

Environmental Assessment Document

Initial Environmental Examination

Grant Number: 0093 NEP

March 2010

Nepal: Rural Reconstruction and Rehabilitation Sector Development Program

Upgrading of Letang-6 No. Budhabare Road Subproject, Morang District

Prepared by the Government of Nepal

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

Initial Environmental Examination (IEE) Report

of

Upgrading of Letang-6 No.Budhabare Road Sub-project, Morang

Submitted to:
**Ministry of Local Development
Government of Nepal**

Proponent:
**District Development Committee
District Technical Office
Biratnagar, Morang**

March, 2010

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ABBREVIATIONS

ADB	Asian Development Bank	IUCN	International Union for Conservation Nature
amsl	Above mean sea level	Km	Kilometer
AP	Affected Person	LDO	Local Development Officer
BG	Building Group	LEP	Labour based, environment friendly and participatory
Ch	Chainage	LEST	Livelihood Enhancement and Skill Training
CBO	Community Based Organization	LRMP	Land Resource Management Project
CDC	Compensation Determination Committee	M	meter
CDO	Chief District Officer	MoU	Memorandum of Understanding
CEA	Country Environmental Analysis	MoE	Ministry of Environment
CGI	Corrugated Galvanized Iron	MoST	Ministry of Science and Technology
CF	Community Forest	MI	Milliliter
CFUG	Community Forest Users Group	MLD	Ministry of Local Development
CISC	Central Implementation Support Consultant	NGO	Non-Governmental Organization
CITES	Convention on International Trade in Endangered Species of Flora and Fauna	NRs	Nepali Rupees
DADO	District Agriculture Development Office	NTFPs	Non timber forest products
DDC	District Development Committee	OFID	OPEC Fund for International Development
DFID	Department for International Development	OP	Operational Plan
DFO	District Forest Office/Officer	OPEC	Organization of Petroleum Exporting Countries
DG	Director General	PAM	Project Administrative Memorandum
DIST	District Implementation Support Team	PCC	Plain Cement Concrete
DIT	District Implementation Team	PCU	Project Coordination Unit
DoLIDAR	Department of Local Infrastructure Development and Agricultural Roads	RBG	Road Building Group
DPO	District Project Office	RCC	Reinforced Cement Concrete
DPCC	District Project Coordination Committee	RCIW	Rural Community Infrastructure Works
DRSP	District Road Support Programme	REA	Rapid Environmental Assessment
DSCO	District Soil Conservation Office	RES	Rapid Environmental Screening
DTO	District Technical Office	RIDP	Rural Infrastructure Development Project
DTMP	District Transport Master Plan	RP	Resettlement Plan
EA	Environmental Assistant/Assessment	RRRSDP	Rural Reconstruction and Rehabilitation Sector Development Program
EARP	Environmental Assessment and Review Procedures	RS	Resettlement Specialist
ES	Environmental Specialist	SF	Social Funding
EIA	Environmental Impact Assessment	SA	Social Appraisal
EMP	Environmental Management Plan	SDC	Swiss Agency for Development and Cooperation
EMS	Environmental Management Section	SM	Social Mobilizer
EPA	Environmental Protection Act	SMC	Social Mobilization Coordinator
EPR	Environmental Protection Rules	SDS	Social Development Specialist
ESD	Environment Screening Document	TA	Technical Assistance
FGD	Focus Group Discussion	ToR	Terms of Reference
GoN	Government of Nepal	TWS	Technical Walkover Survey
GIS	Geographical Information System	VDC	Village Development Committee
Ha	Hectare	VICCC	Village Infrastructure Construction Coordination Committee
HH	Household	ZoI	Zone of Influence
IEE	Initial Environmental Examination		

NAME AND ADDRESS OF THE PROPONENT

Name of Proposal

(Upgrading of) Letang - 6 No. Budhabare Road Subproject, Morang District, Nepal

Name and Address of Proponent

Office of District Development Committee (DDC)/ District Technical Office (DTO), Morang District
Biratnagar, Morang District

Phone No: 021-536943/533750

Fax No: 021-523379

Name of Preparer

Mr. Sabin Chhetri (Environmental Specialist)

Data Collection and Support

Mr. Nabin Bhandari (Social Development Specialist)

Mr. Manish Bhandari (Social Mobilizer)

Mr. Dambar Raj Pandey (Social Mobilizer)

Mr. Bikram Bahadur Singh (Social Mobilizer)

Mr. Jay Kumar Jha (Sub-Engineer)

Mr. Dev Narayan Yadav (Sub-Engineer)

लेटाङ – ६ नं. बुधबारे सडकको प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदनको कार्यकारी सारांश

पृष्ठभूमि

नेपाल सरकारले लामो दूरीले गर्दा क्षति भएका ग्रामीण पूर्वाधारहरूको पुनःनिर्माण तथा पुनःस्थापनाको कार्य एशियाली विकास बैंक (ADB), स्विस् सरकार (SDC), ब्रिटिस सरकार (DFID) तथा ओपेक फण्ड (OFID)को आर्थिक सहयोगमा ग्रामीण पूर्वाधार पुनःनिर्माण र पुनःस्थापना आयोजना' नेपालको बीस वटा जिल्लाहरूमा संचालन गरिरहेको छ । मोरङ जिल्लामा अवस्थित प्रस्तावित लेटाङ – ६ नं. बुधबारे ग्रामीण सडकको पुनःस्थापना सोही कार्यक्रम अन्तर्गत संचालन गर्न लागिएको एक उप-आयोजना हो । प्रस्तावित उप-आयोजना २६.६६ कि.मी. लामो उक्त कच्ची सडकको ग्राभेल स्तरमा स्तरउन्नती गर्न प्रस्ताव गरिएको छ ।

प्रस्तावक

प्रस्तावित सडक उप-आयोजना को प्रारम्भिक वातावरणीय परीक्षणको प्रस्तावक 'जिल्ला विकास समिति र जिल्ला प्राविधिक कार्यालय, मोरङ हुन् । प्रस्तावकको प्रारम्भिक वातावरणीय परीक्षण स्विकृत गर्ने सम्बन्धित निकाय 'स्थानिय विकास मन्त्रालय' हो ।

उद्देश्य

प्रारम्भिक वातावरणीय परीक्षण अध्ययनको मुख्य उद्देश्य प्रस्तावित उप-आयोजना निर्माण तथा संचालन बाट उक्त क्षेत्रको भौतिक, जैविक, सामाजिक, आर्थिक तथा सांस्कृतिक वातावरणमा पर्न सक्ने प्रभावहरू पत्ता लगाई नकारात्मक प्रभावको न्यूनीकरण र सकारात्मक प्रभाव बढाउने उपायहरू बारे सुझाव दिनु, वातावरणीय अनुगमन योजना बनाई कार्यान्वयन गराउनु, तथा प्रस्तावित सडक आयोजनाको लागि प्रारम्भिक वातावरणीय परीक्षण गरे पुग्छ भन्ने कुराको यकिन गर्नु हो ।

प्रस्तावको सान्दर्भिकता

प्रस्तावित सडकले मोरङ जिल्लाको दुर्गम भेगका वासिन्दाहरूलाई सदरमुकाम संगको पहुँच बढाउनेछ भने महेन्द्र राजमार्ग संग पनि जोड्दछ । यस सडक मोरङ जिल्लाको सदरमुकाम (विराटनगर) हुदै धनकुटा जिल्ला जाने छोटो दूरीको सडकमा पर्दछ । साथै सडकको स्थानीय स्तरमा उत्पादन हुने धान, मकै, गहुँ, कोदो, फाफर, आलु, सिमी, अम्लीसो, अलैची, दुध तथा सुन्तलालाई बजार संग जोडी स्थानिय आय आर्जनमा अभिवृद्धि गर्नेछ ।

अध्ययन प्रकृया

अगष्ट, २००९ मा फिल्ड सर्वेक्षणबाट लिइएको तथ्याङ्क तथा अन्य उपलब्ध तथ्याङ्कहरूको साथै प्राविधिक टोलीबाट पुनर्वास कार्यको सर्भेक्षणको सिलसिलामा संकलन गरेका तथ्याङ्कहरू केलाएर प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन तयार गरी निष्कर्ष तथा सुझावहरू दिइएको छ ।

यो प्रारम्भीक वातावरणीय परीक्षण प्रतिवेदन नेपाल सरकारको वातावरण संरक्षण ऐन १९९७, वातावरण संरक्षण नियमावली १९९७ अनुसार तथा स्थानिय विकास मन्त्रालयबाट मिति २०६६/०३/०८ मा स्विकृत गरिएको यसै प्रस्तावकको कार्य-सूचीमा उल्लेख गरीएको अध्ययन प्रक्रिया अनुसार तयार गरिएको छ साथै, एशियाली विकास बैंकको इन्भाईरोमेन्टल एसिसमेन्ट गाइड लाइन २००३ र सेफगार्ड पोलिसी स्टेटमेन्ट २००९ को समेत अनुसरण गरिएको छ ।

आयोजनाको विवरण

प्रस्तावित सडकले मोरङ जिल्लाको सुदुर उत्तरी पहाडी दुर्गम भेगका वस्तीहरूलाई जिल्लाको सदरमुकाम संग जोड्दछ । यसको कूल लम्बाइ २६.६६ कि.मि. छ । हाल उक्त कच्ची ग्रामीण सडकको पुरै सडक खण्डमा गाडी चल्छ । यो सडक चारवटा गाउँ विकास समितिहरू क्रमशः लेटाङ, जाँते, रमिते खोला र वाराडी भएर जान्छ । हाल सडकको कूल चौडाइ ४.३ मि. छ । यस उप-आयोजनाको कूल अनुमानित लागत रु. १६३,०३८,४०९ र प्रति कि.मी अनुमानित लागत रु. ६,११५,४६९ लाग्ने देखिन्छ ।

विद्यमान वातावरणीय स्थिति

यो सडक मोरङ जिल्लाको लेटाङ गा.वि.स.को लेटाङ बजारबाट समुद्री सतहदेखि २६० मी. को उचाईबाट शुरु भएर १७२० मी. उचाईको वारङ्गी गाविसको फिकौली डाँडामा पुग्छ । यस सडक खण्डमा विभिन्न प्रकारका चट्टानहरू जस्तै सेडिमेन्टेड रक आदि पाईन्छन् । यस सडक खण्डमा विभिन्न प्रकारका गिट्टी मिसिएको माटोहरू सडक खण्डमा पाइन्छ । सडक खण्डमा पर्ने पानीका मुख्य श्रोतहरूमा काली खोल्सी, भक्री खोल्सी, पाती खोल्सी आदि पर्दछन् । प्रस्तावित सडक क्षेत्रको वायु तथा पानीको स्तर सफा रहेको देखिन्छ साथै ध्वनि प्रदूषणको समस्या देखिदैन । यो सडक प्रायः खेती गरिएको जमीन, वन र वस्तीहरू भएर जान्छ ।

यस सडक खण्डमा पाइने मुख्य रुखको प्रजातिहरूमा सखुवा, सिसउ, मसला, सिरिस, भुईकटहर, नरिवल, बकाइनो, कदम आदि पर्दछन् । स्याल, बनबिरालो, फ्याउरो, लोखर्के आदि वन्य जन्तुका साथै काग, भंगरा, ढुकुर, चमेरो, परेवा, बकुला, सारस आदि पक्षीहरू सडक वरिपरि पाईन्छ । यो सडक खण्ड संरक्षित क्षेत्र वा मध्यवर्ती क्षेत्रमा पर्दैन ।

यो सडक खण्डको प्रभावित क्षेत्र भित्र जम्मा घरधुरी संख्या ११२६ र जनसंख्या ६१४८ रहेको छ र सरदर परिवार संख्या ५.४६ छ । यहाँ ब्राह्मण, क्षेत्री, तामाङ, राई, लिम्बु, थारु लोहार, कोइरी, यादव जातीहरू बसोबास गर्दछन् ।

यहाँका बासिन्दाहरूको मुख्य पेशा कृषि र पशुपालन हो । यातायातको राम्रो सुविधा नभएकोले कृषि उब्जनीले मात्र पर्याप्त नहुने हुँदा यहाँका अधिकांश मानिसहरू श्रम रोजगारीका अन्य पेशामा काम गर्ने साथै उल्लेखनीय प्रतिशत मानिसहरू जीविकोपार्जनको सिलसिलामा हिउँदमा विराटनगर, इटहरी, तथा भारत लगायतका ठाउँमा रोजगारीका लागि जाने गर्दछन् ।

प्रमुख वातावरणीय प्रभावहरू

सकारात्मक प्रभाव

उप-आयोजना बाट तत्कालै हुने लाभमा स्थानीय स्तरमा रोजगारीको सिर्जना हुनेछ । आयोजना संचालनको लागि करिव १८४,३७० मानव-दिन वरावरको अदक्ष र ७,३७४ मानव-दिन वरावरको दक्ष श्रमशक्तीको आवश्यकता पर्नेछ । आयोजना संग सम्बन्धित कार्यमा (रोजगारीमा) गरीब, महिला तथा पिछडिएका स्थानीय जनताले प्राथमिकता पाउनेछन् । यस चरणमा हुने अन्य लाभहरूमा वन्द व्यापारको वृद्धि, उप-आयोजनाले प्रदान गरेको शीपमुलक तथा जनचेतनामुलक तालिम तथा उप-आयोजना निर्माण कार्यमा सहभागी भई स्थानीय जनताको शीप वृद्धि हुने अवसर पर्दछन् ।

सडक सञ्चालनका चरणमा सडकले प्रभावित क्षेत्रका बासिन्दालाई वजार, सामाजिक सेवा प्रदायक स्थान तथा देशका अन्य भागहरूसम्म पुग्न छिटो, छरितो तथा सुविधाजनक पहुँचको अवसर प्रदान गर्नेछ । सडकले मोरङ जिल्लाको दुर्गम भेगका बासिन्दाहरूलाई सदरमुकाम संगको पहुँच बढाउनेछ भने महेन्द्र राजमार्ग संग पनि जोड्दछ । यस सडक मोरङ जिल्लाको सदरमुकाम हुदै धनकुटा जान छोटो दूरीको सडकमा पर्दछ । सडक सुविधाको कारण मल तथा किटनाशक औषधीहरूको सस्तो तथा सुलभ आपूर्तिले कृषिको उत्पादकत्वमा अभिवृद्धि हुनेछ । यसले स्थानीय जनताको आय तथा खाद्य सुरक्षामा अभिवृद्धि हुनेछ साथै स्थानीय श्रोत साधनको उपयोग गर्ने साना कृषि उद्योगहरूको प्रवर्द्धन हुनेछ । पहुँच तथा यातायातको अवसर संगै शिक्षा, स्वास्थ्य, संचार, वजार, वैकिङ्ग तथा अन्य आर्थिक तथा सामाजिक क्षेत्रहरूको विकास हुनेछ । यसले यस क्षेत्रका मानिसहरूको समग्र जीवनस्तर उकास्न मद्दत पुर्‍याउनेछ । सडकको सञ्चालनले स्थानीय जग्गा जमिनको मुल्य वृद्धि गर्न सहयोग पुर्‍याइ स्थानीय जग्गाधनीलाई लाभ पुर्‍याउनेछ ।

उप-आयोजना कार्यन्वयनबाट पर्न सक्ने नकारात्मक प्रभावहरू:

सडक निर्माणको क्रममा भिरहरू काट्दा, खन्दा निस्किएको माटो तथा गेगर थुपार्दा, निर्माण सामग्री भिक्नलाई खानी सञ्चालन गर्दा त्यस क्षेत्रको भिरालो ठाँउहरूमा असर पर्न गई पहिरो तथा भु-क्षय हुन सक्ने सम्भावना रहन्छ । फोहर तथा खन्दा निस्किएका माटो, गेगर को उचित व्यवस्थापन हुन सकेन भने यसले भुक्षय बढाउन तथा जल प्रदूषण गराउन सक्छ ।

सडक निर्माणको दौरान बाटो चौडाई ५ मी. कायम गर्नको लागी २.५२ हेक्टर जंगल क्षेत्र प्रयोग हुनेछ, तथा विभिन्न जातका गरी करिव ४९ रुखहरू विरुवाहरू काटिनेछन् । सडक निर्माण क्रियाकलापबाट जीवजन्तुलाई असर पर्ने तथा सडक निर्माण कार्यमा खटिएका कामदारहरूले वनका जीवजन्तुलाई जिस्क्याउने तथा तिनको शिकार गर्नसक्ने सम्भावना रहेता पनि ति न्युन हुनेछ ।

सडक निर्माण कार्यको दौरान ०.२३ हेक्टर खेती गरिएको जमीन अधिग्रहण गर्नुपर्ने हुन्छ जसले गर्दा वार्षिक खाद्यान्न वालीको उत्पादनमा असर पुग्नेछ । सडक निर्माण कार्यको दौरान ७ वटा घर (Ch 3+242, 3+300, 6+875, 6+880, 6+886 6+880 र 6+912) लाई क्षति पुग्ने देखिन्छ । सडक निर्माण कार्यले स्कुल, कुलो (Ch. 2+350), आदिमा समेत असर पर्न सक्ने देखिन्छ । निर्माण कार्यको क्रममा श्रमिकहरू तथा स्थानीय जनतालाई स्वास्थ्य समस्या पर्न सक्छ तथा अप्रिय दुर्घटनाहरू घट्न सक्छन् ।

सडक सञ्चालनको चरणमा सवारी साधनको आवगमनबाट, वर्षायामको पानीबाट तथा स्थानीय भिरपहराहरूमा रुख विरुवा काट्दा भिरपहराहरूमा अस्थिरता बढ्न गई पहिरो जान सक्छ । सडक किनाराका नाला बाट वगेको अनियन्त्रित पानीले सडक मुनिका खेतवारीमा भुक्षय हुन सक्छ । सवारी साधनको वृद्धिले धुलो तथा ध्वनी प्रदूषण बढ्नेछ । त्यसैगरी सडकको सुधार संगै वन क्षेत्रसम्म भएको पहुँचको वृद्धिले वन सम्पदा तथा अन्य जन्तुमा चाप बढ्न गई वन सम्पदाको क्षय र जीवजन्तुलाई असर पर्न सक्छ । सडकको सुधार संगै बस्ती र वजारको अव्यवस्थित विस्तार हुने सम्भावना र सडक क्षेत्र मिच्ने प्रवृत्ति देखिन सक्छ ।

प्रभाव न्युनिकरणका उपायहरू:

सडक आयोजनाहरूलाई वातावरण मैत्री बनाउनका लागी सकारात्मक प्रभावलाई बढावा गर्ने तथा नकारात्मक प्रभावहरूलाई नियन्त्रण या न्युनिकरण गर्ने थुप्रै उपायहरू यस प्रतिवेदनमा प्रस्तावित गरिएको छ । जनताले राजी खुशीले बाटोको लागी दिएको वाहेक आयोजनाले गरिवीका रेखामुनि परेका परिवारहरूको अधिग्रहण गर्ने सबै जग्गाको प्रचलित मुल्य अनुसार

क्षतिपूर्ति दिनेछ । सडक ठेक्का पट्टा मार्फत र सम्भव भए सम्म एल.ई.पी. (श्रम मुलक वातावरण मैत्री सहभागीतामूलक) ढंगले निर्माण गरिने छ । क्षति भएका निजी सम्पत्तीहरूको पुनर्वास कार्य आयोजना अनुसार क्षतिपूर्ती दिइनेछ । आयोजनाले प्रभावित जनतालाई निर्माण कार्यमा रोजगारीमा तथा शिपमुलक तालिममा प्रथमिकता दिनेछ । आयोजना निर्माणको क्रममा जग्गा फँडानी गर्दा, जमिन काट्दा, खानी सञ्चालन गर्दा खन्दा निस्किएका माटो, गेगर थुपार्दा तथा अन्य संवेदनशील कार्य गर्दा त्यस क्षेत्रको वातावरणलाई सुरक्षित राख्न विशेष ध्यान दिनेछ । बायो इन्जिनियरिङ र वाटो छेउ-छाउ वृक्षारोपण गरीने छ । निर्माण कार्यको क्रममा श्रमिकहरूको बिमा गरिने छ तथा सुरक्षाका सामाग्रीहरू जस्तै हेल्मेट, माक्स, बुट, ग्लोभ्स आदि श्रमिकहरूलाई प्रयोगमा ल्याउन दिईने छ । वन, जीवजन्तुको संरक्षण गर्न तथा सामाजिक अक्षुण्णतालाई कायम राख्न यस चरणमा जनचेतनामूलक कार्यक्रमहरू तथा तालिमहरू सञ्चालन गरिनेछ । निर्माण कार्यको क्रममा श्रमिकहरूको बिमा गरिने छ तथा सुरक्षाका सम्पूर्ण सामाग्री श्रमिकहरूलाई प्रयोगमा ल्याउन दिईने छ । निर्माण स्थलहरूमा प्राथमिक उपचारको सामग्रीहरूको व्यवस्था गरिने छ । काटिएका रुख विरुवाहरूको क्षतिपूर्ति वापत १:२५+१०% अनुपातमा वन क्षेत्रमा र १:१ निजी जग्गाहरूमा वृक्षारोपण गरिनेछ । वृक्षारोपणमा संरक्षित तथा स्थानिय प्रजातिहरूलाई प्राथमिकता दिइनेछ । सडक सञ्चालनका क्रममा सडकमा देखिएका अस्थिरताहरूलाई नियमित रूपमा मर्मत सभार गरिनेछ । सडकमा तथा सडकको कारण नजिकैको खेतवारीमा पानी जम्मा हुन नदिन उचित निकासको व्यवस्थापन गरिनेछ । स्कूल नजिक सचना पाटी, वाटो छेउ-छाउ वृक्षारोपण सडक दुर्घटनाबाट वचावत गर्ने उपायहरू अवलम्बन गरिनेछ ।

वातावरण व्यवस्थापन योजना

यस प्रतिवेदनमा वातावरण व्यवस्थापन योजना अन्तर्गत उप-आयोजनाबाट पर्ने संभावित असरहरू, असरहरूको प्रभाव, न्युनिकरण विधि, अनुगमन विधि तथा कार्यतालिका प्रस्तावित गरिएको छ । यसका साथै न्युनिकरणका उपायहरूको तथा अनुगमन कार्यको कार्यान्वयन गर्ने जिम्मेवार निकायहरूको पनि पहिचान गरिएको छ । अनुगमनका लागि आवश्यक भौतिक, जैविक, सामाजिक-आर्थिक तथा साँस्कृतिक वातावरणका विभिन्न अनुगमन सुचाङ्कहरूको पनि पहिचान गरिएको छ । वातावरण व्यवस्थापन योजना कार्यान्वयन गर्न निम्नानुसार खर्च हुने अनुमान गरिएको छ:

क्र. सं.	विवरण	रकम (ने.र.)	कैफियत्
१.	वातावरण सम्बन्धी जनचेतनामूलक तालिम तथा अन्य तालिम	२००,०००/-	आयोजनाको बजेटमा समावेश गरिने ।
२.	श्रमिकहरूको बिमा	४००,०००/-	BoQ मा समावेश गरिने ।
३.	बायो-इन्जिनियरिङ, सडक छेउ वृक्षारोपण	११,२४४,०२८/-	BoQ मा समावेश गरिने ।
४.	पुनर्वास लागत (सार्वजनिक तथा निजी संरचनाको क्षतिपूर्ति/पुनर्निर्माण लागत, प्रभावित परिवारलाई जिविकोपार्जन सुधारका लागि जिवन उपयोगी तालिम)	१,१८९,६५५/-	पुनर्वास योजनामा समावेश गरिने ।
५.	पुनर्निर्माण तथा अन्य	५००,०००/-	BoQ मा समावेश गरिने ।
६.	क्षतिपूर्ती वृक्षारोपण	५२,९९३/-	आयोजनाको बजेटमा समावेश गरिने ।
७.	सामाजिक कार्य	८२४,९०० /-	सामाजिक योजना तथा आयोजनाको बजेटमा समावेश गरिने ।
८.	पेशागत स्वास्थ्य सुरक्षा तथा जानकारीमूलक सूचनापाटी	५००,०००/-	BoQ मा समावेश गरिने ।
९.	अनुगमन तथा मूल्यांकन	२००,०००/-	आयोजनाको बजेटमा समावेश गरिने ।
	जम्मा :	१५,१११,५७६/-	

निष्कर्ष

पहिचान गरिएका प्रायः वातावरणीय प्रभावहरू कम महत्वका तथा मुख्य गरी निर्माणकार्यका वखतमा सीमित रहेको पाइएको छ । वातावरण व्यवस्थापन योजना अन्तर्गत उल्लेख गरिएको उपायहरूको कार्यान्वयन गरिएमा यस आयोजनाको कार्यान्वयनले आयोजना क्षेत्रको भौतिक, जैविक, सामाजिक - आर्थिक तथा साँस्कृतिक वातावरणमा उल्लेखनीय नकारात्मक प्रभाव नपर्ने देखिन्छ । यस प्रारम्भिक वातावरणीय अध्ययनको आधारमा यस प्रतिवेदनमा उल्लेख गरिएको वातावरणीय व्यवस्थापन योजनालाई पूर्ण रूपमा लागु गरी प्रस्तावित उप-आयोजना कार्यान्वयन गर्न सिफारिश गरिन्छ । उप-आयोजनाको 'वातावरणीय प्रभाव मूल्याङ्कन' स्तरमा अध्ययन गर्न आवश्यक नरहेको सिफारिश समेत गरिन्छ ।

EXECUTIVE SUMMARY

Background

Government of Nepal has received financial assistance from ADB, SDC, DFID and OFID for implementation of the Rural Reconstruction and Rehabilitation Sector Development Program (RRRSDP). The RRRSDP aims for reconstruction and rehabilitation of rural infrastructures damaged in the twenty conflict affected districts of the country. The Proposed 26.66 km long Letang - 6 No. Budhabare Rural Road in Morang District is one of the Subprojects selected under the RRRSDP. It is an existing earthen road proposed for upgrading in gravel standard.

Project Proponent

The 'Proponent' of the proposed Subproject (Proposal) is District Development Committee (DDC)/District Technical Office (DTO), Morang. Ministry of Local Development (MoLD) is the 'Concerned Agency' for approving the IEE study.

Objectives of the IEE Study

The objectives of the IEE study is to identify the impacts on the physical, biological, socio-economic and cultural environment of the project influence area from construction and operation of the Proposal, and recommend site-specific adverse impact mitigation measures and beneficial impact augmentation measures. The Study will assess if the IEE level study is sufficient for the Subproject.

Relevancy of the Proposal

This road links the remote area of the district to its headquarter and Mahendra Highway. This road is the shortest distance from Morang headquarter (Biratnagar) to Dhankuta District. The area has high potential in agriculture production. As a result socio-economic condition of people living in that area will enhance as local products like rice, wheat, barley, millet, maize, potato, beans and cash crop alaichi, amliso, dairy production and orange.

Study Methodology

The IEE study has been conducted through review of secondary information collected from relevant agencies, and primary information collected from the field survey in August 2009. The survey methods included walk-through survey along the proposed alignment with checklists, conduction of sample household survey, organizing focus group discussions (FGD) in the related VDCs, and information supplemented by the resettlement and technical team of the Subproject.

The IEE report has been prepared following the Environmental Protection Act, 2053 BS (1997 AD) and Environmental Protection Rules, 2054 BS (1997 AD) of the Government of Nepal (GoN); and Environmental Assessment Guidelines, 2003, and Safeguard Policy Statement, 2009 of ADB. The report follows the Terms of Reference for IEE Study approved by MoLD on 08/03/2066 BS.

Brief Description of the Subproject

The proposed road links with Northern part of the remote area of Morang district with the district headquarter. The total length of road is 26.66 km. The road alignment is already opened and motorable. The road passes four village development committees namely Letang, Jante, Ramitekhola and Warrangi. The existing average width of the road is 4.3 m and geometry will be improved as per design required. The total project cost is NRs 163,038,409.00 and per km cost is NRs. 6,115,469.00.

Existing Environmental Condition

The road starts from Letang VDC at 260 m amsl and ends at Phirkauli Dada of Warrangi VDC at 1720m amsl. The project area comprise mainly of sedimented rock at various places. Generally, boulder mixed soil is found along the road alignment. Main water bodies found across the road alignment are Kali kholsi, Jhakri Kholsi, and Pati Kholsi etc. Ambient air and water quality of the proposed project area is observed to be good and there is no noise pollution. The road mainly passes through cultivated land, forest and settlements.

The dominant vegetation found in the road alignment are Sakhuwa (*Shorea robusta*), Sissau (*Dalbergia Sissoo*), Masala (*Eucalyptus camaldulensis*), Siris (*Albizia procera*), Pineapple (*Ananas comosus*), Coconut (*Cocos nuriera*), Bakaino (*Melia azedarach*) and Kadam (*Anthrocephalus chinensis*). Similarly, Jackle (*Canis aureus*), Jungle Cat (*Felis chaus*), Fox (*Vulpes sp.*) and Squirrel (*Ratua species*) are the common mammals; and Crow (*Corvus splendens*), Sparrow (*Passer domesticus*), Bat, Dhukur, Bakulla, Saras, Pigeon (*Columba livia*) are the birds found in the Subproject area. The road does not fall under any protected area or their buffer zones. Total population of the Subproject area is 6148 total household numbers is 1126, and average family size is 5.46. Brahmin, Chettri, Tamang, Rai, Limbu, Tharu, Lohar, Koiree and Yadav are the main castes living in the area.

Subsistence agriculture and livestock farming are the main occupation. Due to limited transportation facilities agriculture farming is not enough for subsistence level. Moreover, significant percentage of the economically

active male population also migrates to various places including Biratnagar, Itahari and India seasonally during slack farming season for employment.

Major Environmental Impacts

Beneficial Impacts

The immediate benefit from this road Subproject is employment opportunities. The implementation of Subproject require about 184,370 person days of unskilled and 7,374 person days of skilled manpower. The project will give advantage to local people for employment opportunity. Other beneficial impacts include enhancement of local business, development in skills of local people from skill developing training, awareness raising training and involvement in the construction of the project.

During operation stage of road, the people from the Zone of Influence (ZoI)¹ will get easy and fast accessibility to markets, social services and other regions of the country. This road links the remote area of the district to its headquarter and Mahendra Highway. This road is the shortest distance from Morang head quarters to Dhankuta. The fertilizers and pesticides will become cheaper with better transportation facility hence, agricultural production will increase. This will ensure better economic condition and food security of the people living in the ZoI of the project area. Moreover this will promote the small agro based industries that uses local resources. Easy access and opportunity of better transportation system will develop other sectors like education, health, communication, market, banking and other socio-economic sectors. This will increase the overall living condition of the people living in ZoI of project area. The better land network will result in increased land price which will be beneficial for land owners.

Adverse Impacts

During the road construction, the cutting of slopes and consequently disposal of soil and earth material, operation of quarries might result in on erosion and landslide during construction and operation. Furthermore, spoils generated during construction can create the water pollution to the nearby water sources.

During road widening and construction required 2.52 ha of forest area and different type of tree total 49 nos. will have to be cleared. Also during construction of road there might be possible impacts on wildlife as workers might harass/ hunt the wildlife in the nearby forests, however, such effects are very minimum.

During construction stage, there will be loss 0.23 ha of agricultural land which results in annual reduction of agricultural production. 7 residential houses (Ch 3+242, 3+300, 6+875, 6+883, 6+876, 6+886 and 6+912) will be affected. Also schools, irrigation canal (Ch. 2+350) will be affected during construction of road. Labors and local people are prone to health effects and accidents relating to construction activities.

During operation stage, vehicular movement, monsoon rain, cutting of trees on the unstable slopes might result in slope instability and hence erosion and landslides might occur. The flowing water on the side drain of the road might cause erosion of soil on adjacent agricultural land. Vehicular emissions will result in air and noise pollution. Because of easy accessibility to the forest areas will deplete forest resources and wildlife. New settlement, bazaar area will be expanse and this may increase encroachment of the RoW.

Mitigation Measures

The various benefit augmentation measures and adverse impact mitigation measures have been proposed in the report to make this project environment friendly. Other than land donated by local people for the projects, adequate compensation will be provided to affected poor and marginalize household for all the lands that need to acquire. The construction of road will be based on contractor modality and Labour-based, Environment friendly and Participatory (LEP) Approach as far as possible. Loss of private properties will be compensated according to resettlement plan. Affected families will be given high priority for employment and skill development trainings. Necessary measures will be taken to reduce the adverse effects that might arise from site clearance, cutting of slopes, disposal of spoils and quarrying activities. Bio-engineering and roadside tree plantation will be done. Necessary trainings and awareness programs will be conducted. Necessary measures will be adopted for protection of flora and fauna. At construction site, the workers will be provided insurance, first aid facilities and safety equipments such as helmets, masks, gloves and boots. Loss of trees will be compensated by planting of trees in the ratio of 1:25+10% for the numbers of trees that need to be cut down during construction at forest area and at 1:1 will be done in private land. Protected species will be given emphasis for plantation. Proper maintenance and proper drain system will be provided to prevent accumulation of water on the nearby agricultural lands during operation. Information signboard will be placed in school area. Roadside tree plantation will be done. Adequate road safety measures will be provided to minimize road accident.

¹ ZoI is one and half hour walking distance from the road and areas of related VDCs.

Environmental Management Plan

Environmental management plan is prepared to ensure the implementation and monitoring of mitigation measures for minimizing adverse impacts and maximizing the beneficial impacts. The necessary mitigation measures together with environmental monitoring process and responsible bodies for environmental monitoring have been identified. Similarly, for environmental monitoring various sections of physical, biological, socio-economic and cultural environment have been identified to generate useful information and improves the quality of implementation of mitigation measures.

The cost for implementing environmental management plan has been identified as follows:

SN.	Description	Amount (NRs.)	Remarks
1	Environmental awareness raising training and other training	200,000.00	To be included in project cost
2	Insurance of workers	400,000.00	To be included in BoQ
3	Bio-engineering/Road side plantation	11,244,028.00	To be included in project cost
4	Resettlement cost (Compensation/reconstruction for public and private properties, Livelihood Enhancement Skills Training (LEST) program for affected families)	1,189,655.00	To be included in Resettlement plan, project cost
5	Restoration or relocation of affected infrastructures, Spoil management, Reinstatement of quarry, stockpiling etc.	500,000.00	To be included in BoQ
6	Compensatory Plantation cost	52,993.00	To be included in project cost
7	Social Plan Cost	824,900.00	To be included in Social plan, project cost
8	Occupational health and safety, Information signboard	500,000.00	To be included in BoQ
9	Monitoring	200,000.00	To be included in project cost
	Total	15,111,576.00	

Conclusion and Recommendation

The identified environment impacts will be seen in limited small areas and mainly during construction period. The implementation of proposed mitigation measures for identified adverse impacts will minimize as well as mitigate the adverse impacts on environment. The Resettlement Plan and compensation to the affected households should be ensured. The implementation of measures as described in environmental management plan will mitigate the negative impacts on physical, biological, socio-economic and cultural environment. Therefore, this IEE is sufficient for approval of the proposed sub-project, and recommended for implementation with incorporation of mitigation measures and environmental management plan. Therefore, the proposed Subproject does not require Environmental Impact Assessment (EIA).

1. Introduction

1.1 Background

1. The Rural Reconstruction and Rehabilitation Sector Development Program (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 Program is financed by the Government of Nepal (GoN), Asian Development Bank (ADB), Department for International Development (DFID), Swiss Development Cooperation (SDC), Nepal and OPEC Fund for International Development (OFID). The Program covers twenty districts spread over the country. Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR) under the Ministry of Local Development (MoLD) is the executing agency (EA). The District Development Committees (DDCs) / District Technical Office (DTO) are the Project Implementing Agencies. The DDC/DTO is supported by District Implementation Support Team (DIST) with engineering, safeguards and social mobilization responsibilities.

2. Morang District is one of the project districts under RRRSDP. This Proposal is for upgrading in gravel standard of the 26.66 km long Letang - 6 No. Budhabare district road in Morang District.

1.2 The Name and Address of Proponent

Name of Proposal	:	Upgrading of Letang-6no.Budhabare District Road, Morang District, Nepal
Name of Proponent	:	Office of District Development Committee/ District Technical Office,
Address of Proponent	:	Morang Biratnagar, Morang District Phone No: 021-536943/533750 Fax No: 021-523379

1.3 Relevancy of the Proposal

3 The Project area is located at remote and underdeveloped North hilly part of Morang district .The road is currently earthen and motorable during dry weather. This road links the remote area of the district to its headquarter, Biratnagar and Mahendra Highway. This road is the shortest distance from Morang head quarters to Dhankuta. The area has high potential in production of rice, wheat, barley, millet, maize, potato, beans and cash crop alaichi, amliso, dairy production and orange. In this regard, the upgrading of the road will enhance access of people to social services and market centers with significantly reduced travel time and cost, and will contribute in their socio-economic development. Access shall also attract other development infrastructures and open door to further development opportunities in the area.

1.4 Need and Objectives of the IEE Study

4 **Need:** An IEE study of the Proposal is a legal requirement according to the Environment Protection Act, 1997; and Environment Protection Rule, 1997 (Amendment 2007) of GoN; and according to the provisions of the Environmental Assessment Guidelines, 2003; and Safeguard Policy Statement, 2009 of ADB.

5 **Objectives:** The main objective of the IEE study is to identify the impacts from the construction and operation of the Proposal on the physical, biological, socio-economic and cultural environment of the Subproject area. The IEE study recommends practical and site specific environmental mitigation and enhancement measures, prepare and implement environmental monitoring plan and make sure that IEE is sufficient for the proposed road sub-project.

1.5 Methodology Adopted

6 The IEE study has followed the provisions of the EPA, 1997 and EPR, 1997, and the provisions of ADB. It follows methodology suggested in the approved Terms of Reference for IEE Study (please refer Annex 1). For the collection of environmental features related to bio physical environment, maximum 100 meter distance observable from the centre of the road alignment was taken as an influence area and socio-economic and cultural environment was taken of ZOI (one and half hour walking distance from the centre line of the road) information of the Subproject area. The IEE study has been conducted through review of secondary information collected from relevant agencies, and primary information collected from the field survey in August 2009. This IEE report is prepared based on ToR approved on 2066/03/08 B.S by MoLD which is given in Annex (1). Field survey, sample household survey, organization of Focus Group Discussions in the related VDCs was carried out and necessary information was collected. The DDCs officials, VDCs and Community Groups were also contacted to verify information to solicit their concerns. Based on the analysis of information the impacts have been predicted, mitigation measures prepared and monitoring plan has been developed.

1.6 Public Consultation

7 In order to ensure the involvement of concerned stakeholders, following procedures were followed:

- Publication of Public Notice- a 15 days public notice was published on 2066/03/25 in Naya Patrika national daily newspaper (**see Annex V**) seeking written opinion from the concerned VDCs, DDC, schools, health posts and related local stakeholders. A copy of the public notice was also affixed in the offices of the above mentioned organizations and deed of enquiry (muchulka) was collected (**see Annex VI and Annex VII**).
- Interaction with local communities and related stakeholders like District Forest Office, District Agricultural Development Office, District Watershed and Soil Conservation Office and others were carried out during field survey to collect the public concerns and suggestions (**see Annex VIII**). Focus Group Discussions were conducted in all the five VDCs to collect and solicit their suggestions on protection of bio-physical and socio-economic environment in the Zone of Influence (ZOI) of the road. Summary of minutes of meeting is given in **Annex IX** and following Table 2.1.
- Draft IEE report was kept at information center of DDC, Letang, Jante, Ramitekhola and Warrangi VDCs for public disclosure. Information was also disseminated through person to person contacts and interviews and group discussions. Recommendation Letters for implementation of the Proposal were also obtained from all the concerned VDCs (**see Annex X**).

Table 1.1: Summary of FGD Meeting Conducted Under IEE Study

Location	Date	No. of Participants		Issues and Suggestions of the meeting	Decision
		Male	Female		
Letang	2066/04/04	8	5	<ul style="list-style-type: none"> No major environmental issues related to implementation of the subproject were raised in the meeting. Road should be constructed as soon as possible. 	<ul style="list-style-type: none"> Adequate benefit augmentation measures and adverse impact mitigation measures shall be taken to enhance the beneficial impact and mitigate the adverse impacts due to implementation of the subproject.
Jante	2066/10/21	10	5		
Ramite Khola	2066/04/18	12	5		
Warrangi	2066/09/15	10	6		

1.7 Information disclosure

8 The approved IEE report is accessible to interested parties and general public through the websites of ADB and MoLD/DoLIDAR. The copy of approved IEE report has been distributed to following offices:

1. District Development Committee, Morang
2. District Technical Office, Morang
3. District Project Office, Morang
4. District Implementation Support Team, Morang
5. Letang, Jante, Ramitekhola and Warrangi VDCs, Morang
6. Ministry of Local Development, Environment Management Section
7. Department of Local Infrastructure Development and Agricultural Roads
8. Project Coordination Unit, RRRSDP
9. Asian Development Bank, Nepal Resident Mission

2. Description of the Proposal

9 The proposed road lies in Northern part of morang district in Eastern Development region of Nepal. The proposed road links the remote area of the district with Biratnagar and Mahendra Highway. This road links with Dhankuta district, which will be the shortest distance from district headquarter Biratnagar to Dhankuta. Length of road in ToR was 32 km but after detail survey and DDC decision, it was proposed that the road to be constructed up-to Phirkauli Danda of Warrangi VDC and total length is 26.66 km. The remaining section from Phirkauli Danda to 6 no. Budhabare in Dhankuta district will be constructed by Dhankuta, DDC. This road starts from Letang VDC which is 8 km far from Mahendra Highway and ends at Phirkauli Danda of Warrangi VDC of Morang District. In between, the road passes through Jante and Ramite Khola VDCs.

10 The road is currently of earthen surface and vehicles ply in dry season. Widening, geometric correction and grade improvement, slope stabilization, side drains and construction of cross drainage structures is planned to be implemented under the proposed upgrading works of the road. The total project cost is estimated at average of NRs. 163,038,409.00 (Excluding Bio-engineering Cost) with NRs. 6,115,469.00 per km as shown in **Annex III**. Activities included during the road construction are: Site clearance, Pavement work, Structures work (toe wall, retaining wall, breast wall, river training etc.), Earthwork, Bio-engineering, Cross drainage works and Side drain works

SALIENT FEATURES

1. Name of the Project	:	Letang - 6 No. Budhabare VDC of Morang District
1.1 Project Components	:	Road
1.2 Project Activities	:	Construction Stage Site clearance, Pavement work, Structures work (toe wall, retaining wall, breast wall, river training), Earthwork, Bio-engineering, Cross drainage works and Side drain works. Operation Stage Maintenance Works
2. Locations		
2.1 Geographical Location:		
2.1.1 Start Point	:	Letang
2.1.2 End Point	:	Phirkauli Danda
2.2 Geographical Features		
2.2.1 Terrain	:	Hilly
2.2.2 Land use Pattern	:	Agricultural land, forest area and built up area. (The road does not pass through any National park, protected area and Archeological Site)
2.2.3 Altitude	:	260 m asml at Letang and 1720 m asml at Phirkauli Danda
2.2.4 Climate	:	Sub-Tropical
2.2.5 Soil	:	Boulder mix soil
3. Classification of Road	:	District Road (Rural Road Class A)
4. Length of Road	:	26.66 km
5. Standard of Pavement	:	Gravel
6. Design speed	:	20 km/hr
7. Major Settlements	:	Gange Chowk, B.P. Chowk, Campus Chowk, Milan Chowk, Sukechauri Chowk, Lakhbari Chowk, Guhabari, Patapur, Yangshila, Dhapagaon, Pangre, Jamire, Samala Danda, Aahale, Baaise, Ghumaune, Khola Gaun, Phirkauli, Gadahare
7.1 No. of Household	:	1126 HHs
7.2 VDCs along the Road	:	Letang, Jante, Ramite Khola and Warrangi
8. Right of way	:	5m each side (center line)
9. Formation width	:	5 m
10. Carriageway width	:	3m
11. Lane	:	Single
12. Structures		
12.1 Gabion Works	:	2974 Cum.
12.2 Stone Pitching	:	9522 Cum.
12.3 Hume Pipe	:	247.50 Rm.

12.4 Bio-Engineering	:	8% to total cost (NRs. 11,244,028.00)
13. Earth Work		
13.1 E/W in Excavation	:	152,969.41 Cum
13.2 Embankment Filling	:	47037.37 Cum
14. Project cost		
14.1 Total Cost (NRs)	:	NRs 163,038,409.00 (Excluding Bio-engineering Cost)
14.2 Costs per km (NRs.)	:	NRs 6,115,469.00
15. Employment generation:		
15.1 Total employment	:	191,744(person days)
15.2 Skilled	:	7,374(person days)
15.3 Unskilled	:	184,370(person days)
16. Radius	:	Min. 10
17. Gradient	:	Max. 12%
18. DTMP Code	:	05A016R

2.1 Construction Approach and Activities

11 The construction will be based on contractor modality and Labor-based, Environment-friendly and Participatory (LEP) Approach as far as possible. The important features of the LEP approach are (i) construction with balanced cut and fill; (ii) manual work and use of hand tools and small equipment rather than heavy machinery; (iii) bio-engineering for slope stabilization; (iv) use soft engineering structures. Contractor 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.

12 Activities included during the road construction are: Site clearance, Pavement work, Structures work (toe wall, retaining wall, breast wall, river training etc.), Earthwork, Bio-engineering, Cross drainage works and Side drain works

2.2 Proposed Schedule for Implementation of Subproject

13 Following Table 2.1 shows the proposed implementation schedule of the Subproject:

Table 2.1: Sub-project implementation schedule

SN	Activity	2008 IV	2009				2010				2011			
			I	II	III	IV	I	II	III	IV	I	II	III	IV
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 MoLD													
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 - January, February, March
- II - April, May, June
- III - July, August, September
- IV - October, November, December

Figure 2.1: Location of Letang - 6 No. Budhabare Road Subproject in Morang District

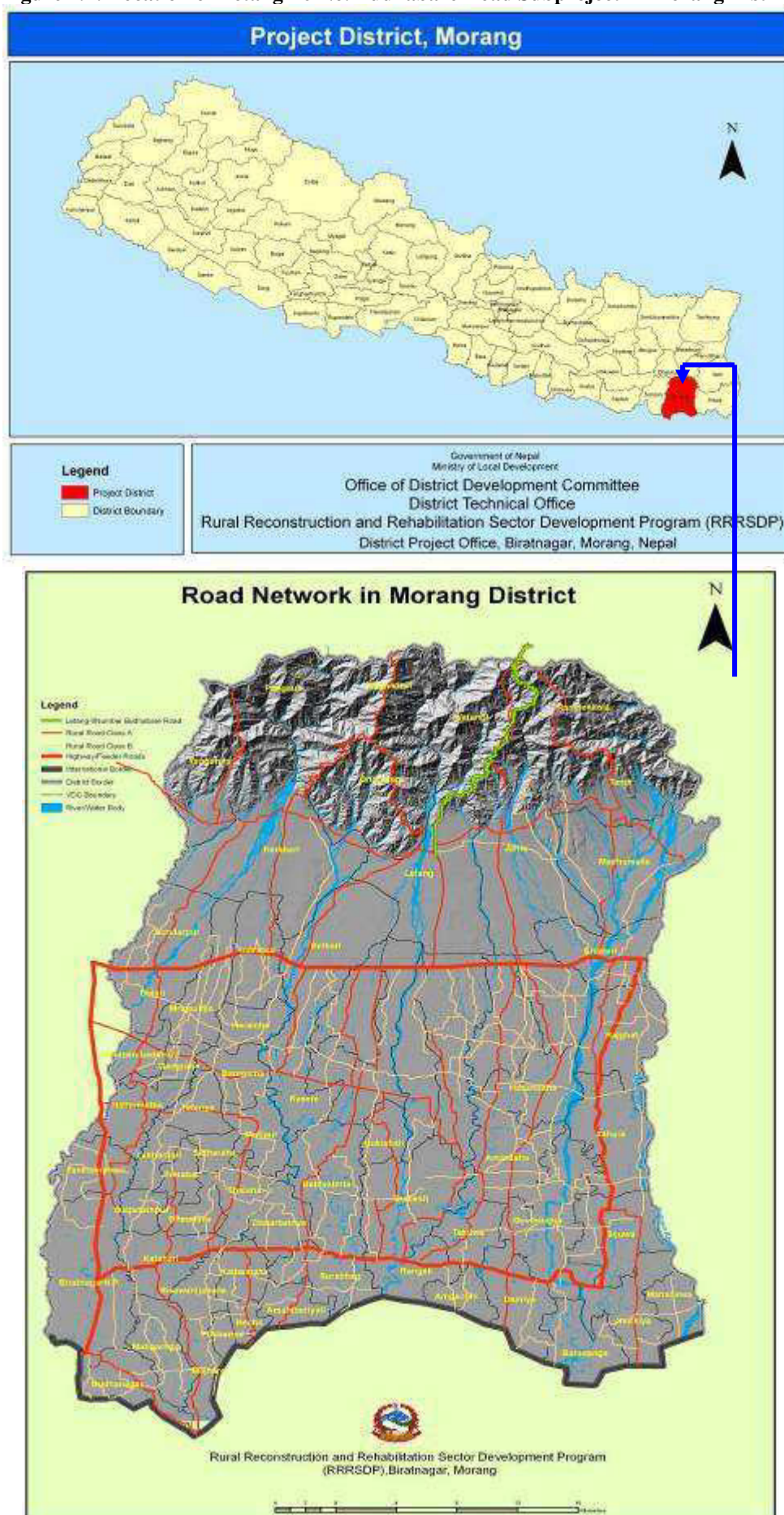
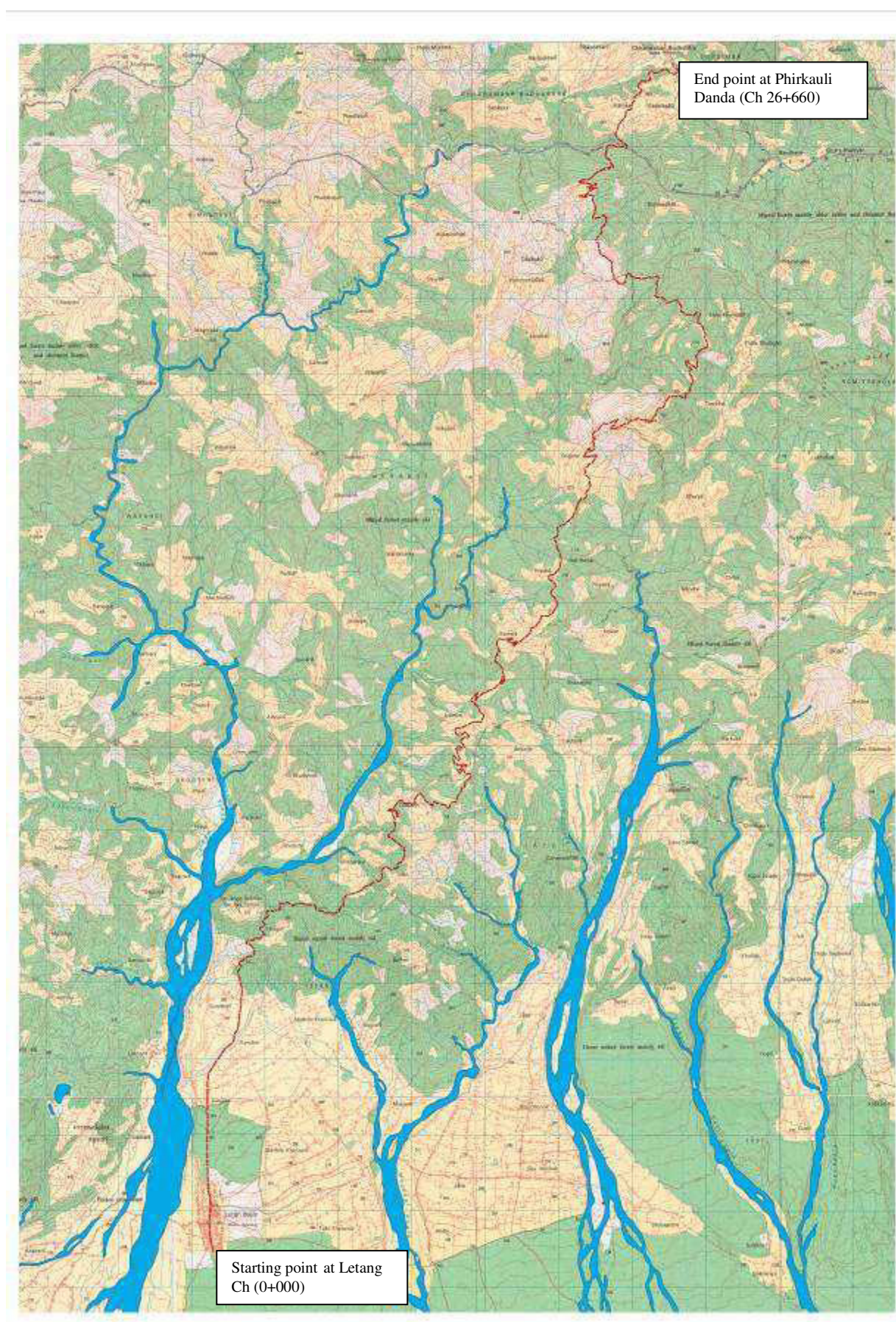


Figure 2.2: Topographical Map, Showing the Letang - 6 No. Budhabare Road Alignment.



3. Review of Relevant Acts, Regulations and Guidelines

14 The IEE study has followed the provisions of following acts, regulations and guidelines of Government of Nepal and ADB to ensure conservation of environment during proposal implementation and operation.

Table 3.1: Review of Environmental Acts, Regulations and Guidelines

SN	Environmental Acts, Regulations and Guidelines	Description of Requirements
1	Three Years Interim Plan, 2007/08-2009/10, GoN	Requires all projects will be formulated and constructed based on methods that optimally utilize the local skill and resources and generate employment opportunities.
2	Environmental Protection Act, 2053 BS (1997 AD), GoN	Any development project, before implementation, shall pass through environmental assessment, which will be either IEE or an EIA depending upon the location, type and size of the projects.
3	Environmental Protection Rule 2054 BS (1997 AD) (amendment, 2007), GoN	The EPR and its schedules clearly provide various step-wise requirements to be followed while conducting the IEE study. It also obliges the Proponent to timely consult and inform the public on the contents of the proposal and IEE study.
4	Forest Act, 2049 BS (1993 AD) (amendment, 2007), GoN	Requires decision makers to take account of all forest values, including environmental services and biodiversity, not just the production of timber and other commodities. It includes several provisions to ensure development, conservation, management, and sustainable use of forest resources based on approved work plan.
5	Forest Rules, 2051 BS (1995 AD), GoN	Elaborates legal measures for the conservation of forests and wildlife. Expenses incurred for cutting trees and transportation shall be borne by proponent.
6	Batabaraniya Nirdesika (Nepal; MLD), 2057, GoN	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.
7	Local Self Governance Act 2055 BS (1999 AD) (1999) and Regulation 2055 BS (1999 AD), GoN	Empowers the local bodies for the conservation of soil, forest and other natural resources and implements environmental conservation activities
8	Land Acquisition Act, 2034 BS (1977 AD) and Land Acquisition Rules, 2026 BS (1969 AD), GoN	Specifies procedural matters on land acquisition and compensation
9	National Environmental Impact Assessment Guidelines, 1993 (2050 BS), GoN	Provides 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, earthworks and slope stabilization, location of stone crushing plants etc.
10	APPROACH for the Development of Agricultural and Rural Roads, 1999 (2055 BS), GoN	Emphasizes labor based technology and environmental friendly, local resource oriented construction methods to be incorporated actively in rural infrastructure process.
11	RRRSDP Environmental Assessment & Review Procedures (EARP), 2007, GoN	For preparation of environmental assessments of future subprojects under Rural Reconstruction and Rehabilitation Sector Development Program (RRRSDP), this EARP includes: i) The process to be adopted while preparing environmental reports, ii) the potential environmental impacts that could result from undertaking the Project based on the Initial Environmental Examinations (IEEs) of sample core subprojects; iii) the proposed mitigation measures to avoid the identified impacts; iv) institutional capacity assessment and strengthening arrangements; v) legal framework for environmental assessment, domestic and the Asian Development Bank (ADB) environmental assessment and review procedures; and finally vi) the approaches to be adopted during implementation of the Project in order to ensure that environmental aspects are dealt with in a comprehensive manner.

12	Reference Manual for Environmental and Social Aspects of Integrated Road Development, 2003 (2060 BS), GoN	Suggests stepwise process of addressing environmental and social issues alongside the technical, financial and others
13	Environmental Assessment Guidelines, 2003, ADB	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
14	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.
15	The Interim Constitution of Nepal, 2063 (2007).	Has provision of right regarding environment - Every person shall have the right to live in clean environment.
16	The Labor Act, 2048 BS (1992 AD)	Regulates the working environment and deals with occupational health and safety.
17	Child Labor (Prohibition and Regulation) Act, 2056 (2000)	No child having not attained the age of 14 years shall be engaged in works as a laborer.

4. Baseline Environmental Condition in the Subproject Area

4.1 Physical Environment

4.1.1 Topography

15 The elevation of the starting point of the road at Letang is 260 m amsl and ends at Phirkauli Dada of Warrangi VDC at 1720 m amsl. The road alignment passes through the hilly areas. The grade of the road varies from 2% to 18%. Major portion of the road passes along the north-east facing slope.

4.1.2 Geology and Soil Type

16 The project area comprise mainly of sedimented rock at various places. Generally, boulder mixed soil is found along the road alignment. Following **Table 4.1** presents the geological features recorded along the road alignment.

Table 4.1: Geological Features along the Road Alignment

Chainage	Terrain slope	Land Use Pattern	Geological Problem
0+000 – 3+050 Km	Moderate	Settlement	-
3+050 - 7+370 km	Moderate	Settlement+Cultivated	Major landslide at Ch.4+232
7+ 370 – 10+000 km	Moderate	Cultivated	-
10+000-14+000 km	Moderate	Cultivated+Forest	Major landslide at Ch.11+200
14+000-17+260 km	Moderate	Cultivated+Forest	-
17+000– 17+300 km	Moderate	Settlement	-
18+800 – 26+660 km	Moderate	forest	-

Source: Field Survey, August, 2009

4.1.3 Land Use

17 Land use pattern of the area through which the road passes have been classified into three types: cultivated land, forest and built up area as shown in **Table 4.2**.

Table 4.2: Summary 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)
	From	To					
Built up area	0+000	3+050	3050	5	0	1.525	0
	6+800	7+370	1620	4.5	0.5	0.729	0.081
	17+000	17+300	300	5	0	0.15	0
Sub total			4970			2.404	0.081
Agricultural land	3+050	4+100	1050	5	0	0.525	0
	7+370	12+300	4930	4.8	0.2	2.366	0.0986
	12+300	14+260	1960	4.5	0.5	0.882	0.098
	17+300	18+260	960	4.5	0.5	0.432	0.245
Sub total			8900			4.205	0.2312
Forest Land	4+100	6+800	2700	3.5	1.5	0.945	0.405
	14+260	17+000	2740	3.5	1.5	0.959	0.411
	18+260	26+660	8540	3.0	2	2.562	1.708
Sub total			13980			4.466	2.524

Source: Field Survey, August, 2009

4.1.4 Climate

18 The road lies in sub tropical region. Rainy season starts from June and ends in September. The meteorological record shows total average annual rainfall of 1300 mm. Average minimum temperatures of 3°C and average maximum temperature of 42°C is observed in the area. (Source: District Profile of Morang, 2058)

4.1.5 Hydrology and Drainage System

19 Main water bodies found across the road alignment are Kali Kholsi at Ch 23+280, Jhakri Kholsi at Ch 24+980 and at Pati Kholsi at Ch 25+520. Many dry streams are across the road alignment. No wetlands are found within the vicinity of the road. The summary of the cross drainage works along the road alignment is given in **Annex XIV**.

4.1.6 Soil Erosion and Sedimentation

20 The stability of slopes along the road corridor depends upon slope angle, the material constituting the slope, rock discontinuities and hydrological conditions. Proposed alignment pass through a major landslide at Ch. 4+232 and 11+200. The main causes for occurring slides are rock weathering, precipitation and surface runoff.

4.1.7 Existing Road Condition

21 The maximum and the minimum gradient along the road alignment is 18% and 4% respectively. The whole length of the road alignment is motorable. The width of the road alignment in average is 4.3 m. The road is operable only during dry season. Vehicles (2 truck/mini truck and 5 jeep) ply up to Budhabare during dry season. Grade and curve problem has been seen at Ch. 18+500 – Ch 19+00 where alignment is needed to change in this section. About 8 trees are removed in this section.



Existing Road alignment at Aahale

4.1.8 Air, Noise and Water Quality

22 The air, noise and water quality are not measured or tested, but are observed to be within acceptable limit. Dust emission during vehicle operation has become common phenomena in the existing road and it is more significant during dry and winter season. Likewise, water quality in the proposed road section is observed to be good since it is free from any kind of pollution sources. 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 and gully erosion. The proposed area does not have any sources of noise nuisance.

4.2 Biological Environment

23 This alignment passes through Mahabharat community forest at Ch (4+100-6+800). This is the only community forest which the road alignment passes through.

4.2.1 Vegetation

24 The forest is sparse with dominant species observed in the road alignment are Sakhuwa (*Shorea robusta*), Sissau (*Dalbergia Sissoo*), Masala (*Eucalyptus camaldulensis*), Siris (*Albizia procera*), Pineapple (*Ananas comosus*), Coconut (*Cocos nuriera*), Bakaino (*Melia azedarach*) and Kadam (*Anthrocephalus chinensis*). NTFPs are not found along the road alignment.

25 Sakhuwa (*Shorea Robusta*) is protected plant species according to the Forest Act 1993, which is categorized into timber trees banned for felling, transportation and export for commercial purposes.

4.2.2 Wildlife

26 Common wildlife including Jackle (*Canis aureus*), Jungle Cat (*Felis chaus*), Fox (*Vulpes sp.*) and Squirrel (*Ratufa species*) are the common mammals and *Corvus splendens* (Crow), *Passer domesticus* (Sparrow), Bat, Dhukur, Columba livia (Pigeon), Bakulla, Saras are common birds found in the surrounding area.

27 Among the wildlife found in the project area, Jackle (*Canis aureus*) is listed in CITES Appendix III and Squirrel (*Ratufa species*) is listed in Appendix II.

4.2.3 Aquatic Life

28 Fish species found in water bodies are Bam and Hile. These fish species are mainly found in Pahara Khola which is within ZoI.

4.3 Socio-economic and Cultural Environment

4.3.1 Population, Household and Ethnicity

29 The demographic profile of the concerned VDCs is presented in following Table 4.3. Major castes in the area are Brahmin, Chettri, Tamang, Rai, Limbu, Tharu, Lohar, Koiree and Yadav.

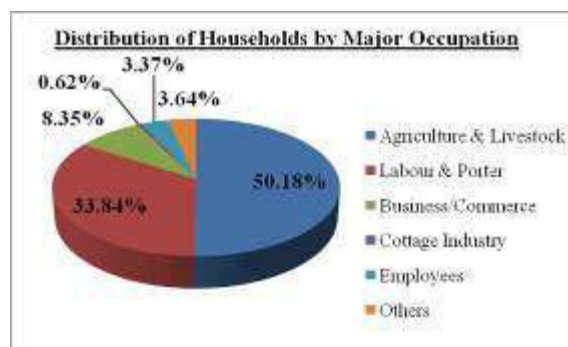
Table 4.3: Demographic Profile of VDCs

VDC	Population			HH
	Male	Female	Total	
Letang	2475	2434	4909	819
Jante	341	353	694	214
Ramite Khola	120	115	235	43
Warrangi	165	145	310	50
TOTAL	3101	3047	6148	1126

Source: Field Survey, August, 2009

4.3.2 Main Occupation

30 The main occupation of all people residing within the ZoI of the proposed road alignment is agriculture and livestock. However, agriculture farming is not enough for subsistence level due to small landholding size and lack of irrigation facilities. Therefore people are carrying out other economic activities like labour for different works. The main occupation of the people of this area are agriculture & livestock (50.18%), business & commerce (8.35%), cottage industry (0.62%), labour & porter (33.84%), employee (3.37%) and other (3.64%).



Source: Field Survey, August 2009

4.3.3 Market Centers and Business Facilities

31 Grocery shops exist in almost all settlements. According to survey data, 6 hotel and lodges, 10 restaurants, 7 grocery shops, and 20 other shops (stationery, medicine, tailoring etc.) are present in the area.

4.3.4 Local Economy

32 Local people are gradually attracted towards cultivation of cash crops such as Alaichi, Amliso, dairy production and orange production and selling it to the local market has been also another source of income for local farmers. With growing closeness of the project area with Itahari and Biratnagar due to transportation facility, cultivation of fruits, vegetables in a commercial scale seems to gain momentum. Diversity in employment pattern has been also observed in recent years. Local people have increasingly engaged in business activities in B.P. Chowk and Aahale area. Many people seasonally migrate to Biratnagar and Itahari and even different parts of India to earn some money for their live hood.

4.3.4 Agriculture Pattern

33 Major crops grown in the Subproject area are rice, wheat, barley, millet, maize, potato and beans. Cash crop farming is also increasing in recent days. Major cash crops grown in the areas are vegetable, amliso, and orange.

4.3.5 Livestock

34 Due to availability of good number of fodder trees, the Subproject area has good potentiality of cow and buffalo farming for dairy, and goat farming for meat. Despite being potential, they were not encouraged to produce milk in commercial scale due to time consumption in transportation and difficult access.

4.3.6 Industry

35 Some local people are engaged in weaving of bamboo products, making furniture, dairy (Khuwa) production, and tailoring. The area has high potentiality for agro-based industries. There is one weaving industry, 3 nos. of rice/flour mill and 2 milk collection centers are available within ZoI.

4.3.7 Tourism Potential

36 The Subproject area has potentiality of eco-tourism development. Some hotels are in operation in Gange Chowk, B.P. Chowk, Campus Chowk, Milan Chowk and Aahale. Local people have been developed homestay facilities at Gange Chowk, B.P. Chowk, Campus Chowk, Milan Chowk.

4.3.8 Health and Sanitation

37 People use water from dug well and spring. Open defecation is also prevalent. Major health problems observed in the area are gastric, water borne diseases, gout, respiratory diseases, skin disease, malnutrition, and typhoid. Sanitation awareness among local people is increasing and many of them have toilets in their home, but there is no public sewerage system. People discharge their wastewater in the nearby natural streams.

4.3.9 Public Services and Infrastructures

Table 4.4: Infrastructure Facilities in the Project Area

Infrastructure Facilities	Details
Education	8 educational institutions ranging from primary level to college level exists in the area. There is a Campus and a higher secondary school in Letang. Most of the families send their children to school.
Health	3 health posts/sub health posts exists in various settlements
Communication	All of the settlements have telephone facilities mostly with CDMA connection. Three post offices have been serving the local people.
Electricity	Some settlements in ZoI are connected with national grid transmission line and some with solar.
Water Supply	Piped drinking water supply is available to Letang VDC and Kirat Chowk(Letang-2,6,3,9)
Other Infrastructures	There is a Agricultural Service Sub-Centre, Irrigation canal, diary firms and Veterinary Service Sub Centre are also available in the project area
Financial Institutions	There are 5 nos. of saving and credit cooperatives in ZoI of Letang.
Community Center	4 nos. in all VDCs.

Source: Field Survey, August 2009

Table 4.5: Public Services and Infrastructures along the Road Alignment

Type of Public Service and Infrastructure	Chainage/ Location	Distance from the Road	Remarks
Letang Campus, Shanti Bhagawoti HSS, Letang	0+180	Adjacent	Not affected
Primary Health Centre, Letang	0+150	100 m away in the west from road.	Not affected
Agriculture Development Bank,	2+350	120 m away in the east from road.	Not affected
Shree Mahabharat Sec. School, Guwabari	3+500	Adjacent	Not affected
Irrigation Canal	2+350	Adjacent	Affected
Gyan Jyoti Primary School	14+940	Adjacent	Not affected

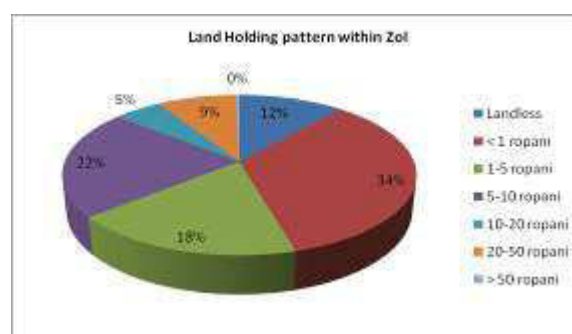
Source: Field Survey, August 2009

4.3.10 Existing Traffic Situation

38 5 passenger Jeep daily ply on the road, whereas about 3 numbers of mini truck/pick-up and 9 motorcycles are found to operate in the road. Vehicles are mainly used for commuting and transportation of milk, fruit and rice.

4.3.11 Land Holding Pattern

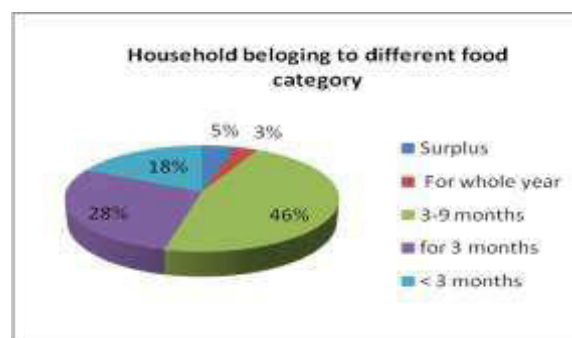
39 Land holding pattern within the ZoI of the road demonstrates that most of the population (18.29%) have 1-5 ropani (approximately 1 ha= 19.8 ropani) land while 22.02% households have 5-10 ropani and 34.28% HHs have less than one ropani land. 11.37% households are landless and 5.15% household have 10-20 ropani, 8.53% HHs have 20-50 ropani and 0.36% HHs have more than 50 ropani. (See Annex XI c).



Source: Field Survey, August 2009

4.3.12 Food Security

40 About 46.36% of the households have enough food for only three to nine months, 3.02% for whole year, 17.85% HHs are of less than three month, 4.53% HHs are reported as food surplus ones and 28.24% HHs are of food sufficient for 3 months. Food sufficiency condition is given in Annex XI d.



Source: Field Survey, August 2009

4.3.13 Migration Pattern

41 Few permanent migrations take place annually towards India during slack farming season from months of Mangsir to Poush (Nov-Jan). 20 percentage people seasonally migrate to Biratnagar, Dharan and India for labour during off-agriculture season to earn money for their livelihood.

4.3.14 Settlement and Market

42 Major settlements within ZoI are Gange Chowk, B.P.Chowk, Campus Chowk, Milan Chowk, Sukechauri Chowk, Lakhbari Chowk, Guhabari, Patapur, Yangshila, Dhapagaon, Pangre, Jamire Tole, Samala Danda, Aahale, Baaise, Ghumaune, Khola Gaon, Phirkauli and Gadahare. Housing pattern of these scattered settlements are mostly one to two storied, CGI (Corrogated Galvanized Iron) sheet roofed buildings. Some of them are also of thatch roof. RCC buildings have started to appear in the market centers.



Settlement at Aahale

4.3.15 Potential for Development

43 The potential of the Subproject area are as mentioned in Table 4.6 below.

Table 4.6: Development Potentialities in Various Sectors

SN	Sector	Development potentiality
1	Agriculture	Cash crop farming like vegetable, amliso, alaichi, orange, dairy production within the ZoI
2	Tourism Promotion	There are many places along the alignment in which the tourism activities can be enhanced such as in Guhabari, Yangshila, Aahale and Ghumaune settlements
3	Small and Cottage Industry	Mills, furniture, dairy within the whole ZoI
3	Trade and business	The main market centre is Letang bazaar.

Source: Field Survey, August 2009

4.3.16 Religious, Cultural and Historical Sites

44 There are no significant sites of religious, cultural and historical importance in the ZoI.

5. Project Alternatives

45 Assessment on alternatives of the Subproject is discussed as in the following subsections.

5.1 No Action Option

46 This alternative does not allow the implementation of the Proposal. An earthen road currently exists, which is only fair weather road. As the road connects few major settlements with high potential in vegetable, dairy and fruits products, the no action option will increase the transportation time and cost for the local people to the district headquarter and markets and vice versa resulting into low level of productivity and prevalence of poverty. The no action option will conserve some of the environmental adverse impacts at the cost of poverty and hardship of the people.

5.2 Proposal Alternatives

47 Construction of other supporting roads could be the options for achieving the transportation and access. Considering other project alternatives, the upgrading of the existing road project can be the best option to serve the home to home services. Upgrading of the Letang -6 No. -Budhabare Road will link Morang and Dhankuta district as well as it links with Mahendra Highway. The upgrading of the existing road project is the best alternative for cheap and efficient transportation.

5.3 Alternative Alignment

48 Alignment of the Letang - 6 No. - Budhabare road is an existing earthen road. This road is in operation as a fair weather and proposed for the upgrading, requirement to acquire land and cutting trees will be minimum than in new alignment opening. Hence, new alternative alignment is not studied and the existing road can be the best option.

5.4 Alternative Design and Construction Approach

49 The road has been designed considering combination of both the LEP approach for works possible through manual labor (earth excavation, bio-engineering, gabion structures etc.), and Contractor for works that require mechanized applications (gravelling or construction of RCC cross drainage structures etc.).

5.5 Alternative Schedule

50 During the rainy season, the construction work will be stopped. Rehabilitation and construction work will be carried out during the remaining months. The construction period is more appropriate from October to June due to dry weather, and then the people are generally free from farming activities.

5.6 Alternative Resources

51 The physical resources consumed for the upgrading of the road will mainly include boulders for gabions and stone for dry masonry wall. Stones are easily available in nearby areas of various sections of the road whereas fine aggregates and sand has to be transported from Chisang Khola which is 1 km far from Letang bazaar. The proposed construction will optimally use the local labour force and local materials.

6. Identification & Evaluation of Impacts, Benefit Augmentation and Mitigation Measures/Enhancement measures

52 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 judgment. 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

53 An effective implementation of benefit maximization measures and adverse impacts mitigation measures are also suggested hereunder. (See also **Table 7.2**).

6.1 Beneficial Impacts and Benefit Augmentation Measures

6.1.1 Construction Stage

Employment Generation and Increase in Income

54 Impacts: One of the major direct beneficial impacts of the road during construction stage is the creation of employment opportunity to the local community. Total employment during construction of this road alignment is 191,744 person-days in which 7,374 person- days as skilled and 184,370 person- days as unskilled. Employment generation for the local people will minimize seasonal migration through for a short period. The amount of money that is earned by the wages will directly enhance various economic activities and enterprise development with multiplier effect. This is one of the direct and significant impacts of the project but it is of short-term and local in nature.

55 Measures: Benefit Augmentation Measures are:

- Work will be implemented through RBG and Contractor.
- Priority for employment will be given to local poor, dalit, vulnerable groups and women.
- Livelihood Enhancement Skills Training (LEST) program will be conducted under social plan of the project. 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.

Skill Enhancement

56 Impacts: Although many people in the project area are unskilled at present, the construction 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 (RBGs). This will enhance the technical skills of local people. The skill and knowledge acquired from the project during construction will enhance employment opportunities of such manpower who can earn livelihoods from similar project in future. This impact is indirect, medium, local and long-term in nature.

57 Measures: Road Building group members will be given on the job training on masonry, gabion wires, construction of dry and foundation walls, bioengineering works.

Enterprise Development and Business Promotion

58 Impacts: 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. Local shops and restaurants will be opened to meet these demands around Letang, Jyamire and 6 No. Budhabare. This impact is direct, low significance, local and short term in nature.

59 Measures:

- Promote use of local products.
- Awareness raising program will be facilitated for the promotion of cooperatives and linkage with other financial institutions through social action programs.

Community Empowerment and Ownership

60 Impacts: During construction various road construction coordination committees and road building groups will be constituted in order to facilitate in implementation of the road. 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. This impact is indirect, low, local and short term.

61 Measures: Various coordination committees (DPCC, VICCC) will be constituted and training will be given to them.

6.1.2 Operation Stage

Improvement in Accessibility and Saving of Time and Transportation Cost

62 Impacts: Upgrading of road will enhance the access of people to social services, and quick transportation of goods. More than fifty percent of travel time and cost will be cheaper. This impact is direct, high, regional and long term.

63 Measures: Regular maintenance of the road will be done by the Proponent.

Increase in Trade, Commerce and Development of Market

64 Impact: Improved access will increase economic activities and minor local markets like Letang, Jamire, Aahale will grow. Productivity will increase due to cheaper transportation of agricultural inputs. Sale of farm and livestock products will increase in the bigger markets of Morang district. This will support the economy of rural hilly area. The impact will be indirect, significant, local and long term in nature.

65 Measures: DDC/VDCs shall manage planned growth with required infrastructure facilities in the market areas. Agriculture extension services, market linkages and networking for better market price will be coordinated with District Agriculture Office.

Appreciation of Land Value

66 Impacts: The construction of road leads to appreciation of land values particularly near the market and settlement areas 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. Mainly the land price will increase in Gange Chowk, B.P. Chowk, Campus Chowk, Milan Chowk, Sukechauri Chowk, Lakhbari Chowk and Aahale by twice. The impact is indirect, medium, local and long term in nature.

67 Measures: Promotion of land development activities and control of encroachment within RoW. The local people will be made aware that high value lands are acceptable to the banks and microfinance institutions to provide loans for them to start their own economic/social ventures.

Increased Crop Productivity and Sale of Farm Products

68 Impacts: Due to easy and cheaper availability of agricultural inputs and technologies, productivity will be increased along the road. Sale of farm and livestock products will be increased in the settlements along the road corridor like Sukechauri Chowk, Lakhbari Chowk, Aahale, B.P. Chowk settlements which are potential areas for the production of kodo, maize, potato, beans and cash crops such as Tobacco, Turmeric vegetables etc. Operation of road will further commercialize the subsistence agriculture of rural area. This activity would likely uplift the economic condition of the local people. This is the indirect, significant, local and long term impacts.

69 Measures: Promotion of market linkages and networking for better market price.

Enhancement of Community Development Services

70 Impacts: Improved access will contribute in improvement of social services in the area such as education, health, government offices, saving and credits. Improved access will facilitate stay of extension workers, teacher, and doctor to their rural duty areas such as Letang, Jamire and Aahale. This is indirect, significant, regional and long-term impact of the proposed project.

71 Measures: The access will be kept maintained so that other services will follow in the area.

Women and Disadvantaged Group Empowerment

72 Impacts: Women 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 disadvantaged people. Thus, the project will have indirect, significant, local and long-term impact in ZoI.

73 Measures: Various training programs will be conducted under Gender Action Plan (GAP) of the project. Trainings programs include Legal and women human right literacy classes, Reproductive cum maternity health

care orientation classes, Gender sensitization and social inclusion training etc. During the road construction more emphasis will be given to women, dalit and vulnerable workers.

6.2 Adverse Impacts and Mitigation Measures

6.2.1 Construction Stage

74 The road will be constructed according to LEP approach where manual works are possible; and Contractor based where the work cannot be done manually. The likely impacts on physical, biological, socio-economic and cultural resources of the project area and respective mitigation measures are presented here under.

Physical Environment

Change in Land Use

75 Impacts: Construction of road will convert 0.23 ha. of cultivated land, 0.081 ha. of built up areas and 2.52 ha of forest land into road structure. The impact will be high, direct, local and for long term.

76 Measures: The mitigation measures will be compensatory. Plantation of trees will be done on all water available areas and roadside slopes to increase greenery in the area. Fruit and fodder plants shall be given emphasis.

Slope Instability

77 Impacts: Removal of vegetation and embankment filling with exposed soil to rain may cause soil erosion. Since it is existing road, there are no major flood hazard and erosion problems. Existing landslide areas along the road alignment are at Ch: 4+232 and 11+200. Impact is direct, medium, site specific and medium term depending on cases.

78 Measures: The mitigation measures will be maximized re-use of spoil materials in construction of various components/activities of the road; adoption of bio-engineering techniques (such as Grass Plantation, Tree/ shrub plantation); and use of soft engineering structures such as dry wall before disposing spoil. Recommended civil engineering structures and bioengineering measures for slope stabilization have been given in **Annex XVI**.

Spoil Disposal

79 Impacts: The common likely problems from the inappropriate disposal of spoils are: gulying 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.

80 Measures: Spoil will be safely disposed and managed at designated site with minimum environmental damage. Engineer will give approval for disposal site of spoil. Balanced cut and fill and re-use of excavated materials will be given emphasis. Spoil will be used to reclaim land or eroded areas. Disposal site will be provided with proper toe wall, drainage, vegetation and adequate protection against erosion. Excess of spoil be used in structure filling and during construction of road Potential safe spoil management areas are given in **Table 6.1**.

Table 6.1 Potential Spoil Disposal Sites

S. No	Chainage	Remarks
1	5+300	Lower side of road
2	11+980	Lower part of Jyamire(Jate-6)
3	17+400	Beyond Aahale
4	24+000	Lower side of road

Source: Field Survey, August 2009

Quarry/ Borrow Operation

81 Impacts: Potential adverse impacts are accelerated land erosion, disturbance in natural drainage patterns, water logging and water pollution. The likely impact will be direct, medium in magnitude, site specific in extent and short term in duration.

82 Measures: Quarry and borrow operation sites will be identify and approved by Engineer; quarry sites will be rehabilitated by providing appropriate civil and bioengineering measures such as protection wall tree plantation after the extraction is complete. Recommended quarry sites in the area are given in Table 6.2.

Table 6.2: Recommended Quarry Sites

SN	Chainages	Places of recommended quarry sites
1.	9+700	Stone quarry in a limited scale.
2.	14+940	Stone quarry at upper side of the road in a limited scale.
3.	Chisang Khola	For aggregates and sand

Source: Field Survey, August 2009

Air, Noise and Water Pollution

83 Impacts: 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.

84 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 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.

85 Measures: The mitigation measures will include use of face mask by the workers working in the areas of high dust generation; avoid disposal of excavated materials in the water bodies; cover dry material or make it wet during transportation. Both sides of the road will be planted with trees, as far as possible which will act as sound and noise barrier.

Drainage Management

86 Impacts: Water from the roadside drain outlets may cause erosion and landslide affecting the stability of the road. Natural drainage may get blocked due to construction of road. The impact will be indirect, medium, site specific and medium term.

87 Measures: The mitigation measures will be to provide adequate numbers of drainage structures in order to have minimum interference with natural drainage pattern of the area; channelize surface water discharge from side drains; do not block water away from natural watercourse; Details about necessary structures required to mitigate the water induced adverse impacts are given in **Annex XIV**.

Location of Camp Sites and Storage Depots

88 Impacts: Camp will not be required if works are carried out by RBGs. However, contractor, if used, will establish camp if he brings labors from outside the area. Sitting of camp may cause encroachment of forest, agriculture land, alteration of drainage, solid waste, waste water problems and fuel leakage from vehicle. Impact will be direct, medium significance, site specific and short-term.

89 Measures: The mitigation measures will be use of local labors to avoid camp; rent local house instead of camp to keep labors; sitting camp away from productive lands and forest areas; pay compensation for using private farm or lands for storage or camp; fuel and chemical storage areas will be on paved surface with surrounding catch drain to protect soil from leakage. Appropriate camp sites have been observed at Ch: 11+980 and at Ch: 14+940. At camp sites will be provided drinking water and latrine facilities. For waste water and solid waste management soak pit will be made and proper management will be done.

Construction Equipment and Vehicles

90 Impacts: The contractor based construction will use machineries and tools. During construction vehicles such as roller, spreader, tipper, loader will be in use which increase in air pollution due to emission of smoke and dust, and increase in vibration due to vehicular movement. Impact will be direct, high significance, site specific and short-term.

91 Measures: All equipment/vehicles deployed for construction activities shall be regularly maintained. All the vehicles deployed for material movement shall be spill proof to the extent possible. In any case all material movement routes shall be inspected daily twice to clear off any accidental spills.

Decline in Aesthetic Value

92 Impact: Landscape degradation relates particularly to poorly designed or monitored activities resulting from quarrying operations and from indiscriminate dumping of spoil material. Road may create scars on the landscape. The likely impact will be direct, low in magnitude, local nature and short term in duration

93 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 to cover the scar by greenery.

Chemical Issues

94 Impacts: Petrol, diesel and grease required for vehicle to operate and kerosene to workers to cook meals. Spillage of these chemicals also damage soil productivity. Storage of fuels and chemicals and operation of vehicles and machineries result in the spillage of hazardous chemicals that can pollute nearby water sources and soil; and affects health of the workers. The impact will be direct, low, site specific and medium term.

95 Measures: The mitigation measures will be to store fuels and chemicals on paved surface with surrounding catch drain to protect soil from leakage. Proper storage of hazardous chemicals and providing information signboards. Use of safety gears to workers during handling of chemicals and fuels. Close monitoring during operation of machineries.

Biological Environment

Loss or Degradation of Forests and Vegetation

96 Impacts: The road passes through forest area. But total 49 nos. of trees from government land will be cleared (see **Annex XII**). The impacts on vegetation have been considered to be direct, high in magnitude, site specific in extent and long term in duration.

97 Measures: Cutting of tree only in formation width, compensation will be given to private trees, it will be compensated by replantation. Following the 'Work Procedure for Providing the Forest Land for Other Use, 2063' of Government of Nepal (cabinet decision of 10.11.2063 B.S.). Compensatory plantation in 1:25 +10% ratio for each cleared tree from forest area and at 1:1 will be done in private land. For greenery development trees will be planted on both sides of the road.

Impact on Wildlife Due To Loss of Habitat and Poaching

98 Impacts: The proposed area is not significant habitat for wildlife and bird species. However, the construction of road may disturb wildlife and bird species present in surrounding forests along the road corridor. The impact will be indirect, low, local and short term in nature.

99 Measures: 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 illegal poaching/harassing of birds or animals; Coordination with DFO to control the activities like illegal poaching by enforcing acts and regulations strictly.

Impacts on Flora and Fauna (as listed in CITES and IUCN Red Data Book)

100 Impacts: There is no impact on Flora and Fauna.

Socio-economic Environment

Loss or Degradation of Farm Land and Productivity

101 Impacts: There will be permanent loss of 0.23 ha of agricultural land due to road rehabilitation. This may reduce annual production of rice, wheat, maize, fruits and vegetable. Dust settling on crop and vegetation will also affect production. This impact is expected to be of high in magnitude, local in extent and long term in duration

102 Measures: Compensate for loss of property; for loss of standing crops and temporary use of agriculture land; Coordination with District Agriculture Office shall be maintained to implement agriculture extension program in these areas.

Loss of Private Properties

103 Impacts: The road alignment will damage 7 residential small huts at Ch 3+242, 3+300, 6+875, 6+883, 6+876, 6+886 and 6+912. The impact will be direct, site specific, long term and high in magnitude. Details about property loss and damage will be described in Resettlement Plan Report (**See Annex XV**).

104 Measures: Compensation for affected people. NRs. 1,189,654.89 has been proposed, which include Livelihood Enhancement Skills Training (LEST) for affected families whose budget is allocated as 250,000.

Impact on Community Infrastructure

105 Impacts and Measures: The community infrastructure that requires reconstruction / rehabilitation during construction works, and the mitigation measures are as presented in following Table 6.3.

Table 6.3: Impact on Community Infrastructure and Mitigation Measures

Infrastructure	Location	Impact	Mitigation Measure
Letang Campus, Shanti Bhagabati HSS, Letang	0+180	Dust and Noise Pollution	Information signboard will be placed (Such as School area, Speed limit, drive slowly), Use of horns will be prohibited. Two rows road side tree plantation will be done.
Primary Health Centre, Letang	0+150	Noise Pollution (100 m away in the west from road.)	Use of horns should be restricted.
Shree Mahabharat Secondary School, Guwabari	3+500	Dust and Noise Pollution	Information signboard will be placed (Such as School area, Speed limit), Use of horns should be restricted, Two rows road side tree plantation.
Irrigation Canal	2+350	Affected	RCC slab will be provided.
Gyan Jyoti Primary School	14+940	Dust and Noise Pollution	Information signboard will be placed (Such as School area, Speed limit), Use of horns should be restricted, Two rows road side tree plantation.

Source: Field Survey, August 2009

Health and Safety Matters

106 Impacts: During construction, workers will be exposed to respiration and eye diseases due to exposure to dust, risk of accident during work, polluted drinking water, unhygienic sanitary facilities, hearing loss due to high level of noise. Increased contact between local and migrated workers can cause spread of serious health risks like STDs and HIV/AIDS. This impact is direct, high in magnitude, short term and local.

107 Measures: Make mandatory the use of helmets, safety belts, masks, gloves and boot by workers depending on nature of work; sprinkle water at high dust sites; provide clean drinking water at sites and camp; pit toilets at sites and camp; first aid facilities at sites and camp with training to use them; provide group accidental insurance for workers. Awareness generation to local people and workers on HIV AIDS and other communicable diseases.

Impacts on Cultural, Religious and Archeological Sites

108 Impacts: There are no any cultural, religious and archeological sites along the road alignment.

6.2.2 Operation Stage

Physical Environment

Road Slope Instability and Management

109 Impacts: The inadequate maintenance of the road, blockage of drains, damages the road surface can lead to slides and slope failure. Possible slope instability locations are at chainage 4+232 and 11+200. This may cause damage to road section, disruption to transportation and other social impacts in the nearby areas. The impact will be direct, medium, local and long term nature.

110 Measures: The mitigation measures to be adopted clear drainages; restoration of rill and gully formation; and conservation of soil by planting grass and trees/shrubs. Slope stabilization measures will be provided at Ch. 4+232 and 11+200, the cost of NRs. 11,244,028 is allocated for slope protection works. Routine maintenance to be adopted for proposed cross drainage structures.

Impact Due to Air, Noise and Water Pollution

111 Impacts: During operation period, vehicles will ply along the road and will emit gaseous pollutants. This will increase the pollution level of ambient air along the road corridor due to emission of gaseous pollutants. However, air pollution due to dust will be minimized to greater extent after upgrading of earthen road to the gravel standard. 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 medium term. 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 short term. The disposal of spoil and other construction materials and wastes, washing of vehicles in water bodies may degrade the water quality. The impact of this kind will be direct, low, local and long term.

112 Measures: Plantation of trees on both sides of the road as far as possible; Use of horns should be restricted near forest area, health posts, schools and settlements; for control of dust nuisance, speed limit of vehicle.

Biological Environment

Depletion of Forest Resources

113 Impacts: The road passes through forest area. The forest resources may deplete due to human pressure on forest to meet increasing needs of heating and cooking, illegal felling/cutting of trees for timber. The impact will be indirect, medium, local and long term.

114 Measure: The mitigation measures recommended are support District Forest Office and VDCs to encourage and support local community in controlling illegal harvesting of forest resources; awareness programs organized to educate local people on the importance of forest conservation. Improved access will facilitate easy transportation of LPG gas and kerosene to replace use of firewood.

Disturbance to Wildlife and Illegal Poaching

115 Impacts: Although there are no significant habitats of wildlife in the ZoI, hunting of birds may occur. However, affect will be Collision of wildlife with vehicles, disturbance in their normal activities. The impact will be indirect, low, local and long term in nature.

116 Measures: Warning traffic signal, speed and horn use will be provided. Community and authorities will remain vigilant and alert on illegal killing of birds.

Socio-economic and Cultural Environment

Unplanned Settlement and Market Center Development

117 Impacts: Expansion of settlement area and market can be observed at Letang and Aahale. Encroachment of RoW may take place. This will reduce road capacity, increase road accidents, and adversely impact road. The impact will be direct, medium, local and long term in nature.

118 Measures: The mitigation measures to be adopted include regulation of settlement with proper planning; plantations of trees in the RoW so that it is not encroached; provide sewerage in market areas. Authorities and VDCs will control encroachment of road.

Change in Social Behavior

119 Impacts: Access facilities may bring social nuisance like increase in alcohol consumption, gambling, prostitution, and may increase girl trafficking. The impact will be indirect, medium, local and long term in nature.

120 Measures: Support awareness raising programs and strengthen communities against such nuisances.

Issues on Road Safety

121 Impacts: 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.

122 Measures: The mitigation measures to be adopted will be applying appropriate road safety measures such as delineator post and required safety signs will be used along the road.

7. Environmental Management Plan

123 The EMP is prepared to guide implementation of mitigation measures and monitoring requirements.

7.1 Institutions and Their Roles

Table 7.1: Concerned Institutions and Their Roles

Institution	Role	Responsibility in the Project	Remark
Ministry of Environment	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)	It is concerned line ministry, executive agency and concerned agency as per EPA/EPR. Environment Management Section is responsible to look into safeguard matters for the ministry.	<ul style="list-style-type: none"> 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	First Class Officer / DDG of DoLIDAR has been heading the PCU.
District Development Committee / District Technical Office	DDC/DTO is Project Implementing Agency.	<ul style="list-style-type: none"> 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 from MLD. Conduct environmental safeguard monitoring Reporting 	District Technical Officer is the Project Manager
District Project Office	Project implementation office working directly under DDC/DTO.	Responsible for overall activities related to implementation of the works at field level.	Implementing Agency
Central Implementation Support Consultant (CISC)	Support consultants at central level	Technical and management support to PCU	Consultant
District Implementation Support Team (DIST)	Support consultants at district level	Technical and management support to DPO	Consultant

124 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 manual construction works. Contractor will be appointed for works requiring higher skill and mechanized support.

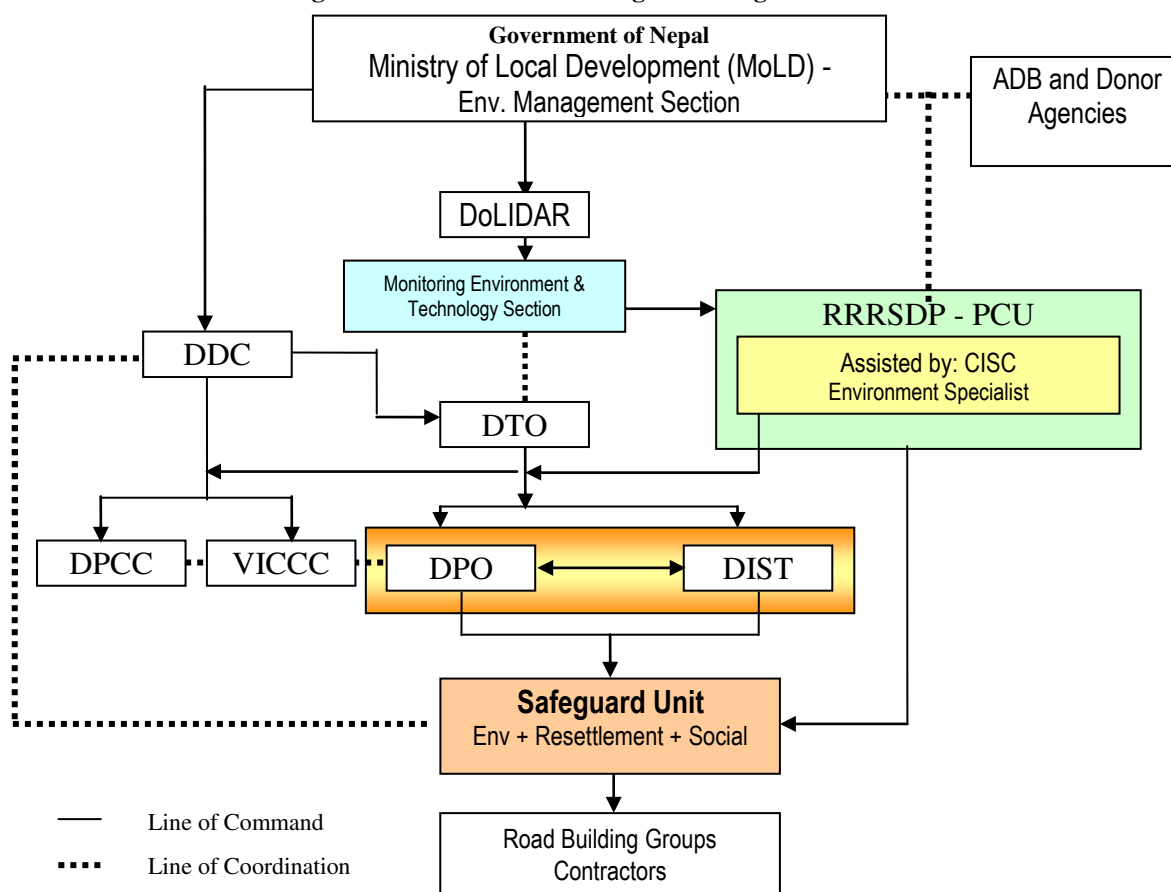
7.2 Reporting

125 Monitoring checklist will be developed as per the Environment Management Action Plan (EMP). The checklist will be used for regular monitoring. Trimesterly EMP compliance report will be prepared and submitted to the DDC, and DDC will forward it to PCU / DoLIDAR.

126 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 corrective plan.

127 The trimester environment monitoring report will be submitted for the first year of operation of the road by the Proponent (DDC/DTO) to Executing Agency (PCU/DoLIDAR), who will forward the report to ADB. This is to ensure that post project monitoring is also carried out at least for one year.

Fig. 7.1: Environmental Management Organization Structure



7.3 Benefit Augmentation and Mitigation Measures Implementation Strategy

128 The DDC/DTO with support of DPO/DIST at local level and PCU/CISC at central level will be responsible for conducting careful and routine monitoring of EMP compliance. Overall implementation of the EMP will be the responsibility of the Proponent. Framework for implementing environmental management plan is shown in Table 7.2.

Table 7.2: Beneficial Impacts and Proposed Enhancement Measures

Activity	Effect	Related Beneficial Impacts	Type of Impact *)				Benefit Augmentation Measures	Responsible Agencies		
			Nat	Mag	Ext	Dur		Executing Agency	Supporting Agency	
Construction Stage										
Construction of road	Employment Generation and Increase in Income	Increase in income level	D	H	L	ST	Maximize manual work through local, poor, vulnerable and women. Training in income generation and skill enhancement. Skilled 7,374 person- days, unskilled 184,370 person- days.	DDC/DTO DIST	DPCC / VICCC / CISC/PCU	
On the job training to local labour	Skill Enhancement	Increase in income generating activities, employment opportunities	IN	M	L	LT	Priority to Affected Peoples (APs) and vulnerable groups, job training on various constructions works such as masonry, gabion wires, bio-engineering works. LEST program will be conducted under social plan.	DPO/DIST	DDC/DTO / CISC/PCU	
Construction of road	Enterprise Development and Business Promotion	Enhancement in local economy	D	L	L	ST	Promote use of local products. Awareness raising programs will be facilitated for the promotion of cooperatives and linkage with other financial institutions through social action programs.	Contractor/ RBG	DIST/ CISC/PCU	
Construction coordination committee and RBG program	Community Empowerment and Ownership	Increase in income and ownership.	IN	L	L	ST	Various Coordination committees (DPCC, VICCC) will be constituted and training will be given to them.	DPO/DIST	DDC/DTO / CISC/PCU	
Operation Stage										
Operation of Road	Improvement in Accessibility and Saving of Time and Transportation Cost	Saving in travel time and travel cost	D	H	R	LT	Regular maintenance of the road.	DTO/DDC	DoLIDAR	
Operation of Road	Increase in Trade, Commerce and Development of Market centers	Shifts towards improved commercial agriculture and increase in non-agricultural occupation	IN	H	L	LT	Manage planned growth with required infrastructure facilities in the market areas. Agriculture extension services, market linkages and networking for better market price.	DPO	DDC/VDC	
Operation of Road	Appreciation of Land Value. Land price will increase in Gange Chowk, B.P. Chowk, Campus Chowk, Milan Chowk,Sukechauri Chowk, Lakhbari Chowk and Aahale by twice.	Improvement in local economic condition	IN	M	L	LT	The local people will be made aware that high value lands are acceptable to the banks and microfinance institutions to provide loans for them to start their own economic/social ventures.	DDC/DPO	DDC/VDC	
Operation of Road	Increased Crop productivity and Sale of Farm Products.	Enhancement of local economy	IN	H	L	LT	Promotion of market linkages and networking for better market price.	DDC/DPO	DDC/VDC	
Operation of Road	Enhancement of Community Development Services	Ease of access to social service and raise in quality service	IN	H	R	LT	Keep road maintained to ensure access facility that will attract development of other social services facilities	Local people, DDC, VDC	DDC, VDC	

Activity	Effect	Related Beneficial Impacts	Type of Impact *)				Benefit Augmentation Measures	Responsible Agencies	
			Nat	Mag	Ext	Dur		Executing Agency	Supporting Agency
Operation of Road	Women and Disadvantaged Group Empowerment	Poor and Disadvantaged Groups will have easy and frequent access to social services (education, health, community development, bank)	IN	H	L	LT	Various training programs will be conducted under Gender Action Plan (GAP) of the project. Trainings programs include Legal and women human right literacy classes, Reproductive cum maternity health care orientation classes, Gender sensitization and social inclusion training etc.	VDC / DDC	VDC / DDC

Table 7.3: Adverse Impacts and Proposed Mitigation Measures

Table 7.5: Adverse Impacts and Proposed Mitigation Measures											
Activity	Potential Negative Effects	Related Adverse Impacts	Type of Impact *)					Mitigation Measures	Responsibility for Mitigation Measure		
			Nat	Mag	Ext	Dur	Rev		Executing Agency	Supporting Agency	
Construction Stage											
Physical Environment											
Construction of Road (Site clearance, Pavement work, Side/cross drainage work)	Change in land use	Loss of 0.23 ha. of cultivated land, 2.52 ha.of forest and 0.081ha.of settlement areas; Cause production loss, loss of property.	D	H	L	LT	IR	Pay compensation for all lost of properties. Plantation of trees will be done on all water available areas and roadside slopes to increase greenery in the area.	DDC/DTO	DIST	
Construction of Road (Earthworks)	Spoil Disposal and imposed weight of spoil on fragile slopes	Gully erosion, landslide, disruption of road, damage to farmland, water pollution etc.	D	M	SS	ST	Re	Proper site selection and management of spoil at designated areas approved by Engineer; provision of proper drainages, toe walls; Proposed spoil disposal sites are 5+300 , 11+980,17+400 and 24+000.	DDC/DTO	DIST/VICCC/ VDC	
Site clearance, excavation	Slope Instability	Erosion, landslide. Areas of concern are at Ch 4+232 and 11+200.	D	M	SS	MT	Re	Civil structures with bio-engineering application (Such as Tree/Shrub plantation, Brush layering, etc.) shall be used to stabilize the slopes.	DDC/DTO	DIST	
Construction of Road (Side and cross drainage works)	Drainage Management, generation of large volume of surface runoff	Erosion, landslide, damage to farmland	IN	M	SS	MT	Re	Adequate numbers of drainage structures will be provided, channelize surface water discharge from side drains; do not block water away from natural watercourse.	DDC/DTO	DIST	
Construction works, operation of construction equipments and vehicles hauling and unloading etc.	Air pollution due to dust from exposed surface, from construction equipments and vehicles	Affect on local people and workers health and affect on agriculture.	D	L	L	ST	Re	Use of face mask while working on dust prone areas , cover material during transportation.	DDC/DTO / RBGs	DIST	
	Noise pollution	Disturbance and annoyance around school, health posts, forest areas.	D	L	L	ST	Re	Restrict horn near school, settlement and forest areas.	DDC/DTO / Contractor	DIST	

Activity	Potential Negative Effects	Related Adverse Impacts	Type of Impact *)					Mitigation Measures	Responsibility for Mitigation Measure	
			Nat	Mag	Ext	Dur	Rev		Executing Agency	Supporting Agency
Slope cutting, spoil and waste disposal.	Water pollution due to sediment level, spills and leakage of oils and chemicals to water bodies	Risk of water borne diseases	D	L	L	ST	Re	Proper spoil management, and prevention of leakage and spills of construction chemicals.	DDC/DTO/ Contractor/RBGs	DIST/VICCC
Quarry and borrow operation	Quarry/borrow operation and its potential effect on instability, landslide	Change in river regime, instability, land slide; disturbance in natural drainage patterns; water pollution	D	M	SS	ST	Re	Proper selection and management of quarry sites, rehabilitation of quarry/borrow sites after completion of work. Recommended quarry sites are Ch 9+700 and 14+940 for stone collection and Chisang Khola for sand and gravel collection.	DDC/DTO/ RBGs	PCU/CISC/ DIST/ VICCC
Construction of road (Camp Operation, Storage of construction materials)	Location of Camp Sites, Storage Depots	Encroachment of forest, agriculture land, solid waste, and waste water may cause pollution	D	M	SS	ST	Re	Locate camp site away from productive land and forest area (potential sites at 11+980 and 14+940) use local labor and local houses as camp; pay compensation to land owner of camp area; proper storage of chemical and materials.	DPO assisted by DIST/ Contractor	DIST/VICCC
Operation of construction equipments	Construction Equipment and vehicles (Rollers, tippers, spreader, water tanker etc.)	Air pollution due to emission of smoke, increase in vibration and noise pollution	D	H	SS	ST	Re	Equipment/vehicles deployed for construction activities shall be regularly maintained. All the vehicles deployed for material movement shall be spill proof to the extent possible	DPO assisted by DIST/ Contractor	DIST/CISC/ PCU
Storage of Chemicals and operation of machineries	Spillage of fuels and chemicals.	Pollution to the nearby water sources and soil. Health hazards to the workers	D	L	SS	MT	Re	Store fuels and chemicals on paved surface with surrounding catch drain to protect soil from leakage. Provide information signboards. Use of safety gears. Close monitoring during operation of machineries.	DTO/DIST/ Contractor	PCU/CISC/ DIST
Construction of Road, Quarry operation	Decrease in aesthetic value	Disturbances in working areas and scar on topography	D	L	L	ST	Re	Cover the road alignment by planting tree on both sides; manage working areas.	DPO in assistance by DIST / Contractors	PCU / CISC / Users Committee / VDC
Biological Environment										
Clearance of vegetation necessary for road formation	Loss of 49 nos tree from public land.	Loss of vegetation, biodiversity	D	H	SS	LT	Re	Cutting of tree only in formation width, compensatory plantation of local species of tree at 1:25+10% ratio for public trees and 1:1 for private trees.	DDC/DTO/DFO	DFO/CFUGs/ DIST/VDC
Construction activity	Impact on Wildlife Due To Loss of Habitat and Poaching	Killing and harassing of wildlife; Loss of biodiversity and valuable species of wildlife	IN	L	L	ST	Re	Work only in day time, do not disturb wildlife, aware workers. Coordination with DFO to control the activities like illegal poaching and poaching by enforcing acts and regulations strictly.	DDC/DTO/DFO	DFO/CFUGs/ DIST

Activity	Potential Negative Effects	Related Adverse Impacts	Type of Impact *)					Mitigation Measures	Responsibility for Mitigation Measure		
			Nat	Mag	Ext	Dur	Rev		Executing Agency	Supporting Agency	
Social-economic Environment											
Acquisition of land for maintaining road width*	Loss or Degradation of Farm Land and Productivity	Permanent loss of 0.23 ha of agricultural land	D	H	L	LT	IR	Compensation for the loss of property will be provided to the affected people.	DDC/DTO	CFC2 DIST/VICCC	
Acquisition of property for maintaining road width	Loss of Private Properties (7 residential small huts at Ch 3+242, 3+300, 6+875, 6+883,6+876, 6+886 and 6+912)	Loss of property, hardship for affected families.	D	M	SS	ST	IR	Compensation for affected people. NRs. 1,189,654.89 has been proposed, which include Livelihood Enhancement Skills Training (LEST) for affected families whose budget is allocated as 250000.	DDC/DTO	CFC ³ /DIST	
Demolition of structures along road alignment	Impact on Community Infrastructure	Affected Community Infrastructure (School at Ch 0+150, 0+180, 3+500, 14+940), Irrigation canal at 2+350	D	M	SS	ST	Re	Restoration or relocation of affected infrastructures. Information signboard will be placed (Such as School area, Speed limit, drive slowly), Use of horns will be prohibited. Road side tree plantation. RCC slab will be provided at irrigation crossing.	DDC/DTO	PCU DIST/CISC/VI CCC/VDC	
Occupational health and safety aspects	Health and safety matters	Injury, fatal accidents, outbreak of epidemics and diseases, decline in capacity to work	D	H	L	ST	IR	Make mandatory the use of helmets, safety belts, masks, gloves and boot by workers depending on nature of work, first aid facility at sites with health treatment arrangements, contingency planning; Proper drinking water and toilet facility for construction crew	DDC/DTO / Contractors	DIST/CISC	
Operation Stage											
Physical Environment											
Road operation Quarrying, operation	Road Slope Instability and Management	Slides and slope failure , Disturbance to traffic flow, pollution of water bodies	D	M	L	LT	Re	Clear drainages; restoration of rill and gully formation; and conservation of soil by planting grass and trees/shrubs..	DDC/DTO/VDC	DoLIDAR , DFO, District Watershed and Soil Conservation Office (DWSSC)	

* Activities that will be carried out during pre-construction period

² The Land Acquisition Guidelines, 1991 specify the establishment of an Acquisition and Rehabilitation Committee (also known as Compensation Fixation Committee, “CFC”) for fixing the rate of compensation of private properties to be acquired, consisting of the concerned Chief District Officer (Chair), Land Revenue Officer, representative of the DDC and the Project Manager and others as deemed necessary.

Activity	Potential Negative Effects	Related Adverse Impacts	Type of Impact *)					Mitigation Measures	Responsibility for Mitigation Measure	
			Nat	Mag	Ext	Dur	Rev		Executing Agency	Supporting Agency
Operation of vehicles, Inadequate drainage	Air, Noise and Water Pollution	Disturbance to students, patients, wildlife, effect to nearby agriculture land and crops	D	L	L	LT	Re	Speed limit for vehicles, no horn signs, use vegetation barrier; Regular maintenance of drainage.	DDC/DTO	DoLIDAR/Local administration
Biological Environment										
Road operation	Depletion of Forest Resources	Loss of timber, forest resources and benefits	IN	M	L	LT	IR	Enforcement of law, District Forest Office and VDCs to encourage and support local community in controlling illegal harvesting of forest resources.	DFO/CFUGs/VDCs	DDC/CDO
Road operation	Disturbance to the Wildlife and Illegal Poaching	Collision of wildlife with vehicles, disturbance in their normal activities, Loss of biodiversity	IN	L	L	LT	IR	Warning traffic signal, Awareness training to driver to limit speed and horn use. Community and authorities will remain vigilant and alert on illegal poaching.	DTO/CFUGs	DDC/CDO / DFO
Social-economic Environment										
Easy Access by road operation	Unplanned Settlement and Market Center Development	Encroachment of RoW, increased accidents, delay in traffic movement.	D	M	L	LT	IR	Awareness program, enforcement of law, roadside tree plantation.	DDC/DTO	CDO / VICCC
Operation of Road	Change in Social behavior	Social and cultural conflicts	IN	M	L	LT	IR	Awareness raising programs and strengthen communities against such nuisances, Enforcement of law and order.	DTO	DDC/DoLIDAR
Operation of Road	Issues on Road Safety	Increase in accidents	D	M	L	LT	IR	Appropriate road safety measures (safety signs, delineator post) along the road.	DTO	DDC/DoLIDAR

* Legend Value in parenthesis is level of significance:

Nature- IN= Indirect; D= Direct

Magnitude- L= Low; M= Medium; H= High;

Extent- SS= Site Specific; L= Local; R= Regional; N= National; CB=Cross-boundary

Duration- ST= Short Term; MT= Medium Term; LT= Long term

Re=Reversible; IR= Irreversible

7.4 Mitigation Cost

129 The estimated cost for benefit 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) program of the RRRSDP. Costs for income generation and awareness program activities for Affected Persons (APs) are included in Social Action Plan. The design and cost estimate for most of the suggested mitigation measures such as slope stabilization, quarry site management, spoil disposal, supply of safety gears, accidental insurance of RBGs, bio-engineering measures, tree plantation, land slide rehabilitation will be incorporated in the project cost. Therefore, most of the mitigation measures suggested would be a part of main project 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. The indicative cost for environmental enhancement and mitigation is presented in the **Table 7.4**.

Table 7.4: Cost Estimate for Environmental Enhancement and Mitigation 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 Naik of RBGs/Contractor	50,000.00	To be included in project cost
1.3	Enhancement in Technical Skills	100,000.00	To be included in project cost
	Sub-Total (1)	200,000.00	
2. Adverse Impacts Mitigation Measures			
2.1	Bio-engineering/Road side plantation work	11,244,028.00	(8% of total project cost) To be included in project cost
2.2	RBG Insurance	400,000.00	To be included in project cost
2.3	Information Signboards	50,000.00	To be included in BoQ
2.4	Resettlement cost (Compensation/ reconstruction for public and private properties, Livelihood Enhancement Skills Training (LEST) program for affected families)	1,189,655.00	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 (Re-plantation)	52,993.00	To be included in project cost
2.8	Social Plan Cost	824,900.00	To be included in Social plan, project cost
2.9	Occupational health and safety; First aid boxes, campsite sanitation (Pit latrine); solid waste management, Safety measures for workers (Helmets, gloves, masks, boots, etc.)	450,000.00	To be included in BoQ
	Sub-Total (2)	14,711,576.00	
	Total	14,911,576.00	

7.5 Implementation of Mitigation Measures

130 The mitigation measures will be integrated into project design and tender documents so that the mitigation measures will automatically become part of the project implementation and operation. Mitigation measures will be included as separate items in the Bill of Quantities, and monitoring will be done based on these. The Proponent and the contractor will be bound by the parameters identified in the IEE Report and specific mitigation measures spelled in the contract. The final acceptance of the completed works will not occur until all the environmental clauses have been satisfactorily implemented.

131 The contract agreement document will explicitly mention the penalizing action to be taken against failure to comply with EMP requirements.

7.5 Environmental Monitoring

7.5.1 Monitoring Responsibility

132 The Proponent will develop in-built monitoring mechanism to safeguard environment during construction and operation stages. The DPO will be supported by DIST in the district, and PCU will be supported by CISC at center to ensure effective monitoring and undertaking corrective actions, as required. A Safeguard Unit will be established

in DPO. The social, resettlement and environment specialists / officers from DPO/DIST will work in cooperation under the Safeguard Unit. They will undertake Subproject level monitoring under supervision and coordination of Specialists from PCU/CISC.

133 MoLD/DoLIDAR will be responsible for central level monitoring of EMP compliance. A provision of NRs. 100,000 will be allocated for the periodic monitoring by the center.

134 The Safeguard Unit at Subproject level shall submit monthly monitoring report to the PCU, who will forward a copy to ADB, NRM. Total cost of environmental monitoring (field visits, observation, review of reports and report preparation), excluding the cost of personnel, is estimated at NRs.200, 000.00 as given in **Table 7.5**.

Table 7.5: Environmental Monitoring Cost

S. No.	Detail	Unit	Quantity	Rate	Total (NRs.)
1	Environmental Management Specialist	Man-month			Included in the Cost of DIST
2	Sociologist / Public Relation Expert	Man-month			Included in the Cost of DIST
3	Report preparation		LS		100,000.00
4	Cost for Monitoring by MoLD/DoLIDAR		LS		100,000.00
	TOTAL				200,000.00

Thus, total environmental monitoring and management cost is NRs. 15,111,576.00

7.5.2 Types of Monitoring and Monitoring Parameters

135 Monitoring is an on going component of the environmental assessment process and subsequent environmental management and mitigation activities. There are basically three types of monitoring: Baseline monitoring, Compliance Monitoring and Impact Monitoring.

136 Environmental Monitoring for this sub project are:

- Compliance Monitoring** – that verifies whether the EMP provisions are properly implemented in the field. The framework for compliance monitoring is given in the Table 7.6.
- Impact Monitoring** - that confirms the result of implementing mitigation measures. The framework for impact monitoring is given in the Table 7.7.

Table 7.6: Compliance Monitoring for Letang-6 No.Budhabare Road Construction Works

Parameters/Issues	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
Final alignment selection as per IEE /EMP recommendation	DIST	Incorporation of IEE / EMP recommendations into alignment selection process and design document	Walkthrough along final road alignment, verifying sensitive areas	Initial stage preconstruction phase	Proponent through 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 Record of land donors	Initial stage pre-construction phase - well ahead of construction	CFC / PCU (CISC) / DOLIDAR / MoLD
Resettlement, assistance and compensation	Proponent / DIST	Legal provisions by GoN; Compensations paid	Numbers of household compensated	Well ahead of construction	CFC / PCU (CISC) / DOLIDAR / MoLD
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/ DPO
Use of local labour, particularly vulnerable groups and women	DPCC / VICCC / DIST	Specifications which obligate the contractors/BG to observe certain quotas for employing local labour, specially vulnerable groups and women, prohibition of child labour	Records of the that facilitates and coordinates the process for local people's employment, interviews	During the entire period where labour work is contracted, trimester	Proponent / DPO
Awareness and orientation training on road construction to technicians, and locally employed labourers	Proponent in assistance of DIST	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	DIST / Proponent (DTO)
Compliance to Occupational health and safety matters	DIST / Contractor	Health and safety regulations, first aid and medical arrangements, contingency plan, number and type of safety equipments such as mask, helmet, glove, safety belt, First Aid, Emergency Rescue	Spot checks at work sites, photos, accident records, interviews	throughout construction activities, trimester	Proponent / 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, protection of fauna and flora	Contractor /RBG/ DIST	Arrangement specified in the Code of Practice and in Manuals relating to environmental protection; EMP detail in IEE Document; 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	DPO/Proponent
Vegetation clearance	Contractor / RBG /	Actual number of trees felled during construction	Record, inspection and interview with	After detail	DPO

Parameters/Issues	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
	DIST	works; Location (in Formation Width or RoW	local people and CFUGs	design and before construction work	CFUGs / Proponent
Measures to avoid pressure on forest and wildlife	Contractor / RBG / DIST	Use of firewood or fossil fuel by construction crew, events of poaching of wildlife	Inspection, interview with local people and CFUGs	Once a month during construction	DPO / CFUGs / Proponent
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, Observation of good construction practices and Discussion with residents and workers	Once in a month during construction	Proponent / DPO
Measures to protect water bodies from pollution	Contractor / RBG / DIST	Visual observation, observation of open defecation/waste/spoil 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	Proponent / DPO
Restoration, rehabilitation, reconstruction of all infrastructure services disrupted or damaged by the proposal activities	Contractor / RBG / DIST	Continued services by the facilities and functional public life	Site observation; VDC records; Public Consultation Meetings; Photos	Once in 15 days during construction	Proponent / DPO
Adequate technical and environmental supervision	DIST	Adequate number of technicians regularly at site 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	DPO , Proponent
Clean up and reinstatement of the construction sites (camps, quarries, borrow pits)	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 CBOs	At end of construction period	Proponent / DPO

Table 7.7: Impact / Effect Monitoring for Letang-6 No. Budhabare Road Construction Works

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 where bio-engineering failed	Continuously during construction and operation	DIST during construction; Proponent / DPO / Soil Conservation Office during operation
Bio-engineering of disturbed slopes	Establishment of nursery Re-vegetation through bio-engineering application on disturbed slope; Number of sites bio-engineered.	Site observation; Reports, photos, measurements	Fill and cut slopes, critical sites	During and at end of Project construction	DIST/ Proponent
Disposal of Spoils and construction wastes	Affected aesthetic value, affected forest and agriculture, initiated land erosion by local blocked drainage, hazard to downhill slope residents and agricultural lands	Site observation and interviews, photos, geo-referencing sites	At specific locations where such sites occur	During construction	DIST/ Proponent
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/ Proponent
Disruption of drainage system	Status of rehabilitation Service status of irrigation and water supply system; Operation and maintenance requirement	Observation and interviews, photos, fisheries data, wildlife records	Disrupted aquatic system, irrigation schemes	During construction	DIST / Proponent
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	Proponent / DIST/ VICCC
Water quality	Observation of open defecation and waste disposal around water sources near construction sites ; Parameters like pH, hardness, DO etc.	Visual observation, measurement of water sample using standard field kit	local streams	During construction; Upon demand for testing with field kit	DIST / Proponent
Dust pollution	Dust cloud in work sites. Dust collected on leaves of nearby vegetation	Visual inspection and comparison with baseline condition	At construction sites and at sensitive spots (schools, health spots, major settlements)	During construction and operation	DIST / Proponent
Forest and vegetation	Numbers of trees, presence of ground vegetation, signs of illicit logging and extraction of NTFFPs	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 during operation
Wildlife	Wildlife poaching trapping and poaching by work force, trade of wildlife, biological survey on selected biota, road accidents inflicting	Interview with local people / DFO/ CFUGs members, photos, observations	Forest areas at roadside	Twice a year during construction and routine during	DIST during construction; CFUGs/DFO during

Parameters /Issues	Verifiable Indicators	Verification Methods	Location	Schedule	Responsible Implementation and Monitoring Agency
	wildlife			operation	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, DISTussion with stakeholders	Project Area	Trimester during construction phase	DIST /Proponent
Trade and commerce	Numbers of shops increased or decreased, rental of houses and land spaces	Records, interviews, observations, photos	Project Area	Throughout Project, once in a year	Proponent / VDC
Cottage industries	Establishment of industries in the vicinity of Project Area	Records and interviews, photos	Project Area/ zone of influence	Throughout Project	Proponent / 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 labourers	Project Area	During construction	DIST/Proponent
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	Project Area	During operation	Proponent / VDC
Ribbon settlement	Congestions to road users Nos. of accidents, RoW encroachment	Records, observations	Project Area	During operation	DDC/CDO

8. Conclusion and Recommendation

8.1 Conclusion

137 The IEE study of the proposed Letang-6 No.Budhabare road Subproject does not pass through any environmentally sensitive area, and have minimum adverse impact associated with loss of agricultural land. Most of the adverse impacts predicted are of low significance and short term as well as reversible. The rehabilitated road will provide better access to market and social services, and is expected to enhance productivity and improving quality of life of the people. Local people will get direct employment opportunity as workers during construction works, which will contribute in improving their income. This road links the remote area of the district to its headquarter and Mahendra Highway. This road is the shortest distance from Morang headquarter (Biratnagar) to Dhankuta district. The beneficial impacts from the implementation of the proposed road are more significant and long term in nature against the adverse impacts most of which could be avoided or minimized or compensated.

138 The IEE has shown that none of the anticipated environmental impacts of constructing the proposed road is significant enough to need a detailed follow-up EIA study. Therefore, this IEE is sufficient for approval of the Subproject.

8.2 Recommendation

139 A key consideration in selecting the road alignment is to minimize the acquisition of valuable agricultural, forest and built up area. However, some agricultural, forest and built up area will have to be acquired for construction of the proposed road. A Resettlement Plan has been prepared to ensure that the persons affected by these losses are properly compensated..

140 The proposed road project is recommended for implementation with incorporation of mitigation measures and environmental Management plan.

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ANNEXES

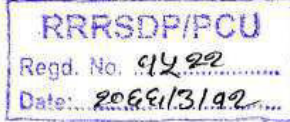
Annex I: Terms of Reference



नेपाल सरकार
स्थानीय विकास मन्त्रालय
(वातावरण व्यवस्थापन शाखा)

फोन नं. ५५४८५१४
फ्याक्स नं. ५५४८५१४
Web: www.mld.gov.np

पत्र संख्या ०६५/०६६
चलानी नं. २८४



मिति:- २०६६/३/१०

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

श्री स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग,
जावलाखेल, ललितपुर ।

उपर्युक्त विषयमा ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना अन्तर्गत सुनसरी र मोरङ जिल्ला विकास समितिको कार्यालयबाट निम्नानुसारका सडकहरुको प्रारम्भिक वातावरणीय परीक्षण (IEE) को कार्यसूची (TOR) तयार गरी त्यहाँ विभाग मार्फत वातावरण संरक्षण नियमावली, २०५४ अनुसार स्वीकृतिको लागि यस मन्त्रालयमा पेश भएकोमा नेपाल सरकारको मिति २०६६/३/१० को निर्णय(सचिवस्तर) अनुसार स्वीकृत भएको कार्यसूची २/२ थान यसै पत्रसाथ पठाईएको व्यहोरा अनुरोध छ ।

निम्न

१. पकली-वक्लौरी -भरौल-महेन्द्रनगर-चतरा-बराहक्षेत्र (सुनसरी जिल्ला)
२. इनरुवा-बविया-जलपापुर-देवानगञ्ज-कप्तानगञ्ज-कौवाखोज (सुनसरी जिल्ला)
३. लेटाङ - ६नं. बुधवारे (मोरङ जिल्ला)

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२०७५/४/२८

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उप-सचिव

स्वीकृत मिति :- २०६६/३/८



Terms of Reference (ToR)
for
Initial Environmental Examination (IEE)
of
Letang-6No.Budhabare
Road Sub-Project

Submitted to:
Ministry of Local Development,
Government of Nepal

Proponent:
District Development Committee (DDC)/
District Technical Office (DTO)
Morang
Telephone No. – 021-536943/533750
Fax No. – 021-523379

June 2009

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ToR for IEE of Letang-6No. Budhabare Road sub-project in Morang District

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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
TA	Technical Assistance
ToR	Terms of Reference
VDC	Village Development Committee
Zoi	Zone of Influence



Task for IEE Letang 6-No Budhabare Road sub-project, Morang

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1.0 NAME AND ADDRESS OF THE PROPONENT

The District Development Committee (DDC)/District Technical Office (DTO), Morang is the executing agency at the district level and the proponent of the Initial Environmental Examination (IEE) study for the rehabilitation of Letang 6-No Budhabare road sub-project. The Ministry of Local Development (MLD) is the concerned authority for the approval of IEE study report.

Address of the Proponent:

District Development Committee (DDC)
District Technical Office (DTO)
Biratnagar, Morang
Telephone No. :- 021-536943 / 533750
Fax No. :- 021-523379

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.

The RRRSDP program is financed by the Government of Nepal (GoN), Asian Development Bank (ADB), Department for International Development (DFID), OPEC Fund for International Development (OFID) and Swiss Agency for Development and Cooperation (SDC) to improve the connectivity, enhance economic and employment opportunities, increase access to market and social services of rural communities. The coordinating government department is the Department for Local Infrastructure Development and Agricultural Roads (DoLIDAR) under the Ministry of Local Development (MLD).

The DDCs is the Project Implementing Agencies at the district level. The DTO of each respective DDC is responsible for technical and Project management matters in the district. The DTO will be supported by the DIST which includes engineering, safeguards, and social mobilization staff.

BDA Nepal has provided District Implementation Support Team (DIST) for RRRSDP and have the responsibility of providing technical assistance in such districts like Morang etc.

This Terms of Reference (ToR) is prepared to conduct an IEE study of Letang 6-No Budhabare Road sub-project in Morang District.



2.2 BACKGROUND OF THE SUB-PROJECT

The proposed of Letang 6-No Budhabare Road sub-project lies in the East-Northern part of Morang district of Eastern Development region of Nepal. This sub-project starts from Gange-Chowk of Letang VDC ward no. 2 and ends at 6-No Budhabare of Budhabare VDC ward no-6. Major settlements along the road alignment are Gange chowk, BP chowk, Campus Mode chowk, Milan Tole, Sukechaurie chowk, Lakhbari, Guwabari, Patakpur, Yangsila, Dhappau, Pangre, Jyamire, Samla, Ahale, Baise, Ghumaune, Kholagau, Phirkauli, Gaderegau, Chhanambar Budhabare. Total length of the road alignment is 32 km according to DTMP, 2007 of Morang District.

The starting point of the road Letang-2, Gange Chowk is a point 8 K.M. North from Mahendra Raj Marga (M.R.M. Highway), 60 km far from Biratnagar, district headquarter of Morang. Upto 5.750 km section, the road width is 15.24 m or less. For the remaining length of the road, width is 3.7 m in general, but some sections of road are having 3 m width also. Almost all alignment of the road passes from lower ridge to upper ridge.

The people in this project area are having many types of transportation problems due to the existing nature or slope of ground. Local people have many difficulties to access the market centres of the district to fulfil their daily needs. Hence, the locally produced materials like *Vegetables, Millet, Paddy, Wheat, Maize etc.* are getting low prices than it may fetch. Other development facilities are also far from the reach of people because it is very difficult to create a system like water supply, electricity, and telephone. health post due to land topography and steep slope. Due to the land topography, in rainy season almost every year people face the problem of transportation due to land slide.

The rehabilitation of road will mainly enhance the transportation of *Vegetables, Millet, Paddy, Wheat, Maize etc* produced in areas of Letang and other VDCs and it will also extend physical and economical access to the people within the immediate zone of influence. For the road construction, use of local labour will generate immediate employment to local people and minimise migration to Kathmandu and Biratnagar in search of work. Consequently, local people will get long-term benefit which will enhance their economic status within the ZoI of road corridor and adjoining area of Ilam, Dhankutta, Pachthar district.

This road is identified as a priority road in the District Transport Master Plan (DTMP). Rehabilitation of this road with gravelling will provide physical and economical access to the people of East-Northern part of the district with district headquarter and other part of Nepal.

The location and alignment of the road is given in **Figure 1 and 2**



DISTRICT TRANSPORTATION MASTER PLAN (DTMP) MORANG, 2007

- Map of Morang District showing Letang-6 NO. Budhabare Road sub-project



Map for IEE Letang-6-No Budhabare Road sub-project in Morang District

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 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.

2.4 RELEVANCY OF THE SUB-PROJECT

The proposed road will connect Letang, Jante, Warangi, Ramitekhola, and 6-No Budhabare VDCs with feeder road to the Biratnagar Sub-Metropolitan, Morang through Kanepokhari Mahendra-Rajmarg Highway. This road starts from Gange chowk (250 m amsl), which is a small settlement likely to be changed to a bazaar area due to economical growth. Then the road runs towards north direction. The end point of this rehabilitation section of road is Chhanambar Budhabare, (1700m amsl).

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 (EPA, 1997) and Environmental Protection Rules, 1997 (EPR, 1997). Preparation of IEE report by concerned District Development Committee (DDC) 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 Guideline.

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 Nirdeśika* (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, 1969
- National Environmental Impact Assessment Guidelines, 1998
- APPROACH for the Development of Agricultural and Rural Roads, 1999 (DoLIDAR)
- RRRSDP Environmental Assessment and Review Procedures (EARP) 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 and EPR. 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

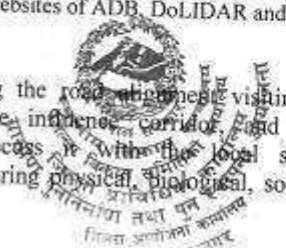
4.2 PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

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 and/or municipality 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.
- The approved IEE report will be made accessible to interested parties and general public through information center of DDC and websites of ADB, DoLIDAR and 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 with the local stakeholders. The information collection will be made covering physical, biological, socio-economic and cultural aspects of the environment.



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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 1 below:

Table 1. 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
- Forestry and wildlife
- Geology
- Road engineering

- Social, economic and culture.

The IEE will be carried out and prepared by DIST Environmental Specialist, with support from DIST team Morang, Environmental Specialist from CISC and District Project Office (DPO). CISC Environmental Specialist will provide necessary training to DIST for the environmental assessment procedures. The activity of IEE preparation will be supervised by DPO office. 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 basis if needed.

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. 4 hours walking distance from the road alignment or 10 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
- Appreciation of Land Value
- Increased Crop Productivity and Sale of Farm Products
- Enhancement of Community Development Services
- Promotion of 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.

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 works i.e. springs, streams, rain water (Drainage and Cross Drainage Works)
- Air Dust, Noise and Water Pollution
- Quarrying and Borrow Pit
- Decline in Aesthetic Value

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
- Impact on 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)

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 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

Biological environment

- Depletion of forest resources
- Disturbance to wild life and illegal hunting

Socio-economic and cultural environment

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

10.0 BENEFIT AUGUMENTATION/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.



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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 contain the following sections:

- i. **Cover page with name of the proposal and proponent and address**
- ii. **Table of content**
- iii. **List of Abbreviation (acronyms)**
- 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. **Salient Features of the Project**
- 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



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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 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. **Annex**

- ToR of IEE
- Rapid Environmental Assessment (REA) Checklist
- Abstract of cost
- RRRSDP environmental checklist
- Public notice
- Deed of enquiry (*muchulka*)
- Name of the organizations
- List of person contacted
- Meeting minutes of community consultation
- Recommendation letters from municipality and VDC's
- 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 Zol
 - d. Number of households belonging to different food security category
- List of trees
- Maximization of slope cutting and preservation of vegetation cover
- Photographs



Annex II: Rapid Environmental Assessment (REA) Checklist

Rapid Environmental Assessment (REA) Checklist

Instructions:

- ☐ This checklist is to be prepared to support the environmental classification of a project. It is to be attached to the environmental categorization form that is to be prepared and submitted to the Chief Compliance Officer of the Regional and Sustainable Development Department.
- ☐ This checklist is to be completed with the assistance of an Environment Specialist in a Regional Department.
- ☐ This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB checklists and handbooks on (i) involuntary resettlement, (ii) indigenous peoples planning, (iii) poverty reduction, (iv) participation, and (v) gender and development.
- ☐ 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.

Country/Project Title:

Nepal / RRRSDP

Name of the sub Project:

Letang -6 no. Budhabare Road

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Sitting			
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)?		✓	

SCREENING QUESTIONS	Yes	No	REMARKS
<ul style="list-style-type: none"> Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site? 		✓	
<ul style="list-style-type: none"> Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction? 		✓	
<ul style="list-style-type: none"> Increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing? 		✓	
<ul style="list-style-type: none"> Noise and vibration due to blasting and other civil works? dislocation or involuntary resettlement of people 		✓	
<ul style="list-style-type: none"> Other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress? 		✓	
<ul style="list-style-type: none"> Hazardous driving conditions where construction interferes with pre-existing roads? 		✓	
<ul style="list-style-type: none"> Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations? 		✓	
<ul style="list-style-type: none"> Creation of temporary breeding habitats for mosquito vectors of disease? 		✓	
<ul style="list-style-type: none"> Dislocation and compulsory resettlement of people living in right-of-way? 		✓	
<ul style="list-style-type: none"> Accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials and loss of life? 		✓	
<ul style="list-style-type: none"> Increased noise and air pollution resulting from traffic volume? 		✓	
<ul style="list-style-type: none"> Increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road? 		✓	

Source: Field survey, August 2009

Annex III: Abstract of Cost

Name of Sub-Project : - Letang 6 No Budhabare Road

Chainage: 0+000 to26+660

Item No	Description	Unit	Quantity	Rate	Amount
1	General Items				
1.1	Insurances-[General Conditions of Contract, Clause-13)	LS			750000.00
1.2	Lab Testing of materials and works as necessary	LS			750000.00
1.3	Maintenance of existing road during construction.	Km-Month	319.92	2481.43	793859.09
1.4	Hire and supply insured two wheel motor bike in well condition (150 cc Indian& Manufacture date not erlier than 2010 AD), including costs for fuel, lubricants, maintenance etc all complete for the Supervision Works by DPO and DIST	days	1095.00	450.00	492750.00
1.5	Hire and supply insured Double Cab Four Wheel Drive Pick-Up during Project period to the Employer including costs for fuel, lubricants, maintenance, driver etc all complete when directed by the Engineer for the Supervision Works.	days	600.00	3000.00	1800000.00
1.6	Provide and maintain Site Office in Letang bazar at Letang and Aahale at Ramitekhola for the Supervision Team for the contract period as per Engineer ' instruction . (Minimum office area 1000 sq. ft with water, electricity, toilet, Bathroom and parking facilities)	LS			400000.00
	Sub Total (1)				4986609.09
2	Earthwork				
2.1	a) Road				
2.1.1	Site Clearance including Clearing and grubbing as per specification(DoLIDAR- 1-1)	Sq.m.	40000.00	10.58	423200.00
2.1.2	Excavation in roadway including removal and satisfactory disposal and stacking or hauling (to sites of embankment construction) of suitable cut materials as required.(as per the rate of manang and Pachthar RRRSDP)				
	a) OrdinarySoil	Cu.m.	36197.54	68.91	2494425.11
	b) Hard soil	Cu.m.	71361.80	82.69	5900878.33
	c) Soft Rock	Cu.m.	27619.61	275.64	7612942.80
	d) Medium Rock	Cu.m.	3004.58	551.27	1656334.82
	e) Hard Rock	Cu.m.	1057.83	4631.40	4899214.22
2.1.3	Construction of roadway in embankment and miscellaneous backfilling areas with approved material obtained from roadway excavation including average transportation distance up to 50 m along the lead route, spreading in layers, watering and compaction; (DoLIDAR clause 2-5)	Cum.	46369.89	66.13	3066440.83
2.2	b) Retaining & Brest Wall				
2.2.1	Earthwork in Excavation for foundations for retaining and brest wall structures including removal and satisfactory disposal and stacking or hauling (to sites of embankment construction) of suitable cut materials as required.(DoLIDAR SN 5, Clause 2-1.2.2, 2-1.8, 2-1.9)				
	a) OrdinarySoil	Cu.m.	321.20	136.22	43754.20
	b) Hard soil	Cu.m.	910.81	163.46	148881.66
	c) Soft Rock	Cu.m.	409.72	544.87	223243.59
	d) Medium Rock	Cu.m.	0.01	1085.60	15.44
	e) Hard Rock	Cu.m.	24.33	4613.80	112274.52
2.2.2	Backfilling in structures with material obtained from excavation including average transportation distance up to 50 m along the lead route, spreading in layers, watering and compaction; (DoLIDAR clause 2-5)	Cum.	17.79	66.13	1176.45
2.3	c) Stone Pitching				
2.3.1	Excavation in Hard soil for Stone Pitching works in roads	Cum.	7617.60	163.46	1245172.90
2.4	d) Drain				
	a) OrdinarySoil	Cum.	689.38	136.22	93908.02

	b) Hard soil	Cum.	2121.36	163.46	346757.18
	c) Soft Rock	Cum.	1102.44	544.87	600687.03
	d) Medium Rock	Cum.	12.39	1085.60	13451.67
	e) Hard Rock	Cum.	65.96	4613.80	304303.18
2.5	e)Hume Pipe				
2.5.1	Earth work in excavation (inlet clearance) for existing HPC- 22 nos.@ 2 cum.	Cum.	44.00	163.46	7192.24
	For new RC Pipe Culvert works.	Cum.	232.85	163.46	38061.33
2.5.2	Backfilling and compaction with suitable material supplied from quarry sites all complete in trench of pipe culverts as mentioned in specification and directed by the Engineer (DoLIDAR SN 10, Clause 2-5)	Cum.	649.69	331.78	215553.32
2.6	f) Dry stone Causeway				
2.6.1	Excavation in Hard Soil	Cum.	176.00	163.46	28768.96
	Sub Total of Earthwork Items				29476637.79
3	Pavement Works				
3.1	Preparation of subgrade in roadway and junctions with link roads as mentioned in the specification and directed by the engineer. (DOR new norms no 10.01, 10.03, clause-1003)	Sqm.	136300.00	9.76	1330867.28
3.2	Supply, Place and compact gravel subbase (passing sieve of 63 mm and down) over prepared subgrade according to the designed camber all complete as mentioned in the specification and directed by the engineer. (DOR new norms no-12.01, clause-1201)	Cum	15886.90	1595.23	25343180.05
3.3	Supply ,Place and compact crusher run materials (passing sieve of 40 mm and down) for base course over subbase according to the designed camber all complete as mentioned in the specification and directed by the engineer. (DOR new norms no-12.06, clause-1202	Cum	500.72	2405.47	1204468.19
3.4	Providing and spraying Bituminous Prime Coat MC30/MC70 over base course at spray rate of 1ltr/m ² as mentioned in the specification and directed by the engineer. (DOR new norms no-13.03, clause-1301,1302)	Sqm.	5000.00	127.74	638675.00
3.5	Providing and spraying Bituminous Tack Coat MC30/MC70 at spray rate of 0.7ltr/m ² over primed surface including cleaning the road surface using wire, brushes, broom etc. before application as mentioned in the specification and directed by the engineer. (DOR norms no-13.01, Clause-1301, 1302)	Sqm.	5000.00	89.41	447062.50
3.6	Providing, mixing, laying and compaction of 40 mm thick premixed carpet all complete as mentioned in the specification and directed by the engineer. (DOR new norms no-13.09, Clause-1307,1308)	Cum	200.00	11333.25	2266650.00
3.7	Supply spreading and compaction of seal coat aggregate (sand seal) all complete. (DOR norms no-15(20) and others)	Sqm.	5000.00	24.61	123025.00
3.8	20 cm thick stone pitching on the prepared bedding including supply of stone and river spalls for sealing of voids	Cum.	7617.60	2874.14	21894029.82
3.9	Stone edging works with boulders of size 100 mm breadth and 250 mm depth in proper line and level along the two sides of the road all complete.(analysis of construction works 2041of 15-24)	Rm	34276.00	74.46	2552190.96
	Sub Total (3)				55800148.80
4	Drainage Management Works				
4.1	Stone Masonry works				
4.1.1	Supply and Laying Stone Masonry in 1:4 cement mortar all complete works as mentioned in specification and directed by the Engineer (DoLIDAR SN 38A-c, Clause-8) :				
4.1.2	for Side Drain works	Cum.	2455.50	5191.91	12748735.01
4.1.3	for RC Pipe Culvert works.	Cum.	188.38	5191.91	978051.92
4.2	Plaster works				
4.2.2	12.5 mm thick plastering with cement sand mortar all complete as mentioned in specification and directed by the				

	Engineer (DoLIDAR SN 37B, Clause-7-9.4, 7-12, 7-13.2)				
4.2.2	In 1:3 ratio inside drain	Sqm.	15715.20	164.83	2590336.42
4.3	<u>Punning works</u>				
4.3.1	3 mm thick cement punning all complete in plastered area of side drain as mentioned in specification and directed by the Engineer .	Sqm.	15715.20	13.28	208729.29
4.4	<u>P.C.C. Works</u>				
4.4.1	concrete class , M10/40 for foudation of drain	Cum.	933.09	5304.49	4949566.57
	Sub Total (4)				21475419.21
5	<u>Structural work</u>				
5.1	<u>Gabion works</u>				
	Box size (2x1x1)				
5.1.1	Stone Packing in Gabion Crates including stone supply	Cum.	648.00	4573.55	2963660.40
5.1.2	Fabrication of gabion boxes including rolling, cutting, weaving and supply to the site (Hexagonal Mesh Size: 100mm*120mm, selvedge wire-7swg, mesh wire-10 swg & binding wire-12 swg, all heavy coated)	Nos.	324.00	2580.37	836039.88
	Box size (1.5x1x1)				
5.1.3	Stone Packing in Gabion Crates including stone supply	Cum.	486.00	3330.98	1618856.28
5.1.4	Fabrication of gabion boxes including rolling, cutting, weaving and supply to the site (Hexagonal Mesh Size: 100mm*120mm, selvedge wire-7swg, mesh wire-10 swg & binding wire-12 swg, all heavy coated)	Nos.	324.00	1884.05	610432.20
5.2	<u>Geo-textile work inside of gabion wall</u>	Sq.m	882.32	80.00	70585.34
5.3	<u>Hume pipe</u>				
5.3.1	Laying, Fitting, and Fixing of Hume Pipe of 60 cm dia having a length of 1m or more. It includes all operations required to complete the work up to a trench depth of 2.2 m below the ground level and the jointing of pipes with 1:2 cement sand mlortar.	Rm.	247.50	3901.19	965544.53
5.4	<u>Dry Stone Causeway</u>				
5.4.1	a)Stone soling.	Cum.	176.00	2874.14	505848.20
	b)Stone solling in bed of drain	Cum.	1964.40	2874.14	5645955.71
5.4.2	<u>Gabion works(Box size (2x1x1))</u>				
5.4.2.1	Stone Packing in Gabion Crates including stone supply	Cum.	1840.00	4573.55	8415332.00
5.4.2.2	Fabrication of gabion boxes including rolling, cutting, weaving and supply to the site (Hexagonal Mesh Size: 100mm*120mm, selvedge wire-7swg, mesh wire-10 swg & binding wire-12 swg, all heavy coated)	Nos.	920.00	2580.37	2373940.40
	Sub Total (5)				24006194.93
6	<u>Miscellaneous Work</u>				
6.1	Lead for carriage of extra excavated materials by tipper (30kmph) in tipping site and spreading as per specification and directed by the engineer all complete ((spoil tipping works, DoLIDAR SN-57.3, Clause-G13.2)	m ³	23217.86	206.97	4805343.29
	Sub Total (6)				4805343.29
A	<u>Total</u>				140550353.11
	VAT 13% of A				18271545.90
	<u>Bioengineering@8% of A</u>				11244028.25
	<u>Contingencies @ 3% of A</u>				4216510.59
B	<u>Grand Total</u>				174282437.85

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[illegible]

4. Land holding pattern

3.7	Pig										
3.8	Fisheries										
3.9	Poultry										
3.10	Bee-keeping										
3.11	Others										

A. _____ B. _____ C. _____
D. _____ E. _____ F. _____
G. _____ H. _____ I. _____

7. Migration for employment

- (a) 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

- (b) Seasonal migration in search of work.

Month	No. of Total HH	Destination	Purpose

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

B. DEVELOPMENT POTENTIAL ACCORDING TO SETTLEMENT

- B.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. N.	Name of Area	Description of Development Potential

- B.2. Scope of the proposed linkage in view of promoting socio-economic development (communication, agricultural production, education and health).

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

C. Historic and Cultural Resources Within The Settlement

Type of Resource	Name/specification	Affecting activities	Location from project



नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितीको कार्यालय
जिल्ला प्राविधिक कार्यालय, मोरङ
ग्रामिण पुन निर्माण तथा पुनस्थापना आयोजना
जिल्ला आयोजना कार्यालय
मोरङ, विराटनगर

नयाँ पत्रिका
२०७५

प्रारम्भिक वातावरणीय परीक्षणसम्बन्धी सार्वजनिक लागि सार्वजनिक सूचना

(प्रथम पटक प्रकाशित मिति - २०६६।०३।२५)

ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना (R/RRSDP) अन्तर्गत एसियाली विकास बैंक, डीफिड तथा स्थानीय सरकार विकास निकायको अनुदान सहयोग तथा डीफिडको क्षण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राहीसमेतको लगानीमा निर्माण गर्ने प्रस्ताव गरिएको लेटाइ-६ नं बुधबारे ग्रामीण सडक उपआयोजना प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन कार्यान्वयन गर्ने मितिसिलामा वातावरण संरक्षण नियमावली, २०५४ (पहिलो संशोधन, २०५५) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावको नाम: जिल्ला विकास समितिको कार्यालय जिल्ला प्राविधिक कार्यालय, मोरङ, विराटनगर ।

प्रस्तावित सडकले प्रभाव पार्ने गा.वि.स.हरू :

१. लेटाइ-६ नं बुधबारे ग्रामीण सडक अन्तर्गत: लेटाइ, जाले, वारंगी, रमितेखोला, ६ नं बुधबारे गा.वि.स. (धनकुटा) हरू ।

प्रस्तावको विवरण

प्रस्तावित १. लेटाइ-६ नं बुधबारे ग्रामीण सडक उपआयोजना लेटाइ गा.वि.स. छो गङ्गे चौक, वि.पी. चौक, सधामपस चौक, मिलन टोल, सुकेचौरी चौक, लाख बारी, गुवा बारी, पाटापुर, याङ्खोला, धापुराउ, पाङ्ग्रे, ज्यामिरे, समला, अहाले, बाइसे, घुमाउने, फिकैली चौक, गडेरेगाउँ, ६ नं बुधबारे धस्तीहरू भएर जान्छ । यस सडकको जम्मा लम्बाइ ३० कि.मी. रहेको छ ।

उक्त प्रस्तावको कार्यान्वयनबाट वातावरणमा पर्ने सक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना प्रकाशित भएको मितिले १५ (पन्ध्र) दिनभित्र तल उल्लेखित ठेगानामा आफ्नो राय सुझाव पठाई सहयोग गरीदनुहुन अनुरोध गरिन्छ । साथै यस समितिमाको राय सुझाव स्थानीय पूर्वाधार विकास तथा कृषि-सडक विभाग, जावलाखेल तथा स्थानीय विकास मन्त्रालय, पुल्चोक, काठमाडौंमा पनि पठाउन सकिनेछ ।

राय सुझाव पठाउने ठेगाना:

जिल्ला विकास समितिको कार्यालय, मोरङ, विराटनगर ।	जिल्ला प्राविधिक कार्यालय, मोरङ, विराटनगर ।
टेलिफोन नं: ०२१५२५२०७	टेलिफोन नं: ०२१५३३७५०
फ्याक्स नं: ०२१५२३३७९	फ्याक्स नं: ०२१५३३७५०

Annex VI: Deed of Enquiry (Muchulka)



Nepal Government
स्थानीय विकास मन्त्रालय
Ministry of Local Development

लिल्लु प्रविधिक कार्यालय

मोरङ, विराटनगर

०० नं०

२०६६/०६/१८

गाउँ विकास समितिको कार्यालय

Office Of the Village Development Committee

चलानी नम्बर १११/०६६/०६६

रमितेखोला, मोरङ

कोशी अञ्चल/Koshi Zone

पत्र संख्या ८

Ramitekhol, Morang

मिति २०६६/०६/१८

Ref No. ८

Date

विषय/SUB :- सूचना दौंस गारे मुचुल्का पठाएछे बारे ।
श्री जिल्ला प्राविधिक कार्यालय, मोरङ

उपरोक्त सम्बन्धमा यस कार्यालयको मिति २०६६/०६/१८
पासमा ००८ को पत्र प्राप्त भएकाले बहुरी सावधानिपूर्वकमा
गाउँको ००८ को सूचना पाठमा दौंस गये र सोको मुचुल्का
पानागं १२ सेप्टेब्रा २०६६ सम्मको नाममा पठाएछे जसको भु
बोध्य छ ।

हरिप्रसाद उप्रेती
गा.वि.स. सचिव

श्री राहुल
०६/२०

निश्चितम् सौम्य साँस मुचुलका साहिदाप मर्ति
 तपत्रिलका चक्रिक ७ आर्ज हाजीरुले नि. नि. स
 मीरडुके मिति ०६६।३।२८ च तं २०६ की मुचुलका यस
 लेताड० सा. नि. स. को मुचुलता पावीमा साँस मर्ति को
 देरिए को हुदा उक्त मुचुलता पदि बांची कुति पाये। -
 सौही अनुसार सछो निरत मुक्ति यस्त साँस मुचुलका
 साहिदाप मर्ति दिमा।

तपत्रिल

२०५५।६९. उतडा पसाद वरात लेताड० ६

१. सुत वरात - ॥ २

२. दूनेम्वरात मर्ति ॥ ६

४ वरात मर्ति ॥ ६

५. मर्ति मर्ति - ॥ ६

इति सम्मत ०६६ साल आठवा ४ मर्ति सौम्य मुचुलका



गणतन्त्र नेपाल
Government of Nepal
स्थानीय विकास मन्त्रालय
Ministry of Local Development

गाउँ विकास समितिहरूको कार्यालय
Office of the Village Development Committee

नगरपालिका क्षेत्र (Nepal)
Warant (Nepal)
चरमो मोरङ

कोशी अञ्चल / Koshi Zone
मिति: २०७३/०५/१४
Date

पत्र संख्या :
चलानी नम्बर
Ref. No. :

विषय: SUB: सूचना दिएको बारेमा जानकारी कार्यालय
श्री लिम्बा विकास समितिमा कार्यलय मोरङ

उपरोक्त सम्बन्धमा मोरङ जिल्लाको मोरङ जिल्ला हाङ्गुला जिल्लाको
पुष्पकेश्वर-६ हाङ्गुला जिल्ला जैन सम्बन्धमा प्रकाशित सूचना प्रस
ता-वि-स.को कार्यलयमा प्राप्त भई सूचना पायीमा दिएको भएको ज्ञात
आकुरोस गरिन्छ।

२०७३/०५/१४
नयाँ बजार
म.वि.स.हाङ्गुला



सुदूर पश्चिम
Government of Nepal
सुदूर पश्चिम प्रदेश
Ministry of Local Development
सुदूर विकास समिति कार्यालय
Office of the Village Development Committee

पत्र संख्या :
सहायी संख्या :
दिनांक :

जम्हा, मोरंग (नेपाल)
Jama, Morang (Nepal)

कोशी अञ्चल / Koshi Zone
मिति : २८/०८/९०
Date :

विषय/Subject : सूचना दिएको सम्बन्धमा ।
सिक्ता विकास समितिको कार्यालय मोरङ

प्रस्तुत विषयमा लेखेको - दैनिक बुझावरी सहित भ. धर्मोपदेश
को प्रारम्भिक पाठ्यक्रमीय परीक्षण (PCC) गर्ने सम्बन्धमा
प्रकाशित सार्वजनिक सूचनाको एक प्रति श. ग. वि. को
कार्यालयको सूचना पाटीमा दिएको गरिएको बारेमा अनुवैधा
न गरिन्छ ।

सहित
२८/०८/९०
२८

Annex VII: Name of the Organizations

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

SN	Name or Organization	Address	Remarks
1	Office of Village Development Committee, Letang	Letang	
2	Office of Village Development Committee, Jante	Jante	
3	Office of Village Development Committee, Ramitekhola	Ramitekhola	
4.	Office of Village Development Committee, Warrangi	Warrangi	
5	Office of Village Development Committee, Budhabare	Budhabare	

Source: Field Survey, August 2009

Annex VIII: List of Persons Consulted

List of persons consulted

S.N.	Name	Address
1.	Dhak Bdr Shrestha	Letang-2
2.	Kopila Devi Shrestha	Letang-2
3.	Khadga Bdr Limbu	Letang-6
4.	Ishwari Magar	Letang-2
5.	Dil Kumar Limbu	Letang-6
6.	Khadga Prashad Baral	Letang-5
7.	Haremba Raj Bhattarai	Letang-2
8.	Dambar Limbu	Bhogatani -8
9.	Ranjan Rai	Letang- 6
10.	Janga Bdr. Tamang	Letang -2
11.	Mani Kumar Tamang	Letang-2
12.	Prem Prashad Rai	Ramitekhola-4
13.	Lal Bdr. Rai	Ramitekhola -2
14.	Janga Bdr. Rai	Ramitekhola -1
15.	Prarbat Rai	Ramitekhola-1
16.	Kabindra Rai	Budhabare-1
17.	Dipak Kumar Shrestha	Budhabare 2
18.	Bishwanath Dahal	Budhabare -6
19.	Hemkarna Tumsa	Budhabare -2
20.	Hari Bhagat Shrestha	Budhabare -6
21.	Ganesh K.C.	Budhabare -6
22.	Chhabilal Gurung	Budhabare -6
23.	Devi kumari Shrestha	Budhabare -6
24.	Narayan Prashad Shrestha	Budhabare-2
25.	Bhuban Shrestha	Budhabare 2
26.	Subarna Rana	Budhabare 2
27.	Chudamani Acharya	Budhabare 6
28.	Suk Bdr. Thegin	Budhabare.2

Source: Field Survey, August 2009

Meeting Minute of Letang VDC.

[illegible]

१. वतावदशीय प्रभाव सम्बन्धमा ।
२. अन्य सम्बन्धमा ।

निर्णय

१. प्रस्ताव नं. १ माघी छलफल गर्दै लेटाङ-
धनं बुधवारै ग्रामिण सडक निर्माण कार्य
हुने भएको र सो सडक बाट गा. वि. स.
विद्यालय, स्वास्थ्य चौकी, खानेपानी कार्य
बराबरमा असार नपर्ने भएकोले सर्व
सहमतो बाट निर्णय पारित गरियो।

२. प्रस्ताव नं. २ माघी छलफल गर्दै लेटाङ,
धनं बुधवारै सडक चिह्नो मत्वा चिह्नो काम
शुरु गरियोस भने निर्णय गरियो।

A collection of handwritten signatures and stamps. At the top right, there is a signature with the word 'सुभाष' written below it. In the center, there are several other signatures, some with the word 'सुभाष' written next to them. At the bottom left, there is a signature with the word 'सुभाष' written below it. At the bottom right, there is a signature with the word 'सुभाष' written below it.

तुलावा

सुभाष

प्रजा. मिति २०७१/०८/२७ गते बुधवारको दिन
 यस गते गा. वि. ए. को भवनमा गा. वि. ए. को
 स्विच को प्रेम प्रसाद छिमेरि ज्यूको अध्यक्षतामा
 वल्लेकी बैठकमा ११८८८ (गामिना २०: निमोको
 तथा २०: स्थापना समन्वय समितिका सदस्यहरु
 समेत गा. वि. ए. अन्तर्गतका पार्टी प्रतिनिधी -
 हुका उपस्थितिमा उपस्थित वमोजिमका प्रस्ताव
 माथि छलफल गरी बैठक बसी छलफल
 गर्ने गरियो ।

उपस्थिति

१. प्रेम प्रसाद छिमेरि (आ. वि. ए. स्विच) *प्रम*
२. धन बहादुर लिम्बु (आ. वि. ए. स्विच) *प्रम*
३. प्रशान्त त्रिभेण (आ. वि. ए. स्विच) *प्रम*
४. डिल्ली प्र. विमली स्वाधीन विकास कोष - *प्रम*
५. मान कुमार मा. *प्रम*
६. विष्णुमान, गदकराज *प्रम*
७. सुशी वहादुर थापा *प्रम*
८. माथुका ठाकुरी *प्रम*
९. खड्क भुमाल *प्रम*
१०. कृष्ण कुमारी त्रिभेण *प्रम*
११. दुर्गा ताम्बेली *प्रम*
१२. फुल थापा राजा भुमाल *प्रम*
१३. भुमाल भुमाल *प्रम*
१४. राधिका थाकुरेल *प्रम*
१५. डिल्ली थाकुरेल *प्रम*
१६. लाल थाकुरेल *प्रम*
१७. धन थाकुरेल *प्रम*
१८. राम थाकुरेल *प्रम*
१९. दिल कुमार लिम्बु *प्रम*

प्रस्तावहरु

- १) वातावरणीय प्रभाव समन्वयी
- २) अन्य

आज मिति बुधबार २०७३ साल का दिन रात १२ बजे रामितेखोला गाउँ विकास समितिमा भएको बैठकको सचिव श्री हरि प्रसाद उप्रेती जीको अध्यक्षतामा १३००० तथा अन्य पार्टी प्रतिनिधिको खैरो र बैङ्कको तपसिल वमोजिमको प्रस्ताव माथि बैङ्कको फैसला गरियो।

उपस्थित

क्र.सं.	नाम	पद	संस्था
१.	हरि प्रसाद उप्रेती	अध्यक्ष	विकास
२.	बिरबल राई	सदस्य (नै. का.)	विकास
३.	प्रकाश राई	सदस्य	पंच
४.	दत्त बिक्रम	सदस्य (ने.का.का.)	विकास
५.	निर्णय कुमारी तामाङ	सदस्य वाम-२	निर्णय
६.	शुभान राई	सदस्य	शुभान
७.	मनोज तामाङ	"	मनोज
८.	कर्ण वहादुर तामाङ	"	कर्ण
९.	लक्ष्मण राई	"	लक्ष्मण
१०.	निवारी राई	"	निवारी
११.	भगिना गुड्डा	महिला प्रतिनिधी	भगिना
१२.	शुक्रजित राई	सदस्य	शुक्रजित
१३.	लाल बिक्रम राई	सदस्य	लाल
१४.	अशोक कर्ण राई	सदस्य	अशोक

पुस्तावक

- (१) वातावरणीय सम्बन्धमा
- (२) अन्य

निर्णय

प्रस्ताव नं १ माथि फैसला गर्दा लेटाइ, बुझाउने, राम्रि सडकको निर्माण काममा कार्य हुने भएकोले सो कार्य हुने काममा वातावरणमा केही फरक आएन भन्ने जस्तै खानेपानी, विद्यालय, बिचौली महामन्दिर आदीमा केही वातावरणीय असर

नमते भएकैले सर्व सहमतिबाट निर्णय
पारित गरियो ।

शुभाजि के.के. शर्मा
मुख्य निर्देशक
मन्त्री जे.के.
लालवन्शी
लक्ष्मण शर्मा
मन्त्री निर्देशक
मन्त्री निर्देशक

आज मिला २०६६/८/२४ गते बुधवार का दिन
 अस् वास्की गांव कि खड को गांव कि खड लचिव श्री
 नन्दी केशर काफले ज्य को अध्यक्षता पा वसेको बैठक
 मा विल्ले वगमिन पुनः निर्माण तथा पुनः स्थापना लम्प
 लामिरी का सदस्य का लामिरी गांव कि खड अन्तर्गत का
 पार्थि प्रतिनिधी द्य को लामेन इमलसीती पा तपसि
 व मोजिम का प्रस्ताव माधी बैठक वसी धलफल गर्ने
 गालियो
उपस्थित

१. नन्दी केशर काफले - अध्यक्ष -
 २. धन बहादुर लिम्बु - सदस्य -
 ३. खेरमान तामाङ - (पति पत्नी निधी - र.भा.ले) -
 ४. नरेन्द्र कुमाल लिम्बु - सदस्य -
 ५. विजय बहादुर सिम्बु - सदस्य -
 ६. गोपी माया तामाङ - सदस्य -
 ७. चन्द्रा राई - महिला प्रतिनिधी -
 ८. अर्जु - राई - " " -
 ९. लाल बहादुर वि.के - सदस्य -
 १०. तिलक राई - (सदस्य) -
 ११. विमला राई - " -
 १२. राम कुमार मगर - " -
 १३. राज विक्रम राई - (सदस्य) -
 १४. राज कुमार राई -
- प्रस्ताव द्य

१. अन्तर्गत प्रभाव लामिरी
२. अन्य


निर्णय

१. प्रस्ताव नो व माधी धलफल गार्दी लेताङ - दन

कुछवारे ग्रामिण लडक के निर्माण कार्य हुने
 भएको ले हो पडक वार बतावल मा केही
 असर त पर्ने ईफा मल्हो गा. वि. स. स्कूल
 प्वातेपानी लगायतका कार्यहरू मा बतावलीय
 असर त पर्ने भएको ले १९८८ तथा अन्य
 पार्थि प्रतीनिधी हरू को सर्वसहमत वार निर्णय
 पारित गरियो ।

७६५५
 तिर्थेश्वर
 रामकुमार
 राजविश्व
 धनराज
 गोपीनाथ
 विमलाचंद
 नरेश्वर
 रामकुमार
 लालबहादुर
 चन्दा/चंद
 अड पई

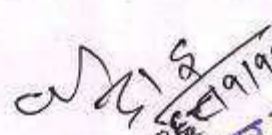
Annex X: Recommendation Letters from VDCs and suggestions
Recommendation Letter of Letang VDC


	<p>नेपाल सरकार Government of Nepal स्थानीय विकास मन्त्रालय Ministry of Local Development</p>	फोन : ०२१-५६००४४
	<p>गाउँ विकास समितिको कार्यालय Office of the Village Development Committee</p>	
चलानी नम्बर : १६३६	लेटाङ, मोरङ (नेपाल) Letang, Morang (Nepal)	कोशी अञ्चल /Koshi Zone
पत्र संख्या : ०६६१०६८		मिति २०६८.०१.१९
Ref. No. :		Date

विषय / SUB : शिफारिस सम्बन्धमा ।

१६। ग्रामिन पुनः निर्माण तथा पुनर्स्थापना आयोजना
जिल्ला कार्यलय (मोरङ)

उक्त उपर्युक्त सम्बन्धमा तहाँ कार्यलयको मिति ०६८-
वैशाख ८ गतेको च.नं. १३को प्राप्त पत्रानुसार लेटाङ-
दमः बुधवार सडक पुनर्स्थापनाका प्रारम्भिक मातृकरागिय
परीक्षण सम्बन्धमा यो शिफारिस गरिएको छ । उक्त -
प्रस्तावको प्रारम्भिक मातृकरागिय परीक्षण प्रतिवेदनमा
उल्लेख भएका विषय तथा मातृकरागिय प्रभाव रोक
णका उपाय हुनको बारेमा यत कार्यलयलाई जानकारी
भएकोले उक्त प्रस्ताव कार्यलयका लागि शिफारिस
गरिएको यसले जानकारी साथ अनुसूचित गरिन्छ ।


०६८/१/१९
जीत बहादुर लामा
वरिष्ठ
लेटाङ गा.वि.स.


यशराज सिंग
गा.वि.स. सदस्य (स.अ.)/अध्यक्ष



नेपाल सरकार
Government of Nepal
स्थानीय विकास मन्त्रालय
Ministry of Local Development

फोन :

गाउँ विकास समितिको कार्यालय

Office of the Village Development Committee

पत्र संख्या ०३६/०३८

चलानी नम्बर : ३६३

Ref. No. :

जाने, मोरङ (नेपाल)
Jante, Morang (Nepal)

कोशी अञ्चल / Koshi Zone

मिति ०३८/११/९६...

Date

विषय / Sub. : सिफारीस गोरैको सम्बन्धमा

श्री ग्रामिण पुनर्निर्माण तथा पुनर्स्थापना आयोजना
तिल्लु आयोजना कार्यालय
मिराटनगर, मोरङ, ।

उपरोक्त सम्बन्धमा लेटाइ, ६ नं कुन्धवाँ सडक उप
आयोजनाको प्राथमिक वातावरणीय प्रविक्षण प्रतिवेदन
सम्बन्धमा यो पत्र लेखिएको छ। उक्त प्रस्तावको प्रसि-
क वातावरणीय प्रविक्षण प्रतिवेदन नो क्लेयर भएकाले
निष्पत्त तथा वातावरणीय प्रभाव र संरक्षणको उपायहरू
बारेमा यस कार्यालयलाई जानकारी गराउँदै उक्त
प्रस्ताव कार्यालयबाट हुनको लागी सिफारीस
गरी पठाइएको छ। योसँगै आफ्नो आफ्नो चक्ष

०३८/११/९६
स्वा. वि. स. अध्यक्ष

श्रीमान प्रसाद विमले
गा. वि. स. अध्यक्ष



नेपाल सरकार
Government of Nepal
स्थानीय विकास मन्त्रालय
Ministry of Local Development

गाउँ विकास समितिको कार्यालय
Office of the Village Development Committee
रमितेखोला, मोरङ (नेपाल)
Ramitakhola, Morang (Nepal)

फोन :

पत्र संख्या :

चलानी नम्बर :

Ref. No. :

१४८
०६६/०६८

कोशी अञ्चल /Koshi Zone

मिति

Date

०६८/१/१३

विषय /SUB : सिफारिस गरिएको वीर ।
की ग्रामिण पुनः निर्माण तथा पुनः स्थापना आयोजना
जिल्ला आयोजना कार्यालय
मोरङ, विराट्मार्ग

उपरोक्त सम्बन्धमा देश, दूर भुटानले सङ्गठन
आयोजनाको प्रारम्भिक वातावरणीय प्रारम्भिक प्रतिवेदन छवन्ध
मा भौण्ड लेखिएको छ। उक्त प्रस्तावको प्रारम्भिक वातावरणीय
प्रतिवेदन प्रतिवेदन उल्लेख भएका विषय तथा वातावरणीय प्रभा
व वृत्तिवर्धनका उपग्रहको वीरमा यस कार्यालयलाई जानकारी
भएको छ उक्त प्रस्ताव कार्यालय हुनको लागि सिफारिस
गरिन्छ।

०६८/१/१३
गा.वि.स.सचिव
श्री प्रताप शर्मा



नेपाल सरकार
Government of Nepal
स्थानीय विकास मन्त्रालय
Ministry of Local Development

फोन :

गाउँ विकास समितिको कार्यालय
Office of the Village Development Committee

वाराङ्गी, मोरङ (नेपाल)
Warrangi, Morang (Nepal)

कोशी अञ्चल /Koshi Zone

मिति २०६०/१/१३

Date

पत्र संख्या :


चलानी नम्बर

Ref. No. :

विषय / SUB : सिफारिस गरिएको बारे ।

श्री. ग्रामिण पुनः निर्माण तथा पुनर्स्थापना आयोजना
जिल्ला आयोजना कार्यालय,
विराटनगर, मोरङ ।

उपर्युक्त विषयमा तपाईं कार्यालयको मिति २०६०/१/८
च.नं. १३ को प्राप्त पत्रावली लेटाउनु - धनं. लुधवोर सहित
उप आयोजनाको प्रारम्भिक वातावरणीय परीक्षण सम्बन्धमा
यो पत्र लेखिएको छ। उक्त प्रस्तावको प्रारम्भिक वाता-
वरणीय परीक्षण प्रतिवेदनमा उल्लेख भएका विषय तथा
वातावरणीय प्रभाव र संरक्षणका उपायहरूको बारेमा यस
कार्यालयबाट जानकारी भएकाले उक्त प्रस्ताव कार्यालय
को लागि सिफारिस गरिएको कसैको अक्षेप छैन।


२०६०/१/१३
नन्दी केशर काफ्ले
गा.वि.स. अध्यक्ष

Annex XI

Annex XI a: Distribution of households by major occupation

Annex XI b: Summary of public services & infrastructures

Annex XI c: Land holding pattern of settlements within ZoI

Annex XI d: Number of households belonging to different food security category

Annex XIa: Distribution of Households by Major Occupation

VDC Name	Number of HH						
	Agriculture & Livestock	Labour & Porter	Business/ Commerce	Cottage Industry	Employees	Others (specify)	Total HHs
Letang	473	222	72	4	22	26	819
Jante	52	142	13	0	5	2	214
Warrangi	12	9	9	2	5	13	50
Ramitekhola	28	8	0	1	6	0	43
Total	565	381	94	7	38	41	1126
Percentage (%)	50.18	33.84	8.35	0.62	3.37	3.64	100

Source: Field survey, August, 2009

Annex XIb: Summary of Public Services & Infrastructures

Settlement Name/	School (no)	Health post (no)	Post office (no.)	Communication(no) CDMA/MOBILE	Hydro power (no)	Solar (no)	Shops/lodge (no)	Water supply (no)	Irrigation (KULO)	Mill (no)	Bridge (no)	Community organization (no)	Fin. Institution (no)	Community CENTRE	Industry (no)
Letang	5	1	0	12	0	5	23	4	5	2	0	1	5	2	3
Jante	1	0	0	3	0	0	3	0	1	1	0	0	0	2	1
Warrangi	1	1	2	1	0	0	2	0	0		0	0	0	0	1
Ramitekhola	1	1	1	4	0	0	4	0	0	1	0	0	0	2	0
Total	8	3	3	20	0	5	32	4	6	4	0	1	5	4	5

Source:Field survey, August, 2009

Annex XI c: Land Holding Pattern of Settlements within ZoI

Settlement Name	Number of HH							Total HHs
	Land less	<one Ropani	1-5 Ropani	5-10 Ropani	10-20 Ropani	20-50 Ropani	>50 Ropani	
Letang	121	317	124	142	31	82	2	819
Jante	3	29	45	98	23	14	2	214
Warrangi	1	23	16	6	4	0	0	50
Ramitekhola	3	17	21	2	0	0	0	43
Total	128	386	206	248	58	96	4	1126
Percentage (%)	11.37	34.28	18.29	22.02	5.15	8.53	0.36	100

Source: Field survey, August 2009

Annex XI d: Number of Households Belonging to Different Food Security Category

Settlement Name	Surplus	Sufficient for whole year	Sufficient for 3-9 months	Sufficient for three months	Less than three months	Total
Letang	11	27	422	197	162	819
Jante	23	3	61	98	29	214
Warrangi	5	1	22	13	9	50
Ramitekhola	12	3	17	10	1	43
Total	51	34	522	318	201	1126
Percentage	4.53	3.02	46.36	28.24	17.85	100

Source: Field survey, August 2009

Annex XII: List of Trees to be removed

S.N	Chainage		Unit	Number	Species	Scientific Name
	From	To				
1	3+400	5+750	Nos.	2	Chilaune	Schima wallichii
2	5+750	7+000	Nos.	3	Chilaune	Schima wallichii
3	7+000	9+500	Nos.	2	Chilaune	Schima wallichii
4	9+500	10+300	Nos.	3	Shirish	Albizia labbeck
5	10+300	11+980	Nos.	5	Barpipal	Ficus religiosa
6	11+980	14+950	Nos.	4	Shirish	Albizia labbeck
7	14+950	17+260	Nos.	6	Chilaune	Schima wallichii
8	17+260	18+500	Nos.	3	Chilaune	Schima wallichii
9	18+500	19+000	Nos.	8	Chilaune	Schima wallichii
10	19+000	20+500	Nos.	1	Chilaune	Schima wallichii
11	20+500	20+950	Nos.	5	Shirish	Albizia labbeck
12	20+950	23+950	Nos.	2	Shirish	Albizia labbeck
13	23+950	25+950	Nos.	3	Shirish	Albizia labbeck
14	25+950	28+450	Nos.	2	Chilaune	Schima wallichii
			Total	49		

➤ Detail about the loss of tree and their cost will be included in the resettlement plan.

Annex XIII: Photographs



Chainage 0+000 at letang



Settlement at Letang Bazar



Tap stand falling within RoW



Road alignment at chainage 17+100



Road alignment at Aahale



End point at chainage 26+660

Annex XIV: Summary of Cross Drainage Structures

Causeway

Chainage	Span(m)	Causeway Thickness (m)	Remarks
5+560	6	0.25	
5+740	8	0.25	
5+780	6	0.25	
5+840	6	0.25	
7+440	4	0.25	
7+500	4	0.25	
7+540	8	0.25	
7+860	8	0.25	
7+900	10	0.25	
8+000	8	0.25	
8+120	8	0.25	
8+310	6	0.25	
9+450	8	0.25	
9+725	8	0.25	
10+000	6	0.25	
12+080	6	0.25	
12+850	6	0.25	
15+380	6	0.25	
15+500	6	0.25	
15+660	6	0.25	
15+840	6	0.25	
17+120	6	0.25	
17+850	6	0.25	
18+080	8	0.25	
18+240	8	0.25	
18+400	8	0.25	
22+285	8	0.25	
22+880	8	0.25	
23+250	6	0.25	
24+950	8	0.25	
25+250	8	0.25	
26+808	8	0.25	
26+995	6	0.25	
27+035	6	0.25	
27+070	6	0.25	
27+520	6	0.25	
27+640	8	0.25	

Pipe Culvert

Chainage	Length(m)	Diameter(m)	Pipe Count	Clear Cover Depth(m)	Slope[1V:mH]	Remarks
0+000	7.5	60	3	0.3	0	
0+800	7.5	60	3	0.3	0	
1+820	7.5	60	3	0.3	0	
2+262	7.5	60	3	0.3	0	
2+351	7.5	60	3	0.3	0	
2+452	7.5	60	3	0.3	0	
3+010	7.5	60	3	0.3	0	
3+296	7.5	60	3	0.3	0	

3+352	7.5	60	3	0.3	0
3+705	7.5	60	3	0.3	0
3+760	7.5	60	3	0.3	0
3+810	7.5	60	3	0.3	0
3+900	7.5	30	3	0.3	0
3+950	7.5	30	3	0.3	0
4+270	7.5	30	3	0.3	0
4+300	7.5	30	3	0.3	0
4+480	7.5	30	3	0.3	0
4+775	7.5	30	3	0.3	0
5+020	7.5	30	3	0.3	0
5+920	7.5	90	3	0.3	0
6+100	7.5	90	3	0.3	0
6+200	7.5	90	3	0.3	0
6+500	7.5	90	3	0.3	0
6+560	7.5	90	3	0.3	0
6+580	7.5	90	3	0.3	0
7+200	7.5	60	3	0.3	0
8+140	7.5	60	3	0.3	0
9+510	7.5	60	3	0.3	0
11+030	7.5	60	3	0.3	0
11+440	7.5	60	3	0.3	0
11+740	7.5	60	3	0.3	0
14+980	7.5	90	3	0.3	0
15+070	7.5	90	3	0.3	0
15+230	7.5	90	3	0.3	0
15+340	7.5	90	3	0.3	0
15+380	7.5	90	3	0.3	0
15+575	7.5	90	3	0.3	0
15+910	7.5	90	3	0.3	0
16+040	7.5	30	3	0.3	0
16+280	7.5	30	3	0.3	0
17+900	7.5	30	3	0.3	0
18+060	7.5	30	3	0.3	0
18+400	7.5	30	3	0.3	0
18+550	7.5	30	3	0.3	0
18+920	7.5	30	3	0.3	0
19+280	7.5	60	3	0.3	0
19+600	7.5	60	3	0.3	0
20+180	7.5	60	3	0.3	0
20+680	7.5	60	3	0.3	0
20+880	7.5	60	3	0.3	0
21+340	7.5	60	3	0.3	0
26+480	7.5	60	3	0.3	0
26+640	7.5	60	3	0.3	0
26+660	7.5	60	3	0.3	0
27+150	7.5	60	3	0.3	0
27+670	7.5	60	3	0.3	0
28+000	7.5	60	3	0.3	0

Slav Culvert

Chainage	Span(m)	Thickness (m)	Depth (m)	Remarks
29+460	6	0.2	5	

Annex XV: Affected Houses and Structures along the Road Alignment


S. N.	Chainage		Structure No	Name of House owner	Settlement	Ward	VDC	Type of Structure	Remarks
	From	To							
1	3+242	3+246	1	Ram Lal Rai	Guwabari	9	Letang	Hut	Fully Damage
2	3+300	3+335	1	Mira Limbu	Guwabari	9	Letang	Hut	Fully Damage
3	6+875	6+876	1	Bhim Rai	Guwabari	2	Yansila	Hut	Fully Damage
4	6+875	6+880	1	Dal Bahadur Rai	Yangsila	2	Jante	Hut	Fully Damage
5	6+912	6+914	1	AbirJang Rai	Yangsila	2	Jante	Hut	Fully Damage
6	6+883	6+885	1	Umes Rai	Yangsila	2	Jante	Hut	Fully Damage
7	6+886	6+890	1	Upendra Rai	Yangsila	2	Jante	Hut	Fully Damage


Source: field survey, August, 2009


Summary of Cost for RP


Item		Unit	Total loss	Amount(NRs)	Remarks
1. DIRECT COSTS					
1.1	Compensation for private land	(sqm)	10497.58	0.00	Cost for total land is NRs. 16064737 /-
A	Donated Land	(sqm)	8629.9	0.00	Cost for donated land is NRs.11829977/-
B	Non Interviewed HHs Land (Reserve Fund)	(sqm)	1867.68	202021.82	Reserve Fund for absentee HHs 54and 37 plate
1.2	Compensation for structures	(sqm)	105.22	73003.12	
1.3	Cost for Private Trees	Nos.	3	3408.87	Harvesting and Transportation
1.4	Cost for (CFUG) Trees	Nos.	18	23358.13	
	Sub-Total			301791.94	
2. INDIRECT COSTS					
2.1	Deed Transfer Assistance	LS:		150000.00	
2.2	Official Deed Transfer fees	LS		100000.00	
2.6	Appreciation Program for APs	LS:		120000.00	
	Sub Total			370000.00	
3	Livelihood Enhancement Skills Training (LEST)	LS:		250000.00	For APs
	Total			620000.00	
4	Contingency (5%)			31000.00	heading (2+3)
5	Further Grievances	LS		236862	
	Grand Total NRs.			1189654.89	


Details of Affected structures


House hold No. 01	Structure No.01	Chainage :- From 3+242 to 3+246 Distance from Centre Line of the Road4m.....				
	Story	Total Area (sq. ft.)	Area of structure to be acquired (sq. ft.)	Rate Per unit (sq. ft.)	Total	
	First					
	Second					
	Third					
	Veranda/ Basking					
	Shed					
	Wall					
	Cottage	258.2	258.2	45.25	4001.67	
	Total				4001.67	
Name of owner; Ram Lal Rai Address: Guwabari-9 Letang		Type of structure :- Kacchi Material used in wall :- Bamboo, Clay & Wood Material used in roof : Jasta Material used in story : Present use : Residential Construction year : 2052				


House hold No. 02	Structure No.02	Chainage From 3+300 To 3+335 Distance from Centre Line of the Road.....4m.....			
	Story	Total Area (sq. ft.)	Area of structure to be acquired (sq. ft.)	Rate Per unit (sq. ft.)	Total
	First				
	Second				
	Third				
	Veranda				
	Basking				
	Shed				
	Wall				
	Cottage	268.96	268.96	38.19	10272.14
	Total				10272.14
Name of owner: Mira Limbu Address: Guwabari-9 Letang		Type of structure :- Kacchi Material used in wall :- Bamboo, Clay & Wood Material used in roof : Tile Material used in story : Present use : Residential Construction year : 2052			

House hold No.03	Structure No.03	Chainage From 6+875 To 6+876 Distance from Centre Line of the Road 2.5 m.				
	Story	Total Area (sq. ft.)	Area of structure to be acquired (sq. ft.)	Rate Per unit (sq. ft.)	Total	
	First					
	Second					
	Third					
	Veranda					
	Basking					
	Shed					
	Wall					
	Cottage	290.47	290.47	290.47	15252.38	
	Total				15252.38	
Name of owner: Bhim Rai Address: Yansila-2 Jante		Type of structure :- Kacchi Material used in wall :- Bamboo, Clay & Wood Material used in roof : Jasta /Tile / Straw Material used in story : Wood Present use : No Construction year : 2048				

House hold No. 04	Structure No.04	Chainage From 6+912 To 6+914 Distance from Centre Line of the Road 2.5 m.				
		Story	Total Area (sq. ft.)	Area of structure to be acquire (sq. ft.)	Rate Per unit (sq. ft.)	Total
		First				
		Second				
		Third				
		Veranda\ Basking				
		Shed				
		Wall				
		Cottage	225.92	225.92	225.92	15252.38
		Total				15252.38
Name of owner; AbirJang Rai Address: Yansila-2 Jante		Type of structure :- Kacchi Material used in wall :- Bamboo, Clay & Wood Material used in roof : Jasta /Tile / Straw Material used in story : Wood Present use : No Construction year : 2064				

House hold No. 5	Structure No.05	Chainage:- From 6+875 To 6+880 Distance from Centre Line of the Road2.5m.....				
	Story	Total Area (sq. ft.)	Area of structure to be acquired (sq. ft.)	Rate Per unit (sq. ft.)	Total	
	First					
	Second					
	Third					
	Veranda\ Basking					
	Shed					
	Wall					
	Cottage	9.84	9.84	410.54	4039.75	
	Total				4039.75	
	Name of owner : Dal Bahadur Rai Address: Yansila-2 Jante		Type of structure :- Kacchi Material used in wall :- Bamboo, Cement, Brick & Wood Material used in roof : Jasta Material used in story : Wood Present use : No Construction year:- 2065			

House hold No. 06	Structure No.06	Chainage From 6+883 To 6+885 Distance from Centre Line of the Road 2.5 m.				
		Story	Total Area (sq. ft.)	Area of structure to be acquired (sq. ft.)	Rate Per unit (sq. ft.)	Total
		First				
		Second				
		Third				
		Veranda\ Basking				
		Shed				
		Wall				
		Cottage	9.84	9.84	406.67	4001.63
		Total				4001.63
Name of owner: Umes Rai : Yansila-2 Jante		Addr	Type of structure :- Kacchi Material used in wall :- Bamboo, Cement,Stone& Wood Material used in roof : Jasta Material used in story : Wood Present use : No Construction year : 2064			

House hold No. 7	Structure No.07	Chainage From 6+886 To 6+890 Distance from Centre Line of the Road 2 m.			
	Story	Total Area (sq. ft.)	Area of structure to be acquired (sq. ft.)	Rate Per unit (sq. ft.)	Total
	First				
	Second				
	Third				
	Veranda\ Basking				
	Shed				
	Wall				
	Cottage	88.43	88.43	45.25	4001.67
	Total				4001.67
Name of owner : Upendra Rai Address: : Yansila-2 Jante		Type of structure :- Kacchi Material used in wall :- Bamboo, Clay & Wood Material used in roof : Jasta & Straw Material used in story : Wood Present use : No Construction year : 2047			

Annex XVI: Structure for Slope Stabilization

SN	Chainages	Type of Structure	Height(m)
1	4+760	Gabion Wall	4
2	5+540	Gabion Wall	3
3	6+940	Gabion Wall	5
4	7+440	Gabion Wall	5
5	7+600	Gabion Wall	3
6	7+860	Gabion Wall	5
7	8+280	Gabion Wall	5
8	10+000	Gabion Wall	4
9	10+400	Gabion Wall	5
10	10+760	Gabion Wall	3
11	10+780	Gabion Wall	6
12	10+860	Gabion Wall	3
13	10+980	Gabion Wall	4
14	11+840	Gabion Wall	4
15	11+960	Gabion Wall	4
16	12+040	Gabion Wall	4
17	12+080	Gabion Wall	5
18	12+540	Gabion Wall	4
19	12+900	Gabion Wall	3
20	12+960	Gabion Wall	4
21	13+040	Gabion Wall	5
22	13+060	Gabion Wall	3
23	13+080	Gabion Wall	3
24	13+180	Gabion Wall	4
25	13+300	Gabion Wall	4
26	13+420	Gabion Wall	3
27	13+680	Gabion Wall	4
28	13+700	Gabion Wall	4
29	13+720	Gabion Wall	4
30	13+780	Gabion Wall	3
31	14+040	Gabion Wall	4
32	14+080	Gabion Wall	6
33	14+480	Gabion Wall	6
34	14+880	Gabion Wall	4
35	14+920	Gabion Wall	3
36	15+080	Gabion Wall	4
37	15+240	Gabion Wall	3
38	15+700	Gabion Wall	2
39	15+720	Gabion Wall	3
40	15+760	Gabion Wall	4
41	15+800	Gabion Wall	4
42	15+840	Gabion Wall	2
43	17+000	Gabion Wall	4
44	17+060	Gabion Wall	4
45	17+380	Gabion Wall	3
46	18+140	Gabion Wall	5
47	18+380	Gabion Wall	3
48	19+200	Gabion Wall	4
49	19+220	Gabion Wall	4
50	19+260	Gabion Wall	3
51	19+280	Gabion Wall	3
52	19+500	Gabion Wall	3
53	19+540	Gabion Wall	3
54	19+560	Gabion Wall	3
55	19+600	Gabion Wall	3
56	19+620	Gabion Wall	4
57	19+640	Gabion Wall	3
58	19+660	Gabion Wall	6
59	19+680	Gabion Wall	4

60	19+700	Gabion Wall	5
61	19+720	Gabion Wall	3
62	22+120	Gabion Wall	3
63	22+280	Gabion Wall	4
64	22+340	Gabion Wall	3
65	22+540	Gabion Wall	3
66	22+560	Gabion Wall	4
67	22+600	Gabion Wall	4
68	22+640	Gabion Wall	3
69	22+660	Gabion Wall	6
70	22+720	Gabion Wall	4
71	22+760	Gabion Wall	3
72	22+960	Gabion Wall	5
73	23+120	Gabion Wall	4
74	23+240	Gabion Wall	4
75	23+320	Gabion Wall	4
76	23+400	Gabion Wall	5
77	23+420	Gabion Wall	6
78	24+420	Gabion Wall	4
79	24+860	Gabion Wall	4
80	25+140	Gabion Wall	3
81	25+440	Gabion Wall	3
82	25+460	Gabion Wall	3
83	25+640	Gabion Wall	4
84	25+940	Gabion Wall	5
85	26+080	Gabion Wall	4
86	26+252	Gabion Wall	6
87	26+420	Gabion Wall	3

Source: Field Survey, August, 2009