selected based upon appropriateness and cost analysis and these will be suggested for pre-construction, construction and post construction phase of the project. Mitigation measures will be proposed for the impacts on physical, biological, socio-economic and cultural environment.

11.0 ENVIRONMENTAL MANAGEMENT PLAN

The study will ensure the implementation and monitoring of mitigation measures for minimizing adverse impacts and maximizing the beneficial impacts. This plan will also identify the key environmental monitoring indicators with respect to activities, methods and responsibilities in order to monitor the environmental condition and adoption of suitable mitigation measures.

12.0 IEE report format

This format will be in line with provision made in the Schedule 5 of EPR, 1997 and should be adapted to project specific situation. The IEE report will be more extensive not limiting the following sections:

i. **Cover page with name of the proposal and proponent and address**
ii. **Executive Summary (NEPALI)**
iii. **Table of content**
iv. **Executive Summary that includes:**
- Background
- Project Proponent
- Objective
- Relevancy of the Proposal
- Project Description
- Existing Condition
- Identification of Impacts and Benefit Augmentation/Mitigation Measures
- Environmental Management Plan
- Conclusions and recommendations

v. **List of Abbreviation (acronyms)**
vi. **Introduction:** This section should describe the project in simple terms and concisely, without missing relevant points but avoiding unnecessary details. The project description should provide following information:

1. Background
2. Relevancy of the proposal
   - Objectives
   - Methodology adopted
3. Name and Address of the Proponent
4. Description of the Sub-project
5. Construction Approach
6. Proposed Schedule for Implementation of Sub-project

vii. **Public Consultation and Information Disclosure**

viii. **Review of Relevant Acts, Regulations and Guidelines:** During the study relevant policies, legislations and guidelines should be reviewed and their salient features should be mentioned in this section. Similarly related institutions should be consulted.

ix. Existing Environmental condition: Baseline information on the existing physical, biological as well as socio-economic and cultural resources of the proposed sub-projects is described here. Environmental features such as sensitive areas, population and settlements, forests should be shown in a map

x. Project Alternatives: This section summarizes the alternatives by environmental comparison. This may include the following sub-headings.
a. Project alternative
b. Alternative routes

c. Alternative design and construction approach
d. Alternative schedule and process
e. Alternate resources
f. Any other alternatives

xi. Identification of Impacts and Benefit Augmentation/Mitigation Measures: This section contains the process, findings and conclusions of analysis and interpretations. The impacts are predicted in terms of their magnitude (minor, moderate and high), extent (site specific, local and regional) and duration (short, medium and long term) and appropriate benefit enhancement and mitigation measures are suggested as following:

a) **Physical Impacts**: such as land, air, water, noise, infrastructure impacts and other factors

b) **Biological Impacts**: such as flora, and fauna, population, and natural habitats and ecosystems

c) **Socio-economic-cultural impacts**: such as agricultural land, human health, social, cultural and religious values, implications of physical and biological impacts and other relevant socio-cultural-economic impacts.

This section also summarizes the recommended mitigation measures including basis for selection and cost if possible.

xii. Environmental Management Plan: This section summarizes the recommended implementation of IEE, monitoring from level with specific parameters/indicators, activities, methods and responsibilities.

xiii. Conclusion and Recommendations: This section should clearly indicate whether IEE report is sufficient or further assessment is needed. Likewise, it should also be recommended that what aspects should be covered if further environmental assessment is needed.

xiv. Miscellaneous: Reference materials should be mentioned here if used during IEE report preparation in standard format.

xv. Annexes

- ToR of IEE
- Public notice
- Deed of enquiry (*muchulka*)
- Recommendation letters from VDC's
- List and Name of the organizations and person consulted
- List of trees
- Existing condition
    a. Distribution of household by major occupation
    b .Summary of public services and infrastructures according to settlement
    c. Land holding pattern of settlements within ZoI
    d. Number of households belonging to different food security category
- Maximization of slope cutting and preservation of vegetation cover
- Photographs

Appendix 2

Rapid Environmental Assessment (REA) Checklist

Instructions:
- This checklist is to be completed with the assistance of an Environment Specialist.
- This checklist focuses on environmental issues and concerns.
- Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Project Title:	**Rural Reconstruction and Rehabilitation Sector Development Programme**
Subproject:	**Sunkhani – Kyanpa Road Sub-project**

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project siting Is the project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site		√	
▪ Protected area		√	
▪ Wetland		√	
▪ Mangrove		√	
▪ Estuarine		√	
▪ Buffer zone of protected area		√	
▪ Special area for protecting biodiversity		√	
B. Potential environmental impacts Will the project cause…			
▪ Encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?		√	
▪ Encroachment on precious ecology (e.g. sensitive or protected areas)?		√	
▪ alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?		√	
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?		√	

SCREENING QUESTIONS	Yes	No	REMARKS
▪ increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?	√		
▪ noise and vibration due to blasting and other civil works? ▪ dislocation or involuntary resettlement of people	√		Dislocated people will be compensated and included in resettlement plan.
▪ other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?		√	
▪ hazardous driving conditions where construction interferes with pre-existing roads?		√	
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?		√	
▪ creation of temporary breeding habitats for mosquito vectors of disease?		√	
▪ dislocation and compulsory resettlement of people living in right-of-way?	√		There are 5 HHs that should be dislocated. Dislocated people will be compensated.
▪ accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials and loss of life?		√	
▪ increased noise and air pollution resulting from traffic volume?		√	
▪ increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?		√	

Appendix 3
RRRSDP Environmental Checklist
A. GENERAL SOCIO-ECONOMIC SITUATION OF THE INFLUENCE AREA

1. **Overview of settlements in the zone of influence (ZoI) area**

Settlement Code*	Name of Settlement and address	Household and Population	Caste/ethnic distribution	General Comment (Indigenous group)
A				
B				
C				
D				
E				
F				
G				
H				
I				
J				
K				

***** Use the same codes as in strip map and topographical map.

2. Economic activities/main occupation

Settlement Code	Number of HH and Percentage of Population engaged in					
	Agriculture & Livestock	Labour & Porter	Business/ Commerce	Cottage Industry	GO/NGO Employees	Others (specify)
A						
B						
C						
D						
E						
F						
G						
H						
I						
J						
K						

3. Existing services and infrastructures

S. No.	Service/Infrastructure Category	Settlement Code									
		A	B	C	D	E	F	G	H	I	J
1	**EDUCATION**										
1.1	Campus (no.) Students (no.)										
1.2	High School (no.) Students (no.)										
1.3	Primary School (no.) Students (no.)										
2	**HEALTH**										
2.1	Hospital /health centre (no.) Capacity (beds)										
2.2	Health Post (no.) Sub-Health Post (no.)										
3	**COMMUNICATION**										
3.1	Telephone/fax										
3.2	Mobile/CDMA										

S. No.	Service/Infrastructure Category	Settlement Code									
		A	B	C	D	E	F	G	H	I	J
3.3	Post Office										
4	**ELECTRICITY SUPPLY (no. of Hhs)**										
4.1	from Micro-hydro										
4.2	from Mini-hydro										
4.3	from National Grid										
4.4	from Solar System										
4.5	from Diesel Generator										
5	**BUSINESS & COMMERCE**										
5.1	Hotels & Lodges (no.)										
5.2	Restaurants & Tea Stalls (no.)										
5.3	Grocery Shops (no.)										
5.4	Other Shops (no.) (e.g. stationery, medicine, tailoring, fancy/cloth etc.)										
6	**DRINKING WATER SUPPLY SCHEMES**										
6.1	Gravity-Flow Scheme (capacity)										
6.2	Tube-wells (no.)										
6.3	Spring/Dug-wells (no.)										
7	**IRRIGATION SCHEMES**										
7.1	Surface Irrigation (ha.)										
7.2	Groundwater (ha.)										
8	**OTHER INFRASTRUCTURES**										
8.1	Micro-hydro scheme (no. & capacity.....kw)										
8.2	Water Mill (no.)										
8.3	Suspension Bridges (no.)										
8.4	Wooden Bridges (no.)										
8.5	Other Bridges (specify)										
9	**INDUSTRY**										
9.1	Weaving Industry (no.)										
9.2	Rice & flour Mills (no.)										
9.3	Other Industries										
10	**FINANCIAL INSTITUTIONS**										
10.1	Bank (no.)										
10.2	Cooperative										
11	**COMMUNITY USE**										
11.1	Ghat (no.)										
11.2	Hatia/Bazaar (no.)										
11.3	Playground (no.)										
11.4	Community Centre (no.)										
11.5	Community Organisation										
11.6	Others (specify										

4. <u>Land holding pattern</u>

Land holding Pattern (ropani)	Settlement (HH No.)										Remarks
	A	B	C	D	E	F	G	H	I	J	
Landless											

less than 1											
1 to 5											
5 to 10											
10 to 20											
20-50											
> 50											

5. Food grain availability (HH no.)

Availability Status	Settlements (HH No.)										Total
	A	B	C	D	E	F	G	H	I	J	
Surplus											
Sufficient for whole year											
Sufficient for three to nine months											
Sufficient for three months											
Less than three months											

6. Major existing agriculture production (denote the most dominant by 1, second dominant by 2 and so on).

S. No.	Type of Agriculture Production	Settlements									
		A	B	C	D	E	F	G	H	I	J
1.0	**CEREALS**										
1.1	Rice										
1.2	Wheat										
1.3	Maize										
1.4	Millet										
1.5	Junelo										
1.6	Phaper										
1.7	Others (list)										
2.0	**CASH CROPS**										
2.1	Oil Seeds										
2.2	Beans/Dal										
2.3	Tobacco										
2.4	Potato										
2.5	Vegetables										
2.6	Fruits										
2.7	Tea/Coffee										
2.8	Amliso										
2.9	Sericulture										
2.10	Others (list)										
3.0	**LIVESTOCK & FISHERIES**										
3.1	Cattle (cows & buffaloes)										
3.2	Horses, Mules										
3.3	Yak										
3.4	Goat										
3.5	Sheep										
3.6	Rabbit										
3.7	Pig										
3.8	Fisheries										
3.9	Poultry										
3.10	Bee-keeping										
3.11	Others										

7. Migration for employment

No. of HHs from where at least one person (may be HH head) is away from home for more than 6 months.

Settlement (No. of HH)

A	B	C	D	E	F	G	H	I	J

8. Name of settlement: **Address:**

A. Seasonal migration in search of work

Month	No. of Total HH	Destination	Purpose
Baisakh			
Jestha			
Ashad			
Shrawan			
Bhadra			
Ashwin			
Kartik			
Marga			
Poush			
Magh			
Falgun			
Chaitra			

B. Dominant off-farm occupation in the settlement in descending order

1.....
2.....
3.....

C. DEVELOPMENT POTENTIAL OF THE INFLUENCE AREA

C.1. Areas which have significant potential for development, for instance, high agricultural production, tourism development, local mines, etc. (indicate these areas in map/sketch).

S.No.	Name of Area	Description of Development Potential
1		
2		
3		
4		

C.2. Scope of the proposed linkage in view of promoting socio-economic development

S. No.	Sectors to get direct benefit	Describe how it will benefit
1		
2		
3		

D. Historic and Cultural Resources

Type of Resource	Name/specification	Affecting activities	Location from project
Temples			
monuments			
Religious place			
others			

E. Name of Existing Community Organisation

F. Trading pattern

Imported items

Exported Items

G.a. Travel time from starting point

By Walking

By Vehicle

G.b. Transportation cost

Porter

Mule / Vehicle

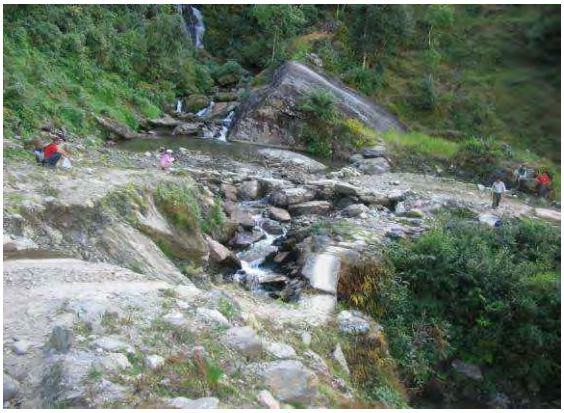
Appendix 4 Photographs

Starting point of the road alignment at Sisagolai

Gulley Erosion along the alignment

Agricultural land with roadside vegetation

Settlement along the road alignment in Babare



Dampha khola at Chainage 23+140 km

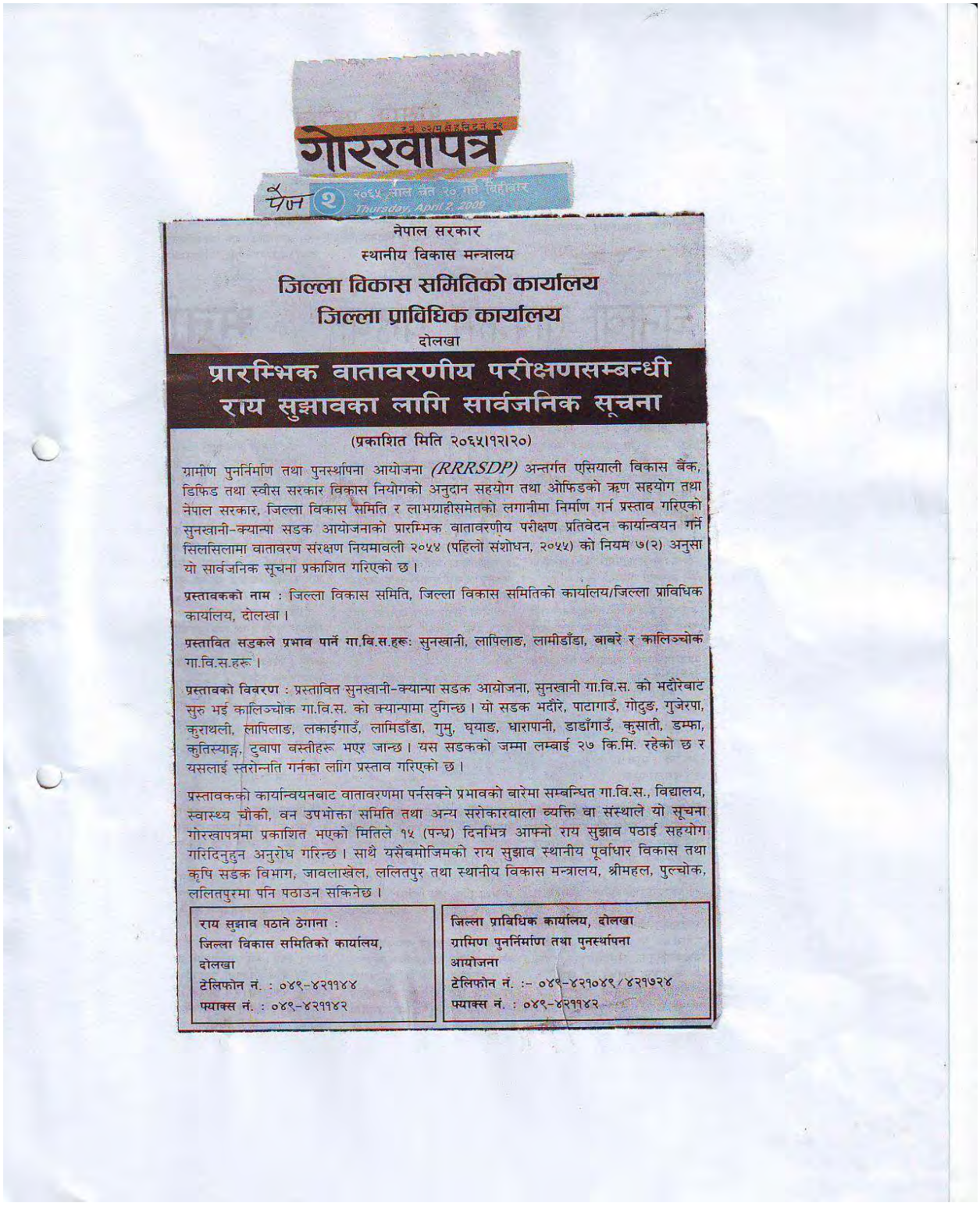
End point at Kynapa at Ch 27+390

Appendix 5 Abstract of Cost

Item No.	Description of Works	Unit	Quantity	Amount NRs.
1	General Work			3,387,074.38
2	Site Clearance with tree cutting	m^2	26075.00	196,400.25
3	Earthwork Excavation and Backfilling	m^3	295,222.97	45,511,937.62
4	Stone masonry work	m^3	8343.00	27,408,189.26
5	Gabion Masonry Work	Nos	2774.00	13,546,971.52
6	Concrete Work	m^3	4740.80	41,531,593.70
7	Formwork	m^2	0.00	181,730.94
8	Pavement Work	m^3	17491.87	35,304,600.05
9	Filter Membrane/Geotextile Materials	m^2	0.00	129,008.88
10	Reinforcement	Kg	38002.23	4,285,909.96
11	Miscellaneous Work	m	145.00	396,647.16
12	Day Work (labour, material, equipment)	PS		200,000.00
	Sub-Total (A)			**172,080,063.72**
13	Bio-Engineering Works			4,152,133.30
	Total (B)			**176,232,197.02**
	VAT (13% of B)			22,910,185.61
	Total ©			**199,142,382.63**
	Provision for Contingencies (5%of C)			9,957,119.13
	Grand Total			**209,099,501.76**
	COST PER KILOMETER			**7,634,154.87**

Note: PS = Provisional sum

Appendix 6 Public notice



गोरखापत्र

२०६५ साल चैत २० गते शिहिबार
Thursday, April 2, 2009

नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय
जिल्ला प्राविधिक कार्यालय
दोलखा

प्रारम्भिक वातावरणीय परीक्षणसम्बन्धी राय सुझावका लागि सार्वजनिक सूचना

(प्रकाशित मिति २०६५।१२।२०)

ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना *(RRRSDP)* अन्तर्गत एसियाली विकास बैंक, डिफिड तथा स्वीस सरकार विकास नियोगको अनुदान सहयोग तथा ओफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राहीसमेतको लगानीमा निर्माण गर्न प्रस्ताव गरिएको सुनखानी-क्यान्पा सडक आयोजनाको प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमावली २०५४ (पहिलो संशोधन, २०५५) को नियम ७(२) अनुसा यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम : जिल्ला विकास समिति, जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, दोलखा ।

प्रस्तावित सडकले प्रभाव पार्ने गा.वि.स.हरू: सुनखानी, लापिलाङ, लामीडाँडा, बाबरे र कालिञ्चोक गा.वि.स.हरू ।

प्रस्तावको विवरण : प्रस्तावित सुनखानी-क्यान्पा सडक आयोजना, सुनखानी गा.वि.स. को भदौरेबाट सुरु भई कालिञ्चोक गा.वि.स. को क्यान्पामा टुगिन्छ । यो सडक भदौरे, पाटागाउँ, गोदुङ, गुजेरपा, कुराथली, लापिलाङ, लकाईगाउँ, लामिडाँडा, गुमु, घ्याङ, धारापानी, डाडाँगाउँ, कुसाती, डम्फा, कुतिस्याङ, टुवापा बस्तीहरू भएर जान्छ । यस सडकको जम्मा लम्बाई २७ कि.मि. रहेको छ र यसलाई स्तरोन्नति गर्नका लागि प्रस्ताव गरिएको छ ।

प्रस्तावकको कार्यान्वयनबाट वातावरणमा पर्नसक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना गोरखापत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिनभित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । साथै यसैबमोजिमको राय सुझाव स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग, जावलाखेल, ललितपुर तथा स्थानीय विकास मन्त्रालय, श्रीमहल, पुल्चोक, ललितपुरमा पनि पठाउन सकिनेछ ।

राय सुझाव पठाने ठेगाना : जिल्ला विकास समितिको कार्यालय, दोलखा **टेलिफोन नं.** : ०४९-४२११४४ **फ्याक्स नं.** : ०४९-४२११४२	**जिल्ला प्राविधिक कार्यालय, दोलखा** ग्रामिण पुनर्निर्माण तथा पुनर्स्थापना आयोजना **टेलिफोन नं.** :- ०४९-४२१०४९/ ४२१७२४ **फ्याक्स नं.** : ०४९-४२११४२

Government of Nepal
Office of District Development Committee,
Charikot, Dolakha

Public notice for comments and suggestion on the Initial Environmental Examination

(Date of first publication: Apirl 2, 2009)

An Initial Environmental Examination (IEE) report is under preparation for the implementation of Sunkhani-Kyanpa road sub-project in Sunkhani, Lapilang, Lamidada, Babare and Kalinchowk VDCs of Dolakha district by Rural Reconstruction and Rehabilitation Sector Development Programme (RRRSDP). In accordance with the provision of the Rule 7 (2) of the Environment Protection Rules 1997, this public notice has been published to solicit comments and suggestions, in writing, about the impacts of the sub-project on the environment and local people within 15 days from the first date of its publication in Gorkhapatra, national daily newspaper in the following address. Comments and suggestions may be sent to Department of Local Infrastructure Development and Agricultural Roads, Jawalakhel and Ministry of Local Development, Pulchowk, Lalitpur.

Address:

Office of District Development Committee

Address: Charikot, Dolakha

Telephone No: 049-421144/049-421049

Fax No. 049-421142

District Technical Office,
Address: Charikot, Dolakha

Telephone No: 049-421144/049-421049
Fax No. 049-421142

Appendix 7 Muchulkas (Deed of Inquiries)

श्री .... ले निम्नानुसारको सूचना यस .... कार्यालयको सूचना पाटीमा टाँसेको व्यहोरा प्रमाणित गरिन्छ ।

नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय/
जिल्ला प्राविधिक कार्यालय
दोलखा

प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना
(प्रकाशित मिति २०६५/१२/२०)

ग्रामीण पुर्ननिर्माण तथा पुर्नस्थापना आयोजना (RRRSDP) अन्तरगत एशियाली विकास बैंक, डिफिड तथा स्वीस सरकार विकास नियोगको अनुदान सहयोग तथा ओफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राही समेतको लगानीमा निर्माण गर्न प्रस्ताव गरिएको सुनखानी–क्यान्पा सडक आयोजनाको प्रारम्भिक वातावरणीय परिक्षण प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमावली २०५४ (पहिलो संसोधन, २०५५) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम: जिल्ला विकास समिति,जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, दोलखा

प्रस्तावित सडकले प्रभाव पार्ने गा.वि.स.हरु: सुनखानी, लापिलाङ, लामीडाँडा, बाबरे र कालिन्चोक गा.वि.स.हरु

प्रस्तावको विवरण: प्रस्तावित सुनखानी–क्यान्पा सडक आयोजना सुनखानी गा.वि.स. को भदौरेबाट शुरु भई कालिन्चोक गा.वि.स.को क्यान्पामा टुंगिन्छ । यो सडक भदौरे, पाटागाउँ, गोदुङ, गुजेरपा, कुरावली, लापीलाङ, लकाईगाउँ, लामिडाँडा, गुमु,ध्याङ, धारापानी, डाँडागाउँ, कुसाती, डम्पा, कुतिस्याङ, दुवापा बस्तीहरु भएर जान्छ । यस सडकको जम्मा लम्बाई २७ कि.मि. रहेको छ र यसलाई स्तरोन्नति गर्नका लागि प्रस्ताव गरिएको छ ।

प्रस्तावकको कार्यान्वयन बाट वातावरणमा पर्न सक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना गोरखापत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । साथै यसै बमोजिमको राय सुझाव स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग, जावलाखेल, ललितपुर तथा स्थानीय विकास मन्त्रालय श्रीमहल, पुल्चोक, ललितपुरमा पनि पठाउन सकिनेछ ।

राय सुझाव पठाउने ठेगाना:

जिल्ला विकास समितिको कार्यालय, दोलखा
टेलिफोन नं.: ०४९-४२११४४
फ्याक्स नं.: ०४९-४२११४२

जिल्ला प्राविधिक कार्यालय, दोलखा
टेलिफोन नं.:०४९-४२१०४९
फ्याक्स नं.: ०४९-४२११४२

सूचना टाँसेको प्रमाणित गर्ने कर्मचारीको नाम:
पद:
कार्यालयको छाप:

हस्ताक्षर:
कार्यालयको नाम:
मिति:

श्री .... ले निम्नानुसारको सूचना यस .... कार्यालयको सूचना पाटीमा टाँसेको व्यहोरा प्रमाणित गरिन्छ ।

नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय/
जिल्ला प्राविधिक कार्यालय
दोलखा

प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना
(प्रकाशित मिति २०६५/१२/२०)

ग्रामीण पुर्ननिर्माण तथा पुर्नस्थापना आयोजना (RRRSDP) अन्तरगत एशियाली विकास बैंक, डिफिड तथा स्वीस सरकार विकास नियोगको अनुदान सहयोग तथा ओफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राही समेतको लगानीमा निर्माण गर्न प्रस्ताव गरिएको सुनखानी–क्यान्पा सडक आयोजनाको प्रारम्भिक वातावरणीय परिक्षण प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमावली २०५४ (पहिलो संसोधन, २०५५) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम: जिल्ला विकास समिति,जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, दोलखा

प्रस्तावित सडकले प्रभाव पार्ने गा.वि.स.हरु: सुनखानी, लापिलाङ, लामीडाँडा, बाबरे र कालिन्चोक गा.वि.स.हरु

प्रस्तावको विवरण: प्रस्तावित सुनखानी–क्यान्पा सडक आयोजना सुनखानी गा.वि.स. को भदौरेबाट शुरु भई कालिन्चोक गा.वि.स.को क्यान्पामा टुंगिन्छ । यो सडक भदौरे, पाटागाउँ, गोदुङ, गुजेरपा, कुरावली, लापीलाङ, लकाईगाउँ, लामिडाँडा, गुमु,ध्याङ, धारापानी, डाँडागाउँ, कुसाती, डम्पा, कुतिस्याङ, दुवापा बस्तीहरु भएर जान्छ । यस सडकको जम्मा लम्बाई २७ कि.मि. रहेको छ र यसलाई स्तरोन्नति गर्नका लागि प्रस्ताव गरिएको छ ।

प्रस्तावकको कार्यान्वयन बाट वातावरणमा पर्न सक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना गोरखापत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । साथै यसै बमोजिमको राय सुझाव स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग, जावलाखेल, ललितपुर तथा स्थानीय विकास मन्त्रालय श्रीमहल, पुल्चोक, ललितपुरमा पनि पठाउन सकिनेछ ।

राय सुझाव पठाउने ठेगाना:

जिल्ला विकास समितिको कार्यालय, दोलखा
टेलिफोन नं.: ०४९-४२११४४
फ्याक्स नं.: ०४९-४२११४२

जिल्ला प्राविधिक कार्यालय, दोलखा
टेलिफोन नं.:०४९-४२१०४९
फ्याक्स नं.: ०४९-४२११४२

सूचना टाँसेको प्रमाणित गर्ने कर्मचारीको नाम:
पद:
कार्यालयको छाप:

हस्ताक्षर:
कार्यालयको नाम:
मिति:

श्री .... ले निम्नानुसारको सूचना यस .... कार्यालयको सूचना पाटीमा टाँसेको व्यहोरा प्रमाणित गरिन्छ ।

नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय/
जिल्ला प्राविधिक कार्यालय
दोलखा

प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना
(प्रकाशित मिति २०६५/१२/२०)

ग्रामीण पुर्ननिर्माण तथा पुर्नस्थापना आयोजना (RRRSDP) अन्तरगत एशियाली विकास बैंक, डिफिड तथा स्वीस सरकार विकास नियोगको अनुदान सहयोग तथा ओफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राही समेतको लगानीमा निर्माण गर्न प्रस्ताव गरिएको सुनखानी–क्यान्पा सडक उपआयोजनाको प्रारम्भिक वातावरणीय परिक्षण प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमावली २०५४ (पहिलो संसोधन, २०५५) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम: जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, दोलखा

प्रस्तावित सडकले प्रभाव पार्ने गा.वि.स.हरु: सुनखानी, लापिलाङ, लामीडाँडा, बाबरे र कालिन्चोक गा.वि.स.हरु

प्रस्तावको विवरण : प्रस्तावित सुनखानी–क्यान्पा सडक उपआयोजना सुनखानी गा.वि.स. को भदौरेबाट शुरु भई कालिन्चोक गा.वि.स.को क्यान्पामा टुंगिन्छ । यो सडक भदौरे, पाटागाउँ, गोदङ, गुजेरपा, कुरावली, लापिलाङ, लकाईगाउँ, लामिडाडा, गुमु ध्याङ, धारापानी, डाँडागाउँ, कुसाती, डम्फा, कुतिस्याङ, दुवापा बस्तीहरु भएर जान्छ । यस सडकको जम्मा लम्बाई २७ कि.मि. रहेको छ र यसलाई स्तरोन्नति गर्नका लागि प्रस्तावित गरिएको छ ।

उक्त प्रस्तावकको कार्यान्वयन बाट वातावरणमा पर्न सक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना गोरखापत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । साथै यसै बमोजिमको राय सुझाव स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग, जावलाखेल, ललितपुर तथा स्थानीय विकास मन्त्रालय श्रीमहल, पुल्चोक, ललितपुरमा पनि पठाउन सकिनेछ ।

राय सुझाव पठाउने ठेगाना:

जिल्ला विकास समितिको कार्यालय, दोलखा
टेलिफोन नं.: ०४९-४२११४४
फ्याक्स नं.: ०४९-४२११४२

जिल्ला प्राविधिक कार्यालय, दोलखा
टेलिफोन नं.:०४९-४२१०४९
फ्याक्स नं.: ०४९-४२११४२

सूचना टाँसेको प्रमाणित गर्ने कर्मचारीको नाम:
पद:
कार्यालयको छाप:

हस्ताक्षर:
कार्यालयको नाम:
मिति:

श्री .... ले निम्नानुसारको सूचना यस .... कार्यालयको सूचना पाटीमा टाँसेको व्यहोरा प्रमाणित गरिन्छ ।

नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय/
जिल्ला प्राविधिक कार्यालय
दोलखा

प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना
(प्रकाशित मिति २०६५/१२/२०)

ग्रामीण पुर्ननिर्माण तथा पुर्नस्थापना आयोजना (RRRSDP) अन्तरगत एशियाली विकास बैंक, डिफिड तथा स्वीस सरकार विकास नियोगको अनुदान सहयोग तथा ओफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राही समेतको लगानीमा निर्माण गर्न प्रस्ताव गरिएको सुनखानी–क्यान्पा सडक आयोजनाको प्रारम्भिक वातावरणीय परिक्षण प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमावली २०५४ (पहिलो संसोधन, २०५५) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम: जिल्ला विकास समिति,जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, दोलखा

प्रस्तावित सडकले प्रभाव पार्ने गा.वि.स.हरु: सुनखानी, लापिलाङ, लामीडाँडा, बाबरे र कालिन्चोक गा.वि.स.हरु

प्रस्तावको विवरण: प्रस्तावित सुनखानी–क्यान्पा सडक आयोजना सुनखानी गा.वि.स. को भदौरेबाट शुरु भई कालिन्चोक गा.वि.स.को क्यान्पामा टुंगिन्छ । यो सडक भदौरे, पाटागाउँ, गोदुङ, गुजेरपा, कुरावली, लापीलाङ, लकाईगाउँ, लामिडाँडा, गुमु,ध्याङ, धारापानी, डाँडागाउँ, कुसाती, डम्पा, कुतिस्याङ, दुवापा बस्तीहरु भएर जान्छ । यस सडकको जम्मा लम्बाई २७ कि.मि. रहेको छ र यसलाई स्तरोन्नति गर्नका लागि प्रस्ताव गरिएको छ ।

प्रस्तावकको कार्यान्वयन बाट वातावरणमा पर्न सक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना गोरखापत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । साथै यसै बमोजिमको राय सुझाव स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग, जावलाखेल, ललितपुर तथा स्थानीय विकास मन्त्रालय श्रीमहल, पुल्चोक, ललितपुरमा पनि पठाउन सकिनेछ ।

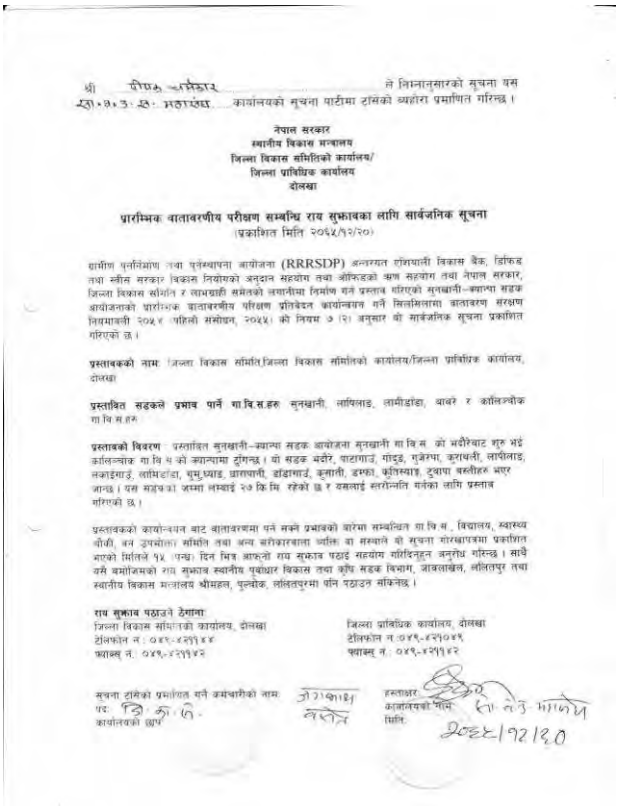
राय सुझाव पठाउने ठेगाना:

जिल्ला विकास समितिको कार्यालय, दोलखा
टेलिफोन नं.: ०४९-४२११४४
फ्याक्स नं.: ०४९-४२११४२

जिल्ला प्राविधिक कार्यालय, दोलखा
टेलिफोन नं.:०४९-४२१०४९
फ्याक्स नं.: ०४९-४२११४२

सूचना टाँसेको प्रमाणित गर्ने कर्मचारीको नाम:
पद:
कार्यालयको छाप:

हस्ताक्षर:
कार्यालयको नाम:
मिति:



श्री दीपक भण्डारी ले निम्नानुसारको सूचना यस
दो.वि.स. मलपोस कार्यालयको सूचना पाटीमा टाँसेको व्यहोरा प्रमाणित गरिन्छ ।

नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय/
जिल्ला प्राविधिक कार्यालय
दोलखा

प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना
(प्रकाशित मिति २०६५/१२/२०)

ग्रामीण पुर्नर्निर्माण तथा पुर्नस्थापना आयोजना (RRRSDP) अन्तरगत एशियाली विकास बैंक, हिफिड तथा स्वीस सरकार विकास निर्योगको अनुदान सहयोग तथा ओफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राही समेतको लगानीमा निर्माण गर्ने प्रस्ताव गरिएको सुनखानी–क्याम्पा सडक आयोजनाको प्रारम्भिक वातावरणीय परिक्षण प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमावली २०५४ (पहिलो संसोधन, २०५५) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम: जिल्ला विकास समिति,जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, दोलखा

प्रस्तावित सडकले प्रभाव पार्ने गा.वि.स.हरु: सुनखानी, लापिलाङ, लामीडाँडा, बावरे र कालिन्चोक गा.वि.स.हरु

प्रस्तावको विवरण : प्रस्तावित सुनखानी–क्याम्पा सडक आयोजना सुनखानी गा.वि.स. को भदौरेघाट शुरु भई कालिन्चोक गा.वि.स.को क्याम्पामा टुगिन्छ । यो सडक भदौरे, पाटागाउँ, गोदुङ, गुजेरपा, कुरापानी, लापिलाङ, लकाईगाउँ, लामिडाँडा, गुमु,घ्याङ, धारापानी, डाँडागाउँ, कुसाती, डम्का, कुतिस्याङ, टुवापा बस्तीहरु भएर जान्छ । यस सडकको जम्मा लम्बाई २७ कि.मि. रहेको छ र यसलाई स्तरोन्नति गर्नेका लागि प्रस्ताव गरिएको छ ।

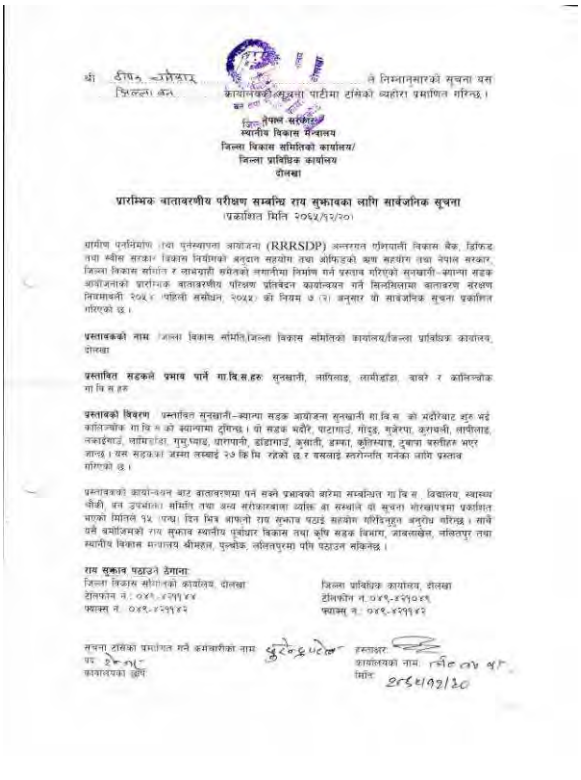
प्रस्तावकको कार्योन्वयन बाट वातावरणमा पर्न सक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना सोरखापत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । सार्वै पर्ने कमीजिमको राय सुझाव स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग, जावलाखेल, ललितपुर तथा स्थानीय विकास मन्त्रालय श्रीमहल, पुल्चोक, ललितपुरमा पनि पठाउन सकिनेछ ।

राय सुझाव पठाउने ठेगाना:
जिल्ला विकास समितिको कार्यालय, दोलखा
टेलिफोन नं.: ०४९-४२१४४
फ्याक्स नं.: ०४९-४२१४२

जिल्ला प्राविधिक कार्यालय, दोलखा
टेलिफोन नं.०४९-४२१०४९
फ्याक्स नं.: ०४९-४२१४२

सूचना टाँसेको प्रमाणित गर्ने कर्मचारीको नाम: जोगबाहादुर बस्नेत
पद: डि.का.नि.
कार्यालयको छाप:

हस्ताक्षर:
कार्यालयको नाम: दो.वि.स. मलपोस
मिति: २०६५/१२/२०



श्री ठोप्ने जोरेपाटी ले निम्नानुसारको सूचना यस
दि.वि.स. कार्यालयको सूचना पाटीमा टाँसेको व्यहोरा प्रमाणित गरिन्छ ।

नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय/
जिल्ला प्राविधिक कार्यालय
दोलखा

प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना
(प्रकाशित मिति २०६५/१२/२०)

ग्रामीण पुर्नर्निर्माण तथा पुर्नस्थापना आयोजना (RRRSDP) अन्तरगत एशियाली विकास बैंक, हिफिड तथा स्वीस सरकार विकास निर्योगको अनुदान सहयोग तथा ओफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राही समेतको लगानीमा निर्माण गर्ने प्रस्ताव गरिएको सुनखानी–क्याम्पा सडक आयोजनाको प्रारम्भिक वातावरणीय परिक्षण प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमावली २०५४ (पहिलो संसोधन, २०५५) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम: जिल्ला विकास समिति,जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, दोलखा

प्रस्तावित सडकले प्रभाव पार्ने गा.वि.स.हरु: सुनखानी, लापिलाङ, लामीडाँडा, बावरे र कालिन्चोक गा.वि.स.हरु

प्रस्तावको विवरण : प्रस्तावित सुनखानी–क्याम्पा सडक आयोजना सुनखानी गा.वि.स. को भदौरेघाट शुरु भई कालिन्चोक गा.वि.स.को क्याम्पामा टुगिन्छ । यो सडक भदौरे, पाटागाउँ, गोदुङ, गुजेरपा, कुरापानी, लापिलाङ, लकाईगाउँ, लामिडाँडा, गुमु,घ्याङ, धारापानी, डाँडागाउँ, कुसाती, डम्का, कुतिस्याङ, टुवापा बस्तीहरु भएर जान्छ । यस सडकको जम्मा लम्बाई २७ कि.मि. रहेको छ र यसलाई स्तरोन्नति गर्नेका लागि प्रस्ताव गरिएको छ ।

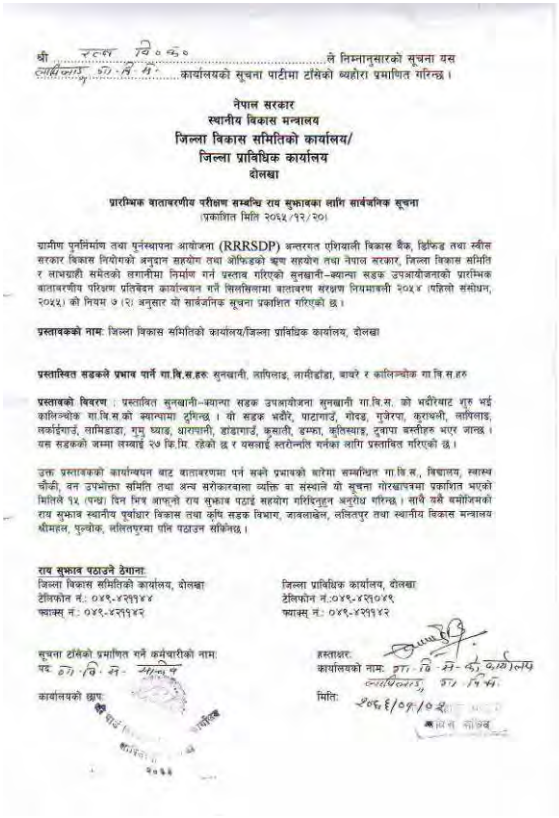
प्रस्तावकको कार्योन्वयन बाट वातावरणमा पर्न सक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना सोरखापत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । सार्वै पर्ने कमीजिमको राय सुझाव स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग, जावलाखेल, ललितपुर तथा स्थानीय विकास मन्त्रालय श्रीमहल, पुल्चोक, ललितपुरमा पनि पठाउन सकिनेछ ।

राय सुझाव पठाउने ठेगाना:
जिल्ला विकास समितिको कार्यालय, दोलखा
टेलिफोन नं.: ०४९-४२१४४
फ्याक्स नं.: ०४९-४२१४२

जिल्ला प्राविधिक कार्यालय, दोलखा
टेलिफोन नं.०४९-४२१०४९
फ्याक्स नं.: ०४९-४२१४२

सूचना टाँसेको प्रमाणित गर्ने कर्मचारीको नाम: सुरेन्द्र पोतेल
पद: इन्जि.
कार्यालयको छाप:

हस्ताक्षर:
कार्यालयको नाम: दि.वि.स. दोलखा
मिति: २०६५/१२/२०



श्री रहन वि.क.ले निम्नानुसारको सूचना यस
लापिलाङ गा.वि.स. कार्यालयको सूचना पाटीमा टाँसेको व्यहोरा प्रमाणित गरिन्छ ।

नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय/
जिल्ला प्राविधिक कार्यालय
दोलखा

प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना
(प्रकाशित मिति २०६५/१२/२०)

ग्रामीण पुर्नर्निर्माण तथा पुर्नस्थापना आयोजना (RRRSDP) अन्तरगत एशियाली विकास बैंक, हिफिड तथा स्वीस सरकार विकास निर्योगको अनुदान सहयोग तथा ओफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राही समेतको लगानीमा निर्माण गर्ने प्रस्ताव गरिएको सुनखानी–क्याम्पा सडक उपआयोजनाको प्रारम्भिक वातावरणीय परिक्षण प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमावली २०५४ (पहिलो संसोधन, २०५५) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम: जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, दोलखा

प्रस्तावित सडकले प्रभाव पार्ने गा.वि.स.हरु: सुनखानी, लापिलाङ, लामीडाँडा, बावरे र कालिन्चोक गा.वि.स.हरु

प्रस्तावको विवरण : प्रस्तावित सुनखानी–क्याम्पा सडक उपआयोजना सुनखानी गा.वि.स. को भदौरेघाट शुरु भई कालिन्चोक गा.वि.स.को क्याम्पामा टुगिन्छ । यो सडक भदौरे, पाटागाउँ, गोदुङ, गुजेरपा, कुरापानी, लापिलाङ, लकाईगाउँ, लामिडाँडा, गुमु,घ्याङ, धारापानी, डाँडागाउँ, कुसाती, डम्का, कुतिस्याङ, टुवापा बस्तीहरु भएर जान्छ । यस सडकको जम्मा लम्बाई २७ कि.मि. रहेको छ र यसलाई स्तरोन्नति गर्नेका लागि प्रस्तावित गरिएको छ ।

उक्त प्रस्तावकको कार्यान्वयन बाट वातावरणमा पर्न सक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना सोरखापत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । साथै यसै कमीजिमको राय सुझाव स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग, जावलाखेल, ललितपुर तथा स्थानीय विकास मन्त्रालय श्रीमहल, पुल्चोक, ललितपुरमा पनि पठाउन सकिनेछ ।

राय सुझाव पठाउने ठेगाना:
जिल्ला विकास समितिको कार्यालय, दोलखा
टेलिफोन नं.: ०४९-४२१४४
फ्याक्स नं.: ०४९-४२१४२

जिल्ला प्राविधिक कार्यालय, दोलखा
टेलिफोन नं.०४९-४२१०४९
फ्याक्स नं.: ०४९-४२१४२

सूचना टाँसेको प्रमाणित गर्ने कर्मचारीको नाम: दो.वि.स. कार्यालय लापिलाङ
पद: दो.वि.स. सचिव
कार्यालयको छाप:

हस्ताक्षर:
कार्यालयको नाम: दो.वि.स. कार्यालय लापिलाङ
मिति: २०६१/०१/०२

श्री रहन वि.क. ले निम्नानुसारको सूचना यस
श्री भालपे नि.प्रा.वि.स.लामीडाँडा कार्यालयको सूचना पाटीमा टाँसेको व्यहोरा प्रमाणित गरिन्छ ।

नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय/
जिल्ला प्राविधिक कार्यालय
दोलखा

प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना
(प्रकाशित मिति २०६५/१२/२०)

ग्रामीण पुर्नर्निर्माण तथा पुर्नस्थापना आयोजना (RRRSDP) अन्तरगत एशियाली विकास बैंक, हिफिड तथा स्वीस सरकार विकास निर्योगको अनुदान सहयोग तथा ओफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राही समेतको लगानीमा निर्माण गर्ने प्रस्ताव गरिएको सुनखानी–क्याम्पा सडक आयोजनाको प्रारम्भिक वातावरणीय परिक्षण प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमावली २०५४ (पहिलो संसोधन, २०५५) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम: जिल्ला विकास समिति,जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, दोलखा

प्रस्तावित सडकले प्रभाव पार्ने गा.वि.स.हरु: सुनखानी, लापिलाङ, लामीडाँडा, बावरे र कालिन्चोक गा.वि.स.हरु

प्रस्तावको विवरण : प्रस्तावित सुनखानी–क्याम्पा सडक आयोजना सुनखानी गा.वि.स. को भदौरेघाट शुरु भई कालिन्चोक गा.वि.स.को क्याम्पामा टुगिन्छ । यो सडक भदौरे, पाटागाउँ, गोदुङ, गुजेरपा, कुरापानी, लापिलाङ, लकाईगाउँ, लामिडाँडा, गुमु,घ्याङ, धारापानी, डाँडागाउँ, कुसाती, डम्का, कुतिस्याङ, टुवापा बस्तीहरु भएर जान्छ । यस सडकको जम्मा लम्बाई २७ कि.मि. रहेको छ र यसलाई स्तरोन्नति गर्नेका लागि प्रस्ताव गरिएको छ ।

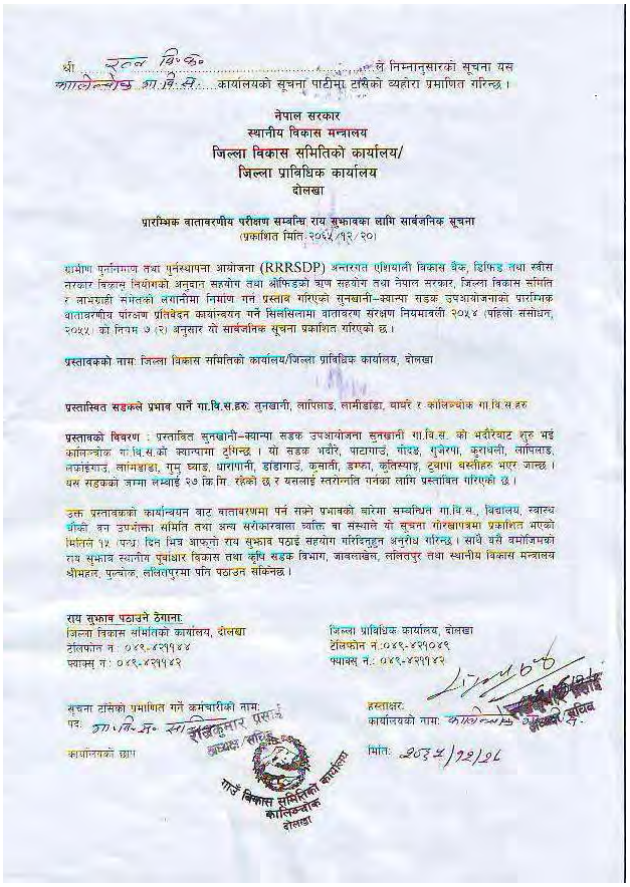
प्रस्तावकको कार्योन्वयन बाट वातावरणमा पर्न सक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना सोरखापत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । साथै यसै कमीजिमको राय सुझाव स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग, जावलाखेल, ललितपुर तथा स्थानीय विकास मन्त्रालय श्रीमहल, पुल्चोक, ललितपुरमा पनि पठाउन सकिनेछ ।

राय सुझाव पठाउने ठेगाना:
जिल्ला विकास समितिको कार्यालय, दोलखा
टेलिफोन नं.: ०४९-४२१४४
फ्याक्स नं.: ०४९-४२१४२

जिल्ला प्राविधिक कार्यालय, दोलखा
टेलिफोन नं.०४९-४२१०४९
फ्याक्स नं.: ०४९-४२१४२

सूचना टाँसेको प्रमाणित गर्ने कर्मचारीको नाम: ठेप्रुण सर्पिता
पद: प्रशा.सहायक
कार्यालयको छाप:

हस्ताक्षर:
कार्यालयको नाम: श्री भालपे नि.प्रा.वि.स.लामीडाँडा
मिति: २०६५-१-१७



श्री २८८ वि०क०
मालेश्वोष गा.वि.स. कार्यालयको सूचना पाटीमा टाँसेको व्यहोरा प्रमाणित गरिन्छ ।

नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय/
जिल्ला प्राविधिक कार्यालय
दोलखा

प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना
(प्रकाशित मिति: २०६५/१२/२०)

ग्रामीण पुर्ननिर्माण तथा पुर्नस्थापना आयोजना (RRRSDP) अन्तरगत एशियाली विकास बैंक, डिफिड तथा स्वीस सरकार विकास निधीशको अनुदान सहयोग तथा ओफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राही समेतको लगानीमा निर्माण गर्न प्रस्ताव गरिएको सुनखानी–क्याम्पा सडक उपआयोजनाको प्रारम्भिक वातावरणीय परिक्षण प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमावली २०५४ (पहिलो संसोधन, २०५५) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम: जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, दोलखा

प्रस्तावित सडकले प्रभाव पार्ने गा.वि.स.हरु: सुनखानी, लापिलाड, लामीडाँडा, बायरे र कालिञ्चोक गा.वि.स.हरु

प्रस्तावको विवरण : प्रस्तावित सुनखानी–क्याम्पा सडक उपआयोजना सुनखानी गा.वि.स. को भदौरेघाट शुरु भई कालिञ्चोक गा.वि.स.को क्याम्पामा टुगिन्छ । यो सडक भदौरे, पाटागाउँ, गोदड, गुजेरपा, कुरायली, लापिलाड, लफाईगाउँ, लामीडाँडा, गुप्त घ्याङ, धारापानी, डाँडागाउँ, कुवाती, डम्फा, कुलिस्याङ, टुवाणा बस्तीहरु भएर जान्छ । यस सडकको जम्मा लम्बाई २७ कि.मि. रहेको छ र यसलाई स्तरोन्नति गर्नका लागि प्रस्तावित गरिएको छ ।

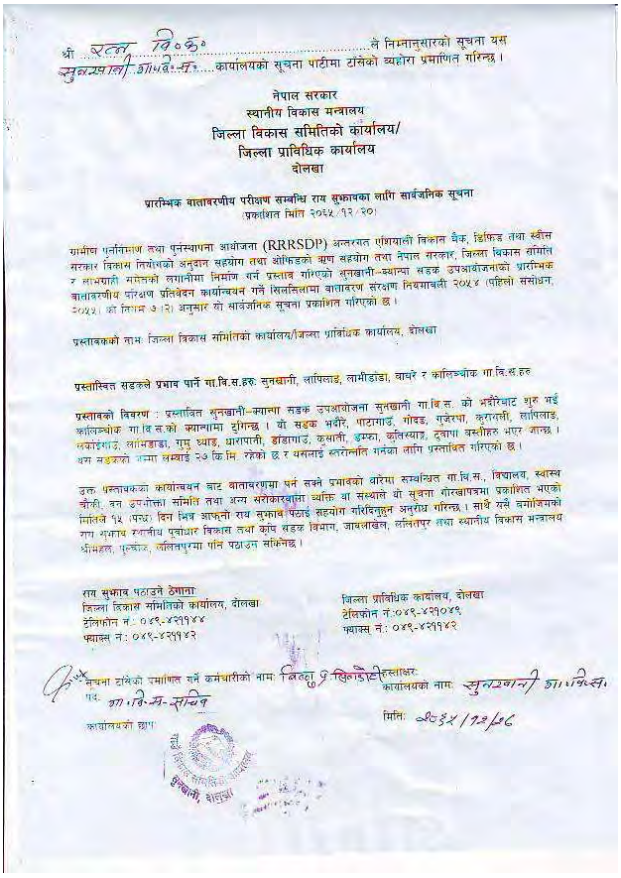
उक्त प्रस्तावकका कार्यान्वयन बाट वातावरणमा पर्न सक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना गोरखापत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । साथै यसै वमोजिमको राय सुझाव स्थानीय पुवाधार विकास तथा कृषि सडक विभाग, जावलाखेल, ललितपुर तथा स्थानीय विकास मन्त्रालय श्रीमहल, पुल्चोक, ललितपुरमा पनि पठाउन सकिनेछ ।

राय सुझाव पठाउने ठेगाना:
जिल्ला विकास समितिको कार्यालय, दोलखा
टेलिफोन नं: ०४९-४२१४४
फ्याक्स नं: ०४९-४२१४२

जिल्ला प्राविधिक कार्यालय, दोलखा
टेलिफोन नं:०४९-४२१०४९
फ्याक्स नं: ०४९-४२१४२

सूचना टाँसेको प्रमाणित गर्ने कर्मचारीको नाम:
पद: गा.वि.स. सचिव
कार्यालयको छाप:

हस्ताक्षर:
कार्यालयको नाम:
मिति: २०६५/१२/२८



श्री २८८ वि०क०
सुनखानी गा.वि.स. कार्यालयको सूचना पाटीमा टाँसेको व्यहोरा प्रमाणित गरिन्छ ।

नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय/
जिल्ला प्राविधिक कार्यालय
दोलखा

प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना
(प्रकाशित मिति २०६५/१२/२०)

ग्रामीण पुर्ननिर्माण तथा पुर्नस्थापना आयोजना (RRRSDP) अन्तरगत एशियाली विकास बैंक, डिफिड तथा स्वीस सरकार विकास निधीशको अनुदान सहयोग तथा ओफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राही समेतको लगानीमा निर्माण गर्न प्रस्ताव गरिएको सुनखानी–क्याम्पा सडक उपआयोजनाको प्रारम्भिक वातावरणीय परिक्षण प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमावली २०५४ (पहिलो संसोधन, २०५५) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम: जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, दोलखा

प्रस्तावित सडकले प्रभाव पार्ने गा.वि.स.हरु: सुनखानी, लापिलाड, लामीडाँडा, बायरे र कालिञ्चोक गा.वि.स.हरु

प्रस्तावको विवरण : प्रस्तावित सुनखानी–क्याम्पा सडक उपआयोजना सुनखानी गा.वि.स. को भदौरेघाट शुरु भई कालिञ्चोक गा.वि.स.को क्याम्पामा टुगिन्छ । यो सडक भदौरे, पाटागाउँ, गोदड, गुजेरपा, कुरायली, लापिलाड, लफाईगाउँ, लामीडाँडा, गुप्त घ्याङ, धारापानी, डाँडागाउँ, कुवाती, डम्फा, कुलिस्याङ, टुवाणा बस्तीहरु भएर जान्छ । यस सडकको जम्मा लम्बाई २७ कि.मि. रहेको छ र यसलाई स्तरोन्नति गर्नका लागि प्रस्तावित गरिएको छ ।

उक्त प्रस्तावकका कार्यान्वयन बाट वातावरणमा पर्न सक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना गोरखापत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । साथै यसै वमोजिमको राय सुझाव स्थानीय पुवाधार विकास तथा कृषि सडक विभाग, जावलाखेल, ललितपुर तथा स्थानीय विकास मन्त्रालय श्रीमहल, पुल्चोक, ललितपुरमा पनि पठाउन सकिनेछ ।

राय सुझाव पठाउने ठेगाना:
जिल्ला विकास समितिको कार्यालय, दोलखा
टेलिफोन नं: ०४९-४२१४४
फ्याक्स नं: ०४९-४२१४२

जिल्ला प्राविधिक कार्यालय, दोलखा
टेलिफोन नं:०४९-४२१०४९
फ्याक्स नं: ०४९-४२१४२

सूचना टाँसेको प्रमाणित गर्ने कर्मचारीको नाम: लिलु प्र खिलेछो हस्ताक्षर:
पद: गा.वि.स. सचिव
कार्यालयको छाप:

कार्यालयको नाम: सुनखानी गा.वि.स.
मिति: २०६५/१२/२८

A Sample of Deed of inquiry

This is to certify that District Project Office, Dolakha has affixed the following notice in the notice board of Sunkhani VDC, Dolakha

Government of Nepal
Office of District Development Committee,
Charikot Dolakha

Public notice for comments and suggestion on the Initial Environmental Examination

(Date of first publication: 2 April 2009)

An Initial Environmental Examination (IEE) report is under preparation for the implementation of Sunkhani-Kyanpa road sub-project in Sunkhani, Lapilang, Lamidada, Babare and Kalinchowk VDCs of Dolakha district by Rural Reconstruction and Rehabilitation Sector Development Programme (RRRSDP). In accordance with the provision of the Rule 7 (2) of the Environment Protection Rules 1997, this public notice has been published to solicit comments and suggestions, in writing, about the impacts of the sub-project on the environment and local people within 15 days from the first date of its publication in Gorkhapatra, national daily newspaper in the following address. Comments and suggestions may be sent to Department of Local Infrastructure Development and Agricultural Roads, Jawalakhel and Ministry of Local Development, Pulchowk, Lalitpur.

Address:
Office of District Development Committee, Dolakha
Address: Charikot, Dolakha
Telephone No: 049-421144/049-421049

Fax No. 049-421142

District Technical Office,
Address: Charikot, Dolakha

Telephone No: 049-421144/049-421049

Fax No. 049-421142

Name of person certifying the affix of notice:
Designation: Technical Assistant
Office: Village Development Committee, Charikot, Dolakha
Office Seal (stamp):

Appendix 8 Name of organization contacted

Name of the Organizations (notice pasted and deed of inquiry obtained)

SN	Name or Organization	Address	Remarks
1.	Bhagwati Lower Secondary School	Lamidanda-7,Dolakha	
2.	Office of Village Development Committee	Lapilang, Dolakha	
3.	Office of Village Development Committee	Lamidanda, Dolakha	
4.	Office of Village Development Committee	Sunkhani, Dolakha	
5.	Office of Village Development Committee	Babare, Dolakha	
6.	Office of Village Development Committee	Kalinchowk, Dolakha	
7.	District Forest Office	Charikot, Dolakha	
8.	Lapilang Secondary School	Lapilang, Dolakha	
9.	Primary Health Center	Charikot, Dolakha	
10.	Federation of Community Forestry Users Nepal (FECOFUN)	Charikot, Dolakha	

Source: Field Survey, 2009

Appendix 9 List of Persons Contacted

SN	Name	Designation	Address
1.	Shankar Bahadur Thapa	LDO	DDC, Charikot,Dolakha
2.	Rameswar Marahatta	DE	DTO, Charikot,Dolakha
3.	Rajendra KC	DTO-Engineer	DTO Charikot,Dolakha
4.	Shreelal Baral	Horti. Dev. Officer	D ADO, Dolakha
5.	Sher Bahadur Shrestha	Asst.Soil Cons.Officer	DSCO, Dolakha
6.	Durga Bahadur Shrestha	JTA	DSCO, Dolakha
7.	Yugal Kishor Lal	Assistant District Forest Officer	District Forest Office, Dolakha
8.	Usha Dahal	District Coordinator	NSCFP,,Dolakha
9.	Bed Prasad Khatiwada	Headmaster	Bhagwati Lower Secondary School Lamidanda-7, Dolakha.
10.	Chitra Bahadur Bhandari	Secratary	Office of VDC,Lapilang,Dolakha.
11.	Bhanubhakta Achraya	Chairperson	Office of VDC, Lamidanda,Dolakha.
12.	Bishnu Prasad Siwakoti	Chairperson	Office of VDC Sunkhani, Dolakha.
13.	Ramkumar Khatiwada	Chairperson	Office of VDC, Kalinchowk.
14.	Nil Bahadur Achary	Agriculture	Sunkhani-9,Dolakha
15.	Devendra Khadka	Business	Sunkhani-9,Dolakha
16.	Krishana Bdr.Basnet	Business	Sunkhani-9,Dolakha
17.	Bimala Acharya	Teacher	Sunkhani-9,Dolakha
18.	Dabal Thapa	Teacher	Lapilang-8,Dolakha
19.	Chbilal B.K	Agriculture	Sunkhani-9,Dolakha
20.	Nayan Bahadur Basnet	Agriculture	Lapilang-9,Dolakha
21.	Lal bahadure Siwakoti	Agriculture	Lapilang-9,Dolakha
22.	Bir Bahadur Thakur	Agriculture	Lapilang-9,Dolakha
23.	Arjun Khatri	Agriculture	Lapilang-9,Dolakha
24.	Chitra Bdr.Thami	Student	Lapilang-4,Dolakha
25.	Tilak Bdr.Shrestha	Agriculture	Lapilang-4,Dolakha
26.	Thakur Bdr.Thami	Agriculture	Lapilang-4,Dolakha
27.	Surya pradip Lama	Agriculture	Lamidanda
28.	Yam bahadur Karki	Agriculture	Lamidanda
29.	Kumar aryal	Agriculture	Lamidanda
30.	Prithivi Bahadur Pandey	Agriculture	Babare
31.	Ganga Bahadur Nepali	Agriculture	Babare
32.	Padma Kumari Pandey	Agriculture	Babare

Source: Field Survey, 2009

Appendix 10 Summary of meeting minutes with local people

मिति:

ग्रामीण पुनर्निर्माण तथा पुर्नस्थापना कार्यक्रम (RRRSDP) अन्तर्गत दोलखा जिल्लामा पर्ने सुनखानि-क्यानपोल सडक उपआयोजना को प्रारम्भिक वातावरणीय परीक्षण (IEE) अध्ययनको सिलसिलामा आयोजना प्रभावित क्षेत्रभित्र पर्ने सुनखानी गा.वि.स.को बस्ती नजिकै (कसिगाउँ)मा स्थानीय बासिन्दाहरुको उपस्थितिमा सडक आयोजनाको निर्माण तथा संचालनका क्रममा पर्न सक्ने वातावरणीय असरहरुका बारेमा राय, सुझावहरु लिने तथा सडक निर्माण तथा संचालनका क्रममा ध्यान दिनु पर्ने विषयहरुका बारेमा छलफल गर्ने कार्य सम्पन्न भयो।

उपस्थिति:

	नाम, थर	पेशा	ठेगाना	हस्ताक्षर
१.	तिल ब. आचार्य	कृषि	सुनखानी-९	
२.	देवेन्द्र खड्का	होटेल व्यवसाय	सुनखानी-९	
३.	कृष्ण ब. बस्नेत	व्यापार	सुनखानी-९	
४.	ध्रुव थापा	व्यापार	सुनखानी-९	
५.	विमला आचार्य	शिक्षक	सुनखानी-९	
६.	डवल थापा	शिक्षक	लापिलाङ-८	
७.	गणेश ब. कार्की	शिक्षक	लापिलाङ-८	
८.	छविलाल वि.क.	कृषि	सुनखानी-९	
९.	रमेश शिवाकोटी	विद्यार्थी	सुनखानी-५	

राय, सुझाव, प्रतिक्रियाहरु

१. ०+२०० मीटरमा सडकदेखि ६ मीटर तल पर्ने देवीको मन्दिरमा पुरिन वा भत्किन सक्ने हुनाले सडक निर्माणका क्रममा उक्त कुरालाई ध्यान दिने।

२. ०+३०० मीटरमा सडकको भित्तामा रहेको खानेपानीको मूल पुरिन सक्ने, उचित निकासको अभावमा पहिरो जाने सक्ने भएकोले स्रोतको संरक्षणका लागि आवश्यक उपाय अपनाउने।

३. ०+००० मा पर्ने बुढी खोल्सीको पानी विशेष गरी वर्षायाममा जम्मा भएर तल्लो भेगको खेतबारी, घरहरुलाई असर पर्न सक्ने भएकोले पानी निकासको उचित प्रबन्ध मिलाइदिने।

४. स्थानीय बासिन्दाहरुलाई तरकारी, फलफूल, नगदे बालीको खेती गर्नलाई प्रोत्साहित गर्ने, तालिमहरु दिने, आवश्यक सामग्रीहरु सहज रुपमा उपलब्ध गराउने तथा कृषि उत्पादनको बजार व्यवस्थापन गर्न सहयोग पुर्‍याउने।

मिति:

ग्रामीण पुनर्निर्माण तथा पुर्नस्थापना कार्यक्रम (RRRSDP) अन्तर्गत दोलखा जिल्लामा पर्ने सुनखानी-क्यानपोल सडक उप-आयोजना को प्रारम्भिक वातावरणीय परीक्षण अध्ययन (IEE)को सिलसिलामा आयोजना प्रभावित क्षेत्रभित्र पर्ने लापिलाङ गा.वि.स. वडा नं. ९, पाटागाउँमा स्थानीय बासिन्दाहरुको उपस्थितिमा सडक आयोजनाले यसको निर्माण तथा संचालन चरणमा पर्न सक्ने सकरात्मक तथा नकरात्मक प्रभावहरुका बारेमा छलफल गर्दै सकरात्मक प्रभाव अभिवृद्धि गर्दै नकरात्मक प्रभावहरु न्यूनीकरण गर्नका लागि अपनाउनुपर्ने उपायहरुका बारेमा राय, सुझाव प्रतिक्रियाहरु संकलन गर्ने कार्य सम्पन्न भयो।

उपस्थिति:

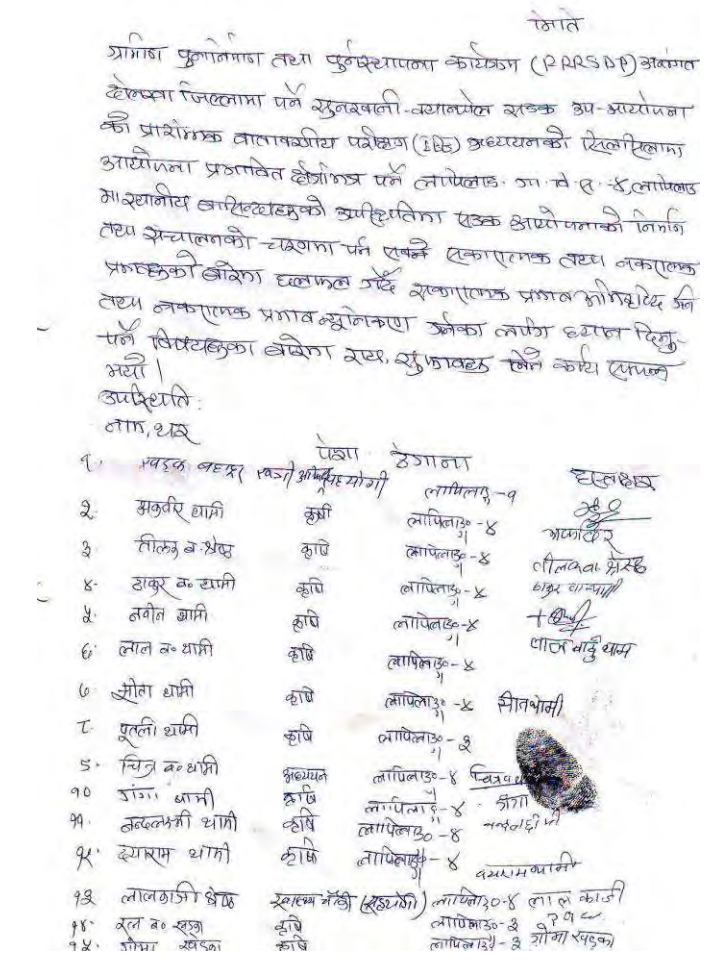
	नाम, थर	पेशा	ठेगाना	हस्ताक्षर
१.	छत्र ब. शाही	कृषि	लापिलाङ-९	
२.	नयन ब. बस्नेत	कृषि	,, ,,	
३.	लालि ब. शिवाकोटी	,,	,, ,,	
४.	पदम ब. शिवाकोटी	,,	,, ,,	
५.	वीर ब. ठकुरी	,,	,, ,,	
६.	दुर्गा ब. शाही	,,	,, ,,	
७.	शिवजी ठकुरी	,,	,,	
८.	चेत ब. खत्री	,,	,,	
९.	चण्डिका बस्नेत	,,	,,	
१०.	गणेश कुमारी खत्री	,,	,,	
११.	विष्णु माया बस्नेत	,,	,,	
१२.	अर्जुन खत्री			

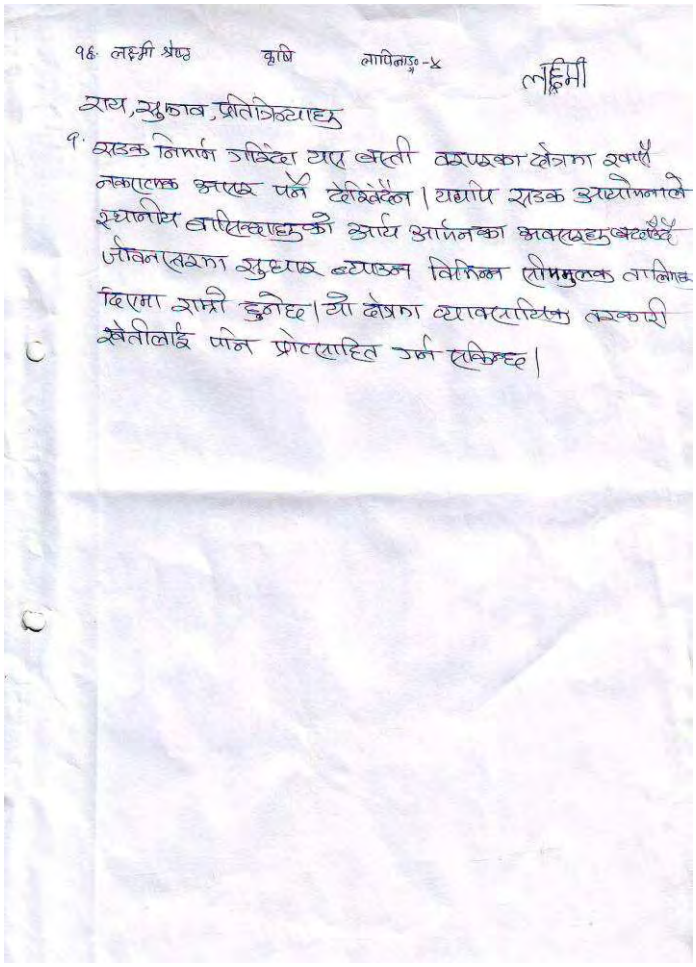
राय, सुझाव, प्रतिक्रियाहरु

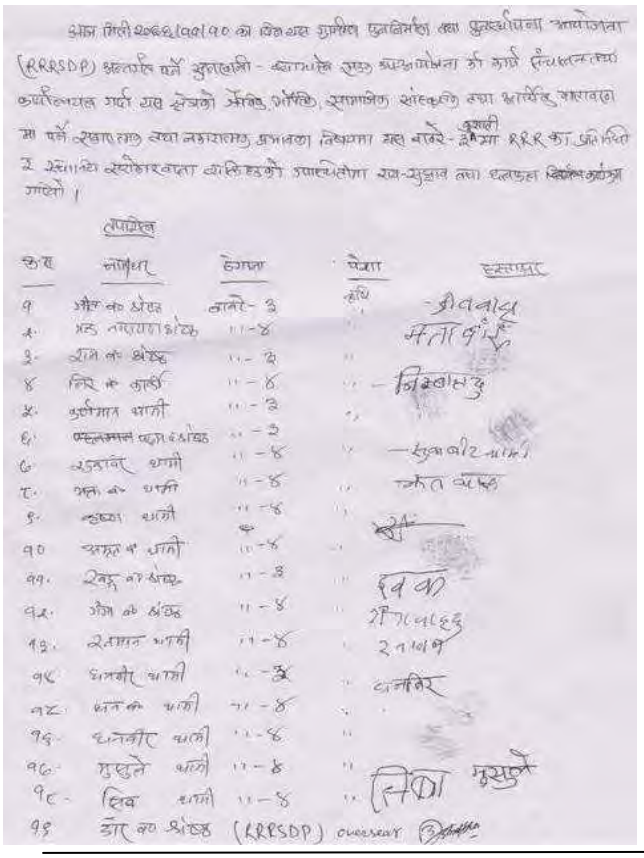
१. ३+२०० मा पर्ने शिवालय मन्दिर, देवी मन्दिर तथा पाटीसडक छेउमा पर्ने भएको र सडक निर्माणका क्रममा असर पर्न सक्ने भएकोले त्यसको संरक्षणको लागि आवश्यक उपायहरु अपनाउने।

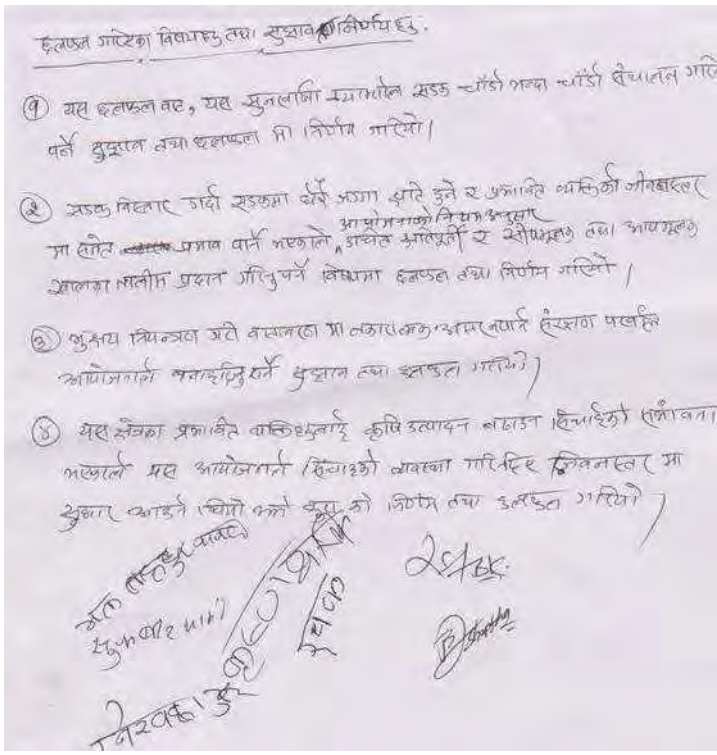
२. सोहि स्थानमा भएको खानेपानी रिजर्भ ट्याङ्की विस्थापित हुने भएकोले त्यसको पुर्नस्थापना गरिदिनुपर्ने।

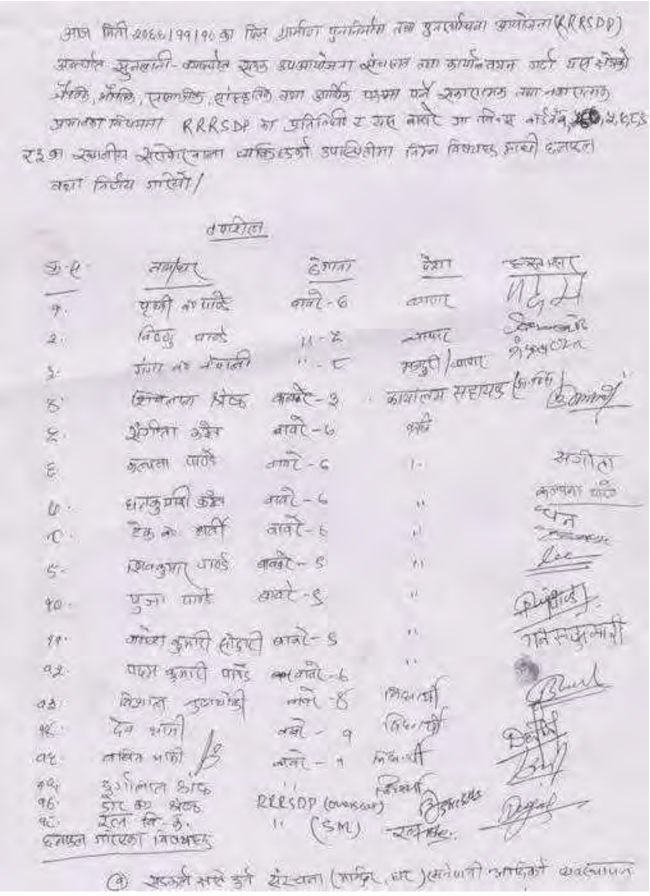
३. सडक निर्माणका क्रममा पहिरो/भूक्षय हुन सक्ने संभावित स्थान हरुमा आवश्यक सुरक्षाका उपायहरु अपनाई बालिका तथा सार्वजनिक सम्पत्तिको नोक्सान हुनबाट जोगाउने।











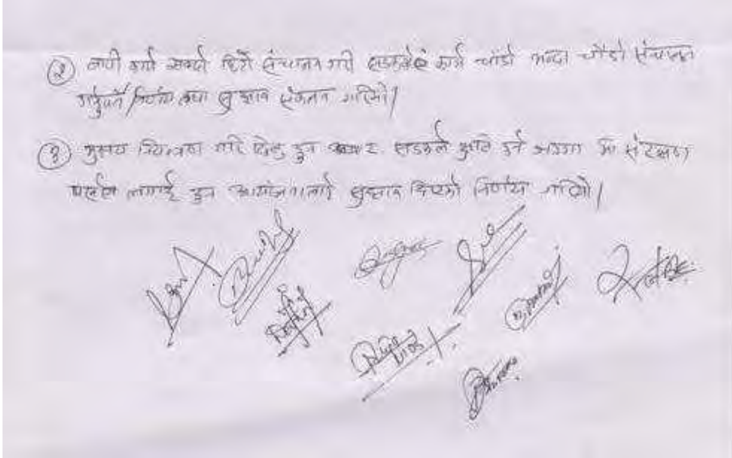
आज मिति २०६६।११।१७ का दिन ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना (RRRSDP) अन्तर्गत सुनखानी-क्यान्पा सडक उपआयोजना संचालन तथा कार्यान्वयन गर्दा यस क्षेत्रको भौतिक, जैविक, सामाजिक, सांस्कृतिक तथा आर्थिक पक्षमा पर्ने सकारात्मक तथा नकारात्मक प्रभावका विषयमा RRRSDP का प्रतिनिधि र यस वडा नं. [illegible] का स्थानीय सरोकारवाला व्यक्तिहरूको उपस्थितिमा निम्न विषयहरू माथि छलफल तथा निर्णय गरियो।

तपसिल

क्र.सं.	नाम/थर	ठेगाना	पेशा	दस्तखत
१.	पृथ्वी [illegible]	वडा-६	व्यापार	[illegible]
२.	[illegible]	" -६	व्यापार	[illegible]
३.	[illegible]	" -८	मजदुरी/व्यापार	[illegible]
४.	[illegible]	वडा-३	कार्यालय सहायक	[illegible]
५.	[illegible]	वडा-६	कृषि	[illegible]
६.	[illegible]	वडा-६	"	अनीता
७.	[illegible]	वडा-६	"	[illegible]
८.	[illegible]	वडा-६	"	[illegible]
९.	[illegible]	वडा-५	"	[illegible]
१०.	[illegible]	वडा-५	"	[illegible]
११.	[illegible]	वडा-५	"	[illegible]
१२.	[illegible]	वडा-६	"	[illegible]
१३.	[illegible]	वडा-८	विद्यार्थी	[illegible]
१४.	[illegible]	वडा-९	विद्यार्थी	[illegible]
१५.	[illegible]	वडा-९	विद्यार्थी	[illegible]
१६.	[illegible]			[illegible]
१७.	[illegible]	RRRSDP (overseer)		[illegible]
१८.	[illegible]	" (SM)		[illegible]

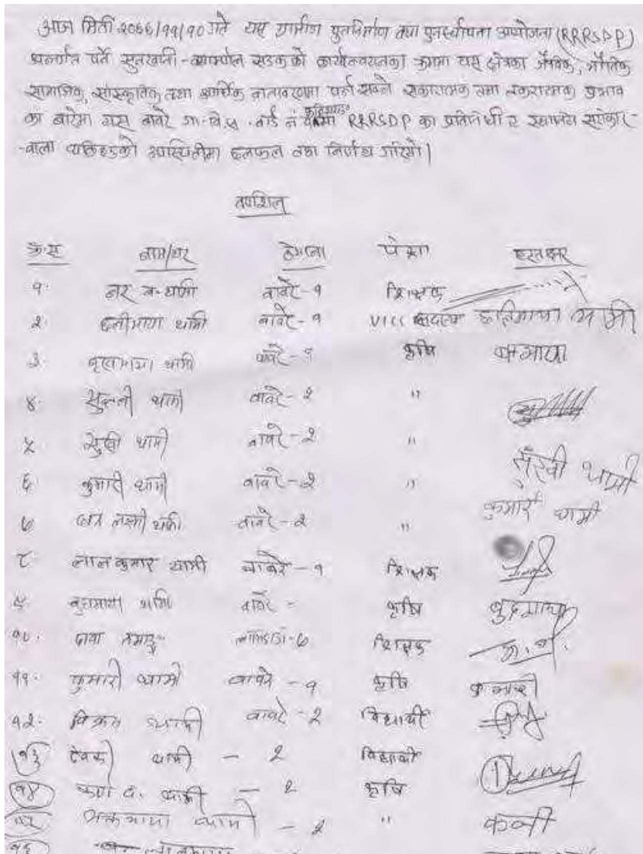
छलफल गरिएका विषयहरू

(१) सडकले असर गर्ने संरचना (मन्दिर, घर) लाई आर्थिक [illegible]



(२) [illegible] संचालन गर्दा [illegible] सुझाव संकलन गरियो।

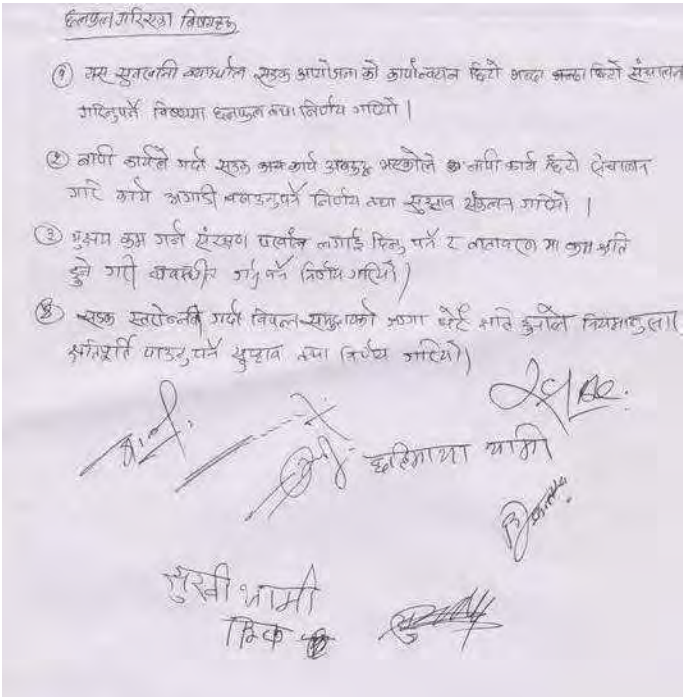
(३) [illegible] निर्णय गरियो।



आज मिति २०६६।११।१० गते यस ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना (RRRSDP) अन्तर्गत पर्ने सुनखानी-क्यान्पा सडकको कार्यान्वयनका क्रममा यस क्षेत्रका भौतिक, जैविक, सामाजिक, सांस्कृतिक तथा आर्थिक वातावरणमा पर्नसक्ने सकारात्मक तथा नकारात्मक प्रभाव का बारेमा यस वडा नं. [illegible] RRRSDP का प्रतिनिधि र स्थानीय सरोकारवाला व्यक्तिहरूको उपस्थितिमा छलफल तथा निर्णय गरियो।

तपसिल

क्र.सं.	नाम/थर	ठेगाना	पेशा	दस्तखत
१	[illegible]	वडा-१	[illegible]	[illegible]
२	[illegible] थामी	वडा-१	VDC सदस्य	[illegible] थामी
३	[illegible] थामी	वडा-१	कृषि	[illegible]
४	[illegible] थामी	वडा-२	"	[illegible]
५	[illegible] थामी	वडा-२	"	[illegible] थामी
६	[illegible] थामी	वडा-२	"	[illegible] थामी
७	[illegible] थामी	वडा-२	"	[illegible]
८	[illegible] थामी	वडा-१	[illegible]	[illegible]
९	[illegible] थामी	वडा-	कृषि	[illegible]
१०	[illegible]	[illegible]-६	[illegible]	[illegible]
११	[illegible] थामी	वडा-१	कृषि	[illegible]
१२	[illegible] थामी	वडा-२	विद्यार्थी	[illegible]
१३	[illegible] थामी	-२	विद्यार्थी	[illegible]
१४	[illegible]	-२	कृषि	[illegible]
१५	[illegible] थामी	-२	"	[illegible]
१६	[illegible] थामी	-१	"	[illegible] थामी
१७	डोर ब. श्रेष्ठ	RRRSDP (Overseer)		[illegible]
१८	[illegible]	RRRSDP (CM)		



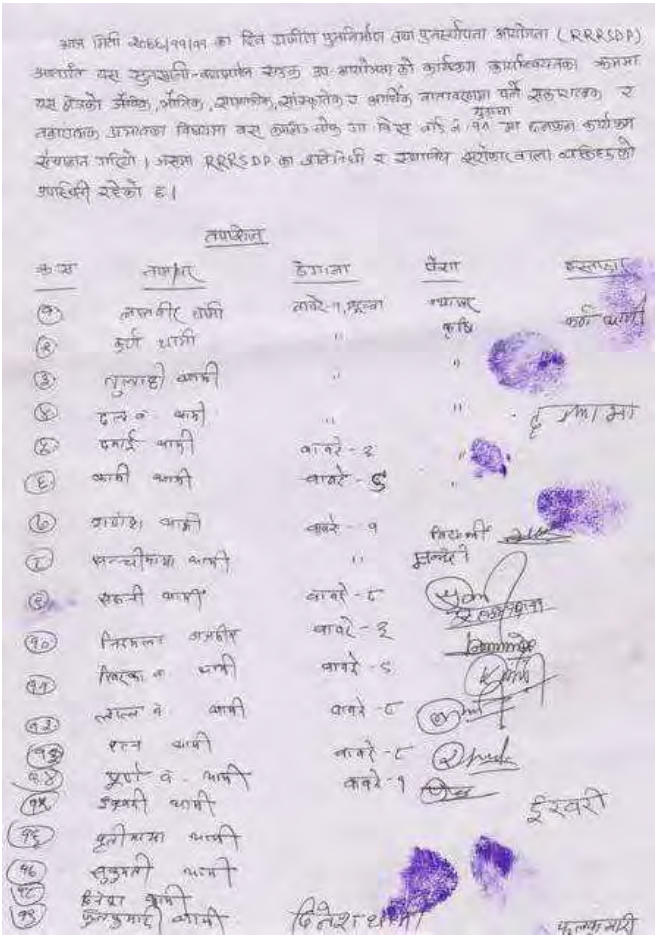
छलफल गरिएका विषयहरू

(१) यस सुनखानी-क्यान्पा सडक आयोजनाको कार्यान्वयन [illegible] संचालन गरिनुपर्ने विषयमा छलफल तथा निर्णय गरियो।

(२) [illegible] सुझाव संकलन गरियो।

(३) [illegible] निर्णय गरियो।

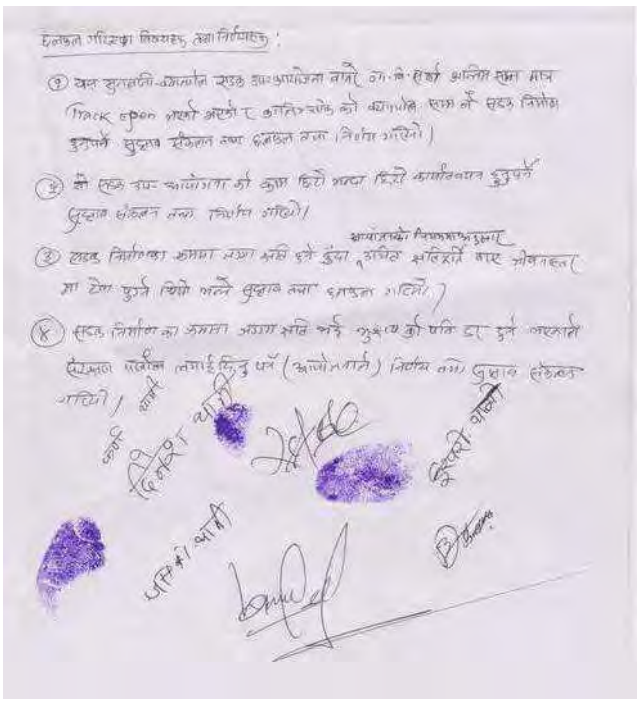
(४) सडक [illegible] क्षतिपूर्ति पाउनुपर्ने सुझाव तथा निर्णय गरियो।



आज मिति २०६६/११/२८ को दिन ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना (RRRSDP) अन्तर्गत यस सुनखानी-क्याम्पाने सडक उप-आयोजना को कार्यिका कार्यान्वयनका क्रममा यस क्षेत्रको जैविक, भौतिक, आर्थिक, सांस्कृतिक र सार्वजनिक वातावरणमा पर्ने प्रतिकूलका र सुधारका प्रभावका विषयमा यस छलफल बैठक का विषय नं. २ मा छलफल कार्यक्रम सञ्चालन गरियो। यसमा RRRSDP का प्रतिनिधी र स्थानीय क्षेत्रमा बस्ने व्यक्तिहरुको उपस्थिती रहेको छ।

तपसिल

क्रम	नाम/थर	ठेगाना	पेशा	हस्ताक्षर
१	लक्ष्मीर तामी	वडा नं. १, सुनखा	स्थायर कृषि	
२	दुर्ग थामी	"	"	
३	तुलाराही थामी	"	"	
४	दुल ब कामी	"	"	
५	एमाई थामी	वडा नं. २	"	
६	आनी थामी	वडा नं. ६	"	
७	राधोरे थामी	वडा नं. ९	किरानी	
८	सन्चीमाया थामी	"	मुखिया	
९	सकली थामी	वडा नं. ८		
१०	निरमला अधिकारी	वडा नं. ३	विद्यार्थी	
११	विरेन्द्र बहादुर थामी	वडा नं. ६		
१२	लाल बहादुर थामी	वडा नं. ८		
१३	रत्न थामी	वडा नं. ८		
१४	पुष्प बहादुर थामी	वडा नं. १		
१५	ईश्वरी थामी			ईश्वरी
१६	दुनीमाया थामी			
१७	सुकुमती थामी			
१८	हिरेन्द्र बहादुर थामी			
१९	फुलकुमारी थामी			फुलकुमारी



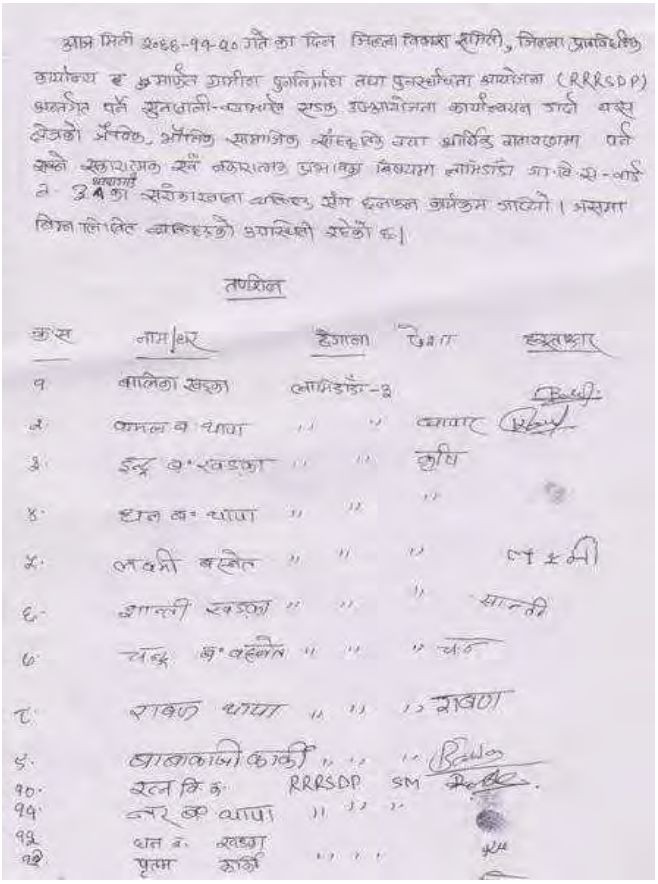
छलफल गरिएका विषयहरु :

१) यस सुनखानी-क्याम्पा सडक उपआयोजना बाटो ८ फी. चौडा भएपछि सुधा मात्र (Track open गर्दा अरुको ८ फीटभन्दा बढी को खाडीहरु सम्म नै सडक निर्माण हुनुपर्ने सुझाव स्थानिय तथा छलफल गरेका निर्णय गरियो।)

२) यो सडक यस आयोजना को कुल कित्ते भन्दा बाहिर कार्यान्वयन हुनुपर्ने सुझाव स्थानिय तथा निर्णय गरियो।

३) सडक निर्माणका क्रममा यसमा भएका घरे कुंदा, ढुंगाहरु आयोजनाको विपक्षमा हुनुपर्ने खालका पुर्ने सुझाव तथा छलफल गरियो।

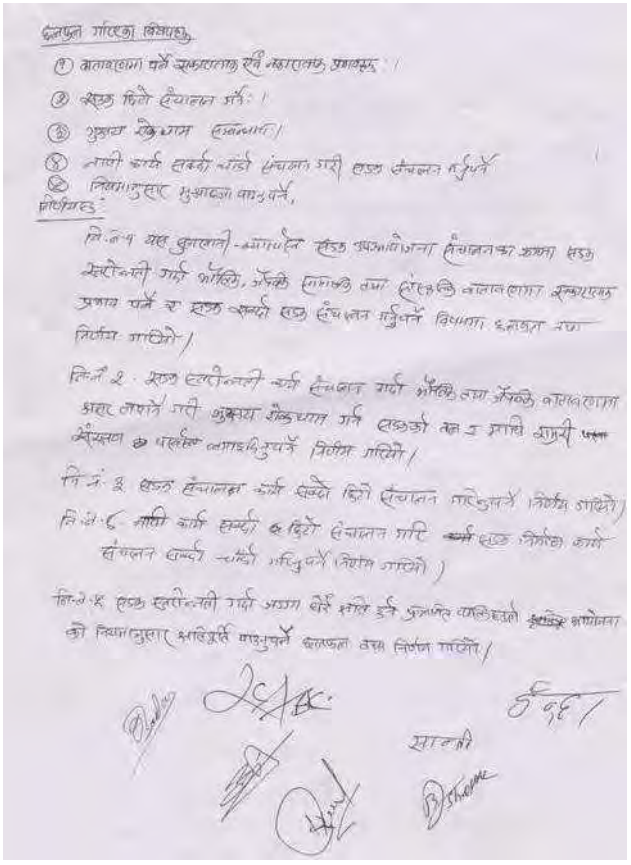
४) सडक निर्माणका क्रममा आउने भनि भने पुरुषय को पनि ८ फुट भन्दा बढी चौडाई स्थानिय सहमति लगाई सिधु पर्ने (आयोजनाले) निर्णय गरियो। सुझाव स्थानिय।



आज मिति २०६६-११-२० गते का दिन जिल्ला विकास समिति, जिल्ला प्रशासन कार्यालय र छनौटमा परेका ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना (RRRSDP) अन्तर्गत पर्ने सुनखानी-क्याम्पाने सडक उपआयोजना कार्यान्वयन गरी बस्ने क्षेत्रको जैविक, भौतिक सामाजिक पाँचकृति तथा सार्वजनिक वातावरणमा पर्ने सम्भावित सकारात्मक र नकारात्मक प्रभावका विषयमा लामिडाँडा गा.वि.स.-वार्ड नं. ३ र ४ का सरोकारवाला व्यक्तिहरु सँग छलफल आयोजना गरियो। यसमा निम्न लिखित व्यक्तिहरुको उपस्थिती रहेको छ।

तपसिल

क्रम	नाम/थर	ठेगाना	पेशा	हस्ताक्षर
१	बालिका खड्का	लामिडाँडा-३		
२	कमल ब॰ थापा	" "	व्यापार	
३	इन्द्र ब॰ खड्का	" "	कृषि	
४	दान ब॰ थापा	" "	"	
५	लक्ष्मी बस्नेत	" "	"	लक्ष्मी
६	आनन्दी खड्का	" "	"	आनन्दी
७	चन्द्र ब॰ बस्नेत	" "	"	चन्द्र
८	राकेश थापा	" "	"	राकेश
९	बालकाजी कार्की	" "	"	
१०	रत्न कि॰	RRRSDP	SM	
११	नर ब॰ थापा	" "	"	
१२	दान ब॰ खड्का			
१३	पूतम कार्की	" "	"	



छलफल गरिएका विषयहरु

१) वातावरणमा पर्ने सकारात्मक एवं नकारात्मक प्रभावहरु।
२) सडक किते हेरेर चलाउने भने।
३) सुझाव सैद्धान्त छलफल।
४) यसमा कसरी सडकको बाँडो छलाउन सकी सडक सञ्चालन गर्नुपर्ने
५) निर्माणपछिका सुझावहरु बारे।

छलफलबाट :

वि.नं.१ यस सुनखानी-क्याम्पाने सडक उपआयोजना हेरेर चलाउने कुरामा सडक सेरोफेरोमा पर्ने जग्गाहरु, जग्गाको तथा घरहरुको वातावरणमा देखापर्ने प्रभाव पर्ने र सडक चौडा सडक हेरेर चलाउनु पर्नुपर्ने विषयमा छलफल तथा निर्णय गरियो।

वि.नं. २ सडक सेरोफेरोमा पर्ने हेरेर किते जग्गा, जग्गाको वातावरणमा असर नपर्ने गरी सुझाव सैद्धान्त गर्ने सडकको बाँडो ८ फीटको सञ्चालन र सडकमा लगाइनुपर्ने निर्णय गरियो।

वि.नं. ३ सडक सञ्चालनका क्रममा पोखरी किते हेरेर चलाउने गरियो।

वि.नं. ४ सडक सञ्चालन गर्दा पोखरी किते हेरेर चलाउने गरियो।

वि.नं. ५ सडक सञ्चालन गरिसकेपछि सडकको दायाँ बायाँ को जग्गाहरु आयोजना को विधानुसार क्षतिपूर्ति गर्नुपर्ने छलफल तथा निर्णय गरियो।

Summary of Meeting Minutes

Date	Location of public meeting	Address	Issues and Suggestions of the meeting
2065/12/24 BS (05/04/09 AD)	Bhadaure	Sunkhani VDC, Dolakha	▪ Devi temple which is 5m below from alignment might be affected during road construction activities at Ch 0+200 so proper care should be given to conserve it. ▪ Spring source at Ch 0+300 should be conserved and mitigation measure should be adopted to prevent from possible adverse impacts ▪ Drainage should be constructed at Ch 0+000.
2065/12/26 BS (07/04/09)	Lapilang settlement	Lapilang VDC, Dolakha	▪ No adverse effects are seen due to the road construction activities. ▪ Training for income generating activities should be provided to local people. ▪ Vegetable farming should be encouraged to local people.
2065/12/26 BS (07/04/09AD)	Patagau settlement	Lapilang VDC, Dolakha	▪ Siwalaya temple, Devi temple and resting place *(pati)* may be affected during road construction activities at Ch 3+200 so they could be preserved. ▪ Affected drinking water supply reservoir at Ch 3+200 should be restored. ▪ Appropriate mitigation measures should be given to minimize damage of public and private property from possible landslide
2066/11/10 B.S (23-03-2010 AD)	Kyurtisang settlement,	Babare Kalinchowk VDC	▪ The Project havs to be start very soon. ▪ Compensation should be paid as per project norms. ▪ Erosion prone area should be stabilize, ▪ Training related to skill development should be provided to local
	Thapagaun settlement	Lamidanda VDC	▪ Have positive impact due to road construction ▪ Erosion prone area should be stabilize and impact on physical,biological and socio-economic should be minimize. ▪ The Project havs to be start very soon. ▪ Compensation should be paid as per project norms
	Gumcha Settlement	Kalinchowk VDC	▪ This road just touches this VDC so road should be constructed up to Kyanpol of this VDC. ▪ The Project havs to be start very soon. ▪ Compensation should be paid as per project norms. ▪ Erosion prone area should be stabilize, ▪ Training related to skill development should be provided to local

Appendix 11
Socio-economic Data of Subproject Area

Appendix 11a Population, Household and Ehinicity within the Zol of road alignment

S.N.	Major Settlements	VDCs & ward no.	Total Households	Total Population	Caste
1	Si.Sa. Golae	Sunkhani	16	90	Chetri,Newar, Kami
2	Katike	Sunkhani-9	20	120	Chhetri,Bhramin
3	Sithka	Sunkhani	125	660	Bharmin,Chhetri,Dhami
4	Pata Gau	Lapilang-9	72	450	Chhetri,Sunupar,Bramin
5	Laptung	Lapilang-7,8	285	1700	Chhetri
6	Gujarpa	Lapilang-5,6	60	350	Chhetri,Bramin
7	Lapilang	Lapilang-4,5,3	234	1404	Chhetri,Newar
8	Lakiegau	Lapilang	260	1500	Chhetri,BK,Nepali
9	Gumu	Lamidada	200	1050	B.K,Nepali,Chhetri,Newar,
10	Pokhare	Lamidada-8	80	480	B.K,Nepali,Chhetri,Newar
11	Pandya Tol	Lamidada	130	780	Chhetri,Bramin
12	Bhirmuni	Lamidada	120	720	Tamang,Chhetri
13	Dharapani	Babare	200	1000	Tamang,Dhami,Chhetri,Bramin
14	Bhirmuni /Fusra	Babare-6,7	180	800	Chhetri,Bramin, Thami
15	Dada Gaun	Babare-4,5	300	1600	Chhetri,Newar,Kami,Sherpa, Thami
16	Damfa	Babare-3	150	850	Newar,Chhetri,B.k, Thami
17	Kutisyang &Tuwapa	Babare1,2	252	2010	Panday,Thami, Thami
		Total	**2684**	**15564**	

Source: Field survey, 2009

Appendix 11b Distribution of households by major occupation

Settlement Name	Number of HH in					
	Agriculture & Livestock	Labour & Porter	Business/ Commerce	Cottage Industry	Employees	Others (specify)
Si.Sa. Golae	25	10	6	1	3	-
Katike	20	20	-	-	1	-
Sithka	120	80	25	-	17	-
Pata Gau	72	70	3	3	1	-
Laptung	285	230	5	-	50	-
Gujarpa	60	39	6	-	15	-
Lapilang	234	225	13	-	10	-
Lakiegau	260	200	40	-	50	-
Gumu	200	170	10	2	50	-
Pokhare	80	60	10	-	10	-
Pandya Tol	130	115	5	-	16	-
Bhirmuni	120	110	5	-	8	-

Settlement Name	Number of HH in					
	Agriculture & Livestock	Labour & Porter	Business/ Commerce	Cottage Industry	Employees	Others (specify)
Dharapani	180	150	9	-	50	-
Bhirmuni /Fusra	160	160	7	2	20	-
Dada Gaun	270	280	8	17	20	-
Damfa	150	140	18	15	10	-
Kutisyang &Tuwapa	252	250	5	20	3	-
Total	**2618**	**2215**	**175**	**60**	**234**	
Percentage	**97.54**	**82.52**	**6.52**	**2.23**	**8.71**	

Source: Field survey, 2009

Appendix 11c Existing Farming System (Cereals)

Settlement Name	Rice	Wheat	Maize	Millet	Junelo	Phaper	Others
Si.Sa. Golae	4	3	2	1	-	-	-
Katike	-	3	1	2	-	4	-
Sithka	3	4	2	1	-	-	-
Pata Gau	4	3	1	2	-	-	-
Laptung	3	4	2	1	-	5	-
Gujarpa	3	4	2	1	-	5	-
Lapilang	3	4	2	1	-	5	-
Lakiegau	3	4	2	1	-	5	-
Gumu	1	4	3	2	-	5	-
Pokhare	-	3	2	1	-	4	-
Pandya Tol	3	4	2	1	-	5	-
Bhirmuni	-	3	2	1	-	4	-
Dharapani	2	4	3	1	-	5	-
Bhirmuni /Fusra	2	4	3	1	-	5	6
Dada Gaun	2	4	3	1	-	5	6
Damfa	3	4	2	1	-	-	5
Kutisyang &Tuwapa	3	4	2	1	-	6	5

Note: 1= most dominant cereals, 2= Second dominant cereals, 3= third dominant cereals and so on.

Source: Field survey, 2009

Appendix 11c Existing Farming System (Cash Crops)

Settlement Name	Oil Seed	Beans/ Dal	Tobacco	Potato	Vegetable	Fruits	Tea/ Coffee	Amliso	Seri culture	Others
Si.Sa. Golae	-	4	-	1	-	3	-	2	-	-
Katike	5	-	-	4	3	2	-	1	-	-
Sithka	-	4	-	1	5	2	-	3	-	-
Pata Gau	-	-	-	1	2	3	-	4	-	-
Laptung	-	-	-	1	3	-	-	2	-	-
Gujarpa	-	-	-	1	3	4	-	2	-	-

Settlement Name	Oil Seed	Beans/ Dal	Tobacco	Potato	Vegetable	Fruits	Tea/ Coffee	Amliso	Seri culture	Others
Lapilang	4	5	-	1	3	6	-	2	-	-
Lakiegau	5	6	-	1	2	3	-	4	-	-
Gumu	-	4	-	1	3	2	-	5	-	-
Pokhare	-	-	-	1	3	-	-	2	-	-
Pandya Tol	-	6	-	1	2	3	-	5	-	4
Bhirmuni	5	-	-	1	2	3	-	4	-	-
Dharapani	-	-	-	1	3	4	-	2	-	-
Bhirmuni /Fusra	5	6	-	1	4	3	-	2	-	7
Dada Gaun	7	5	-	1	2	3	-	4	-	6
Damfa	-	-	-	1	2	-	-	3	-	4
Kutisyang &Tuwapa	6	5	-	1	3	4	-	2	-	-

Note: 1=Most dominant cash crops, 2=Second dominant cash crops, 3=third dominant cash crops and so on
Source: Field survey, 2009

Appendix 11d Livestock and Fisheries

Settlement Name	Cattle	Horse, Mules	Yak	Goat	Sheep	Rabbit	Pig	Fisheries	Poultry	Bee-Keeping
Si.Sa. Golae	1	-	-	2	-	-	4	-	3	-
Katike	1	-	-	2	-	-	-	-	3	-
Sithka	2	-	-	1	5	-	-	-	3	4
Pata Gau	3	-	-	1	-	-	-	-	2	4
Laptung	1	-	-	2	5	-	-	-	3	4
Gujarpa	1	-	-	2	4	-	-	-	3	5
Lapilang	1	-	-	2	5	-	-	-	3	4
Lakiegau	1	-	-	2	5	-	-	-	3	4
Gumu	2	-	-	1	-	-	-	-	3	-
Pokhare	2	-	-	1	-	-	-	-	3	4
Pandya Tol	2	-	-	1	-	-	-	-	3	-
Bhirmuni	1	-	-	2	4	-	-	-	3	-
Dharapani	1	-	-	2	-	-	4	-	3	5
Bhirmuni /Fusra	1	-	-	2	-	-	-	-	3	-
Dada Gaun	2	-	-	1	-	-	-	-	3	-
Damfa	2	-	-	1	-	-	4	-	3	5
Kutisyang &Tuwapa	1	-	-	2	-	-	-	-	3	-

Note: 1=Most dominant livestock, 2=Second dominant livestock, 3=third dominant livestock and so on.
Source: Field survey, 2009

Appendix 11e
Summary of public services and infrastructures according to settlement

Settlement Name	Type of educational institution	School (no.)	Student no.	Hospital	Telephone/Fax.	Tele phone (mobile/CDMA)	Post office	Micro-hydro	Mini-hydro	National Grid	Solar System
Si.Sa. Golae	Campus High School Primary School	- - 1	- - 145	-	2	7	-	-	-	1	-
Katike	Campus High School Primary school	- -	- -	-	-	10	-	-	-	1	-
Sithka	Campus High School Primary School	- 1 1	- 200 40	-	3	70	-	-	-	-	-
Pata Gau	Campus High School Primary School	- - 1	- - 110	-	2	5	-	-	-	-	4
Laptung	Campus High School Primary School	- 1 1	- 300 120	1	2	80	-	-	-	-	25
Gujarpa	Campus High School Primary School	- 1 1	- 125 30	-	1	20	-	-	1	-	-
Lapilang	Campus High School Primary School	- 1 3	- 500 200	1	4	50	1	1	-	-	4
Lakiegau	Campus High School Primary School	- 1 2	- 350 250	-	3	35	-	-	-	-	15
Gumu	Campus High School Primary School	1 - 3	500 - 300	-	4	50	-	-	-	-	75
Pokhare	Campus High School Primary School	- - 1	- - 120	-	1	20	-	-	-	-	3
Pandya Tol	Campus High School Primary School	- 1 1	- 600 40	-	1	40	-	1	-	-	8
Bhirmuni	Campus High School Primary School	- - 1	- - 60	-	1	25	-	-	-	-	9
Dharapani	Campus High School Primary School	- - 2	- - 300	-	2	35	-	-	-	-	20
Bhirmuni /Fusra	Campus High School Primary School	1 - 2	600 - 350	-	3	30	1	-	85	-	8
Dada Gaun	Campus High School Primary School	- - 3	- - 500	-	4	60	-	-	180	-	30
Damfa	Campus High School Primary School	- - 1	- - 150	-	1	13	-	-	145	-	5
Kutisyang &Tuwapa	Campus High School Primary School	1 - -	552 - -	1	1	15	-	95	-	-	2

Source: Field survey, 2009

Appendix 11e
Summary of public services and infrastructures according to settlement

Settlement Name/	Restuarent/tea shops(no)	Grocery (no)	Other Shops	Gravity flow	Spring/ dugwells	Irrigation (ha)	Micro hydro(KW)	Water mill	Suspension bridge	Wooden bridge
Si.Sa. Golae	4	6	1	9	7	-	-	-	-	-
Katike	-	-	-	18	2	-	-	-	-	-
Sithka	5	6	3	117	8	20	-	2	-	-
Pata Gau	1	3	-	60	12	12	-	1	1	-
Laptung	-	5	-	200	85	10	5	2	1	1
Gujarpa	-	6	-	55	5	10	12.5	3	2	7
Lapilang	2	12	1	5	230	-	-	3	-	-
Lakiegau	-	40	3	-	90	200	-	-	-	-
Gumu	-	10	20	150	50	-	-	-	-	-
Pokhare	3	3	7	70	10	-	-	-	-	-
Pandya Tol	4	4	-	70	60	4	21	1	-	-
Bhirmuni	-	3	-	110	20	-	-	-	-	-
Dharapani	2	8	3	150	50	-	-	1	-	2
Bhirmuni /Fusra	7	8	1	150	30	-	10	1	-	2
Dada Gaun	15	20	-	250	50	-	2	2	1	3
Damfa	-	3	1	125	25	-	5	-	-	2
Kutisyang &Tuwapa	3	5	2	240	12	1	15	1	1	1

Source: Field survey, 2009

Appendix 11e
Summary of public services and infrastructures according to settlement

Settlement Name/	Weaving Industry	Rice /Flour mill	Cooperative	Ghat	Hatia/ Bazar	Play ground	Community Center	Community Organization
Si.Sa. Golae	-	-	-	-	1	-	3	1
Katike	2	-	1	-	-	-	-	-
Sithka	1	1	-	1	1	2	-	2
Pata Gau	-	-	-	-	-	1	-	1
Laptung	1	1	1	1	-	2	1	7
Gujarpa	-	2	1	3	-	2	-	6
Lapilang	-	1	1	-	-	4	1	4
Lakiegau	-	5	-	1	-	3	-	5
Gumu	20	3	1	-	-	4	1	10
Pokhare	7	-	1	-	-	3	2	4
Pandya Tol	-	-	1	1	-	2	-	6
Bhirmuni	-	1	-	-	-	1	-	4
Dharapani	25	2	1	1	-	2	-	6
Bhirmuni /Fusra	1	2	3	1	-	2	1	3
Dada Gaun	2	2	7	1	1	4	2	3
Damfa	2	2	1	1	-	1	-	3
Kutisyang &Tuwapa	1	1	1	5	-	2	-	2

Source: Field survey, 2009

Appendix 11f Land holding Pattern (Households)

Settlement Name	Landless	Less than 1 ropani	1 to 5 ropani	5 to 10 ropani	10 to 20 ropani	20 to 50 ropani	>50 ropani
Si.Sa. Golae	-	-	5	11	-	-	-
Katike	-	-	6	2	12	-	-
Sithka	2	6	55	45	15	2	-
Pata Gau	2	2	18	40	10	-	-
Laptung	1	-	37	180	60	5	2
Gujarpa	-	5	8	40	7	-	-
Lapilang	-	-	1	110	120	2	1
Lakiegau	-	10	70	150	25	5	-
Gumu	-	-	5	100	95	-	-
Pokhare	-	-	15	40	15	10	-
Pandya Tol	-	-	20	20	20	10	-
Bhirmuni	-	-	15	15	50	5	-
Dharapani	-	20	100	100	10	-	-
Bhirmuni /Fusra	1	-	30	30	50	20	-
Dada Gaun	-	-	40	40	100	57	3
Damfa	-	5	15	15	50	5	-
Kutisyang &Tuwapa	-	20	20	20	12	-	-
Total Percentage	**0.26**	**3.043**	**20.09**	**42.30**	**28.60**	**5.416**	**0.26**

Source: Field survey, 2009

Appendix 11g Food Sufficiency (Households)

Settlement Name	Surplus	Sufficient for whole year	Sufficient for 3-9 months	Sufficient for three months	Less than three months
Si.Sa. Golae	-	-	16	-	-
Katike	-	12	2	6	-
Sithka	17	40	60	5	3
Pata Gau	4	4	40	15	14
Laptung	-	5	170	60	50
Gujarpa	-	7	40	10	3
Lapilang	-	3	156	60	15
Lakiegau	-	30	200	25	5
Gumu	10	135	50	5	-
Pokhare	5	10	40	20	5
Pandya Tol	5	20	60	45	-
Bhirmuni	5	10	50	30	25
Dharapani	10	10	50	100	30
Bhirmuni /Fusra	20	40	105	5	10
Dada Gaun	30	60	140	30	50
Damfa	15	10	55	40	30
Kutisyang &Tuwapa	-	-	160	32	60
Total Percentage	**4.54**	**14.42**	**51.67**	**18.10**	**11.27**

Source: Field survey, 2009

Appendix 11h Migration Pattern (Households)

S.N.	Major Settlements	No. of Hhs	Destination	Purpose	Month
1	Si.Sa. Golae	10	Kathmandu, India	Employment	Shrawan
2	Katike	19	Kathmandu, India	Employment	Shrawan,Poush
3	Sithka	50	India, Kathmandu,	Employment	Shrawan,Magh
4	Pata Gau	50	Kathmandu, India	Labour	Shrawan
5	Laptung	250	Kathmandu, India	Labour	Shrawan
6	Gujarpa	50	Kathmandu, India	Employment	Shrawan
7	Lapilang	120	Darjeeling, Gantang, Kathmandu	Employment	Shrawan
8	Lakiegau	200	Kathmandu, India	Labour	Shrawan
9	Gumu	75	Kathmandu, India	Employment	Shrawan,Poush
10	Pokhare	60	Kathmandu, India	Labour	Shrawan
11	Pandya Tol	110	Kathmandu, India	Employment	Shrawan
12	Bhirmuni	110	Kathmandu, India	labour	Shrawan
13	Dharapani	150	Kathmandu, India	Employment	Shrawan
14	Bhirmuni /Fusra	35	Kathmandu, India	Employment	Shrawan
15	Dada Gaun	260	Kathmandu, India, Other countries	Employment	Shrawan
16	Damfa	110	Kathmandu, India	Employment	Shrawan
17	Kutisyang &Tuwapa	220	Kathmandu, India	Employment	Shrawan

Source: Field survey, 2009

Appendix 12 Recommendation Letter

गाउँ विकास समितिको कार्यालय

लाभिमकुट, दोलखा

पत्र संख्या :- ०६६।०६७

चलानी :- २५०

मिति ०६६।११२०

विषय :- सिफारिस गरिएको सम्बन्धमा ।

श्री जिल्ला विकास समितिको कार्यालय,
चरिकोट, दोलखा ।

उपर्युक्त सम्बन्धमा प्रस्तावित सुनखानी क्याङपोल सडकको केही खण्ड यस गा. वि. स. हुँदै गएको तथा सडकको प्रस्तावित सुधार कार्यको लागी प्रारम्भिक वातावरणीय परिक्षण अध्ययन कार्य त्यस कार्यालय मार्फत भैरहेको अवगत भयो ।

सो सम्बन्धमा प्रस्तावित सडक सुधार कार्यबाट यस गा. वि. स. को भौतिक, जैविक, सामाजिक आर्थिक तथा सांस्कृतिक वातावरणमा नकरात्मक असर नपर्ने तथा प्रस्तावको कार्यान्वयनबाट यस क्षेत्रको आर्थिक तथा सामाजिक स्तरमा उन्नतीका अवसरहरु प्राप्त हुने देखिन्छ । तसर्थ प्रस्तावीत सडक सुधार कार्यमा यथाशिघ्र संचालन गर्न सम्बन्धीत निकायलाई यसै पत्र मार्फत सिफारिस गरिएको व्यहोरा अनुरोध छ ।

बोधार्थ :-
श्री जिल्ला प्राविधिक कार्यलय,
चरिकोट दोलखा ।

भिम बहादुर भण्डारी
गा.वि.स. सचिव

गाउँ विकास समितिको कार्यालय

सुनखानी, दोलखा

पत्र संख्या :- ०६६-०६७

चलानी नं. :- २४५

मिति :- ०६६।०११।०३

विषय :- सिफारिस गरिएको सम्बन्धमा ।

श्री जिल्ला विकास समिती
जिल्ला विकास समितीको कार्यालय
दोलखा ।

प्रस्तुत विषयमा प्रस्तावित सुनखानी क्याङपोल सडकको केही खण्ड यस गा. वि. स. हुँदै गएको तथा सडकको प्रस्तावित सुधार कार्यको लागी प्रारम्भिक वातावरणीय परिक्षण (IEE) अध्ययन कार्य त्यस कार्यालय मार्फत भईरहेको अवगत भयो उपरोक्त सम्बन्धमा प्रस्तावित सडक सुधार कार्यबाट यस गा. वि. स. को भौतिक, जैविक, सामाजिक आर्थिक तथा सांस्कृतिक वातावरणमा नकरात्मक असर नपर्ने तथा प्रस्तावको कार्यान्वयनबाट यस क्षेत्रको सामाजिक र आर्थिक स्तरमा उन्नतिका अवसरहरु प्राप्त हुने देखिन्छ, तसर्थ प्रस्तावित सडक सुधार कार्यक्रम यथाशिघ्र सञ्चालन गर्न सम्बन्धीत निकायलाई यसै पत्र मार्फत सिफारिस गरिएको व्यहोरा अनुरोध गरिन्छ ।

(विष्णु प्रसाद सिवाकोटी)
अध्यक्ष

गाउँ विकास समितिको कार्यालय

कावेरे, दोलखा

पत्र संख्या :- ०६४।०६६

चलानी :- १६८

मिति २०६६।०९।१६

विषय :- सिफारिस गरिएको सम्बन्धमा ।

श्री जिल्ला विकास समितिको कार्यालय
दोलखा, चरिकोट

प्रस्तुत विषयमा प्रस्तावित सुनखानी क्याङपोल सडकको केही खण्ड यस गा. वि. स. हुँदै गएको तथा सडकको प्रस्तावित सुधार कार्यको लागी प्रारम्भिक वातावरणीय परिक्षण अध्ययन कार्य त्यस कार्यालय मार्फत भईरहेको अवगत भयो । उपरोक्त सम्बन्धमा प्रस्तावित सडक सुधार कार्यबाट यस गा. वि. स. को भौतिक, जैविक, सामाजिक आर्थिक तथा सांस्कृतिक वातावरणमा नकरात्मक असर नपर्ने तथा प्रस्तावको कार्यान्वयनबाट यस क्षेत्रको आर्थिक तथा सामाजिक स्तरमा उन्नतीका अवसरहरु प्राप्त हुने देखिन्छ । तसर्थ प्रस्तावित सडक सुधार कार्यक्रम यथाशिघ्र संचालन गर्न सम्बन्धीत निकायलाई यसै पत्र मार्फत सिफारिस गरिएको व्यहोरा अनुरोध गरिन्छ ।

बोधार्थ
श्री जिल्ला प्राविधिकको कार्यलय
दोलखा, चरिकोट

गा. वि. स. अध्यक्ष

गाउँ विकास समितिको कार्यालय

लाभिमकुट, दोलखा

पत्र संख्या :- ०६४।०६६,

चलानी :- १६४,

मिति २०६६।०९।०६

विषय :- सिफारिस गरिएको सम्बन्धमा ।

श्री जिल्ला विकास समितिको कार्यालय
दोलखा, चरिकोट

प्रस्तुत विषयमा प्रस्तावित सुनखानी क्याङपोल सडकको केही खण्ड यस गा. वि. स. लगायत कावेरे गा. वि. स. समेत हुँदै गएको तथा सडकको प्रस्तावित सुधार कार्यको लागी प्रारम्भिक वातावरणीय परिक्षण अध्ययन कार्य त्यस कार्यालय मार्फत भईरहेको अवगत भयो । उपरोक्त सम्बन्धमा प्रस्तावित सडक सुधार कार्यबाट उल्लेखित गा. वि. स. को भौतिक, जैविक, सामाजिक, आर्थिक तथा सांस्कृतिक वातावरणमा नकरात्मक असर नपर्ने तथा प्रस्तावको कार्यान्वयनबाट यस क्षेत्रको आर्थिक तथा सामाजिक स्तरमा उन्नतिका अवसरहरु प्राप्त हुने देखिन्छ । तसर्थ प्रस्तावित सडक सुधार कार्यक्रम यथाशिघ्र संचालन गर्न सम्बन्धीत निकायलाई यसै पत्र मार्फत सिफारिस गरिएको व्यहोरा अनुरोध गरिन्छ ।

बोधार्थ
श्री जिल्ला प्राविधिकको कार्यलय
दोलखा, चरिकोट

गा. वि. स. अध्यक्ष

गाउँ विकास समितिको कार्यालय

कालिञ्चोक, दोलखा

पत्र संख्या : ०६६/०६७
चलानी नं. : ३४५

मिति : २०६६।०९।२०

विषय : सिफारिस सम्बन्धमा

श्री जिल्ला विकास समितिको कार्यालय दोलखा चरिकोट

प्रस्तुत विषयमा प्रस्तावित सुनखानी–क्याङपा सडक यस गा.वि.स. हुँदै जाने तथा सो सडकको प्रस्तावित सुधार कार्यको प्रारम्भिक वातावरणीय परीक्षण अध्ययन कार्य त्यस कार्यालय मार्फत भई रहेको तथा उपरोक्त प्रस्तावित सडक सुधार कार्यबाट यस गा.वि.स. को भौतिक सामाजिक आर्थिक एवं सांस्कृतिक वातावरणमा नकारात्मक असर नपर्ने तथा सडक निर्माण कार्य सम्पन्न हुँदा यस गा.वि.स. को आर्थिक एवं सामाजिक स्तरमा सुधारका अवसरहरु प्राप्त हुने देखिएको हुँदा प्रस्तावित सडक सुधार कार्यक्रम यथाशिघ्र सञ्चालन गर्न सम्बन्धित निकायलाई सिफारिस गरिएको व्यहोरा अनुरोध गरिन्छ।

बोधार्थ
श्री जिल्ला प्राविधिक कार्यालय
दोलखा, चरिकोट।

रामकुमार खतिवडा
अध्यक्ष

A Sample of Recommendation letter from VDC

Government Of Nepal

Ministry Of Local Development
Office of Village Development Committee ……
……., Dolakha

Reference No: ……

Subject: Recommendation letter for the implementation of IEE report

To,
The Office of District Development Committee, Dolakha

We have received the IEE report prepared for the Sunkhani-Kyanpa road sub project. We reviewed the environmental impacts and mitigation measures as mentioned in the report and satisfied with the IEE report and recommend for the implementation of road sub-project.

Signature
…….
VDC Secretar

Appendix 13

Major stream and their characteristics along the road alignment.

SN	Name of the stream	Chainage	Span(m)	Characteristics*
1	Chure khola	2+700	6	E
2	Andheri khola	3+450	6	C
3	Sime khola	4+700	10	E
4	Ghatte khola	4+900	16	B
5	Lampa khola	5+530	12	C
6	Andheri khola	6+120	12	C
7	Gumu khola	6+240	25	B
8	Lapse khola (i)	6+930	20	D
9	Lapse khola (ii)	7+750	8	B
10	Deudhunga khola	8+730	10	E
11	Guye khola	8+820	8	E
12	kholsi	9+300	4	D
13	kholsi	10+500	4	D
14	Ghatte khola	10+800	14	B
15	kholsi	10+960	6	E
16	Thade kholsi	11+700	4	E
17	Bakhere khola	12+200	10	D
18	Khurle khola	15+100	8	C
19	Kholsi	16+980	8	E
21	Kholsi	18+600	8	E
22	Andheri khola	18+700	9	D
23	Dhara pani khola	19+000	8	E
24	Kholsi	19+330	7	E
25	Khola	19+450	10	C
26	Barbare khola	20+500	11	C
27	Kusati khola	21+430	11	D
28	Barbare khola	21+740	8	D
29	kholsi	21+700	4	E
30	Dampha khola	23+140	13	D
31	Thathi khola	25+560	5	D
32	Sindure khola	26+200	10	D
33	Sime khola	26+000	4	C

***A:** Perennial, snow-fed **B:** Perennial, spring-fed **C:** Dry-up for short period
D: Dry-up in winter **E:** Dry-up most of the year and having high flash-floods

Source: Field survey, 2009

Appendix 14
Detailed Of Land Use Pattern Along The Road Alignment

Type of Land	Chainage	Length(m)	Existing Width(m)	Additional Width (m)	Existing area (ha)	Additional Area (ha)
Settlement	6+700-6+900	200	4	1	0.08	0.02
	9+900-10+000	100	3.5	1.5	0.035	0.015
	10+500-10+800	300	4	1	0.12	0.03
	14+320-14+480	160	4	1	0.064	0.016
	17+110-17+200	90	3.5	1.5	0.0315	0.0135
	23+00-23+360	360	3	2	0.108	0.072
	Subtotal				**0.4385**	**0.1665**
Barren land	15+250-15+650	400	3	2	0.12	0.08
	19+720-20+000	280	3.5	1.5	0.098	0.042
	Subtotal				**0.218**	**0.122**
Forest	0+500-1+600	1100	4.5	0.5	0.495	0.055
	1+700-2+700	1000	3.5	1.5	0.35	0.15
	15+750-16+100	350	3.5	1.5	0.1225	0.0525
	Subtotal				**0.9675**	**0.2575**
Agricultural	0+000-0+500	500	4	1	0.2	0.05
	1+600-1+700	100	5	0	0.05	0
	2+700-6+700	4000	4	1	1.6	0.4
	6+900-9+900	3000	4	1	1.2	0.3
	10+000-10+500	500	4	1	0.2	0.05
	10+800-14+320	3520	4.5	0.5	1.584	0.176
	14+480-15+250	770	3.5	1.5	0.2695	0.1155
	15+650-15+750	100	4	1	0.04	0.01
	16+100-16+920	820	4	1	0.328	0.082
	16+920-17+110	190	4	1	0.076	0.019
	17+200-19+720	2520	4	1	1.008	0.252
	20+000-23+000	3000	3.5	1.5	1.05	0.45
	23+360-27+390	4030	4	1	1.612	0.403
	Subtotal				**9.2175**	**2.3075**

Source: Fileld survey, 2009.

Appendix 15

Recommended Structures Necessary for Slope Stabilization at Various Places

A.DRY STONE MASONRY WALL

S.N	Chainage(m)		Remarks
	From	to	
1	555	565	Left
2	705	715	Left
3	1195	1205	Left
4	1475	1485	Left
5	1635	1645	Left
6	1655	1665	Left
7	1695	1705	Left
8	1745	1755	Left
9	1755	1765	Left
10	1875	1885	Left
11	2075	2085	Left
12	2155	2165	Left
13	2335	2345	Left
14	2755	2765	Left
15	2905	2915	Left
16	3035	3045	Right
17	3385	3395	Right
18	3615	3625	Left
19	4455	4465	Left
20	4475	4485	Left
21	4495	4505	Left
22	4575	4585	Left
23	5455	5465	Left
24	5495	5505	Left
25	5515	5525	Left
26	5889.02	5899.02	Left
27	6215	6225	Left
28	6435	6445	Left
29	6449.12	6459.12	Left
30	6463.92	6473.92	Left
31	6515	6525	Right
32	6553.69	6563.69	Right
33	6635	6645	Right
34	7856	7866	Right
35	8555	8565	Left
36	8675	8685	Left
37	8975	8985	Left
38	9075	9085	Left
39	9375	9385	Left
80	23775	23785	Left
81	24123	24133	Left
82	24135	24145	Left
83	24255	24265	Left
84	24495	24505	Left
85	25275	25285	Left
86	25295	25305	Left
87	25335	25345	Left
88	25355	25365	Left
89	25695	25705	Left
90	25715	25725	Left
91	25815	25825	Left

S.N	Chainage(m)		Remarks
	From	to	
40	9655	9665	Left
41	12975	12985	Left
42	12985.56	12995.56	Left
43	13395	13405	Left
44	13415	13425	Left
45	15415	15425	Left
46	16195	16205	Left
47	16295	16305	Left
48	16315	16325	Left
49	16335	16345	Left
50	16635	16645	Left
51	16735	16745	Left
52	16795	16805	Left
53	17075	17085	Left
54	17495	17505	Left
55	17535	17545	Left
56	17675	17685	Left
57	17917.13	17927.13	Left
58	17946	17955	Left
59	17955	17965	Left
60	18775	18785	Left
61	18855	18865	Left
62	18995	19005	Left
63	19055	19065	Left
64	19435	19445	Left
65	19475	19485	Left
66	20075	20085	Left
67	20515	20525	Left
68	20535	20545	Left
69	20555	20565	Left
70	20755	20765	Left
71	20835	20845	Left
72	21075	21085	Left
73	21095	21105	Left
74	21165	21175	Left
75	21175	21185	Left
76	22406	22416	Left
77	23235	23245	Left
78	23475	23485	Left
79	23635	23645	Left
92	26175	26185	Left
93	26275	26285	Left
94	26415	26425	Left
95	26435	26445	Left
96	26715	26725	Left
97	26795	26805	Left
98	26815	26825	Left
99	26835	26845	Left
100	27315	27325	Left
101	27335	27345	Left
102	27355	27365	Left
103	27375	27385	Left

Source: Field Survey, 2009

B.Schedule Of Gabion Works

Chainage		Gabion Type	Remarks
From	To		
815	825	Light	Right
1095	1105	Heavy	Right
1465	1475	Heavy	Right
1520	1530	Heavy	Right
1525	1535	Heavy	Right
1805	1815	Light	Right
2035	2045	Light	Right
2195	2205	Light	Right
2205	2215	Heavy	Right
2215	2225	Light	Right
2225	2235	Light	Right
2475	2485	Heavy	Right
2675	2685	Light	Right
2955	2965	Heavy	Right
3233.45	3243.45	Light	Right
3243.5	3250.26	Light	Right
3295	3305	Light	Right
3708.5	3718.5	Heavy	Right
4035.39	4045.39	Heavy	Right
4130.21	4140.21	Heavy	Right
5161.88	5171.88	Heavy	Right
5655	5665	Heavy	Right
5799.23	5809.23	Heavy	Right
6484.22	6494.22	Heavy	Right
6745	6755	Heavy	Right
6849	6859	Heavy	Right
8235	8245	Light	Right
8255	8265	Light	Right
8384.13	8394.13	Heavy	Right
8690.8	8700.8	Heavy	Right
9135	9145	Light	Right
9155	9165	Light	Right
9175	9185	Light	Right
9446.2	9456.2	Heavy	Right
9515	9525	Light	Right
9892.99	9902.99	Heavy	Right
9979.91	9989.91	Heavy	Right
10130	10140	Heavy	Right
10275	10285	Light	Right
11175	11185	Light	Right
11315	11325	Light	Right
11512.5	11522.5	Heavy	Right
11768.91	11778.91	Heavy	Right
11775	11785	Heavy	Right
23885	23895	Light	Right
23895	23905	Light	Right
23935	23945	Light	Right
23955	23965	Light	Right
23995	24005	Light	Right
24020	24030	Light	Right
24035	24045	Light	Right
24856	24866	Light	Right
24875	24885	Light	Right
24895	24905	Light	Right
25021	25031	Heavy	Right
25173	25183	Heavy	Right

Chainage		Gabion Type	Remarks
From	To		
11986	11996	Heavy	Right
12135	12145	Heavy	Right
12277.1	12287.1	Heavy	Right
12880.5	12890.5	Light	Right
13529.75	13539.75	Heavy	Right
13535	13545	Heavy	Right
13955	13965	Heavy	Right
13960	13970	Heavy	Right
15175.42	15185.42	Heavy	Right
15965	15975	Light	Right
15975	15985	Light	Right
15995	16005	Light	Right
17175	17185	Light	Right
17195	17205	Light	Right
17215	17225	Light	Right
17395	17405	Light	Right
17770	17780	Light	Right
18072	18082	Heavy	Right
18268	18278	Heavy	Right
18418	18428	Heavy	Right
18631	18641	Heavy	Right
18655	18665	Light	Right
19247	19257	Heavy	Right
19388.93	19398.93	Heavy	Right
19395	19405	Heavy	Right
19635	19645	Light	Right
19935	19945	Light	Right
20005.5	20015.5	Heavy	Right
20137	20147	Heavy	Right
20155	20165	Light	Right
20275	20285	Light	Right
20295	20305	Light	Right
20315	20325	Light	Right
20335	20345	Light	Right
20355	20365	Light	Right
20445	20455	Heavy	Right
20728	20738	Heavy	Right
21215	21225	Light	Right
22495	22505	Light	Right
22718	22728	Heavy	Right
23376	23386	Heavy	Right
23723.28	23733.28	Heavy	Right
23855	23865	Light	Right
23875	23885	Light	Right
25435	25445	Light	Right
25655	25665	Light	Right
25915	25925	Light	Right
25925	25935	Heavy	Right
26135	26145	Light	Right
26235	26245	Light	Right
26255	26265	Light	Right
26855	26865	Light	Right
26875	26885	Light	Right
26895	26905	Light	Right
26915	26925	Light	Right
27035	27045	Light	Right

Source: Field Survey, 2009

Appendix 16

Recommended Structure to Mitigate Water Induced Hazards.

A.Schedule of Causeway
(Span -12 m, Causeway Thickness -0.25m)

Chainage	Chainage	Chainage	Chainage	Chainage	Chainage	Chainage
1+470	4+135	9+451	11+991	17+775	19+394	23+381
1+525	5+165	9+898	12+140	18+077	20+010	23+728
2+480	6+750	9+985	12+282	18+273	20+142	25+026
2+960	6+854	10+135	13+534	18+423	20+450	25+178
3+713	8+390	11+512	13+965	18+636	20+733	25+930
4+040	8+695	11+774	15+180	19+252	22+723	

Source: Field survey, 2009

B.Schedule of Pipe Culvert
(Length -2.1 m, diameter -0.6m)

chainage	chainage	chainage	chainage	chainage	chainage
0+675	5+495	13+150	15+120	17+534	22+980
1+100	5+660	13+418	15+255	17+920	25+540
1+375	5+804	13+698	16+368	21+133	25+810
2+210	8+275	14+580	16+633	21+361	26+005
2+675	12+676	14+884	17+355	22+460	

Source: Field survey, 2009

C.Schedule of Slab Culvert
(Span -6m, Slab Thickness -0.3m, depth-3.4m)

Chainage	Chainage	Chainage	Chainage	Chainage	Chainage	Chainage
6+400	11+675	12+990	19+747	22+045	24+640	27+220
7+320	9+357	16+000	20+870	22+305	24+720	27+300

Source: Field survey, 2009

Appendix 17

List of trees to be removed

A. List of trees to be removed from Community Forest.

Chainage	Name of Community Forest	Species	Girth of tree (inch.)					Total
			<20	20-30	30-40	40-50	>50	
0+500-1+600	Janaakata CF	Chilaune (*Schima wallichii)*		3				307
		Sallo (*Pinus roxburghii*)	121	108	45	8	21	
		Uttis (*Alnus nepalensis)*	1					
1+700-2+700	Ramche CF	Angeri (*Lyonia ovalifolia*)		1				99
		Chilaune (*Schima wallichii)*	3	5	6			
		Gurans (*Rhodendron arboreum*)		2				
		Kafal *(Myrica esculenta*)		2				
		Maledo *(Macaranga indica)*	11	12				
		Okhar (*Juglans regia)*		2				
		Pahele (*Listea salicifolia*)		2				
		Sallo (*Pinus roxburghii*)	4	16	19	9	2	
		Uttis (*Alnus nepalensis)*		2			1	
15+750-16+100	Thalaripakha CF	Chilaune (*Schima wallichii)*	4	11				60
		Kafal (*Myrica esculenta*)		1				
		Khirro (*Sapium insigne*)	1					
		Sallo (*Pinus roxburghii*)		36				
		Uttis (*Alnus nepalensis)*	4	3				
Total			**149**	**206**	**70**	**17**	**24**	**466**

Source: Field survey, 2009

B.List of trees to be removed from from private land

Chainage	Species	Girth of tree (Inch.)					Total
		<20	20-30	30-40	40-50	>50	
Excluding CF	Aaru (*Prnus persica*)	6					6
	Angeri *(Lyonia ovalifolia)*	4	1		6		11
	Banjh (Quercus lanata)		1	6	1		8
	Bamboo	36 clump (Avg. 10 no .)					
	Kagbalayoh (*Rhus wallichii*)	2				1	3
	Chilaune (*Schima wallichii)*	159	181	33	7	16	396
	Dudhilo (*Ficus nerifolia)*	27	9			1	37
	Dursul (*Ribes sps*.)	7					7
	Flat *(Quercus lamellose)*,		3				3
	Jigano (*Eurya acuminate*)	11	6				17
	Gogan *(Sauravia nepauensis*)		1				1
	Gurans (*Rhodendron arboreum*)	11	2	1		3	17
	Hadebir	5	1			1	7

Chainage	Species	Girth of tree (Inch.)					Total
		<20	20-30	30-40	40-50	>50	
	Kafal*(Myrica esculenta*)	4		1			5
	Katus(*Castanopsis indica)*	17	12	2			31
	Kaulo (*Persea odoratissima*)	8	4	2	1	1	16
	Khaniyu (*Ficus semicordata*)	6	13	2	3	4	28
	Khirro (*Sapium insigne*)	7	3				10
	Koiralo (*Bahunia variegate)*	2					2
	Kutmero (*Litsea monopetala)*	43	18	6	1		68
	Lakuri *(Fraxinus floribunda)*	5	13			3	21
	Lampate *(Duabanga grandifolia)*	1					1
	Lapsi (*Choerospondias axillaris*)			1			1
	Mauwa *(Bassia latifolia)*	15	5	3	1	1	25
	Maledo *(Macaranga indica)*	20	16				36
	Naspati (*Pyrus communis*)	2					2
	Newaro *(Ficus auriculata)*	8	17	2	1	1	29
	Okhar (*Juglans regia)*		2	3		1	6
	Pahele (*Listea salicifolia*)		9	2		1	12
	Paiyun (*Prunus cerasoides)*	40	46	12	3	10	111
	Pati	18	1				19
	Phosro	2	1				3
	Ragachan		3		1		4
	Sallo (*Pinus roxburghii*)	9	11	2		3	25
	Suntala (*Citrus sps*.)	6					6
	Uttis (*Alnus nepalensis)*	195	179	26	8	8	416
Total		**640**	**558**	**104**	**33**	**55**	**1,390**
Cost (Nrs.) for compensatory plantation (1:3 ratio) of 1,390 trees in private land i.e,plantation cost for 4170 plants in private area @16.62 Nrs/plant							**69305.4**

Source: Field survey, 2009

Appendix 18
Affected House and Structure along Road Alignment with Photographs.

Appendix 18a Affected House and Structure with Socioeconomic Profile of Affected Houses along Road Alignment.

Data on affected HH/Structure including their Socio-economic Profile

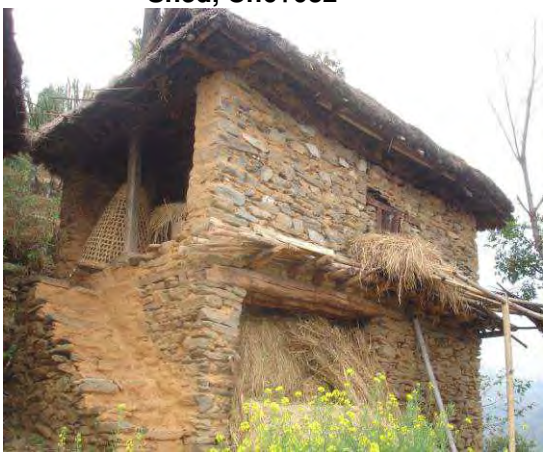
S.N	Chainage	Name of structure owner/HH head	Occupation	Family Member		HH food sufficiency (In Month)	Income in NRS/Month		Total HH landholding Sq m	Total affected land area Sq. M	Present use of Structure	structure type	storey	affected Structure Fully or partially
				Male	Female		Agriculture	Non agriculture						
1	2+640	Kamal Bahadur Thakuri	Business	4	4	6	10000	93000	5865	60	Residential and Shed	Mud and Stone walled with CGI Sheet roofing	3	Full
2	4+200	Ganga Maya Thapa (Ram Bahadur Thapa)	Agriculture	3	4	8	2000	50000	3976	30	Residential	Mud and Stone walled with Khar roofing	2	Full
3	6+032	Dhan Bahadur Thami	Agriculture cum wage labour	4	3	6	0	52000	11800	32	Residential and Shed	Mud and Stone walled with CGI Sheet roofing	2	Full
4	7+100	Krishna Bahadur Thami	Agriculture	1	2	12	6000	25400	11165	76	Residential	Mud and Stone walled with CGI Sheet roofing	1	Full
5	10 +920	Hom Bdr Thami	Teacher	2	1	3	0	4000	3605	.47sq me	house and toilet	Mud and stone wall with CGI sheet roofing	storie	Full
6	12+900	-	-								Pratikshalay			Full
7	13+670	Krishna Bdr Basnet	Business man	2	3	9	2000	4000	3452.5	7.65	Mill	Shed type	storie	full
8	14+035	Bharat Baniya	Agriculture and wage labour	2	4	6	1000	5000	4069.84	10.6	Shop	hut with (GI sheet) roofed	storie	Full
9	17+0640	Dabal Bdr Khatri	Agriculture and wage labour	4	3	6	2000	5000	3925	32.06	House	slate roofed	storie	full
10	22+405	-								6.25	Temple (Shiva ji)	Hut wit slate roofed	1	Full
11	22+390	Samsher Bdr Basnet	Astrologist (village level)	3	3	9	3000	5000	——	56.43	Shed	plastic roofed shed	1	full
12	25+835	Tul Man Thami	Agriculture and wage labour	5	5	4	2000	6000	22645	25.5	house	GI sheet roofed and slate roofed	3	full

Appendix 18b Photographs of Affected House and Structure along Road Alignment

Dabal Bdr Khatri, Resident House, Ch 17+064

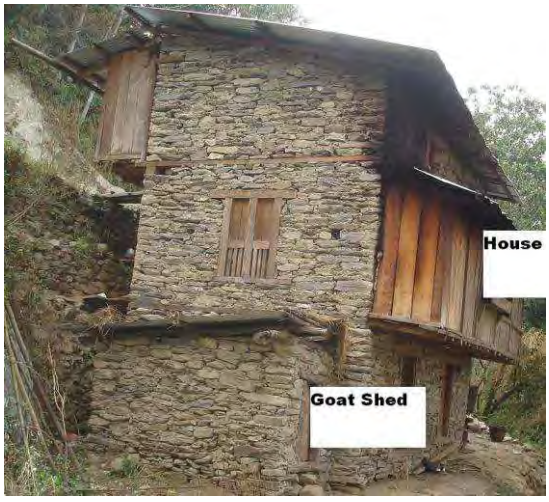
Dhan Bdr.Thami, Resident House and Goat Shed, Ch6+032

Partikshyala/Chautari (Resting Place), Ch 12+900



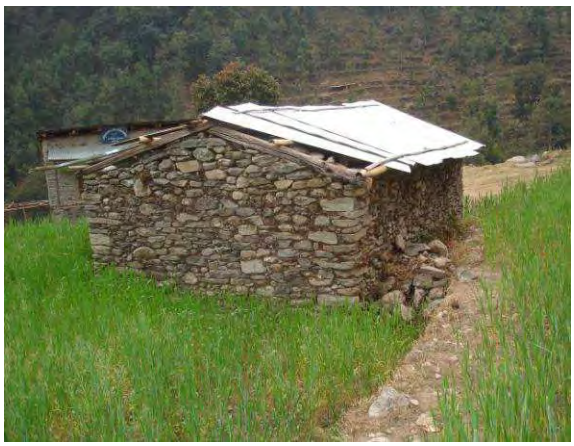
Ganaga Maya Thapa, Residential House, Ch 4+200

Hom Bdr Thami, Residential House and Toilet Ch 10+920



Kamal Bdr. Thakur, Residential House and Goat Shed Ch 2+640

Appendix 18b Photographs of Affected House and Structure along Road Alignment



Krishna Bdr Thami, Residential House, Ch 7+100

Krishna Bdr. Basnet, Mill ,Ch 13+670

Samsher Bdr. Basnet, Residential Shed, Ch 22+390

Shivayal Temple, Ch 22+405

Bharat Baniya, Shop, Ch 14+035

Tul Maan Thami, Residential House, Ch 25+835

Appendix 19
Name of the proponent and preparer

Name of the Proponent
District Development Committee (DDC)/
District Technical Office (DTO)
Charikot, Dolakha
Telephone No: 049-421144/049-421049
Fax No. 049-421142

Consultant:
Frisa-Iteco Joint Venture (in association with SKAT)
District Implementation Support Team (DIST)
Jawalakhel, Lalitpur
P.O. Box 113
Kathmandu, Nepal
Tel: (++977)-01-5547755
Fax/Tel: (++977)-01-5543144

Name of the preparer

Prakash Basnet	Environmental Specialist

Supported by

Chitra Bahadur Thapa	DIST Team Leader
Vijaya Bijukchhe	Engineer
Reemaya Nepali	Social Development Specialist
Engila Mishra Maharjan	Environmental Assistant
Dor Bahadur Shrestha	Sub- Engineer
Deepak Charmakar	Social Mobilizer
Ratna B.K	Social Mobilizer