

Environmental Assessment Document

Initial Environmental Examination

Grant Number: 0093 NEP

June 2010

Nepal: Rural Reconstruction and Rehabilitation Sector Development Program

Ghyampedol-Badbhanjyang Road Upgrading Subproject, Kathmandu 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
[ADBGrant 0093NEP]

Initial Environmental Examination (IEE) Report
Of
Ghyampedol-Badbhanjyang Road Upgrading Sub Project
Kathmandu District

Submitted to:
Ministry of Local Development
Government of Nepal

Proponent:
District Development Committee/
District Technical Office
Kathmandu

June, 2010

Prepared By:
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ABBREVIATIONS

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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	SMO	Social Mobilization Officer
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

Ghyampedol- Badbhanjyang Road Upgrading Sub Project, Kathmandu District, Nepal

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घ्याम्पेडोल - बाडभञ्ज्याङ्ग सडकको प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन कार्यकारी सारांश

पृष्ठभूमि

नेपाल सरकारले लामो द्वन्द्वले गर्दा क्षति भएका ग्रामीण पूर्वाधारहरूको पुनःनिर्माण र पुनःस्थापना को कार्य एशियाली विकास बैंक, स्वीस सरकार (SDC), ब्रिटिस सरकार (DFID) तथा ओपेक फण्ड (OFID)को आर्थिक सहयोगमा 'ग्रामीण पुनर्निर्माण तथा पुनःस्थापना आयोजना' नेपालको बीसवटा जिल्लाहरूमा संचालन गरिरहेको छ । काठमाण्डौ जिल्लामा अवस्थित प्रस्तावित घ्याम्पेडोल - बाडभञ्ज्याङ्ग ग्रामीण सडकको पुनःस्थापना सोही कार्यक्रम अन्तर्गत संचालन गर्न लागिएको एक उप-आयोजना हो । उप-आयोजना (प्रस्ताव) अन्तर्गत ६.०३७ कि.मी. लामो उक्त कच्ची सडकको कालो पत्रे स्तरमा पुनःस्थापना गर्न प्रस्ताव गरिएको छ ।

प्रस्तावक

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

उद्देश्य

प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन अध्ययनको मुख्य उद्देश्य प्रस्तावित उप आयोजना निर्माण तथा संचालन बाट उक्त क्षेत्रको भौतिक, जैविक, सामाजिक, आर्थिक तथा सांस्कृतिक वातावरणमा पर्ने 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 काठमाण्डौ जिल्लाको पश्चिम उत्तर भेगका ग्रामीण वासिन्दाहरूलाई सदरमुकाम संगको पहुँच बढाउनेछ भने स्थानीय स्तरमा उत्पादन हुने तरकारी, दुध तथा च्याउ लाई बजार संगजोडी स्थानीय आय आर्जनमा अभिवृद्धि गर्नेछ।

अध्ययन प्रकृया

२००९ जुलाई-अगष्टमा फिल्ड सर्वेक्षणबाट लिइएको तथ्याङ्क तथा अन्य उपलब्ध तथ्याङ्कहरूको साथै सामाजिक तथा प्राविधिक टोलीबाट पुनर्वास कार्यको सर्वेक्षणको सिलसिलामा संकलन गरेका तथ्याङ्कहरू केलाएर प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन तयार गरी निष्कर्ष तथा सुझावहरू दिइएको छ । यो प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन नेपाल सरकारको वातावरण संरक्षण ऐन २०५३, वातावरण संरक्षण नियमावली २०५४ अनुसार तथा स्थानीय विकास मन्त्रालयबाट मिति २०६६/०२/२५ मा स्वीकृत गरिएको यसै प्रस्तावको कार्यसूची अनुसार तयार गरिएको छ । साथै, एशियाली विकास बैंकको Environmental Assessment Guideline, 2003 तथा Safeguard Policy Statement, 2009 को समेत अनुसरण गरिएको छ ।

आयोजनाको विवरण

प्रस्तावित सडकको कूल लम्बाइ ६.०३७ कि.मी. छ । हाल उक्त ग्रामीण सडकको केहि सडक खण्डमा यातायात सञ्चालन भइरहेको छ । यो सडक छ वटा गाउँ विकास समितिहरू क्रमश नयाँ नैकाप, पुरानो नैकाप, दहचोक, बलम्बु, थानकोट र बाडभञ्ज्याङ्ग भएर जान्छ । प्रस्तावित सडक पृथ्वी राजमार्ग को पुरानो नैकाप देखि नागदुङ्गाखण्ड को वैकल्पिक मार्गमा स्थापित हुने देखिन्छ । हाल सडकको कूल चौडाइ ५ मी. भएकोले र प्रस्तावित सडक पनि ५ मी. भएकोले कुनै प्रकारको जग्गा अधिग्रहण गरिने छैन । यो आयोजनाको सडक निर्माणको अनुमानित लागत नेरु ७,७०,८०,२२६।६९ (इनिजनीयरिङ्ग भागको मात्र) रहेको र प्रति कि.मी अनुमानित लागत नेरु. १,२७,६७,९६८।६४ लाग्ने देखिन्छ ।

विद्यमान वातावरणीय स्थिति

यो सडक पुरानो नैकाप गा.वि.स.को थापागाउँ समुद्र सतह देखिको १३९० मी. को उचाईबाट शुरु भएर समुद्र सतह देखिको १५२० मी. उचाईको नागदुङ्गा भएर जान्छ । यस सडक खण्डमा विभिन्न प्रकारका चट्टानहरू जस्तै क्वार्टजाइट, सिष्ट पाईन्छन् । प्रायः एलुभियल, कोलुभियल तथा रेजीड्यूल प्रकारका बालुवा र पाँगो मिसिएको माटोहरू सडक खण्डमा पाईन्छन् । सडक खण्डमा पर्ने पानीका मुख्य श्रोतहरूमा कालो खोला, सिमखोला र ठोटनेखोला पर्दछन् । प्रस्तावित सडक क्षेत्रको वायु तथा पानीको स्तर सफा रहेको देखिन्छ साथै ध्वनि प्रदूषणको समस्या छैन । यो सडक प्रायः खेती गरिएको जमिन तथा बस्तीहरू भएर जान्छ । च्याउ खेति विशेष रूपमा फस्टाएको छ । तीन वटा ईटा भट्टाहरू बाटोको वरिपरि पर्दछन् ।

यस सडक खण्डमा पाइने मुख्य रुखहरूको प्रजातिहरूमा चिलाउने, उत्तिस, सल्ला, बकाइनो आदि पर्दछन् । फ्याउरो, लोखर्के आदि वन्य जन्तुका साथै काग, भँगेरा, परेवा, ढुकुर, र कालिज आदि पंक्षीहरू यस सडक खण्डको वरिपरि पाईन्छन् । यो सडक खण्ड संरक्षित क्षेत्र वा मध्यवर्ती क्षेत्रमा पर्दैन ।

यो सडक खण्डको प्रभावित क्षेत्र भित्र थापागाउँ, पसलटोल, चुनदेवि, चन्डीपाटी, कालापानी, सिर्जनाचोक, बख्तिगाउँ, टोटिटोल, बसनडोल, ऐसेलुचौर बजार र भुर्तेलथोक प्रमुख बस्तीहरू पर्दछन् । जम्मा घरधुरी संख्या ५८५५ र जनसंख्या ३०४८८ रहेको छ र सरदर परिवार संख्या ५.२ छ । यहाँ बसोबास गर्ने विभिन्न जात जातिका मानिसहरूमा मुख्य गरी ब्राह्मण, क्षेत्री, तामाङ्ग, नेवारहरू पर्दछन् । यहाँका बासिन्दाहरूको मुख्य पेसा कृषि, नोकरी र व्यापार व्यवसाय हो ।

प्रमुख वातावरणीय प्रभावहरू

सकारात्मक प्रभाव

आयोजना बाट तत्कालै हुने लाभमा स्थानीय स्तरमा रोजगारीको सिर्जना हुनेछ । आयोजना संचालनको लागि करिब ४७९६८ मानव दिन बराबरको अदक्ष र २०९७१ मानव दिन बराबरको दक्ष श्रमशक्तिको आवश्यकता पर्नेछ । आयोजना संग सम्बन्धित कार्यमा (रोजगारीमा) गरीब तथा पिछडिएका स्थानीय जनताले प्राथमिकता पाउनेछन् । यस चरणमा हुने अन्य लाभहरूमा वन्द व्यापारको बृद्धि हुने अवसर, आयोजनाले प्रदान गरेको शीपमुलक तथा जनचेतनामुलक तालिममा तथा आयोजना निर्माण कार्यमा सहभागी भई स्थानीय जनताको शीप बृद्धि हुने अवसर पर्दछन् ।

सडक सञ्चालनका चरणमा सडकले प्रभावित क्षेत्रका बासिन्दालाई बजार, सामाजिक सेवा प्रदायक स्थान अन्य भागहरूसम्म पुग्न छिटो, छरितो तथा सुविधाजनक पहुँचको अवसर प्रदान गर्नेछ । पहुँच तथा यातायातको अवसरसंगै शिक्षा, स्वास्थ्य, संचार, बजार, बैकिङ तथा अन्य आर्थिक तथा सामाजिक क्षेत्रहरूको विकास हुनेछ । यसले यस क्षेत्रका मानिसहरूको समग्र जीवनस्तर उकास्न मद्दत पुऱ्याउनेछ । सडकको सञ्चालनले स्थानीय जग्गा जमिनको मुल्य बृद्धि गर्न सहयोग पुऱ्याइ स्थानीय जग्गाधनीलाई लाभ पुऱ्याउनेछ ।

आयोजना कार्यन्वयनबाट पर्ने सक्ने नकारात्मक प्रभावहरू:

सडक निर्माणको दौरान बाटो चौडाइ ५ मी. कायम गर्नको लागि सार्वजनिक जग्गाको १ वटा टुनीको रुख काटिनेछ । सडक निर्माण कार्यको दौरान २ वटा पाटि सार्नु पर्ने देखिन्छ । सडक निर्माण कार्यले कूलो (चेनेज १+०३७) तथा पानीको मुहान र ढुङ्गेधारो (चेनेज ४+५३७) मा असर पर्ने देखिन्छ । सडक दुर्घटना बढ्ने छ । सडक निर्माण क्रममा सवारी साधनको धुलो तथा ध्वनी प्रदूषण बढ्नेछ । सडकको सुधारसंगै बस्ती र बजारको अव्यवस्थित विस्तार हुने सम्भावना छ ।

प्रभाव न्यूनिकरणका उपायहरू:

यस उप-आयोजनालाई वातावरण मैत्री बनाउनका लागि सकारात्मक प्रभावलाई बढावा गर्ने तथा नकारात्मक प्रभावहरूलाई नियन्त्रण या न्युनीकरण गर्ने थुप्रै उपायहरू यस प्रतिवेदनमा प्रस्तावित गरिएको छ उप-आयोजनाले प्रभावित जनतालाई निर्माण कार्यमा रोजगारीमा तथा शीपमुलक तालिममा प्राथमिकता दिनेछ । निर्माण कार्यमा कार्यरत श्रमिकहरूको विमा गरिने छ तथा सुरक्षाका सम्पूर्ण सामग्री श्रमिकहरूलाई प्रयोग गर्न अनिवार्य गरिने छ । निर्माण स्थलहरूमा प्राथमिक उपचारको सामग्रीहरूको व्यवस्था गरिने छ । सार्वजनिक क्षेत्रमा परेको रुख विरुवाहरूको क्षतिपुर्ति वापत १:२५+१०% अनुपातमा वृक्षारोपण गरिनेछ । वृक्षारोपणमा संरक्षित तथा स्थानीय प्रजातिहरूलाई प्राथमिकता दिइनेछ । सडकमा तथा सडकको कारण नजिकैको खेतवारीमा पानी जम्मा हुन नदिन उचित निकासको व्यवस्थापन गरिनेछ । सडक दुर्घटना बाट बचाव गर्न उपायहरू अवलम्बन गरिनेछ । धुलो नियन्त्रणकालागि पानी छर्कने र ध्वनी नियन्त्रण गर्नु पर्ने ठाउँकालागि हर्न निषेध सङ्केत राखिने छ । गा.वि.स. र शहरी विकास तथा भवन निर्माण विभागलाई अव्यवस्थित बसोबास रोक्न जिम्मेवारी बोध गराइनेछ ।

वातावरण व्यवस्थापन योजना

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

क्र. सं.	विवरण	रकम (ने.रु.)	कैफियत
१.	वातावरण सम्बन्धी जनचेतनामूलक तालिम तथा अन्य तालिम	१५०,०००/-	आयोजनाको बजेटमा समावेश गरिने ।
२.	बायो-इन्जिनियरिङ्ग/सडक छेउछाउ वृक्षारोपण	२,४७,०००/-	BoQ मा समावेश गरिने ।
३.	पेशागत स्वास्थ्य सुरक्षा तथा जानकारीमूलक सूचनापाटी	१,७५,०००/-	BoQ मा समावेश गरिने ।
४.	पुननिर्माण तथा अन्य	१७८,०००/-	BoQ मा समावेश गरिने ।
५.	पुनर्वास तथा जग्गा अधिग्रहण	७,१९६,४९९/९३	पुनर्वास योजनामा समावेश गरिने ।
६.	क्षतिपूर्ति वृक्षारोपण	१३२०/-	आयोजनाको बजेटमा समावेश गरिने ।
७.	एच. आई. भी. रोकथाम तथा अन्य चेतनामूलक कार्यक्रमहरू जस्तै: युवा साक्षरता, स्थानीय विद्यालय सहयोग आदि र VICCC / RBG तालिम	१,०२,६०० /-	सामाजिक योजना तथा आयोजनाको बजेटमा समावेश गरिने ।
८.	जीविकोपार्जन तथा क्षमता अभिवृद्धि कार्यक्रम	६५६,६००/-	BoQ मा समावेश गरिने ।
९.	स्वावलम्बन समूहलाई सशक्तिकरण तथा संस्थगत क्षमता अभिवृद्धि	३२०,९००/-	आयोजनाको बजेटमा समावेश गरिने ।
१०.	अनुगमन तथा मूल्यांकन	२००,०००/-	आयोजनाको बजेटमा समावेश गरिने ।
११.	नेतृत्व विकास तथा लेखा सम्बन्धी तालिम	१४३,२००/-	आयोजनाको बजेटमा समावेश गरिने ।
	जम्मा :	९,३७,१९९/९३	

निष्कर्ष

पहिचान गरिएका प्रायः वातावरणीय प्रभावहरू थोरै क्षेत्रमा तथा मुख्य गरी निर्माण कार्यका वखतमा सीमित रहेको पाइएको छ । प्रस्तावित न्युनीकरण विधिको पालना गरिएमा पहिचान गरिएका वातावरणीय प्रभावहरूको न्युनीकरण अथवा नियन्त्रण गर्न सकिनेछ । सडक निर्माण गर्दा प्रभावित व्यक्तिहरूको सम्पतिको क्षतिपूर्ति गर्न पुनर्वास योजनाको आवश्यकता पर्नेछ । 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 आयोजना कार्यान्वयन गर्न सिफारिश गरिन्छ । आयोजनाको वातावरणीय प्रभाव मूल्याङ्कन स्तरमा अध्ययन गर्न आवश्यक नरहेको सिफारिश समेत गरिन्छ ।

Executive Summary

Background

Government of Nepal has received financial assistance from ADB, DFID, SDC 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 6.037 km long Ghyampedol-Badbhangyang Rural Road in Kathmandu District is one of the Subprojects selected under the RRRSDP. It is an existing earthen road proposed for rehabilitation in blacktop standard.

Project Proponent

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

Objectives

The main objective of the IEE study is to identify the impacts from the construction and operation of the proposed Subproject on the physical, biological, socio-economic and cultural environment of the Subproject area. The objective of IEE study is to recommend site specific environmental mitigation measures for adverse impacts, benefit augmentation measures for beneficial impacts, prepare and implement environmental monitoring plan and make sure that IEE is sufficient for the proposed road sub-project.

Relevancy of the Proposal

The proposed Subproject will connect northern west part with the district headquarters. It will provide easier access to people to social services, and market access for local products like vegetables, mushroom and milk. As a result, the Subproject will assist to promote economic activities, reduce poverty and increase socio-economic conditions of the people of the area.

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 July-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 B.S. (1997) and Environmental Protection Rules, 2054 B.S. (1997), Second Amendment 2064 B.S. (2007) 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 25/02/2066 BS.

Project Description

The total length of the road is 6.037 Km. The road alignment is already opened. The road passes through 6 village development committees namely Purano Naikap, Naya Naikap, Balambu, Dahachowk, Thankot and Badabhanjyang. This road is alternative of Prithivi highway section from Purano Naikap to Nagdhunga. The existing width of the road is 5m, so there will be no need to acquire any type of land. The total road construction cost is NRs. 77,080,226.69 (Engineering Part only) and per Km cost is NRs. 12,767,968.64.

Existing Environmental Condition

The road starts from Thapagau of Purano naikap VDC at 1390m amsl and passes through Nagdhunga at 1520m amsl. The road alignment is composed of various kinds of rock such as quartzite, schist etc. Generally, alluvial, colluvial, residual, boulder mixed, hard and soft rock are found along the road alignment. Main water bodies found across the road alignment are Kalo khola, Seem khola and Thotane khola. 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 and settlements. Mushroom farming is seen along the road alignment. Three numbers of brick kiln seen nearby road alignment.

The dominant forest species found in the road alignment are Uttis (*Alnus nepalensis*), Chilaune (*Schima wallichii*), Salla (*Pinus roxburghii*), Bakaino (*Melia azedarach*). Fox and Squirrel are the wild animals reported in the forests

of proposed road area. Similarly birds like Crow (*Corvus splendens*), Sparrow (*Passer domesticus*), Kalij Pheasant (*Lophura lencomelana*), Pigeon (*Columba livia*) and Dove (*Dovius Cloviuntas*) are found in the project area. The road does not fall under any protected or buffer zone area.

The major settlements along the ZoI of the proposed road alignment are Thapagaun, pasaltole, Chundevi, Chandipati, Kalapani, Chishapani, Shirjanachowk, Bakhtigaun, Totitole, Bansadole, Bhurtelthok and Aiseluchour. The total population of project area is 30488 persons, total household number is 5855 and average family size of 5.2. Diverse ethnic groups such as Brahmin, Chettri, Tamang and Newar live along the ZoI of road alignment. The major occupations of the people are agriculture, service and business.

Major Environmental Impacts

Beneficial Impacts

The immediate benefit from this road sub project is employment opportunities. The implementation of Subproject require about 47968 person days of unskilled and 20971 person days of skilled manpower. The project will give priority to the poor, ethnic minorities and disadvantaged 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 ZoI will get easy and fast accessibility to markets, social services and other regions of the country. 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 road widening and construction only one tree will have to be cleared. During construction stage, 2 Patti will be need to relocate. Irrigation canal is affected at Ch.1+037 and Water Source /Traditional stone tap is affected at Ch.4+537. Labours and local people are prone to health effects and accidents relating to construction activities. Road accidents and vehicular emissions will result in air and noise pollution. New settlement, bazaar area will be expanding 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. Affected families will be given high priority for employment and skill development trainings. Necessary trainings and awareness programs will be conducted. At construction site, the workers will be provided insurance, first aid facilities and safety equipments. Loss of trees will be compensated by planting of trees in the ratio of 1:25 +10% for the numbers of trees in public 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. Adequate road safety measures will be provided to minimize road accident. To mitigate the problem of dust water sprinkling will be done and for the noise reduction sound prohibiting board will be kept at required places. Village Development Committee and Department of Urban Development and Building Construction (DUDBC) will be made aware to address the responsibility regarding unmanaged settlement.

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.	Environmental Protection Measures	Estimated Budget (NRs.)	Remarks
1	Environmental awareness raising training and other training	150,000.00	To be included in project cost
2	Bio-engineering work/Road side plantation	247,000.00	To be included in BoQ
3	Occupational health and safety, information sign board; First aid boxes, campsite sanitation (Pit latrine); solid waste management, Safety measures for workers (Helmets, gloves, masks, boots, etc.)	175,000.00	To be included in BoQ
4	Restoration or relocation of affected infrastructures/mitigation measures for adverse impact on mushroom and milk	178,000.00	To be included in BoQ
5	Compensation for properties	7,196,499.93	To be included in Resettlement plan
6	Compensatory plantation (Re-plantation / Re-forestation)	1,320.00	To be included in project cost
7	Capacity building empowerment (HIV/AIDS / Drug addicted counselling, VIOCC and RBIG orientation Training)	102,600.00	To be included in social part
8	LEST program /Capacity Building and Empowerment	656,600.00	To be included in social part
9	Institutional capacity building/empowerment training of SHGs	320,900.00	To be included in social part
10	Monitoring and Evaluation	200,000.00	To be included in BoQ
11	Leadership Account Keeping Training	143,200.00	To be included in social part
	Total	9,371,119.93	

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 monitoring plan. Therefore, the proposed sub project does not require Environmental Impact Assessment.

1.0 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 (MLD) is the executing agency (EA). The District Development Committees (DDCs) / District Technical Office (DTO) are the Project Implementing Agencies. The DDC/DTO are supported by District Implementation Support Team (DIST) with engineering, safeguards and social mobilization responsibilities.

2. Kathmandu District is one of the project districts under RRRSDP. This Proposal is for upgrading into bituminous standard of the 6.037 Km long Ghyampedol-Badabhangyang District Road in Kathmandu District.

1.2 The Name and Address of Proposal

Name of Proposal:	Ghyampedol-Badbhanjyang Road Upgrading Sub Project District Development Committee. District Technical Office
Name of Proponent:	Mid Baneshwor, Kathmandu
Address of Proponent:	Phone No: 01-4490085 Fax No: 01-4490488

1.3 Relevancy of the proposal

3. Despite the project area being within Kathmandu District. The area has high potential in production of vegetable, milk and mushroom. This is the alternative route of Nagdhunaga-Kalanki for light vehicles. The proposed road will enhance access to market and social services to the people of the area, and will significantly contribute in their socio-economic development. Better access will also open door to new development opportunities. At the start of the project this road is start from the Kalanki so its length 9km but due to the criteria of RRRSDP it has been changed because more than 20 house need to relocate and omitted length has already been black topped.

4. IEE study of the Proposal is a legal necessity according to Environment Protection Act, 2053 B.S. (1997); and Environment Protection Rule, 2054 B.S. (1997), Amendment 2064 B.S. (2007) of GON. Similarly, an IEE study is required according to provision of Environmental Assessment Guidelines, 2003 (2060 B.S.); and Safeguard Policy Statement, 2009 (2066 B.S.) of ADB.

1.4 Objectives of IEE study

5. The main objective of the IEE study is to identify the impacts from the implementation and operation of the Proposal on the physical, biological, socio-economical and cultural environment of the sub project 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 upgrading sub project.

1.5 Methodology adopted

6. The IEE approach, methodology and procedure were generally followed the provisions of the EPA, 2053 B.S. (1997) and EPR, 2054 B.S.(1997) and the provisions of ADB and approved ToR for IEE study by MoLD on 25/02/2066 BS. It follows methodology suggested in the approved terms of reference (ToR) for IEE study (please refer Annex I). 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 Zone of Influence (ZoI) (one and half hour walking distance from the centre line of the road) information of the sub project area. Data collection was done in August, 2009. Secondary information is collected through reports, maps and photographs. Primary level of information is collected through questionnaires, checklist, data sheets walk-over survey and IEE team judgment. Furthermore local people are contacted and interviewed to solicit information. Numbers of focus group discussions are held in the Project area. The DDCs officials, VDCs and community groups are also contacted to verify information to solicit their concerns.

1.6 Description of the proposal

7. According to ToR, the length of sub project was 9.0 Km, after detail design and due to high cost of resettlement the alignment of road was changed and proposed for 6.037 km. Ghyampedol-Badbhanjyang road sub project lies in the northern west part of Kathmandu district in Central Development Region of Nepal which, links the project area with district headquarter. This sub project starts from Thapagaun of Purano Naikap Village Development Committee (VDC) and ends at Nagdhunga of Badbhanjyang VDC. In between the road passes through Naya Naikap, Balambu, Dhahachowk, and Thankot VDC. The pavement of road is earthen.

8. The alignment requires widening, geometrical correction in bends, and grade improvements. The location and alignment of the road is given in **Figure 1.1 and 1.2**. The total project cost is NRs 77,080,266.69 and per km cost is NRs.12,767,968.64 as shown in **Annex III**.

Salient Features of the Subproject:

1. Name of the Project	:	Ghyampedol-Badabhanjyang Road Upgrading Sub Project
2. Location		
2.1 Geographical Locations		
2.1.1 Start Point	:	Thapagaun of Purano Naikap VDC
2.1.2 End Point	:	Nagdhunga of Badbhanjyang VDC
2.2 Geographical Feature		
2.2.1 Terrain	:	Hill
2.2.2 Alignment	:	Foot of the hill/lower valley
2.2.3 Altitude	:	1390 m at Purano Naikap to 1520 m at Nagdhunga
2.2.4 Climate	:	Temperate
2.2.5 Soil	:	Alluvial soil, colluvial soil
3. Classification of Road	:	Rural Road Class A
3.1 DTMP Code	:	27A042R
4. Status of road	:	Upgrading proposed for all weather
5. Length of Road	:	6.037 km
6. Standard of Pavement	:	Bituminous
8. Existing Traffic	:	30-50 vehicles per day
9. Design speed	:	20 Km/hr
10. Major Settlements:		
10.1 Major Settlements	:	Thapagaun, Pasaltole, Chundevi, Chandipati, Kalapani, Shirjanachowk, Bakhtigaun, Totitole, Basandole, Aiseluchaur Bazar and Bhurtelthok.
10.2 No. of Household	:	5855 HHs
10.3 VDCs along the Road	:	Purano Naikap, Naya Naikap, Balambu, Dahachowk, Thankot, and Badbhanjyang
11. Cross Section		
11.1 Right of way	:	4m each side (center line)
11.2 Formation width	:	6 m
11.3 Carriageway width	:	5m
11.4 Lane	:	Intermediate lane (As per Nepal Road Standard, 2027) (First Revision 2045)
12. Structures		
12.1 Retaining Structures		

12.1.1 Toe wall	:	40.90 Cum.
12.1.2 Gabion Wall	:	222.50 Cum.
13. Bio-Engineering / Road side plantation	:	NRs 247,000.00
14. Earth Work		
14.1 Cutting	:	20212.12Cum
14.2 Filling	:	5593.70Cum
15. Project cost		
15.1 Road Construction Cost	:	NRs 77,080,226.69 (Engineering only)
15.2 Costs per km (NRs.)	:	NRs 12,767,968.64
15.3 Social Cost	:	NRs 1,223,300.00 (incl. LEST, SAP and GAP)
15.4 Compensation and Reset. Cost	:	NRs 7,196,499.93
15.5 Environmental Mgmt. Cost	:	NRs 951,320.00 (including Bio-Engineering)
15.6 Grand Total Cost	:	NRs 86,451,346.62
16. Employment generation:		
16.1 Total employment	:	68939 (person days)
16.1.1 Skilled	:	20971
16.1.2 Unskilled	:	47968

1.7 Construction Approach and Activities

9. The construction approach will be Labour-based, Environment-friendly and Participatory (LEP) approach and Machine Intensive Road Construction Approach. The important features of the LEP approach are (i) phased 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) avoid blasting; (v) use soft engineering structures; and (vi) use of contractors only in the works that cannot be done through manual labor. Machine Intensive Road Construction Approach 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.

10. Activities included during the road construction are: Site clearance, Pavement work, Structures (Toe wall, retaining wall etc.), Earthwork, Bioengineering, Gravelling, Cross drainage works and Side drain works.

Proposed Schedule for Implementation of Sub-project

11. Following table shows the proposed implementation schedule for Ghyampedol-Badbhanjyang Road Upgrading Sub-Project:

Table 1.1: Sub-project implementation schedule

SN	Activity	2008 IV	2009				2010				2011	
			I	II	III	IV	I	II	III	IV	I	II
1	Detailed survey, design and estimate											
2	Preparation of resettlement plan											
2.1	Life skill and income generation training											
3	Environment Assessment and implementation											
3.1	IEE report preparation and approval from 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 - July, February, March
- II - April, May, June
- III - July, August, September
- IV - October, November, December

Figure 1.1 Map of Nepal showing the location of Ghyampedol-Badbhanjyang Road Sub Project in Kathmandu District

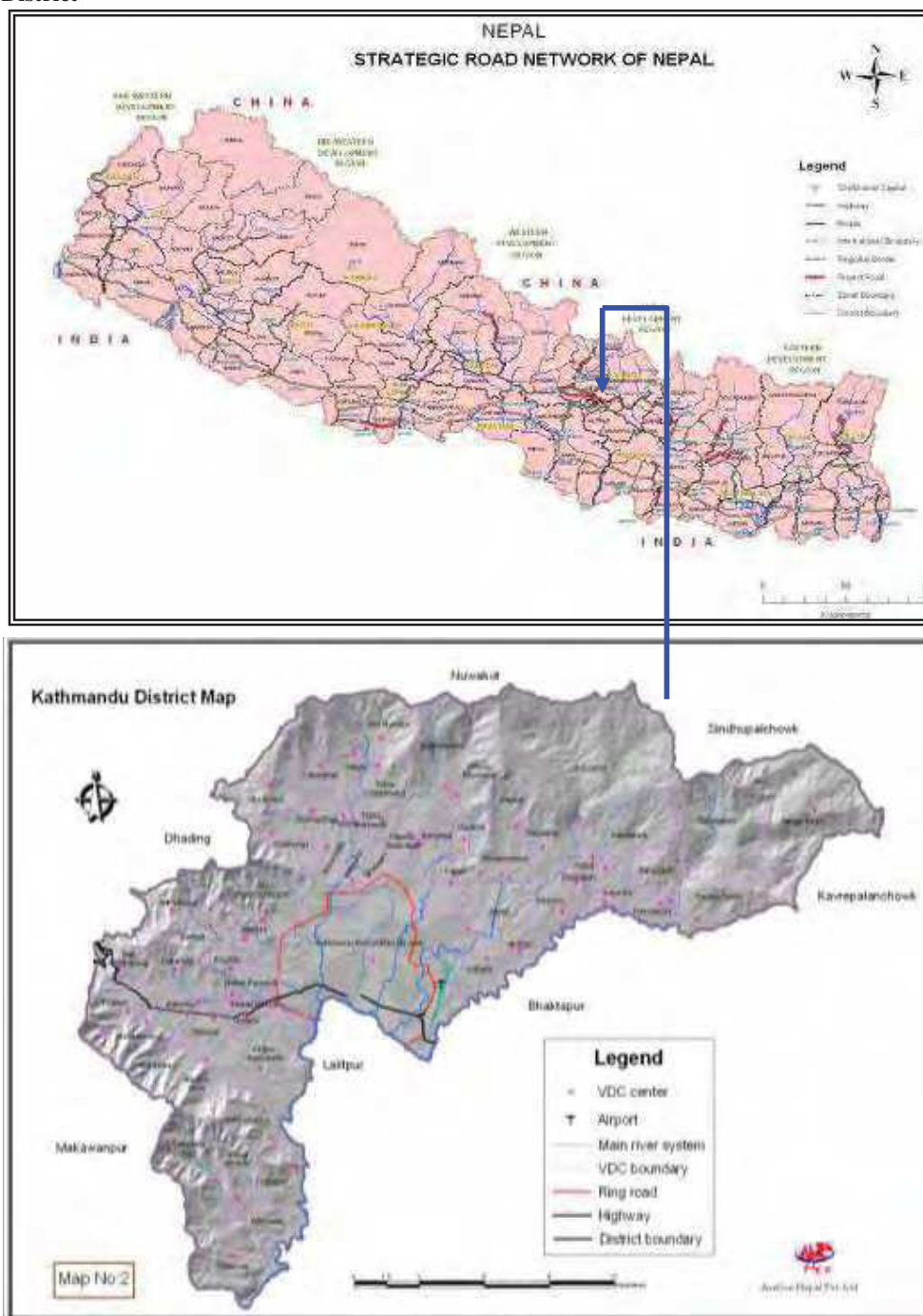
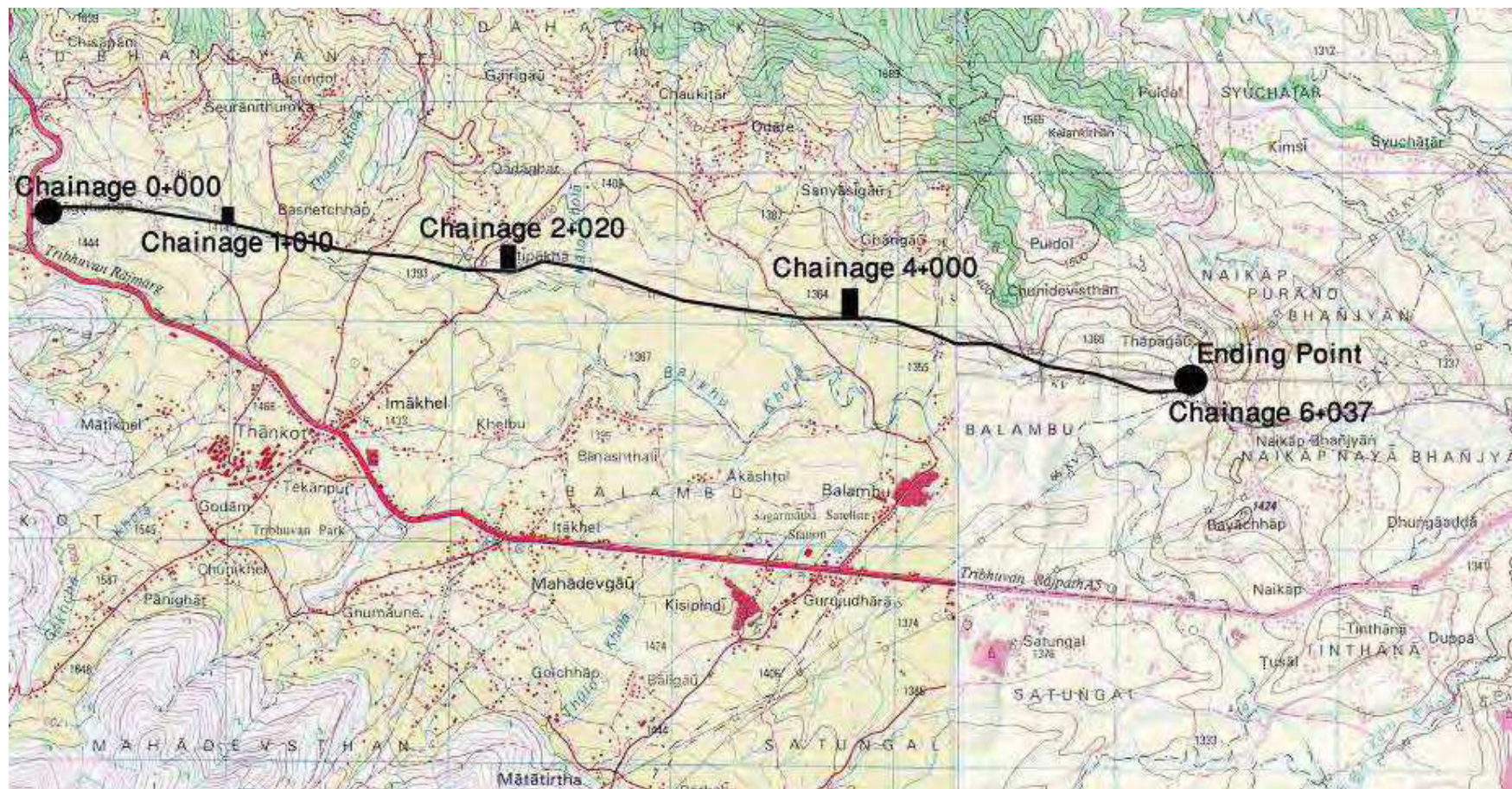


Figure 1.2: Topographical Map of Ghyampedol- Badbhanjyang Rural Road Sub Project



2.0 Public Consultation and Information Disclosure

2.1 Public Consultation

12. 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 2066/03/01(15 June 2009) in the Nagarik Dainik 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 Soil Conservation Office, District Agricultural Development 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 Six 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, Kathmandu and Purano Naikap, Naya Naikap, Balambu, Dahachok, Thankot and Badbhanjyang 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 2.1: Summary of FGD Meeting Conducted Under IEE Study

Location	Date	No. of Participants		Decision
		Male	Female	
Purano Naikap	8 July, 09	21	2	1. FGD program disseminated information on the project. 2. Participants committed on providing land voluntarily for the road. 3. Cash compensation should be provided for land and crop, free distribution of seedlings for private planting, good drainage system, and protection of water sources. 4. Project work should be careful to protect environment.
Naya Naikap	8 July, 09	21	2	
Balambu	3 August, 09	15	-	
Dahachok	3 August, 09	15	-	
Thankot	23 July, 09	16	-	
Badbhanjyang	9 July, 07	23	1	

13. 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, Kathmandu
2. District Technical Office, Kathmandu
3. District Project Office, Kathmandu
4. District Implementation Support Team, Kathmandu
5. Purano Naikap, Naya Naikap, Balambu, Dahachowk, Thankot, and Badbhanjyang VDCs, Kathmandu
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

3.0 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,(2064-2067 B.S) 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, 1997(2053 B.S), GoN	Any development project, before implementation, shall pass through environmental assessment, which may be either IEE or an EIA depending upon the location, type and size of the projects.
3	Environmental Protection Rule 1997(2054 B.S) (amendment, 2007(2064 B.S), 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, 1993 (2050 B.S)(amendment, 2007(2064 B.S), 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, 1995, (2052 B.S) GoN	Elaborates legal measures for the conservation of forests and wildlife. Expenses incurred for cutting trees and transportation shall be borne by proponent.
6	<i>Batabaraniya Nirdesika</i> (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	National Park and Wildlife Conservation Act, 1973, (2031 B.S)(GoN	Addresses for conservation of ecologically valuable areas and indigenous wildlife. The Act prohibits trespassing in park areas, prohibits wildlife hunting, construction works in park area, damage to plant and animal, construction of huts and house in park area without permission of authorized person. It lists 26 species of mammals, 9 species of birds, and 3 species of reptile as protected wildlife.
8	Local Self Governance Act (1999) (2056 B.S and Regulation (1999) (2056 B.S), GoN	Empowers the local bodies for the conservation of soil, forest and other natural resources and implements environmental conservation activities
9	Land Acquisition Act, 1977 (2034 B.S) and Land Acquisition Rules, 1969, GoN	Specifies procedural matters on land acquisition and compensation
10	National Environmental Impact Assessment Guidelines, 1993(2050 B.S), 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.
11	APPROACH for the Development of Agricultural and Rural Roads, 1999,(2056 B.S) GoN	Emphasizes labor based technology and environmental friendly, local resource oriented construction methods to be incorporated actively in rural infrastructure process.
12	RRRSDP Environmental Assessment & Review Procedures (EARP), 2007,	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

	(2064 B.S) GoN	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.
13	Reference Manual for Environmental and Social Aspects of Integrated Road Development, 2003, (2060 B.S) GoN	Suggests stepwise process of addressing environmental and social issues alongside the technical, financial and others
14	Green Roads in Nepal, Best Practices Report: An Innovative Approach for Rural Infrastructure Development in the Himalayas and Other Mountainous Regions, 1999, (2056 B.S) GoN	Focuses on participatory, labor based and environment friendly technology with proper alignment selection, mass balancing, proper water management, bioengineering and phased construction
15	Environmental Assessment Guidelines, 2003,(2060 B.S) 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
16	Safeguard Policy Statement, 2009, (2066 B.S) 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.
17	The Interim Constitution of Nepal, 2063 (2007).	Has provision of right regarding environment - Every person shall have the right to live in clean environment.
18	The Labor Act, 1992(2049 B.S)	Regulates the working environment and deals with occupational health and safety.

4.0 Existing Environmental Condition

15. Baseline information on the existing physical, biological as well as socio-economic and cultural environment of the proposed sub project is described in this chapter.

4.1 Physical Environment

16. This section describes the physical condition of the area that comes under the ZoI of the road section.

4.1.1 Topography

17. The elevation of the starting point of the road at Thapagaunnn is 1390m amsl and at the end of road at Nagdhunga is 1520m amsl. The road alignment passes through the lower valley slope. The slope varies from 3% to 25%. Major portion of the road passes along the south facing hill slope.

4.1.2 Geology and Soil Type

18. The road section comprises of different types of quartzite and schists. In general, soil type along the alignment can be classified as alluvial, colluvial, residual, boulder mixed soil, hard and soft rock.

4.1.3 Climate

19. The road lies in the temperate climatic region. Generally, rainy season starts from June and ends in September. The meteorological record shows unevenly distributed monsoon rain in the project area with the total average annual rainfall of 1764.4 mm. Average minimum temperature of 2° C and average maximum temperature of 32°C is observed in the area.(Source:District Profile 2058)

4.1.4 Hydrology and Drainage System

20. There are 12 numbers of natural drainage along the alignment.The summary of the cross drainage works along the road alignment is given in **Annex XIV**.

4.1.5 Soil Erosion and Sedimentation

21. The stability of slopes along the road corridor depends upon slope angle, the material constituting the slope; rock discontinuities and hydrological conditions. Proposed alignment does not pass through major landslides or erosion prone area. There is small landslide occurs at chainage 4+300. Following **Table 4.1** presents the geological features observed along the road alignment.

Table 4.1 Geological features along the road alignment

Chainage	Location	Terrain slope	State of Land dry/wet	Land Use Pattern	Geological Problem
6+037-5+937	Purano Naikap	Moderate	Dry	Cultivated	-
5+937-5+837	Naya Naikap	Moderate	Dry	Cultivated	-
5+837-5+027	Balambu	Moderate	Dry	Cultivated and Bushes	-
5+027-2+527	Dahachok	Moderate	Dry	Cultivated and Bushes	-
2+527-2+227	Thankot	Moderate	Dry	Cultivated and Bushes	-
2+227-1+937	Dahachok	Moderate	Dry	Cultivated	-
1+937-0+000	Badbhanjyang	Moderate	Dry	Cultivated and settlement	Soil erosion at Ch-1+737

Source: Field survey, August, 2009

4.1.6 Existing Road Condition

22. The maximum and the minimum gradient along the road alignment is 7% and 3% respectively.. The width of the road alignment in average is about 5m. The road is moterable in dry season.

4.1.7 Existing Traffic Situation

23. Five regular passenger buses ply on the road whereas number of mini truck/pick up are 40 and number of motorcycles are around 160 in winter season. In rainy season, no. of vehicles operating in this road reduces by half. Vehicle used for transportation of vegetables, mushroom, milk always operates in the road except during heavy rainfall.

4.1.8 Land Use

24. Land use pattern of the area through which the road passes have been classified into three types: cultivated land, settlement and barren 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)	Existing area (ha)
	From	To			
Barren	0+437	0+837	400	5	0.2
Agricultural land	0+837	6+037	5200	5	2.6
Settlement	0+000	0+437	320	5	0.16
Total					2.96

Source: Field Survey, 2009

4.1.9 Air, Noise and Water Quality

25. The air, noise and water quality are not 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.

4.2 Biological Environment

26. This alignment does not pass through any protected area.

4.2.1 Vegetation

27. The dominant forest and fodder species reported in the road alignment are Uttis (*Alnus nepalensis*), Chilaune (*Schima wallichii*), Salla, (*Pinus roxburghii*), Tooni (*Toona ciliate*) and Bakaino (*Melia azedarach*). The forest is sparse with dominant species such as Uttis, Chilaune and Katus. NTFPs are not found along the road alignment. The road alignment does not pass through government/community forest. Single public trees need to be removed.

4.2.2 Wildlife

28. Fox (*Canis aureus*), Squirrel (*Ratufa sp.*) etc are the common wildlife found in the surrounding area along the road alignment. Crow (*Corvus splendens*), Sparrow (*Passer domesticus*), Kalij Pheasant (*Lophura lencomelana*), Pigeon (*Columba livia*) and Dove (*Dovius Cloviuntas*) etc are the bird found in the surrounding road along the road alignment.

4.2.3 Aquatic Life

29. Fish species found in water bodies along the road alignment are Hile (*Gara Anandolei*) and Buduna. (*Amphipnous Cuchia*) Road alignment has no effect on these Fish.

4.2 Socio-economic and Cultural Environment

4.3.1 Population, Household and Ethnicity

30. The alignment covers 6 VDCs namely: Purano Naikap, Naya Naikap, Balambu, Dahachowk, Thankot, and Badbhanjyang. Major settlements within ZoI of the project are Thapagaun, Pasaltole, Chundevi, Chandipati Kalapani, Shirjanachowk, Bakhtigaun, Totitole, Basandole, Aiseluchaur Bazar and Bhurtelthok. Major castes in the area are Brahman, Chhetri, Tamang and Newar. Major occupations include agriculture, business, livestock and services.

4.3.2 Main Occupation

31. The main occupation of all people residing within the ZoI of the proposed road alignment is agriculture and livestock (55.90%). 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. Occupation of this area is provided to give how they live and earn money. Source of main occupation data is field visit and the district profile.

4.3.3 Market Centres and Business Facilities

32. There are grocery shops available in the almost all settlements. Necessity of sewerage/drainage system has been felt in these places. Other smaller market centres with shops of daily commodities are also found along the road alignment.

4.3.4 Local Economy

33. The economy of the area is predominantly agriculture based. Local people are gradually attracted towards cultivation of cash crops such as mushroom, vegetable. Dairy production and selling it to the local market has been also another source of income for local farmers. 55.9 percent populations base upon agricultural activities for their livelihood. With growing closeness of the project area with capital city Kathmandu due to transportaion facility, cultivation of mushroom, 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 Thapagaun, Pasaltole, Chundevi, Kalapani area.

4.3.5 Agriculture Pattern

34. Major crops that are cultivated in the project area are rice, wheat, maize, potato and beans. Local peoples are also found to be encouraged in cash crops in recent days. Major cash crops that are grown in the project area are mushroom, and vegetables.

4.3.6 Livestock

35. Poultry farming is seen along the road alignment. Due to lack of availability of grass and trees people stop farming of cow and buffalo.

4.3.7 Industry

36. Some local people are engaged in Brick production, making of furniture, mushroom production and Vegetable growing. Three numbers of klin are seen along the road alignment.

4.3.8 Trade and Commerce

37. Goods of daily commodities are major imports in the project area, which includes salt, sugar, packed food items, spices, clothes and other items of daily uses. Similarly, major items exported from the project area are milk, mushroom and vegetables.

4.3.9 Tourism Related Services

38. Some hotel, lodges are in operation in Thapagaunn, Pasaltole, Chundevi, Kalapani, and Chishapani.

4.3.10 Health and Sanitation

39. Major health problems observed in the area are gastric, water borne diseases, gout, respiratory diseases, skin, malnutrition, typhoid etc. Sanitation awareness among local people is increasing and many of them have toilets in their home. People discharge their wastewater in the nearby natural streams.

4.3.10 Public Services and Infrastructures

Education: The proposed project area consists of a total of 32 educational institutions ranging from primary level to college level educational institutions. Most of the families send their children to school. Female enrollment in schools is lower than that of male students. Literacy rate in the project area has been estimated around 80 percent.

Health Facility: There are altogether 4 health posts/sub health posts in various settlements.

Communication: All of the settlements have telephone facilities mostly with CDMA connection. Six post offices have been serving the local people.

Transportation: Public bus service is available. Tippers generally carry vegetables, milk, bricks and other local products from the area.

Electricity: Almost all settlements in ZoI (Zone of Influence, which covers the area of 1.5 hr. walking distance from the centerline of the road alignment to the left and right.) are connected with national grid transmission line.

Water Supply: Piped drinking water supply is not available to all settlements. Some community based water supply system are in function. Some *Dhunge dhara* are also in use.

Irrigation: Irrigation facility has been observed in ZoI of the project area.

Other Infrastructures/services: There is a veterinary service sub centre available in the project area.

Financial Institutions: There are 14 saving and credit cooperatives in ZoI of the alignment of Ghyampedol-Badbhanjyang.

Community Development Facilities/Organizations: Several community centers, community based organizations, youth clubs, women's group, NGOs and water/forest users groups are also active in ZoI of the project. Zone of influence (ZoI) of the sub project is one and half hours walking distance from the centre line of the road.

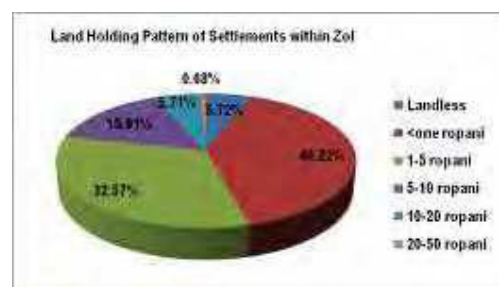
40. Following public services and infrastructures are affected during road construction.

Table 4.3: Affected public services and infrastructures during road construction

Type of Public Service and Infrastructure	Chainage/ Location	Distance from the Road(CL)
Kalika Primary School Totitole	2+537	4m
Dhunge dharo	4+537	2.5m
Irrigation canal crossing	1+037	2m
Guiya Patti	5+797	2m
Public Pati	5+470	2.36m

4.3.11 Land Holding Pattern

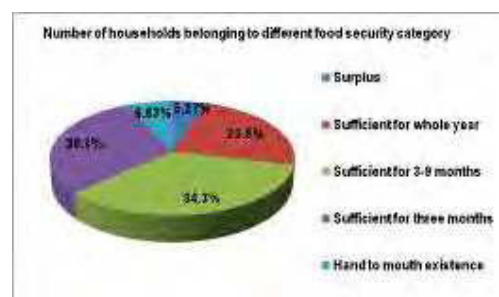
41. Land holding pattern within the ZoI of the road project demonstrates that 32.57 % households fall under 1-5 ropani (approximately 1 ha = 19.8 ropani) land 15.01% households fall under 5-10 ropani land holding category. 5.72 % households fall under landless and 40.22% HHs have less than one ropani land. Details about land holding pattern are given in the **Annex XI c**. Source field visit and district profile.



4.3.12 Food Security

42. About 34.3% of the households have enough food for only for three to nine months. On the contrary, 23.5 percent of the households of the project area have food sufficiency for whole year, 6.83 percent households of the project area have food sufficiency for less than 3 months category and 5.27 percent households are reported as food surplus ones. 30.1% of the households have enough food for three months. The given fig. explain about the condition of the food production and there reliability. Food sufficiency condition is given in **Annex XI d**.

Source of this data is field verification and district profile.



4.3.13 Migration Pattern

43. Permanent migration takes place in limited scale towards Kathmandu center. In search of work temporary migration takes place in India, Qatar and Dubai.

4.3.14 Settlement Pattern

44. Most of the settlements within ZoI of the project are scattered type. Housing pattern of these settlements are mostly one or two storied, RCC and CGI sheet roofed buildings. Mostly nowadays RCC building is seem along the road alignment.

4.3.15 Potential for Development

45. Many of the places, areas and settlements within ZoI of the project have the potentialities in various sectors. These sectors and their potentialities have been mentioned in **Table 4.4** below.

Table 4.4: Development potentialities in various sectors

SN	Sector	Development potentiality
1	Agriculture	Apart from traditional farming like paddy, wheat and maize cash crops mushroom, vegetable farming, dairy production within the whole ZoI.
2	Tourism Promotion	There are many places along the alignment in which the tourism activities can be enhanced such as in Thapagaun, Pasaltole, Chundevi, Kalapani, Chishapani.
3	Small and Cottage Industry	Brick production, concrete block production, dairy industry etc
4	Trade and business	Development several rural market centres at various places along the road alignment and main market centres at Thapagaun, Pasaltole, and Chundevi.

Source: Field Survey, June 2009

4.3. 16 Religious, Cultural and Historical Sites

46. Ganesh temple and Kanthibhairav temple are Religious, Cultural and Historical Sites found along the road alignment.

5.0 Project Alternatives

47. The various alternatives to achieve the project objectives with minimum environmental impacts are discussed as in the following subsections.

5.1 No Action Option

48. This alternative does not allow the implementation of the proposal. Mostly earthen and other remaining ruined gravelled road currently exists, which is only seasonal road. As the road connects few major settlements with high potential in dairy, and vegetable 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

49. Construction of other supporting roads could be the options for achieving the transportation and access.

52. Considering other project alternatives, the proposed road project can be the best option to serve the purpose of efficient transportation requirement as well as this road is alternative of Prithivi highway section from Purano Naikap to Nagdhunga. This is the existing road so alternative analysis will not be required.

5.3 Alternative Alignment

53. The alignment of the Ghayampedol-Badbhanjyang road is an existing earthen fair weather road. It is proposed for upgrading of the existing road which does not need to acquire land and cutting trees. So, new alternative alignment is not studied.

5.4 Alternative Design and Construction Approach

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

5.5 Alternative Schedule and Process

57. During the rainy season, the construction work is stopped and upgrading work will be carried out during the remaining months. The construction period is more appropriate from October to June.

5.6 Alternative Resources

58. Stones, aggregates and sand have to be transported from other locations. The proposed construction will optimally use the local labour force.

6.0 Identification of Impacts and Benefit Augmentation/Mitigation Measures

59. 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 Upgrading 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.

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

6.1 Mitigation Measures During Pre-construction phase

6.1.1 Route Selection

61. Since, this is an existing road and proposed for upgrading the same alignment shall be followed with required geometrical improvements and widening of the road to the specified width of 6m. Local conditions (structures, set-back, mass balancing and safe disposal site for the excess excavated material, community utilities, slopes, sensitive spots etc.) and minimizing land acquisition from forest, cultivable lands, settlement and cultural properties will be taken into due consideration to decide on where and which side should be widened.

6.1.2 Detailed Survey and Design

62. The road design will follow the rural road standards developed by DoLIDAR. The works will be executed through machine intensive construction method in this program. Bio-engineering technique will be applied for stabilization of slopes. At the detail design stage, to avoid and minimize further land requirement by using the existing track. The survey team has selected the existing route for improvements and took care to avoid the acquisition of houses.

6.1.3 Land and Property Acquisition, Compensation and Resettlement

63. ADB Guidelines has necessary provisions for resettlement assistance including entitlements to replacement of land and other assets and/or compensation in case of involuntary resettlement, compensation cost for houses and other affected structures without deduction for depreciation or salvageable materials. However, the resettlement framework also allows land donations in cases where the donation is made freely in public and without coercion, does not affect household food security (>9 months), where land donated is <20% of family holding, and adequate income restoration support exists for the household. The proponent commit the above and voluntary contribution will be accepted if the said criteria are met. However, land taken in the past for existing alignment will not be compensated. Structures and crops will be compensated at replacement cost and lost trees at the cost of harvesting (felling and sectioning) and transportation from the site to home. In case of Ghyampedol- Badbhanjyang, there is no need to compensate for private properties some protection should be provided but some community properties need to relocate.

64. Proponent will assist to form Compensation Determination Committee (CDC) under the Chairmanship of Chief District Officer. The Committee will decide the rates applicable for compensation. The concerned households whose land will be acquired for the project will be informed about the land donation process and entitlements. Finally, the Memorandum of Understanding (MoU) will be prepared and households donating the land will sign it with DDC. If the owner of land could not be contacted an equivalent amount shall be kept separately in the DDC fund until the process is complete.

6.2 Beneficial Impacts and Benefit Augmentation Measures

6.2.1 Construction Stage

Employment Generation and Increase in Income

65. Impacts: Employment opportunity for local people during construction of the road, without gender biasness, is 68939 person days, with 20971 for skilled and 47968 for unskilled labor. Available labours from the ZoI survey

shows that, there are 682 women, 690 men and no indigeneous people. Efforts will be made to employ more than 50% women workers. Total mandays required for the sub project are 10846 skilled and 23984 unskilled labors. The amount of money earned as wages will directly support various economic activities of the people, and assist to empower women. It will assist towards enterprise development with multiplier effect if wage is used for economic investments. This is one of the direct and significant impacts of the project but it is of short-term and local in nature.

66. Measures: Work will be implemented through machine based using National Competetive Bidding (NCB) through contractors. Priority for employment will be given to local poor, Dalit, vulnerable groups and women. Proponent will implement skill training, awareness, and income generation programs encouraging them to utilize their money earned through wage.

Skill Enhancement

67. Impacts: According to the ZoI survey, the peoples of the alignment need socio-economic enhancement for better livelihood and for that, skill enhanching training are required.

68. Measures: Skill enhancement of local people in the alignment will be done from social sector part of the program, which includes flouriculture training, plumber training, Nepali paper production training etc. The skill and knowledge thus acquired will make them find employment opportunities in future life. The total cost for the skill enhancement in social part of the program is 8,80,000.00.

Enterprise Development and Business Promotion

69. 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 the vicinity of the construction sites. This impact is direct, low significance, local and short term in nature.

70. Measures: Small business and micro enterprise development training, account keeping and leadership training under Livelihood Enhancement Skills Training (LEST) of Social Action Plan will be provided. The total cost for the enterprise development and business promotion in social part of the program is 1,43,200.00.

Community Empowerment and Ownership

71. Impacts: During construction various road construction coordination committees 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.

Measures: The coordination committees will be constituted and training will be given to them. The cost for the construction coordination committees for capacity building and empowerment training is NRs. 1,06,000.00.

6.2.2 Operation Stage

Improvement in Accessibility and Saving of Time and Transportation Cost

72. Impacts: Once the road project is completed, the people living within the road corridor will have easy access to cities and markets. This will enhance the transaction of goods and access to social services. Access to input and services will increase, which will be cheaper due to transportation facility.

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

Increase in Trade, Commerce and Development of Market centers

74. Impact: There is a possibility of increased economic opportunities and significant growth and extension of market centers at Thapagaun, Pasaltole, Chundevi, Basandole, Aiseluchaur Bazar and Bhurtelhok. The farmers will be more interested to increase vegetable like mushroom production due to market accessibility. Similarly, there will be diversification in occupational pattern of local people and non-farm employment will grow to those who are till now mainly dependent on subsistence farming. Market center is developed by the local people. This will lessen pressure on local natural resources. The impact will be indirect, low, local and long term in nature.

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

Appreciation of Land Value

76. Impacts: The construction of road leads to appreciation of land values particularly near the market and settlement areas. The land price would increase due to the availability of reliable transportation facilities in all major settlements. This would uplift the economic condition of the local people. We have found there is lack of good and thick settlement inspite of being near to the highway due to the lack of facility. Road condition of that area is bad and drinking water supply problem have been found as well as absence of big market. So, if facility is available than people want to live that place so land value will certainly increase. Blacktop conversion of road brings huge differences in that area. The impact is indirect, medium, local and long term in nature.

77. 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

78. 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 Thapagaun, Pasaltale, Chundevi, Kalapani, Chishapani settlements, which are potential areas for the production of cash crops such as mushroom, vegetable etc. Operation of road will further commercialize the subsistence agriculture of rural area. The economy of rural area will be further monetized and it will help the rural economy. This is the indirect, significant, local and long term impacts from the proposed road.

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

Enhancement of Community Development Services

80. Impacts: Due to increase in employment opportunities, trade, business and income, it is expected that there will be improvement in social service such as education, health, government offices, saving and credits. This is direct, significant, local and long-term impact of the proposed project.

81. Measures: The access will be kept maintained so that other development and services will follow in the project area.

Women and Indigenous People Empowerment

82. 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. Thus, the project will have indirect, significant, local and long-term impact in ZoI.

83. Measures: During the road construction and upgrading, more emphasis will be given to women, dalit and vulnerable workers. Available labours from the ZoI survey shows that, there are 682 women and they are supposed to be benefited from project and there are no indigenous people along the road alignment.

6.3 Adverse Impacts and Mitigation Measures

6.3.1 Construction Stage

84. The proposed road will be constructed according to LEP where manual works are possible; and contractor's approach where the work cannot be done manually. The likely impacts on physical, biological, socio-economic and cultural resources of the proposed road area and respective mitigation measures are presented hereunder.

Physical Impacts

Change in Land Use

85. Impacts: Existing width of the road is 5m in whole alignment. However, in one place, compensation is given for land because, instead of giving huge amount of compensation for building the land in opposite has been compensated. Two others have been compensated for those having losing more than 20% of total land holding.

Spoil Disposal

86. Impacts: The common likely problems from the inappropriate disposal of spoils are: gullying and erosion of spoil tips especially when combined with unmanaged surface water runoff, damage to farm lands, and

destruction of vegetation, crops and property at downhill through direct deposition or indirectly as result of mass flow. The impact from spoil disposal will be direct, medium, site specific and short term in nature.

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

- Wherever possible, surplus spoil will be used to fill eroded gullies, quarries and depressed areas.
- Excess spoils will be disposed in specified tipping sites (See table 6.1) in a controlled manner.
- Spoils will not be disposed on fragile slopes, farmland, marshy land, forest areas, natural drainage path, canals and other infrastructures.
- After the disposal, the site will be provided with proper drainage, vegetation and adequate protection against erosion (bio-engineering, Turfing etc.)
- Necessary toe walls and retaining walls will be provided to protect the disposal of soil on downhill slopes.

Table 6.1 Safe Spoil Disposal Site

S.N.	Chainage	Location	Remarks
1	3+ 277	Kalo khola/Dahachowk	Water Resource
2	2+527	Seem khola/Totitole	Water Resource
3	1+177	Thotnekhola / Badbhanjyang	Water Resource

Source: field survey, August, 2009

Slope Instability

88. Impacts: The road is an existing corridor, and thus the hill slopes will not be disturbed by making large and steep cuttings. Major instability areas are also not present along the road alignment. The likely impact of slope instability and soil erosion is indirect, medium, site specific and mid-term nature. Due to the plain topography there are no any existing major landslides prone area found along the alignment. At chainage 1+737 soil erosions occurs.(*photograph shown at Annex XIII*)

89. The following mitigation measures will be adopted during construction:

- Selecting cut and fill slope at correct angle depending upon the soil type
- Adoption of bio-engineering techniques
- No construction work during rainy season
- Mass balancing in cut and fill
- Use of toe wall before disposing spoils on hill slopes
- Use of check dams, drainage management.

90. Recommended engineering structures necessary at various chainages for slope stabilization have been given in **Annex XVI**

Water Management

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

92. Measures: Roads usually generate large volumes of concentrated surface runoff. The concentrated water flowing through the road and from the outlets cause erosion and landslides, eventually affecting the stability of the road itself, in order to avoid this, the following mitigation measures are suggested:

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

93. Details about necessary structures required to mitigate the water induced adverse impacts are as given in **Annex XIV**.

Air Dust, Noise and Water Pollution

94. Impacts: Although the air quality of the project area is not measured, but the air seems 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.

95. The water quality in the project area appears to be fairly clean and not polluted. During construction these waterbodies may be polluted by spoil and construction wastes. The impact will be direct, low, local, short term and reversible.

96. Measures: The following mitigation measures will be adopted:

- Use of face mask by the workers working in the areas of high dust generation
- Contractor will frequently sprinkle water during surfacing of the road.
- Avoiding the disposal of excavated materials in the water bodies

Quarry Operation

97. Materials are procured from market center. There is no any quarry sites and this area is near from the main market center so material are procure from the market.

Location of Camp Sites, Storage Depots

98. Impacts: The siting of labor camp/ storage depts by contractors for carrying out contractor-based works may cause encroachment of forest, agriculture land, alteration of drainage, disposal of solid waste, and waste water etc. which may cause degradation in the environment.

99. Measures: The following mitigation measures will be adopted:

- The location of camp sites, storage depots will be kept on unproductive/ barren lands, away from forest areas moreover local houses will be taken in rent and compensation will be provided.
- Use of agricultural lands will not be allowed unless in extreme circumstances by paying adequate compensation to the owner.
- The sites will have suitable system to drain storm water, sanitary facilities and shall not contaminate any near by water courses/drains. Camp sites have been observed at ch. 2+500.

Construction Equipment Vehicles

100. Impacts: The contractor based construction will use machineries and tools. The related negative impacts are increase in air pollution due to emission of smoke and dust, and increase in vibration due to vehicular movement.

101. Measures: The following mitigation measures will be adopted:

- 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.
- Materials under transportation shall be covered.

Crusher Plants

102. Due to the availability of market at near area, all the things will be procured from nearest market center.

Use of Bitumen

103. Impacts: Bitumen is required for black topping which needs heating before using. Contractors tend to use local fuel wood collected from nearby forest to heat bitumen. Spillage of bitumen also damage soil productivity. The impact will be direct, high, local and long term.

104. Measures: The following mitigation measures will be adopted

- Use kerosene for heating and strict prohibition to heat bitumen by using fuelwood.
- Appropriate storage of material.
- Use of appropriate safety gears to ensure safe health of workers such as masks, boot, gloves, hat.

Decline in Aesthetic Value

105. 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

106. 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 ROW on both side of road for enhancing aesthetics, to act as dust and sound barrier and to prevent encroachment of ROW. Total 500 numbers of (Rato Sirish, Kalki Phool) will be planted.

Biological Impacts

Loss or Degradation of Forests and Vegetation

107. Impacts: There is no impact on forest area and vegetation. Only one public tree need to be cut down during construction.

108. Measures: The loss of trees can not be minimized; however, it can be compensated by the plantation. According to the Work Procedure for Providing the Forest Land for Other Use, 2063 of Government of Nepal, project has to carry out plantation equivalent to the forest area lost from the construction of the road or pay for the plantation and protection cost for five years to the District Forest Office. Compensatory plantation will be done in 1:25+10% ratio for affected tree. Plantation of local species along ROW on both side of road for enhancing aesthetics, to act as dust and sound barrier and to prevent encroachment of ROW. Total 500 numbers of (Rato Sirish, Kalki flower) will be planted

Impact on Wildlife Due To Loss of Habitat and Hunting

109. 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.

110. Measures: The following mitigation measures will be adopted:

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

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

111. Impacts: There will be no impact on flora and fauna (listed in CITES and IUCN category) as these are not reported in the proposed project area.

Socio-economic Impacts

Loss or Degradation of Farm Land and Productivity

112. Impacts: There will be no need to acquire additional farm land. Hence there will be no impact on productivity due to road construction.

Loss of Private Properties

113. Impacts: During the construction phase, there will be loss of two private houses, partially affected one kitchen and one toilet. The impact will be direct, site specific, short term and medium in magnitude.

114. Details about Private property will be described in Resettlement Plan Report (refer Annex XV).

115. Measures: Compensation and resettlement measures will be dealt as per decision made by Compensation Determination Committee (CDC).

Impact on Community Infrastructure

116. Impacts: Water source/traditional stone tap at chainage 1+500 will be affected. The road construction along this alignment has no impact on the water supply, health posts and irrigation infrastructures. But schools at 3+500 will not be displaced but disturbed during construction and Guiya Patti will need to relocate.

117. Measures: In order to avoid any impacts, the following mitigation measures will be adopted.

- Restore all disturbed infrastructures to the condition before disturbance or improve where appropriate.
- Avoid contamination of water resources systems during construction
- Provide slab to cover water tank.
- Adopt outward slope to minimize water accumulation.
- Schedule the construction activities during off- agriculture season.

Table 6.2: Specific Mitigation Measures

Type of Public Service and Infrastructure	Chainage/ Location	Distance from the Road	Amount	Mitigation measures
Kalika Primary School Totitole	2+537	Within RoW	50,000.00	Fencing for control of dust nuisance, sprinkling of water during road construction, Information signboard will be placed (Such as School area, Speed limit), Use of horns will be restricted.
Dhunge dharo	4+537	2.5m from C.L	50,000.00	Need slab, center line of road will be change slightly.
Irrigation canal crossing	1+037		53,000.00	Hume pipe will be provided.
Public Pati	5+470	2.36 m from CL	Included in Resettlement Plan	Will be relocated.
Guiya Pati	5+797	2.0 m from CL	Included in Resettlement Plan	Will be relocated.

Impacts on Cultural, Religious and Archeological Sites

118. Impacts: There are few cultural, religious and archeological sites along the road alignment, but far from road corridor. So there are no impacts.

Impacts on Health and Safety Matters

119. Impacts: During construction, workers will be exposed to various risks and hazards. Potential impacts to health are respiration and eye diseases due to exposure to dust, risk of accident during work. The lack of proper sanitary measures and increase in waste and water pollution can lead to an outbreak of epidemics and diseases. This impact is considered to be of the direct, high in magnitude, for short term and localized.

120. Measures: The following measures shall be adopted:

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

6.3.2 Operation Stage

Physical Environment

Road Slope Stability and Management

121. Impacts: The destabilization of slope may also be expedited due to human activities in the road neighborhood such as quarrying stones or soil, animal grazing, irrigated cultivation, opening of branch roads that will connect the road with other village settlements. This may cause damage to road section, disruption to transportation and other social impacts in the nearby areas. The inadequate maintenance of the road, blockage of drains, damages the road surface can lead to slides and slope failure. Sensitive areas for possible road slope stability problems are:

- Periphery areas of streams/kholsis/springs/ water seepage areas, which are at chainages 3+227(Kalo khola), 2+527(Seem Khola), 0+917(Thotne Khola) The impact will be direct, medium local and long term nature.
- EMP for slope stabilization has been provided at table 7.3.

122. Measures: The following mitigation measures will be adopted by DDC after completion of project:
- Rill and gully formations will be regularly monitored and immediately fixed at critical areas;
 - Correction of maintenance of the slope protection measures and drainage works will be done.
 - Minor landslide and mass wasting shall be immediately cleared and slope restored with appropriate technology (bio-engineering)
 - Soil conservation will be promoted in the right of way and vulnerable areas beyond the road alignment. Vulnerable area is avoided and provided structure if necessary.

Impact Due to Air, Noise and Water Pollution

123. 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. Continued dust pollution may cause adverse health impact to the people living in the vicinity. Noise level during the operation period will increase due to the movement of vehicles and other activities. However, due to low traffic volume, the impact due to noise pollution will be direct, low, local and long term. 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.

124. Measures: Following mitigation measures will be adopted:
- Community and road user awareness program will be organized to enhance public understanding
 - Use of horns should be restricted near health posts, schools and settlements
 - For control of dust nuisance, sprinkling of water, speed limit of vehicle and vegetative barrier by planting trees along roadsides will be designed.

Biological Environment

Depletion of Forest Resources

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

126. Measures: The mitigation measures recommended are:
- Encourage and support local community for controlling illegal harvesting of forest resources.
 - Awareness programs shall be organized to educate local people on the conservation of forest.
 - DFO will be more vigilant.

Disturbance to the Wildlife and Illegal Hunting

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

128. Measures: Wildlife and birds will be disturbed due to the vehicle movement. The mitigation measure for this is to erect appropriate sign boards informing drivers about:
- Prohibition of blowing horns in the dense forest areas
 - Hunting will be prohibited.

Socio-economic and Cultural Impacts

Unplanned new Settlement and Market Center Development

129. Impacts: The existing trend is to settle along the road side for the economic activities through the establishment of shops, restaurants, stalls and hotels. Expansion of settlement area and market can be observed in Thapagaun, Pasaltole, and Chundevi. There is a lot of free space found along the road alignment, upgrading of this road into black top will trigger the practice of encroaching right of way (RoW). Consequently, this will reduce road capacity and increase road accidents. The increasing trend of roadside settlement is likely to increase household waste as well as wastewater on the road. The impact will be direct, medium, local and long term in nature.

130. Measures: The following mitigation measures will be adopted:
- Awareness raising program through local organizations for planned settlements.
 - Regulate settlement growth with proper planning/zoning along RoW.
 - Plantation of local species along ROW on both side of road for enhancing aesthetics, to act as dust and sound barrier and to prevent encroachment of ROW. Total 500 numbers of (Rato Sirish ,Kalki Phool) will be planted
 - Give efforts by concern agencies for infrastructure facilities like drainage, sewerage etc. in the market areas.
 -

Change in Social Behavior

131. *Impacts:* Access facilities may bring social nuisance like increase in alcohol consumption, gambling, prostitution, and may increase girl trafficking. Increase of settlement brings different group people and also different cast so alcoholism may increase. The impact will be indirect, medium, local and for long term.

132. *Measures:* One day awareness raising program on HIV AIDS/Drug addict counseling will be organised from social sector of the program. The total cost for the program will be NRs. 16,500.00.

Issues on Road Safety

132. 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.

133. Measures: The mitigation measures adopted will be:
- Applying appropriate road safety measures with the help of 3-Es i.e. Engineering, Enforcement and Education.
 - Required safety signs will be used along the road

7.0 Environmental Management Plan

134. 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. 	Executing Agency
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.	Executing Agency
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 have 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

135. 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.

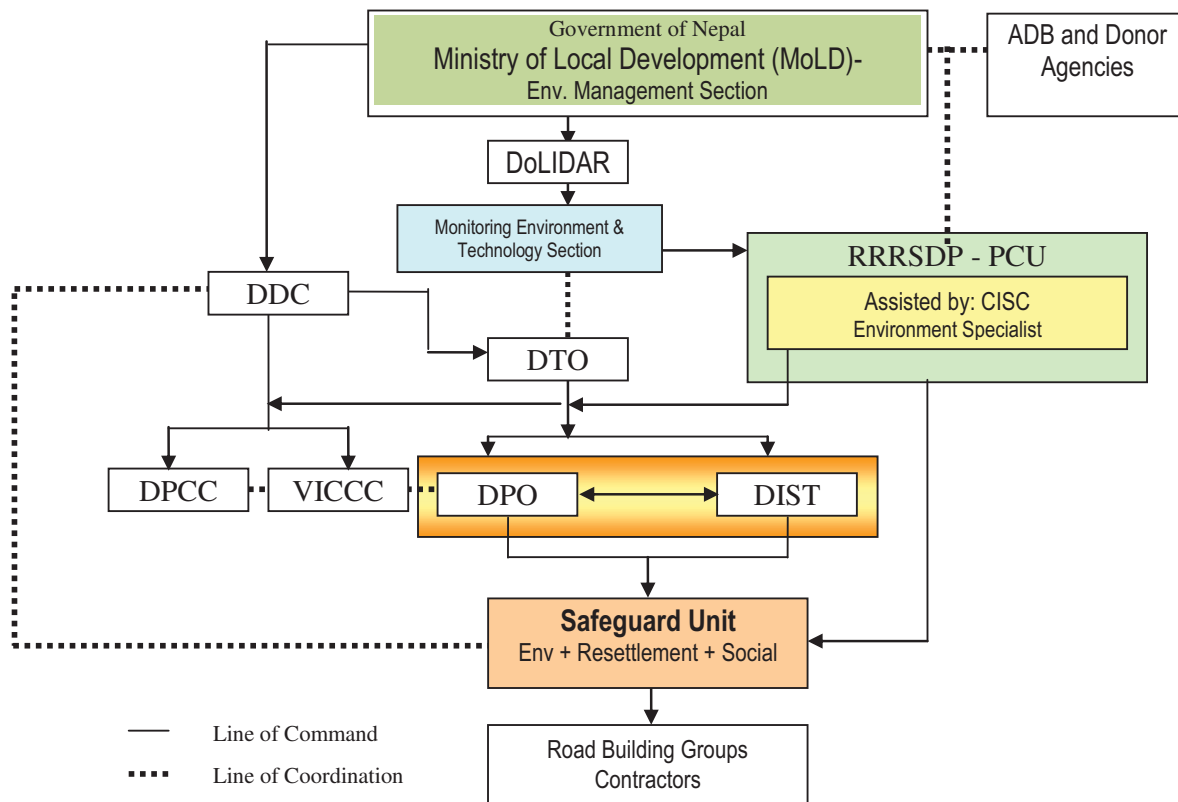
7.2 Reporting

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

137. 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.

138. 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 Environmental Management Plan

139. 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	Ma g	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 20971 nos, unskilled 47968 nos	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.	DPO/DIST	DDC/DTO / CISC/PCU	
Construction of road	Enterprise Development and Business Promotion	Enhancement in local economy	D	L	L	ST	Training is provided and local products are relatively used in the large number.	Contractor/ RGB	DIST/ CISC/PCU	
Construction coordination committee and RGB program	Community Empowerment and Ownership	Increase in income and ownership.	IN	L	L	ST	Coordination committees 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	Proper maintenance (regular, emergency) , continuation of bioengineering	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	L	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	Improvement in local economic condition	IN	M	L	LT	Promotion of land development activities and control of encroachment within RoW. Awareness program shall be organized on use of high value land to get bank loans for setting up enterprise ventures.	DDC/DPO	DDC/VDC	
Operation of Road	Increased Crop productivity and Sale of Farm Products.	Enhancement of local economy	IN	H	L	LT	Promaoion of market linkages and networking for better market price.	DDC/DPO	DDC/VDC	
Operation of Road	Enhancement of Community	Ease of access to social service and	D	H	L	LT	Keep road maintained to ensure access facility that will attract	Local	DDC, VDC	

Activity	Effect	Related Beneficial Impacts	Type of Impact *)				Benefit Augmentation Measures	Responsible Agencies	
			Nat	Mag	Ext	Dur		Executing Agency	Supporting Agency
	Development Services	raise in quality service					development of other social services facilities	people, DDC, VDC	
Operation of Road	Women and Indigenous People Enhancement	Poor, indigenous and women will have easy and frequent access to social services (education, health, community development, bank, training, CBOs and networking)	IN	H	L	LT	Assist to organize women's groups, provide training in enterprise development, organize cooperatives, provide micro-financing to undertake production of commercial products, provide market services.	VDC / DDC	VDC / DDC

Table 7.3: Likely 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, earth excavation	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 3+277, 2+527, 1+177.	DDC/DTO	DIST/VICCC/ VDC	
Site clearance, excavation	Slope Instability	Erosion, loss of property. Area of concern are at 1+737	IN	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 Drainage	DDC/DTO	DIST	
Construction of Road	Water Management, generation of large volume of surface runoff	Erosion, landslide, damage to farmland	IN	M	SS	MT	Re	Proer drainage structures and proper spoil disposal, Avoid blockage or diversion of natural channels due to construction of road and disposal of spoils.	DDC/DTO	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
Construction works, operation of construction vehicles, material hauling and unloading etc. Slope cutting, spoil and waste disposal.	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, covering of dust sources	DDC/DTO / RBGs	DIST
	Noise pollution	Disturbance and annoyance around school, health posts, forest areas.	D	L	L	ST	Re	Restrict horn near school, health posts, settlement, forest areas. Locate crusher plant away from these areas; cover material during transportation.	DDC/DTO / Contractor	DIST
	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, restriction in urination and defecation in open areas	DDC/DTO/ Contractor/ RBGs	DIST/VICCC
Construction of road	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 2+500) 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
Construction of road	Use of Bitumen	Damage in soil productivity, air pollution due to heating of bitumen	D	H	L	LT	IR	Use kerosene for heating and strict prohibition on firewood uses, safety gears to workers (Such as gloves, boots, masks etc), appropriate storage of materials	DPO assisted by DIST/ Contractor	DIST/CISC/PCU
Operation of construction equipments	Construction machineries and tools (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
Biological Environment										
Clearance of vegetation necessary for road formation	Loss of 1nos tree from public land.	Loss of vegetation	D	L	SS	ST	Re	Cutting of tree only in formation width, compensatory plantation of local species of tree at 1:25+10% ratio	DDC/DTO/ DFO	DFO/CFUGs/DIST/VD C
Construction activity	Impact on Wildlife Due To Loss of Habitat and Hunting	Killing and harrasing of wildlife; Loss of biodiversity and valuable	IN	L	L	ST	Re	Work only in day time, do not disturb wildlife, aware workers	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
		species of wildlife								
Social-economic Environment										
Acquisition of property for maintaining road width	Impact of Private Properties	Loss of two private houses (4+330, 5+560) partially affected one kitchen (0+846) and one toilet (5+230).	D	M	SS	ST	IR	Compensation and resettlement measures will be dealt as per decision made by Compensation Determination Committee (CDC).	DDC/DTO	CFC ¹ /DIST
Demolition of structures along road alignment	Impact on Community Infrastructure	Loss of services (see table 6.2)	D	M	SS	ST	Re	Restoration or relocation of affected infrastructures: 5+797, 4+537, 5+470 and 1+037.	DDC/DTO	PCU DIST/CISC/VICCC/VD C
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	Occupational health and safety regulations, 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										
Construction of Road	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
Quarrying, operation of construction equipments	Road Slope Instability(and Management (Periphery areas of streams/kholsis/springs/ water seepage areas, which are at chainages 3+227(Kalo khola), 2+527(Seem Khola), 0+917(Thotne Khola))	Slides and slope failure , Disturbance to traffic flow, pollution of water bodies, impacts on agriculture land, loss of vegetation.	D	M	L	LT	Re	Regular maintenance of slope protection structures, Selection of healthy upland farming techniques.	DDC/DTO/ VDC	DoLIDAR , DFO, District Watershed and Soil Conservation Office (DWSSC)
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

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
Biological Environment										
Road operation	Depletion of Forest Resources	Loss of timber, forest resources and benefits	IN	M	L	LT	IR	Enforcement of law, vigilance and monitoring, participation of community	DFO/CFUGs/VDCs	DDC/CDO
Road operation	Disturbance to the Wildlife and Illegal Hunting	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	DTO/CFUGs	DDC/CDO / DFO
Social-economic Environment										
Easy Access by road operation	New Settlement and Market Center Development	Encroachment of Row, increased accidents, delay in traffic movement, depletion of local resources, water pollution	D	M	L	LT	IR	Awareness program, enforcement of law, planning of land development, plantation of trees.	DDC/DTO	CDO / VICCC
Operation of Road	Change in Social behavior	Social and cultural conflicts	IN	M	L	LT	IR	Awareness, Enforcement of law and order, Provision of training for skill	DTO	DDC/DoLIDAR
Operation of Road	Issues onRoad Safety	Increase in accidents	D	M	L	LT	IR	Appropriate road safety measures, Safety signs 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

140. The estimated cost for beneficial augmentation measures like awareness raising program, skill training, promotion of small scale industries, and income generation activities will be covered by the Community Empowerment Component and Livelihood Enhancement Skills Training (LEST) 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 face masks, helmets, muffles, accidental insurance, bioengineering measures, plantation, land slide rehabilitation shall be incorporated in the design and cost estimates. 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 DC/DTO/DPO/DIST to conduct environmental monitoring and reporting	50,000.00	To be included in project cost
1.3	Enhancement in Technical Skills (Bio-engineering)	100,000.00	To be included in project cost
	Sub-Total (1)	150,000.00	
2. Adverse Impacts Mitigation Measures			
2.1	Bio-engineering work/Road side plantation	247000.00	To be included in BoQ
2.2	Occupational health and safety, information sign board; First aid boxes, campsite sanitation (Pit latrine); solid waste management, Safety measures for workers (Helmets, gloves, masks, boots, etc.)	175000.00	To be included in BoQ
2.3	Restoration or relocation of affected infrastructures/mitigation measures for adverse impact on mushroom and milk	178,000.00	To be included in BoQ
2.4	Compensatory plantation (Re-plantation / Re-forestation)	1,320.00	To be included in project cost
2.5	Capacity building empowerment (HIV/AIDS / Drug addicted counselling, VICCC and RBIG orientation Training)	102600.00	To be included in social part
2.6	LEST Program capacity Building and Empowerment	656600.00	To be included in social part
2.7	Leadership Account Keeping Training	143200.00	To be included in social part
2.8	Institutional capacity building/empowerment training of SHGs	320900.00	To be included in social part
2.9	Compensation for properties	7,196,499.93	To be included in Resettlement plan
	Sub-Total (2)	9021119.93	
	Total	9,171,119.93	

7.5. Implementation of Mitigation Measures

141. The mitigation measures will be integrated into project design and tender documents. Using this approach, the mitigation measures will automatically become part of the project construction and operation phase. By including mitigation measures in the contract or in specific items in the Bill of Quantities, monitoring and supervision of mitigation implementation could be covered under the normal engineering supervision provisions of the contract. The project contractor will be bound by the parameters identified in the environmental assessment pertaining to specific mitigation measures in the contract. The final acceptance of the completed works should not occur until the environmental clauses have been satisfactorily implemented.

142. The tender instruction to bidders will explicitly mention the site-specific mitigation measures to be performed, the materials to be used, labor camp arrangements, and waste disposal areas, as well as other site specific

environmental requirements. Action to be taken against failure to comply with EMP requirements will also be clearly agreed in the contract agreement document.

7.6. Environmental Monitoring

143. The IEE prescribes the mitigation measures in order to minimize adverse impacts and to enhance beneficial impacts. Environmental monitoring plan is an important tool to ensure the implementation of mitigation measures.

7.6.1 Monitoring Responsibility

144. Monitoring is an integral part of the project proponent. The Proponent, DDC/DTO Kathmandu will develop in-built monitoring mechanism to safeguard environment construction and operational stages. DDC/DTO will be supported by District Implementation Team (DPO and DIST) team in the district and Environmental Management Specialist from the CISC will ensure meaningful monitoring and undertaking corrective actions.

145. According to EPR, 1997, the MLD/DoLIDAR is responsible for monitoring and evaluation of the impact of the implementation of the project. The MLD/DoLIDAR checks whether the DDC/DTO is carrying out monitoring activities as per the IEE, and if the prescribed mitigation measures are being implemented. Total cost estimated for central level environmental monitoring is NRs. 50,000.00.00.

146. DDC/DTO with support from PCU/CISC will make arrangements for sub-project level monitoring. It will constitute a monitoring team. Project's district management team should be responsible for forming the monitoring team, financing the monitoring works, providing logistics and other necessary support. Thus, it is recommended that an external team hired by DDC/DTO take responsibility for periodic monitoring of the environmental performance, in addition to the regular supervision and guidance provided by the DIST at the site. The sub-project specific monitoring plan as given in **Table 7.4 and 7.5** shall be followed. At least one monitoring in each construction season is necessary.

147. The sub-project level monitoring team should submit its report to RRRSDP district management, which should forward a copy to the RRRSDP-PCU. Total cost of environmental monitoring (field visits, observation, review of reports and report preparation) is estimated 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	Stationary, Computer Printing, Photocopies and Transportation		LS		150,000.00
4	Cost for Monitoring by MoLD/DoLIDAR		LS		50,000.00
	TOTAL				200,000.00

Thus, total environmental monitoring and management cost is NRs. 9,371,119.93

7.6.2 Types of Monitoring and Monitoring Parameters

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

a. Baseline monitoring - This type is not used in our monitoring.

b. Compliance Monitoring - It verifies whether contract environmental clauses and the mitigation measures are properly implemented in the field. The frame work for compliance monitoring is given in the **Table 7.6**.

c. Impact Monitoring - It confirms whether the environmental mitigation measures specified in the project design and contract are correctly formulated. The frame work for impact monitoring is given in the **Table 7.7**.

Table 7.6: Compliance Monitoring for Ghyampedol-Badbhanjyang Road Construction Works

Parameters/Issues	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
Final alignment selection as per IEE /EMP recommendation	DPO / DIST	Alignment incur minimum requirements to acquire land from forest, agri. land, and minimum nos. of tress to clear.	Look the alignment on topo map with landuse resources; verify it by walkthrough along final road alignment	preconstruction phase	PCU / CISC; DoLIDAR
Land and property acquisition and compensation Voluntary land acquisition	Proponent with assistance of DIST	Cadastral records, Land and properties acquisition procedures; Procedures followed during voluntary donation of Land; Preparation of inventory of structures likely to be affected Payment of compensation	Public consultation, photos; geo-referencing; Check inventory against cadastral records and discuss with land owners Check record of pending compensation	pre-construction phase before construction begins	CFC / PCU (CISC) / DOLIDAR / MoLD
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	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. Protection of wildlife and sensitive habitats, forests; and Use of fuelwood for heating and cooking.	Site inspection; Discussion with local people; Records; Photos; Sampling and laboratory tests.	During construction period and include in monthly report	DPO / DIST at district and PCU/CISC at center
Protect environment from air & noise pollution	Contractor / RBGs	Dust level and noise level at work sites, major settlements and sensitive spots like health centres and schools; Crusher operated during night	Visual observation, Observation of good construction practices and disssion with residents and workers; DIST to measure air/noise level at sensitive spots.	Once in a month during construction; measurement once during peak construction	DPO / DIST at district and PCU/CISC at center
Protect water bodies from pollution	Contractor / RBG DPO / DIST	Visual observation, observation of open defecation and pit toilets at work sites/waste management/spoil disposal around water sources; Parameters like pH, hardness, DO, Turbidity for drinking water.	Site inspection, test of site-selected samples of local streams water using standard field kit, record of waterborne disease	Observation once in a month during construction; Upon demand for testing with field	DPO / DIST at district and PCU/CISC at center

Parameters/Issues	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
				kit	
Use of local labour, particularly vulnerable groups and women	DPCC / VICCC / RBGs / Contractor	Percentage of employment of local labour, especially vulnerable groups and women and their wage rate.	Verification from records	During the entire period where labour work is contracted	DPO / DIST at district and PCU/CISC at center
Awareness and orientation training on road construction locally employed labourers	DPO / DIST	Training programmes for skill development, occupational safety and environmental protection associated with road construction works; employment generation skill	Training records, assess feedback from participants	Beginning of construction and during construction	DPO / DIST at district and PCU/CISC at center (DTO)
Compliance to occupational health and safety matters	DPO / DIST; Contractor (if involved)	Health and safety regulations, first aid and medical arrangements, contingency plan, number and type of safety equipments such as mask, helmet, glove, safety belt.	Spot checks at work sites, accident records, safety equipment at site; discussion with workers	throughout construction stage	DPO / DIST at district and PCU/CISC at center
Vegetation clearance	Contractor; DPO / DIST	Actual number of trees felled during construction works	Record, inspection and interview with local people and CFUGs	Before construction work	DPO / DIST at district and PCU/CISC at center; CFUGs
Measures to avoid pressure on forest and wildlife	Contractor / RBG / DIST	Use of firewood or fossil fuel by construction crew, events of hunting and poaching of wildlife	Record verification, interview with local people and CFUGs	Once a month during construction	DPO / DIST at district and PCU/CISC at center / CFUGs
Restoration, rehabilitation, reconstruction of all infrastructure services disrupted or damaged during the construction work	Contractor / RBG / DIST	Continued services by the facilities and functional public life	Site observation; Public Consultation Meetings	Once in 15 days during construction	DPO / DIST at district and PCU/CISC at center
Clean up and reinstatement of the construction sites (camps, quarries, borrow pits)	Contractor	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	At end of construction period	DPO / DIST at district and PCU/CISC at center

Table 7.7: Impact / Effect Monitoring for Ghyampedol-Badbhanjyang Road Construction Works

Parameters /Issues	Verifiable Indicators	Verification Methods	Location	Schedule	Responsible Implementation and Monitoring Agency
Slope stability and erosion	Slope failures & their causes; Fresh gullies and erosion; Success/failure of bio-engineering solutions	Site observation, photos discussion with people and technicians	At landslide areas and sites where bio-engineering failed	Continuously during construction and operation	DIST during construction; Proponent / DPO / Soil Conservation Office during operation
Disposal of Spoils and construction wastes	Damage to forest and agriculture land, blocked drainage, hazard to downhill residents and agricultural lands	Site observation and interviews, photos	At specific locations where such sites occur	During construction at monthly basis	DPO / DIST at district and PCU/CISC at center
Disruption of drainage system	Blocked drainage, waterlogging, slope cutting and erosion by water	Observation, photos	Site specific areas	During construction at rainy season	DPO / DIST at district and PCU/CISC at center
Loss of farmland , houses and properties	Decline in productivity; Quality of life of compensated people	Observation, and interview with stakeholders	Construction areas	During construction in quarterly basis	DPO / DIST at district and PCU/CISC at center / VICCC
Water quality	Water borne disease; adverse impact on aquatic life	Record of disease, measurement of water sample using standard field kit; impact to fish in streams	Construction sites; local streams	During construction at quarterly basis	DPO / DIST at district and PCU/CISC at center
Air quality	Dust level increase	Discussion with people at sensitive locations	At construction sites and at sensitive spots (schools, health post, market and settlements)	During construction at dry season	DPO / DIST at district and PCU/CISC at center
Change in economy	Nos. of new houses built; shops opened; New enterprises by local people	Discussion with local people	Project Area	Yearly during construction phase	DPO / DIST at district and PCU/CISC at center
Occupational safety and hazard	Type and number of accident occurred during construction	Records and interview with labourers	Project Area	During construction	DPO / DIST at district and PCU/CISC at center
Social conflict and nuisance	No of social conflicts between project and people; new 'Bhatti' and prostitution proliferation.	Observations, interview with local people	Project Area	During construction	DPO / DIST at district and PCU/CISC at center / VDC
Ribbon settlement	RoW encroachment	Records, observations	Project Area	During operation	DDC/CDO

8.0 Conclusion and Recommendations

8.1 Conclusion

149. The IEE study of the proposed Ghyampedol-Badbhanjyang Road Upgrading Sub-Project does not pass through any environmentally sensitive area and have minimal detrimental effects associated with loss of private properties and agricultural land. Most of the adverse impacts predicted are of low significance and short term as well as of reversible nature. The beneficial impacts with the facility of access to market centers and location of social services will enhance productivity. In addition, local people will get direct employment as workers which will contribute significantly in improving their livelihood. These benefits from the implementation of the proposed road project are more significant and long term in nature against the adverse impacts most of which could be mitigated or avoided.

150. 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 or special environmental study. Therefore, this IEE is sufficient for approval of the sub project.

8.2 Recommendation

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

152. A key consideration in selecting the road alignment is to minimize the acquisition of valuable agricultural land. However, some agricultural land and possibly some built areas will have to be acquired for construction of the proposed road. A Resettlement Plan will be required to ensure that the persons affected by these losses are properly compensated.

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ANNEXES

Annex I: Terms of Reference



नेपाल सरकार
स्थानीय विकास मन्त्रालय
स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग (डोमिडार)
ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना
आयोजना समन्वय इकाई

स्थानीय विकास मन्त्रालय
स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग (डोमिडार)
ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना
आयोजना समन्वय इकाई
काठमाडौं, नेपाल

प.स ०६४/६६

च.नः १३३६

मिति: २०६४/१२/२६

विषय: प्रारम्भिक वातावरणीय परीक्षण (IEE) को स्वीकृत कार्य सूचि पठाईएको सम्बन्धमा।

✓ श्री जिल्ला प्राविधिक कार्यालय
ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना
जिल्ला आयोजना कार्यालय
काठमाडौं।

उपरोक्त सम्बन्धमा त्यस जिल्लामा निर्माण हुने खगेहवरी-रिङ्गरोड, सोखु-जसिङ्गौवा-गतकेबगर-भोटचौर, घ्याम्पोडोल-बाणभञ्ज्याङ्ग सडक उप आयोजनाहरूको प्रारम्भिक वातावरणीय परीक्षण (IEE) को कार्य सूचि (ToR) नेपाल सरकार (सचिव स्तर) को मिति २०६४/०२/२४ को निर्णय अनुसार स्वीकृत भएकोले स्वीकृत ToR यसै साथ संलग्न गरी सो अनुसार आवश्यक कारवाहीको लागि अनुरोध छ।

[Signature]

नारायण प्रसाद बराल
प्रोजेक्ट इन्जिनियर

वोधार्थः
श्री जिल्ला विकास समितिको कार्यालय,
काठमाडौं।

[Signature]
नेपाल सरकार
स्थानीय विकास मन्त्रालय
स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग (डोमिडार)
आयोजना समन्वय इकाई
काठमाडौं, नेपाल





1. *Chlorophyll a* (Chl *a*)
 2. *Chlorophyll b* (Chl *b*)
 3. *Carotenoids* (Carotenes and Xanthophylls)

प्रारम्भिक बालाचरणीय परीक्षण (IEE) सम्बन्धी राय
सुझावकालागि सार्वजनिक सुचना ।

பெயர்	பிறந்த நாள்	பிள்ளைகள்
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સાચ સુમારણ પઠાવતે કેળાવતે

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अवधिकृत मिति : २०७३/४/२४

Terms of Reference (ToR)

for
Initial Environmental Examination (IEE)
of
**Ghyampedol-Badbhangyang
Road Sub-Project**

Submitted to:
Government of Nepal
Ministry of Local Development

Proponent:
District Development Committee (DDC)
District Technical Office (DTO)
Kathmandu

Telephone No. :- 01-4484005
Fax No. :- 01-4494329

May 2009

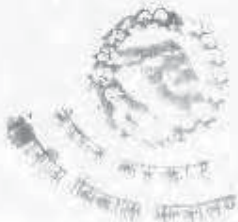




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ABBREVIATIONS

ADB	Asian Development Bank
Ch	Chainage
CF	Community Forest
CSC	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
DLIDAR	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



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1.4 NAME AND ADDRESS OF THE PROPONENT

The District Development Committee (DDC)/District Technical Office (DTO), Kathmandu is the executing agency at the district level and the proponent of the Initial Environmental Examination (IEE) study for the Ghyapedol-Badhangyang Rural 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)
Kathmandu
Telephone No. :- 01-4484005
Fax No. :- 01-4494329

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), OPIC 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).

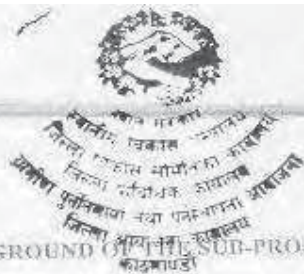
The DDCs are the Project Implementing Agencies at the district level. The DTO of each respective DDC is responsible for technical and Project management matters in the district. The DTO will be supported by the DIST which includes engineering, safeguards, and social mobilization staff.

Manisha Consultant is the District Implementation Support Team (DIST) for RRRSDP and has the responsibility of providing technical, environmental and social assistance in Kathmandu district.

This Terms of Reference (ToR) is prepared to conduct an IEE study of Ghyapedol-Badhangyang road sub-project in Kathmandu District.

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22 BACKGROUND OF THE SUB-PROJECT






The proposed of Ghyapedol-Badhangyang road sub-project lies in the north-west part of Kathmandu district of Central Development Region, one of the closest place in valley but we do have good road condition to reach centre of Kathmandu city. This road has long been observed as alternative way to reach Nagdhunga, one major check point of Kathmandu valley. Present problem of traffic management from Kalanki to Nagdhunga can be addressed by the alternate road after its completion. Major settlements along the road alignment are Ghyapedol, Khadkogau, Naikapahyangyang, Channepati, Chankota, Dabachok and Badhangyang. Total length of the road alignment is 9.0 Km.

The starting point of the road, Ghyapedol-Badhangyang - is Kathmandu-14, Kalanki 41. It is a place 200mts away from Kalankichowk starts joining ringroad. Up to VDC office of Ghyapedol some portion are fine black topped some old black topped portion are reused so, fine. First 3 Km of road the width varies from 3.5mts to 4.5 but after the Naikapahyangyang we don't have black topped section but easy for broadening and settlement are found distantly. Almost all alignment of the road after Naikap follows the flatlands, leaving foot of the adjacent hills and the broadening is easy on this portion. The vegetation found along the road alignment is Titepati, Kanika ful, Daksimo, Ara-pakhada, Bimra, Bhandra etc.

The people in this project area are having only access of mostly earthen but our intention is to widen and upgrade the road, so that it can fulfill the bypass road to reach Nagdhunga without traffic jam problems. Local people have no good access to the market centres of the district to sell their farm products. Since most people of this place rely on traditional farming, and lack of water facility, there can be ample chance of implementing vegetable production, if we can manage irrigation facility. The flatlands are dry and filled with traditional wheat production at the time of field visit. The demand of Vegetable in near by Kathmandu valley can prove this place to be very potential if we can arrange for irrigation facility. The road built will easily supply the produced vegetable and any other cash crop which will finally enhance the livelihood and decrease the job problem of the people living on road corridor.

The rehabilitation of road will mainly enhance the transportation system which is almost crippled by the traffic jam. The alternative road will make the entry and exit from Kathmandu easier. The agrarian based most of the people living near by, on the road corridor can sell their farm product in the market conveniently. The other flourished business is brick production and they will also have easy in transport their finished goods to the purchasers. For the road construction, use of local labour will generate immediate employment to local people and minimise migration to Kathmandu city a search of work. Consequently, local people will get long-term benefit which will enhance their economic status within the Zol of road corridor.

This road is identified as a priority road in the District Transport Master Plan (DTMP). Rehabilitation of this road with graveling will provide physical and economical access to the people of north-west part of the district with district headquarters.



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



Figure 1. Map of Kathmandu district.



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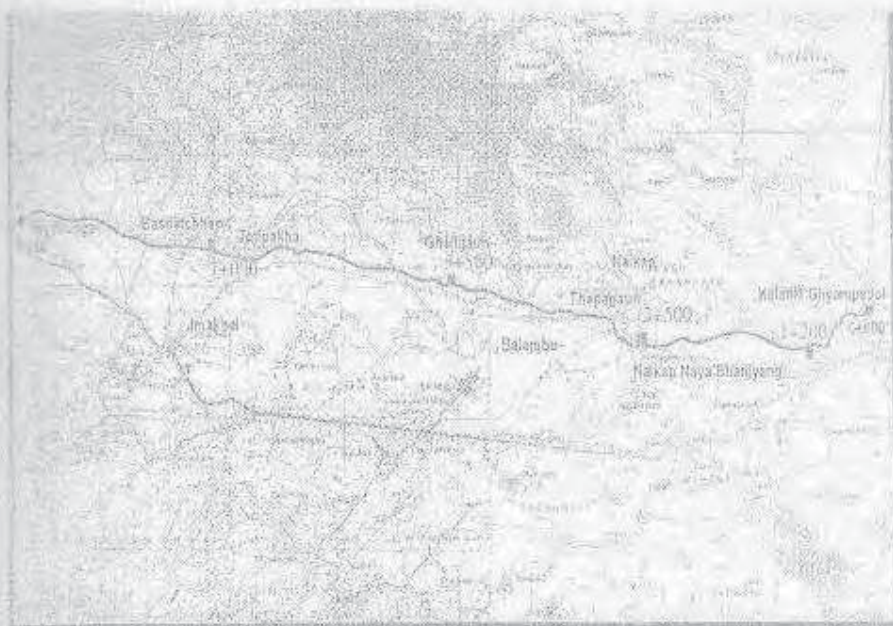


Figure 2. Topographical Map of Kathanki - Ghyampedel- Budhhbanjyang road sub-project

OBJECTIVES

The objectives of the proposed JEE 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 JEE 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 Kalanki, Naikap, and Kathmandu Municipality. This road starts from Kalanki of Kathmandu Municipality, which is 200 mts away from Kalanki Chowk and is a huge dense populated place with enormous traffic burden. The

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end point of this rehabilitation section of road is Thankot-8, Nagdhunga which is of the major check point for entry and exit of Kathmandu valley. The end point of the road is Nagdhunga already a Prithvi Highway. The rehabilitation of existing road by broadening will solve the problem of traffic from Kalanki to Nagdhunga and the livelihood of the people living on the alignment will be elevated.

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.

3.8 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
- *Batabarantya Nrdesika* (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, 1993
- APPROACH for the Development of Agricultural and Rural Roads, 1999 (DoLIDAN)
- RRRSDP Environmental Assessment & 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 Region, UNZ, 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

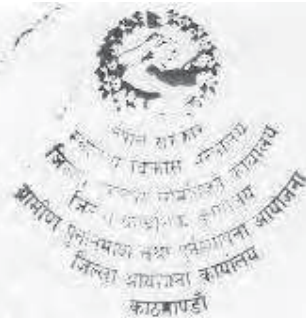
The IEE approach, methodology and procedure should generally follow the provisions of the EPA and EPR. In this connection, following approach and methodology will be adopted during the IEE report preparation.


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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 views 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 (*muchalka*) 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 it with the local stakeholders.

The information collection will be made covering physical, biological, socio-economic and cultural aspects of the environment.

5.9 ALTERNATIVES FOR THE IMPLEMENTATION OF THE PROPOSAL

Alternative analysis has been considered as an integral part of IEE study, which involve alternative ways of achieving the objectives of a proposed sub-project. The main alternative analysis is to arrive at a development option, which maximizes the benefit while minimizing the unwanted impacts.

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

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

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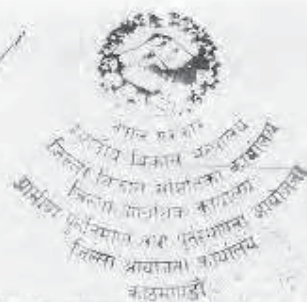
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7.0 ENVIRONMENTAL BASELINE

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

8.0 ANALYSIS AND INTERPRETATION

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

9.0 IDENTIFICATION, PREDICTION AND EVALUATION OF IMPACT

The identification and prediction of impacts shall be carried out by considering the proposed project actions/activities in terms of rehabilitation and construction of the road project. The impacts of the activities shall be on bio-physical, socio-economic and cultural resources in a defined zone of influence (i.e. 1.5 hours walking distance from the road alignment or 3 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:


Project Director


Project Engineer


Project Assistant Engineer





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.

3.2.2 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

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11.3 BENEFIT AUGUMENTATION/MITIGATION MEASURES

The IEE study will propose site-specific benefit augmentation and mitigation measures to generate the benefits expected from the sub-project and minimize/mitigate avoid or control of project'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.

11.4 ENVIRONMENTAL MANAGEMENT PLAN

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

12. 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 contents:

- a. Cover page with name of the proposal and proponent and address
- b. 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 briefly, without missing relevant points but avoiding unnecessary details. The project description should provide following information:

1. Background
2. Relevancy of the proposal
 - Objectives
 - Methodology adopted
3. Name and Address of the Proponent



4. Description of the Sub-project
5. Construction Approach
6. Proposed Schedule for Implementation of Sub-project

vii. Public Consultation and Information Disclosure

viii. Review of Relevant Acts, Regulations and Guidelines:

During the study relevant policies, legislations and guidelines should be reviewed and their salient features should be mentioned in this section. Similarly related institutions should be consulted.

ix. Existing Environmental condition:

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

x. Project Alternatives:

This section summarizes the alternatives by environmental comparison. This may include the following sub-headings.

- a. Project alternative
- b. Alternative routes
- c. Alternative design and construction approach
- d. Alternative schedule and process
- e. Alternate resources
- f. Any other alternatives

xi. Identification of Impacts and Benefit Augmentation/Mitigation Measures:

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

- a) **Physical Impacts:** such as land, air, water, noise, infrastructure impacts and other factors
- b) **Biological Impacts:** such as flora, and fauna, population, and natural habitats and ecosystems
- c) **Socio-economic-cultural impacts:** such as agricultural land, human health, social, cultural and religious values, implications of physical and biological impacts and other relevant socio-cultural-economic impacts.

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



xii. Environmental Management Plan:

This section summarizes the recommended implementation of IEE, monitoring parameters/indicators, activities, methods and responsibilities.

xiii. Conclusion and Recommendations:

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

xiv. Miscellaneous:

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

xv. Annexes

- ToR of IEE
- 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:

Ghyampedol-Badbhanjyang Road Upgrading Sub Project

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)?		✓	
▪ Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?		✓	

SCREENING QUESTIONS	Yes	No	REMARKS
<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



Government of Nepal
Ministry of Local Development
Office of District Development Committee
District Technical Office

Rural Rehabilitation Reconstruction Sector Development Program

Kathmandu

Road: Ghyampedole-Badkhanjyang Road Upgrading Sub Project
Chainage: 0+000-6+037

Summary of Total Cost (Item-wise)

SN	Description of works	Unit	Estimated Quantity	Rate(NRs) In Figure	Amount (NRs)
1	General				
1.1	Provision of Insurances	LS	0.01		600,000.00
1.2.a	Traffic safety, control measures & temporary diversions	Nos	12.00	1745.90	20,950.86
1.2.b	Traffic sign, Sign board, Kilometer Post	Nos	7.00	2413.19	16,900.32
1.3	Laboratory testing of material & quality control tests	LS	0.01		300,000.00
	Sub Total of General Item				937,857.18
2	Earthwork				
2.1	Site Clearance	Sq.m.	4829.60	12.63	61,094.41
2.2	E/W	Cum.	20212.12	64.20	1,297,616.25
2.3	Roadway embankment and backfilling	Cum.	5593.70	79.06	442,251.52
	Sub Total of Earthwork Items				1,800,982.22
3	Structural work				
3.1	Gabion boxes				
3.1(a)	Box size (2*1*1)	Box	78.00	6568.69	512,358.15
3.1(b)	Box size (1.5*1*1)	Box	45.00	4753.30	213,898.57
3.2	Geo-textile work inside of gabion wall	Sq.m	161.00	98.00	15,778.00
3.3	Providing and fixing NP3 RCC Pipes of different dia				
	(a) 600mm Dia (NP3)	No	8.00	72871.25	582,970.00
	(b) 900mm Dia (NP3)	No	5.00	117199.11	585,995.54
	Toe wall in stone masonry (1:4) C.S.M.	cum.	40.90	5707.83	233,450.44
	Side drain in stone masonry (1:4) C.S.M.	cum.	2604.35	5707.83	14,865,172.10
	Sub Total of Structural works Items				17,009,622.81
4	Pavement work				
4.1	Preparation of subgrade	Sq.m	36,222.00	12.65	458,208.30
4.2	Compacting layer of compacted 200mm thick	cum.	4652.40	688.76	3,204,385.67
4.3	Subbase: 200mm thick	cum.	7177.40	2086.72	14,977,190.07
4.4	Base course over subbase	cum.	4500.00	2847.09	12,811,885.57
4.5	Bituminous Prime Coat MC30/MC70	Sq.m	30185.00	106.12	3,203,261.08
4.6	Tack Coat	Sq.m	30185.00	55.85	1,685,824.70
4.7	30 mm thick premixed carpet	cum.	905.55	10196.02	9,233,007.59
	Sub Total of Pavement Items				45,573,763.09
	Grand Total of all Items				65,322,225.29
	VAT @13% of (A)				8,491,889.29
(B)	Sub Total				73,814,114.58
(C)	Provision for contingencies @ 5% of (A)				3,266,111.26
	Grand Total = [(B)+(C)]				77,080,225.85
	Cost Per Kilometer				12,767,968.50

[illegible]

4. Land holding pattern

3.2	Horses, Mules										
3.3	Yak										
3.4	Goat										
3.5	Sheep										
3.6	Rabbit										
3.7	Pig										
3.8	Fisheries										
3.9	Poultry										
3.10	Bee-keeping										
3.11	Others										

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

Annex V: Public Notice

Annex VI: Deed of Enquiry (*Muchulka*)



श्री गाउँ विप्लव समितिको कार्यालय
OFFICE OF VILLAGE DEVELOPMENT COMMITTEE

नैकाप पुरानो भन्ज्याङ, काठमाडौं
 Naikap Purano Bhanjyang, Kathmandu

४३१०१८५
 ४३१०१८५

२६ २०६५/६७
 ३२६८६
 File No.

मिति: २६.६.६७/१७
 Date:

विषय:- जानकारी अभियन्ता ।
 Subject:-

श्री गाउँ विप्लव पुनर्निर्माण तथा पुनः स्थापना समितिको
 जिल्ला कार्यालय बन्दिना ।

उपरोक्त समितिको रमस कार्यालयबाट प्रकाशित पत्र
 ०६०१६७-६८ को कार्यालयिक सूचनाबाट सम्बन्धित बाइबल
 र सार्वजनिक विकास तथा स्थापना बालाजुपर्व प्रकाशित भए
 मा सूचना देखाएर माथि दुवै प्रकाशित भए मा नि स मा
 प्राप्त भएको भन्ने जानकारी को लागि कुरा गर्ने ।

[Signature]
 २६/६/६७

[Signature]
 २६/६/६७

नैकाप



संविधान संरक्षण समिति
संविधान संरक्षण समिति
संविधान संरक्षण समिति



जाउँ विकास समितिको कार्यालय

नेपाल नयाँ मुद्राकाठमाडौं

पत्र संख्या :- ०९९१३६

खलानी नं :- ३२२

फोन नं. ४३९०७९२

मिति :- २०७३.११.०६/१०/७३

विषय :- जानकारी पत्रको बारे ।

श्री उम्मेदवार पुनर्निर्माण तथा पुनर्वासना

आयोजना

समिति/समिति

उपरोक्त समितिले तपाईंको कार्यालयबाट प्राप्त पत्र ०९९१३६

को पत्र अनुसार जानकारीको लागि जानकारी दिइएको छ ।

सिद्धि सम्बन्धमा जानकारीको लागि जानकारी दिइएको छ ।

होस् भन्ने जानकारीको लागि जानकारी दिइएको छ ।

२०७३/०६/१०

मानिक राम शिवा
नायक रक्षा
मा.वि.स.का.व.

२०७३/०६/१०

२०७३/०६/१०





बलम्बु गाउँ विकास समिति



२०४७

काठमाडौं

फोन नं. : ४३१२०६३

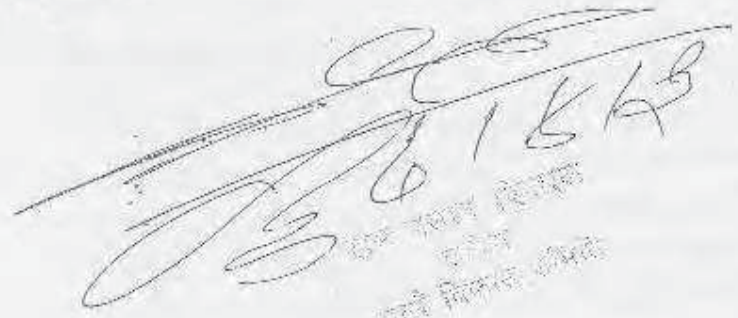
मिति: २०६७/०४/०३

सं. २०६६/६८
नं. ११

विषय:- जनकारी सम्बन्धमा ।

जिल्ला आयोजना कार्यालय
ग्रामीण पुनःनिर्माण तथा पुनःस्थापना आयोजना
दानेश्वर, काठमाण्डौ ।

उपरोक्त सम्बन्धमा कलकी-ध्याम्पेडोल-वाडभञ्ज्याङ्ग सडक आयोजना त्यस प्राविधिक कार्यालयबाट नागरिक राष्ट्रिय दैनिकमा २०६६ असार १ गते प्रकाशित प्रारम्भिक सूचना बलम्बु गा.वि.स. कार्यालय तथा यस अन्तर्गतका विभिन्न ठाउँमा टाँस गरिएकोमा सो सम्बन्धमा हालसम्म कुनै ठाउँबाट कुनै किसिमको राय सुझाव नआएकोले आयोजना सम्चालन गर्दा कुनै पनि बाक्तावरणिय नकारात्मक प्रभाव नपर्ने व्यहोरा जानकारीको लागि अनुरोध गरिन्छ ।


मुख्य विकास अधिकारी
जिल्ला आयोजना कार्यालय
दानेश्वर, काठमाण्डौ









गाउँ विकास समितिको कार्यालय
 थुलुकेट, काठमाण्डौ
 Office of the Village Development Committee
 Thuluke, Kathmandu

फोन नं:- ४-४२२१४

४६६१६२
 ४२

मिति ४६६१६३
 Date:

विषय : जानकारी सम्बन्धमा ।
 उपरिखण्ड:-

जिल्ला आयोजना कार्यालय
 ग्रामिण पुनर्निर्माण तथा पुनर्स्थापना आयोजना
 वानेश्वर, काठमाण्डौ ।

उपरोक्त विषयमा कलकी-धाम्पेडोल-बाईमन्थाल सुदक आयोजनाको त्यस प्राविधिक कार्यालयबाट नागरिक राष्ट्रिय दैनिक २०६६ असार १ गतेको प्रकाशित प्रारम्भिक सूचना बानेश्वर गा.वि.स.कार्यालय तथा यस अन्तर्गतका विभिन्न ठाउँमा टाँस गरिएकोमा सो सम्बन्धमा हाल सम्म कुनै ठाउँबाट कुनै किसिमको राय सुझाव नआएकोले आयोजना संचालन गर्दा कुनै पनि बाधावरणिय तत्कारात्मक प्रभाव नपर्ने व्यहोरा जानकारीको लागि अनुरोध गरिन्छ ।

का.वि.स. वानेश्वर
 २०६७/१४/३
 सचिव

इन्जिनियर

इन्जिनियर





श्री गाउँ विकास समितिको कार्यालय

बहुभुजक ठिमाडो

मिति २०२६/६/१९

$$= 0.001056$$

पृ. 20-1

दिनांक : 21.7.21

श्री जिल्ला आयोगाचा कार्यालय

इति श्री गणेशाय नमः

०१४०५१-११, ०१४०२-०८

[illegible]

2000-6-22

[Signature]

21/3

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, Purano Naikap	Purano Naikap	
2	Office of Village Development Committee, Naya Naikap	Naya Naikap	
3	Office of Village Development Committee, Balambu	Balambu	
4.	Office of Village Development Committee, Dahachowk	Dahachowk	
5	Office of Village Development Committee, Thankot	Thankot	
6.	Kaleshwor Lower Secondary School, Badbhanjyang	Badbhanjyang	

Source: Field Survey, August, 2009

Annex VIII: List of Persons Consulted

List of persons consulted

S.N.	Name	Address	Occupation/Designation
1.	Navaraj Kafle	District Forest Office	District Forest Officer
2.	Achyut Pd. Dhakal	District Agricultural Development Office	District Agricultural Development Officer
3.	Shyam Sundar Shrestha	District Soil Conservation Office	District Soil Conservation Officer
Purano Naikap VDC			
1	Ram Kumar Shrestha	Purano naykap-2	Business
2	Shyam Thapa	Purano naykap-2	Business
3	Bal ram K.C	Purano naykap-4	Farmer
Naya naikap VDC			
1	Achut Kharel	Naya naikap	Business
2	Min Kr. Sharma	Naya naikap	Business
, Balumbu VDC			
1	Dev Raj Dhakal	, Balumbu	Teacher
2	Hari parajuli	, Balumbu	Farmer
3	Bidur Timalisina	, Balumbu	Farmer
Thankot VDC			
1	Maya Sharma	Thankot	Farmer
Dahachowk			
2	Ashis Nakarmi	Dahachowk	Farmer
3	Shiva Sapkota	Dahachowk	Business
Badbhanjyang VDC			
1	Laxmi Parajuli	Badbhanjyang	Business
2	Alisha Timalisina	Badbhanjyang	Teacher

Source: Field Survey, August, 2009

Annex IX: Summary of Meeting with Local People

Date	Place	Type of Participants	No.	Issues raised
8 July, 09	Purano naikap	Administrative Officer, Staffs, Local people	23	Discussed mainly on the project.
8 July, 09	Naya naikap	District Engineer, Engineer, local people	23	Discussed mainly on the project, project modalities of ADB, Role of DTO and local bodies.
3 Aug, 09	Balambhu	Project Affected Families, and local people	15	Cash compensation should be provided for land and crop, free distribution of seedlings for private planting, good drainage system, and protection of water sources.
3 Aug, 09	Dahachowk	Local farmers and project affected families	15	Cash compensation should be provided for land and crop and free distribution of seedlings for private planting. Project work should be careful to protect environment.
23 July, 09	Thankot	Businessmen, CFUG members, teacher, farmer, social worker,	16	Road must be constructed, compensation of land and crop is not a priority; mitigation measures could be implemented to minimize the environmental impacts.
9 July, 09	Badbhanjyang	Businessmen, CFUG members, teacher, farmer, social worker	24	Road should be built as soon as possible, mitigation measures should be implemented to minimize the environmental impacts.

क्र.सं.	सहभागीको नाम	ठेगाना	हेसियत/पद	संस्थापक
१	उद्धव पौडेल	का.स.मा.पा. १४	उपस्थिति	प्र.स.स.स.स.
२	बेदरा नाथ गौतम	नयाँ नैनाथ - ६	सचिव	१२
३	आदित्य पौडेल	का.स.मा.पा. १४	११	सिद्धिपति
४	राम बहादुर सीठुली	पुलाने नैनाथ	सदस्य	स.स.स.स.स.
५	माधव बस्नेत	सैराम गा.स.पा. १४-वि.स.	१४-वि.स.स.स.	१४-वि.स.
६	नारायण नेपाल	नैनाथ पु.स.पा. १४-वि.स.	सचिव	१४-वि.स.
७	दिपक पौडेल	नैनाथ पु.स.पा. १४-वि.स.	उपस्थिति	१४-वि.स.
८	सुष्मा प्र.जि.स.	नैनाथ पु.स.पा. १४-वि.स.	उपस्थिति	१४-वि.स.
९	महेश थापा	पुरानो नैनाथ	उपस्थिति	महेश थापा
१०	प्रविष्ट महर्जन	"	"	प्रविष्ट
११	गुञ्जल मान महर्जन	"	"	गुञ्जल मान
१२	शोभना थापा	"	"	शोभना
१३	सुन्दरी	"	"	"
१४	पद्माक्षी पौडेल	"	"	पद्माक्षी
१५	बसुन्धरी	"	"	बसुन्धरी



Draft for Consultation

COMMUNITY CONSULTATION MEETING NOTES RECORD SHEET
(Sample only)

उप-प्रोजेक्ट का नाम: कलंदी चलापेडीला वाटम उपप्रोजेक्ट सं. 205/105/98
जिल्ला: ठाकुराबाई गा.वि.स. ठा. सोड/बल्लु वडा नं. डोम:
कार्यक्रम संचालकको नाम: प्र.का. प्रो.दे.प्र.सि.

आज मिति २०६८ साल ०४ महीना ०५ गते शुक्रवार का दिन यस गावीन पुर्ननिर्माण तथा पुनर्स्थापना कार्यक्रम (RRRSDP) को सहक उप-बायोजनाको मुखर तथा सहरोनालीका साथी को अध्यक्षतामा बैठक बसी तपसिल बमोजिमका व्यक्ति को उपस्थितिमा सामुहिक छलफल गरी निर्णय गरियो।

क्र.सं.	सहभागीको नाम	ठेगाना	समिति/पद	हस्ताक्षर
१	राज राय गिरी	दहचोक - २	समिति व सदस्य	<u>.....</u>
२	विष्णु राय गिरी	दहचोक - २	जम्मा २५	<u>.....</u>
३	शरण बहादुर गिरी	बल्लु - ५	नेका. प्रो.दे.प्र.सि.	<u>.....</u>
४	कृष्ण बहादुर शर्मा	दहचोक - १०		<u>.....</u>
५	राजेश शर्मा	महोदय - २	समिति व सदस्य	<u>.....</u>
६	नवराज सुवेदी	दहचोक - २	पुनर्स्थापना	<u>.....</u>
७	नवराज पोखरेल	बल्लु - २	समिति व सदस्य	<u>.....</u>
८	प्रकाश पोखरेल	" ७	समिति व सदस्य	<u>.....</u>
९	बल्लु गिरी	दहचोक - २	समिति व सदस्य	<u>.....</u>
१०	मक कुमाल गिरी	" २	समिति व सदस्य	<u>.....</u>
११	कृष्ण गिरी	दहचोक - २	समिति व सदस्य	<u>.....</u>
१२	कृष्ण कुमार गिरी	दहचोक - २	समिति व सदस्य	<u>.....</u>
१३	राजेश गिरी	दहचोक - २	समिति व सदस्य	<u>.....</u>
१४	बाबुकाजी गिरी	दहचोक - २	समिति व सदस्य	<u>.....</u>
१५	राम बहादुर गिरी	दहचोक - २	समिति व सदस्य	<u>.....</u>

.....

.....



Draft for Consultation

उपरोक्त विषय र प्रस्तावहरू

1. आर्थीजनाई अंतर्गत संस्थाहरू।
2. आर्थीजनाई प्रभावित जमीन संस्थाहरू।
3. आर्थीजनाई क्षतिपूर्तिका बारे तथा श्रमिक संस्थाहरूको क्षतिपूर्ति सम्बन्धी।
4. आर्थीजनाई सहजकर्ता उसी लैजाते।

उपरोक्त प्रस्ताव उपरका निर्णयहरू:

1. प्रस्ताव नं १ माथि हलफल गर्दा आयोजनाको कोरेमा सुरक्षा कालांतर विभिन्न नासनेतिहे दस्तावेजनिधि का साथै प्रमुख कानून रदु रंग मस्ती आयोजनाको कोरेमा अनगदी गराइयो।

2. प्रस्ताव नं २ माथि हलफल गर्दा RRSOP को प्रमुख अङ्गहरू आवश्यक जग्गा यहाँका स्थानीय वसन्त हाताहड्डो विचार रनम २ सहा कठार (आवश्यक) भाषणनर पते अग्रा उपलब्ध गराउने गरी सर्वसम्मत वन निर्णय गरियो।

3. प्रस्ताव नं ३ माथि हलफल गर्दा आयोजनाले क्षतिपूर्तिका दस्तावेज सामाजिक सुरक्षा को क्षतिपूर्ति सम्बन्धमा २०१० क्षतिपूर्ति दस्तावेजलाई क्षतिपूर्ति दिने हु भन्ने भन्ने भन्ने भन्ने सर्वसम्मत वन निर्णय गरियो।

प्रस्ताव नं ४ माथि हलफल गर्दा यस RRSOP-ले भने दस्तावेज तालिमको आयोजनालाई सर्वेक्षण सन्तकषे माध्यमका आयोजनालाई प्रतीक्षमा सहयोग र सफा रूपमा अगाडी लैजात सन्ति हु भन्ने सर्व सम्मत वन निर्णय गरियो।

COMMUNITY CONSULTATION MEETING NOTES RECORD SHEET (Sample outline)

उप-आयोजनाको नाम: बुलन्ती गाउँपालिका स्वास्थ्य केन्द्र मिति: २०७६/०८/१९
 तालिम: ४/८/२०७६ गा.वि.स.: चालकोट वडा नं.: ८ टोल:

कार्यक्रम सम्बन्धितको नाम: सुनसरी जेष्ठ

आज मिति २०७६ साल ०८ माहिना ०८ गते विहिनि का दिन यस गाउँपालिका पुनर्निर्माण तथा पुनर्स्थापना कार्यक्रम (RRRSDP) को बुलन्ती गाउँपालिका स्वास्थ्य केन्द्र उप-आयोजनाको सुधार तथा सरोकारवाला लागि विप्लव कुमार राय को अध्यक्षतामा बैठक बसी तपसिल बमोजिमका व्यक्तिको उपस्थितिमा सामुहिक छलफल गरी निर्णय गरियो।

क्र.सं.	सहभागीको नाम	उमेर	पेशा/व्यवसाय	हस्ताक्षर
१	जनक महर्जन	धातकोट - ८	स्वास्थ्य कार्यकर्ता	जनक
२	मिराजुन महर्जन	"	"	मीराजु
३	अश्विन महर्जन	"	"	अश्विन
४	दीपक कुमार राय	"	"	दीपक
५	किमसेन राय	वर्दिपुर	कार्यकर्ता	किमसेन
६	धन लाल महर्जन	"	व्यवसाय	धनलाल
७	जनक	"	"	जनक
८	सुरेन्द्र	"	"	सुरेन्द्र
९	सनेज महर्जन	धातकोट - ८	स्वास्थ्य कार्यकर्ता	सनेज
१०	जगत बाबुराज महर्जन	"	"	जगत
११	जुन सुब्बा महर्जन	"	"	जुन
१२	सुनसरी महर्जन	"	"	सुनसरी
१३	भक्त ब. महर्जन	"	"	भक्त
१४	श्याम ब. महर्जन	"	"	श्याम
१५	रामलाल महर्जन	"	"	रामलाल



संकेत: प्रकाश, ५९, ५९ (प्रकाश)

जब किने २५६ साल ०३ महीना २४ गते कैबिडिहाहा का दिन बस रामीग पुनर्निमाण
 लव पुनर्निमाण कार्यक्रम (RRRSDP) को फरिदी कैपेटेल हाऊस मुद्रक उप-आयोजनाको सुधार तथा
 सार्वजनिक सापि SAG वि. न सापि ४ श्री
 बालक गरी निर्णय गरियो । को अध्यक्षतामा डेटक बसा तपसिल बमोजिमका व्यक्तिको उपस्थितिमा साबुहिक

क्र.सं.	सहभागीको नाम	ठेगाना	संसिद्धत/पद	हस्ताक्षर
१.	मनोज सिग्देल	बाइमजुवाडा, ३	ई.सिद्धत	मं
२.	मदन भुर्तेल	बाइमजुवाडा, २	ई.सिद्धत	मं
३.	रम कानी ठाकुरी	बाइमजुवाडा, ३	ई.सिद्धत	मं
४.	सुदाम ठाकुर	बाइमजुवाडा, ४	ई.सिद्धत	मं
५.	गङ्गा शर्मा	बाइमजुवाडा, ६	ई.सिद्धत	मं
६.	गङ्गा शर्मा	बाइमजुवाडा, ७	ई.सिद्धत	मं
७.	गङ्गा शर्मा	बाइमजुवाडा, ८	ई.सिद्धत	मं
८.	गङ्गा शर्मा	बाइमजुवाडा, ९	ई.सिद्धत	मं
९.	गङ्गा शर्मा	बाइमजुवाडा, १०	ई.सिद्धत	मं
१०.	गङ्गा शर्मा	बाइमजुवाडा, ११	ई.सिद्धत	मं
११.	गङ्गा शर्मा	बाइमजुवाडा, १२	ई.सिद्धत	मं
१२.	गङ्गा शर्मा	बाइमजुवाडा, १३	ई.सिद्धत	मं
१३.	गङ्गा शर्मा	बाइमजुवाडा, १४	ई.सिद्धत	मं
१४.	गङ्गा शर्मा	बाइमजुवाडा, १५	ई.सिद्धत	मं
१५.	गङ्गा शर्मा	बाइमजुवाडा, १६	ई.सिद्धत	मं
१६.	गङ्गा शर्मा	बाइमजुवाडा, १७	ई.सिद्धत	मं
१७.	गङ्गा शर्मा	बाइमजुवाडा, १८	ई.सिद्धत	मं
१८.	गङ्गा शर्मा	बाइमजुवाडा, १९	ई.सिद्धत	मं
१९.	गङ्गा शर्मा	बाइमजुवाडा, २०	ई.सिद्धत	मं



Final Draft

अन्योन्या विषय र प्रस्तावहरू:

१. आयोजनाको बारेमा जानकारी सम्बन्धी
२. आयोजनाले प्रभावित (क्षति) परेको जग्गा सम्बन्धी
३. आयोजनाले प्रभावित घर तथा सामाजिक संरचनाको क्षतिपूर्ति
४. सम्बन्धी।

उपरोक्त प्रस्ताव उपरका निर्णयहरू:

१. प्रस्ताव नं. १ - माथि कलकल गर्दा आयोजनाको बारेमा विस्तृत जानकारी गराइयो।
२. प्रस्ताव नं. २ (आयोजनाले बिस्दी) यस्तो बताइयो कि अभावित व्यक्तिहरूले संलग्न गरी सहमतिमा नै दिने छिने सर्वसम्मतिमा निर्णय गरियो। यसमा अजसली सहमति आएको पनि समुदायले नै मिलाउन निर्णय गरियो।
३. प्रस्ताव नं. ३: माथि कलकल गर्दा आयोजनाले क्षति पुऱ्याएको घर तथा सामाजिक संरचनाको क्षतिपूर्ति आयोजनाको नीति तथा नियम अनुसार उपलब्ध गराइने सर्वसम्मतिबाट निर्णय गरियो।

[Signature]

[Signature]

[Signature]

[Signature]

[Signature]



Annex X: Recommendation Letters from VDCs



श्री गाउँ विकास समितिको कार्यालय OFFICE OF VILLAGE DEVELOPMENT COMMITTEE

नैकाप पुरानो भञ्ज्याङ, काठमाडौं
Naikap Purano Bhanjyang, Kathmandu

४३१०१८५
४३१०१८५

स.स. ५-२०६५/१६

स.स. २६३

Ref. No.

मिति: २०६५/०८/१६

Date: २०६५/०८/१७

विषय:- सिफारिस गर्ने।

Subject:-

श्री गाउँ विकास समिति पुनर्गठन हुँदा पुनर्स्थापना समितिमा
जिल्ला कार्यालय, बसिन्दा।

उपरोक्त समितिमा ल्याम अर्जुनले २०६५/०८/१६

को जम्मा कार्यवाहकता ल्याम अर्जुनको अध्यक्षतामा
सदस्यको तर्फबाट ल्याम अर्जुनको अध्यक्षतामा
प्रतिवेदन दिनुपर्ने कार्यवाहकता पुग्दा र सदस्यको उपाय
हुँदा जिल्ला घुम कार्यवाहकता जिल्ला अदालत उक्त
प्रस्ताव कार्यवाहकता हुन को लागि सिफारिस गर्नु

इतिहास।

पदाधिकारीको लागि

स.स.

मिति: -

स.स.

इतिहास।



श्री गाउँ विकास समिति



आई विकास समितिको कार्यालय

मैकाम नदी, भज्याङ्ग, काठमाडौं

ఇంకా

पत्र संख्या :- २०६६/६६

द्विभागी नं :- ३३३

फोन नं ४३१०७१८

मिति :- २०६६/०६/१६

निष्कर्ष :- प्रिफाफिस ^{गरीमो} जेलो वारे।

श्री अमलीठा पुनः निर्माण तथा पुनः स्थापना आयोगला
मिलला कार्यलय, कोल्हापुर, महाराष्ट्र

उपयुक्त संभवधाम। (यसि आद्योजनोले मिति २०६६/०६६)

मा धस, काशीलयामा धस आयोजनाको ध्यानेचेल, वाडभन्दा, सडकको बाप रजक सञ्चनमा धासिक, वानावाणीय/पासा धासिक, सञ्चनमा कलवालीय धासिक र धासिक उपायको धासिक धासिक ल्याली अन्तारी भएकोले उक्त धासिक काशीलयामा हुनेको लागि सिफारिस गर्छु।

कक्षाकार -
पदाधिकारियों का नाम
पद -
मिति -

Handwritten signature: *[Signature]*





वलम्बु गाउँ विकास समिति

काठमाडौं
२०६९

प.सं. - २०६६/०६६
व.सं. - ४३३

फोन नं. : ४३१२०६९

मिति: २०६९/०७/२०

विषय: सिफारीस गरिएको बरि।

श्री जिल्ला आयोजना कार्यालय
ग्राभिण पुनर्निर्माण तथा पुनर्स्थापना आयोजना
बानेश्वर, काठमाडौं।

प्रस्तुत विषयमा तलस आयोजनाले ०६६/०६७ मा यस गा.वि.स. कार्यालयमा कलकी-घ्यापेडोल-वाडभन्थाङ सडक निर्माणको प्रारम्भिक वातावरणीय परीक्षण/प्रतिवेदन सम्बन्धमा सिफारीस गरिदिन निवेदन दिनु भएकोले यो पत्र लेखिएको छ। उक्त प्रस्तावको प्रारम्भिक वातावरणीय परीक्षण/प्रतिवेदनमा उल्लेख भएका विषय तथा वातावरणीय प्रभाव र संरक्षणका उपायहरूको बारेमा यस कार्यालयलाई जानकारी भएकोले उक्त प्रस्ताव कार्यालयले नैतिकताको लागि सिफारीस गरिएको छ।

हस्ताक्षर

पदाधिकारीको नाम : तसिब श्रेष्ठ
पद : कार्यालय सहायक (कम्प्युटर अपरेटर)
मिति : २०६९/०७/२०


कार्यालय सहायक





फोन नं. - ४३१०४४६

दहचोक गाउँ विकास समितिको कार्यालय

देहधाक, काठमाडौं ।

05.07.2019

77-206

सूत्रक एवं संख्या के मिलन:-

मिति : २०६६/६।१९

विषय :- सिफारिस गरिएको हो ।

श्री ज्ञानोत्तम पुन निर्माण तथा पुन स्थापना
आयोजना बिल्ला कार्यलय, काठमाडौं

[illegible]

६५०१२१

पदादिप्रयोगे नामतः अत्रोक्तं
अत्र

मह - आ. वि. नि. सचिव

मिति- 20/06/23

अपनी खनी

ना.सु.मा.वि.स.सचिव

अभिजित

24

प्रतिनिधायक





गाउँ विकास समितिको कार्यालय

थानकोट, काठमाडौं

Office of the Village Development Committee

Thankot, Kathmandu

फोन नं.: ४-३३२९९४

चक्र संख्या:- ६६६/६६

सन्तानी नं:- ६२६

मिति: ०६/६/१५

Date:

विषय:- विप्लविय गरिबको कोर /

Subject:-

श्री "निल्लि आयोगको कार्यालय"

ग्रामिण पुनर्निर्माण तथा पुनर्स्थापना

आयोगको कार्यालय, काठमाडौं /

परन्तु विप्लव तथा आयोगको निर्माण ०६/६/१५ मा
थप कार्यालयमा बलको, दवापेले, नर्दिभरज्या, सुब्बा निर्माण
को प्रारम्भिक वातावरणमा परिक्षण / प्रतिवेदन शुभचिन्तना विप्लविय
गरिबको निर्माण दिनु भएकोले यो पत्र लेख्ने काम भएको छ। उक्त
प्रस्तावको प्रारम्भिक वातावरणमा परिक्षण / प्रतिवेदन मा उल्लेख
भएका विषय तथा वातावरणमा प्रभाव र संरक्षणका काम
हरेको कारण भएर कार्यालयलाई जानकारी भएकोले उक्त
प्रस्ताव कार्यालयमा हुनुका लागि विप्लविय गरिब /

०६/६/१५

निल्लि

०६/६/१५

निल्लि

०६/६/१५

विप्लव कोष, काठमाडौं



गाउँ विकास समिति



विश्वको विकास
विश्वको विकास
विश्वको विकास

फोन नं. : ४३२२५४



श्री गाउँ विकास समितिको कार्यालय

बाहुमञ्ज्यङ्ग काठमाडौं

नं. ८९९/२९६

मिति २०७३.११.०६/१९८

३४.२०८

विषय: शिक्षाविज्ञ गतिहको बारे

प्रति जिल्ला शिक्षाको कार्यालय,
श्रीगंगा पुस्तकालय तथा पुस्तकालय
कार्यलयको कार्यालय, काठमाडौं

माननीय शिक्षा तथा स्वास्थ्य मन्त्रालयको निर्देशनमा ०९/११/८९ को अति
महत्वपूर्ण निर्देशनको अन्तर्गतमा बाहुमञ्ज्यङ्ग गाउँ विकास समिति
को कार्यालयमा कार्यरत शिक्षाविज्ञ (पुस्तकालय)हरूको विषयमा
विश्वको विकास विभागबाट प्राप्त भएको प्रत्येक लेखको ११ प्रतिलिपि
प्रस्तुत गर्नुका साथै (पुस्तकालय)हरूको विषयमा
तथा कार्यालयीय प्रभाव र प्रत्येक वर्षको उपायहरूको बारेमा यत
तकलाई जानकारी भएकोले उक्त प्रस्ताव कार्यालयमा हुनेबोला
शिक्षाविज्ञ गतिह १९८

०९/११/१९८
डा. रमेश्वर



२०७३/११/०६
२०७३/११/०६

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

Settlement Name	Number of HH in (in percentage)				Total
	Agriculture & Livestock	Labour & Porter	Business/ Commerce	Employees	
Thapagaunn	50	10	25	15	100
Pasaltole	50	10	20	20	100
Chundevi	60	5	15	20	100
Kalapani	50	10	15	25	100
Chishapani	60	10	10	20	100
Shirjanachowk	75	5	10	10	100
Bakhtigau	40	5	30	25	100
Totitole	55	5	10	30	100
Bhasantole	55	5	15	25	100
Bhurtelthok	60	5	30	5	100
Aiselchour	60	5	5	30	100
Total	615	75	185	225	100
Avg %	55.90909	6.818182	16.81818	20.45455	100

Annex XIb: Summary of Public Services & Infrastructures

Settlement Name/ Public services and Infrastructure	School (no)	Health post (no)	Post office (no.)	Communication(n o) 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)
Thapagaunn	5	-	-	1597	-	-	15	1	-	1	1	-	-	-	-
Pasaltole	2			1000			3	1		1			2		
Chundev	4	1		1000			13	1					2		
Kalapani	3			1000			5			1			2		1
Chishapani	2	1		1091	-		10	2	-	2	-	-	2-	-	-
Shirjanachowk	2	-		55			7	1	-	1	-	-	2-	-	-
Bakhtigau	2						10	1					1		
Totitole	8	1	1	2000			15	5		3	1		1		1
Bhasantole	1	1	1	500			15	2		1					
Bhurtelthok	2			600			12	1		1			1		1
Aiselchour	1	-	-	15			7	1	-	1	-	-	1	-	-
Total	32	4	2	8858			112	16	0	12	2	0	14	0	3

Annec XI c: Land Holding Pattern of Settlements within ZoI

Settlement Name(VDC)	Number of HH							Total
	Landless	<one ropani	1-5 ropani	5-10 ropani	10-20 ropani	20-50 ropani	>50 ropani	
Purano Naikap	15	520	115	180	50	5	0	885
Naya naikap	20	500	80	50	35	5	0	690
Balambu	50	259	500	250	60	5	0	1124
Dahachowk	30	280	260	50	30	10	0	660
Thankot	150	600	705	250	120	5	0	1830
Badbhanjyang	66	200	250	100	40	10	0	666
Total	340	2359	1910	880	335	40	0	5855
Percentage	5.72	40.22	32.57	15.01	5.71	0.68	0	100

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

VDC	Surplus	Sufficient for whole year	Sufficient for 3-9 months	Sufficient for three months	Hand to mouth existence	Total
Purano Naikap	18	248	309	266	44	885
Naya Naikap	21	186	207	235	41	690
Balambu	112	337	337	281	57	1124
Dahachowk	33	264	165	165	33	660
Thankot	92	274	823	549	92	1830
Badbhanjyang	33	67	167	266	133	666
Total	309	1376	2008	1762	400	5855
Percentage	5.27	23.5	34.3	30.1	6.83	100

Source: field survey, August, 2009

Annex XII : List of Trees to be Removed

SN.	Common name	Total number	Location	Chainage
1	Tuni	1	Totitole	3+500
	Total	1		

Source: field survey, August, 2009

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

Annex XIII: Photographs



Patti at (Ch.5+797) need to relocate



Required cross drainage structure for water management



Water source/Traditional stone tap require protection work at Ch.4+537



Minor landslide at Ch.1+737



Irrigation canal crossing at Ch.1+037



Existing cross drainage at Ch.0+837

Annex XIV: Summary of Cross Drainage Structures

S.N.	Chainage	Name of the river	Terrain	Type of Cross Drainage	Soil type	Remarks
1	0+837	Kholi	Hill	Hume pipe	Ordinary soil	Existing
2	1+200	Surface water	Hill	Hume pipe	Ordinary soil	Proposed
3	1+237	Kholi	Hill	Hume pipe	Ordinary soil	Existing
4	1+437	Kholi	Hill	Hume pipe	Ordinary soil	Existing
5	1+470	Surface water	Hill	Hume pipe	Ordinary soil	Proposed
6	1+560	Surface water	Hill	Hume pipe	Ordinary soil	Proposed
7	1+660	Surface water	Hill	Hume pipe	Ordinary soil	Proposed
8	1+980	Surface water	Hill	Hume pipe	Ordinary soil	Proposed
9	2+937	Kholi	Hill	Hume pipe	Ordinary soil	Existing
10	3+040	Surface water	Hill	Hume pipe	Ordinary soil	Proposed
11	3+185	Surface water	Hill	Hume pipe	Ordinary soil	Proposed
12	3+937	Kholi	Hill	Hume pipe	Ordinary soil	Existing
13	3+960	Surface water	Hill	Hume pipe	Ordinary soil	Proposed
14	4+820	Surface water	Hill	Hume pipe	Ordinary soil	Proposed
15	5+480	Surface water	Hill	Hume pipe	Ordinary soil	Proposed
16	5+620	Surface water	Hill	Hume pipe	Ordinary soil	Proposed
17	5+720	Surface water	Hill	Hume pipe	Ordinary soil	Proposed
18	5+900	Kholi	Hill	Hume pipe	Ordinary soil	Existing

Annex XV: Affected Houses and Structures along the Road Alignment

S.N	Type of structures	Number	Chainage	Dist.from CL of Road	Remarks
1	Irrigation canal crossing		1+037	2m	impact
2	Dhunga Dhara	1	4+537	2.5m	impact
3	Guiya Pati	1	5+797	2m	impact
4	House of Krishna Giri	1	4+330	2.5	Relocated
5	Public Pati	1	5+470	2.36	Relocated
6	House of Deepak Jung Pandey	1	5+560	2.5	Other side land purchased
7	Kitchen structure	1	0+846	3.5	Relocate
8	Toilet structure	1	5+230	3.8	Relocate

Source: field survey, August, 2009

Summary of Resettlement Plan Cost

Item		Unit	Total loss	Amount (NRs.)	Remarks
1. DIRECT COST					
1.1	Compensation for private land	sqm	195.99	11,06,681.36	
1.2	Public structure (Pati)	Number	2	1,42,771.20	
1.3	Private structure (houses, toilet & kitchen)	Number	4	16,54,800.20	
1.4	Reserve fund for absentee	hhs	191	20,00,000.00	
Sub-total				49,04,252.76	

2. INDIRECT COST					
2.1	Transportation and dismantling allowance	LS	6hhs	2,04,756.70	
2.2	Rental Stipend	LS	1hh	30,000.00	for 3 months
2.3	Deed Transfer Assistance	HHs	449 hhs	5,38,800.00	per households 1200
2.4	Official Deed Transfer fees	LS		3,00,000.00	
Sub-Total				1073556.70	
3	Income generation and Livelihood improvement programme	LS		4,76,000.00	
4	Appreciation Program for APs	LS		4,00,000.00	
Sub-Total				8,76,000.00	
Total				68,53,809.46	
5	Provisional Sum (5%)			3,42,690.47	
GRAND TOTAL				71,96,499.93	

Detail about the loss of structures along the road alignment and their cost will be included in the resettlement plan.

Annex XVI: Structure for Slope Stabilization

SN	Chainages	Civil structures/Mitigation Measures	Bio-engineering Measures
1.	0+020	Toe wall (20 m in length)	
2.	0+040	Toe wall (20 m in length)	
3.	0+060	Toe wall (20 m in length)	
4.	0+080	Toe wall (20 m in length)	
5.	0+100	Toe wall (20 m in length)	
6.	0+390	Gabion wall (67.50 cum)	
7.	2+530	Gabion wall (65 cum)	
8.	2+690	Gabion wall (90 cum)	
9.	1+437		Tree plantation

Source: Field Survey, August, 2009

Annex XVII: Impact on land use pattern

Since, there is no need of additional land there will be no impact on land and land use pattern.