

Environmental Assessment Document

Initial Environmental Examination

Grant Number: 0093 NEP

April 2011

Nepal: Rural Reconstruction and Rehabilitation Sector Development Program

Upgrading of Durlung-Salija Road Subproject, Parbat District

Prepared by the Government of Nepal

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

Initial Environmental Examination (IEE) Report

of

Upgrading of Durlung-Saliya Road Sub-project, Parbat

Submitted to:

Ministry of Local Development
Government of Nepal

Proponent:

District Development Committee
District Technical Office
KUSHMA, PARBAT

April, 2011

Prepared By:

District Implementation Support Team (DIST)
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ABBREVIATIONS

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

NAME AND ADDRESS OF THE PROPONENT

Name of Proposal

(Upgrading of) Durlung-Saliya Road Subproject, Parbat District

Name and Address of Proponent

District Development Committee (DDC), District Technical Office (DTO), Parbat District
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दुर्लुङ-सालिजा 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, स्विस् सरकार (SDC), ब्रिटिस सरकार (DFID) तथा ओपेक फण्ड (OFID)को आर्थिक सहयोगमा 'ग्रामीण पूर्वाधार पुनःनिर्माण र पुनःस्थापना आयोजना' नेपालको विसवटा जिल्लाहरूमा संचालन गरिरहेको छ । पर्वत जिल्लामा अवस्थित प्रस्तावित दुर्लुङ-सालिजा ग्रामीण सडकको स्तरउन्नती सोही कार्यक्रम अन्तर्गत संचालन गर्न लागिएको एक उपआयोजना हो । (प्रस्ताव) अन्तर्गत २१.०४२ कि.मी. लामो पर्वत जिल्लामा पर्ने उक्त कच्ची सडकको गावेल स्तरमा स्तरउन्नती गर्न प्रस्ताव गरिएको छ ।

प्रस्तावक

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

उद्देश्य

प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन अध्ययनको मुख्य उद्देश्य प्रस्तावित उप आयोजना निर्माण तथा संचालनबाट उक्त क्षेत्रको भौतिक, जैविक, सामाजिक, आर्थिक तथा सांस्कृतिक वातावरणमा पर्ने प्रभावहरू पत्ता लगाई नकारात्मक प्रभावको न्यूनिकरण 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 पर्वत जिल्लाको उतर भेगका वासिन्दाहरूलाई सदरमुकाम संगको पहुँच बढाउनेछ भने स्थानिय स्तरमा उत्पादन हुने तरकारी (आलु), फलफुल (सुन्तला, केरा) लाई बजार संग जोडी स्थानिय आय आर्जनमा अभिवृद्धि गर्नेछ ।

अध्ययन प्रकृया

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

यो प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन नेपाल सरकारको वातावरण संरक्षण ऐन २०५३, वातावरण संरक्षण नियामावली २०५४ अनुसार तथा स्थानिय विकास मन्त्रालयबाट मिति २०६६/०२/२५ मा स्विकृत गरिएको यसै प्रस्तावको कार्यसूची अनुसार तयार गरिएको छ । साथै, एशियाली विकास बैंकको Environmental Assessment Guideline, 2003 को समेत अनुसरण गरीएको छ ।

आयोजनाको विवरण

प्रस्तावित सडकले पर्वत जिल्लाको उतर भेगका वस्तीहरूलाई जिल्लाको सदरमुकाम संग जोड्दछ । यसको कूल लम्बाइ २१.०४२ कि.मि. छ । हाल उक्त ग्रामीण सडकको पुरै सडक खण्डमा गाडी चल्छ । यो सडक तीनवटा गाउँ विकास समितिहरू क्रमश सिवालय, दुर्लुङ र क्याङ्ग भएर जान्छ । सडकको कुल चौडाइ ५ मि. हुनेछ भने मोडहरूमा आवश्यकता अनुसारको चौडाइ हुनेछ । यो आयोजनाको कूल अनुमानित लागत नेरु. १५,२९,८०,१९५ रहेको र प्रति कि.मी अनुमानित लागत नेरु. ७२,५५,४०४ लाग्ने देखिन्छ ।

विद्यमान वातावरणीय स्थिति

यो उपआयोजना सीवालय गा.वि.स को दुर्लुङ चौक (पोखरा-वाग्लुङ राजमार्ग) बाट शुरुभई, समुद्री सतहदेखिको ८९१ मी. को उचाईबाट शुरु भएर समुद्री सतहदेखिको २०९४ मी. उचाईमा पुगी क्याङ्ग गा.वि.स को लेसपारमा गई टुङ्गिन्छ । यस सडक खण्डमा विभिन्न प्रकारका चट्टानहरू जस्तै सेडिमेन्टेड रक आदि पाईन्छन् । यस सडक खण्डमा विभिन्न प्रकारका बालुवा र गिट्टी मिसिएको माटोहरू सडक खण्डमा पाइन्छ । सडक खण्डमा पर्ने पानीका मुख्य श्रोतहरूमा पद्म खोलसी, साँदी खोलसी, लेसपार खोलसी आदि पर्दछन् । प्रस्तावित सडक क्षेत्रको वायु तथा पानीको स्तर सफा रहेको देखिन्छ साथै ध्वनि प्रदूषणको समस्या छैन । यो सडक प्रायः खेती गरिएको जमीन, बाभो जमीन, वन र वस्तीहरू भएर जान्छ ।

यस सडक खण्डमा पाइने मुख्य रुखहरूको प्रजातिहरूमा साल, चीलाउने, उतिश, लालीगुरास, बास र सल्लो का रुख आदि पर्दछन् । यो सडक खण्ड ३ वटा सामुदायिक वन भएर जान्छ । स्याल, बादर र दुम्सी आदि वन्य जन्तुका साथै काग, कालिज, परेवा र भागेरा आदि पंक्षीहरू यस सडक खण्ड भएर जाने वनमा पाईन्छन् । यो सडक खण्ड संरक्षित क्षेत्र वा मध्यवर्ती क्षेत्रमा पर्दैन ।

यो सडक खण्डको प्रभावित क्षेत्र भित्र सिवालय, दुलूङ्ग र क्याङ्ग गा.वि.स.का १३ वटा प्रमुख वस्तीहरू पर्दछन् । जम्मा घरधुरी संख्या ४०८ र जनसंख्या २३४० रहेको छ, र सरदर परिवार संख्या ५.७४ छ । यहाँ बसोबास गर्ने विभिन्न जात जातिका मानिसहरूमा मुख्य गरी बाहुन, क्षेत्री, मगर, गुरूङ्ग, नेवार र दलित पर्दछन्।

यहाँका बासिन्दाहरूको मुख्य पेसा कृषि र पशुपालन हो । यातायातको राम्रो सुविधा नभएको तथा पहाडी क्षेत्र भएकोले कृषि उब्जनीले मात्र पर्याप्त नहुने हुदा यहाँका अधिकांश मानिसहरू श्रम रोजगारीका अन्य पेशामा काम गर्ने तथा केही मानिसहरू सरकारी तथा अन्य संस्थामा काम गर्ने, थोरै मानिसहरूले व्यापार व्यवसाय गर्ने गर्दछन् । साथै जनसंख्याको उल्लेखनीय प्रतिशत मानिसहरू जीविकोपार्जनको सिलसिलामा हिउँदमा पोखरा, बागलुङ्ग, काठमाडौं तथा भारत लगायतका विभिन्न ठाउँमा रोजगारीको लागि जाने गर्दछन् ।

प्रमुख वातावरणीय प्रभावहरू

सकारात्मक प्रभाव

आयोजना बाट तत्कालै हुने लाभमा स्थानीय स्तरमा रोजगारीको सिर्जना हुनेछ । आयोजना संचालनको लागी करिव ९५६१२ मनव दिन वरावरको अदक्ष र १९१२२ मावन दिन वरावरको दक्ष श्रमशक्तीको 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 तथा देशका अन्य भागहरूसम्म पुग्न छिटो, छरितो तथा सुविधाजनक पहुँचको अवसर प्रदान गर्नेछ । सडक सुविधाको कारण दैनिक उपयोग गर्ने सामग्रीको सस्तो तथा सुलभ आपूर्ति हुनेछ । यसले स्थानीय जनताको आय तथा खाद्य सुरक्षामा अभिवृद्धि हुनेछ साथै स्थानीय श्रोत साधनको उपयोग गर्ने साना कृषि उद्योगहरूको प्रवर्द्धन हुनेछ । पहुँच तथा यातायातको अवसर सँगै शिक्षा, स्वास्थ्य, संचार, बजार, बैकिङ्ग 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 पर्न सक्ने नकारात्मक प्रभावहरू:

सडक निर्माणको क्रममा भिरहरू काट्दा, खन्दा निस्किएको माटो तथा गेगर थुपार्दा, निर्माण सामग्री भिक्नलाई खानी सञ्चालन गर्दा त्यस क्षेत्रको भिरालो ठाँउहरूमा असर पर्न गई पहिरो तथा भु-क्षय हुन सक्ने सम्भावना रहन्छ । फोहर तथा खन्दा निस्किएका माटो, गेगर को उचित व्यवस्थापन हुन सकेन भने यसले भुक्षय बढाउन तथा जल प्रदुषण गराउन सक्छ । सडक निर्माणको दौरान बाटो चौडाई ५मी. कायम गर्नको लागी १.२७ हेक्टर जंगल क्षेत्र प्रयोग हुनेछ, तथा विभिन्न जातका गरी करिव ११२ रुखहरू विरुवाहरू काटिनेछन्। सडक निर्माण क्रियाकलापबाट जीवजन्तुलाई असर पर्ने तथा सडक निर्माण कार्यमा खटिएका कामदारहरूले वनका जीवजन्तुलाई जिस्क्याउने तथा तिनको शिकार गर्नसक्ने सम्भावना रहेता पनि ति न्युन हुनेछ ।

सडक निर्माण कार्यको दौरान १.१० हेक्टर खेती गरिएको जमीन अधिग्रहण गर्नुपर्ने हुन्छ जसले गर्दा वार्षिक १.५६ टन वालीको उत्पादनमा असर पुग्नेछ । सडक निर्माण कार्यको दौरान ७ वटा घर(Ch, 10+800, 10+900, 10+700, 10+750, 11+000, 11+200, 12+100), १ वटा गोठ (Ch 4+100), १ वटा स्कुल (Ch11+900), र २ वटा चर्पीहरू(Ch1+000, 12+100) लाई क्षति पुग्ने देखिन्छ । निर्माण कार्यको क्रममा श्रमिकहरू तथा स्थानीय जनतालाई स्वास्थ्य समस्या पर्न सक्छ, तथा अप्रिय दुर्घटनाहरू घट्न सक्छन् ।

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

प्रभाव न्युनिकरणका उपायहरू:

यस आयोजनाहरूलाई वातावरण मैत्री बनाउनका लागी सकारात्मक प्रभावलाई बढावा गर्ने तथा नकारात्मक प्रभावहरूलाई नियन्त्रण या न्युनिकरण गर्ने थुप्रै उपायहरू यस प्रतिवेदनमा प्रस्तावित गरिएको छ । जनताले राजी खुशीले बाटोको लागी

दिएको वाहेक आयोजनाले गरिवीका रेखामुनि परेका परिवारहरुको अधिग्रहण गर्ने सवै जग्गाको प्रचलित मुल्य अनुसार क्षतिपुर्ति दिनेछ । सम्भव भए सम्म सडक मानव श्रम प्रविधिमा आधारित हुनेछ तथा LEP (श्रम मुलक वातावरण मैत्री सहभागीता मुलक) ढंगले निर्माण गरिने छ । आयोजनाले प्रभावित जनतालाई निर्माण कार्यमा रोजगारीमा तथा शिपमुलक तालिममा प्रथमिकता दिनेछ । आयोजना निर्माणको क्रममा जग्गा फँडानी गर्दा, जमिन काट्दा, खानी सञ्चालन गर्दा, खन्दा निस्किएका माटो, गेगर थुपार्दा तथा अन्य संवेदनशील कार्य गर्दा त्यस क्षेत्रको वातावरणलाई सुरक्षित राख्न विशेष ध्यान दिनेछ । बायो इन्जिनियरिङ र वाटो छेउ-छाउ वृक्षारोपण गरीने छ । निर्माण कार्यको क्रममा श्रमिकहरुको विमा गरिने छ तथा सुरक्षाका सम्पूर्ण सामग्री श्रमिकहरुलाई प्रयोगमा ल्याउन दिइने छ । वन, जीवजन्तुको संरक्षण गर्न तथा सामाजिक अक्षुण्णतालाई कायम राख्न यस चरणमा जनचेतनामुलक कार्यक्रमहरु तथा तालिमहरु सञ्चालन गरिनेछ । निर्माण कार्यको क्रममा श्रमिकहरुको विमा गरिने छ तथा सुरक्षाका सम्पूर्ण सामग्री श्रमिकहरुलाई प्रयोगमा ल्याउन दिइने छ । निर्माण स्थलहरुमा प्रार्थमिक उपचारको सामग्रीहरुको व्यवस्था गरिने छ । काटिएका रुख विरुवाहरुको क्षतिपुर्ति वापत १:२५+१० % अनुपातमा वृक्षारोपण गरिनेछ । वृक्षारोपणमा संरक्षित प्रजातिकाहरुलाई प्राथमिकता दिइनेछ । सडक सञ्चालनका क्रममा सडकमा देखिएका अस्थिरताहरुलाई नियमित रुपमा मर्मत संभार गरिनेछ । सडकमा तथा सडकको कारण नजिकैको खेतवारीमा पानी जम्मा हुन नदिन उचित निकासको व्यवस्थापन गरिनेछ । सडक दुर्घटनाबाट बचाव गर्ने उपायहरु अवलम्बन गरिनेछ ।

वातावरण व्यवस्थापन योजना

यस प्रतिवेदनमा वातावरण व्यवस्थापन योजना अन्तर्गत आयोजनाबाट पर्ने संभावित असरहरु, असरहरुको प्रभाव, न्युनिकरण विधि, अनुगमन विधि तथा कार्यतालिका प्रस्तावित गरिएको छ । यसका साथै न्युनिकरणका उपायहरुको तथा अनुगमन कार्यको कार्यन्वयन गर्ने जिम्मेवार निकायहरुको पनि पहिचान गरिएको छ । अनुगमनका लागी आवश्यक भौतिक, जैविक, सामाजिक-आर्थिक तथा साँस्कृतिक वातावरणका विभिन्न अनुगमन सुचाङ्कहरुको पनि पहिचान गरिएको छ । वातावरण व्यवस्थापन योजना कार्यन्वयन गर्न निम्नानुसार खर्च हुने अनुमान गरिएको छ ।

क्र. सं.	विवरण	रकम (ने.रु.)	कैफियत
१.	वातावरण सम्बन्धी जनचेतनामूलक तालिम तथा अन्य तालिम	३००,०००/-	आयोजनाको बजेटमा समावेश गरिने ।
२.	श्रमिकहरुको विमा	४००,०००/-	BoQ मा समावेश गरिने ।
३.	बायो-इन्जिनियरिङ/सडक छेउछाउ वृक्षारोपण	३,६२५,२०७/-	BoQ मा समावेश गरिने ।
४.	पुनर्वास तथा जग्गा अधिग्रहण	४,८०५,४३२/-	पुनर्वास योजनामा समावेश गरिने ।
५.	पुनर्निर्माण तथा अन्य	५००,०००/-	BoQ मा समावेश गरिने ।
६.	क्षतिपुर्ती वृक्षारोपण	३०४,९६९.००/-	आयोजनाको बजेटमा समावेश गरिने ।
७.	सामाजिक कार्य लागत	१,०४३,५००.००/-	सामाजिक योजना तथा आयोजनाको बजेटमा समावेश गरिने ।
८.	पेशागत स्वास्थ्य सुरक्षा तथा जानकारीमूलक सूचनापाटी	५००,०००/-	BoQ मा समावेश गरिने ।
९.	अनुगमन तथा मुल्यांकन	२,००,०००/-	आयोजनाको बजेटमा समावेश गरिने ।
	जम्मा :	११,६७८,३०० /-	

निष्कर्ष

पहिचान गरिएका प्रायः वातावरणीय प्रभावहरु थोरै क्षेत्रमा तथा मुख्य गरी निर्माणकार्यका वखतमा सिमित रहेको पाइएको छ । प्रस्तावित न्युनिकरण विधिको पालना गरिएमा पहिचान गरिएका वातावरणीय प्रभावहरुको न्युनिकरण अथवा नियन्त्रण गर्न सकिनेछ । सडक निर्माण गर्दा प्रभावित व्यक्तिहरुको सम्पत्तीको क्षतिपुर्ति गर्न पुनर्वास योजनाको आवश्यकता पर्नेछ । वातावरण व्यवस्थापन योजना अन्तर्गत उल्लेख गरिएको उपायहरुको कार्यान्वयन गरिएमा यस आयोजनाको कार्यान्वयनले आयोजना क्षेत्रको भौतिक, जैविक, सामाजिक - आर्थिक तथा साँस्कृतिक वातावरणमा उल्लेखनीय नकारात्मक प्रभाव नपर्ने देखिन्छ । यस प्रारम्भीक वातावरणीय अध्ययनको आधारमा यस प्रतिवेदनमा उल्लेख गरिएको वातावरणीय व्यवस्थापन योजनालाई पूर्ण रुपमा लागु गरी प्रस्तावित आयोजना कार्यान्वयन गर्न सिफारिश गरिन्छ । आयोजनाको वातावरणीय प्रभाव मुल्याङ्कन स्तरमा अध्ययन गर्न आवश्यक नरहेको सिफारिश समेत गरिन्छ ।

EXECUTIVE SUMMARY

Background

Government of Nepal has received financial assistance from ADB, SDC, DFID and OFID for implementation of the Rural Reconstruction and Rehabilitation Sector Development Program (RRRSDP). The RRRSDP aims for reconstruction and rehabilitation of rural infrastructures damaged in the twenty conflict affected districts of the country. The 21.042 km long Durlung-Saliya Rural Road in Parbat district is one of the Sub Projects under RRRSDP. It is an existing earthen road proposed for upgrading in gravel standard.

Project Proponent

The proponent of the proposed road Subproject for Initial Environmental Examination (IEE) is District Development Committee (DDC)/District Technical Office (DTO), Parbat. Ministry of Local Development (MoLD) is the authorized body for approving the IEE of the proposed Subproject.

Objectives of the IEE Study

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 provide access to district headquarter, living in northern area of Parbat district. As a result socio-economic condition of people living in that area will enhance as local products like vegetables (potato), and fruits (orange and mango) will get access to market.

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 May/June 2009. The survey methods included walk-through survey along the proposed alignment with checklists, conduction of sample household survey, organizing focus group discussions (FGD) in the related VDCs, and information supplemented by the resettlement and technical team of the Subproject.

The IEE report has been prepared following the Environmental Protection Act, 2053 BS (1997 AD) and Environmental Protection Rules, 2054 BS (1997 AD) (second amendment 2007) of the Government of Nepal (GoN); and Environmental Assessment Guidelines, 2003. The report follows the Terms of Reference for IEE Study approved by MoLD on 25/02/2066 BS.

Project Description

The proposed road links with Northern part of the remote community of Parbat district with the district headquarter. The total length of the road is 21.042Km. The road alignment is already opened and motorable. The road passes three village development committees namely Shivalaya, Durlung and Kyang. The average width of the road is 5 m and geometry will be improved as per design required. The total project cost is NRs 152,980,195 and per km cost is NRs. 7,255,404.

Existing Environmental Condition

The road starts from Durlung Chowk (Pokhara-Baglung Highway), Shivalaya VDC at 891 m amsl and ends at Lespar of Kyang VDC at 2094 amsl. The mountain in the area comprise of mainly sedimented rock at various places. Generally, boulder mixed soil is found along the road alignment. Main water bodies found across the road alignment are Padam Kholsi, Sandhi Kholsi, and Lespar Kholsi etc. Ambient air and water quality of the proposed project area is observed to be good and there is no noise pollution. The road mainly passes through cultivated land, barren land, forest and settlements.

The dominant forest species found in the road alignment are Uttis (*Alnus nepalensi*), Chilaune (*Schima wallichii*), Bamboo (*Dendrocalamus*), Sal (*Shorea rubosta*), Sallo (*Pinus roxburghii*), and Laligurans (*Rhododendron*). The road passes through three community forest. Fox (*Vulpes vulpes*), Monkey (*Macaca mulatta*), and Porcupine (*Hystrix indica*) etc are the common wildlife and Similarly birds like *Corvus splendens* (Crow), *Passer domesticus* (Sparrow), *Lophura lencomelana* (Kalij Pheasant), *Columba livia* (Pigeon) are

found in the surrounding forest along the road alignment. The road does not fall under any protected or buffer zone area.

There are 13 major settlements along the ZoI of the proposed road alignment in Shivalaya, Durlung and Kyang VDCs with total population of 2340 persons (408 households) and average family size of 5.74. Diverse ethnic groups such as Brahmin, Chhetri, Magar, Gurung, Newar and occupational caste (Damai, Kami, and Sarki) live along the ZoI of road alignment.

Subsistence agriculture and livestock farming are the main occupation. Due to limited transportation facilities and high altitude, agriculture farming is not enough for subsistence level due to small landholding size and lack of irrigation facilities. Therefore people are involved in government and non government services and few are involved in business. Moreover, significant percentage of the economically active male population also migrates to various places including Pokhara, Baglung, Kathmandu and India seasonally during slack farming season for employment

Major Environmental Impacts

Beneficial Impacts

The immediate benefit from this road Subproject is employment opportunities. The implementation of Subproject require about 95612 man-days of unskilled and 19122 man-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. Daily commodities will become cheaper with better transportation facility hence, agricultural production will increase. This will ensure better economic condition and food security of the people living in the ZoI of the project area. Moreover this will promote the small agro based industries that uses local resources. Easy access and opportunity of better transportation system will develop other sectors like education, health, communication, market, banking and other socio-economic sectors. This will increase the overall living condition of the people living in ZoI of project area. The better land network will result in increased land price which will be beneficial for land owners.

Adverse Impacts

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

During road widening and construction required 1.27 Ha of forest area and different type of tree total 112 nos will have to be cleared. Also during construction of road there might be possible impacts on wildlife as workers might harass/ hunt the wildlife in the nearby forests, however, such effects are very minimum.

During construction stage, there will be loss 1.10 Ha of agricultural land which results in annual reduction of more than 1.56 MT of agricultural production mainly paddy, wheat, maize and millet. 7 residential houses (Ch, 10+800, 10+900, 10+700, 10+750, 11+000, 11+200, 12+100), 2 toilet (Ch1+000, 12+100), 1 cowshed (Ch 4+100), and 1 school building (Ch11+900) will be affected. Labours and local people are prone to health effects and accidents relating to construction activities.

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

Mitigation measures

The various benefit augmentation measures and adverse impact mitigation measures have been proposed in the report to make this project environment friendly. Other than land donated by local people for the projects, adequate compensation will be provided to affected poor and marginalize household for all the lands that need to acquire. The construction of road will be based on Labour-based, Environment friendly and Participatory (LEP) Approach to extend possible. Affected families will be given high priority for employment and skill

development trainings. Necessary measures will be taken to reduce the adverse effects that might arise from site clearance, cutting of slopes, disposal of spoils and quarrying activities. Bio-engineering and roadside tree plantation will be done. Necessary trainings and awareness programs will be conducted. Necessary measures will be adopted for protection of flora and fauna. At construction site, the workers will be provided insurance, first aid facilities and safety equipments. Loss of trees will be compensated by planting of trees in the ratio of 1:25+10% for the numbers of trees that need to be cut down during construction at forest area. 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.

Environmental Management Plan

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

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

SN.	Description	Amount (NRs.)	Remarks
1	Awareness raising training and other training	300,000.00	To be included in project cost
2	Insurance of workers	400,000.00	To be included in BoQ
3	Bio-engineering	3,625,207.00	To be included in BoQ
4	Resettlement Cost (Compensatory for properties)	4,805,432.00	To be included in Resettlement plan
5	Restoration or relocation of affected infrastructures, Spoil management, Reinstatement of quarry, stockpiling etc.	500,000.00	To be included in BoQ
6	Compensatory Plantation cost	304,161.00	To be included in project cost
7	Social Cost	1,043,500.00	To be included in Social plan, project cost
8	Occupational health and safety, Health awareness, Information signboard	500,000.00	To be included in BoQ
9	Monitoring	200,000.00	To be included in project cost
	Total	11,678,300.00	

Conclusion and Recommendation

The IEE study of the proposed Durlung-Saliya road sub-project reveals that 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 Subproject 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. Parbat District is one of the project districts under RRRSDP. This Proposal is for upgrading / of existing Durlung-Saliya district road of 21.042 km long in gravel standard.

1.2 The Name and Address of Proposal

- 3.
- | | |
|-----------------------|---|
| Name of Proposal: | Upgrading of Durlung-Saliya District Road, Parbat District, Nepal |
| Name of Proponent: | District Development Committee/District Technical Office, Parbat |
| Address of Proponent: | Kushma, Parbat |
| | Phone No: 067-420151, 067-421165 |

1.3 Need and Objectives of the IEE Study

4. **Need:** IEE study of the Proposal is a legal necessity according to Environment Protection Act, 2053 BS (1997 AD); and Environment Protection Rule, 2054 BS (1997 AD) of GON. Similarly, an IEE study is required according to provision of Environmental Assessment Guidelines, 2003; and Safeguard Policy Statement, 2009 of ADB.

5. **Objectives:** The main objective of the IEE study is to identify the impacts from the implementation and operation of the Proposal on the physical, biological, socio-economic 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 sub-project.

1.4 Methodology adopted

6. The IEE study has followed the provisions of the EPA, 2053 BS (1997 AD) and EPA, 2054 BS (1997 AD), and the provisions of ADB. It follows methodology suggested in the approved Terms of Reference for IEE Study (please refer Annex 1). For the collection of environmental features related to bio physical environment, maximum 100 meter distance observable from the centre of the road alignment was taken as an influence area and socio-economic and cultural environment was taken of ZoI (one and half hour walking distance from the centre line of the road) information of the Subproject area. Data collection on physical, biological, socio-economic and cultural environment of the Subproject area was done in May/June 2009. Field survey, sample household survey, organization of Focus Group Discussions in the related VDCs was carried out and necessary information was collected. The DDCs officials, VDC and Community Groups were also contacted to verify information to solicit their concerns. Based on the analysis of information the impacts have been predicted, mitigation measures prepared and monitoring plan has been developed.

1.5 Public Consultation

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

- **Publication of notice-** a 15 days public notice was published on **Shrawan 10, 2066** in the Naya Patrika, a national daily newspaper (**see Annex V**) seeking written opinion from concerned VDCs, DDC, schools, health posts and related local organizations. A copy of the public notice was also affixed in the above

mentioned organizations and deed of enquiry (muchulka) was collected (see **Annex VI** for deed of inquiry and **Annex VII** for the names of organizations).

- IEE team also carried out interaction with local communities and related stakeholders like District Forest Office, District Soil Conservation Office, District Agricultural Development Office and others during field survey to collect the public concerns and suggestions (see **Annex VIII** for the list of persons consulted). Moreover, Focus Group Discussions were conducted to collect and solicit information regarding the bio-physical and socio-economic and cultural aspects of the road. Summary of minutes of meeting with local people is given in **Annex IX** and following **Table 1.1**.
- Draft IEE report will be sent to Shivalaya, Durlung and Kyang VDCs for Public disclosure. Recommendation letters were also obtained from above mentioned VDCs as given in **Annex X**. A copy of draft IEE will also be kept in information center of DDC, Parbat for Public disclosure. After reviewing draft IEE report and incorporating the suggestions from the concerned stakeholders, final IEE report will be prepared and sent to PCU for approval from MLD and ADB.

Table 1.1: Summary of FGD Meeting

Location	Date	No. of Participants		Issues, Suggestions and Discussions	Decision
		Male	Female		
Shivalaya	09 Sept, 09	10	2	No major issues were arised regarding the negative impacts of the projects on the surrounding environment.	The adverse environmental impacts on VDCs due to the construction of this road will be minimum. However, adequate benefit augmentation measures and mitigation measures will be provided.
Durlung	07 Sept, 09	9	3		
Kyang	14 Sept, 09	11	2		

1.6 Information Disclosure

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

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

2.0 Description of the Proposal

9. The proposed 21.042 km long earthen Durlung-Salija road Subproject lies in the Northern part of Parbat district in Western Development Region of Nepal. It links the remote area of the district to headquarter. This road starts from Shivalaya VDC Kushma (District headquarter-Pokhara-Baglung Highway) and ends at Lespar of Kyang VDC. In between, the road passes through Shivalaya, Durlung and Kyang VDCs.

10. The road was opened in 2000 and vehicles ply during dry season. The alignment requires widening, geometrical correction in bends, and grade improvements at chainage 4+200-4+300, 12+000-12+300 and 13+200-13+300. The location and alignment of the road is given in **Figure 2.1 and 2.2**. The total project cost is NRs. 152,980,195 and per km cost is NRs. 72,55,404 as shown in **Annex III**. Activities included during the road construction are: Site clearance, Pavement work, Structures work (toe wall, retaining wall, breast wall, river training etc.), Earthwork, Bio-engineering, Cross drainage works and Side drain works.

2.1 Salient features of the Road Subproject

1. Name of the Project	:	Durlung-Salija Road
2. Location		
2.1 Geographical Locations		
2.1.1 Start Point	:	Durlung Chowk of Kusma Bazaar, Shivalaya VDC
2.1.2 End Point	:	Lespar of Kyang VDC
2.2 Geographical Feature		
2.2.1 Terrain	:	Hill
2.2.2 Alignment	:	Upper valley
2.2.3 Altitude	:	891 m at Durlung Chowk and 2094 m at Lespar
2.2.4 Climate	:	Sub-Tropical, Temperate
2.2.5 Soil	:	Clay and Boulder Mixed Soil.
2.2.6 Landuse Pattern	:	Cultivated Land, Barren Land, Forest and Built up Area.
		The Road alignment does not pass through any national Park, conservation area hunting reserve, wetland and their Buffer zone or through any archeological/historical important place.
3. Classification of Road	:	District Road (Rural Road Class A)
4. Length of Road	:	21.042 km
5. Standard of Pavement	:	Gravelled
6. Design speed	:	20 km/hr
7. Major Settlements	:	Durlung Chowk, Godame, Shlyan, Thumka, Kamidanda, Rohote, KotThar, Deurali, Gaudamuni, Tallo halhale, Upplo Halhale, Meksar, Lespar.
8. No. of Household	:	408 HHs
9. VDCs along the Road	:	Shivalaya, Durlung and Kyang
10. Existing Traffic	:	4 bus, 6 truck/tractor and 10 jeep ply daily during dry season
11. Right of way	:	5m each side (center line)
12. Formation width	:	5 m
13. Carriageway width	:	3. m
14. Lane	:	Single
15. Structures		
15.1 Stone Massonary	:	4072 Cum.
15.2 Dry Stone	:	1643 Cum.
15.3 Gabion Wall	:	5394 Cum
15.4 Bio-Engineering	:	3% to total cost (NRs. 3,625,207.00)
16. Earth Work		
16.1 Cutting	:	236396 Cum
16.2 Filling	:	21780 Cum
17. Project cost		
17.1 Total Cost	:	NRs 152980195.00
17.2 Costs per km	:	NRs 7255404.00
18. Employment generartion:		
18.1 Total employment	:	114734

18.2 Skilled	:	19122
18.3 Unskilled	:	95612
19. Gradient	:	Max. 12% (Design gradient)
20. Radius	:	Min. 10

2.2 Relevancy of the proposal

11. The project area being within Parbat District, it belongs to remote and underdeveloped Northern part of the district. The area has high potential in production of vegetable, milk and Potato. The 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.

2.3 Construction Approach and activities

12. The construction approach will be labour-based, environment-friendly and participatory (LEP) and Contractor based. The important features of the approach are (i) construction with balanced cut and fill; (ii) manual work and use of hand tools and small equipment rather than heavy machinery; (iii) bio-engineering for slope stabilization; (iv) use soft engineering structures. Contractor based 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.

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

2.4 Proposed Schedule for Implementation of Sub-project

14. Following table shows the proposed implementation schedule for Durlung-Saliya road sub-project:

Table 2.1: Sub-project Implementation Schedule

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

Note:

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

Figure 2.1 Map of Nepal showing Parbat District

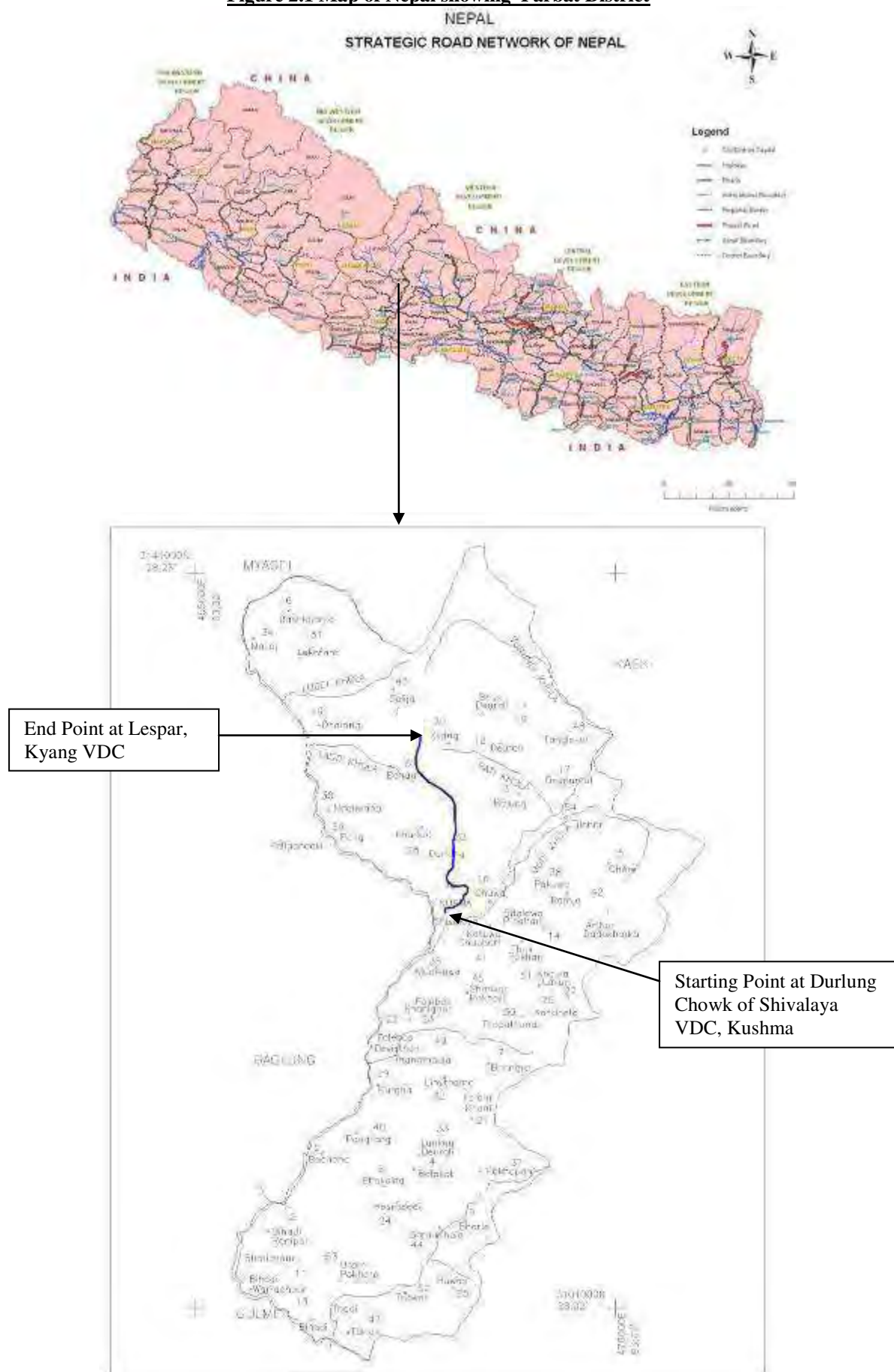
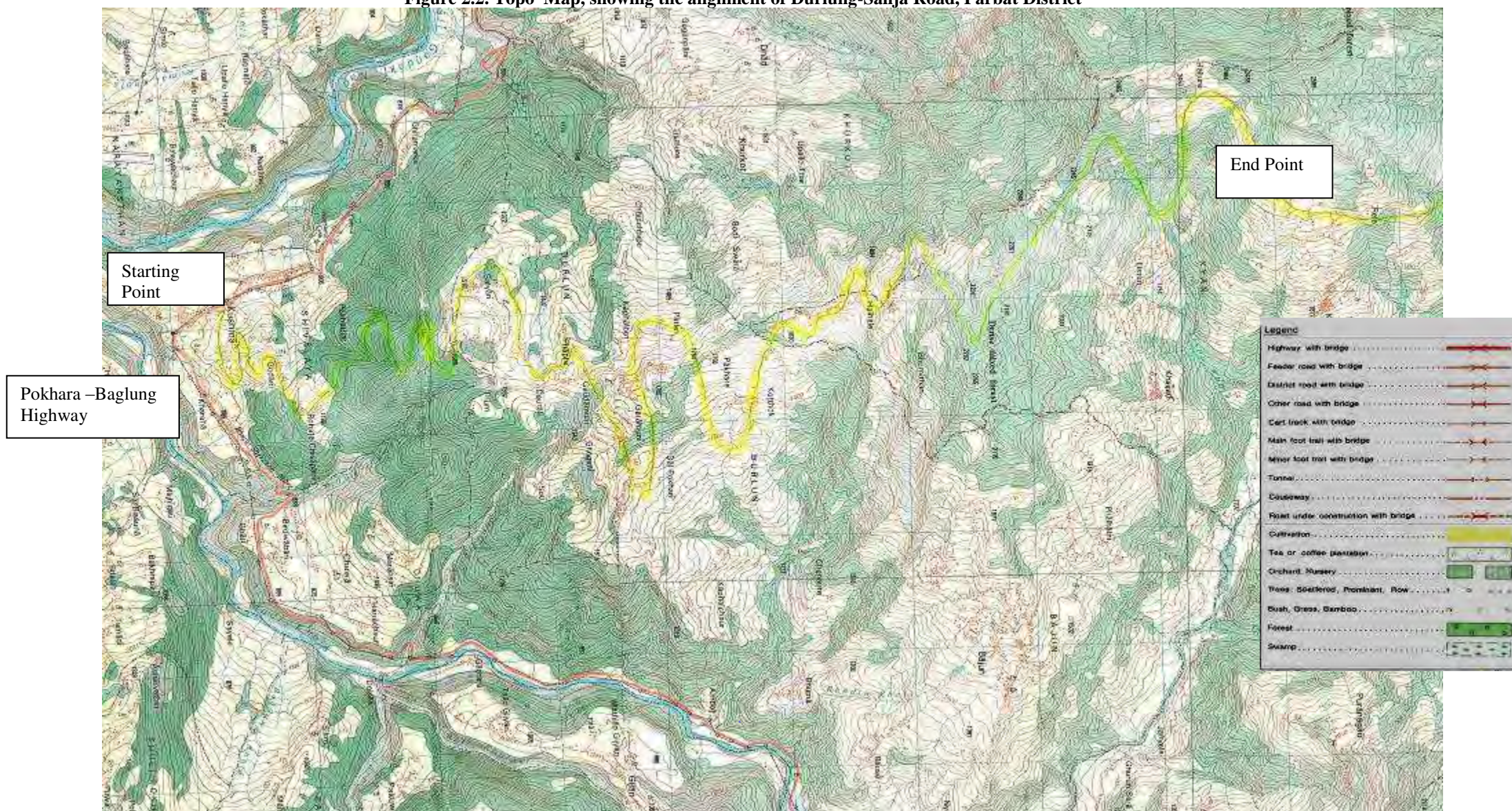


Figure 2.2. Topo Map, showing the alignment of Durlung-Saliya Road, Parbat District



3.0 Review of Relevant Acts, Regulations and Guidelines

15. The IEE study has followed the provisions of following acts, regulations and guidelines of Government of Nepal and ADB to ensure development and conservation of environment.

Table 3.1: Review of Environmental Acts, Regulations and Guidelines

SN	Environmental Acts, Regulations and Guidelines	Description of Requirements
1	Three Years Interim Plan, 2007/08-2009/10, GoN	Requires all projects will be formulated and constructed based on methods that optimally utilize the local skill and resources and generate employment opportunities.
2	Environmental Protection Act, 2053 BS (1997 AD), GoN	Any development project, before implementation, shall pass through environmental assessment, which will be either IEE or an EIA depending upon the location, type and size of the projects.
3	Environmental Protection Rule 2054 BS (1997 AD) (amendment, 2007), GoN	The EPR and its schedules clearly provide various step-wise requirements to be followed while conducting the IEE study. It also obliges the Proponent to timely consult and inform the public on the contents of the proposal and IEE study.
4	Forest Act, 2049 BS (1993 AD) (amendment, 2007), GoN	Requires decision makers to take account of all forest values, including environmental services and biodiversity, not just the production of timber and other commodities. It includes several provisions to ensure development, conservation, management, and sustainable use of forest resources based on approved work plan.
5	Forest Rules, 2051 BS (1995 AD), GoN	Elaborates legal measures for the conservation of forests and wildlife. Expenses incurred for cutting trees and transportation shall be borne by proponent.
6	Batabaraniya Nirdesika (Nepal; MLD), 2057, GoN	The directive is focused in the practical implementation of small rural infrastructures through the minimization of environmental impacts. This directive includes the simple methods of environmental management in the different phases of the project cycle.
7	National Park and Wildlife Conservation Act, 2029 BS (1973 AD), 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 2055 BS (1999 AD) (1999) and Regulation 2055 BS (1999 AD), GoN	Empowers the local bodies for the conservation of soil, forest and other natural resources and implements environmental conservation activities
9	Land Acquisition Act, 2034 BS (1977 AD) and Land Acquisition Rules, 2026 BS (1969 AD), GoN	Specifies procedural matters on land acquisition and compensation
10	National Environmental Impact Assessment Guidelines, 1993 (2050 BS), GoN	Provides guidance to project proponent on integrating environmental mitigation measures, particularly on the management of quarries, borrow pits, stockpiling of materials and spoil disposal, operation of the work camps, earthworks and slope stabilization, location of stone crushing plants etc.
11	APPROACH for the Development of Agricultural and Rural Roads, 1999 (2055 BS), GoN	Emphasizes labor based technology and environmental friendly, local resource oriented construction methods to be incorporated actively in rural infrastructure process.
12	RRRSDP Environmental Assessment & Review Procedures (EARP), 2007, GoN	For preparation of environmental assessments of future subprojects under Rural Reconstruction and Rehabilitation Sector Development Program (RRRSDP), this EARP includes: i) The process to be adopted while preparing environmental reports, ii) the potential environmental impacts that could

		result from undertaking the Project based on the Initial Environmental Examinations (IEEs) of sample core subprojects; iii) the proposed mitigation measures to avoid the identified impacts; iv) institutional capacity assessment and strengthening arrangements; v) legal framework for environmental assessment, domestic and the Asian Development Bank (ADB) environmental assessment and review procedures; and finally vi) the approaches to be adopted during implementation of the Project in order to ensure that environmental aspects are dealt with in a comprehensive manner.
13	Reference Manual for Environmental and Social Aspects of Integrated Road Development, 2003 (2060 BS), GoN	Suggests stepwise process of addressing environmental and social issues alongside the technical, financial and others
14	Green Roads in Nepal, Best Practices Report: An Innovative Approach for Rural Infrastructure Development in the Himalayas and Other Mountainous Regions, 1999 (2055 BS), 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, 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, 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, 2048 BS (1992 AD)	Regulates the working environment and deals with occupational health and safety.
19	Child Labor (Prohibition and Regulation) Act, 2056 (2000)	No child having not attained the age of 14 years shall be engaged in works as a laborer.

4.0 Existing Environmental Condition

16. Baseline information on the existing physical, biological as well as socio-economic and cultural environment of the Subproject is described in this chapter.

4.1 Physical Environment

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

4.1.1 Topography

18. The elevation of the starting point of the road at Durlung Chowk (Pokhara-Baglung Highway) of Shivalaya VDC is 891m amsl and the end of road at Lespar of Kyang VDC is 2094m amsl. The road alignment passes through hill. The existing grade of the road varies from 4% to 22%. Major portion of the road passes along the south-west facing slope.

4.1.2 Geology and Soil Type

19. The road section comprises of sedimented highly weathered types of rocks. The road passes through fragile and erosion prone hills at different locations. Soil type along the alignment can be classified as alluvial, colluvial, boulder mixed soil, and soft rock.

4.1.3 Climate

20. The road lies in the Subtropical and temperate 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 1532 mm. Average minimum temperature 4° C and average maximum temperature 31°C is observed in the area. (Source: District Profile of Parbat)

4.1.4 Hydrology and Drainage System

21. There is no major natural drainage along the alignment. Many dry streams are across the road alignment. Main water bodies found across the road alignment are Padam Kholsi, Sandhi Kholsi, and Lespar Kholsi. No wetlands are found within the vicinity of the road. The summary of the cross drainage works along the road alignment is given in **Annex XIV**.

4.1.5 Soil Erosion and Sedimentation

22. The stability of slopes along the road corridor depends upon slope angle, the material constituting the slope, rock discontinuities and hydrological conditions. The road alignment pass through a major landslides at 5+500 and other minor landslide and erosion prone areas are at Ch. 2+000, 3+700, 5+000, 5+240 and 12+700. The main causes for occurring slides are rock weathering, precipitation and surface runoff.

4.1.6 Existing Road Condition

23. The maximum and the minimum gradient along the road alignment is 22% and 4% respectively. The whole length of the road alignment is motorable. The width of the road alignment in average is about 4m. The road is operable only during dry season. Now vehicle (4 bus, 6 truck/tractor and 10 jeep) ply daily up to Durlung 11+500 during dry season. Beyond 11+500 grade and curve improvement is essential at many locations.



Existing road at 6+000 area, Shlyan

4.1.8 Land Use

24. Land use pattern of the area through which the road passes have been classified into four types: cultivated land, Built up area, forest and barren land. The details is given in **Table 4.1**.

Table 4.1: Summary of land use pattern along the road alignment

Land use	Chainage		Length (m)	Existing width (m)	Additional Width (m)	Additional Area (ha)
	From	To				
Cultivated land	0+950	2+050	2000	4	1	0.2
	3+000	3+400	400	3.5	1.5	0.06
	6+000	8+750	2750	3.5	1.5	0.4125
	8+750	10+800	2050	4	1	0.205
	10+800	12+300	1500	3.5	1.5	0.225
Total cultivated land						1.1025
Barren and Pasture land	18+400	19+600	1200	3.6	1.4	0.168
	19+600	21+042	1442	3.5	1.5	0.21
Total Barren land						0.378
Forest	2+050	3+000	950	3.5	1.5	0.1425
	3+400	6+000	2600	4	1	0.26
	12+300	13+500	1200	3.5	1.5	0.18
	13+500	15+200	1700	3.8	1.2	0.204
	15+200	18+400	3200	3.5	1.5	0.48
Total Forest land						1.2665
Built up area	0+000	0+950	950	3.5	1.5	0.1425
Total Built up area						0.1425

Source: Field Survey, May/June, 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. Likewise, water quality in the road section is observed to be good since it is free from any kind of pollution sources. There is no defecation problem observed around the drinking water sources. However, during the monsoon season the quality of water may be polluted due the accumulation of silt, landslide and gully erosion. The project area does not have any sources of noise nuisance

4.2 Biological Environment

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

4.2.1 Vegetation

27. The dominant species found in the road alignment are *Alnus nepalensis* (Uttis), *Schima wallichii* (Chilaune), *Pinus roxburghii* (Khote Salla), *Rhododendron* (Laliguras), *Sal* (*Shorea rubosta*), *Pinus roxburghii*. Other plant species found within ZoI of the sub-project are *Buddleja asiatica* (Bhimsen pati), *Litsea monopelata* (Kutmiro), *Ficus semicordata* (Khanyu), *Lindera neesiana* (Siltimur), *Ficus bengalensis* (Bar), *Fraxinus floribunda* (Lankuri), *Prunus cerasoides* (Painyu), *Ficus religiosa* (Pipal), *Bahunia purpurea* (Tanki), *Bahunia variegata* (Koiralo), *Albizia labbeck* (Sirish), *Bauhinia vahili* (Bhorla), *Bassia latifolia* (Mauwa), *Pisidium guyava* (Amba), *Drepanostachyum intermedium* (Nigalo), *Dendrocalamus strictus* (Bans), *Maesa chisia* (Bilaune), *Urtica dioica* (Sisnoo), *Vitex negundo* (Simali), *Woodfodia fruticosa* (Dhangeri). No major NTFPs are not found along the road alignment.

28. The road alignment passes through Vadhkhaur Community Forest (Ch 2+000-3+000), Gajaite Community Forest (Ch 3+400-6+000) and Kyang Community forest (Ch 13+800).

4.2.2 Wildlife

29. Fox (*Vulpes vulpes*), Monkey (*Macaca mulatta*) and Porcupine (*Hystrix indica*) etc are the common wildlife and Similarly birds like *Corvus splendens* (Crow), *Passer domesticus* (Sparrow), *Lophura lencomelana* (Kalij Pheasant), *Columba livia* (Pigeon) are found in the surrounding forest along the road alignment.

4.2.3 Endangered and protected species

30. **Faunal species:** Among the fauna present in the forest area along the road alignment, Dumsi (*Hystrix indica*), Monkey (*Macaca mulatta*) are listed in CITES Appendix-II.

31. Floral Species: Sal (*Shorea rubosta*), is prohibited species for export to other countries according to the Forest Act 2051 B.S.

4.2.3 Aquatic Life

32. There is no river crossing and no major aquatic life is found.

4.3 Socio-economic and Cultural Environment

4.3.1 Population, Household and Ethnicity

33. The alignment covers three VDCs namely: Shivalaya, Durlung and Kyang VDCs. Major Settlements within ZoI of the project are Durlung Chowk, Godame, Shlyan, Thumka, Kamidanda, Rahote, KotThar, Deurali, Gaudamuni, Tallo Halhale, Upplo Halhale, Meksar, and Lespar. Major castes in the area are Brahman, Chhetri, Newar, Gurung, Magar and Dalit. Major occupations include agriculture, business, livestock and services.

4.3.2 Main Occupation

34. The main occupation of all people residing within the ZoI of the road alignment is agriculture and livestock. However, agriculture farming is not enough for subsistence level due to small landholding size and lack of irrigation facilities. Therefore people are carrying out other economic activities like labour for different works.

4.3.3 Market Centres and Business Facilities

35. Major settlements along the road alignment are Durlung Chock, Godame, Thumka, Kamidanda, Rahote, Shlyan, KotThar, Deurali, Gaudamuni, Tallo Halhale, Upplo Halhale, Meksar and Lespar. There are grocery shops and tea stalls available in the almost all settlements. Durlung Chowk and Shlyan have also some hotels and restaurants. Other smaller market centres with shops of daily commodities are also found along the road alignment.

4.3.4 Local Economy

36. The economy of the area is predominantly agriculture based. Local people are gradually attracted towards cultivation of cash crops such as banana, orange, potato, ginger, and Siltimur, pear. Over 75 percent populations base upon agricultural activities for their livelihood. With growing closeness of the project area with Pokhara, Baglung district due to transportaion facility, cultivation of fruits, vegetables in a commercial scale seems to gain momentum. Diversity in employment pattern has been also observed in recent years. Local people have increasingly engaged in business activities in Durlung Chowk and Shlyan area. Many people seasonally migrate to Baglung, Pokhara and even different parts of India to earn some money for their livelihood.



Agriculture land and Banana cultivation at Durlung area

4.3.5 Agriculture Pattern

37. Major crops that are cultivated in the project area are rice, wheat, maize, millet, 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 mustard, vegetables, fruits like orange, banana etc.

4.3.6 Livestock

38. Due to availability of good number of fodder trees, the project area has also immense potentiality of cow and buffalo farming for dairy and goat farming for meat.

4.3.7 Industry

39. Some local people are engaged in weaving of bamboo products, making of furniture, brick production, mills and tailoring. The area has the potentiality of agro-based industries such as food processing as well as furniture, bamboo products.

4.3.8 Trade and Commerce

40. 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 vegetables, fruits, timber and bamboo products.

4.3.9 Tourism

41. Some hotel is in operation in Durlung Chowk and Shlyan, KotThar, Deurali, Gaudamuni, Tallo halhale, and Upplo Halhale. Local people have been developed homestay facilities at Deurali, Gaudamuni, Tallo halhale, and Upplo Halhale.



View from Deurali

4.3.10 Health and Sanitation

42. People use piped water with source at high altitude springs. Sanitation awareness among local people is increasing and many of them have toilets in their home, but there is no public sewerage system. There are toilets in few (more than 30%) Durlung Chowk, Godame, Shlyan, KotThar, Deurali, Gaudamuni, Tallo halhale and Upplo Halhale settlements. Major health problems observed in the area are gastric, water borne diseases, gout, respiratory diseases, and skin disease. There are 7 health posts/sub health post in the project areas.

4.3.10 Public Services and Infrastructures

Table 4.2: Infrastructure Facilities in the Project Area

Infrastructure Facilities	Details
Education	22 educational institutions ranging from primary level to college level exists in the area. There is a higher secondary school in Kusma bazaar. 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 65 percent.
Health	7 health posts/sub health posts exists in various settlements
Communication	All of the settlements have telephone facilities mostly with CDMA connection. Two post offices have been serving the local people.
Electricity	Almost all settlements in ZoI are connected with national grid transmission line.
Water Supply	Piped drinking water supply is available to all settlements
Other Infrastructures	There is Agricultural Service Sub-Centre, dairy firms and Veterinary Service Sub Centres are also available in the project area.
Financial Institutions	There are 4 number of financial Institutions.:Nepal Bank Ltd, Rastriya Banijya Bank, Everest Bank and Kasthmandap Development Bank in Kushma.
Community Center	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.

Source: Field Survey, May/June, 2009

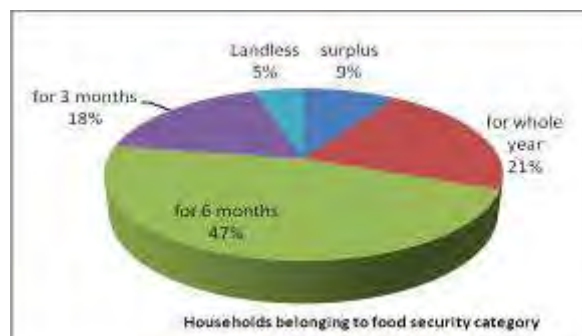
Table 4.3: Public Services and Infrastructures along the Road Alignment

Type of Public Service and Infrastructure	Chainage/ Location	Distance from the Road
Water Supply Line	1+050, 1+250, 8+250-8+350, 8+400, 9+300, 11+100	Along the road
Irrigation Crossing	5+900, 7+200	
Foot Trail	0+550, 1+650, 3+000, 4+250, 6+000, 9+950, 12+500,	
Brick Factory	1+300	
School	1+600, 11+900	Road side
Electric Pole	4+800	Along the road
Access road	2+800, 4+800, 6+900	

Source: Field Survey, May/June, 2009

4.3.11 Food Security

43. About 4.90% of the households are landless. On the contrary, 21.57 percent of the households of the project area have food sufficiency for whole year, 46.81 percent households of the project area have food sufficiency for 6 months category and 9.07 percent households are reported as food surplus ones. 17.65% of the households have enough food for three months Food sufficiency condition is given in **Annex XI d**.



Source: Field Survey, May/June, 2009

4.3.12 Migration Pattern

44. Permanent migration takes place in limited scale towards Pokhara. Similarly, seasonal migration also takes place from all the settlements. Majority of them migrate during slack farming season from Mangsir to Poush mainly in Pokhara, Kusma and various parts of India to work as a labourer. This shows economic dependency of the local people in the proposed road corridor. This could be reduced by providing employment opportunities at the local level.

4.3.13 Settlement Pattern

45. Most of the settlements within ZoI of the project are scattered type. Housing pattern of these settlements are mostly one or two storied, CGI sheet roofed buildings. Some of them are also thatch roofed buildings. RCC buildings have been started to appear in market centres such as Durlung chowk.

4.3.14 Potential for Development

46. 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	Paddy, millet, wheat, potato, beans farming, orange, banana 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 Deurali, Gaudamuni, Tallo halhale, and Uplo Halhale Settlements.
3	Small and Cottage Industry	Mills, bamboo products, furniture
4	Trade and business	Development several rural market centres at various places along the road alignment and main market centres at Durlung chowk and Shlyan, Halhale.

Source: Field Survey, May/June, 2009

4.3.15 Religious, Cultural and Historical Sites

47. There is Durga Mandir at 1+520 and Kotghar at 10+200, which lies in RoW. Religious sites are visited and used for worship, by the local residents. However, these temples and religious sites don't fall in the road alignment and their displacement is not needed. Religious faith of most of the people within ZoI of the project is Hinduism followed by Buddhism. Main festivals observed by local people are Dashain, Tihar, Maghe/Saune Sakranti, Lhosar etc.



Kotghar at 10+200

5.0 Project Alternatives

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

5.1 No Action Option

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

5.2 Proposal Alternatives

50. Construction of other supporting roads could be the options for achieving the transportation and access. Considering other project alternatives, the proposed road project can be the best option to serve the home to home services. Upgrading of the Durlung-Saliya Road will link the project area with Pokhara –Baglung highway. The proposed road project is the best alternative for cheap and efficient transportation.

5.3 Alternative Alignment

51. Alignment of the Durlung-Saliya road is an existing earthen road. This road is in operation as a fair weather and proposed for the upgrading, requirement to acquire land and cutting trees will be minimum than in new alignment opening. Hence, new alternative alignment is not studied and the upgrading of existing road can be the best option.

5.4 Alternative Design and Construction Approach

52. The road has been designed considering the both LEP and Contractor based 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

53. During the rainy season, the construction work is stopped to allow the natural compaction of the road. Upgrading and construction work will be carried out during the remaining months. The construction period is more appropriate from October to June as the local people are generally free from farming activities.

5.6 Alternative Resources

54. The physical resources consumed for the construction of the road will mainly include boulders for gabions and stone for dry masonry wall. Stones are easily available in nearby areas of various sections of the road whereas fine aggregates and sand has to be transported from Kaligandaki river. The proposed construction will optimally use the local labour force and local materials.

6.0 Identification and Evaluation of Impacts, Benefit Augmentation and Mitigation Measures

55. The identification and assessment of impacts has been carried out by considering the proposed proposal activities examined in terms of its current condition and 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 road sub-project can be both beneficial as well as adverse. Most of the identified impacts have been quantified to the extent possible. The impacts have been predicted in terms of their magnitude, extent and duration. The possible impacts (positive and negative) in construction and operation phase are presented in the following sub-sections.

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

6.1 Beneficial Impacts and Benefit Augmentation Measures

6.1.1 Construction Stage

Employment Generation and Increase in Income

57. Impacts: One of the major direct beneficial impacts of the road during construction stage is the creation of employment opportunity to the local community. Total employment during construction of this road alignment is 114734 person-days in which 19122 person- days as skilled and 95612 person- days as unskilled. Employment generation for the local people will minimize seasonal migration through for a short period. The amount of money that is earned by the wages will directly enhance various economic activities and enterprise development with multiplier effect. This is one of the direct and significant impacts of the project but it is of short-term and local in nature.

58. Measures: Benefit augmentation measures will be implementing the work as much as possible through the local Road Building Groups (RBGs) the local people particularly poor; dalit (occupational caste), ethnic minority and women will be given priority for employment. They will be given training to do the job. To utilize their money earned from the project works, RRRSDP will implement life skill training for income generation activities.

Skill Enhancement

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

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

Enterprise Development and Business Promotion

61. Impacts: During construction period, different types of commercial activities will come into operation in order to meet the demand of workers. Since the workers will have good purchasing power due to money earned from wages, they will regularly demand for different types of food, beverage and other daily necessary items. More local shops and restaurants will be opened to meet these demands around the vicinity of the construction sites at Durlung Chowk, Godame and Thumka. This impact is also direct, low significance, local and short terms in nature.

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

Community Empowerment and Ownership

63. Impacts: During construction period, various road construction coordination committees and road building groups will be constituted in order to proceed and implement the road construction activities. In this process, they

will be oriented and trained to build and safeguard community infrastructures which will result in community empowerment and feeling of ownership among them. This impact is also indirect, low, local and short terms in nature.

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

6.1.2 Operation Stage

Improvement in Accessibility and Saving of Time and Transportation Cost

65. Impacts: Once the road project is completed, the people living within the road corridor will have easy access to Headquarter and other cities. It takes one day walking distance from Lespar to reach Kusma on existing road, but after operation of this road the travel time will reduce upto two and half hour. The local people will be more benefited due to fast mobility and safe access to market places compare to earlier scenario due to regular transport facility. 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. The impact will be direct, high, regional and long term in nature.

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

Increase in Trade, Commerce and Development of Market centers

67. Impact: There is a possibility of increased economic opportunities and significant growth and extension of the minor settlement markets along the road corridor. Market centres will develop at Durlung Chowk, Godame, Shlyan, KotThar, Deurali, Halhale and Lespar. The farmers will be more encouraged to increase agricultural production due to market accessibility. This will lessen pressure on local natural resources. The impact will be indirect, low, local and long term in nature.

68. Measures: DDC/VDCs shall manage planned growth with required infrastructure facilities in the market areas. Agriculture extension services, market linkages and networking for better market price by providing Small business and Micro Enterprise Development Training under Livelihood Enhancement Skills Training (LEST) programs of Social Action Plan (SAP) and coordination with district agriculture office.

Appreciation of Land Value

69. Impacts: The construction of road leads to appreciation of land values particularly near the market and settlement areas due to the availability of reliable transportation facilities. There will be rapid increase in the commercial production of agricultural crops due to road accessibility, which is also a major factor to raise the land value. Mainly the land price will increase in Durlung Chowk, Godame, Shlyan, KotThar, Deurali and Halhale by twice. The impact is indirect, medium, local and long term in nature.

70. 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

71. Impacts: Due to easy and cheaper availability of agricultural inputs and technologies, productivity will be increased along the road. Sale of farm and livestock products will be increased in the settlements along the road corridor like Godame, Kotthar, Meksar, Halhale, Lespar settlements, which are potential areas for the production of maize, potato, wheat and cash crops such as ginger, orange, banana, vegetables etc. Operation of road will further commercialize the subsistence agriculture of rural area. This activity would likely uplift the economic condition of the local people. This is the indirect, significant, local and long term impacts.

72. Measures: Generate better awareness, skill, capacity and services for the development of environmentally sound high value organic agriculture and livestock products, for agriculture extension services, market linkages and networking for better market price will be coordinated through DDC, district agriculture office.

Enhancement of Community Development Services

73. 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. The improvement can also be expected with more frequent visit of extension workers, longer stay of professionals such as teacher, doctors to their rural duty areas. Similarly, enhanced income level will encourage local people to spend

more on health and sanitation, development of education facilities by employing qualified and professional teachers and upgrading the existing health posts. Production of educated manpower will also help to increase the number of employees in government/non government services. This is direct, significant, local and long-term impact.

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

Women and Disadvantaged Group Empowerment

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

76. Measures: During the road construction and rehabilitation, more emphasis will be given to women, dalit and vulnerable workers.

6.2 Adverse Impacts and Mitigation Measures

6.2.1 Construction Stage

77. The road will be constructed according to LEP where manual works are possible; and contractors approach where the work cannot be done manually. The 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

78. Impacts: Construction of road will convert 1.10 ha. of cultivated land, 0.38 ha. of barren land, 1.27 ha. of forest and 0.14 ha. of settlement areas into built-up area. This may reduce production of 1.56 MT of Paddy, maize and wheat annually. The impact from changes in land use will be high, direct, local and long term in nature.

79. Measures: The mitigation measures will be compensatory. Generate better awareness, skill, capacity and services for the development of environmentally sound high value organic agriculture, cash crops and livestock products. Plantation of trees will be done to increase greenery in the area. Fruit and fodder plants shall be given emphasis.

Spoil Disposal

80. Impacts: The common likely problems from the inappropriate disposal of spoils are: gully 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.

81. Measures: Spoil will be safely disposed and managed at designated site with minimum environmental damage. Engineer will give approval for disposal site of spoil. Appropriate spoil disposal sites are 2+300, 2+650, 4+500, 5+600, 13+650, 14+600 and 15+200. Balanced cut and fill and re-use of excavated materials will be given emphasis. Spoil will be used to reclaim land or eroded areas. Disposal site will be provided with proper toe wall, drainage, vegetation and adequate protection against erosion.

Slope Instability

82. Impacts: The road has been already opened by VDC and DDC budget. Only areas with difficult topography have been left for road widening. In particular, the stretches at 7+000 – 10+000 and 11+500- 16+000 are remaining for widening the road and gradient improvement. Several slide areas exist along the opened section that requires stabilization. Major slide areas along the road alignment are at 2+000, 3+700, 5+000, 5+240, 5+500 and 12+700. A major landslide at 5+500 needs detail survey by consulting a Bio-engineer. The impact of slope instability and soil erosion is direct, medium, site specific and mid-term nature.

83. The mitigation measures will be balance cut and fill; ensuring minimum cut slope depending upon the soil type; Re-vegetation of exposed areas; adoption of bio-engineering techniques (Grass plantation, Brush layering, Palisades, Shrub/Tree plantation, Bamboo plantation, live check dams etc.); no construction work during rainy season; and use of soft engineering structures (dry wall, check dams) before disposing spoil. Soil conservation will be done by providing cross drainage structures with protection works at outlet for safe discharge of drain water on

eroded roadside slopes. Recommended engineering structures necessary at various chainages for slope stabilization have been given in **Annex XVII**.

Drainage Management

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

85. Measures: The mitigation measures will be to provide adequate numbers of drainage structures in order to have minimum interference with natural drainage pattern of the area; channelize surface water discharge from side drains with outlet management. Details about necessary structures required to mitigate the water induced adverse impacts are as given in **Annex XIV**.

Air Dust, Noise and Water Pollution

86. Impacts: Although the air quality of the project area is not measured, air does not appear to be polluted. Dust will be a major problem during both construction and operation of the road. Impact on air quality will be direct, low, local, and for short term.

87. The project area at present does not experience noise pollution. However, during construction, the increased construction activities may increase noise level to some extent. The impact of road construction on noise level will be direct, low, site specific, reversible and short term.

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

89. Measures: The mitigation measures will include use of face mask by the workers working in the areas of high dust generation at 1+300 to 5+600 areas; avoid disposal of excavated materials in the water bodies; cover dry material or make it wet during transportation. Both sides of the road will be planted with trees, as far as possible which will act as sound and noise barrier.

Quarry Operation

90. Impacts: The extraction of materials from inappropriate places or in excessive amount can damage the local environment. Potential adverse impacts of quarrying and borrowing activities are accelerated land erosion, landslides, disturbance in natural drainage patterns and water pollution. The impact from the operation of quarry sites will be direct, low in magnitude, local nature and short term in duration.

91. Measures: Quarry and borrow operation sites will be identified and approved by Engineer; unstable sites, erosion prone area, forest area, settlements, fertile farm land will be avoided for quarry / borrow operation; quarry sites will be rehabilitated by providing appropriate civil engineering structures and bioengineering measures after the extraction is complete. Recommended quarry sites in the area are given in Table 6.1.

Table 6.1: Recommended Quarry sites

SN	Chainages	Places of recommended quarry sites
1	4+450	Stone quarry at upper side of the road in a limited scale
2	Kaligandaki river	Sand and gravel collection, About 10 Km from starting point(Durlung chowk)
3	12+500	Stone collection
4	16+510	Stone collection
5	19+100	Stone collection
6	20+850	Stone collection from Lespar khola and nearby sides

Source: Field Survey May/June, 2009

Location of Camp Sites, Storage Depots

92. Impacts: The siting of labor camp/ storage depots 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. Impact will be direct, medium significance, site specific and short-term.

93. Measures: The mitigation measures will be use of local labors as far as possible; siting camp away from productive lands; pay compensation for using private farm or lands for storage or camp; electricity and first aid facilities will be provided in camp sites; provision of soak pit and pit latrine will be made. For waste water and solid waste management, soak pit will be made and proper management will be done. Appropriate camp site should be at 2+300, area private land, 13+900 open space.

Construction Equipment Vehicles

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

95. 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.

Decline in Aesthetic Value

96. 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 impact will be direct, low in magnitude, local nature and short term in duration

97. The following mitigation measures will be adopted:

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

Chemical Issues

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

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

Biological Impacts

Loss or Degradation of Forests and Vegetation

100. Impacts: Total of 1.27 ha of forest will be lost due to road construction work. 112 numbers of trees of various species will be removed from forest and private land during road construction (See Annex XII). Major species to be cleared include *Pinus roxburgii*, *Alnus nepalensis*, *Schima wallichii* and *Castanopsis indica*. The impacts on vegetation have been considered to be direct, high in magnitude, site specific in extent and long term.

101. 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 to the District Forest Office, Community Forest Users Group. Compensatory plantation will be done in 1:25+10% ratio total 3080 nos tree will be planted. Emphasis will be given to plant the trees along the sides of the road in RoW.

Impact on Wildlife Due To Loss of Habitat and Hunting

102. 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.

103. Measures: Site clearance for construction shall be limited to the minimum width. No tree or vegetation shall be cut unless absolutely necessary; The construction activities near forest area will be appropriately managed so that there will be least disturbance to the wildlife and birds; Workers shall be actively discouraged from collecting fuel wood from forest or 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)

104. Impacts: Dumsi (*Hystrix indica*), Monkey (*Macaca mulatta*) are listed in CITES Appendix-II. Sal (*Shorea rubosta*), is protected plant species according to the Forest Act 2051 B.S. Some of these wildfauna and flora will be affected during road construction. The impact will be indirect, low, site specific and short term in nature.

105. Measures: Construction activities near forest area will be appropriately managed so that there will be least disturbance to the wildlife and birds; Restriction to wildlife harassment by the workers; Coordination with DFO and CFUGs to control the activities like illegal hunting, felling and poaching of wild fauna and flora by enforcing acts and regulations strictly; Conducting conservation awareness program for the construction workers; Compensatory plantation of felled tree.

Socio-economic Impacts**Loss or Degradation of Farm Land and Productivity**

106. Impacts: There will be permanent loss of 1.10 ha of agricultural land due to road construction. This will reduce 1.56 MT annual production of paddy, wheat, maize and millet. Dust from construction work may settle on crop and vegetation, which may also affect production. This impact is expected to be of high in magnitude, local in extent and of long term in duration.

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

Loss of Private Properties

108. Impacts: The road alignment will damage 7 residential houses (Ch, 10+800, 10+900, 10+700, 10+750, 11+000, 11+200, 12+100), 2 toilet (Ch1+000, 12+100), 1 cowshed (Ch 4+100), and 1 school building (Ch11+900). The impact will be direct, site specific, long term and high in magnitude. Details about property loss and damage will be described in Resettlement Plan Report (See Annex XV).

109. Measures: Compensation for the loss of property will be provided to the affected people. A separate Resettlement Plan has been prepared to address land and property acquisition as well as compensation issues. In this plan, direct cost of NRs. 4,805,432.00 has been estimated.

Impact on Community Infrastructure

110. Impacts: The community infrastructure that requires reconstruction / rehabilitation during construction works, and the mitigation measures are as presented in following Table 6.2.

Table 6.2: Community Infrastructures along the Road Alignment

Type of Public Service and Infrastructure	Chainage/ Location	Potential Impact	Mitigation measures
Water Supply Line	1+050, 1+250, 8+250-8+350, 8+400, 9+300, 11+100	Damaged	Will be reinstated and for at 9+300 and 11+100 waste water crossing pipe will be provided.
Irrigation Crossing	5+900, 7+200	Damaged during road construction	Irrigation crossing Will be reinstated with 30 dia.Hume pipe
Foot Trail	0+550, 1+650, 3+000, 4+250, 6+000, 9+950, 12+500,	Damaged	Will be reinstated by providing drain cover and damage foot steps
School	1+600, 11+900	Along the road	Information signboard, at 11+900 school compound wall will be reinstated
Electric Pole	4+800	Damaged during road construction	Will be relocated.
Access road	2+800, 4+800, 6+900	Damaged during road construction	Will be reinstated

Impacts on Cultural, Religious and Archeological Sites

111. Impacts: There is a Durga Mandir at 1+520 and Kotghar at 10+200, which lies in RoW. Its foot steps and wall will be affected during road construction. This impact is expected to be of low in magnitude, local in extent and of short term in duration.

112. Measures: Reinstated footsteps and wall. The cost is included in BoQ.

Impacts on Health and Safety Matters

113. Impacts: During construction, workers will be exposed to various risks and hazards. Potential impacts to health are respiration because of high altitude and eye and lung diseases due to exposure to dust, and risk of accident during work. The lack of proper sanitary measures and increase in waste and water pollution can lead to diseases such as jaundice, typhoid and dysentery. Increased contact between local and migrated workers can cause spread of serious health risks like STDs and HIV/AIDS. This impact is direct, high in magnitude, short term and local.

114. Measures: The workers shall be provided and made mandatory the use of helmets, safety belts, masks, gloves and boot depending on nature of work; provide clean drinking water at sites and camp; pit toilets at sites and camp; first aid facilities at sites and camp with training to use them; provide group accidental insurance for workers. Awareness generation to local people and workers on HIV/AIDS and other communicable diseases.

6.2.2 Operation Stage

Physical Environment

Road Slope Stability and Management

115. Impacts: Sensitive areas for possible road slope stability problems are 5+240 and 5+500. The impact will be direct, medium local and long term nature.

116. Measures: The mitigation measures to be adopted include immediate clearance of slides and restoration of slopes; regular maintenance of bio-engineering and civil structures for slope protection; restoration of rill and gully formation; and conservation of soil.

Impact Due to Air, Noise and Water Pollution

117. 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. As the road is of district road category and the vehicular movement is not expected to be very high. The impact of air pollution will be direct, low, local and long term. Noise level during the operation period will increase due to the movement of vehicles and other activities. However, due to low traffic volume, the impact due to noise pollution will be direct, low, local and 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.

118. Measures: Measures to be adopted will include plantation of trees on both sides of the road as far as possible; Use of horns should be restricted near dense forest, health posts, schools and settlements; for control of dust nuisance, speed limit of vehicle and vegetative barrier by planting trees along roadsides will be designed.

Biological Environment

Depletion of Forest Resources

119. 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.

120. Measures: CFUGs will be supported to conserve and manage their CFs according to operational plans; encourage and support local community for controlling illegal harvesting of forest resources; awareness programmes shall be organized to educate local people on the conservation of forest.

Disturbance to the Wildlife and Illegal Poaching

121. Impacts: Although the wildlife is low. However, 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 poaching during operation period by the people from outside due to easy accessibility. The impact will be indirect, low, local and long term in nature.

122. Measures: Prohibition of blowing horns in the dense forest areas at Ch 3+400-6+000, 13+500-15+200.

Socio-economic and Cultural Impacts

Unplanned Settlement and Market Center Development

123. Impacts: Expansion of settlement area and market can be observed at Durlung Chowk, Shlyan, Halhale and Lespar. Settlements having a central location will expand exponentially and will give rise to problems that are similar to other urban areas. Encroachment of RoW will take place. The issues of sewerage, solid waste, haphazard settlement development, dumping of wastes into streams, roadside will feature as major problems. Small scale industries may develop as the Brick, Mills, Furniture industry in future. This will put enormous pressure on natural resources. This will reduce road capacity and increase road accidents. The impact will be direct, medium, local and long term in nature.

124. Measures: Awareness raising program through local organizations for planned settlements; include regulation of settlement with proper planning; plantations of trees in the RoW so that it is not encroached; provide sewerage in market areas. Authorities and VDCs will control encroachment of road.

Change in Social behavior

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

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

Impact on Livelihood and Economic Activities

127. There may be inflation and price hike due to the flow of outside visitors which will affect the subsistence living condition of the people. Nevertheless, there will be more employment opportunities resulting into increased economic activities. The adverse impact may be overshadowed by the increased working opportunities. Therefore, no mitigation measures are needed. Similarly Total 1.1 ha of agricultural land will be permanently converted into built up area as road. This will result into loss of 1.56MT food grain production per year from cultivated land. Consequently it will cause adverse impact in the income and livelihood of the local people. However, it is expected that agricultural production in the adjoining area may rise substantially due to easy and increased access to agricultural inputs. Moreover, value of remaining land will also be increased which may nullify the adverse impact related to the loss of agricultural production to a great extent. So, there will be no significant adverse impact in the livelihood of the people

Road Safety Measures

128. 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.

129. Measures: The mitigation measures to be adopted will be applying appropriate road safety measures with the help of 3-Es i.e. Engineering, Enforcement and Education; and required safety signs will be used along the road. Information signboards will be placed such as Traffic signs (at Ch: 0+500, 0+550, 1+550, 1+650, 2+100, 2+200, 2+600, 2+650, 3+450, 3+550, 3+950, 4+000, 4+300, 4+350, 4+520, 4+550, 8+000, 8+450, 8+550, 9+650, 9+700), at school areas (Ch: 5+220, 5+260, 2+800, 2+880), at market areas (Ch: 5+050, 5+200) and signboards for landslide zone (Ch: 5+450, 5+500).

7.0 Environmental Management Plan

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

7.1 Institutions and Their Roles

Table 7.1: Institution 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 and concerned agency as per EPA/EPR. Environment Management Section is responsible to look into safeguard matters for the ministry.	<ul style="list-style-type: none"> To review IEE ToR and Report, and give approval. Coordinate with project on safeguard issues Conduct environmental monitoring from central level. 	
Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR)	Department under MLD responsible to execute infrastructure projects under MLD. Provides back-up support to DDCs in technical matters through DTO.	RRRSDP is being executed under overall coordination and supervision of the Department for the Ministry. It is also supporting DDCs through DTOs to implement the project.	
RRRSDP- Project Coordination Unit	Project specific unit.	Technical Unit to support and coordinate all activities for implementation of RRRSDP. Review, comment, and forward IEE ToR and Report for review to ADB and for approval to MLD	First Class Officer / DDG of DoLIDAR 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.	
Central Implementation Support Consultant (CISC)	Support consultants at central level	Technical and management support to PCU	
District Implementation Support Team (DIST)	Support consultants at district level	Technical and management support to DPO	

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

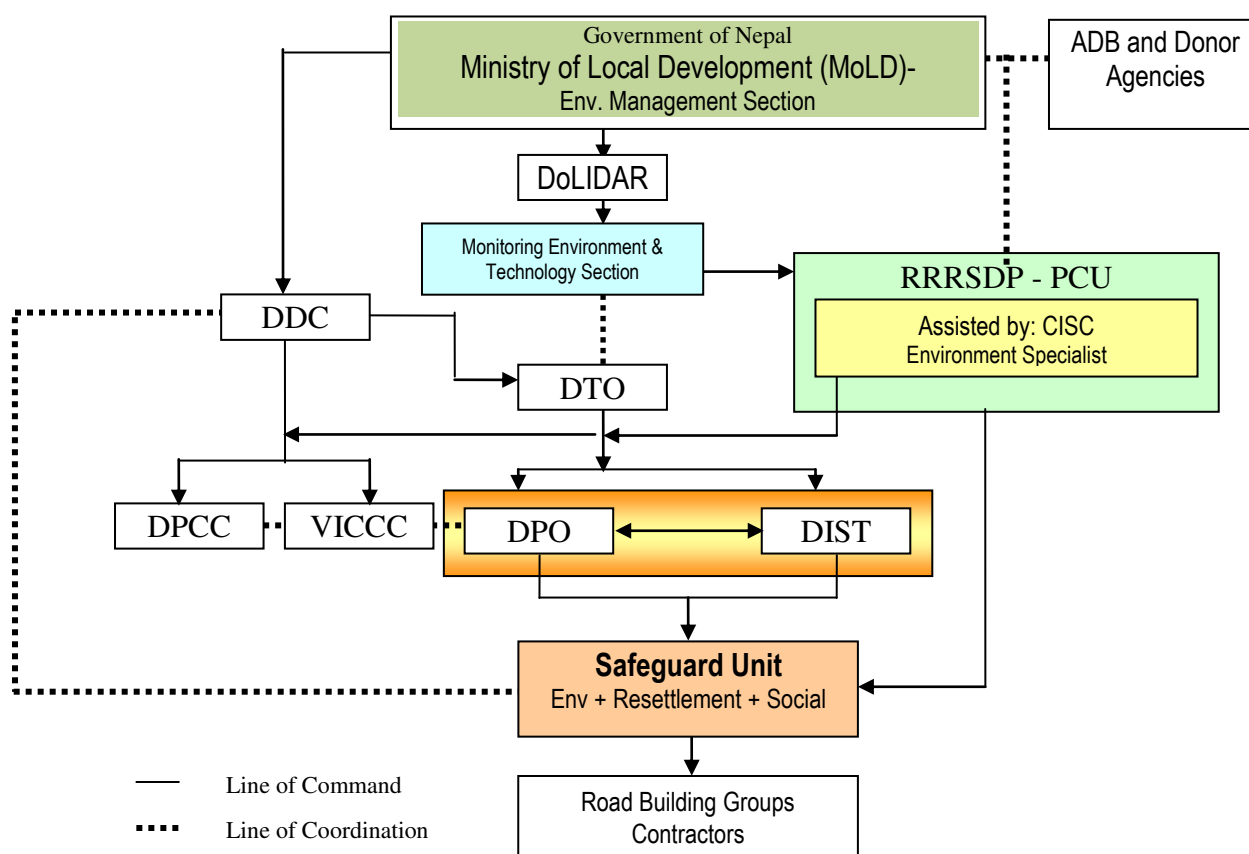
7.2. Reporting

132. 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.

133. 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.

134. 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.

Fig. 7.1: Environmental Management Organization Structure



7.3. Benefit Augmentation Measures and Mitigation Measures Implementation Strategy

135. 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 environmental safeguard and ensure the implementation of mitigation measures and according to EMAP. Overall implementation of the EMP will become proponent's responsibility. Framework for implementing environmental management plan is shown by 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	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 19122 person- days, unskilled 95612 person- days	DDC/DTO DIST	DPCC / VICCC / CISC/PCU
Construction of road	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 in cooperatives, and promote use of local products by the construction crews.	Contractor/ RBG	DIST/ CISC/PCU
Construction coordination committee and RBG 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. Land price will increase in Durlung Chowk, Godame, Shlyan, KotThar, Deurali and Halhale by twice.	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	Promotion of market linkages and networking for better market price.	DDC/DPO	DDC/VDC
Operation of Road	Enhancement of Community Development Services	Ease of access to social service and raise in quality service	D	H	L	LT	Keep road maintained to ensure access facility that will attract development of other social services facilities	Local people, DDC, VDC	DDC, VDC

Activity	Effect	Related Beneficial Impacts	Type of Impact *)				Benefit Augmentation Measures	Responsible Agencies	
			Nat	Mag	Ext	Dur		Executing Agency	Supporting Agency
Operation of Road	Women and Disadvantaged Group Empowerment	Poor and Disadvantaged Groups will have easy and frequent access to social services (education, health, community development, bank, 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: Adverse Impacts and Proposed Mitigation Measures

Activity	Potential Negative Effects	Related Adverse Impacts	Type of Impact *)					Mitigation Measures	Responsibility for Mitigation Measure		
			Nat	Mag	Ext	Dur	Rev		Executing Agency	Supporting Agency	
Construction Stage											
Physical Environment											
Construction of Road (Site clearance, Pavement work, Side/cross drainage work)	Change in land use - Loss of 1.10 ha. of cultivated land, 0.38 ha.of barren land, 1.27 ha.of forest and 0.14 ha.of settlement areas	Production loss, loss of property. Decrease in1.56 MT of Paddy, maize and wheat production annually.	D	H	L	LT	IR	Pay compensation for all lost of properties.	DDC/DTO	DIST	
Construction of Road (Earthworks)	Spoil Disposal and imposed weight of spoil on fragile slopes	Gully erosion, landslide, disruption of road, damage to farmland, water pollution etc.	D	M	SS	ST	Re	Proper site selection and management of spoil at designated areas approved by Engineer; provision of proper drainages, toe walls; Proposed spoil disposal sites are 2+300, 2+650, 4+500, 5+600, 13+650, 14+600 and 15+200.	DDC/DTO	DIST/VICCC/ VDC	
Site clearance, excavation	Slope Instability	Erosion, landslide, loss of property. Areas of concern are at Ch 2+000, 3+700, 5+000, 5+240, 5+500 and 12+700	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 (Side and cross drainage works)	Drainage Management, generation of large volume of surface runoff	Erosion, landslide, damage to farmland	IN	M	SS	MT	Re	Proper 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 (1+300 to 5+600), covering of dust sources	DDC/DTO / RBGs	DIST
	Noise pollution	Disturbance and annoyance around school, health posts, forest areas.	D	L	SS	ST	Re	Restrict horn near school, health posts, settlement and 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
Quarry and borrow operation	Quarry/borrow operation and its potential effect on instability, landslide	Change in river regime, instability, land slide; damage to forest, farmland and property; water pollution	D	L	L	ST	Re	Proper selection and management of quarry sites, rehabilitation of quarry/borrow sites after completion of work. Recommended quarry sites are Ch 4+450, 12+500, 16+510, 19+100 and 20+850 for stone collection and Kaligandaki river for sand and gravel collection.	DDC/DTO/ RBGs	PCU/CISC/ DIST/ VICCC
Construction of road (Camp Operation, Storage of construction materials)	Location of Camp Sites, Storage Depots	Encroachment of forest, agriculture land, solid waste, and waste water may cause pollution	D	M	SS	ST	Re	Locate camp site away from productive land and forest area (potential sites at 13+900) use local labor and local houses as camp; pay compensation to land owner of camp area; proper storage of chemical and materials.	DPO assisted by DIST/ Contractor	DIST/VICCC
Operation of construction equipments	Construction 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
Storage of Chemicals and operation of machineries	Spillage of fuels and chemicals.	Pollution to the nearby water sources and soil. Health hazards to the workers	D	L	SS	MT	Re	Store fuels and chemicals on paved surface with surrounding catch drain to protect soil from leakage. Provide information signboards. Use of safety gears. Close monitoring during operation of machineries.	DTO/DIST/ Contractor	PCU/CISC/ DIST
Biological Environment										
Clearance of vegetation necessary for road formation	Loss of 112 nos tree from public land.	Loss of vegetation	D	H	SS	LT	Re	Cutting of tree only in formation width, compensatory plantation of local species of tree at 1:25+10% ratio for public trees and 1:1 for private trees.	DDC/DTO/DFO	DFO/CFUGs/DIST/VDC

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 activity	Impact on Wildlife Due To Loss of Habitat and Poaching	Killing and harrasing of wildlife; Loss of biodiversity and valuable species of wildlife	IN	L	L	ST	Re	Work only in day time, do not disturb wildlife, aware workers	DDC/DTO/DFO	DFO/CFUGs/DIST
Social-economic Environment										
Acquisition of land for maintaining road width*	Loss or Degradation of Farm Land and Productivity	Permanent loss of 1.10 ha of agricultural land	D	H	L	LT		Compensation for the loss of property will be provided to the affected people.	DDC/DTO	CFC1 DIST/VICCC
Acquisition of property for maintaining road width	Impact of Private Properties (8 residential houses, 1 cowhed and 2toilet)	Pollution of water source.	D	M	SS	ST	IR	Compensation for affected people.	DDC/DTO	CFC ² /DIST
Demolition of structures along road alignment	Impact on Community Infrastructure	Loss of services (see table 6.3)	D	M	SS	ST	Re	Restoration or relocation of affected infrastructures.	DDC/DTO	PCU DIST/CISC/VICCC/VDC
Occupational health and safety aspects	Health and safety matters	Injury, fatal accidents, outbreak of epidemics and diseases, decline in capacity to work	D	H	L	ST	IR	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

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

¹ The Land Acquisition Guidelines, 1991 specify the establishment of an Acquisition and Rehabilitation Committee (also known as Compensation Fixation Committee, “CFC”) for fixing the rate of compensation of private properties to be acquired, consisting of the concerned Chief District Officer (Chair), Land Revenue Officer, representative of the DDC and the Project Manager and others as deemed necessary.

Activity	Potential Negative Effects	Related Adverse Impacts	Type of Impact *)					Mitigation Measures	Responsibility for Mitigation Measure	
			Nat	Mag	Ext	Dur	Rev		Executing Agency	Supporting Agency
Quarrying, operation of construction equipments	Road Slope Instability and Management	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
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 on Road 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

136. 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 DDC/DTO/DPO/DIST to conduct environmental monitoring and reporting	50,000.00	To be included in project cost
1.2	Training to Naik of RBGs	50,000.00	To be included in project cost
1.3	Enhancement in Technical Skills (Bio-engineering)	200,000.00	To be included in project cost
	Sub-Total (1)	300,000.00	
2. Adverse Impacts Mitigation Measures			
2.1	Bio-engineering work	3,625,207.00	To be included in BoQ
2.2	RBG Insurance	400,000.00	To be included in project cost
2.3	Information Signboard	100,000.00	To be included in BoQ
2.4	Resettlement Cost (Compensation for properties)	4,805,432.00	To be included in Resettlement plan
2.5	Restoration or relocation of affected infrastructures, spoils disposal site management and rehabilitation, reinstate of quarry etc.	500,000.00	To be included in BoQ
2.6	Compensatory plantation Re-plantation / Re-forestation, Road side plantation	304,161.00	To be included in project cost
2.7	Social Plan Cost	1,043,500.00	To be included in Social plan, project cost
2.8	Occupational health and safety; First aid boxes, campsite sanitation (Pit latrine); solid waste management, Safety measures for workers (Helmets, gloves, masks, boots, etc.)	400,000.00	To be included in BoQ
	Sub-Total (2)	11,178,300.00	
	Total	11,478,300.00	

7.5. Implementation of Mitigation Measures

137. 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.

138. 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 EMAP requirements will also be clearly agreed in the contract agreement document.

7.6. Environmental Monitoring

139. 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

140. Monitoring is an integral part of the project proponent. The Proponent, DDC/DTO Parbat 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.

141. 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.

142. 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 shall 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.

143. The sub-project level monitoring team shall submit its report to RRRSDP district management, which will 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	Report Preparation		LS		100,000.00
4	Transportation		LS		50,000.00
5	Cost for Monitoring by MoLD/DoLIDAR		LS		50,000.00
	TOTAL				200,000.00

Thus, total environmental monitoring and management cost is NRs. 11,678,300.00.

7.6.2 Types of Monitoring and Monitoring Parameters

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

145. Environmental Monitoring for this sub project are:

- 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**.
- 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 Durlung-Saliya Road Construction Works

Parameters & Indicators	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
Final alignment selection as per IEE /EMP recommendation	DIST	Incorporation of IEE / EMP recommendations into alignment selection process and design document	Walkthrough along final road alignment, verifying sensitive areas	Initial stage preconstruction phase	Proponent through CISC; DoLIDAR
Land and property acquisition and compensation	Proponent with assistance of DIST	Cadastral records, Land and properties acquisition procedures; Procedures followed during voluntary donation of Land; Preparation of inventory of infrastructures likely to be affected	Public consultation, photos; geo-referencing; Check inventory against cadastral records and discuss with people	Initial stage pre-construction phase - well ahead of construction	CFC / PCU (CISC) / DOLIDAR / MoLD
Resettlement, assistance and compensation	Proponent / DIST	Legal provisions by GoN; Compensations paid	Check compliance to legal procedures	Well ahead of construction	CFC / PCU (CISC) / DOLIDAR / MoLD
Site selection and preparation of construction logistics	Proponent / VICCC	Project's arrangement for materials storage, and construction activities	Site observation, geo-referencing and photographic documentation	Beginning of construction period	DIST/ DPO
Use of local labour, particularly vulnerable groups and women	DPCC / VICCC / DIST	Specifications which obligate the contractors/BG to observe certain quotas for employing local labour, specially vulnerable groups and women, prohibition of child labour	Records of the that facilitates and coordinates the process for local people's employment, interviews	During the entire period where labour work is contracted, trimester	Proponent / DPO
Awareness and orientation training on road construction to technicians, and locally employed labourers	Proponent in assistance of DIST	Training programmes for skill development, occupational safety and environmental protection associated with road construction works	Specifications; Training records, check training programme reports, assess feedback from participants	Beginning of construction and during construction	DIST / Proponent (DTO)
Compliance to Occupational health and safety matters	DIST / Contractor (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, First Aid, Emergency Rescue	Spot checks at work sites, photos, accident records, interviews	throughout construction activities, trimester	Proponent / DPO
Compliance to Environmental Protection Measures, including pollution prevention, water and soil management, slope	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. Training	Site inspection, DISTussion with Project management, consultants, and local people. Quantifying site-specific impacts,	Before and during construction period	DPO/Proponent

Parameters & Indicators	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
stabilisation, cut and fill, waste management, spoils, sensitive habitats and critical sites, protection of fauna and flora	DIST	programmes for labourers to prevent impacts on wildlife sensitive habitats, forests and fuel wood use.	photos, laboratory tests where required. Existing patrol, control and enforcement mechanisms, enforcement records		
Vegetation clearance	Contractor / RBG / DIST	Actual number of trees felled during construction works; Location (in Formation Width or RoW	Record, inspection and interview with local people and CFUGs	After detail design and before construction work	DPO CFUGs / Proponent
Measures to avoid pressure on forest and wildlife	Contractor / RBG / DIST	Use of firewood or fossil fuel by construction crew, events of hunting and poaching of wildlife	Inspection, interview with local people and CFUGs	Once a month during construction	DPO / CFUGs / Proponent
Measures to protect environment from air & noise pollution	Contractor / RBG / DIST	Dust level and noise level at work sites, major settlements and sensitive spots like health centres and schools	Visual observation, Observation of good construction practices and DISTussion with residents and workers	Once in a month during construction	Proponent / DPO
Measures to protect water bodies from pollution	Contractor / RBG / DIST	Visual observation, observation of open defecation/waste/spoil disposal around water sources near construction sites .	Site inspection, test of site-selected samples of local streams water using standard field kit, interview	Once in a month during construction; Upon demand for testing with field kit	Proponent / DPO
Restoration, rehabilitation, reconstruction of all infrastructure services disrupted or damaged by the proposal activities	Contractor / RBG / DIST	Continued services by the facilities and functional public life	Site observation; VDC records; Public Consultation Meetings; Photos	Once in 15 days during construction	Proponent / DPO
Adequate technical and environmental supervision	DIST	Adequate number of technicians regularly at site Ability to implement labour based road construction concept	Check number and type of technicians available at site; Skill of work carried out; Discussion	Twice a month during construction	DPO , Proponent
Clean up and reinstatement of the construction sites (camps,	Contractor / RBG /	Decommissioned sites indicate no adverse/residual environmental impacts, and are rehabilitated to the	Site observation; Comparing photos;	At end of construction	Proponent / DPO

Parameters & Indicators	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
quarries, borrow pits)	DIST	satisfaction of the supervisor and land owners	Consultation with land owners and CBOs	period	

Table 7.7: Impact / Effect Monitoring for Durlung-Saliya Road Construction Works

Parameters & Indicators	Verifiable Indicators	Verification Methods	Location	Schedule	Responsible Implementation and Monitoring Agency
Slope stability and erosion	Inclination, slope failures causes; Drainage facilities such as catch drain, side drains and functionality of cross drainage structures; Fresh gullies and erosion; Success/failure of bio-engineering solutions	Site observation, photos DISTussion with people and technicians	Near steep slopes and at landslide areas and sites where bio-engineering failed	Continuously during construction and operation	DIST during construction; Proponent / DPO / Soil Conservation Office during operation
Bio-engineering of disturbed slopes	Re-vegetation through bio-engineering application on disturbed slope; Establishment of nursery	Site observation; Inspection of nursery and its production rate, photos, measurements	Cut slope area, where vegetation is cleared; Nursery	During and at end of Project construction	DIST/ Proponent
Disposal of Spoils and construction wastes	Affected aesthetic value, affected forest and agriculture, initiated land erosion by local blocked drainage, hazard to downhill slope residents and agricultural lands	Site observation and interviews, photos, geo-referencing sites	At specific locations where such sites occur	During construction	DIST/ Proponent
Quarrying of construction materials	Initiated erosion, changes in river regime, erosion by river systems, landslide due to quarrying, degradation of vegetation, water logging, waterborne diseases	Site observation, photos, records from local health centres	Quarry site areas	During construction	DIST/ Proponent
Disruption of drainage system	Status of rehabilitation Service status of irrigation and water supply system; Operation and maintenance requirement	Observation and interviews, photos, fisheries data, wildlife records	Disrupted aquatic system, irrigation schemes	During construction	DIST / Proponent
Loss or degradation of farmland , houses and properties	Status of road side land; Production / yield; Status of road side houses; Status of standing crop along alignment	Observation, data collection and analysis and interview with stakeholders	Road side land and houses	During construction	Proponent / DIST/ VICCC
Water quality	observation of open defecation and waste disposal around water sources near construction sites ; Parameters like pH, hardness, DO etc.	Visual observation, measurement of water sample using standard field kit	local streams	During construction; Upon demand for testing with field kit	DIST / Proponent
Air quality	Dust level in ambient air	Visual inspection and comparison with baseline	At construction sites and at sensitive spots	During construction and	DIST / Proponent

Parameters & Indicators	Verifiable Indicators	Verification Methods	Location	Schedule	Responsible Implementation and Monitoring Agency
		condition	(schools, health spots, major settlements)	operation	
Forest and vegetation	Numbers of trees, presence of ground vegetation, signs of illicit logging and extraction of NTFPs	Observations, DFO records, photos; interview with CFUGs members	In and around the construction sites, markets,	During construction and operation	DIST/ CFUGs/DFO during construction; CFUGs / DFO during operation
Wildlife	Wildlife hunting trapping and poaching by work force, trade of wildlife, biological survey on selected biota, road accidents inflicting wildlife	Interview with local people / DFO/ CFUGs members, photos, observations	Forest areas at roadside	Twice a year during construction and routine during operation	DIST during construction; CFUGs/DFO during operation
Change in economy	Numbers of people employed by the Project during construction Numbers of women in work forces	Records kept by the Project management, DISTussion with stakeholders	Project Area	Trimester during construction phase	DIST /Proponent
Trade and commerce	Numbers of shops increased or decreased, rental of houses and land spaces	Records, interviews, observations, photos	Project Area	Throughout Project, once in a year	Proponent / VDC
Cottage industries	Establishment of industries in the vicinity of Project Area	Records and interviews, photos	Project Area/ zone of influence	Throughout Project	Proponent / VDC
Occupational safety and hazard	Type and number of accident occurred during construction; Adequacy of occupational safety measured provided; Compensation provided in case of fatal accidents or invalidity	Observations, photos, spot checks, contractors' and health centre records interview with labourers	Project Area	During construction	DIST/Proponent
Change in socio-economic structure	No and extent of new settlements / types and ethnic groups; Nos and extent of new businesses; Nos and extent of new services and utilities, social conflicts	Observations, interview with local people, DDC Police and VDC records	Project Area	During operation	Proponent / VDC
Ribbon settlement	Congestions to road users Nos. of accidents, RoW encroachment	Records, observations	Project Area	During operation	DDC/CDO

8.0 Conclusion and Recommendations

8.1 Conclusion

146. The IEE study of the Durlung-Saliya road sub-project does not pass through any environmentally sensitive area and have minimal detrimental effects associated with loss of forest 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 rural area and improve the quality of life of the people. 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.

147. The IEE has shown that none of the anticipated environmental impacts of constructing the 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

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

149. A key consideration in selecting the road alignment is to minimize the acquisition of valuable agricultural and forest land. However, some agricultural and forest 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.

9.0 Miscellaneous

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ANNEXES

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मिति: २०६६/१/२४

लिपि: 'नामिक माताचरणीय पमीलप (1111) को कानसुची (1199) स्वीकृत भएको ।

प्रमाण पुनर्विचार तथा पुनर्व्याख्या कार्यलय (REPEAL) अन्तर्गत निम्न विन्ता निम्नतः शक्तिशाली प्रमाणलेखात निम्नानुसारका सहकर्मचारी प्ररम्भिक क्तावरणीय परीक्षणको कार्यस्थली (ताका) कार्यस्थली (TOA) तथा गरी रक्तो विनाश गर्फत प्रदानरणीय संरक्षण विभागाधी २०४४ अनुसार स्वीकृतको रक्तो यस मन्त्रालयमा पेश भएकोमा नेपाल सरकारको मिति २०४५/२/२४ को निर्णय (अतिरिक्त) अनुसार स्वीकृत भएको प्रतिवेदन मात्र २/२ को प्रस्ताव सहकर्मचारी लाठीत अनुमति भन्नेछ ।

1. चिन्तामणी-रुक्मण्य, अरुण जीव, डोमिनिका-फलोप्यस, गुल्ताद-सोलेस, कार्बोनिट-गुडगु, मधुसूदन-पर्वत जिल्हा। ✓
2. गुरुवा-राठीविदास, कार्बोनिट-रुक्मण्य, कार्बोनिट-रुक्मण्य, कार्बोनिट-रुक्मण्य (गुरुवा जिल्हा)। ✓
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(विजयराज सुर्वेडी)
शासक अधिकारी



स्वीकृत मिति: २०६६/२/२२



Terms of Reference (ToR)
for
Initial Environmental Examination (IEE)
of
**Durlun-Saliya
Road Sub-Project**

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

दस्ता नं:- १६
दस्ता मिति:- २०६६/०४/१४

Proponent:
**District Development Committee (DDC)/
District Technical Office (DTO)
Parbat**
Telephone No. -067-421165

March 2009

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TABLE

Table 1. Proposed Work Schedule for Conducting IEE Study.....5

FIGURE

Figure 1. Map of Nepal Showing Location of Durlun-Saliya Road Sub-Project

Parbat District

Figure 2. Map of Parbat District Showing Durlun-Saliya Road Sub-Project.....2

ToR for IEE of Durlung-Saliya road sub-project in Parbat District



ABBREVIATIONS

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

ToR for IEE of Durlung-Salija road sub-project, Purbat District

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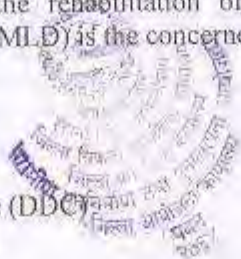

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1.0 NAME AND ADDRESS OF THE PROPONENT

The District Development Committee (DDC)/District Technical Office (DTO), Parbat is the executing agency at the district level and the proponent of the Initial Environmental Examination (IEE) study for the rehabilitation of Durlun-Saliya 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)
Kushma, Parbat



2.0 INTRODUCTION

2.1 GENERAL INTRODUCTION

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

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

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

This Terms of Reference (ToR) is prepared to conduct an IEE study of Durlun-Saliya road sub-project in Parbat District.

2.2 BACKGROUND OF THE SUB-PROJECT

The proposed of Durlung-Saliya VDC road sub-project lies in the North-Eastern part of Parbat district of Western Development region of Nepal. This sub-project starts from Siwalaya VDC and ends at Kyang VDC. Major settlements along the road alignment are

ToR for IEE Durlung-Saliya sub-project in Parbat District

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Durlungchouk of Durlung VDC, Halhalechouk of Halhale VDC, Total length of the road alignment is 20 km.

The starting point of the road Durlungchouk of Durlungchouk VDC is a head at Pokhara-Baglung highways. This road is Link with Kusma, district headquarter of Parbat. The trail runs through ridges and crosses the hilltop of Halhale. It has a steep slope at most of the stretches. It links Salija VDC with Kusma, the headquarters of the district. It passes through dense forest area in some region. The road width is 3.5 to 4.0 m or more because of gabion wall construction at different sections. For the remaining length of the road, width is 3 m in general, but some sections of road are having 2.5 to 3.5 m width also.

The people in this project area are having many types of transportation problems due to the steep topography. Local people have no access to the market centres of the district to fulfil their daily needs. This road is link with District headquarter Kusma. Hence the locally produced materials like Paddy, Wheat, Maize are main product of that areas and due to lack of link road that product getting low prices than it may fetch. Other development facilities are also far from the reach of people because it is very difficult to create a system like water supply, electricity, bio-gas plant and telephone without a road corridor. Having lots of transportation difficulties, people of the road corridors initiated to construct a road by using excavating machine through DDC from FY 062/063.

The rehabilitation of road will mainly enhance the transportation of Paddy, Wheat, Maize produced in remote areas of Durlung, Halhale, Kyang VDCs and it will also extend physical and economical access to the people within the immediate zone of influence. For the road construction, use of local labour will generate immediate employment to local people and minimise migration to Kathmandu, Pokhara in search of work. Consequently, local people will get long-term benefit which will enhance their economic status within the ZOI of road corridor and adjoining area of Parbat district.

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

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

Figure 1. Map of Nepal showing location of Durlun-Salija road sub-project in Parbat district

Figure 1

Figure 2. Map of Parbat district showing Durlun-Salija road sub-project

ToR for IEE Durlun-Salija sub-project in Parbat District



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2.3 OBJECTIVES

The objectives of the proposed IEE study includes to:

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

2.4 RELEVANCY OF THE SUB-PROJECT

The proposed road will connect Siwalaya, Durlung, Halhale and Salija VDCs with connect to the Pokhara-Baglung highways, etc. This road starts from Siwalaya VDC to The trail runs through ridges and crosses the hilltop of Halhale. The end point of this rehabilitation section of road is Kayang VDC (770 m amsl),

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

3.0 REVIEW OF RELEVANT LAWS, RULES AND GUIDELINES

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

- Environment Protection Act, 1997 and Environment Protection Rules, 1997 (amended 1999)
- Forest Act, 1993 and Forest Rules, 1995
- Batabaraniya Nirdeśika (Nepal; MLD), 2057
- National Park and Wildlife Conservation Act, 1973
- Local Self Governance Act, 1999 and Local Self Governance Rules, 2000
- Land Acquisition Act, 1977 and Land Acquisition Rules, 1969
- National Environmental Impact Assessment Guidelines, 1993

- APPROACH for the Development of Agricultural and Rural Roads, 1999 (DoLIDAR)
- 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 Regions. GTZ, SDC, 1999.
- ADB Environmental Assessment Guidelines, 2003
- Three Years Interim Plan, 2007/08-2009/10

4.0 PROCEDURE TO BE ADOPTED WHILE PREPARING THE REPORT

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

4.1 DESK REVIEW

The following steps will be followed during the desk review:

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

4.2 PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

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

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

4.3 FIELD WORK

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

5.0 ALTERNATIVES FOR THE IMPLEMENTATION OF THE PROPOSAL

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

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

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

6.0 REQUIREMENT OF THE IEE STUDY

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

6.1 TIME SCHEDULE

IEE report will be completed within eight weeks after the approval of ToR. An indicative time frame for conducting IEE is given in the Table 1 below:

Table 1. Proposed work schedule for conducting IEE study

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

ToR for IEE Durlung-Sallija sub-project in Parbat District


महोदय, डुलुङ-सल्लिजा



6.2 ESTIMATED BUDGET AND STUDY TEAM

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

- Landslides, slope stability, bio-engineering and erosion
- Forestry and wildlife
- Geology
- Road engineering
- Social, economic and culture.

The IEE will be carried out and prepared by DIST Environmental Specialist, with support from DIST team Parbat, Environmental Specialist from CISC and District Project Office (DPO). CISC Environmental Specialist will provide necessary training to DIST for the environmental assessment procedures. The activity of IEE preparation will be supervised by DPO office. Since, the IEE report will be prepared by the DIST team with the support of the CISC, no separate budget and manpower is required. However, specific subject matter experts will be hired for short term basis if needed.

7.0 ENVIRONMENTAL BASELINE

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

8.0 ANALYSIS AND INTERPRETATION

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

9.0 IDENTIFICATION, PREDICTION AND EVALUATION OF IMPACT

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

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

9.1 BENEFICIAL IMPACTS

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

9.1.1 Construction Stage

- Employment Generation and Increase in Income
- Skill Enhancement
- Enterprise Development and Business Promotion
- Community Empowerment and Ownership

9.1.2 Operation Stage

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

9.2 ADVERSE IMPACTS

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

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

Physical environment

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

- Change in Land Use
- Spoil Disposal
- Slope Instability
- Water Management works i.e. springs, streams, rain water (Drainage and Cross Drainage Works
- Air Dust, Noise and Water Pollution
- Quarrying and Borrow Pit
- Decline in Aesthetic Value

Biological environment

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

- Loss or degradation of forests and vegetation
- Impact on wildlife including birds due to loss or degradation of habitat, increased hunting and other form of human pressure.
- Impacts on flora and fauna (as listed in CITES and IUCN Red data book)

Socio-economic and cultural environment

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

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

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

Physical environment

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

Biological environment

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

Socio-economic and cultural environment

- New settlement along the road alignment
- Road safety measures

10.0 BENEFIT AUGUMENTATION/MITIGATION MEASURES

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

11.0 ENVIRONMENTAL MANAGEMENT PLAN

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


responsibilities in order to monitor the environmental condition and adoption of suitable mitigation measures.

12.0 IEE report format

This format will be in line with provision made in the Schedule 5 of EPR, 1997 and should be adapted to project specific situation. The IEE report will contain the following sections:

- i. Cover page with name of the proposal and proponent and address
- ii. Table of content
- iii. List of Abbreviation (acronyms)
- v. Executive Summary that includes:
 - Background
 - Project Proponent
 - Objective
 - Relevancy of the Proposal
 - Project Description
 - Existing Condition
 - Identification of Impacts and Benefit Augmentation/Mitigation Measures
 - Environmental Management Plan
 - Conclusions and recommendations
- v. Salient Features of the Project
- vi. Introduction: This section should describe the project in simple terms and concisely, without missing relevant points but avoiding unnecessary details. The project description should provide following information:
 1. Background
 2. Relevancy of the proposal
 - Objectives
 - Methodology adopted
 3. Name and Address of the Proponent
 4. Description of the Sub-project
 5. Construction Approach
 6. Proposed Schedule for Implementation of Sub-project
- vii. Public Consultation and Information Disclosure
- viii. Review of 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. Annex

- ToR of IEE
- Rapid Environmental Assessment (REA) Checklist
- Abstract of cost
- RRRSDP environmental checklist
- Public notice
- Deed of enquiry (*muchulka*)
- Name of the organizations
- List of person contacted



- Meeting minutes of community consultation
- Recommendation letters from municipality and VDC's
- Existing condition
 - a. Distribution of household by major occupation
 - b. Summary of public services and infrastructures according to settlement
 - c. Land holding pattern of settlements within Zol
 - d. Number of households belonging to different food security category
- List of trees
- Maximization of slope cutting and preservation of vegetation cover
- Photographs

Ministry of Agriculture, Government of Nepal



Ministry of Agriculture, Government of Nepal (MOA)
District Technical Office (DTO)
Parbat
Postcode: 33700

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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:

Durlung-Saliya

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Sitting			
Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site		✓	
▪ Protected Area		✓	
▪ Wetland		✓	
▪ Mangrove		✓	
▪ Estuarine		✓	
▪ Buffer zone of protected area		✓	
▪ Special area for protecting biodiversity		✓	
B. Potential Environmental Impacts			
Will the Project cause...			
▪ Encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?		✓	
▪ Encroachment on precious ecology (e.g. sensitive or protected areas)?		✓	

SCREENING QUESTIONS	Yes	No	REMARKS
<ul style="list-style-type: none"> Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site? 		✓	
<ul style="list-style-type: none"> Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction? 		✓	
<ul style="list-style-type: none"> Increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing? 	✓		During road construction there will be increase in human and different construction activities that may cause the air pollution.
<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, May/June, 2009

Annex III: Abstract of Cost

SN	Description of works	Unit	Estimated	Rate(NRs)	Amount
			Quantity	In Figure	(NRs)
A	General				
1	Insurance of works, Plants and materials, construction equipments and against accident to workmen including third party insurance.	Lump Sum		400,000.00	400,000.00
2	Carry out additional tests for material and works as required and instructed by the Engineer.	Lump Sum		150,000.00	150,000.00
3	Providing Motorbike for Supervision team @ 2Nos.	Lump Sum		250,000.00	250,000.00
4	Providing Site Office for Supervision team	Lump Sum		48,000.00	48,000.00
	Sub-Total (A)				848,000.00
B.	Roadway Works				
1	Site clearance work	Sq.m	10,542.50	12.00	126,510.00
	Sub-Total (B)				126,510.00
2	Excavation in roadway, drain and foundation for gabion, dry and cement masonry retaining wall structures including removal and satisfactory disposal and stacking or hauling (to sites of embankment construction) of suitable cut materials as required (Respective clause of specifications 2-1.2.2,2-1.8 and 2-1.9)				
2.1	a) ordinary soil	Cum.	84,008.920	150.00	12,601,338.00
2.2	b) hard soil	Cum.	152,388.670	180.00	27,429,960.60
2.3	c) Ordinary Rock	Cum.	8,134.490	600.00	4,880,694.00
2.4	d) Medium rock	Cum.	10,286.140	1,200.00	12,343,368.00
2.5	e) hard Rock	Cum.	1,355.030	5,100.00	6,910,653.00
	Sub-Total (C)				64,166,013.60
3	Construction of roadway in embankment and miscellaneous backfilling areas with approved material obtained from roadway excavation including average transportation distance up to 50 m along the lead route, spreading in layers, watering and compaction; (Respective clause of specifications 2-5)				
3.1	a) ordinary soil	Cum.	21,780.540	75.00	1,633,540.50
	Sub Total (D)				1,633,540.50
C.	Structure Works				
1	Stone Masonry work in (1:4) in Drain work along the road(Respective clause of specifications 8 A d)	Cum.	4,072.043	4,526.35	18,431,492.96
2	Cement Concrete works: It includes all labour and material required for mixing, placing in position, vibrating, compacting, finishing, curing and all other incidentals required to produce concrete of specific strength as per the specification. The rate includes the work of making, fixing and removing of all centres and forms required for the work.(Respective clause of specifications 11 A a)				
2.1	Cement concrete work (1:3:6)	Cum.	13.100	7,911.95	103,646.55
3	Dry Stone works	Cum	1,643.250	1,496.35	2,458,877.14
	Sub-Total (E)				20,994,016.65
5	Supply and laying RCC Hume pipe (NP3). It includes all operations required to complete the work upto a trench depth below the ground level and jointing of pipes with 1:2 cement sand mortar.For ever subsequent pipe having a length of minimum 1 m. (Respective clause of specifications 15-5 and 15-6)				
5.1	60cm Dia	Rm.	112.500	5,221.18	587,382.75
	Sub-Total (F)				587,382.75
6	Assembling,Stone Packing and Febrication of gabion baskets (including rolling, cutting, weaving and supply to the site,				

	Hexagonal Mesh Size: 100mm*120mm, selvedge wire-7swg, mesh wire-10 swg & binding wire-12 swg, all heavy coated,placing them in position including stretching, binding them together and tying down lids,quarrying and transportation)(Respective clause of specifications 17-1.4,17-5 and 17-6)				
6.1	Gabion Boxes of sizes (2mx1mx1 m)	Nos.	1,729.000	5,135.30	8,878,933.70
6.2	Gabion Boxes of sizes (1.5mx1mx1 m)	Nos.	1,291.000	3,787.80	4,890,049.80
	Sub-Total (G)				13,768,983.50
7	20 cm thick stone pitching on the prepared bedding including supply of stone and river spalls for sealing of voids	Cum.	3,208.600	1,383.02	4,437,557.97
8	5cm thick beddig for stone pitching with screened Granular material	Cum.	852.550	1,695.83	1,445,779.87
	Sub total (H)				5,883,337.84
D.	Pavement work				
1	Subgrade preparation work(Loosing and recompactng at subgrade level including breaking of clods, spreading in layers,watering and compaction) Respective clause of specifications2-1.6,2-1.7,2-1.8,2-1.9 a	Sq.m	46,000.000	38.50	1,771,000.00
2	15 cm thick gravelling work (63mm down) Lead average 15km	Cum.	4,493.550	2,459.46	11,051,706.48
	Sub total (I)				12,822,706.48
E	Cutting of trees having girth of above 30 cm when measured at 1m above the ground including the removal of trunk, branches and stumps up to a lead of 100m along the lead route for trees of size:(Respective clause of specifications 1-1.5(a), 1-1.5(b) and 1-1.6)	Nos.	112.000	87.00	9744.00
	Sum Total (J)				9,744.00
	(K) Total of Sub-Total A,B,C,D,E,F,G,H,I and J				120,840,235.32
	Bio-Engineering 3% of Total cost				3,625,207.06
	Sub Total(L)				3,625,207.06
	Tools for RBGs @ 3% of total cost of RBGs				1,847,964.75
	Sub Total(M)				1,847,964.75
	Total of sub total K,L and M				126,313,407.13
	15% OVERHEAD excluding RBGs Cost				9,707,187.31
	(B) Total				136,020,594.44
	13% VAT excluding RBGs Cost				9,674,830.02
	(C)Total				145,695,424.46
	<u>Contingency@5% of total</u>				7,284,771.22
	Grand total				152,980,195.68
	Cost Per KM				7,255,404.11

Annex IV: RRRSDP Environmental Checklist

A. GENERAL SOCIO-ECONOMIC SITUATION OF THE INFLUENCE AREA³

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

VDC	Name of Settlement	Household and Population	Caste/ethnic distribution	General Comment

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

2. Economic activities/main occupation

VDC	Settlement	Number of HH and Percentage of Population engaged in					
		Agriculture & Livestock	Labor & Porter	Business/Commerce	Cottage Industry	GO/NGO Employees	Others (specify)

3. Existing services and infrastructures

[illegible]

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

A. B. C.
D.

4. Land holding pattern

Land holding Pattern	Settlement Code (HH No.)												Remarks
Landless													
less than 1 ropani)													
1 to 5 ropani													
5 to 10 ropani													
10 to 20 ropani													
20-50 ropani													
> 50 ropani													

A. _____ B. C.
D.

1. Food grain availability

S N	VDC	Settlement	Number of HHs having food sufficiency for					Total HHs
			Surplus (Sufficient for > 12 months)	Sufficient for whole years	Sufficient for 6 months	Sufficient for 3 months	Hand to mouth existence	
1								
2								
3								
4								
5								

Source: field survey, May/June, 2009

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

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

A. _____

B. _____

C. _____

D. Bayaleneta

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. Also mention the place.

Settlement (No. of HH)									
A	B	C	D	E	F	G	H	I	J

Name of settlement:

- (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
1		
2		

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
1		
2		
3		
4		

C. HISTORIC AND CULTURAL RESOURCES WITHIN THE SETTLEMENT

Type of Resource	Name/specification	Affecting activities	Location from project

जिल्हा प्राविधिक कार्यालय
पर्यंत
फोन नं ०६७-४२०९५३
०६७-४२९९६५

Annex VI: Deed of Enquiry (Muchulka)

संयोजित प्रक्रिया तथा पुनर्निर्माण कार्यक्रमको अन्तर्गत नै निम्नानुसारको सूचना यस कार्यालयको सूचना पाटीमा टाँसेको व्योहोरा प्रमाणित गरिन्छ ।

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

प्राथमिक बातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना

(प्रकाशित मिति ०६.०४.१९९९)

सामान्य पुनर्निर्माण तथा पुनर्स्थापना आयोजना (RRRSDP) अन्तर्गत एभियाली विकास बैंक, डिफिड तथा स्वीस सरकार विकास निगमको अनुदान सहयोग तथा अतिरिक्त भूगर्भ सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभकारी समेतका लगायतीमा निर्माण गर्न प्रस्ताव गरिएको दोधिल्ला-फलेवास, कुपमा-दुर्लुङ-सालिजा, बिसापानी-बुवास-बरीचौर र काकीनेटा-लुखु सडक उपआयोजनाको प्राथमिक बातावरणीय परीक्षण प्रतिवेदन (IEE) कार्यान्वयन गर्ने स्थलभित्रमा बातावरण संरक्षण नियमावली २०५४ (पहिलो संसोधन, २०५४) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

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

प्रस्तावित सडक उपआयोजनाहरूको विवरण :-

क्र.सं.	सडकको नाम	प्रभाव पार्ने गा.वि.स.हरु	प्रस्तावकको विवरण	तम्बाई
१	दोधिल्ला-फलेवास सडक उप आयोजना	चुवा, पकुवा, पिपलटारी, कटुवाचौपारी, मडिकुवा र देविस्थान	यो उपआयोजना चुवा गा.वि.स अन्तर्गत पोखरा बागलुङ राजमार्गको सुन्दरे खोला बाट शुरू भई देविस्थान गा.वि.स को फलेवास क्याम्पस चौकमा गई टुकिन्छ। यो सडकमा दोधिल्ला, बिल्ली, माझगाउँ, लायाचौर, बडहरे, देउतबजार, साईकलाचोक, सिरपा, एकधरे, सातवीसे,डाडा, सेराखीर राहाले, चम्पनटार-फलेवास आदि बस्ति हरू पर्दछन्।	१५ की.मी.
२	कुपमा-दुर्लुङ -गोविन्दा सडक उप आयोजना	शिवालय, दुर्लुङ र क्याङ	यो उपआयोजना शिवालय गा.वि.स को दुर्लुङ चौक (पोखरा-बागलुङ राजमार्ग) बाट शुरू भई क्याङ गा.वि.स को लेखार चौकमा गई टुकिन्छ। यो सडकमा दुर्लुङ चौक, कामि डाडा, चिरेटोल, गोबामे राहाटे, भाटचौर, खोटाचौर, देउराखी, गौडाखानी, काफनबोट, काकिनेटा, गोठचौर, धुवेलखान, तल्ली हलहान, बारीचौर, माथिल्ली तुपलले, मेसुर र लेखार आदि बस्ति हरू पर्दछन्।	२० की.मी.
३	बिसापानी हवास बरीचौर सडक उप आयोजना	हवास, चिबेशी, मेउलिवास, ठरामपोखरा, सालिग्राम र सतर्फि	यो उप आयोजना हवास, गा.वि.स को बिसापानी बाट शुरू भई बहाली गा.वि.स को बहाली भन्ज्याङमा गई टुकिन्छ। यो सडकमा धिन्तनचौक, शालेमाचौक, अर्धुन प्रजार, डाडा, कथहरे, शिरुनडाडा, र बहाली भन्ज्याङ आदि बस्ति हरू पर्दछन्।	१५ की.मी.
४	काकीनेटा लुखु सडक उप आयोजना	काकीनेटा, शपाखान र भंगारा	यो उप आयोजना काकीनेटा, गा.वि.स को हिलेखोला बाट शुरू भई भंगारा गा.वि.स र स्वहृदय जिल्लाको सिमाना बगलेनेटामा गई टुकिन्छ। यो सडकमा बुङ्गे छाटी टोल, रालेमाडा खोटे चौर, काकीनेटा बजार, बगलेनेटा, आदि बस्ति हरू पर्दछन्।	१० की.मी.

उक्त प्रस्तावकको कार्यान्वयन बाट बातावरणमा पर्नेसक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स, विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य संयोजकवाला व्यक्ति वा संस्थाले यो सूचना गौरवान्ध्रता प्रकाशित भएको मितिदेखि १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । साथै यसै बमोजिमको राय सुझाव स्थानीय पुर्वाधार विकास तथा कृषि सडक विभाग, जात्रलाखेल तथा स्थानीय विकास मन्त्रालय पल्लोक, काठमाण्डौ मा पनि पठाउन सकिन्छ । राय सुझाव पठाउने ठेगाना

जिल्ला विकास समितिको कार्यालय, पर्वत फोन नं ०९७-४२०२२६ फ्याक्स नं ०९७-४२०१४४	जिल्ला प्राविधिक कार्यालय, पर्वत फोन नं ०९७-४२०३५१, ०९७-४२११९४ फ्याक्स नं. -
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सूचना टाँसेको प्रमाणित गर्ने कर्मचारीको नाम

पद : नि.पि. प्रमुख
कार्यालयको छाप

दिनांक ०६/०४/१९९९

प्रस्तावक
कार्यालयको नाम
मिति

प्रमाणित गर्ने कर्मचारीको नाम
पद : नि.पि. प्रमुख
कार्यालयको छाप

राष्ट्रिय प्रशासनिक प्रणाली विकास निदेशावली

प्रस्तावित सडक उप-आयोजनाहरूको विवरण :-

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

प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना

(प्रकाशित मिति ०५/०८/२०१५)

राष्ट्रिय पुर्ननिर्माण तथा पुर्नस्थापना आयोजना (PRRSDB) अन्तर्गत प्रभावकारी विकास बैंक, डिफिड तथा स्वीस सरकार विकास तियोगको अनुदान सहयोग तथा लोफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभकारी समितिको लगानीमा निर्माण गर्न प्रस्ताव गरिएको दोधिल्ला-फलेवास, कुम्मा-दुर्लङ, सासिजा चिसापानी-हवास-बरीचौर र काकीनेटा-सुङ्गु सडक उप-आयोजनाको प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन (IEE) कार्यालयमा गर्ने सिलसिलामा वातावरण संरक्षण निवामावली २०५४ (पहिलो संस्करण, २०५४) को नियम ३.१२ अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम : प्रस्तावकको नाम : जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, पर्वत
प्रस्तावित सडक उप-आयोजनाहरूको विवरण :-

क्र.सं.	सडकको नाम	प्रभाव पर्ने गा.वि.स.हरु	प्रस्तावकको विवरण	जम्माई
१	दोधिल्ला-फलेवास सडक उप-आयोजना	चुवा, फकुवा, निपलदारी, कटुवाबोखारी, मडिकुवा र देविस्थान	यो उप-आयोजना चुवा गा.वि.स. अन्तर्गत पोखरा वार्डमा रहेको राजमार्गको सुन्दर खोला बाट सुरु भई देविस्थान गा.वि.स.को फलेवास नवाम्पस चौकमा गई दुईन्छ। यो सडकमा दोधिल्ला, खिल्लो, माभराउ, जामाचौर, चडले, देउविचौर, साईकलचौक, सिस्वा, एकघरे, मातवीसे,डाडा, सेराचौर, राहासे, चम्पनटार फलेवास आदि बस्ति हरू पर्दछन्।	१५ की.मी.
२	कुम्मा-दुर्लङ - सासिजा सडक उप-आयोजना	सासिजा, दुर्लङ र फ्याङ	यो उप-आयोजना सासिजा गा.वि.स.को दुर्लङ चौक (पोखरा-बागमुर राजमार्ग) बाट सुरु भई फ्याङ गा.वि.स.को सेस्वार चौतारामा गई दुईन्छ। यो सडकमा दुर्लङ चौक, कासि डाडा, पुरिडोल, गोथौली, रालोट, माटौली, खोटाङ, बडराजी, गौडामती, कापलचौर, सासिजा, कोटघाट, भुजेलथान, तल्लो हलहले, भरीचौर, माथिल्लो हलहले, सेस्वार र सेस्वार आदि बस्ति हरू पर्दछन्।	२० की.मी.
३	चिसापानी हवास बरीचौर सडक उप-आयोजना	हवास, जिरेपी, बेडेलवास, उरामपोखरा, सासिग्राम र बडौली	यो उप-आयोजना हवास, गा.वि.स.को चिसापानी बाट सुरु भई बहाकी गा.वि.स.को बहाकी भन्ज्याङमा गई दुईन्छ। यो सडकमा चिसापानी चौक, हातेमालीचौक, अर्थन बजार, खोटा, कचहरे, विमुनडाडा, र बहाकी भन्ज्याङ आदि बस्ति हरू पर्दछन्।	१५ की.मी.
४	काकीनेटा सुङ्गु सडक उप-आयोजना	काकीनेटा, बासभाना र भंगारा	यो उप-आयोजना काकीनेटा, गा.वि.स.को हिलेखोला बाट सुरु भई भंगारा गा.वि.स. र स्याङ्गजा जिल्लाको सिमाना बगालेनेटामा गई दुईन्छ। यो सडकमा बुढे खोटी टोल, रालोमारा घोप्टे चौर, काकीनेटा बजार, बगालेनेटा, आदि बस्ति हरू पर्दछन्।	१० की.मी.

उक्त प्रस्तावकको कार्यन्वयन बाट वातावरणमा पर्नेसक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना गोरखापत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । साथै यसै बर्षासम्मको राय सुझाव स्थानीय पुर्नधार विकास तथा कृषि सडक विभाग, काठमाडौं तथा स्थानीय विकास मन्त्रालय पुर्नधार, काठमाडौं मा पनि पठाउन सकिनेछ ।

राय सुझाव पठाउने ठेगाना

जिल्ला विकास समितिको कार्यालय, पर्वत फोन नं ०६७-४२०२२६ फ्याक्स नं ०६७-४२०१४४	जिल्ला प्राविधिक कार्यालय, पर्वत फोन नं ०६७-४२०१५१, ०६७-४२११५२ फ्याक्स नं
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सूचना यसको प्रमाणित गर्ने कार्यकारीको नाम

पद

कार्यालयको रूप



प्रस्तावक

कार्यालयको नाम

सम्पति



श्री प्रजागोपुन खेती तथा पुनर्वसन विभाग
आ.वि.स.को दुर्लुङ, नेपाल सरकार
स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय/
जिल्ला प्राविधिक कार्यालय
एवम्

प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि राय सुझावका लागि सार्वजनिक सूचना
(प्रकाशित मिति ०६.०६.१४)

ग्रामीण पुनर्निर्माण तथा पुनर्वसनका आयोजना (RRRSDP) अन्तर्गत एशियाली विकास बैंक, डीकड तथा स्वीस सरकार विकास निर्माणको अनुदान सहयोग तथा भौतिकको कृप सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राही समेतको लगानीमा निर्माण गर्ने प्रस्ताव गरिएको दोविस्सा-फलेवास, कुश्मा-दुर्लुङ-सालिजा, चिसापानी-हुवास-भरीचौर र कार्कीनेटा-लुङ्खु रडक उपआयोजनाको प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन (IEE) कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमवली २०१४ (पहिने शाखेन, २०१४) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ।

प्रस्तावकको नाम - प्रस्तावकको नाम - जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, पर्वत
प्रस्तावित सडक उपआयोजनाहरूको विवरण :-

क्र.सं.	सडकको नाम	प्रभाव गर्ने गा.वि.स.हरु	प्रस्तावकको विवरण	तम्बाङ
१.	दोविस्सा-फलेवास सडक उप आयोजना	चुवा, पकुवा, पिपलटारी, कटुवाचौपारी, मन्त्रिकुवा र देविस्थान	यो उपआयोजना चुवा गा.वि.स. अन्तर्गत पोखरा डाम्गलुङ राजमार्गको सुन्चरे खाता बाट शुरु भई देविस्थान गा.वि.स.को फलेवास न्याम्पर चौकमा गई दुईन्छ। यो सडकमा दोविस्सा, निल्ली, माझगाउँ, लामाचौर, बडहरे, देउनिबजार, साईकुलचौक, शिरुवा, एकधरे, सातवीसे,डाडा, सेराचौर, राखले, केन्दुनटार फलेवास आदि बस्ति हरू पर्दछन्।	१५ की.मी.
२.	कुश्मा-दुर्लुङ-सालिजा सडक उप आयोजना	शिवालय, दुर्लुङ र क्याङ	यो उपआयोजना शिवालय गा.वि.स.को दुर्लुङ चौक (पोखरा-नामगुङ राजमार्ग) बाट शुरु भई क्याङ गा.वि.स.को केन्दुनटार खातामा गई दुईन्छ। यो सडकमा दुर्लुङ चौक, काँस डाडा, परिटोल, गौदाम् रोहोटे, भाटचौर, खोरटोल, देउराली, गौडाम्नी, काफ्लेबोट, सार्पटोल, कोटवर, भुजेबस्थान, तल्लो हलहले, भरीचौर, माथिल्लो हलहले, केन्दुनटार र केन्दुनटार आदि बस्ति हरू पर्दछन्।	२० की.मी.
३.	चिसापानी हुवास-भरीचौर सडक उप आयोजना	हुवास, त्रिवेणी, वेजलिवास, उरागपोखरा, सालिगाम र बहाकि।	यो उप आयोजना हुवास, गा.वि.स.को चिसापानी बाट शुरु भई बहाकी गा.वि.स.को बहाकी भन्ज्याङमा गई दुईन्छ। यो सडकमा चिल्लनचौक, हातेमालोचौक, अर्धुन बजार, डाडा, कचहरे, त्रिसुवाडाडा, र बहाकी भन्ज्याङ आदि बस्ति हरू पर्दछन्।	१५ की.मी.
४.	कार्कीनेटा-लुङ्खु सडक उप आयोजना	कार्कीनेटा, धोपाथला र भंगारा।	यो उप आयोजना कार्कीनेटा, गा.वि.स.को हिलेखोला बाट शुरु भई भंगारा गा.वि.स. र स्वाङ्गजा जिल्लाको सिमाना बगालेनेटामा गई दुईन्छ। यो सडकमा बुङे खाटी टोल, रातोमाटा, छोप्ते चौर, कार्कीनेटा बजार, बगालेनेटा, आदि बस्ति हरू पर्दछन्।	१० की.मी.

उक्त प्रस्तावकको कार्यान्वयन बाट वातावरणमा पर्नेसबने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्थानीय स्तरीय, ग्राम उपमहोत्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना गोरक्षपत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिन भित्र आफ्नो राय सुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ। साथै यसै अवसरमा राय सुझाव स्थानीय पुर्वाधार विकास तथा कृषि सडक विभाग, जावलाखेल तथा स्थानीय विकास मन्त्रालय पुल्चोक, काठमाडौं मा पनि पठाउन सकिनेछ।

राय सुझाव पठाउने ठेगाना:

जिल्ला विकास समितिको कार्यालय, पर्वत
फोन नं ०६७-४२०२५६
फ्याक्स नं ०६७-४२०१४४

जिल्ला प्राविधिक कार्यालय, पर्वत
फोन नं ०६७-४२०१४५, ०६७-४२५१५५
फ्याक्स नं

सूचना दिएको प्रमाणित गर्ने कर्मचारीको नाम डा. कुल ४ पी
आ.वि.स.को दुर्लुङ
कार्यालयको छाप

हस्ताक्षर:
कार्यालयको नाम
मिति:

०६/०६/१४
गोपाल शर्मा
गा.वि.स. सचिव



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, Shivalaya	Kushma	
2	Office of Village Development Committee, Durlung	Durlung	
3	Office of Village Development Committee, Kyang	Kyang	

Source: Field Survey, , 2009

Annex VIII: List of persons consulted

List of persons consulted

S.N.	Name	Address	Occupation	Contact No.
Shivalaya VDC				
1	Hom Bdr Bhandari	Shivalaya VDC	VDC Secretary	
2	Puran Giri	Shivalaya VDC	Politician	
3	Ram Pd Acharya	Shivalaya VDC	Politician	
4	Rudra Giri	Shivalaya VDC	Politician	
5	Mahadev Giri	Shivalaya VDC	Politician	
6	Parshuram Puri	Shivalaya VDC-3	Social Worker	
Durlung VDC				
1	Gokul Sharma	Durlung VDC	VDC Secretary	
2	Lekh Bdr Gurung	Durlung VDC	Social Worker	
3	Tej Pd Padhya	Durlung VDC	Social Worker	
4	Lal Bdr Gurung	Durlung VDC	Business	
5	Hom Bdr Thapa	Durlung VDC	Budiness	
6	Hiradevi Magar	Durlung VDC	Social Worker	
7	Ram Kumari Gurung	Durlung VDC	Politician	
8	Indra Bdr Gurung	Durlung VDC	Teacher	
9	Uma Deve Sharma	Durlung VDC	Teacher	
Kyang VDC				
1	Dhan Bdr Okhali	Kyang VDC	VDC Secretary	
2	Man Kumar Pun	Kyang VDC	Politician	
3	Padam Bdr Pun	Kyang VDC	Politician	
4	Bhim Bdr Pun	Kyang VDC	Politician	
5	Om Bdr Rokka Pun	Kyang VDC	Politician	
6	Kul Bdr Pun	Kyang VDC	Business	
7	Ganga Bdr Bishwakarma	Kyang VDC	Farmer	
8	Ram Bdr Pun	Kyang VDC	Farmer	
1	Raju Sapkota	DWSCC	Soil Conservation Officer	
2	Kamal Pokharel	DADO	Officer	
3	Harischandra Sapkota	DFO	Forest Officer	

Source: Field Survey, May/June, 2009

Annex IX: Summary of meeting minutes with local people

आज भिन्न-भिन्न जाति के लोग मिल कर बैठे।
 गा. बि. का दलित भी होम-बहुतुर गठारों का
 अक्षयलतामा-बदेकौ गोलामा-कुम्मा-दुर्लुङ-शालिजा
 सड़क उप-आयोजना का काम करने शुरू पूर्वोक्त
 निर्माण सम्बन्ध राशितिकों के काम निम्नानुसार की उपस्थिति
 रहे।

उपस्थिति :-

- १) श्री होम-बहुतुर गठारी - गा. बि. का दलित
- २) श्री पूर्ण गिरि - इच्छित रेकमा माओवानी (सदस्य)
- ३) श्री रामप्रसाद आचार्य - प्रेमाने काँग्रेस
- ४) श्री दद गिरि - रेकमा एमाले (सदस्य)
- ५) महादेव गिरि - रा. प्र. पा (सदस्य)
- ६) परशुरामपुरी - शिवालय-३ नागरिक समाज

निर्णय क्र. १

कुम्मा-दुर्लुङ-शालिजा सड़क के निर्माण
 कार्य अन्तर्गत (I.E.E) आर्थिक वातावरणीय प्रभाव
 मूल्यांकन को लागू करने के बहकले यह उप आयोजना
 के इस गा. बि. का वातावरण को कुने प्रकार के
 नकारात्मक वातावरणीय प्रभाव होने निर्णय
 सर्वसम्मति से पास कर दिया।

ભિલાલ મિત્રે ૨૦૬૬/૪/૨૪ મેં દુર્લુક જા. સે. માં ગણત માટે સ્વરૂપ
પૂર્ણકાર નિર્માણ સમિતિના સભ્યોને બેઠક પર સ્વીકૃતિ અર્પણ
શ્રી ગોકુલ શર્માએ અધ્યક્ષતામાં વડી તપસિન સમીક્ષાએ અધ્યક્ષ
મિત્ર પ્રસ્તાવરૂપે આથી દલકલ રાઈ નિર્ણય ગરિલું।

અધ્યક્ષ

અધ્યક્ષ :- શ્રી ગોકુલ શર્મા કિશનજી

આ. ર. :- શ્રી ભેલ બદાદુર ગુરુજી કિશન

આ. ર. :- શ્રી તેલ પ્રણાદ ભણા કિશન

આ. ર. :- શ્રી ભાલ બદાદુર ગુરુજી કિશન

આ. ર. :- શ્રી ભોજ બદાદુર શાળા કિશન

સહસ્ય :- શ્રીમતી દિવા ભોજી જાળ કિશન

આ. ર. :- શ્રીમતી રાજ કુમારી ગુરુજી કિશન

આ. ર. :- શ્રીમતી રાજ કુમારી ગુરુજી કિશન

સા. વ. :- શ્રીમતી ગંગાદેવી જાળી કાશ્મીર

પ્રસ્તાવરૂપ :-

૧. પ્રાચીન વાતાવરણીય પરીસ્થિતિ સમ્બંધી

નિર્ણયરૂપ :-

નિ. નં. ૧ પ્રસ્તાવ નં. ૧ માંથી દલકલ ગઈ યદુ બિનાલય - દુર્લુક -
જાલીલા તેડ નિર્માણ કાર્યની ચલ ગા. સે. ર. માં લાલો કુને પ્રમણી
લખાણ અસર નર્પે નિર્ણય ગરિલો।

કિશનજી

કિશન

કિશન

કિશન

आल मिमि २०६६ साल माघ २३ गते प्रवेष्टार निर्माण
समितिका संमोजक श्री धन बहादुर भर्तृहरि रैनालेका
अगुवा बनेका निम्न प्रमोजक समितिका पदाधिकारीहरूको नामावलि
गयो।

उपनिधाय

१. संमोजक श्री धन बहादुर भर्तृहरि
२. प्र. क. पा. ग. भोवादी श्री तनकुमार पुन मल्ल
३. प्र. क. पा. र. माले प्र. श्री पद्म बहादुर पुन
४. प्र. क. पा. र. माले प्र. श्री निमबहादुर पुन
५. प्र. क. पा. य. पा. प्र. भोम बहादुर ऐक्य पुन
६. प्र. क. पा. र. माले प्र. श्री कुल बहादुर पुन
७. प्र. क. पा. र. माले प्र. श्री गंगा बहादुर वि. क.
८. प्र. क. पा. र. माले प्र. श्री ल. ग. बहादुर पुन
९. महिला प्र. श्री

निर्णय १.

क्याड जा. वि. ए. को प्रवेष्टार निर्माण समितिकै
मिति २०६६/२/२५ गते बसेको बैठकले क्याड जा. वि. ए. को
वातावरणमा प्रस्तुत बाबलम - दुर्लुङ - सालीमा सडकको निर्माणले
अहो पुगे आएर तर्फ निर्णय सर्वसम्मतिमा गरिने गरियो।

प्र. क. पा. ग. भोवादी
प्र. क. पा. र. माले प्र.
प्र. क. पा. य. पा. प्र.
प्र. क. पा. र. माले प्र.
प्र. क. पा. र. माले प्र.

Annex X: Recommendation Letters from VDCs



गाउँ विकास समितिको कार्यालय

सुदूर पर्वत

पत्र संख्या :- ४६६/६६
चलानी नम्बर :-

घरलाभिटि अन्तर्गत
मिति :- २०६६/५/१६

विषय :- सिफारिस ।

श्री ग्रामीण पुर्ननिर्माण तथा पुर्नस्थापना आयोजना -
भिराला आयोजना कार्यालय
पर्वत ।

उपरोक्त सम्बन्धमा यस कुश्मा दुर्गुङ्ग-क्याङ्गु मोरा कसो
उपआयोजनाको प्रारम्भिक कालावलीय प्रशिक्षण प्रतिवेदन तयार पार्नुमा
यो पत्र लेखिएको छ । उक्त प्रस्तावको प्रारम्भिक कालावलीय
प्रशिक्षण प्रतिवेदनमा उल्लेख भएका विषय तथा कालावलीय प्रस्ताव
र सहस्रता उपायहरूको को समुदायलाई लागू गरी भइसकेको
उक्त प्रस्ताव कार्यालयको उक्त लेखी सिफारिस साथ भइसकेको छ ।

२०७६/५/१६



श्री गाउँ विकास समितिको कार्यालय

फोन नं. - ०६७-४२०९४९



पत्र संख्या - ०६६/०६७

चलानी नं. - ४८९

मिति: २०६६/७/२४

विषय:- स्त्रिकापीस्तु गारेखी बारे । -

श्री ग्रामिण पुनर्निर्माण तथा पुनर्स्थापना आयोजना
जिल्ला आयोजना कार्यालय, पर्सा

प्रस्तुत विषयमा दुरमा - दुर्लुङ्ग, - शालिजा
सडक उप आयोजनाको प्रारम्भिक वातावरणीय परिक्षण प्रति-
-वेदनमा उल्लेख भएका विषय तथा वातावरणीय
प्रभाव र संरक्षण उपायहरूको बारे यस कार्यालयलाई
जानकारी भएकाले उक्त प्रस्ताव कार्यान्वयनमा -
लानी स्त्रिकापीस्तुसँग अनुरोध गरिनेछ । -


२०७०/०६/०६

गा.वि.स. सचिव (शा.अ.)



गाउँ विकास समितिको कार्यालय

પત્ર સંખ્યા :- ૦૬૬/૦૬૭

ਬਲਾਕੀ ਕਮਿਸ਼ਨ :- 26



धवलागिटि अन्धल

मिति :- 20/11/196

विषय :- सिद्धि

श्री श्रीगुरुदेवकी आज्ञा सुनिश्चयानुसारि

सिद्धा आनोसना वामनाथ
पुस्तक

426

प्रस्तुत विषय ओ शिवालय १ जुलै १९८५

लेख 512 का 55 रुपय आयोजना की प्राप्ति का अवधि

परीक्षा प्रतिष्ठान सविज्ञानी सेवा को लागू है/ ३६

यथायथा देवाः शक्तिं वाचयन्ति तथैव यथायथा

उत्तरांचे १ मध्ये विविध तथ्यां वास्तवरानिष्ठ प्रमाण (निष्कर्ष)

उपासक के वाणी से ही कामना चलती जा रही है।

ॐ श्रीगणेशाय नमः ॥ श्रीगणेशाय नमः ॥ श्रीगणेशाय नमः ॥

१७
१७/११/२०१०
गा.स.स. सचिव

ग.स.स. सचिव

Annex XI

XI a. Distribution of households by major occupation

XI b. Summary of public services & infrastructures

XI c. Number of households belonging to different food security category

XIa: Distribution of households by major occupation

S.N.	Settlements	Number of HH and Percentage of Population engaged in					
		Agriculture & Livestock	Labour & Porter	Business/ Commerce	Cottage Industry	GO/ NGO Employees	Total
1	Kushma (Durlung Chowk)	0	7	15	0	10	32
2	Thumka	2	0	3	0	2	7
3	Kamidanda	10	20	0	0	0	30
4	Godam	10	10	2	0	13	35
5	Rohote	40	8	0	0	15	63
6	Shlyan	8	2	3	0	1	14
7	Deurali	5	0	0	0	10	15
8	Gaudamuni	24	10	0	0	10	44
9	Kot Thar	13	2	0	5	0	20
10	Tallo Halhale	25	5	2	0	9	41
11	Upplo Halhale	20	5	0	0	7	32
12	Meksar	8	2	1	2	0	13
13	Lespar	30	7	10	0	15	62
Total		195	78	36	7	92	408
Percentage (%)		47.79	19.12	8.82	1.72	22.55	100

Source: Field survey, 2009

XI b. Summary of public services and infrastructures according to settlement

Settlement Name/ Public services and Infrastructure	School (no)	Health post (no)	Post office (no.)	Communication(no) CDMA/MOBILE	Hydro power (no)	Solar (no)	Shops/lodge (no)	Water supply (no)	Irrigation (KULO)	Mill (no)	Bridge (no)	Community organization (no)	Fin. Institution (no)	Community CENTRE	Industry (no)
Kushma (Durlung Chowk)	15	1	1	23	1	11	35	1	-	-	1	2	4	1	-
Thumka	-	-	-	6	-	2	2	1	-	-	-	-	-	-	-
Kamidanda	-	-	-	-	-	5	15	1	-	-	-	-	-	-	-
Godam	1	-	-	6	-	2	4	1	-	-	-	-	-	-	-
Rohote	1	1	-	3	-	7	25	1	-	1	-	1	-	-	-
Shlyan	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-
Deurali	-	-	-	2	-	3	5	-	-	1	-	-	-	-	-
Gaudamuni	1	1	-	2	-	5	12	1	-	-	-	1	-	-	-
Kot Thar	1	1	-	3	8	30	1	1	-	-	1	1	-	-	-
Tallo Halhale	1	1	-	7	-	8	25	-	-	-	-	1	-	1	-
Upplo Halhale	1	1	-	2	-	6	15	-	-	-	-	1	-	1	-
Meksar	-	-	-	-	-	2	-	1	-	-	-	1	-	-	-
Lespar	1	1	-	2	-	5	5	-	-	-	-	2	-	-	-

Source: Field survey, 2009

XI c. Number of Households Belonging to Different Food Security Category

SN	Settlement	Number of HHs having food sufficiency for					Total HHs
		Surplus (Sufficient for > 12 months)	Sufficient for whole years	Sufficient for 6 months	Sufficient for 3 months	Landless	
1	Kushma (Durlung Chowk)	5	15	7	5	0	32
2	Thumka	1	2	3	1	0	7
3	Kamidanda	0	0	15	10	5	30
4	Godam	5	10	17	3	0	35
5	Rohote	7	13	31	9	3	63
6	Shlyan	1	3	8	2	0	14
7	Deurali	2	5	7	1	0	15
8	Gaudamuni	3	7	20	11	3	44
9	Kot Thar	5	8	5	2	0	20
10	Tallo Halhale	2	6	25	6	2	41
11	Upplo Halhale	3	2	17	8	2	32
12	Meksar	0	1	9	2	1	13
13	Lespar	3	16	27	12	4	62
Total		37	88	191	72	20	408
Percentage (%)		9.07	21.57	46.81	17.65	4.90	100

Source: field survey, May/June, 2009

Annex XII: List of trees to be removed

Chainage	Species	Size (Girth) m	
		(0.3-0.6)m	Total
2+600	Chilaune(Schima wallichii)	2	2
2+735	Chilaune(Schima wallichii)	4	4
2+989	Chilaune(Schima wallichii)	1	1
3+780	Chilaune(Schima wallichii), Uttis (Alnus nepalensis)	5	5
4+049	Chilaune(Schima wallichii) , Uttis (Alnus nepalensis)	5	5
5+300	Chilaune(Schima wallichii)	3	3
5+900	Chilaune(Schima wallichii)	3	3
5+936	Chilaune(Schima wallichii), Uttis (Alnus nepalensis)	4	4
5+998	Chilaune(Schima wallichii)	2	2
6+972	Chilaune(Schima wallichii), Katus (Castanopsis indica)	4	4
9+560	Chilaune(Schima wallichii)	5	5
9+960	Chilaune(Schima wallichii)	3	3
10+199	Chilaune(Schima wallichii)	4	4
10+460	Chilaune(Schima wallichii), Katus (Castanopsis indica)	5	5
10+480	Salla (Pinus Roxburgii)	1	1
10+860	Salla (Pinus Roxburgii), Katus (Castanopsis indica)	7	7
10+920	Salla (Pinus Roxburgii)	3	3
11+217	Salla (Pinus Roxburgii)	3	3
12+345	Salla (Pinus Roxburgii)	5	5
13+473	Salla (Pinus Roxburgii)	7	7
14+601	Salla (Pinus Roxburgii)	9	9
15+729	Laliguras (Rhododendron arboretum)	4	4
16+857	Laliguras (Rhododendron arboretum)	6	6
17+985	Laliguras (Rhododendron arboretum), Katus (Castanopsis indica)	12	12
19+113	Laliguras (Rhododendron arboretum), Katus (Castanopsis indica)	7	7
20+241	Laliguras (Rhododendron arboretum), Katus (Castanopsis indica)	6	6
20+369	Katus (Castanopsis indica)	3	3
20+897	Katus (Castanopsis indica)	9	9
Total			112

Source: field survey, June, 2009

Annex XIII: Photographs



Starting point Ch. 0+000, at Kushma, Shivalaya VDC at (District headquarter) connecting Pokhara-Baglung Highway



Drinking water pipe crossing and road section requiring gradient improvement at Ch. 1+050



Affected electric pole at Ch. 4+800, which needs to be relocated.



Landslide at Ch. 5+240



Proposed site for Cross drainage at Ch. 11+100 for waste water from public tap.



Road alignment passes through Kyang Community forest at Ch 13+800

Annex XIV: Summary of Cross Drainage Structures

Summary of Drainage works along the road alignment

Hume Pipe Details

S.N.	Chainage	Length	Dia.	Quantity	Remarks
		m	m	no.	
1	1+600	7.5	0.3	3	
2	5+900	7.5	0.3	3	
3	6+850	7.5	0.3	3	
4	7+196	7.5	0.3	3	
5	9+060	7.5	0.3	3	
6	9+450	7.5	0.3	3	
7	10+300	7.5	0.3	3	
Total		52.50		21.00	RM

S.N.	Chainage	Length	Dia.	Quantity	Remarks
		m	m	no.	
1	0+450	7.5	0.6	3	
2	1+075	7.5	0.6	3	
3	2+150	7.5	0.6	3	
4	2+300	7.5	0.6	3	
5	3+250	7.5	0.6	3	
6	3+700	7.5	0.6	3	
7	4+200	7.5	0.6	3	
8	4+800	7.5	0.6	3	
9	5+270	7.5	0.6	3	
10	5+600	7.5	0.6	3	
11	6+160	7.5	0.6	3	
12	7+522	7.5	0.6	3	
13	7+850	7.5	0.6	3	
14	8+500	7.5	0.6	3	
15	8+979	7.5	0.6	3	
16	9+900	7.5	0.6	3	
Total		120.00		48.00	RM

Source: Detail Technical Design, 2010

Annex XV: Affected Houses and Structures along the Road Alignment

Affected Houses and Structures along the Road Alignment


S. N.	Chainage		Structure No	Name of House owner	Settlement	Ward	VDC	Type of Structure	Remarks
	From	To							
1	1+000	1+200	1	Dil Bahadur Nepali	Godam	3	Shivalaya	Toilet	Fully Damage
2	4+100	4+200	2	Shree Prasad Padhya	Shlyan	5	Durlung	Goth	Fully Damage
3	10+800	10+900	3	Dhani Lal Sarki	Sarki Tol	3	Durlung	Residensial Home	Fully Damage
4	11+000	11+100	4	Chandra Bahadur B.K.	Durlung kot	3	Durlung	Residensial Home	Fully Damage
5	10+900	10+950	5	Tulasi Devi sarki	Durlung kot	3	Durlung	Residensial Home	Fully Damage
6	10+700	10+750	6	Manilal Sarki	Durlung kot	2	Durlung	Residensial Home	Fully Damage
7	10+750	10+800	7	Som Badhur sarki	Durlung kot	3	Durlung	Residensial Home	Fully Damage
8	11+200	11+300	8	Min Badhur Gurung	Kotthar	3	Durlung	Residensial Home	Fully Damage
9	11+900	12+000	9	Halhale Lowerseconderi School	Halhale	9	Kyang	School Building	Fully Damage
10	12+100	12+200	10	Tike Pun	Halhale	9	Kyang	Residensial Home	Partial Damage
11	12+100	12+200	11	Tike Pun	Halhale	9	Kyang	Toilet	Fully Damage


Source: field survey, May/June, 2009


Summary of Cost for RP


Item		Unit	Total loss	Amount (NRs.)	Remarks
1. DIRECT COST					
1.1	Compensation for private land	sqm	99411		12410000
1.2	Private Trees	No.	0	0	
1.3	Public tree	No.	0	0	
1.4	CFUGs Tree	No.	0	0	
1.5	Private structure	No.	10	1045132.36	
1.6	Public Structure	No	1	133,908.00	
	Sub Total (A)			11,79,040.36	
2.INDIRECT COST					
2.1	Moved allowance	LS		75,000.00	
2.2	Rental Stipend		2000*9*3	54,000.00	
2.3	Transportation Allowance	LS		1,00,000.00	
2.4	Deed Transfer Assistance	HHN	313	160,000.00	
2.5	Official Deed Transfer fees	LS	313	160,000.00	
	Sub Total (B)			4,49,000.00	
3	Income generation and Livelihood improvement programme			9,43,800.00	
4	Appreciation Program for APs	LS		1,00,000.00	
	Sub-Total (C)			10,43,800.00	
	Total (A+B+C)			26,71,840.36	
5	Provisional Sum (5%)			133592.00	
6	Reserve Fund for Absentees HHs			20,00,000.00	
	Grand Total			48,05,432.36	


Details of Affected Structures


House hold No. 01	Structure No.01	Chainage From 1+000 to 1+200 Distance from Centre Line of the Road 2.50... Address of Structure :- Godam Parbat.				
		Story	Total Area (sq.ft)	Area of land to be acquired (Sq.ft)	Rate per Sqft.	Total
			21.5			
		First		21.5	300	6450
		Second				
		Third				
		Veranda				
		Basking				
		Shed				
		Wall				
		Other				
		Total				6450
Name of owner : Dil Bahadur Nepali Address: Durlung 2 Parbat Citizenship Number: 5859 Name of father :Juthe Nepali Map/Sheet No: 093/0856 Plot No:88 Owner's certificate No: No		Type of structure Kacchi Material used in wall :- Mud, stone. Material used in roof : Jasta Material used in story : wood mud Present use : Toilet Construction year : 2060				


House hold No. 02	Structure No.02	Chainage : From 4+100 to 4+200 Distance from Centre Line of the Road :...3m..... Address of Structure :- Salyan Parbat				
	Story	Total Area (sq.ft)	Area of land to be acquired (Sq.ft	Rate per Sq.ft.	Total	
		24.18				
	First		24.18	200	4836	
	Second					
	Third					
	Veranda					
	Basking					
	Shed					
	Wall					
	Other					
	Total				4836	
Name of owner : Shree Prasad Padhya Address: Durlung 5 Parbat Citizenship Number: 5447 Name of father / Husband Padam Pani Padhya Map/Sheet No : Plot No: 323 Land Owner's certificate No: No		Type of structure :- Kachchi Material used in wall Mud Material used in roof : Material used in story Present use : Construction year :				


House hold No. 03	Structure No.03	Chainage From : 10+800 to 10+900 Distance from Centre Line of the Road 1.80m Address of Structure :-				
		Story	Total Area (sq.ft)	Area of land to be acquired (Sq.ft)	Rate per Sq.ft.	Total
			57.19			
		First		57.19	200	11438
		Second				
		Third				
		Veranda				
		Basking				
		Shed				
		Wall				
		Other				
		Total				11438
Name of owner : Dhani Lal Sarki Address: Durlung 3 Parbat Citizenship Number: Not f Name of father : Aaite Sarki Map/Sheet No: Plot No: 853 Land Owner's certificate No:6/125		Type of structure :- Kacchi Material used in wall :- ,Stone& Mud Material used in roof : Jasta Material used in story : Wood Bambo Present use : Temporary Hut Construction year :				


House hold No.0 4	Structure No.04	Chainage From : 11+000 to 11+100 Distance from Centre Line of the Road 1 m. Address of Structure :- Durlung Kot Parbat				
	Story	Total Area (sq.ft)	Area of land to be acquired (Sq.ft	Rate per Sq.ft.	Total	
		129				
	First		129	300	38700	
	Second					
	Third					
	Veranda					
	Basking					
	Shed					
	Wall					
	Other					
Total					38700	
Name of owner : Chandra Bahadur B.K. Address: Durlung 3 parbat Citizenship Number: Name of father Map/Sheet No: Plot No: Land Owner's certificate No:		Type of structure :- Kacchi Material used in wall :- Stone, Mud Material used in roof : Jasta Material used in story : Wood, Mud Present use : Residential home Construction year :				


House hold No. 05	Structure No.05	Chainage From : 10+900 to 10+950 Distance from Centre Line of the Road .1.50 m.. Address of Structure :- Durlungkot Parbat				
		Story	Total Area (sq.ft)	Area of land to be acquired (Sq.ft	Rate per Sq.ft	Total
			725.5			
		First		362.75	300	217650
		Second		362.75	300	217650
		Third				
		Veranda				
		Basking				
		Shed				
		Wall				
		Other				
		Total				435300
Name of owner :Tulasi Devi sarki Address: : Durlung 3 Parbat Citizenship Number: 12133 Name of father / Husband : Meethe Sarki Map/Sheet No Plot No1271 Land Owner's certificate No:		Type of structure :- Kacchi Material used in wall :- Stone, Mud Material used in roof : Jasta Material used in story : Wood,Mud Present use : Residential Home Construction year :				


House hold No. 06	Structure No.06	Chainage From :10+700 to 10+750 Distance from Centre Line of the Road .1.80 m.. Address of Structure :- Durlungkot Parbat				
		Story	Total Area (sq.ft)	Area of land to be acquired (Sq.ft)	Rate per Sq.ft.	Total
			166.755			
		First		166.755	200	33350
		Second				
		Third				
		Veranda				
		Basking				
		Shed				
		Wall				
		Other				
		Total				33350
Name of owner :Manilal sarki Address: : Durlung 2 Parbat Citizenship Number: 12200 Name of father / Husband : Rupe Sarki Map/Sheet No Plot No Land Owner's certificate No:		Type of structure :- Kacchi Material used in wall :- Stone, Mud and khar Material used in roof : Khar Material used in story : Wood,Mud Present use : Residential Home Construction year :				

House hold No. 07	Structure No.07	Chainage From : 10+750 to 10+800 Distance from Centre Line of the Road .1.80 m.. Address of Structure :- Durlungkot Parbat			
	Story	Total Area (sq.ft)	Area of land to be acquired (Sq.ft)	Rate per Sq.ft	Total
		225.926			
	First		225.926	200	45185.2
	Second				
	Third				
	Veranda				
	Basking				
	Shed				
	Wall				
	Other				
	Total				
					45185.2
Name of owner :Som Badhur sarki Address: : Durlung 3 Parbat Citizenship Number: 11148 Name of father / Husband : Prithe Sarki Map/Sheet No Plot No Land Owner's certificate No:		Type of structure :- Kacchi Material used in wall :- Stone, Mud Material used in roof : Jasta Material used in story : Wood,Mud Present use : Residential Home Construction year :			

House hold No. 08	Structure No.08	Chainage From :11+200 to 11+300 Distance from Centre Line of the Road .1.55.. Address of Structure :- Durlungkot Parbat			
	Story	Total Area (sq.ft)	Area of land to be acquired (Sq.ft)	Rate per Sq.ft.	Total
		602.47			
	First		301.235	300	180741
	Second		301.235	300	180741
	Third				
	Veranda				
	Basking				
	Shed				
	Wall				
	Other				
	Total				361482
Name of owner :Min Badhur Gururng Address: : Durlung 3 Parbat Citizenship Number: Name of father / Husband : Map/Sheet No Plot No 208 Land Owner's certificate No:		Type of structure :- paki Material used in wall :- Stone, Mud Material used in roof : Jasta Material used in story : Wood,Mud Present use : Residential Home Construction year :			

House hold No. 09	Structure No.09	Chainage From : 12+100 to 12+200 Distance from Centre Line of the Road .1.50 m.. Address of Structure :- Kyang Halhale Parbat				
		Story	Total Area (sq.ft)	Area of land to be acquired (Sq.ft)	Rate per Sq.ft	Total
			172.134			
		First		172.134	300	51702
		Second				
		Third				
		Veranda				
		Basking				
		Shed				
		Wall				
		Other				
		Total				51702
Name of owner :Tike Pun Address: Kyang 9 Parbat Citizenship Number: Name of father / Husband : Map/Sheet No Plot No Land Owner's certificate No:		Type of structure :- paki Material used in wall :- Stone, Mud Material used in roof : Stone Material used in story : Wood,Mud Present use : Residential Home Construction year :				

House hold No. 10	Structure No.10	Chainage From : 12+100 to 12+200 Distance from Centre Line of the Road .1.50 m.. Address of Structure :- Kyang halhale Parbat				
		Story	Total Area (sq.ft)	Area of land to be acquired (Sq.ft)	Rate per Sq.ft	Total
			43.03			
		First		43.03	300	12910.08
		Second				
		Third				
		Veranda				
		Basking				
		Shed				
		Wall				
		Other				
		Total				12910.08
Name of owner :Tike Pun Address: Kyang 9 Parbat Citizenship Number: Name of father / Husband : Map/Sheet No Plot No Land Owner's certificate No:		Type of structure :- Paki Material used in wall :- Stone, Mud Material used in roof : Stone Material used in story : Wood,Mud Stone Present use : Toilet Construction year :				

House hold No. 11	Structure No.11	Chainage From : 11+900 to 12+000 Distance from Centre Line of the Road .1.60 m.. Address of Structure :- Kyang Halhale Parbat			
	Story	Total Area (sq.ft)	Area of land to be acquired (Sq.ft)	Rate per Sq.ft.	Total
		446.36			
	First		446.36	300	133908
	Second				
	Third				
	Veranda				
	Basking				
	Shed				
	Wall				
	Other				
	Total				133908
Name of owner : Halhale Lower Secondari School Address: : Kyang 9 Parbat Citizenship Number: Name of father / Husband : Map/Sheet No Plot No Land Owner's certificate No:		Type of structure :- paki Material used in wall :- Stone, Mud Material used in roof : Jasta Material used in story : Wood,Mud stone Present use : School Bulding Construction year :			

Annex XVI: Structure for Slope Stabilization

Recommended structures necessary for slope stabilization at various places

S.NO.	Description	Chainage	Length	Height	Volume	Total Gabion (Nos.)		Remarks
		from	m	m	m3	1x1x1.5	1x1x2	
1	Gabion Walls	0+728	12	4	84.00	24.00	24.00	GWBRT
2	Gabion Walls	1+265	11	3	50.50	11.00	17.00	
3	Gabion Walls	1+406	7	4	49.00	14.00	14.00	
4	Gabion Walls	1+930	10	3	45.00	10.00	15.00	GWBRT
5	Gabion Walls	2+586	12	3	54.00	12.00	18.00	GWBRT
6	Gabion Walls	4+199	14	5	140.00	28.00	49.00	GWBRT
7	Gabion Walls	4+429	10	4	70.00	20.00	20.00	GWBRT
8	Gabion Walls	4+509	14	3	63.00	14.00	21.00	
9	Gabion Walls	4+931	10	4	70.00	20.00	20.00	GWBRT
10	Gabion Walls	5+758	14	3	63.00	14.00	21.00	
11	Gabion Walls	6+893	11	4	77.00	22.00	22.00	
12	Gabion Walls	6+990	10	4	70.00	20.00	20.00	
13	Gabion Walls	7+781	7	4	49.00	14.00	14.00	
14	Gabion Walls	7+790	7	3	32.50	7.00	11.00	
15	Gabion Walls	8+542	9	5	91.00	18.00	32.00	GWBRT
16	Gabion Walls	8+652	11	3	50.50	11.00	17.00	
17	Gabion Walls	8+669	11	4	77.00	22.00	22.00	
18	Gabion Walls	9+380	15	3	68.50	15.00	23.00	
19	Gabion Walls	9+606	6	3	27.00	6.00	9.00	
20	Gabion Walls	9+608	5	3	23.50	5.00	8.00	
21	Gabion Walls	10+780	10	3	45.00	10.00	15.00	
22	Gabion Walls	10+790	10	3	45.00	10.00	15.00	
23	Gabion Walls	11+157	17	3	77.50	17.00	26.00	
24	Gabion Walls	11+176	17	4	119.00	34.00	34.00	
25	Gabion Walls	11+194	10	4	70.00	20.00	20.00	
26	Gabion Walls	11+236	13	3	59.50	13.00	20.00	
27	Gabion Walls	11+260	12	3	54.00	12.00	18.00	
28	Gabion Walls	12+029	15	3	68.50	15.00	23.00	
29	Gabion Walls	12+074	13	5	131.00	26.00	46.00	
30	Gabion Walls	12+078	5	3	23.50	5.00	8.00	
31	Gabion Walls	12+100	10	4	70.00	20.00	20.00	
32	Gabion Walls	14+246	12	4	84.00	24.00	24.00	
33	Gabion Walls	14+268	8	6	108.00	24.00	36.00	
34	Gabion Walls	14+319	15	6	203.50	45.00	68.00	
35	Gabion Walls	15+046	10	4	70.00	20.00	20.00	
36	Gabion Walls	15+071	9	4	63.00	18.00	18.00	
37	Gabion Walls	15+315	14	4	98.00	28.00	28.00	
38	Gabion Walls	15+608	9	3	41.50	9.00	14.00	
39	Gabion Walls	15+610	6	3	27.00	6.00	9.00	
40	Gabion Walls	15+689	4	3	18.00	4.00	6.00	
41	Gabion Walls	15+982	7	3	32.50	7.00	11.00	
42	Gabion Walls	15+988	5	3	23.50	5.00	8.00	
43	Gabion Walls	15+991	6	3	27.00	6.00	9.00	
44	Gabion Walls	16+117	14	4	98.00	28.00	28.00	

45	Gabion Walls	16+130	12	4	84.00	24.00	24.00	
46	Gabion Walls	16+140	10	3	45.00	10.00	15.00	
47	Gabion Walls	16+168	12	5	120.00	24.00	42.00	
48	Gabion Walls	16+176	8	4	56.00	16.00	16.00	
49	Gabion Walls	16+184	5	3	23.50	5.00	8.00	
50	Gabion Walls	16+184	6	3	27.00	6.00	9.00	
51	Gabion Walls	16+195	11	4	77.00	22.00	22.00	
52	Gabion Walls	16+206	10	4	70.00	20.00	20.00	
53	Gabion Walls	16+214	9	4	63.00	18.00	18.00	
54	Gabion Walls	16+225	10	3	45.00	10.00	15.00	
55	Gabion Walls	16+254	7	3	32.50	7.00	11.00	
56	Gabion Walls	16+260	7	4	98.00	28.00	28.00	
57	Gabion Walls	16+269	10	4	140.00	40.00	40.00	
58	Gabion Walls	16+280	11	3	101.00	22.00	34.00	
59	Gabion Walls	16+291	9	3	83.00	18.00	28.00	
60	Gabion Walls	17+758	16	5	320.00	64.00	112.00	
61	Gabion Walls	17+788	3	3	29.00	6.00	10.00	
62	Gabion Walls	18+213	14	3	126.00	28.00	42.00	
63	Gabion Walls	18+318	13	4	182.00	52.00	52.00	
64	Gabion Walls	18+410	10	3	90.00	20.00	30.00	
65	Gabion Walls	18+420	8	3	72.00	16.00	24.00	
66	Gabion Walls	19+722	12	3	108.00	24.00	36.00	
67	Gabion Walls	19+915	5	3	47.00	10.00	16.00	
68	Gabion Walls	19+916	6	3	54.00	12.00	18.00	
69	Gabion Walls	19+933	10	5	200.00	40.00	70.00	
70	Gabion Walls	20+030	5	3	47.00	10.00	16.00	
71	Gabion Walls	20+491	14	3	126.00	28.00	42.00	
72	Gabion Walls	20+669	6	3	54.00	12.00	18.00	
73	Gabion Walls	20+675	5	3	47.00	10.00	16.00	
TOTAL					5394.50	1291.00	1729.00	

Source: Field Survey, May/June, 2009