

Environmental Assessment Document

Initial Environmental Examination

Grant Number: 0093 NEP

July 2010

Nepal: Rural Reconstruction and Rehabilitation Sector Development Program

Jagati Police Station-Doleshwar-Ashapuri Road Subproject, Bhaktapur 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

Initial Environmental Examination (IEE)
of
Jagati Police Station – Doleshwar – Ashapuri Road
Sub-Project, Bhaktapur



Submitted to:
Government of Nepal
Ministry of Local Development

Proponent:
Office of District Development Committee,
District Technical Office
Bhaktapur District

Prepared by:
District Implementation Support Team (DIST)

July, 2011

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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	ML	Milliliter
CF	Community Forest	MLD	Ministry of Local Development
CFUG	Community Forest Users Group	NGO	Non-Governmental Organization
CISC	Central Implementation Support Consultant	NRs	Nepali Rupees
CITES	Convention on International Trade in Endangered Species of Flora and Fauna	NTFPs	Non Timber Forest Products
DADO	District Agriculture Development Office	OFID	OPEC Fund for International Development
DDC	District Development Committee	OP	Operational Plan
DFID	Department for International Development	OPEC	Organization of Petroleum Exporting Countries
DFO	District Forest Office/Officer	PAM	Project Administrative Memorandum
DG	Director General	PCC	Plain Cement Concrete
DIST	District Implementation Support Team	PCU	Project Coordination Unit
DIT	District Implementation Team	RBG	Road Building Group
DoLIDAR	Department of Local Infrastructure Development and Agricultural Roads	RCC	Reinforced Cement Concrete
DPO	District Project Office	RCIW	Rural Community Infrastructure Works
DPCC	District Project Coordination Committee	REA	Rapid Environmental Assessment
DRSP	District Road Support Programme	RES	Rapid Environmental Screening
DSCO	District Soil Conservation Office	RIDP	Rural Infrastructure Development Project
DTO	District Technical Office	RP	Resettlement Plan
DTMP	District Transport Master Plan	RRRSDP	Rural Reconstruction and Rehabilitation Sector Development Program
EA	Environmental Assistant/Assessment	RS	Resettlement Specialist
EARP	Environmental Assessment and Review Procedures	SF	Social Funding
ES	Environmental Specialist	SA	Social Appraisal
EIA	Environmental Impact Assessment	SDC	Swiss Agency for Development and Cooperation
EMP	Environmental Management Plan	SM	Social Mobilizer
EMS	Environmental Management Section	SDS	Social Development Specialist
EPA	Environmental Protection Act	TA	Technical Assistance
EPR	Environmental Protection Rules	ToR	Terms of Reference
ESD	Environment Screening Document	TWS	Technical Walkover Survey
FGD	Focus Group Discussion	VDC	Village Development Committee
GoN	Government of Nepal	VICCC	Village Infrastructure Construction Coordination Committee
GIS	Geographical Information System	ZoI	Zone of Influence
Ha	Hectare		
HH	Household		
IEE	Initial Environmental Examination		

NAME AND ADDRESS OF THE PROPONENT

Name of Proposal

Upgrading of Jagati Police Station – Doleshwar – Ashapuri RoadSub-Project, Bhaktapur

Name and Address of Proponent

District Development Committee (DDC), District Project Office (DPO), Bhaktapur District

Phone No:

Fax No: 065-533616

Email:

Name of Preparer

Sujit Kumar Yadav Deputy Team Leader

Data Collection and Support

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EXECUTIVE SUMMARY IN ENGLISH

Background

Government of Nepal has received financial assistance from ADB, DFID, SDC and OFID for implementation of the Rural Reconstruction and Rehabilitation Sector Development Program (RRRSDP). The RRRSDP aims for reconstruction and rehabilitation of rural infrastructures damaged in the twenty conflict affected districts of the country. The Proposed 10.04 long Jagati Police Station-Doleshwor –Ashapuri Road Sub-project in Bhaktapur district is one of the Subprojects selected under the RRRSDP. It is an existing earthen, gravelled in some section and proposed for blacktopped standard.

Project Proponent

The proponent and executing agencies of the proposed road Subproject for Initial Environmental Examination (IEE) is District Development Committee (DDC)/District Technical Office (DTO) of Bhaktapur at the district level. Ministry of Local Development (MoLD) is the authorized body for approving the IEE of the proposed Subproject.

Objectives

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

Relevancy of the Proposal

The Project area is located at South-eastern part of the district. The area has high potential in production of vegetables, fruits and milk products. The upgrading of the existing road into blacktopped standard will benefit people living in the vicinity of the project area with easy access, easy and cheap transportation of agricultural products to nearby markets. The proposed road will enhance access to market and social services to the people of the area, and will significantly contribute in their socio-economic development. It helps to connectivity to the other parts of the country, all weather serviceability, safety after upgrading the road in blacktopped standard.

Study Methodology

The IEE report has been prepared the Environmental Protection Act, 1997 and Environmental Protection Rules, 1997 (second amendment 2007) of the Government of Nepal (GoN); and Environmental Assessment Guidelines, 2003, and Safeguard Policy Statement, 2009 of ADB. The report follows the Terms of Reference for IEE Study approved by MoLD on 2066/02/25.

Project Description

The proposed road links with South-eastern part of Bhaktapur district with the headquarter. The total length of the road is 10.04 Km. The road alignment is already opened and motorable up to Doleshwor. The road passes only one village development committees namely Sipadol. The average existing width of the road is 4.0 m and geometry will be improved as per design required. The total project cost is Nrs 84,360,689 and per km cost 8,590,702

Existing Environmental Condition

The road starts from Jagati at 1325m amsl and passes through Patibhanjang at 1780m amsl and ends at Ashapuri. The road alignment is composed of various kinds of rock such as fine grained crystalline limestone, siliceous, quartzite, phyllites etc. Generally, alluvial, residual and boulder mix soil are found along the road alignment. Main waterbodies found across the road alignment is Chakku Khola (0+715). Ambient air and water quality in the proposed subproject area is found to be good and there's 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 (*Alnu nepalensis*), Chilaune (*Schima wallichii*), Bans (*Dendrocalamus strictus*) and Salla (*Pinus roxburghii*). *Canis aureus* (Jackal), *Macaca mulatta* (Monkey), *Rattus rattus* (Musa), *Martes flavigula* (Malsanpro), *Ratufa spp.* (Lokharke), *Herpestes Edwardsi* (Nyauri Musa) are the wild animals reported in the forests of the road area. Similarly, *Lophura lencomelana* (kalij pheasant), *Columba livia* (Pigeon), *Corvus splendens* (Kag), *Passer domesticus* (Bhangero), *Streptopelia spp.* (Dhukur), *Gallus gallus* (Jungle fowl) are the birds reported in the project area. The road passes through Soche Thulo Gaun Community Forest from Ch 5+820 - 6+070 and 6+600 - 6+750. The road does not fall under any protected area or buffer zone.

The major settlements are Jagati, Chakkubasti, Nanapu, Bibicha, Taudol, Vundol, Dolgaun, Bhattaraitol, Thulogaun, Sochebasti, Patibhanjayang, Naichalbasti and Ashapuri. Total population of the Subproject area is 1763, total household number is 312, and average family size is 5.65. Brahmin, Chhetri, Newar, Tamang and occupational caste (Damai, Kami) live along the Zol of the road alignment.

The major occupation of all people residing within the Zol of the proposed road alignment is agriculture and livestock. Due to limited transportation facilities agriculture farming is not enough for subsistence level. There for people are carrying out other economic activities like majority of the people work as labor and porters while some people work in government and non government organization and few is doing business.

Major Environmental Impacts

Beneficial Impacts

The immediate benefit from this road Subproject is employment opportunities. The implementation of Subproject require about 70862 person days of unskilled and 18981 person days of skilled manpower. The project will give priority to the poor, ethnic minorities and disadvantaged local people for employment opportunity. Other beneficial impacts include enhancement of local business, development in skills of local people from skill developing training, awareness raising training and involvement in the construction of the project.

During operation stage of road, the people from the Zol will get easy and fast accessibility to markets, social services and other regions of the country. This will ensure better economic condition and food security of the people living in the Zol 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 Zol 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. Further more spoils generated during construction can create the water pollution to the nearby water sources. During road widening and construction required 0.04 ha of forest area and 0.26 ha of built-up area will loss. There might be possible impacts on wildlife as workers might harass/ hunt the wildlife in the nearby forests, however, such effects are very minimum.

During construction stage, there will be loss 0.39 ha of agricultural land, will results in annual reduction of more than 0.6 Metric tons of agricultural production. During construction stage, labours and local people are prone to health effects and accidents relating to construction activities. 19 private houses (-----), Pati (1+410), Access road(1+500, 2+020, 2+270, 3+520, 3+920, 7+010), School(7+030), Tap Stand (2+535), Water Supply Pipe (1+900, 7+040), Irrigation crossing(3+880), Foottrail (4+460, 4+700,7+300 5+000), Electric Pole (0+800, 7+200) will be affected during road construction.

During operation stage, vehicular movement, monsoon rain 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.

Due to easy accessibility to the forest areas will deplete forest resources and wildlife. Unplanned 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. The construction of road will be based on Labour-based, Environment friendly and Participatory (LEP) and Contractor modality. Necessary measures will be taken to reduce the adverse effects that might arise from cutting of slopes, disposal of spoils and quarrying activities. Necessary trainings and awareness programs will be conducted for RBG and contractor. At construction site, the workers will be provided with insurance, first aid facilities and safety measures such as helmets, boots, gloves and masks; as well as drinking water and better sanitation facility. Compensatory plantation of trees will be done in forest areas at 1:25 ratio + 10 % and in private land at 1:1 ratio. Proper maintenance and appropriate drain system will be provided to prevent road and agricultural lands during operation. Adequate road safety measures will be provided to minimize road accident. Affected private houses, community buildings, Irrigation Canal, Water Supply Pipeline/Tapstand, Foot Trail, Access road, Electric Pole will be reinstated, relocated, compensated. The cost will be included in detail project report.

Environmental Management Plan

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

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

SN.	Description	Amount (NRs.)	Remarks
1	Environmental awareness raising training and other training	100,000.00	To be included in project cost
2	Insurance of workers		Included in BoQ
3	Bio-engineering		
4	Information Signboard, Traffic safety	300,000	To be included in Resettlement plan
5	Resettlement and Land Acquisition	49,869,200	To be included in BoQ
6	Restoration or relocation of affected infrastructures, Spoil management, Reinstatement of quarry, stockpiling etc.	2353674.00	To be included in project cost
7	Social cost.		To be included in Social plan, project cost
8	Occupational health and safety	250,000.00	
9	Monitoring	200,000.00	To be included in project cost
	Labour camp site management	225,000.00	
	Total		

Conclusion and Recommendation

The IEE study of the proposed road 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. Bhaktapur District is one of the project districts under RRRSDP. This Proposal is for **Upgrading** in premixed carpeting and semi grouting standard of the 10.04 km long Jagati Police station – Doleshwar – Ashapuri district road in Bhaktapur District.

1.2 The Name and Address of Proponent

Name of Proposal:	Upgrading of Jagati Police station – Doleshwar – Ashapuri Road Sub-project, Bhaktapur District, Nepal
Name of Proponent:	District Development Committee/ District Technical Office
Address of Proponent:	Bhaktapur Phone No: 01-6614826 Fax No: 01-6614826

1.3 Objectives of IEE study

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

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

1.4 Methodology Adopted

4. The IEE study has followed the provisions of the EPA, 1997 and EPR, 1997, the provisions of ADB and approved ToR for IEE Study by MoLD on **25/02/2066** BS. It follows methodology suggested in the approved Terms of Reference for IEE Study (please refer Annex I). For the collection of environmental features related to bio physical environment, maximum 100 meter distance observable from the centre of the road alignment was taken as an influence area and socio-economic and cultural environment was taken of Zol (one and half hour walking distance from the centre line of the road) information of the Subproject area. The IEE study has been conducted through review of secondary information collected from relevant agencies, and primary information collected from the field survey in 10th November 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, VDCs and Community Groups were also contacted to verify information to solicit their concerns. Based on the analysis of information the impacts have been predicted, mitigation measures prepared and monitoring plan has been developed.

1.5 Public Consultation

5. 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 18th September 2009 (2066/06/02) in the Nayapatrika, 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). Summary of minutes of meeting is given in Annex IX and following Table 1.1
- Draft report will be send to concerned VDC for public disclosure. Recommendation letters were also obtained from above mentioned VDCs as given in Annex X. Draft IEE will also be kept in information center of DDC Bhaktapur 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 and Suggestions	Decision
		Male	Female		
Sipadol VDC	2066/07/01	8	5	<ul style="list-style-type: none"> • Soche community forest areas will loss during road construction and negative impact will be occur. The project should take minimization measures, donot disturb importance flora and fauna. • Minimize impact on Diferent Community infrastructures and Mahadev temple. 	<ul style="list-style-type: none"> • Different mitigation measures shall be provided to enhance beneficial impacts and mitigate adverse impacts from implementation of the proposal.

1.6 Information Disclosure

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

1. District Development Committee, Bhaktapur
2. District Technical Office, Bhaktapur
3. District Project Office, Bhaktapur
4. District Implementation Support Team, Bhaktapur
5. Sipadol VDC
6. Ministry of Local Development
7. Department of Local Infrastructure Development and Agricultural Roads
8. Project Coordination Unit, RRRSDP
9. Asian Development Bank, Nepal Resident Mission

2.0 Description of the proposal

7. The road section is earthen and partially gravelled. This road starts from Jagati Police Station and ends at Ashapuri of Sipadol VDC. The maximum and the minimum gradient along the road alignment is 17.51% and 0.52% respectively. The whole length of the road alignment is motorable. The width of the road alignment in average is about 4.0m. This road is fair weather road. This road links south-eastern part of the district to its headquarter. According to ToR, the length of sub project is 9.9 Km, after detail design the road length is increase (10.04 km). Widening, geometric correction and grade improvement, slope stabilization, side drains and construction of cross drainage structures and blacktopped is planned to be implemented under the proposed rehabilitation works of the road. The total estimated project cost is **NRs. 84,360,689.00 and per km cost is 8,590,702.00.**

2.1 Salient Features of the Subproject

1. Name of the Project	:	Upgrading of Jagati Police Station- Doleshwor- Ashapuri Road
2. Location		
2.1 Geographical Locations		
2.1.1 Start Point	:	Jagati Police Station of Sipadol VDC
2.1.2 End Point	:	Ashapuri of Sipadol VDC
2.2 Geographical Feature		
2.2.1 Terrain	:	Hilly
2.2.2 Alignment	:	Ridge/upper valley
2.2.3 Altitude	:	1325m amsl at Jagati Police Station to 1651m amsl at Ashapuri and 1803m is highest altitude at Thulogaun
2.2.4 Climate	:	Temperate
2.2.5 Soil	:	Alluvial soil, residual soil
3. Classification of Road	:	District Road (Rural Road Class A)
5. Length of Road	:	10.040 km
6. Standard of Pavement	:	Premixed carpeting and semi grouting
8. Traffic Forecast	:	300 vehicles per day
9. Design speed	:	40 km/hr
10. Major Settlements:		
10.1 Major Settlements	:	Jagati, Nanapu, Toudol, Dolgaon, Bhattari Tole, Twanbasu Tole, Doleshwor, Thulogaon, Pathibhanjyang, Naichalbasti, Bibicha, Bhundol and Ashapuri
10.2 No. of Household	:	312 HHs
10.3 VDCs along the Road	:	Sipadol VDC
11. Cross Section		
11.1 Right of way	:	5m each side (center line)
11.2 Formation width	:	5 to 6.5 m
11.3 Carriageway width	:	3 to 5.5 m
11.4 Lane	:	Single
12. Structures		
12.1 Stone Masonry	:	3488.64. Cum.
12.2 Gabion Wall	:	516.00.00 Cum.
12.3 Stone Pitching	:	2316.29 Cum.
13. Bio-Engineering	:	NRs 2,457,107.00
14. Earth Work		
14.1 Cutting	:	62843.34Cum
14.2 Filling	:	7625.58Cum

15. Total Cost (NRs) : NRs 84,360,689.00
 15.2 Costs per km (NRs.) : NRs 8,590,702

16. Employment generation:
 16.1 Total employment : 89843
 16.1.1 Skilled : 18981 (person days)
 16.1.2 Unskilled : 70862 (person days)

17. DTMP Code : 26A015R

2.2 Relevancy of the Proposal

8. The Project area is located at South-eastern part of the district. The area has high potential in production of vegetables, fruits and milk products. The upgrading of the existing road into blacktopped standard will benefit people living in the vicinity of the project area with easy access, easy and cheap transportation of agricultural products to nearby markets. The proposed road will enhance access to market and social services to the people of the area, and will significantly contribute in their socio-economic development. It helps to connectivity to the other parts of the country, all weather serviceability, safety after upgrading the road in blacktopped standard

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

2.2 Construction Activities and Approach

10. The construction approach will be Contractor Modality and Labour Based Environment Friendly and Participatory Approach (LEP) wherever possible.

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

2.3 Proposed Schedule for Implementation of Sub-project

12. Table 2.1 shows the proposed implementation schedule for Jagati Police Station- Doleshwor-Ashapuri Road Sub-Project.

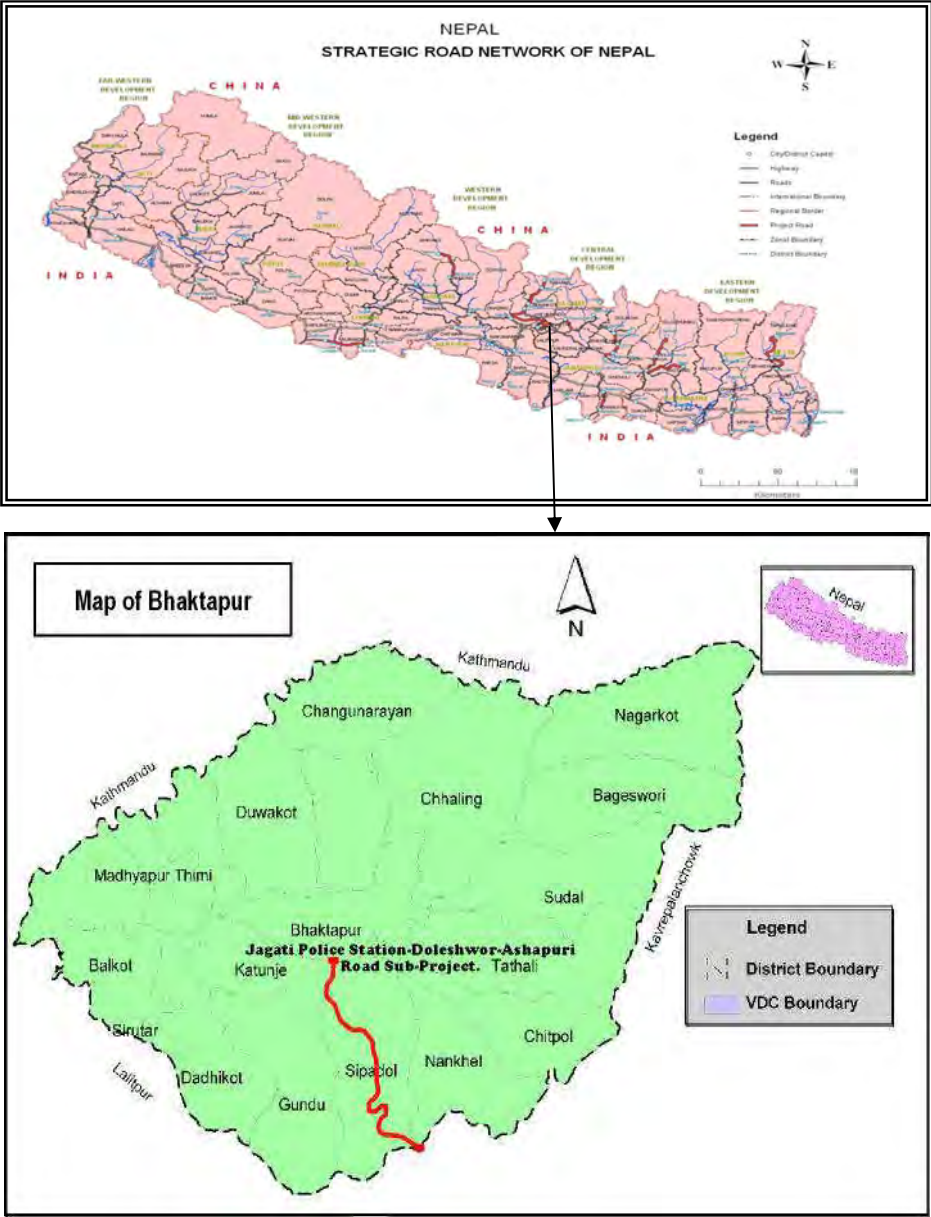
Table 2.1: Sub-project implementation schedule

SN	Activity	2009				2010				2011				2012	
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II
1	Detailed survey, design and estimate														
2	Preparation of resettlement plan														
2.1	Life skill and income generation training														
3	Environment Assessment and implementation														
3.1	IEE report preparation and approval from MoLD														
3.2	Implementation of EMP														
3.3	Environmental monitoring														
4	Work implementation														
4.1	Civil construction work by contractors														
4.2	Construction work by RBGs(Bio-engg)														

Note:

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

Figure 1.1 Map of Nepal showing the location of Jagati Police Station – Doleshwar - Ashapuri road Subproject in Bhaktapur District



The map displays the Arniko Highway route, highlighted in red, starting from Jagati Police Station (0+000) and ending at point 10+040. The route passes through Vundol (4+770), Dofeshwar (3+750), and Soche (6+700). The surrounding area is characterized by dense mixed forest and hilly terrain, with various smaller settlements and geographical features labeled. The map includes contour lines and a grid system for reference.

3.0 Review of Relevant Acts, Regulations and Guidelines

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

Table 3.1: Review of Environmental Acts, Regulations and Guidelines

SN	Environmental Acts, Regulations and Guidelines	Description of Requirements
1	Three Years Interim Plan, 2007/08-2009/10, GoN	Requires all projects will be formulated and constructed based on methods that optimally utilize the local skill and resources and generate employment opportunities.
2	Environmental Protection Act, 2053 BS (1997 AD), GoN	Any development project, before implementation, shall pass through environmental assessment, which will be either IEE or an EIA depending upon the location, type and size of the projects.
3	Environmental Protection Rule 2054 BS (1997 AD) (amendment, 2007), GoN	The EPR and its schedules clearly provide various step-wise requirements to be followed while conducting the IEE study. It also obliges the Proponent to timely consult and inform the public on the contents of the proposal and IEE study.
4	Forest Act, 2049 BS (1993 AD) (amendment, 2007), GoN	Requires decision makers to take account of all forest values, including environmental services and biodiversity, not just the production of timber and other commodities. It includes several provisions to ensure development, conservation, management, and sustainable use of forest resources based on approved work plan.
5	Forest Rules, 2051 BS (1995 AD), GoN	Elaborates legal measures for the conservation of forests and wildlife. Expenses incurred for cutting trees and transportation shall be borne by proponent.
6	Batabaraniya Nirdesika (Nepal; MLD), 2057, GoN	The directive is focused in the practical implementation of small rural infrastructures through the minimization of environmental impacts. This directive includes the simple methods of environmental management in the different phases of the project cycle.
7	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.
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.

4.0 Existing Environmental Condition

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

4.1 Physical Environment

4.1.1 Topography

15. The road alignment passes through the hilly area. The lowest elevation is at starting point Jagati Police Station 1325 m and highest elevation at Patibhanjang is 1803 m amsl. Major portion of the road passes along the south-west facing slope.

4.1.2 Geology and soil type

16. The road section lies in southern hilly region and comprises of different types of rocks and soil. The road corridor in initial section is composed of alluvial, residual and boulder mix soil. Upper section falls under hilly region and comprises of fine grained crystalline limestone, partly siliceous and thick bedded quartzite, and phyllites.

4.1.3 Climate

17. This road lies in the temperate climatic region. Generally, rainy season starts from June and ends in September. The meteorological record shows unevenly distributed monsoon rain in the project area with the total average annual rainfall is 1362.2 mm. The general climatic condition is cold in winter and hot in summer with average minimum temperature of -2° C and average maximum temperature of 32°C. (Source: DTMP of Bhaktapur, 2008)

4.1.4 Hydrology and Drainage System

18. There are various perennial and non perennial water bodies along the road alignment which is listed below. No wetlands are found within the vicinity of the road.

Table 4.1: River and Streams along the road

S. No.	Name of River/Stream	Chainage	Characteristics	Remarks
1	Chakhu khola	0+715	Perennial, spring fed	
2	Doleshwor Khola	3+830	Perennial, spring fed	
3	Digaun	3+890	Dry-up short period	
4	Thulo Gaun Khola	5+080	Dry-up short period	
5	Thulo Gaun Khola	5+220	Dry-up short period	
6	Thulo Gaun Khola	5+280	Dry-up in winter	
7	Soche Area	5+390	Dry-up most of the year	
8	Soche Area	5+860	Dry-up most of the year	
9	Soche Area	5+910	Dry-up in winter	
10	Patibhanjang	7+220	Dry-up in winter	
11	Patibhanjang	7+540	Dry-up in winter	
12	Nainchal Area	8+020	Dry-up short period	
13	Nainchal Area	8+280	Dry-up in winter	
14	Nainchal Area	8+420	Dry-up in winter	
15	Tallo Nainchal Area	8+550	Dry-up most of the year	
16	Tallo Nainchal Area	8+740	Dry-up in winter	
17	Tallo Nainchal Area	9+000	Dry-up most of the year	
18	Tallo Nainchal Area	9+380	Dry-up short period	
19	Ashapuri Khola	10+040	Perennial, spring fed	

Source: Field Survey, 2009

4.1.5 Soil Erosion and Sedimentation

19. There are existing landslides at Ch 3+520(gully), 4+270, 5+800 (seepage area), 6+100 - 6+380, 6+590 - 6+600, 6+700 - 6+715 and 9+650 - 9+690. These land slides are mainly caused by loose soil condition and surface runoff.

4.1.6 Existing Traffic Situation

20. Regular passenger micro-buses, private cars, vans, motor bikes ply on the road to Doleshwor temple. Whereas numbers of mini truck/pick up are 75 and number of motorcycles are around 300 in winter season. In rainy season, the passenger vehicle remains constant but motorbike and mini trucks reduced by one- fourth. After Doleshwor to Ashapuri, traffic rate is relatively low and only light vehicles ply on the road.

4.1.7 Land use

21. Land use pattern of the area through which the road passes have been classified into four types: cultivated land, forest, barren land and built-up area. The road alignment mainly passes through cultivated land. Details about land use pattern along the road alignment have been given as below.

Table 4.2: Summary of land use pattern along the road alignment

Type of land	Chainage		Length (m)	Existing Width (m)	Additional Width (m)	Additional Area (Ha)
	From	To				
Agricultural land	0+280	1+680	1400	5	0	0
	5+030	5+820	790	4.2	0.8	0.06
	6+070	6+600	530	3.8	1.2	0.06
	7+110	10+0400	2710	4.0	1.0	0.27
Sub - Total						0.39
Built up Area	0+000	0+140	140	5	0	0
	0+140	0+280	140	5	0	0
	1+680	2+000	320	4.3	0.7	0.02
	2+000	2+090	90	5	0	0
	2+090	3+720	1630	3.9	1.1	0.18
	4+650	5+030	380	4	1	0.04
	6+880	7+110	230	4.2	0.8	0.02
Sub - Total						0.26
Barren land	3+720	4+650	930	3.5	1.5	0.14
Sub - Total						0.14
Community Forest	5+820	6+070	250	3.9	1.1	0.03
	6+600	6+750	150	4.3	0.7	0.01
Sub - Total						0.04
Total						0.83

Source: Field Survey, 2009

4.1.8 Air, Noise and Water Quality

22. The air quality observed was good and expected to be good in future. Dust emission during vehicle operation has become common phenomena in the existing road. Likewise, water quality in the proposed road section is observed to be good since it is free from any kind of pollution sources. There is no defecation problem observed around the drinking water sources. However, during the monsoon season the quality of water may be polluted due the accumulation of silt, landslide and gully erosion. The proposed area does not have any sources of noise nuisance.

4.2 Biological Environment

23. This alignment does not pass through any protected area. The road mainly passes through cultivated area and forest area.

4.2.1 Vegetation

24. The dominant species in the road alignment are Uttis (*Alnu nepalensis*), Chilaune (*Schima wallichii*), Bans (*Dendrocalamus strictus*) and Salla (*Pinus roxburghii*). Other plant species found within Zol of the sub-project are Bhimsen pati (*Buddleja asiatica*), Siltimur (*Lindera neesiana*), Painyu (*Prunus cerasoides*), Pipal (*Ficus religiosa*), Lapsi (*Choerospondias axillaris*), Koiralo (*Bahunia variegata*), Sirish (*Albizia labbeck*), Amba (*Pisidium guyava*), Nigalo (*Drepanostachyum intermedium*), Bans (*Dendrocalamus strictus*), Bilaune (*Maesa chisia*), Sisnoo (*Urtica dioca*), Simali (*Vitex negundo*), Angeri (*Lyonia ovaliforiya*), Dhangeri (*Woodfodia fruticosa*). Detailed of trees cutting from community forest and private forest during road construction are given in Annex XII.

Community Forest

25. There is one Community Forest along the road alignment as given in the Table 4.3.

Table 4.3: Community Forests along road alignment

SN	Name of Community Forest	Chainage	Length	Main Species
1	Soche Thulo Gaun Community Forest	5+820 - 6+070 6+600 - 6+750	500m	Natural and Planted forest (Salla, Uttis, Chilaune)
	Total		500m	

Source: Field survey, 2009

4.2.2 Wildlife

26. *Canis aureus* (Jackal), *Macaca mulatta* (Monkey), *Rattus rattus* (Musa), *Martes flavigula* (Malsanpro), *Ratufa spp.* (Lokharke), *Herpestes Edwardsi* (Nyauri Musa), are the wild animals reported in the forests of proposed road area. Similarly birds are *Lophura lencomelana* (kalij pheasant), *Columba livia* (Pigeon), *Corvus splendens* (Kag), *Passer domesticus* (Bhangero), *Streptopelia spp.* (Dhukur), *Gallus gallus* (Jungle fowl).

4.2.3 Aquatic Life

27. Fish species found in water bodies are Hile and Buduna. These fish species are mainly found in Chakkhu Khola and Doleshwor Khola.

4.2.4 Endangered and protected species

28. Faunal species: Jackal (*Canis aureus*) is listed in CITES Appendix-III, Lokharke (*Ratufa spp.*) is listed in CITES Appendix II.

4.3 Socio-economic and Cultural Environment

4.3.1 Population, Household and Ethnicity

29. Major caste in this area are Brahmin, Chetri, Ethnic groups in this area are Newars and Tamang and Occupational caste are Damai and Kami as given in Table 4.4.

Table 4.4: General Characteristics of the VDCs along the alignment

Municipality / VDC	Major Settlements	Composition of Caste / Ethnicity	Major Occupation	Remarks
Sipadol	Jagati, Chakkubasti, Nanapu, Bibicha, Taudol, Vundol, Dolgaun, Bhattaraitol, Thulogaun, Sochebasti, Patibhanjayang, Naichalbasti and Ashapuri.	Brahmin, Chettri, Newars, Tamang, Damai, Kami.	Agriculture	

Source: Field Survey, 2009

30. There are 13 major settlements along the Zol of the road. Total population is 1763, 312 households and average family size is 5.65.

4.3.2 Main occupation

31. The main occupation of people residing within the Zol of the proposed road alignment is agriculture and livestock. Major crops are rice, wheat, maize, potato, beans and cash crops are different types of vegetables, fruits, and dairy production. Some people are engaged in business as well as job holders. Details of occupations of the people according to the settlements are shown in Annex XI a.

4.3.3 Market Centres and Business Facilities

32. Major settlements along the road alignment are Jagati, Nanapu, Toudol, Dolgaon, Bhattari Tole, Twanbasu Tole, Doleshwar, Thulogaon, Pathibhanjyang, Naichalbasti, Bibicha, Bhundol and Ashapuri. There are grocery shops and tea stalls available in the almost all settlements. Other smaller market centres with shops of daily commodities are also found along the road alignment.

4.3.4 Local Economy

33. The economy of the area is predominantly agriculture and livestock. Local people are gradually attracted towards cultivation of cash crops such as different types of vegetables. Poultry farming and selling it to the local market has been also another source of income for local. Over 53 percent populations base upon agricultural activities for their livelihood. Diversity in employment pattern has been also observed in recent years. Local peoples have increasingly engaged in business activities.

4.3.5 Agriculture Pattern

34. Major crops cultivated in the project area are rice, wheat, maize, potato and beans. Local peoples are also found to be encouraged in cash crops in recent days. Major cash crops are different types of vegetables, fruits, and dairy production.

4.3.6 Livestock

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

4.3.7 Industry

36. Some local people are engaged in making of furniture, poultry farming, bamboo products, dairy production and tailoring.

4.3.8 Trade and Commerce

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

4.3.9 Tourism Related Services

38. The project and its surrounding area have potentiality of various types of tourism promotion. Doleshwar Temple and Ashapuri Temple can be explored as a religious tourist destination which will enhance local economy.

4.3.10 Health and Sanitation

39. Major health problems observed in the area are gastric, water borne diseases, gout, respiratory diseases, skin, malnutrition, typhoid etc. Sanitation awareness among local people is increasing and many of them have toilets in their home, but there is no public sewerage system.

4.3.11 Public Services and Infrastructures

Infrastructure Facilities	Details
Education	The proposed project area consists of a total of 7 educational institutions ranging from primary level to secondary level educational institutions. There is a higher secondary school in settlement. 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	There are altogether 1 health posts/sub health posts in Dolgaun settlement.
Communication	All of the settlements have telephone facilities mostly with CDMA connection.
Electricity	All settlements in Zol are connected with national grid transmission line
Water Supply	Piped drinking water supply is available to all settlements
Other Infrastructures	There is a RCC bridge, Agricultural Service Sub-Centre, diary firms, Medicine factory, ply factory and pipe factory and Veterinary Service Sub Centre are also available in the project area.

Irrigation	No irrigation facility has been observed in Zol of the project area
Financial Institutions	There are few saving and credit cooperatives in Zol of Dolgaun and Jagati

Community Development Facilities/Organizations: Several community centers, community based organizations, youth clubs, women's group, NGOs and water/forest users groups are also active in Zol of the project.

40. Following Public Services and Infrastructures are affected during road construction.

Table 4.5: Public Services and Infrastructures along the Road Alignment

Type of Public Service and Infrastructure	Chainage/ Location	Distance from the Road	Remarks
Pati	1+410	Adjacent	
Access road	1+500, 2+020, 2+270, 3+520, 3+920, 7+010	Adjacent	
Sarswoti School	7+030	Adjacent	
Tap Stand	2+535	Adjacent	
Water Supply Pipe	1+900, 7+040,	Across the road	
Irrigation crossing	3+880		
Foottrail	4+460, 4+700, 7+300, 5+000,	Adjacent	
Electric Pole	0+800, 7+200	Formation width	

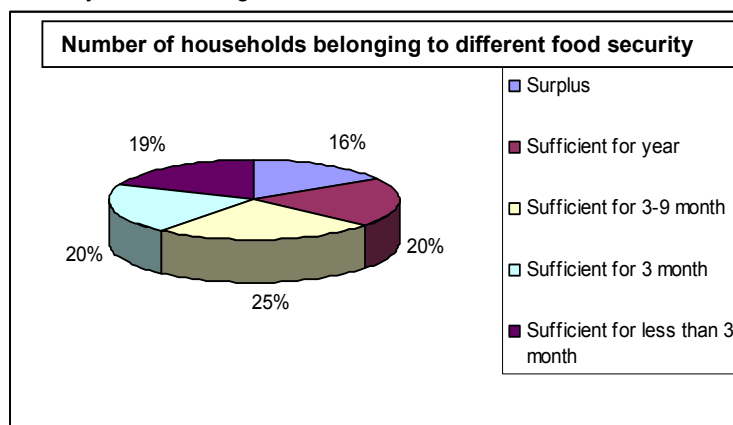
Source: Field Survey, 2009

4.3.12 Land Holding Pattern

41. Land holding pattern within the Zol of the road project demonstrates that 34% have 1-5 ropani, 31% have less than 1 ropani, 20% have 5-10 ropani, 8% hav 10-20 ropani and Land Less 7%. Details about land holding pattern are given in the Annex XI c.

4.3.13 Food Security

About 25% of the households have enough food for only three to nine months, 20% households have food sufficient for whole year, 20% households have food sufficient for three months and 16% households are reported as food surplus and 19% households have food for only less than three months. Detail food sufficiency condition is given in Annex XI d.



Source: Field Survey, 2009

4.3.14 Migration Pattern

42. Seasonal migration also takes place in Kathmandu, Bhaktapur during slack farming season.

4.3.15 Settlement Pattern

43. Most of the settlements within Zol of the project are scattered type and congested type as well. Housing pattern of these settlements are mostly one or two storied, CGI sheet roofed buildings. RCC buildings have been started to appear in market area such as Jagati, Thulogaun, Chakkubasti, Toudal and Asapuri.

4.3.16 Potential for Development

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

Table 4.6: Development Potentialities in Various Sectors

SN	Sector	Development potentiality
1	Agriculture	All Settlements
2	Tourism Promotion	Dolleshwar and Ashapuri
3	Small and Cottage Industry	bamboo products, furniture, dairy

Source: Field Survey, 2009

4.3. 17 Religious, Cultural and Historical Sites

45. The religious and cultural sites along the road alignment are listed below.

Table 4.7: List of Religious Site

S.No	Description	Chainage	Distance from center of Road Alignment	Impact
1.0	Manakamana Temple	2+770	2.30	No Impact
2.0	Dolleshwar Temple	3+720	10	No Impact
3.0	Dachinkali Temple	5+030	19	No Impact
4.0	Ashapuri Temple	9+820	35	No Impact

Source: Field Survey, 2009

5.0 Project Alternatives

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

5.1 No Action Option

47. The objective of the proposed road project is to improve access to goods, market and services. Earthen road currently exists, which is only seasonal road. As the road connects major settlements with high potential in vegetable and dairy products. Construction of the road will decrease transportation cost as well as provide better access and facility with enhanced opportunity for economical enhancement and overall infrastructure development of the area without any additional significant adverse impacts. Thus, this option is not relevant for the Proposal.

5.2 Proposal Alternatives

48. Construction of other supporting roads could be the options for achieving the transportation and access. Considering other project alternatives such as, construction of ropeway, airport, and road could be the options for achieving the above mentioned objectives.

49. Considering other project alternatives, the proposed road project can be the best option to serve the home to home services. This road also link with Kavre District. This road helps to reduce travel time and cost of local people to access other part of the country.

5.3 Alternative Alignment

50. The alignment of the road is an existing motorable and fair weather earthen track with 4m average width and proposed for upgrading which need to acquire minimum additional land. Hence, new alternative alignment is not feasible and the proposed existing alignment can be the best option.

5.4 Alternative Design and Construction Approach

51. The proposed road has been designed considering the both Contractor Modality and RBG. Due to limitation of time the most of the construction activities will be only carried out through Contractor Modality and bioengineering activities will be carried out by RBGs.

5.5 Alternative Schedule

52. The construction period is more appropriate from October to June due to dry weather, and then the people are generally free from farming activities.

5.6 Alternative Resources

53. The physical resources consumed for the construction of the proposed road will mainly include boulders for gabions and stone for dry masonry wall. Stones are available during roadway excavation in nearby areas of various sections of the road whereas fine aggregates and sand has to be transported from market, near by river. The proposed construction will optimally use the local labour force and local materials and flexible road structures.

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

54. The identification, evaluation and assessment of impacts has been carried out by considering the proposed proposal activities examined in terms of its current condition and likely impacts during construction and subsequent operation phases. The impacts have been predicted in terms of their magnitude, extent and duration. The possible impacts (positive and negative) in construction and operation phases are presented in the following sub-sections. Beneficial impacts maximization and adverse impacts mitigation measures are also suggested hereunder (see Table 7.2 in Chapter 7).

6.1 Beneficial Impacts and Benefit Augmentation Measures

6.1.1 Construction Stage

Employment Generation and Increase in Income

55. 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 89843 person days in which 18981 person days as skilled and 70862 person days as unskilled. Employment generation for the local people will minimize seasonal migration. 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.

56. Measures: Priority for employment will be given to local poor, dalit, vulnerable groups and women. They will be given training to do the job. Proponent will implement skill training, awareness, and income generation programs encouraging them to utilize their money earned through wage. The costs of LEST training is NRs. 967140.00 which is included in cost of Social Action Plan.

Skill Enhancement

57. Impacts: Working in construction of the road is likely to enhance skills of local people in construction works. Trainings on construction and maintenance of structures will further enhance their skill. The skill and knowledge thus acquired will make them find employment opportunities in future projects. This impact is indirect, medium, local and long-term in nature.

58. Measures: Training on masonry, gabion work, bioengineering works, and roadside tree plantation will be given. Livelihood Enhancement Skills Training (LEST) programs under social plan will be provided. The cost of these training is included in SAP of the project.

Enterprise Development and Business Promotion

59. Impacts: During construction period, different types of commercial activities will come into operation in order to meet the demand of workers. Since they will have good purchasing power, they will regularly demand for different types of food, beverage and other daily necessary items. Business will increase in Doleshwar, Thulogaon, Pathibhanjyang, and Ashapuri. This impact is also direct, low significance, local and short terms in nature.

60. Measures: Conduct training under LEST program which include Agriculture Trainings such as Mushroom Production, Off Season Vegetable; Life Skilled Trainings such as Mobile Repair and maintenance Training, Driving, House Wiring, Dhaka Cutting and Sewing; and Capacity building/Empowerment Training such as Leadership Training, Account Keeping. The costs of these training are included in cost of Social Action Plan.

Community Empowerment and Ownership

61. 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.

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

6.1.2 Operation Stage

Improvement in Accessibility and Saving of Time and Transportation Cost

63. Impacts: Once the road project is completed, the people living within the road corridor will have easy access to cities and markets. This will enhance the transaction of goods and access to social services. Access to input and services will increase, which will be cheaper due to transportation facility. This road helps to reduce travel time about half an hour to one hour and reduce the cost from NRs 10 to 15 of local people to reach district headquarter. This impact is direct, high, regional and long term.

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

Appreciation of Land Value

65. **Impacts:** Upgrading of road will lead to increase in land values. Mainly the land price will be increased in Toudol, Dolgaon, Bhattari Tole, Twanbasu Tole, Doleshwor, Thulogaon, Pathibhanjyang and Ashapuri. The impact is indirect, medium, local and long term in nature.

66. Measures: Awareness program shall be organized on use of high value land to get bank loans for setting up enterprises.

Increased Crop Productivity and Sale of Farm Products

67. Impacts: Due to easy and cheaper availability of agricultural inputs and technologies, productivity will be increased along the road. There is a possibility of increased economic opportunities and significant growth and extension of market centers at Doleshwor, Pathibhanjyang and Ashapuri settlements, which are potential areas for the production of vegetables, fruits and milk. Productivity such will increase due to cheaper transportation. The economy of rural area will be further monetized and it will help the rural economy. This is the indirect, significant, local and long term impacts from the proposed road.

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

6.2 Adverse Impacts and Mitigation Measures

6.2.1 Construction Stage

69. The likely impacts on physical, biological, socio-economic and cultural resources of the proposed road area and respective mitigation measures are suggested hereunder.

Physical Environment

Change in Land Use

70. Impacts: Agricultural land (0.39 ha), Community forest area (0.04 ha), Barren land (0.14 ha) and Built up area land (0.26 ha) will be permanently lost during road construction. The changes in land use will have impact on loss of agricultural land, which will directly reduce the agricultural production. Similarly, there will be also some change in land use due to expansion of roadside settlements like temporary shops and labor camps etc. The impact from changes in land use will be high, direct, local and long term in nature.

71. Measures: Compensation will be given for loss of private properties. Plantation of trees will be done to increase greenery in the area. Local tree species, fruit and fodder plants shall be given emphasis.

Spoil Disposal

72. Impacts: Unmanaged disposal of spoil may cause blockage of natural drainage systems, loss of organic fertile top soil gully erosion, landslide, disruption of road, damage to farmland, water pollution, waterlogging. The impact from spoil disposal will be direct, high, local and long term in nature.

73. Measures: Spoil will be reused as possible. Spoil will be safely disposed and managed at designated site with minimum environmental damage. Engineer will give approval for disposal site of

spoil. After the disposal, the site will be provided with proper drainage, vegetation and adequate protection against erosion. Necessary toe walls and retaining walls will be provided to protect the disposal of soil on downhill slopes. Recommended spoil sites are 5+280, 5+350, 5+560, 5+900, 7+200, 7+600(Private land), (Private land), 9+950.

Slope Instability

74. Impacts: There are some landslide prone areas at Ch 3+520(gully), 4+270, 5+800 (seepage area), 6+100 - 6+380, 6+590 -6+600, 6+700 - 6+715 and 9+650 - 9+690. From Ch 6+100 to 6+715 detail study will be done. The impact of slope instability and soil erosion is direct, medium, site specific and for mid-term.

75. Measure: The following mitigation measures will be adopted during the construction of the road and cost for these mitigation measures shall be included in detail bio-engineering design which is under preparation:

- Adoption of bio-engineering techniques (Such as Grass plantation, Tree/Shrub plantation, Brush layering, Live checkdam construction etc.)
- Use of toe wall before disposing spoils
- Drainage management (Catch drain, rip-rap drain, checkdam etc.)
- From Ch 6+100 to 6+715 detail studies will be carried out.
- Detail bio-engineering estimate is under preparation.

76. Detail structures for slope stabilization are given in Annex XII.

Drainage Management

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

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

Air Dust, Noise and Water Pollution

79. Impacts: Although the air quality of the project area is not measured, the air does not appear to be polluted. Dust will be major problem during the construction of the road. Impact on air quality will be direct, low, local, reversible and for short term. The project area at present does not experience higher levels of noise pollution. However, during construction, the increased construction activities may increase the noise level to some extent. The impact of road construction on the noise level will be direct, low, site specific, reversible and short term.

80. Measures: The mitigation measures will include use of face mask by the workers working in the areas of high dust generation; contractor will frequently sprinkle water during surfacing of the road; avoid disposal of excavated materials in the water bodies; cover dry material or make it wet during transportation. Roadside tree plantation will be done.

Quarrying Operation

81. Impacts: The construction of road will require boulders, sand and aggregates. Fine aggregates sand will be taken from markets. The extraction of materials from inappropriate places or in excessive amount will damage the local environment. The potential adverse impacts of quarrying are accelerated erosion, landslides, disturbance in natural drainage patterns, water logging and water pollution. The impact from the operation of quarry sites will be direct, low in magnitude, local nature and short term in duration.

82. Measures: Fine aggregates, sand will be taken from markets. If quarry and borrow operation sites will in road corridor it will be finalized for operation after 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 and bioengineering measures (Grass plantation, Shrub/Tree plantation, Brush layering).

Decline in Aesthetic Value

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

84. 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 (Rato Sirish, Kalki Phool, Bakaino) along ROW on both side of road for enhancing aesthetics and to prevent encroachment of ROW.

Location of Campsites, Storage Depots:

85. Impacts: Camp sites will be required during construction of road. Siting of camp may cause encroachment of agriculture land and alteration of drainage, solid waste and waste water problems. Impact will be direct, medium significance, site specific and short-term.

86. Measures: The mitigation measures will be use of local labors to avoid camp; rent local house instead of camp to keep labors; pay compensation for using private lands for storage or camp; fuel and chemical storage areas will be on paved surface with surrounding catch drain to protect soil from leakage. At camp site will be drinking water and latrine facilities. For waste water and solid waste management, soak pit will be made and proper management will be done. The location of campsite is proposed at chainage 3+ 720 and 7+000.

Construction Equipment Vehicles

87. Impacts: The Machine Intensive Road Construction Approach will use machineries and tools (Rollers, tippers, spreader, water tanker etc.). The related negative impacts are increase in air pollution due to emission of smoke, increase in vibration due to vehicular movement. 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. Impact will be direct, high significance, site specific and short-term.

88. Measures: The equipment/vehicles deployed for construction activities shall be regularly maintained. 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. All the vehicles deployed for material movement shall be spill proof to the extent possible. Fencing for the equipments camp.

Use of Bitumen

89. Impacts: Bitumen is required for black topping. Spillage of bitumen damage soil productivity and pollution. Accident will occur.

90. Measures: The following mitigation measures will be adopted

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

Biological Environment

Loss or degradation of forests and vegetation

91. Impacts: Total of 0.04 ha of forest area will be permanently lost due to road construction work. The impacts is midium in magnitude, site specific in extent and long term in duration, whereas loss of other forest resources will be moderate, local and long term in magnitude, extent and duration respectively.

92. Measure: The loss of trees will be minimized; Compensatory plantation of trees will be done in forest areas at 1:25 ratio + 10 % and in private land at 1:1 ratio. Bio-engineering/Roadside tree plantation will be done for greenery development.

Impact on Wildlife Due To Loss of Habitat and Poaching

93. 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.

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

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

Impacts on Flora and Fauna (as listed in CITES and IUCN Red data book)

95. There will be no impact on endangered or protected flora and fauna.

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

96. Impacts: There will be permanent loss of 0.39 ha agricultural land due to road construction. This will lead to annual loss of approximately 0.6 metric tons of food grain production among the families losing lands to the project. Moreover spoils on farm land will also affect the production of agricultural crops. This impact is expected to be direct, of high in magnitude, local in extent and of long term in duration.

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

Loss of Private Properties

98. Impacts: Altogether 19 structures will be affected including private residential and business structures. Impact will be direct, high significance, site specific and long-term in nature. Detail are given in Annex XV(B).

99. Measure: Full compensation shall be provided for private houses. Cost will be incorporated in resettlement Plan which is estimated as NRs. ----- LEST trainings will be provided to affected families under Resettlement plan. Details of affected private houses are given in Annex XV(B).

Impact on Community Infrastructure

100. Impacts: There are various infrastructures damage during road construction which are mentioned below. Impact will be direct, high, site specific and short-term in nature.

101. Measures: Damaged Community Infrastructure shall be reconstructed immediately by the project. Cost for reconstruction shall be included in project cost.

Table 6.1: Affected community structures and Mitigation Measures

Type of Public Service and Infrastructure	Chainage/ Location	Impact	Mitigation measures
Pati	1+410	Damaged during road construction	Compensation will be given for relocation
Access road	1+500, 2+020, 2+270, 3+520, 3+920, 7+010	Damaged during road construction	Restoration will be done
Sarswoti School	7+030	Damaged during road construction	Foot step need to reinstate. For control of dust nuisance, sprinkling of water during road construction, Information signboard will be

			placed (Such as School area, Speed limit), and use of horns should be restricted.
Tap Stand	2+535	Damaged during road construction	Restoration of affected tapstand
Water Supply Pipe	1+900, 7+040,	Damaged during road construction	Restoration of affected drinking water pipelines and tapstand
Irrigation crossing	3+880	Damaged during road construction	Reinstate by providing HDP /Hume pipe
Foottrail	4+460, 4+700,7+300 5+000,	Damaged during road construction	Reinstate of affected foottrails, drain cover will be provided
Electric Pole	0+800, 7+200	Damaged during road construction	Relocated

Impacts on Cultural, Religious and Archeological Sites

102. Impacts: There are Manakamana Temple, Doleshwar Temple, **Dachinkali Temple**, Ashapuri Temple but it will not be affected during road construction. However, during construction it might be affected due to dust and noise pollution. The impact is direct, low, local and for short term.

103. Measure: Prohibition of blowing horns, haphazard disposal and stock piling of materials near temple areas. Roadside tree plantation will be done around the temple areas.

Impacts on Occupational Health and Safety Matters

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

105. Measure: Make mandatory the use of helmets, safety belts, masks, gloves and boot by workers 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; provide group accidental insurance for workers. Awareness program will be given to local people and workers on HIV/AIDS and other communicable diseases.

6.2.2 Operation stage

Physical Environment

Road Slope Instability and Management

106. Impacts: Sensitive areas for landslide are Ch. **6+100 - 6+380, 6+590 -6+600, 6+700 - 6+715**. Poor maintenance of road and blockage of drains can lead to road damage. The impact will be direct, medium, local and long term nature.

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

Impact Due to Air, Noise and Water Pollution

108. Impacts: **Black topped** will reduce dust pollution. This is district road category and the vehicular movement is not expected to be very high. Thus, the impact will be direct, low, local and long term.

109. Noise during operation of road will increase. However, due to low traffic volume, the impact due to noise pollution will be direct, low, local and long term. During operation period, the disposal of gases and liquid pollutants from vehicles into water bodies may cause water pollution. The impact will be direct, low, local and long term.

110. Measures: Measures to be adopted will include plantation of trees on both sides of road as far as possible; restrict horn near forest, schools and settlements; provide speed limit for vehicle at sensitive areas. Awareness program will be conducted to vehicle operators.

Biological Environment

Depletion of Forest Resources

111. Impacts: The forest resources depletion may occur due to inappropriate spoil disposal and construction practices and the development of market centers. Operation of road may increase in timber smuggling due to easy access and easy transportation facilities. The impact will be indirect, medium, local and long term in nature. However, provision of forest products distribution in community forest operational plan will minimize the depletion of forest resources.

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

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

Disturbance to the Wildlife and Illegal Poaching

113. Impacts: Wild life may be disturbed due to the frequent movement of the vehicles and horn blowing in the forest area and moreover there may occur illegal hunting during operation period due to easy accessibility. The impact will be indirect, low, local and long term in nature.

114. Measures: The mitigation measure for this is

- Prohibition of blowing horns in the dense forest areas
- Information signboard at potential areas of wildlife crossing
- Awareness training to driver to limit speed and horn use

Socio-economic and Cultural Environment

Unplanned Settlement and Market Center Development

115. Impacts: The existing trend is to settle along the road side for the economic activities through the establishment of shops, restaurants, stalls and hotels. Expansion of settlement area and market can be observed in Jagati, Thulogaun, Chakkubasti, Toudal and Asapuri. This may trigger the practice of encroaching right of way (RoW). Consequently, this will reduce road capacity and increase road accidents. The increasing trend of roadside settlement is likely to increase household waste as well as wastewater on the road. The impact will be direct, medium, local and long term in nature.

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

- Awareness raising program through local organizations for planned settlements.
- Regulate settlement growth with proper planning/zoning along RoW.
- Plantation of trees along the road so that RoW is not encroached

Change in Social Behavior

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

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

Road Safety Measures

119. 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.

120. Measures: The mitigation measures to be adopted will be applying appropriate road safety measures such as delineator post in high embankment and necessary safety signs will be used along the road.

7.0 Environmental Management Plan

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

7.1 Institutions and Their Roles

Table 7.1: Institutions and Their Roles

Institution	Role	Responsibility in the Project	Remark
Ministry of Environment	Mandated to formulate and implement environmental policies, plans and programs at national level	Facilitate when needed on environmental safeguards	No direct responsibility in the project
Ministry of Local Development (MLD)	It is concerned line ministry, executive agency and concerned agency as per EPA/EPR. Environment Management Section is responsible to look into safeguard matters for the ministry.	<ul style="list-style-type: none"> To review IEE ToR and Report, and give approval. Coordinate with project on safeguard issues Conduct environmental monitoring from central level. 	Executing Agency
Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR)	Department under MLD responsible to execute infrastructure projects under MLD. Provides back-up support to DDCs in technical matters through DTO.	RRRSDP is being executed under overall coordination and supervision of the Department for the Ministry. It is also supporting DDCs through DTOs to implement the project.	Executing Agency
RRRSDP- Project Coordination Unit	Project specific unit.	Technical Unit to support and coordinate all activities for implementation of RRRSDP. Review, comment, and forward IEE ToR and Report for review to ADB and for approval to MLD	First Class Officer / DDG of DoLIDAR has been heading the PCU.
District Development Committee / District Technical Office	DDC/DTO is Project Implementing Agency.	<ul style="list-style-type: none"> Prepare IEE ToR and submit for approval to PCU/MLD Conduct IEE Study, Public Consultation, and prepare IEE Report Receive comments from PCU/ADB/MLD and modify accordingly. Get final approval from MLD. Conduct environmental safeguard monitoring Reporting 	District Technical Officer is the Project Manager
District Project Office	Project implementation office working directly under DDC/DTO.	Responsible for overall activities related to implementation of the works at field level.	Implementing Agency
Central Implementation Support Consultant (CISC)	Support consultants at central level	Technical and management support to PCU	Consultant
District Implementation Support Team (DIST)	Support consultants at district level	Technical and management support to DPO	Consultant

122. 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 Zol. They carryout the manual construction works. Contractor will be appointed for works requiring higher skill and mechanized support.

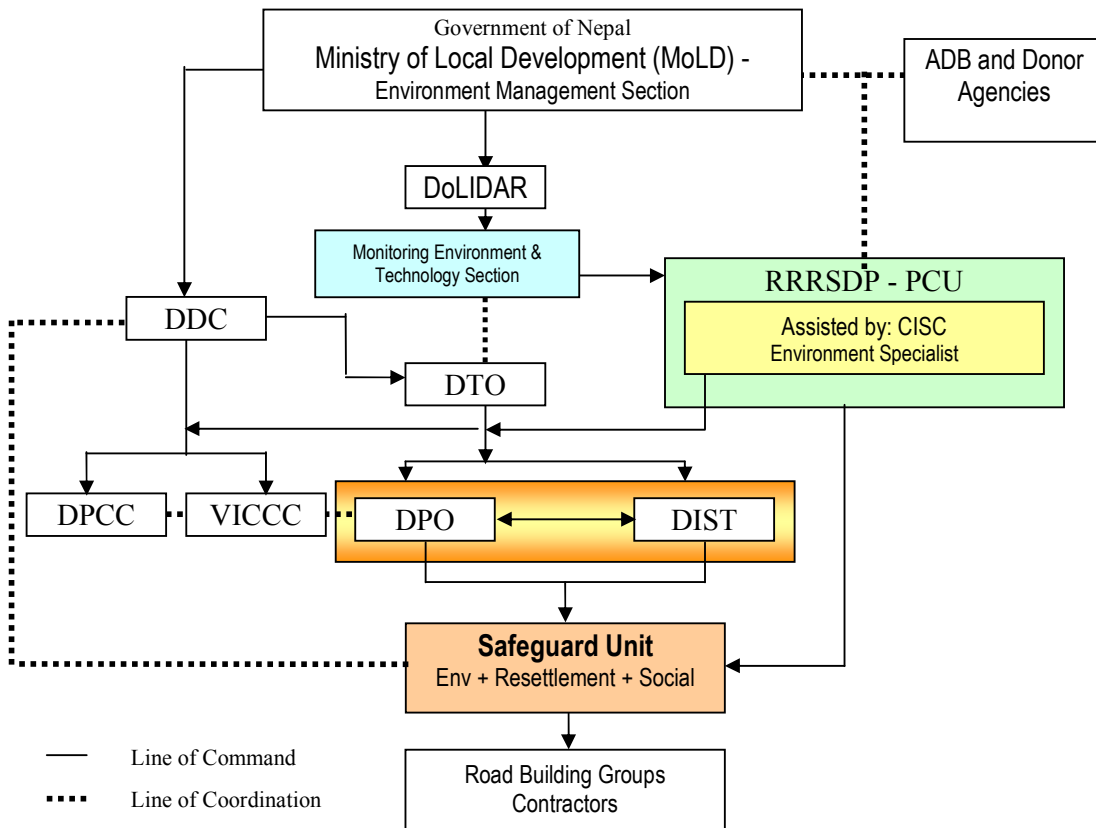
7.2 Reporting

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

124. 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.

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

Fig. 7.1: Environmental Management Organization Structure



7.3 Benefit Augmentation and Mitigation Measures Implementation Strategy

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

Table 7.2: Identified/Predicted Beneficial Impacts and Proposed Enhancement Measures

Activity	Effect	Related Beneficial Impacts	Type of Impact *)				Benefit Augmentation Measures	Responsible Agencies		
			Na t	Ma g	Ex t	Du r		Executing Agency	Supporting Agency	
Construction Stage										
Construction of road	Employment Generation and Increase in Income	Increase in income level; 89843 person days (18981 person days as skilled and 70862 person days as unskilled) will get employment.	D	H	L	ST	Priority for employment will be given to local poor, dalit, vulnerable groups and women. They will be given training to do the job. Proponent will implement skill training, awareness, and income generation programs encouraging them to utilize their money earned through wage.	DDC/DTO/DIST	DPCC / VICCC /CISC	
Construction of road	Skill Enhancement	Increase in income generating activities, employment opportunities	IN	M	L	LT	Training on masonry, gabion work, bioengineering works, and roadside tree plantation will be given. Livelihood Enhancement Skills Training (LEST) programs under social plan will be provided.	DPO/DIST	DDC/DTO/ CISC	
Construction of road	Enterprise Development and Business Promotion	Enhancement in local economy. Business will increase in Doleshwor, Thulogaon, Pathibhanjyang, and Ashapuri.	D	L	L	ST	Provide support to local entrepreneurs, promotion of cooperatives and linkage with financial institutions. Conduct training under LEST programs under social action plan.	DDC/DTO	DIST/CISC	
Construction of road	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	
Operation Stage										
Operation of Road	Improvement in Accessibility and Saving of Time and Transportation Cost	Saving in travel time and travel cost; This road helps to reduce travel time about half an hour to one hour and reduce the cost from NRs 10 to 15 of local people to reach district headquarter	D	H	R	LT	Regular maintenance of the road will be done by the Proponent.	DDC/DTO	DDC / DoLIDAR	
Operation of Road	Appreciation of Land Value	Improvement in local economic condition. Mainly the land price will be increased in Toudol, Dolgaon, Bhattari Tole, Twanbasu Tole, Doleshwor, Thulogaon, Pathibhanjyang and Ashapuri	IN	M	L	LT	Awareness program shall be organized on use of high value land to get bank loans for setting up enterprises.	DDC/DTO	DDC/VDC	
Operation of Road	Increased Crop Productivity and Sale of Farm Products	Enhancement in local economy. Sale of farm and livestock products will be increased in the settlements along the road corridor like Doleshwor, Pathibhanjyang and Ashapuri	IN	H	L	LT	Promotion of market linkages and networking for better market price.	DDC/DTO	DDC/VDC	

Table 7.3: Identified/Predicted 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	Change in land use (0.39 ha. of cultivated land, 0.04 ha.of forest and 0.26 ha.of settlement areas)	Loss of agricultural land, production, loss of property.	D	H	L	LT	IR	Compensation will be given for loss of private properties. Plantation of trees will be done to increase greenery in the area. Local tree species, fruit and fodder plants shall be given emphasis.	DDC/DT O/DPO	DIST	
Construction of Road, earth excavation	Spoil Disposal and imposed weight of spoil on fragile slopes	Gully erosion, landslide, disruption of road, damage to farmland, water pollution etc.	D	H	L	LT	Re	Spoil will be safely disposed and managed at designated site with minimum environmental damage. Engineer will give approval for disposal site of spoil. After the disposal, the site will be provided with proper drainage, vegetation and adequate protection against erosion. Recommended spoil sites are 5+280, 5+350, 5+560, 5+900, 7+200, 7+600(Private land), (Private land), 9+950	DDC/DT O/DPO	DIST/VIC CC/VDC	
Site clearance, excavation	Slope Instability (existing land slides at Ch 3+520(gully), 4+270, 5+800 (seepage area), 6+100 - 6+380, 6+590 -6+600, 6+700 - 6+715 and 9+650 - 9+690	Erosion, landslide, loss of property	D	M	SS	MT	Re	Bio-engineering application (Such as Grass plantation, Tree/Shrub plantation, Brush layering, Palisades etc.) shall be used to stabilize the slopes. Retaining walls, Breast wall and toe walls are proposed. From Ch 6+100 to 6+715 detail studies will be carried out.	DDC/DT O	CISC/DIST	
Construction of Road	Drainage Management, generation of large volume of surface runoff	Erosion, landslide, damage to farmland	IN	M	SS	MT	Re	Provide adequate numbers of drainage structures in order to have minimum interference with natural drainage pattern of the area.	DDC/DT O/DPO	DIST	
Construction works, operation of construction vehicles, material hauling and unloading	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	IR	Use of face mask while working on dust prone areas, cover dry material or make it wet during transportation	DDC/DT O/DPO/Contractor	DIST	
	Noise pollution	Disturbance and annoyance around school, health posts,	D	L	SS	ST	IR	Restrict horn near school, health post etc.	DDC/DT O/DPO / Contract	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
etc. Slope cutting, spoil and waste disposal.		forest areas.							or	
	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/DT O/DPO/Contractor/RBGs	DIST/VIC CC
Cutting of slopes	Quarry operation and its potential effect on instability, landslide	Water pollution, damage to farmland, disturbance in natural drainage	D	L	L	ST	Re	Fine aggregates, sand will be taken from markets. If quarry and borrow operation sites will in road corridor it will be finalized for operation after approved by Engineer; unstable sites, erosion prone area, forest area, settlements, fertile farm land will be avoided.	DDC/DT O/Contractor	DPO/DIST/VICCC
Construction of road	Location of Camp Sites, Storage Depots	Encroachment of forest, agriculture land, alteration of drainage, disposal of solid waste, and waste water problems	D	M	SS	ST	Re	Proper selection of camp sites away from forests, proper sanitary facilities by providing Pit Latrine, sockpit. Appropriate camp site should be at 3+ 720 and 7+000.	DDC/DT O/DPO/Contractor	DIST/VIC CC
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. Use of safety gears to workers during handling of chemicals and fuels	DPO assisted by DIST/Contractor	DIST/CIS C/PCU
Construction of road, quarrying operation, spoil disposal	Decline in Aesthetic Value	Scars of Landscape	D	L	L	ST	Re	Discourage indiscriminate dumping of spoil, rehabilitation of quarry, plantation of local species along the roadside.	DDC/DT O/DPO/Contractor	DIST/CIS C
Construction of road	Use of Bitumen	Damage in soil productivity, air pollution due to heating of bitumen, accident	D	M	L	ST	IR	Use kerosene for heating and strict prohibition on firewood uses, safety gears to workers (Such as gloves, boots, masks, helmet etc), appropriate storage of	DPO assisted by DIST/Contract	DIST/CIS C/PCU

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
								materials	or	
Biological Environment										
Clearance of vegetation necessary for road formation	Loss or Degradation of Forests and Vegetation	Loss of environmental benefits from vegetation, disturbance in ecological function (dust and noise absorbance, aesthetic value etc.)	D	M	L	LT	IR	The loss of trees will be minimized; Compensatory plantation of trees will be done in forest areas at 1:25 ratio + 10 % and in private land at 1:1 ratio. Roadside tree plantation will be done for greenery development.	DDC/DT O/DPO/DFO	DFO/CFUGs/DIST
Construction activity	Impact on Wildlife Due To Loss of Habitat and Poaching	Loss of biodiversity and valuable species of wildlife	IN	L	L	ST	Re	No tree or vegetation shall be cut unless absolutely necessary; Workers shall be actively discouraged from collecting fuel wood from forest or Poaching/harassing of birds or animals; Coordination with DFO to control the activities like illegal Poaching and poaching by enforcing acts and regulations strictly	DDC/DT O/DPO/DFO	DFO/CFUGs/DIST
Socio-economic Environment										
Acquisition of land for maintaining road width*	Loss or Degradation of Farm Land and Productivity 0.39 ha agricultural land	Reduced production, hardship	D	H	L	LT	IR	Minimize productive land acquisition, Compensation for affected people	DDC/DT O/DPO	CDC DIST/VICCC
Acquisition of land and property for maintaining road width	Loss of Private Properties Altogether 19 structures will be affected including private residential and business	Displacement of people, hardship	D	H	SS	LT	IR	Compensation and resettlement to the owner as described in resettlement plan Income generation and Livelihood improvement programme will be conducted for affected families	DDC/DT O/DPO	CDC/DIST
Demolition of structures along road alignment	Impact on Community Infrastructure: (refer Table 6.1) Pati (1+410), Access road (1+500, 2+020, 2+270, 3+520, 3+920, 7+010), School (7+030), Tap Stand	Lack of services	D	H	SS	ST	Re	Necessary mitigation measures will be provided, restoration or relocation of affected infrastructures (Refer Table 6.1)	DDC/DT O/DPO	PCU DIST/CIS C/VICCC/ VDC

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

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
	(2+535), Water Supply Pipe (1+900, 7+040), Irrigation crossing(3+880), Foottrail (4+460, 4+700, 7+300 5+000), Electric Pole (0+800, 7+200)									
Construction of road	Occupational Health and Safety Matters	Injury, fatal accidents, outbreak of epidemics and diseases, decline in capacity to work	D	H	L	ST	Re	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/DT O /DPO/ Contractors	DIST/CIS C
Operation Stage										
Physical Environment										
Landslide, Quarry operation	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 regular maintenance of road through bio-engineering and civil structures for slope protection; restoration of rill and gully formation	DDC/DT O/DPO/V DC	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	Black topped will reduce dust pollution, Speed limit for vehicles, no horn signs, Awareness program will be conducted to vehicle operators.	DDC/DT O	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, Encourage and support local community for controlling illegal harvesting of forest resources, Awareness to community	DFO/ CFUGs/V DCs	DDC/CDO
Road operation	Disturbance to the Wildlife and Illegal Poaching	Collision of wildlife with vehicles, disturbance in their normal activities, Loss of biodiversity	IN	L	L	LT	IR	Warning traffic signal, Awareness training to driver to limit speed and horn use ,Enforcement of law.	DTO/ CFUGs	DDC/CDO / DFO

Activity	Potential Negative Effects	Related Adverse Impacts	Type of Impact *)					Mitigation Measures	Responsibility for Mitigation Measure	
			Nat	Mag	Ext	Dur	Rev		Executin g Agency	Supportin g Agency
Socio-economic Environment										
Easy Access by road operation	Unplanned 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/DT O	CDO / VICCC
Operation of Road	Change in Social behavior	Social and cultural conflicts	IN	M	L	ST	Re	Support awareness raising programs and strengthen communities against such nuisances	DDC/DT O	DDC/DoLI DAR
Operation of Road	Issues on Road Safety	Increase in accidents	D	M	L	LT	IR	Appropriate road safety measures, Safety signs along the road.	DDC/DT O	DDC/DoLI DAR

* 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=ShortTerm;MT=MediumTerm;LT=Longterm,Re=Reversible;IR=Irreversible

7.4. Mitigation cost

127. 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, spoil disposal, supply of face masks, helmets, muffles, accidental insurance, bioengineering measures, plantation 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 Contractor/ Leader of RBGs	50,000.00	
1.2	Enhancement in Technical Skills (Bio-engineering)	50,000.00	
	Sub-Total (1)	100,000.00	
2. Adverse Impacts Mitigation Measures			
2.1	Bio-engineering work/Roadside tree plantation		
2.2	Insurance		Included in BoQ
2.3	Information Signboard	300,000.00	Included in BoQ
2.4	Resettlement cost	49,869,200.00	Included in RP
2.5	Restoration or relocation of affected infrastructures, Spoils disposal site management and rehabilitation.	300,000.00	Included in BoQ
	Spoils disposal site management and rehabilitation (567cu m)	2053674.00	
2.6	Social Cost		
	Labour camp site management	225,000.00	Included in BoQ
2.7	Occupational health and safety; First aid boxes, Safety measures for workers (Helmets, gloves, masks, boots, etc.)	250,000.00	
	Sub-Total (2)		
	Total		

7.5. Implementation of Mitigation Measures

128. 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.

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

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

7.6. Environmental Monitoring

130. 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

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

132. 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.**

133. DDC/DTO with support from PCU/CISC will make arrangements for sub-project level monitoring. It will constitute a monitoring team. Project's district management team should be responsible for forming the monitoring team, financing the monitoring works, providing logistics and other necessary support. Thus, it is recommended that an external team hired by DDC/DTO take responsibility for periodic monitoring of the environmental performance, in addition to the regular supervision and guidance provided by the DIST at the site. The sub-project specific monitoring plan as given in **Table 7.5 and 7.6** shall be followed. At least one monitoring in each construction season is necessary.

134. The sub-project level monitoring team should submit its report to RRRSDP district management, which should forward a copy to the RRRSDP-PCU. Total cost of environmental monitoring (field visits, observation, review of reports and report preparation) is estimated NRs.200, 000.00 as given in **Table 7.5.**

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		50,000.00
5	Transportation		LS		50,000.00
6	Cost for Monitoring by MoLD/DoLIDAR		LS		100,000.00
	TOTAL				200,000.00

7.6.2 Types of Monitoring and Monitoring Parameters

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

Compliance Monitoring - that verifies whether the EMP provisions are properly implemented in the field. The framework for compliance monitoring is given in the **Table 7.6.**

Impact Monitoring - that confirms the result of implementing mitigation measures. The framework for impact monitoring is given in the Table 7.7.

Table 7.6: Compliance Monitoring for Jagati Police station – Doleshwar – Ashapuri Road Sub-Project 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 discussion with people	Initial stage pre-construction phase - well ahead of construction	CFC / PCU (CISC) / DOLIDAR / MLD
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 / MLD
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 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	Contractor / RBG/ DIST	Arrangement specified in the Code of Practice and in Manuals relating to environmental protection; EMP detail in IEE Document; records and observations on pollution, waste management, spoil deposit. Training	Site inspection, Discussion with Project management, consultants, and local people. Quantifying site-specific impacts, photos, laboratory tests where required.	Before and during construction period	DPO/Proponent

Parameters/Indicators	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
management, slope stabilisation, cut and fill, waste management, spoils, sensitive habitats and critical sites, protection of fauna and flora		programmes for labourers to prevent impacts on wildlife sensitive habitats, forests and fuel wood use.	Existing patrol, control and enforcement mechanisms, enforcement records		
Vegetation clearance	Contractor / 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 / 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 / DIST	Dust level and noise level at work sites, major settlements and sensitive spots like health centres and schools	Visual observation, Observation of good construction practices and Discussion with residents and workers	Once in a month during construction	Proponent / DPO
Measures to protect water bodies from pollution	Contractor / DIST	Visual observation, observation of open defecation/waste/spoil disposal around water sources near construction sites ; Parameters like pH, hardness, DO, Turbidity etc.	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 / 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	Contractor / DIST	Decommissioned sites indicate no adverse/residual environmental impacts, and	Site observation; Comparing photos; Consultation with land owners	At end of construction	Proponent / DPO

Parameters/Indicators	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
construction sites (camps, quarries, borrow pits)		are rehabilitated to the satisfaction of the supervisor and land owners		period	
Proper storage of chemicals; prevent pollution of soil and water.	Contractor	Storage of chemicals on paved surface. Provision of safety gears during chemical handling by workers. Spillage during operation of machineries.	Site inspection; consultation with workers.	During the construction stage	DTO/DIST/Contractor

Table 7.7: Impact / Effect Monitoring for Jagati Police station – Doleshwar – Ashapuri Road Sub-Project 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 Discussion with people and technicians	Near steep slopes and at landslide areas and sites where bio-engineering failed	Continuously during construction and operation	DIST during construction; Proponent / DPO / Soil Conservation Office during operation
Bio-engineering of disturbed slopes	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	Status of road side land; Production / yield;	Observation, data collection and analysis and interview	Road side land and houses	During construction	Proponent / DIST/ VICCC

Parameters /Indicators	Verifiable Indicators	Verification Methods	Location	Schedule	Responsible Implementation and Monitoring Agency
farmland , houses and properties	Status of road side houses; Status of standing crop along alignment	with stakeholders			
Water quality	observation of open defecation and waste disposal around water sources near construction sites ; Parameters like pH, hardness, DO etc.	Visual observation, measurement of water sample using standard field kit	Local streams	During construction; Upon demand for testing with field kit	DIST / Proponent
Dust pollution	Dust cloud in work sites. Dust collected on leaves of nearby vegetation	Visual inspection and comparison with baseline condition	At construction sites and at sensitive spots (schools, health spots, major settlements)	During construction and operation	DIST / Proponent
Forest and vegetation	Numbers of trees, presence of ground vegetation, signs of illicit logging and extraction of 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, Discussion 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 period	Proponent / VDC
Occupational safety and hazard	Type and number of accident occurred during construction; Adequacy of occupational safety measures provided; Compensation provided in case of fatal accidents or	Observations, photos, spot checks, contractors' and health centre records interview with labours	Project Area	During construction	DIST/Proponent

Parameters /Indicators	Verifiable Indicators	Verification Methods	Location	Schedule	Responsible Implementation and Monitoring Agency
	invalidity				
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
Chemical pollution	Spillage of chemicals during storage; and operation of machineries. Events of health hazards due to chemicals.	Inspections, Rords	Project Area	During Construction	DPO/DIST/Contractor

8.0 Conclusion and Recommendation

8.1 Conclusion

136. The IEE study of the proposed Jagati Police Station - Doleshwor - Ashapuri 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. The beneficial impacts from the implementation of the proposed road are more significant and long term in nature against the adverse impacts most of which could be avoided or minimized or compensated.

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

8.2 Recommendation

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

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

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ANNEXES

Terms of Reference (ToR)

Initial Environmental Examination (IEE)

Of

**Jagati Police Station – Doleshwar – Ashapuri
Road Sub - Project**

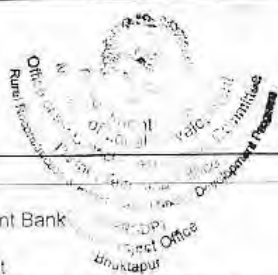
Submitted to:

**Government of Nepal
Ministry of Local Development**

Proponent:

**District Development Committee (DDC)
District Technical Office (DTO)
Bhaktapur
Telephone No. – 01-6614854
Fax No. – 977-1-6613215**

May 2009



ABBREVIATIONS

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

Signature

Signature

Coordinator

52.4.13
स्वास्थ्य विभाग कार्यालय

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1. NAME AND ADDRESS OF THE PROPONENT

The District Development Committee (DDC), District Technical Office (DTO), Bhaktapur is the executing agency at the district level and the proponent of the Initial Environmental Examination (IEE) study for the rehabilitation of Jagati Police Station – Dolleshwar - Ashapuri Road Sub – Project. The Ministry of Local Development (MoLD) is the concerned authority for the approval of IEE study report.

Address of the Proponent:

District Development Committee (DDC)
District Technical Office (DTO)
Bhaktapur
Telephone No. :- 01-6614854
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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 (MoLD).

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.

CEMECA is the District Implementation Support Team (DIST) for RRRSDP and have the responsibility of providing technical, environmental and social assistance in Bhaktapur district.

This Terms of Reference (ToR) is prepared to conduct an IEE study of Jagati Police Station – Dolleshwar - Ashapuri Road Sub - Project in Bhaktapur District.

RRRSDP, Bhaktapur

[Signature]

62.4.03
स्थानीय विकास अधिकारी

2.2 BACKGROUND OF THE SUB-PROJECT

The proposed Jagati Police Station - Doleshwar - Ashapuri Road Sub - Project lies in the south-east part of Bhaktapur district of Central Development region. The road links Kavrepalanchowk and Bhaktapur district to facilitate the transportation of people of that region. Major settlements along the road alignment are Jagati, Chakhu, Nanabu, Bibicha, Taoudol, Bhundol, Dol Gaun, Bhattarai, Tole, Taaunbasu, Tole, Doleshwar, Tholo Gaun, Soche Basti, Patil Bhanjyang, Naichal, Bashi and Ashapuri. The length of the road alignment is 9.90 km.

The starting point of Jagati Police Station - Doleshwar - Ashapuri Road Sub - Project is Jagati Police station at a Arniko Rajmarg and passes through central part of Sipadol VDC and ends at Ashapuri. Upto 4 km section (Gothalechaur Bhanjyang), the road width is 7 m in average and 6 m width from 4+000 to end chainage. Almost whole alignment of the road passes from lower valley to upper valley.

The people in this project area are having many types of transportation problems due to worse condition of road having graveled and earthen sections. Local people have no good and regular access to the market centers of the district to sell and buy the vegetative products such as Potato, Tomato, Onion, Cauliflower etc. to sustain their daily livelihood. Hence, the locally produced materials, vegetative products are getting low prices than it may fetch. Other development facilities such as water supply is also poor along the road corridor of Sipadol VDC. Having lots of transportation difficulties, local people of the road corridor do not have the fast and appropriate access road to reach the market places and nearby destinations etc.

The rehabilitation of road will mainly enhance the transportation of Vegetable products, poultry farming productions produced in different areas of Sipadol VDC. It will increase local as well as foreign tourists in Ashapuri Mahadev temple and it will extend physical and economical access to the people within the immediate zone of influence. Patibhanjyang can be Viewpoint for captivating the beautiful scenario of Kathmandu valley. For the road construction, use of local labour will generate immediate employment to local people and minimize migration to cities of Kathmandu, Bhaktapur and Lalitpur district 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 Kavrepalanchowk district.

This road is identified as a third priority road in the District Transport Master Plan (DTMP) prepared in 2008. Rehabilitation of this road with black topped paving will provide physical and economical access to the people of eastern part of the district with district headquarter and some part of Kavrepalanchowk district.

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

ToR for IEE of Jagati Police Station - Doleshwar - Ashapuri Road Sub - Project

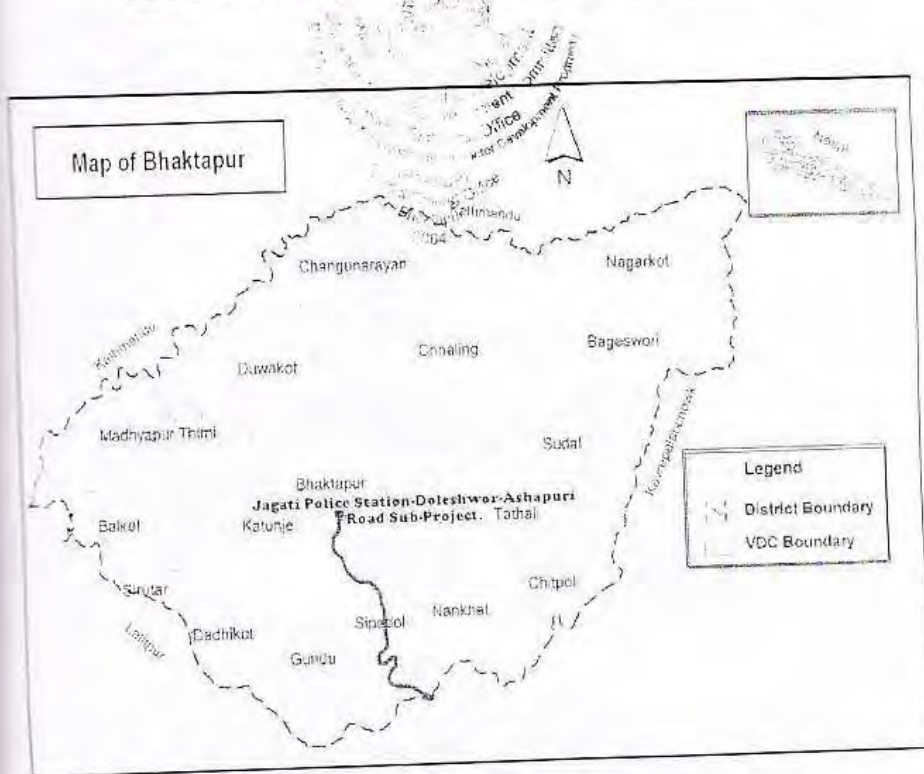


Figure 1. Map of Bhaktapur district showing location Jagati Police Station - Doleshwar - Ashapuri Road Sub - Project

RRRSDP, Bhaktapur

Project

571403
Municipal Engineer

ToR for IEE of Jagati Police Station – Doleshwar – Ashapuri Road Sub - Project



Figure 2. Topographical Map showing Jagati Police Station – Doleshwar – Ashapuri Road Sub – Project



RRSDP, Bhaktapur

Signature
27/11/03

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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 Jagati and Ashapuri of Sipadol VDCs to the Bhaktapur Municipality, Bhaktapur. This road starts from Jagati police station of Bhaktapur Municipality and is about 3.0 km from Tinkune of Bhaktapur. This road can be used as alternative route for vehicular movement between Bhaktapur and Kavrepalanchowk. Some settlements of Sipadol VDC are likely to be market places and Ashapuri is likely to be Religious as well as Tourists destinations. Then the road runs towards south direction to uphill side in between the Mahabharat range with hills and low mountains. The end point of this rehabilitation section of road is Ashapuri, the border of Bhaktapur and Kavrepalanchowk district. The end point of the road deserves the possibility of Religious spot for surrounding settlements.

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
- *Bajabaraniya Nirdesika* (Nepal, MLD), 2057
- National Park and Wildlife Conservation Act, 1973
- Local Self Governance Act, 1999 and Local Self Governance Rules, 2000
- Land Acquisition Act, 1977 and Land Acquisition Rules, 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 it with the local stakeholders. The information collection will be made covering physical, biological, socio-economic and cultural aspects of the environment.

5.0 ALTERNATIVES FOR THE IMPLEMENTATION OF THE PROPOSAL

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

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

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

6/14/05

6.0 REQUIREMENT OF THE IEE STUDY

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

6.1 TIME SCHEDULE

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

Table 1. Proposed work schedule for conducting IEE study

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

6.2 ESTIMATED BUDGET AND STUDY TEAM

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

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

The IEE will be carried out and prepared by DIST Environmental Specialist, with support from DIST team Bhaktapur, 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 human resources 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:

RRRSDP, Bhaktapur

Coordinator

12/11/03
स्थानीय विकास अधिकारी

3.1.1 Construction Stage

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

3.1.2 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

3.2 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.

3.2.1 Construction Stage

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

Physical environment

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

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

Biological environment

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

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

Socio-economic and cultural environment

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

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

3.2.2 Operation stage

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

Physical environment

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

Biological environment

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

Socio-economic and cultural environment

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

11.0 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.

11.2 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.

11.4 IEE report format

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

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

- vi. **Public Consultation and Information Disclosure;**
vii. **Review of Relevant Acts, Regulations and Guidelines:**

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

ix. Existing Environmental condition:

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

x. Project Alternatives:

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

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

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

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

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

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

vi. **Environmental Management Plan:**

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

vii. **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.

viii. **Miscellaneous:**

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

ix. **Annexes**

- ToR of IEE
- Rapid Environmental Assessment (REA) Checklist
- Abstract of cost
- RRRSDP environmental checklist
- Public notice
- Deed of enquiry (*muchulka*)
- Name of the organizations
- List of person contacted
- Meeting minutes of community consultation
- Recommendation letters from municipality and VDC's
- Existing condition
 - a. Distribution of household by major occupation
 - b. Summary of public services and infrastructures according to settlement
 - c. Land holding pattern of settlements within Zol
 - d. Number of households belonging to different food security category
- List of trees
- Maximization of slope cutting and preservation of vegetation cover
- Photographs

Annex- II: Rapid Environmental Assessment (REA) Checklist

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:

Jagati Police Station – Doleshwar - Ashapuri Road Sub – Project

Sector Division:

RRRSDP

SCREENING QUESTIONS	Yes	No	REMARKS
A. PROJECT SITING			
IS THE PROJECT AREA ADJACENT TO OR WITHIN ANY OF THE FOLLOWING ENVIRONMENTALLY SENSITIVE AREAS?			
▪ CULTURAL HERITAGE SITE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
▪ PROTECTED AREA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
▪ WETLAND	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
▪ MANGROVE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
▪ ESTUARINE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
▪ BUFFER ZONE OF PROTECTED AREA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
▪ SPECIAL AREA FOR PROTECTING BIODIVERSITY	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
B. POTENTIAL ENVIRONMENTAL IMPACTS			
WILL THE PROJECT CAUSE...			
▪ encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
▪ encroachment on precious ecology (e.g. sensitive or protected areas)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<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? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> noise and vibration due to blasting and other civil works? dislocation or involuntary resettlement of people 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<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? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> hazardous driving conditions where construction interferes with pre-existing roads? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<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? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> creation of temporary breeding habitats for mosquito vectors of disease? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> dislocation and compulsory resettlement of people living in right-of-way? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials and loss of life? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<ul style="list-style-type: none"> increased noise and air pollution resulting from traffic volume? 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Noise will produce due to vehicular moment
<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? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Annex - 3: Abstract of Cost**Office of District Development Committee****Bhaktapur****Rural Reconstruction and Rehabilitation Sector Development Program (RRRSDP)****Name of Road: Jagati police station - Doleshwer - Ashapuri Raod Sub project**

SN	Description of works	Unit	Quantity	Rate	Amount
1	General				
1.1	Insurance works		L.S.		400,000.00
1.2	Occupational health safety		L.S.		250,000.00
1.3	Site office for supervising team		L.S.		100,000.00
1.4	VICCC operation and management cost		L.S.		85,000.00
1.5	Environmental monitoring cost		L.S.		200000.00
1.6	Transportation means for supervisors		L.S.		200,000.00
1.7	Compensatory Plantation cost	no	1425	44.5	63,412.50
2	Site Clearance		L.S.		125,000.00
3	Road way				
3.1	E/W excavation	m ³	38902	189.56	7,372,707.04
3.2	E/W in Backfilling	m ³	22947	115	2,638,905.00
3.3	Sub - Base Preparation(upto 10 cm)	m ³	46870	35.54	1,665,759.80
3.4	Sub - Base (15cm thickness with compaction)	m ³	7030.5	1392.98	9,793,345.89
3.5	Base (10 cm thickness)	m ³	3374.64	2502.9	8446386.456
3.6	Prime Coat (MC 30/ MC 70) with brushing	m ²	33746.4	98.73	3331782.072
3.7	Premixed Carpeting	m ³	1012.392	9980.89	10104573.19
2	Side Drain				
2.1	E/W excavation (Hard Soil)	m ³	5244.225	189.52	993885.522
2.2	Stone Mosonary (1:4)	m ³	3028.6648	5487.78	16620646.12
2.3	PCC (1:2:4)	m ³	904.0045	6948.6	6281565.669
3	Retaining structure				
3.1	Gabion wall	m ³	875.5	3415.675	2990423.463
3.2	Cement Stone Masonry Wall (1:4)	m ³	703.401	5487.78	3860109.94
4	Cross Drainage Structure				
4.1	Hume pipe required (60 cm)	Rm	120	3651	438120
4.2	E/W excavation (Hard Soil)	m ³	504	189.52	95518.08
4.3	Concreting for footing (PCC 1:3:6)	m ³	6.72	5933.51	39873.1872
4.4	Stone Mosonary (1:4) for wall	m ³	74.08704	5487.78	406573.3764
5	PCC Causeway				
5.1	E/W excavation (Hard Soil)	m ³	127.5	165.83	21143.325
5.2	Compacted Gravel	m ³	76.5	1392.98	106562.97
5.3	PCC (1:3:6)	m ³	51	5933.51	302609.01
Grand Total Excluding Bridge					76303582.00
Cost per Km Excluding Bridge					7770222
6	Bridge (8*5 m)	Rm	8	700000	5600000
Grand Total Including Bridge					81903582.00
Cost per Km Including Bridge					8340487.00
7	Bio-engineering(3% of project cost)				2457107
Grand Total					84360689.00
Cost per Km					8590702.00

Annex IV : RRRSDP Environmental Checklist

A. GENERAL SOCIO-ECONOMIC SITUATION OF THE INFLUENCE AREA

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

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

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

a. Economic activities/main occupation

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

3. Existing services and infrastructures

[illegible]

[illegible][illegible]

10 to 20											
20-50											
> 50											

5. Food grain availability (HH no.)

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

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

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

7. Migration for employment

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

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

--	--	--	--	--	--	--	--	--	--

8. Name of settlement:

Address:

A. Seasonal migration in search of work

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

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

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

C. DEVELOPMENT POTENTIAL OF THE INFLUENCE AREA

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

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

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

S. No.	Sectors to get direct benefit	Describe how it will benefit
1		
2		
3		
4		

D. Historic and Cultural Resources

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

E. Name of Existing Community Organisation

F. Trading pattern -Imported items and Exported Items

G.a. Travel time from starting point - By Walking, By Vehicle

G.b. Transportation cost - Porter , Mule , Vehicle

Annex v: Public Notice

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

प्रारम्भिक वातावरणीय परीक्षण (IEE) सम्बन्धी राय सुझावका लागि सार्वजनिक सूचना

(प्रथम पटक प्रकाशित मिति: २०६६/०६/०२)

यस जिल्ला विकास समितिको कार्यालय जिल्ला प्राविधिक कार्यालय, ग्रामीण पुननिर्माण तथा पुनस्थापना आयोजना, जिल्ला आयोजना कार्यालय भक्तपुरद्वारा निर्माण गर्ने प्रस्ताव गरिएका निम्न सडकहरूको प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरणीय संरक्षण नियमावली २०५४ (पहिलो संसोधन २०५५ समेत) को नियम ७(२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ।

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

सि.नं.	आयोजनाको नाम:	आयोजनाले प्रभावित गर्ने गा.वि.स.हरू	कैफियत
१	जगाती प्रहरीचौकी-डोलेश्वर आषापुरी सडक	सिपाडोल	
२	बोडे सितकोपाटी पुरानो बाटो मनहरा सडक	मध्यपुर थिमि नगरपालीका	

उक्त प्रस्तावको कार्यान्वयनबाट वातावरणमा पर्न सक्ने प्रभावका बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना प्रकाशित भएको मितिले १५(पन्ध्र) दिन भित्र निम्न ठेगानामा आफ्नो राय सुझाव पठाई सहयोग गरी दिनु हुन अनुरोध गरिन्छ।

राय सुझाव पठाउने ठेगाना

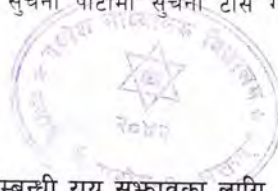
जिल्ला विकास समितिको कार्यालय
भक्तपुर
फोन नं ६६१४८२६, फ्याक्स ६६१३२१५

जिल्ला प्राविधिक कार्यालय, भक्तपुर
फोन नं ६६१४८५४, ६६१९२८०
ईमेल:- dtobhaktapur@rrr.gov.np

Annex VI: Deed of Enquiry

RRRSPP आयोजना अन्तर्गत DIST भक्तपुरबाट खटी आउनु भएका/भएकी सामाजिक परिचालक श्री ज्ञानेश्वर शर्माको वातावरणीय संरक्षण नियमावली २०५४ (पहिलो संसोधन २०५५ समेत) को नियम ७(२) अनुसारको यसैसाथ संलग्न प्रारम्भिक वातावरणीय परीक्षण (IEE) सम्बन्धी राय सुझावको सार्वजनिक सुचना मेरो रोहवरमा जिल्ला विकास समितिको सुचना पाटीमा सुचना टाँस गरेको व्यहोरा प्रमाणित गर्दछु।

नाम:- ज्ञानेश्वर शर्मा विद्यालय
ठेगाना:- जगती प्रहरीचौकी, सिपाडोल, भक्तपुर
दस्तखत:- ज्ञानेश्वर शर्मा



प्रारम्भिक वातावरणीय परीक्षण (IEE) सम्बन्धी राय सुझावका लागि सार्वजनिक सुचना (सूचना प्रकाशित मिति: २०६६/०६/०२)

यस जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना, जिल्ला आयोजना कार्यालय भक्तपुरद्वारा निर्माण गर्ने प्रस्ताव गरिएका निम्न सडकहरूको प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरणीय संरक्षण नियमावली २०५४ (पहिलो संसोधन २०५५ समेत) को नियम ७(२) अनुसार यो सार्वजनिक सुचना प्रकाशित गरिएको छ।

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

सि.नं.	आयोजनाको नाम:	आयोजनाले प्रभावित गर्ने गा.वि.स.हरु	कैफियत
१	जगती प्रहरीचौकी-डोलेश्वर आपापुरी सडक	सिपाडोल	
२	बोडे सितकोपाटी पुरानो बाटो मनहरा सडक	मध्यपुर थिमि नगरपालिका	

उक्त प्रस्तावको कार्यान्वयनबाट वातावरणमा पर्ने सक्ने प्रभावका बारेमा सम्बन्धित गा.वि.स./विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सुचना प्रकाशित भएको मितिले १५(पन्ध्र) दिन भित्र निम्न ठेगानामा आफ्नो राय सुझाव पठाई सहयोग गरी दिनु हुन अनुरोध गरिन्छ।

राय सुझाव पठाउने ठेगाना

जिल्ला विकास समितिको कार्यालय, भक्तपुर फोन नं ६६१४८२६ फ्याक्स ६६१३२१५	जिल्ला प्राविधिक कार्यालय, भक्तपुर फोन नं ६६१४८५४, ६६१९२८० ईमेल:- dtobhaktapur@rrr.gov.np
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RRRSDP आयोजना अन्तर्गत DIST भक्तपुरबाट खटी आउनु भएका/भएकी सामाजिक परिचालक श्रीले वातावरणीय संरक्षण नियमावली २०५४ (पहिलो संसोधन २०५५ समेत) को नियम ७(२) अनुसारको यसैसाथ संलग्न प्रारम्भिक वातावरणीय परीक्षण (IEE) सम्बन्धी राय सुझावको सार्वजनिक सूचना मेरो रोहवरमा विद्यालय को सूचना पाटीमा सूचना टाँस गरेको ब्यहोरा प्रमाणित गर्दछु ।

नाम:- श्री शान्ति निरंजन मा.वि.
ठेगाना:- सिपाडोल, भक्तपुर
दस्तखत:- [Signature]

**प्रारम्भिक वातावरणीय परीक्षण (IEE) सम्बन्धी राय सुझावका लागि
सार्वजनिक सूचना**
(सूचना प्रकाशित मिति: २०६६/०६/०२)

यस जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना, जिल्ला आयोजना कार्यालय भक्तपुरद्वारा निर्माण गर्ने प्रस्ताव गरिएका निम्न सडकहरुको प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरणीय संरक्षण नियमावली २०५४ (पहिलो संसोधन २०५५ समेत) को नियम ७(२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

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

सि.नं.	आयोजनाको नाम:	आयोजनाले प्रभावित गर्ने गा.वि.स.हरु	कैफियत
१	जगाती प्रहरीचौकी-डोलेश्वर आवापुरी सडक	सिपाडोल	
२	बोडे सितकोपाटी पुरानो बाटो मनहरा सडक	मध्यपुर थिमि नगरपालीका	

उक्त प्रस्तावको कार्यान्वयनबाट वातावरणमा पर्ने सबै प्रभावका बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना प्रकाशित भएको मितिले १५(पन्ध्र) दिन भित्र निम्न ठेगानामा आफ्नो राय सुझाव पठाई सहयोग गरी दिनु हुन अनुरोध गरिन्छ ।

राय सुझाव पठाउने ठेगाना

जिल्ला विकास समितिको कार्यालय, भक्तपुर फोन नं ६६९४८२६ फ्याक्स ६६९३२९५	जिल्ला प्राविधिक कार्यालय, भक्तपुर फोन नं ६६९४८५४, ६६९९२८० ईमेल:- dtobhaktapur@rrr.gov.np
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लिखितम हामी तपसिल वसोजिमका मानिसहरू आगे भूमि सुधार कार्यालय
भक्तपुरको प. स. ०५५ नं. ४६६ ... मिति २०५५.१०.२० को
यस गा. वि. स. मा प्राप्त पत्रानुसार ... नाउँको
हकदावी गर्ने दिन ... को सूचना यस गा. वि. स. को सूचना
पाटीमा सबैले देखने गरी टाँसेको देखेको ठिक साँचो हो भनि हामी तपसिल वसोजिमका
मानिसहरूको मनोमान खुशि राजिसंग सही छाप गरी साक्षी बसिदियौ ।

तपसिल

सिपाडोल गा. वि. स. वडा नं. ६ ... वर्तने वर्ष २०५५ को ...
... ..

ए वडा नं. ३ ... वर्तने वर्ष २०५२ को ...

ए वडा नं. ... वर्तने वर्ष ... को

काम तामेल गर्ने

सिपाडोल गा. वि. स. वडा नं. ... सदस्य ...

सिपाडोल गा. वि. स. का सचिव ... श्री मोहन गिरी ...

सिपाडोल गा. वि. स. का पिउन ...

इति सन्वत् २०६६ साल प्रेसीट महिना १६ गते २ रोज शुभम् ।



गाउँ विकास समितिको कार्यालय



सिपाडोल, भक्तपुर

पत्र संख्या: ०६६.१६.७

च.नं. :- १०८८

मिति: २०६६.०८.१६

विषय:- मुचुल्का पठाएको बारे ।

श्री जिल्ला प्रशासकीय कार्यालय,
त्रासिण पुनर्निर्माण तथा पुनर्वासना आयोगमा,
जिल्ला आवाजिना कार्यालय, भक्तपुर ।

उपरोक्त सम्बन्धमा त्यस कार्यालयबाट पठाएको प.सं. ०६६.१६.७ च.नं. ६८.....
मिति २०६६.०८.१६, २०८० को पत्र प्राप्त भै व्यहोरा अवगत भयो । सो
पत्रानुसार सूचना टाँस गरी मुचुल्का टाँस यसै पत्रसाथ संलग्न गरी पठाईएको व्यहोरा अनुरोध गर्दछु ।

२०८०/०८/१६
२०८०/०८/१६
मानवीराम थापा
शाखा अधिकृत
आ. वि. स. सचिव



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नाम:- ले.ए.ए.ए.
ठेगाना:- को.पु.चौ.डो. (की डोलेखर नि.मा.वि.) सिपाडोल-४
दस्तखत:- ले.ए.ए.ए.

**प्रारम्भिक वातावरणीय परीक्षण (IEE) सम्बन्धी राय सुझावका लागि
सार्वजनिक सूचना**
(सूचना प्रकाशित मिति: २०६६/०६/०२)

यस जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, ग्रामीण पुननिर्माण तथा पुनस्थापना आयोजना, जिल्ला आयोजना कार्यालय भक्तपुरद्वारा निर्माण गर्न प्रस्ताव गरिएका निम्न सडकहरुको प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरणीय संरक्षण नियमावली २०५४ (पहिलो संसोधन २०५५ समेत) को नियम ७(२) अनुसार यो सार्वजनिक सुचना प्रकाशित गरिएको छ ।

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

सि.नं.	आयोजनाको नाम:	आयोजनाले प्रभावित पार्ने गा.वि.स.हरु	कैफियत
१	जगाती प्रहरीचौकी-डोलेखर आषापुरी सडक	सिपाडोल	
२	बोडे सितकोपाटी पुरानो बाटो मनहरा सडक	मध्यपुर थिमि नगरपालीका	

उक्त प्रस्तावको कार्यान्वयनबाट वातावरणमा पर्न सक्ने प्रभावका बारेमा सम्बन्धित गा.वि.स.,विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सुचना प्रकाशित भएको मितिले १५(पन्ध्र) दिन भित्र निम्न ठेगानामा आफ्नो राय सुझाव पठाई सहयोग गरी दिनु हुन अनुरोध गरिन्छ ।

राय सुझाव पठाउने ठेगाना

जिल्ला विकास समितिको कार्यालय, भक्तपुर फोन नं ६६१४८२६ फ्याक्स ६६१३२१५	जिल्ला प्राविधिक कार्यालय, भक्तपुर फोन नं ६६१४८५४, ६६१९२८० ईमेल:- dtobhaktapur@rrr.gov.np
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जिल्ला विकास समितिको कार्यालय, भक्तपुर	जिल्ला प्राविधिक कार्यालय, भक्तपुर
फोन नं ६६१४८२६ फ्याक्स ६६१३२१५	फोन नं ६६१४८५४, ६६१९२८०
	ईमेल:- dtobhaktapur@rrr.gov.np



RRRSDP आयोजना अन्तर्गत DIST भक्तपुरबाट खटी आउनु भएका/भएकी सामाजिक परिचालक श्रीले वातावरणीय संरक्षण नियमावली २०५४ (पहिलो संसोधन २०५५ समेत) को नियम ७(२) अनुसारको यसैसाथ संलग्न प्रारम्भिक वातावरणीय परीक्षण (IEE) सम्बन्धी राय सुझावको सार्वजनिक सुचना मेरो रोहवरमा देवी माँ आ.ग्रा.नि. को सुचना पाटीमा सुचना टाँस गरेको ब्यहोरा प्रमाणित गर्दछु ।

नाम:- 'देवी माँ कुन्जा' द्वारा संचालित 'देवी माँ आ.ग्रा.नि.किसालय'

ठेगाना:- सिपाडोल भक्तपुर

दस्तखत:- Basula

**प्रारम्भिक वातावरणीय परीक्षण (IEE) सम्बन्धी राय सुझावका लागि
सार्वजनिक सूचना**

(सूचना प्रकाशित मिति: २०६६/०६/०२)

यस जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, ग्रामीण पुननिर्माण तथा पुनस्थापना आयोजना, जिल्ला आयोजना कार्यालय भक्तपुरद्वारा निर्माण गर्न प्रस्ताव गरिएका निम्न सडकहरुको प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन कार्यान्वयन गर्ने सिलसिला मा वातावरणीय संरक्षण नियमावली २०५४ (पहिलो संसोधन २०५५ समेत) को नियम ७(२) अनुसार यो सार्वजनिक सुचना प्रकाशित गरिएको छ ।

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

सि.नं.	आयोजनाको नाम:	आयोजनाले प्रभावित गर्ने गा.वि.स.हरु	कैफियत
१	जगाती प्रहरीचौकी-डोलेश्वर आषापुरी सडक	सिपाडोल	
२	बोडे सितकोपाटी पुरानो बाटो मनहरा सडक	मध्यपुर थिमि नगरपालीका	

उक्त प्रस्तावको कार्यान्वयनबाट वातावरणमा पर्न सक्ने प्रभावका बारेमा सम्बन्धित गा.वि.स.,विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सुचना प्रकाशित भएको मितिले १५(पन्ध्र) दिन भित्र निम्न ठेगानामा आफ्नो राय सुझाव पठाई सहयोग गरी दिनु हुन अनुरोध गरिन्छ ।

राय सुझाव पठाउने ठेगाना

जिल्ला विकास समितिको कार्यालय, भक्तपुर फोन नं ६६१४८२६ फ्याक्स ६६१३२१५	जिल्ला प्राविधिक कार्यालय, भक्तपुर फोन नं ६६१४८५४, ६६१९२८० ईमेल:- dtobhaktapur@rrr.gov.np
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Annex: VII Name of Organisation

S.No	Name of Organisation	Address	Remarks
1	VDC office of Sipadol VDC	Sipadol	
2	Shanti Niketan Secondary School	Sipadol	
3	Ganesh Secondary School	Sipadol	
4	Devi Ma Aa. Gra. Clinic	Sipadol	
5	Doleswor Mahadev Conservation Committee	Sipadol	
6	Doleswor Primary School	Sipadol	

Source: RRRSDP Field Survey, 2009

Annex VIII: List of Persons Consulted

Name	Designation	Address
Sures K.C.	DTO/PC	District Technical Office, Bhaktapur
Bed Raj Regmi	Engineer	District Technical Office, Bhaktapur
Ishwor Shreshtha	Engineer	District Technical Office, Bhaktapur
Alka Shrestha	Engineer	DPO, RRRSDP, Bhaktapur
Abhsihek Kumar Mahato	Team Leader	DIST, Bhaktapur
Kabita Kafle	SDC	Sipadol VDC
Rameshwor Bohara	Farmer	Sipadol VDC
Krishna Bhakta Timilsina	Farmer	Sipadol VDC
Govinda Nepal	Farmer	Sipadol VDC
Sita Karki	Farmer	Sipadol VDC
Muna Khatri	Farmer	Sipadol VDC
Kiran Thapa	Farmer	Sipadol VDC
Praladh Sangal	Farmer	Sipadol VDC
Balram Nayaju	Farmer	Sipadol VDC
Asha Kumari Nayaju	Farmer	Sipadol VDC
Indira	Farmer	Sipadol VDC
Dipendra Kumar Thapa	Farmer	Sipadol VDC
Bhim Lama	Farmer	Sipadol VDC

Source: RRRSDP Field Survey, 2009

Annex IX: Meeting minutes of community consultation

ग्राहिका पूर्वनिर्गता तथा पूर्वस्थापना कार्यक्रम दुरलभिकी जगती प्रदीपिका दोलेश्वर मदीय आशापुरी मदीय भाति सडक खण्ड अन्तर्गत सडक उपआयोजनाको प्राथमिक वातावरणीय परीक्षा अहममको शिलाले लागी सिपाडील गा. वि. स. अन्तर्गतको उपरगत गणनादमी, बुद्धिजिव, महिला युवा लगायतका सर्वसाधारणको उपस्थितिमा राय सुमानरक निवेकान संपन्न गयो ।

उपस्थिति

१. रामेश्वर वदीर
२. कृष्णमन्त खेजु
३. हरिवहापुर थापा
४. सितल काकी खेजु
५. गुता खत्री
६. कृष्ण थापा
७. किरण थापा
८. प्रदीप संजेल
९. बलदास तमाजु
१०. आशी कुमारी तमाजु
११. इन्द्रा उपरगत
१२. दिनेश कुमार थापा

रामेश्वर वदीर
कुलपति

मुनारपती

1

किरण थापा

प्रदीप संजेल

बलदास तमाजु

आशी कुमारी तमाजु

इन्द्रा उपरगत

दिनेश कुमार थापा

राज सुभाषदत्त

१) जगाती चरवीचींची सर्वांगीण विकासासाठी गावापुरी महादेव
- भोत सडक विकास परिषद स्थापित गा. वि. स.
अंतर्गत परिषद सोने वस्तीची सोने सामुदायिक
वस्ती की कोरड गावा सडकची अधिकार क्षेत्र मित्रपरिषद
- देवा - गलको तक्रारत्मक असलेल्या सडक निर्माण
की क्रमशः हलकवतना परे देवा - गलको असलेल्या
व्यवस्थापन गरि तदत गरि ।

२) उच्चतर सामुदायिक वस्ती देवा - गलको
विभिन्न जात जातिकी परा-पुष्पीदस्तीची गावा
असले परे गावाची वातावरण संरक्षणाना तदत
गरि ।

३) गलको सामुदायिक वस्ती विभिन्न किसिमकी
जड वृत्तिदत्त दत्त । त गावात सामुदायिकवाणी
परिषद तदत दत्त दत्त । तदत सोने सडक निर्माण
की क्रमशः गलको खातकी पूर्वत वातावरणकी
संरक्षण दत्त पुनर्वाटन २ वातावरण सुदृढीकरण
दत्तवात जागाडन तदत गरि ।

४) सडक निर्माण क्रमशः महादेवकी गावा २
विभिन्न संस्थांनाईपरि असलेल्या व्यक्तींनी
दत्त दत्त ।

Annex X: Recommendation of VDC



गाउँ विकास समितिको कार्यालय

☎ : ६६१२५४६



पत्र संख्या:- ०६६/६६

चन :- १६३०

मिति:- २०६६/११/११

विषय:- सिफारिस/सम्झौता

श्री आशीष मुननिर्वाण तथा पुर्नवासना आशीषना,
निहल अभियोजन कार्यालय, भक्तपुर।

उपरोक्त व्यक्तिहरूको वातावरण, स्वास्थ्य, शिक्षा, निवास
वली आदि (जसको सम्झौता २०७२ सालको)को विषय
०१२ वनियोजनको सूचना जारीमा हाल गरिएको छैन
अनुसार गरिएको। उक्त वली निर्वाणको वातावरण
को उक्तको प्रतिकूल असर गर्ने छैन छैनको जानकारी
लाने अनुसार गर्दै कल कार्यमा स्थानीय बासिन्दा
स्वयम् सस् कार्यालय वाट सथा सम्झौता सम्झौता
पुष्टि हुने छैनको जानकारीको साथ अनुसार
गर्दै।

वे. लु. व. व.
२०६६/११/११

मालीराम थापा
सिपाही अधिकारी
गा. वि. स. सदस्य

ANNEX XI

XI a. Distribution of households by major occupation

XI b. Summary of public services and infrastructures

XI c. Land holding pattern of settlement within Zol

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

Annex XI a. Distribution of households by major occupation

SN	Settlement Name	Number of HH in Percentage				
		Agriculture and livestock	Labour and Porter	Business and commerce	Employees	Total
1	Jagati	40	20	30	10	
2	Chakkhubasti	60	20	15	5	
3	Nanabu	70	20	5	5	
4	Bibicha	50	30	15	5	
5	Toudol	60	30	10	10	
6	Vundol	50	35	10	5	
7	Dolgaon	60	20	10	10	
8	Bhattaraitol	50	30	15	5	
9	Thulogaon	50	25	20	5	
10	Sochebasti	60	30	5	5	
11	Patibhanjyang	40	40	15	5	
12	Naichalbasti	50	30	15	5	
13	Ashapuri	50	30	5	5	
	Average	53%	27%	13%	7%	100%

Source: RRRSDP Field Survey, 2009

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

Settlement Name/	School (no)	Health post (no)	Post office (no.)	Communication(n o) CDMA/Mobile	Hydro power (no)	Solar (no)	Shops/lodge (no)	Water supply (no)	Irrigation (kulo)	Mill (no)	Bridge (no)	Community organization (no)	Fin. Institution (no)	Community Centre	Industry (no)
Jagati	1		1				20	5		1			2		1
Chakkhubasti							5	1			1				
Nanabu	1						2	1							
Bibicha	1						5	2		1					
Toudol							10	1							
Vundol	1						15	1		1					
Dolgaon		1					8	1					1		1
Bhattaraitol	1						15	2							
Thulogaon							16	1		1					
Sochebasti							12	1							
Patibhanjyang	1						13	1		1					1
Naichalbasti							7	1							
Ashapuri	1						18	2		1					
Total	7		1				146	20		6	1		3		3

Source: Field survey, 2009

Annex XI c. Land holding pattern of settlement within Zol

SN	Settlement Name	Nuber of HH					Total
		Land Less	< 1 ropani	1-5 ropani	5-10 ropani	10-20 ropani	
1	Jagati	0	10	20	7	4	41
2	Chakkehubasti	2	3	2	2	1	10
3	Nanabu	4	7	5	4	1	21
4	Bibicha	0	5	8	5	2	20
5	Toudol	1	7	13	3	1	25
6	Vundol	0	7	9	5	1	22
7	Dolgaon	0	8	5	5	2	20
8	Bhattaraitol	0	10	8	8	3	29
9	Thulogaon	2	9	4	4	2	21
10	Sochebasti	3	5	3	3	2	16
11	Patibhanjyang	0	5	8	5	2	20
12	Naichalbasti	5	5	8	7	2	27
13	Ashapure	3	18	13	4	2	40
Total		20	99	106	62	25	312
Percentage		7%	31%	34%	20%	8%	

Source: RRRSDP Field Survey, 2009

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

Settlement Name	Surplus	Sufficent for year	Sufficent for 3-9 month	Sufficent for 3 month	Sufficent for less than 3 month	Total
Jagati	9	5	8	9	10	41
Chakkehubasti	1	2	2	3	2	10
Nanabu	3	6	7	3	2	21
Bibicha	4	3	6	4	3	20
Toudol	5	5	4	7	4	25
Vundol	3	3	6	5	5	22
Dolgaon	4	3	6	4	3	20
Bhattaraitol	5	8	6	5	5	29
Thulogaon	4	3	7	3	4	21
Sochebasti	2	3	4	5	2	16
Patibhanjyang	4	4	6	4	3	21
Naichalbasti	4	5	5	6	6	26
Ashapure	4	11	10	5	10	40
Total	52	61	77	63	59	312
Percentage	16%	20%	25%	20%	19%	

Source: RRRSDP Field Survey, 2009

Annex XII: Engineering Structure for Slope Stabilization

S.No	Description of Structure	Chainage	Length	Remarks
1	Gabion Wall	1+810	10	
2	Gabion Wall	2+710	5	
3	Gabion Wall	2+760	20	
4	Gabion Wall	3+300	10	
5	Gabion Wall	3+500	9	
6	Gabion Wall	4+280	2	
7	Gabion Wall	4+560	5	
8	Gabion Wall	5+190	5	
9	Gabion Wall	5+950	5	
10	Gabion Wall	6+110	6	
11	Gabion Wall	6+470	6	
12	Gabion Wall	6+510	10	
13	Gabion Wall	7+390	5	
14	Gabion Wall	7+890	6	
15	Gabion Wall	8+850	3	
16	Gabion Wall	9+280	10	
17	Gabion Wall	9+520	5	
18	Masonry Wall	0+700	15	
19	Masonry Wall	0+700	15	
20	Masonry Wall	0+720	5	
21	Masonry Wall	1+810	12	
22	Masonry Wall	1+860	10	
23	Masonry Wall	1+970	100	
24	Masonry Wall	2+080	20	
25	Masonry Wall	2+270	20	
26	Masonry Wall	2+735	30	
27	Masonry Wall	2+850	8	
28	Masonry Wall	2+960	10	
29	Masonry Wall	3+000	8	
30	Masonry Wall	3+080	10	
31	Masonry Wall	3+250	9	
32	Masonry Wall	3+340	9	
33	Masonry Wall	4+450	5	
34	Masonry Wall	4+850	5	
35	Masonry Wall	5+020	7	
36	Masonry Wall	5+220	6	
37	Masonry Wall	5+950	8	
38	Masonry Wall	6+345	30	
39	Masonry Wall	6+510	30	
40	Masonry Wall	6+550	30	
41	Masonry Wall	7+040	5	
42	Masonry Wall	7+250	10	
43	Masonry Wall	7+290	5	
44	Masonry Wall	7+680	7	
45	Masonry Wall	7+710	5	
46	Masonry Wall	8+120	10	

Annex XIII: Cross Drainage

S.No	Chainage	Puorposed Structure	Remarks
1	0+350	Hume pipe of Dia 60φ	
2	0+480	Hume pipe of Dia 60φ	
3	0+490	Hume pipe of Dia 60φ	
4	0+680	Hume pipe of Dia 30φ	
5	0+900	Hume pipe of Dia 60φ	
6	0+980	Hume pipe of Dia 60φ	
7	1+150	Hume pipe of Dia 60φ	
8	1+810	Hume pipe of Dia 60φ	
9	2+710	Hume pipe of Dia 60φ	
10	2+760	Hume pipe of Dia 60φ	
11	2+990	Hume pipe of Dia 60φ	
12	3+100	Slab culvert	
13	3+310	Hume pipe of Dia 60φ	
14	3+400	Hume pipe of Dia 60φ	
15	3+450	Hume pipe of Dia 60φ	
16	3+510	Hume pipe of Dia 60φ	
17	4+020	Hume pipe of Dia 30φ	
18	4+210	Hume pipe of Dia 30φ	
19	4+710	Hume pipe of Dia 60φ	
20	4+930	Hume pipe of Dia 60φ	
21	5+430	12mcause way+(10*4Gabion box)	
22	5+620	Hume pipe of Dia 90φ +Gabionbox(4*2)	
23	5+800	Hume pipe of Dia 90φ	
24	5+980	3m slab culvert	
25	6+110	5m cause way+Hume pipe of Dia 60φ 2Nos	
26	6+550	Hume pipe of Dia 60φ	
27	6+890	6m cause way	
28	7+110	6m cause way	
29	8+100	6m cause way	
30	9+720	6m cause way	

Annex XV : Photogarth



Road Surface at chainage 4+550



At Junction chainage 7+020



Landslide reduced road width at chainage 6+410



Debris at chainage 4+120



Cultivated land adjacent to chainage 7+020



Rocky portion after chainage 8+350