Environmental Assessment Document

Initial Environmental Examination

Grant Number: 0093 NEP

May 2011

Nepal: Rural Reconstruction and Rehabilitation Sector Development Program

Shaktikhor-Prithivy Highway (Fisling) Road Subproject (New Construction), Chitwan District

Prepared by the Government of Nepal

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

Initial Environmental Examination (IEE) Report

Of

Shaktikhor-Prithivy Highway (Fisling) Road SubProject

(New Construction)

Chitwan District

Submitted to:
Ministry of Local Development
Government of Nepal

Proponent:
District Development Committee/
District Project Office
Bharatpur, Chitwan

May, 2011

Prepared By:
District Project Office
Chitwan

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ABBREVIATIONS

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

NAME AND ADDRESS OF THE PROPONENT

Name of Proposal

New Construction of Shaktikhor-Prithivy Highway (Fisling) Road Subproject, Chitwan District

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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 20.50 km long Shaktikhor-Prithivy Highway (Fisling) Rural Road (District Transport Master Plan No.35A003R) in Chitwan District is one of the subprojects selected under the RRRSDP. The proposal is for new construction of 20.50 Km long road in Earthen standard.

Project Proponent

The proponent of the proposed road Subproject for Initial Environmental Examination (IEE) is District Development Committee (DDC)/District Project Office (DPO), Chitwan district. 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 to make sure whether the IEE or EIA is required for the proposed road sub-project.

Relevancy of the Proposal

The proposed Subproject will provide access to district headquarter for people living in rural area of Chitwan district. It will provide easier access to people to social services, and market access for local products like ginger, tomato, lemon, orange, beans, amliso etc. As a result, the Subproject will assist to promote economic activities, reduce poverty and increase socio-economic conditions of the people of the area. This road links with Prithvy Highway which will easily improve access to Kathmandu, Dhading and Nuwakot district and cost will be cheaper which further be developed as an alternative route.

Study Methodology

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

The IEE report has been prepared following the Environmental Protection Act, 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 04/02/2066 BS.

Brief Description of the Subproject

The proposed road links with Far North-East part of the remote community of Chitwan district with the district headquarter, Bharatpur. The total length of the road is 20.50 Km. The road passes through three Village Development Committees namely Dahakhani, Kaule and Chandibhanjyang. The average width of the road is 5m and geometry will be improved as per design required. The total project cost is NRs. 113,054,419.00 and per km cost is NRs. 4,880,398.00.

Quantities of work involved in different activities are as follows:

S.N.	Activities	Quantity
1.	Excavation required during road construction	198883.02 cum
2.	Retaining walls	4402.63 cum, 1376.4 m
3.	Gabion works	5,605 cum, 946 m
4.	Stone Causeway	14 nos.
5.	Stone Masonry Drain works	10.45 Km

Existing Environmental Condition

The road starts from Upradanggadhi of Dahakhani VDC at 1400 m amsl and ends at Tolang of Chandibhanjyang VDC at 1600m amsl. Generally, alluvial, colluvial, residual, boulder mixed soil, hard and soft rocks are found along the road alignment. Rigdi Khola is the major natural drainages along the road alignment. Ambient air and water quality of the proposed project area is observed to be good and there is no noise pollution. The road passes through cultivated land, barren land, forest and built up land.

The dominant vegetation found in the road alignment are Uttis *(Alnus nepalensis)*, Chilaune *(Schima wallichii)*, Khote Salla *(Pinus roxburghii)* Khanyu (*Ficus semicordata)*, Khirro (*Sapium insigne*), Katus *(Castanopsis indica*), Sirish (*Albizia labbeck*), Bhorla (*Bauhinia vahilii*), Mauwa (*Bassia latifolia*), Simal (*Bombax ceiba*), Bhalayo (*Rhus wallichii*), Phaledo (*Erythrina stricta*), Lampate (*Duabanga grandiflora*), Guras (*Rhodendron arboreum*), Angeri (*Lyonia ovalifolia*) and Bakaino (*Melia azedarach*).

Deer (*Muntiacus muntjack*), Common Leopard (*Panthera pardus*), Jackal (*Canis aureus*), Fox (*Vulpes vulpes*), Squirrel (*Ratufa sp.*), Monkey (*Primates species*) and Dumsi (*Hystrix indica*) etc are the common wildlife found in the surrounding forest along the road alignment and Crow (*Corvus splendens*), Sparrow (*Passer domesticus*), Pigeon (*Columba livia*), Dove (*Streptopelia spp.*) are the birds found in the Subproject area.

Total population of the Subproject area is 7094, total household number is 1282, and average family size is 5.59. Chepang, Gurung, Tamang, Chhetri, Brahmin and occupational caste (Damai, Kami) are the main castes living in the area.

Subsistence agriculture and livestock farming are the main occupation. Due to limited transportation and irrigation facilities, farming is not enough for subsistence level. Moreover, significant percentage of the economically active male population also migrates to Bharatpur, along prithvi highway, Kathmandu and India during slack farming season for better earning.

Major Environmental Impacts

Beneficial Impacts

The immediate benefit from this road Subproject is an employment opportunities. The implementation of Subproject require about 139,224 person days of unskilled and 7,713 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 Zone of Influence (ZoI)1 will get easy and fast accessibility to markets, social services and other regions of the country. The fertilizers and pesticides and agro-production cost will become cheaper with better transportation facility hence, agricultural production will increase. This will ensure better economic condition and food security of the people living in the ZoI of the project area. Moreover, this will promote the small agro based industries that uses local resources. Upradanggadhi, Mayatar, Dumkin, Orlyang, Rigdi are the potential area for production of ginger, tomato, lemon, orange, beans, Amliso and other cash crops. Easy access and opportunity of better transportation system will develop other sectors like education, health,

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

communication, market and other socio-economic sectors. This will increase the overall living condition of the people living in ZoI of project area. The better land network will result in increased land price which will be beneficial for land owners.

Adverse Impacts

During the road construction disposal of soil and earth material, operation of quarries might result in soil erosion. As the road is new construction it might affect the natural drainages. Furthermore, spoils generated during construction can create the water pollution to the nearby water sources. During construction of road there might be possible impacts on wildlife as workers might harass/ hunt the wildlife in the nearby forests, however, such effects are very minimum. During road widening and construction required 2.132 Ha of forest area and total 2994 nos of trees need to be cut down which are 2196 nos of trees from Government forests and 798 nos of trees from private land. 1.82 Ha of agricultural land which results in annual reduction of more than 2 Metric tons of agricultural production. During construction stage, labours and local people are prone to health effects and accidents relating to construction activities. Two house and a Cattle shed will be fully damaged at Ch 9+080 and 9+120 and water supply pipe at Dahakhani Water Supply pipe Ch 9+020- 9+280 and Water Supply pipe in Mayatar Ch 18+200-18+600 will be affected during road construction will be affected. The flowing water on the side drain of the road might cause erosion of soil on adjacent agricultural land. 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. Necessary measures will be adopted for protection of flora and fauna. 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. Proper maintenance and appropriate drain system will be provided to prevent road and agricultural lands during operation. Compensatory plantation of trees will be done in 60,391 numbers in forest areas at 1:25 ratio + 10 % and in private land compensatory plantation will be done in 798 numbers at 1:1 ratio. Forest watchmen at 8 numbers will be employed for six months for monitoring and maintenance of tree plantation. Adequate road safety measures will be provided to minimize road accident. Compensation for affected houses and Cattle shed will be given. Water supply pipe at Dahakhani Water Supply pipe Ch 9+020- 9+280) and Water Supply pipe in Mayatar Ch 18+200-18+600 will be reinstated. The cost will be included in BoQ.

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.)
1	Environmental awareness raising training and other training	200,000.00
2	Bio-engineering	2,365,881.02
3	Insurance of RBGs	150,000.00
4	Information Signboard	30,000.00
5	Relocation of services(Reconstruction of Water Supply system)	562,077.06
6	Rehabilitation and repair of Irrigation system	350000.00
7	Spoil management (Toe Wall for the retaining and stabilization of spoils)	2,471,907.81

SN.	Description	Amount (NRs.)
8	Relocation of private/public infrastructures, Reinstate of quarry, stockpiling etc.	400,000.00
9	Social Plan Cost	1,674,900.00
10	Resettlement cost and compensation cost	1,511,321.58
11	Occupational health and safety(First aid boxes, Helmets, gloves, masks, boots, etc,)	225,000.00
12	Tree plantation including compentary 61189 Nos (60691 nos. in forest ares and 798 nos. in private land) + watchman for 6 months	3,235,883.00
13	Environment Management Cost for operation and Maintenance of Road	1,587,746.76
14	Environmental Monitoring Cost	200,000.00
	Total	**14,614,717.23**

Conclusion and Recommendation

The identified environment impacts will be seen in limited small areas and mainly during construction period. The implementation of proposed mitigation measures for identified adverse impacts will minimize as well as mitigate the adverse impacts on environment. The 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) 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 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). Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR) under the Ministry of Local Development (MLD), the executing agency (EA). The DDCs are the Project Implementing Agencies and the DPO of each respective DDC is responsible for technical and project management. The DPO will be supported by District Implementation Support Team (DIST) which includes engineering, safeguards and social mobilization. Chitwan District is one of the project districts under RRRSDP. The 20.5 km long Shaktikhor-Prithivy Highway (Fisling) Rural Road (District Transport Master Plan No.35A003R) in Chitwan District is one of the subprojects selected under the RRRSDP which is proposed for new construction as per DoLIDAR standard of rural roads.

1.2 The Name and Address of Proponent

Name of Proposal:	New Construction of Shaktikhor-Prithivy Highway (Fisling) Road Sub-project, Chitwan District
Name of Proponent:	District Development Committee/ District Project Office
Address of Proponent:	Bharatpur ,Chitwan

1.3 Need and Objectives of the 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 to 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, and the provisions of ADB. 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 ZoI (one and half hour walking distance from the centre line of the road) information of the Subproject area. The IEE study has been conducted through review of secondary information collected from relevant agencies, and primary information collected from the field survey in July 2009. This IEE report is prepared based on TOR approved on 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 involvement of concerned stakeholders, following procedures were followed:

- Publication of Public Notice- a 15 days public notice was published on 14th of Jestha 2066 in the Kantipur, national daily newspaper (see Annex V) seeking written opinion from the concerned VDCs, DDC, schools, health posts and related local stakeholders. A copy of the public notice was also affixed in the offices of the above mentioned organizations and Deed of enquiry (*muchulka*) was collected (see Annex VI and Annex VII).
- Interaction with local communities and related stakeholders like District Forest Office, District Agricultural Development Office, Water Induced Disaster Control Division Office and others were carried out during field survey to collect the public concerns and suggestions (see Annex VIII). Focus Group Discussions were conducted in all the three VDCs to collect and solicit their suggestions on protection of bio-physical and socio-economic environment in the Zone of Influence (ZoI) of the road. Summary of minutes of meeting is given in Annex IX and following Table 1.1.
- Draft IEE reports were kept at information center of DDC Chitwan, Dahakhani, Chandibhanjyang, and Kaule VDCs for public disclosure. Information was also disseminated through person-to-person contacts, interviews, and group discussions. Recommendation Letters for implementation of the Proposal were also obtained from all the concerned VDCs (see Annex X).

Table 1.1: Summary of FGD Meeting

Location	Date	No. of Participants		Issues and Suggestions	Decision
		Male	Female		
Dahakhani	2067/09/15	13	6	• FGD program disseminated information on the project to stakeholders. • Participants committed on providing land voluntarily for the road. • Project work should be careful to protect environment.	• Adequate benefit augmentation measures and mitigation measures shall be provided to enhance beneficial impacts and mitigate adverse impacts from implementation of the proposal.
Chandibhanjyang	2067/09/16	15	6		
Kaule	2067/09/16	18	5		

1.6 Information Disclosure

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

1. District Development Committee, Chitwan
2. District Technical Office, Chitwan
3. District Project Office, Chitwan
4. Dahakhani,Kaule and Chandibhanjyang VDCs
5. Ministry of Local Development, Environment Management Section
6. Department of Local Infrastructure Development and Agricultural Roads
7. Project Coordination Unit, RRRSDP
8. Asian Development Bank, Nepal Resident Mission

2.0 Description of the proposal

7 The proposal is for construction of 20.50 km long Shaktikhor-Prithivy Highway (Fisling) road in earthen standard. Shaktikhor-Prithivy Highway (Fisling) road Subproject lies in the Northern part of Chitwan district in Central Development Region of Nepal which links the hilly VDCs and remote area of the district to its headquarter and Prithvi Highway at Fisling. According to ToR, the total length of the road is 36 Km and the influenced VDCs were Shaktikhor,DahaKhani, Kaule ,Chandibhanjyang and Darechowk, but, after detailed survey and design the total length of the road has changed to 20.50 Km and influenced VDCs are only Dahakhani, Kaule and Chandibhanjyang. From Shaktikhola (Ch. 0+000) to Upradanggadhi (Ch. 9+020) section of the road is underconstruction by DoR hence; the subproject will be implemented only from 9+020 Km under RRRDSP. Also from Phisling, 8 km road section has been already opened. This Subproject starts from Upradanggadhi of Dahakhani VDC which is 39 km far from East-West highway and ends at Tolang of Chandibhanjyang VDC. This road sub-project connects Upradanggadhi of Dahakhani VDC, Suparedanda, Bayodanda, Lyamdar, Terse of Kaule VDC, Mayatar, Dumkin, Orlang, Rigdikhola, Goganpani, Banspur Guchhibang and Tolang of Chandibhanjyang VDC. Major portion of the alignment passes through thin forest and barren land. Some segments of this alignment falls on agricultural land and built up areas. The alignment of the road is an existing pedestrain track.

8 The major activities are track opening, and construction of soft structures. The location and alignment of the road is given in **Figure 2.1 and 2.2**. The total project cost is NRs 113,054,419.00 and per km cost is NRs 4,880,398.00 shown in **Annex III**.

2.1 Salient Features of the Subproject

1. Name of the Sub-project	:	New construction of Shaktikhor-Prithivy Highway (Fisling) Road Sub-project
1.1 Project Components	:	Road
1.2 Project Activities	:	*Construction Stage* Site clearance, Earthwork, Retaining structures, Bioengineering, Cross and Side drain works. *Operation Stage* Maintenance Works
2. Location		
2.1Geographical Locations		
2.1.1 Start Point	:	Upradanggadhi of Dahakhani VDC (CH 9+020)
2.1.2 End Point	:	Tolang of Chandibhanjyang VDC (CH 29+520)
		The Road alignment does not pass through any national Park, conservation area hunting reserve, wetland and their Buffer zone or through any archeological/historical important place.
2.2 Geographical Feature		
2.2.1 Terrain	:	Hilly
2.2.2 Altitude	:	The Altitude Varies from 420 m amsl to 1600 m amsl
2.2.3 Climate	:	Sub-Tropical/Temperate
2.2.4 Soil	:	Alluvial soil, colluvial soil, Residual soil
3. Classification of Road	:	District Road (Rural Road Class A)
4. Status of road	:	New Construction of Earthen Road
5. Length of Road	:	20.50 Km
6. Pavement design	:	Earthern
7. Construction Period	:	300 Days
8. Design speed	:	20 km/hr
9. Major Settlements		
9.1 Major Settlements	:	Upradanggadhi, Bayodanda, Mayatar, Orlyang, Dumkin, Baspur, Guchibang, Tolang.
9.2 No. of Household	:	1282 HHs
9.3 VDCs along the Road	:	Dahakhani, Kaule and Chandibhanjyang
10. Cross Section		
10.1 Right of way	:	10 m (5 m each side from center line)
10.2 Formation width	:	5 m
10.3 Carriageway width	:	3 m

10.4 Lane	:	Single
11. Cross drainage Structure		
11.1 Dry Stone Causeways	:	14 nos
12. Drain		
12.1 Stone Pitching above 8% gradient.	:	6270 meter
13. Structures		
13.1 Gabion Work	:	5,605 cum, 946 m
13.2 Stone masonry	:	489.94 cum, 77.05 m
13.3 Dry Wall	:	4402.63 cum, 1376.4 m
13.4 Toe Wall	:	3025 cum
14. Earthwork Quantity		
14.1 E/W Excavation in Roadways	:	198883.02 cum
14.2 E/W in Filling	:	37430.92 cum
15. Project cost		
15.1 Total Technical Cost (NRs)	:	NRs. 113,054,419.00
15.2 Costs per km (NRs.)	:	NRs. 4,880,398.00
15.3 Bioengineering/Roadside Plantation	:	NRs. 2365881.02
16. Employment generation:		
16.1 Total employment	:	146937
16.1 Skilled	:	7713
16.2 Unskilled	:	139224

2.2 Relevancy of the Proposal

9 The Project area is located at remote and underdeveloped Northern part of Chitwan district. The area has high potential in production of ginger, tomato, lemon, orange, beans and amliso. In this regard, the proposed road will enhance access of people to social services and market centers with significantly reduced travel time and cost, and will contribute in their socio-economic development. Access shall also attract other development infrastructures and open door to further development opportunities in the area.

2.3 Construction Approach and Activities

10 The construction approach will be Labour-based, Environment-friendly and Participatory (LEP) approach in segment (KM 17+00 to 19+000) and majority length of the road construction will be based on Contractor modality. Contractor/machinery based approach is proposed due to lack of sufficient time for construction. The important features of the LEP approach are (i) phased construction with balanced cut and fill as far as possible; (ii) manual work and use of hand tools and small equipment rather than heavy machinery; (iii) bio-engineering for slope stabilization; (iv) avoid blasting; (v) use soft engineering structures; and (vi) use of contractors only in the works that cannot be done through manual labor. The construction will be carried by using the equipment and machineries in such a way to ensure the minimum environmental damage.

11 Activities included during the road construction are: Site clearance, Earthwork, Retaining structures, Bioengineering, Cross drainage works and Side drain works.

2.4 Proposed Schedule for Implementation of Sub-project

12 Following table shows the proposed implementation schedule for Shaktikhor-Prithivy Highway (Fisling) road sub-project:

Table 2.1: Sub-project implementation schedule

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

Note:

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

Figure 2.1 Map of Nepal showing the location of Shaktikhor-Prithivy Highway (Fisling) road Subproject in Chitwan District

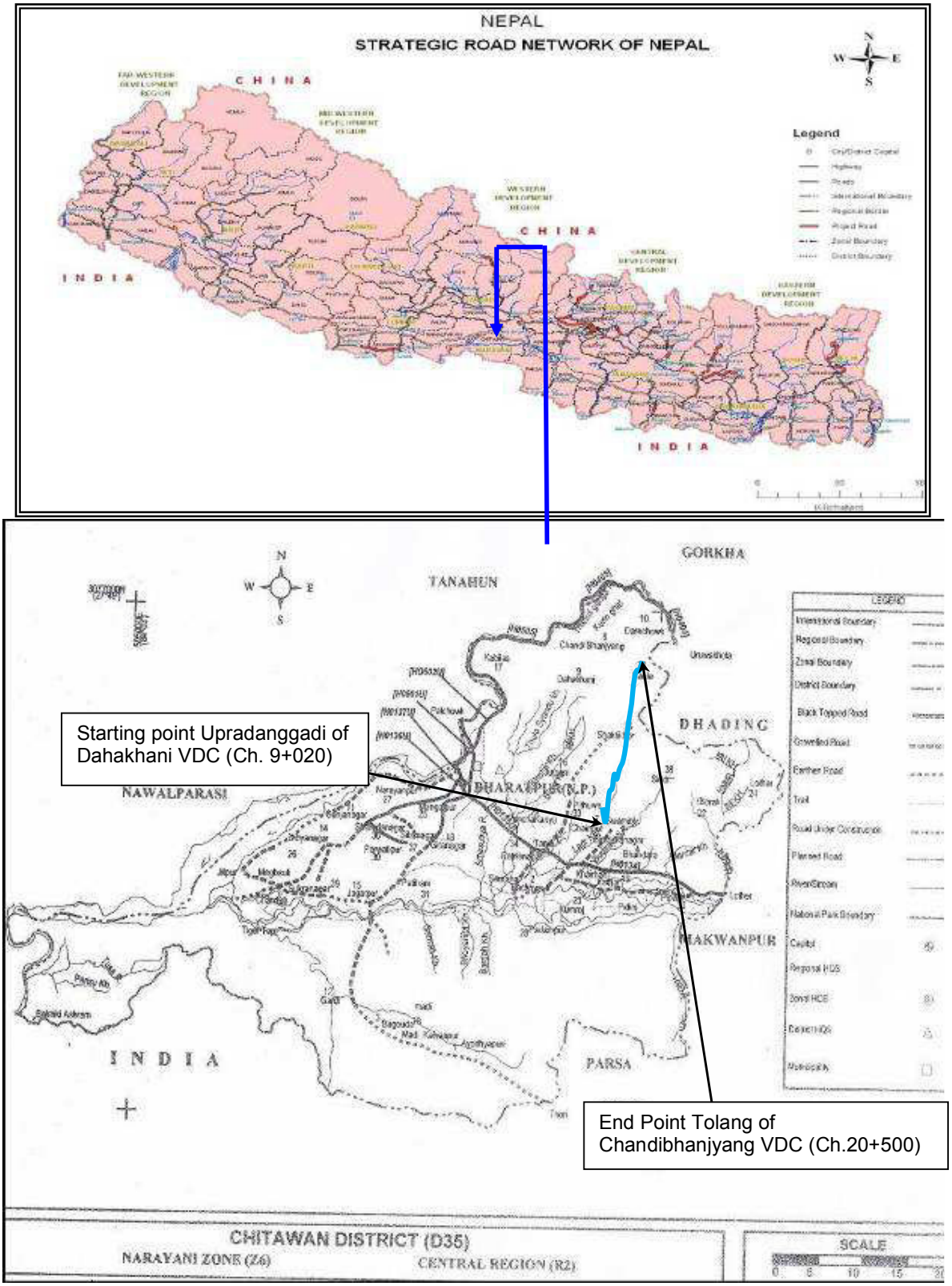
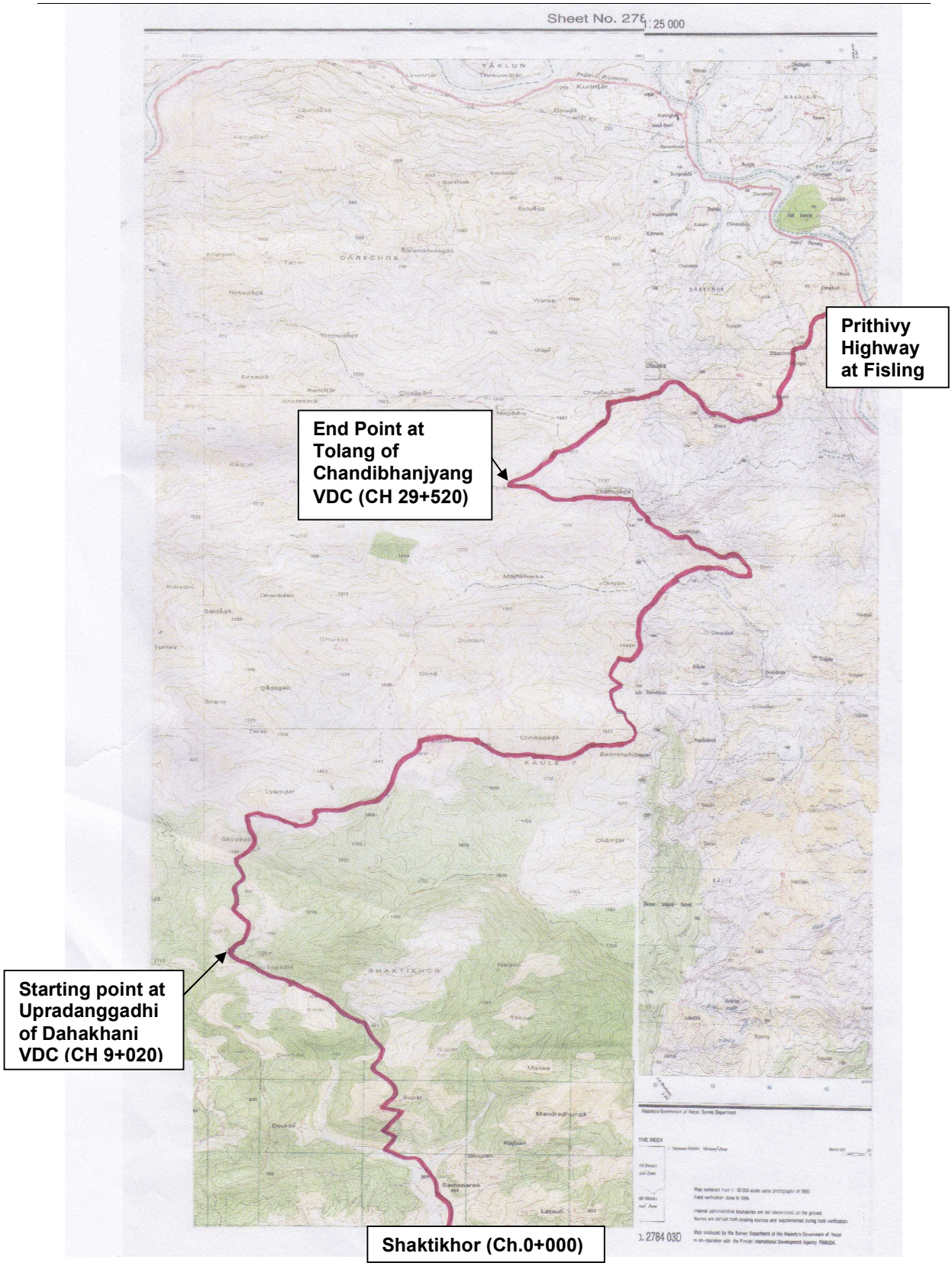


Figure 2.2. Topo. Map showing the alignment of Shaktikhor-Prithivy Highway (Fisling) road sub-project



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 Subproject is described in this chapter.

4.1 Physical Environment

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

4.1.1 Topography

16 The elevation of the starting point of the road at Upradanggadhi of Dahakhani VDC is 1400 m amsl and at the end of road at Tolang of Chandibhanjyang VDC is 1600m amsl. Entire road alignment passes through the hilly area. The grade of the road varies from 2% to 12%.

4.1.2 Geology and Soil Type

17 Geologically, the road alignment lies in Siwalik and Mahabharat region. Soil type along the alignment can be classified as alluvial, colluvial, residual, boulder mixed soil, hard and soft rock.

4.1.3 Climate

18 Shaktikhor-Prithivy Highway (Fisling) road lies in the sub tropical and temperate climatic zone. Generally, rainy season starts from May and ends in August. The meteorological record shows unevenly distributed monsoon rain in the project area with the total average annual rainfall is about 1,997 mm. The maximum recorded temperature in Chitwan district is around 42.5^0 Celsius and minimum temperature is 7^0 Celsius (*Source: District profile of Chitwan, 2065*).

4.1.4 Hydrology and Drainage System

19 There are natural drainages with stream at 10+960 (Bhalukhop Kholsa), 11+700 (Shikarikhop), 12+620 (Pyakirani Kholsa), 13+630 (Dhadhare Kholsa), 21+430 (Rigdi Khola) and 22+280 (Junge kholsa). The major river along the road alignment is Rigdi Khola. The summary of the cross drainages along the road alignment is given in Annex XII.

4.1.5 Soil Erosion and Sedimentation

20 The Road alignment passes through the hilly area. There are landslide prone areas along the road at Ch 11+300, 20+540 and 28+300.

4.1.6 Land Use

21 Land use pattern of the area through which the road passes have been classified into four types: cultivated land, Built up area, forest and barren land as shown in Table 4.1.

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

Land use	Chainage	Length (m)	Existing width		Additional	
			width-m	Area (ha)	width required (m)	Area (ha)
A-Cultivated land	09+060-09+140	80	1	0.008	4	0.032
	10+700-10+820	120	1	0.012	4	0.048
	14+100-14+600	500	1	0.050	4	0.200
	14+600-16+800	2200	1	0.220	4	0.880
	19+300-19+600	300	1	0.030	4	0.120
	20+900-21+200	300	1	0.030	4	0.120
	21+550-21+700	150	1	0.015	4	0.060
	23+000-23+900	900	1	0.090	4	0.360
Subtotal-A		**4550**		**0.455**		**1.82**
B- Barren and Pasture land	09+020-9+060	40	2	0.008	3	0.012
	9+190-10+700	1510	2	0.302	3	0.453
	12+600-14+100	1500	2	0.300	3	0.450
	21+700-23+000	1300	2	0.260	3	0.390
	23+900-24+900	1000	2	0.200	3	0.300

	25+900-26+700	800	2	0.160	3	0.240
	26+700-27+700	1000	2	0.200	3	0.300
	28+200-29+520	1320	2	0.264	3	0.396
Subtotal-B		**8470**		**1.694**		**2.541**
C- Built up area	09+140-9+190	50	3	0.015	2	0.010
	11+500-11+800	300	3	0.090	2	0.060
	19+000-19+300	300	5	0.150		
	24+900-25+900	1000	6	0.600		
	27+700-28+200	500	3	0.150	2	0.100
Subtotal-C		**2150**		**1.005**		**0.1700**
D-Forest area	10+820-11+500	680	1	0.068	4	0.272
	11+800-12+600	800	1	0.080	4	0.320
	14+600-16+800	2200	1	0.220	4	0.880
	19+600-20+900	1300	1	0.130	4	0.520
	21+200-21+550	350	1	0.035	4	0.140
Subtotal-D		**5330**		**0.533**		**2.132**

Source: Field survey, July, 2009

4.1.7 Air, Noise and Water Quality

22 The air, noise and water quality are not tested, but are observed to be within acceptable limit. The project area, at present does not experience any water pollution. No noticeable open defecation problem was encountered around sources of drinking water. Although the quality of water was not analysed, again it is presumed that it is within an acceptable range and only natural pollution occurs. However, during the monsoon season the quality of water may be more polluted due to high flood and accumulation of silt. Due to landslide and gully erosion streams are polluted during the rainy reason (June to September). The project area at present does not experience noise pollution.

4.2 Biological Environment

4.2.1 Vegetation

23 The species observed in the road alignment and ZoI are Uttis *(Alnus nepalensis)*, Chilaune *(Schima wallichii)*, Khote Salla *(Pinus roxburghii)* Khanyu (*Ficus semicordata)*, Khirro (*Sapium insigne*), Katus *(Castanopsis indica),* Sirish (*Albizia labbeck*), Bhorla (*Bauhinia vahilii*), Mauwa (*Bassia latifolia*), Simal (*Bombax ceiba*), Bhalayo (*Rhus wallichii*), Phaledo (*Erythrina stricta*), Lampate (*Duabanga grandiflora*), Guras (*Rhodendron arboreum*), Angeri (*Lyonia ovalifolia*) and Bakaino (*Melia azedarach*).

NTFPs

24 Chutro (*Berberis aristata*), Kurilo (*Asparagus racemosus*), Sugandawal (*Cinnamomum glaucescens*), Bajradanti (*Potentilla fulgens*), Allo (*Diospyros malabarica*), Siltimur (*Lindera neesiana*), Dhasingare *(Gaultheria fragrantissima),* Banmara (*Eupatorium adenophorum*), Amliso (*Thysanolaena maxima*), Titepati (*Artemisia vulgaris*) are found.

Forest

25 This subproject area passes through the forest in as shown in Table 4.2:

Table 4.2: Road alignment passing through forest

Chainage		Types of the forest	Major Species
10+820	11+500	Government forest	Katus, Uttis, Guras,Chilaune
11+800	12+600	Government forest	Katus, Uttis, Guras,Chilaune
14+600	17+800	Government forest	Katus, Uttis, Guras,Chilaune
18+700	20+900	Government forest	Katus, Uttis, Guras,Chilaune
21+900	22+450	Government forest	Katus, Uttis, Guras,Chilaune

Source: Field survey, July, 2009

4.2.2 Wildlife

26 Deer (*Muntiacus muntjack*), Common Leopard (*Panthera pardus*), Jackal (*Canis aureus*), Fox (*Vulpes vulpes*), Squirrel (*Ratufa sp.*), Monkey (*Primates species*) and Dumsi (*Hystrix indica*) etc are the common wildlife found in the surrounding forest along the road alignment and Crow (*Corvus splendens*), Sparrow (*Passer domesticus*), Pigeon (*Columba livia*), Dove (*Streptopelia spp.*) are the birds found in the Subproject area.

4.2.3 Aquatic Life

27 Some Local Fish species found in water bodies along the road alignment. These fish species are mainly found in Rigdi Khola.

4.2.4 Endangered and protected species

28 *Faunal species*: Among the fauna present in the forest area along the road alignment Common Leopard (*Panthera pardus*) is listed in CITES Appendix-I. Monkey (*Primates species*) are Squirrel (*Ratufa sp.*) are listed in CITES Appendix-II. Jackal (*Canis aureus*) is listed in CITES Appendix- III.

29 *Floral Species*: Simal (*Bombax ceiba*) found in the project area are protected plant species according to the Forest Act 1993 which is categorized into timber trees banned for felling, transportation and export for commercial purposes.

4.3 Socio-economic and Cultural Environment

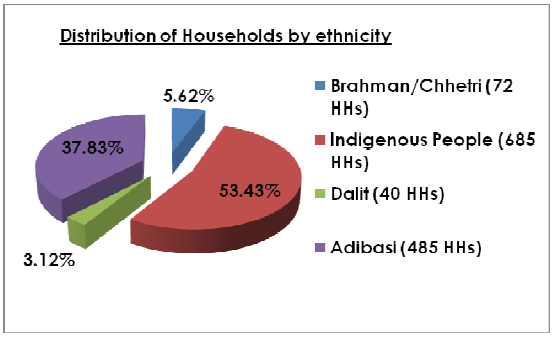
4.3.1 Population, Household and Ethnicity

30 The demographic profile ZoI is presented in following Table 4.3.

Table 4.3: Demographic Profile of ZOI

VDC	Population			HH	Average HH Size
	Male	Female	Total		
Kaule	2392	2053	4445	811	5.48
Chandibhanjyang	1222	1024	2246	403	5.57
Dahakhani	195	208	403	68	5.92
TOTAL	3809	3285	7094	1282	5.59

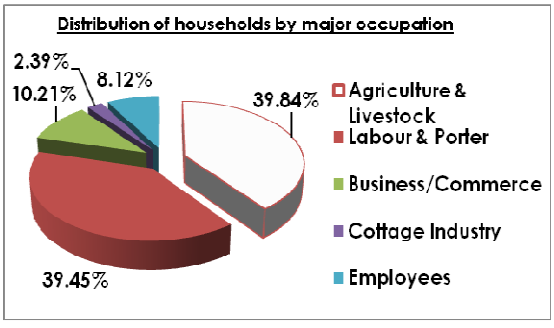
31 Major castes in the ZoI of the project area Chepang, Tamang, Gurung, Chhetri, Brahmin and occupational caste (Damai, Kami). Regarding IPs, Chepang are found along the road corridor who is one of the most deprived sections of the population. Of the total 1282 households, Brahmin/Chhetri are 72 households, Indigenous people are 685 households, Dalits are 40 households and Adibasi are 485 households.



Source: Field Survey July, 2009

4.3.2 Main Occupation

32 The main occupation of the area is agriculture & livestock (39.84%), business & commerce (10.21%), cottage industry (2.39%), labour & porter (39.45%), and services (8.12%). However, agriculture farming is not enough for subsistence due to small landholding size and low productivity. Therefore people also depend on seasonal labour in Narayanghat, Kathmandu and India.



Source: Field Survey July, 2009

4.3.3 Market Centres and Business Facilities

33 Major settlements along the road alignment are Upardanggadhi, Bayodanda, Mayatar, Orlyang, Dumkin, Baspur, Guchibang and Tolang. Grocery shops and teashops are found in some settlements. Major market centre are Bansgadhi and Tolang in Chandibhanjyang VDC. According to survey data, 7 shops/lodge and home stay are present in the area.

4.3.4 Local Economy

34 The economy of the area is predominantly agriculture based with practicing of a mixture of harvesting of forest products. Local people are gradually attracted towards cultivation of cash crops such as ginger, tomato, lemon, orange, beans and amliso. Dairy production and selling it to the market has been also another source of income for local farmers. Over 60 percent populations base upon agricultural activities for their livelihood. With growing closeness of the project area with Chitwan due to transportation facility, bee farming, cultivation of fruits, vegetables in a commercial manner seems to gain momentum. Diversity in employment pattern has been also observed in recent years. Local people have increasingly engaged in business activities as well.

4.3.5 Agriculture Pattern

35 Major crops that are cultivated in the project area are maize, potato, beans etc. Local peoples are also found to be encouraged in cash crops in recent days. Major cash crops that are grown in the project area are ginger, tomato, lemon, orange, beans and amliso etc.

4.3.6 Livestock

36 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, bee farming and goat farming for meat production. The bee farming and diary productions like ghee are increasing in the project area.

4.3.7 Industry

37 Some local people are engaged in weaving of bamboo products, making of furniture, dairy products, and tailoring. The area has the potentiality of agrobased industries such as dairy, food processing as well as furniture, bamboo products.

4.3.8 Trade and Commerce

38 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 ginger, tomato, lemon, orange, beans and amliso etc. whereas cereal crops such as maize are export and import items both.

4.3.9 Tourism Related Services

39 Some Homestay, lodges are in operation in Upradanggadi. Since the ZoI of the project and its surrounding area has potentiality of various types of tourism promotion, more lodge, restaurant and resorts are expected to be established in the area. There is Upradanggadi fort in Dahakhani VDC which is an important area for tourism.

4.3.10 Health and Sanitation

40 Major health problems associated with local people are gastric, water borne diseases, gaeneco related diseases, gout, respiratory diseases, skin disease, malnutrition, water borne diseases etc. Sanitation awareness among local people is on the rise trend and many of them have toilets in their home.

4.3.11 Public Services and Infrastructures

41 ***Education***: The proposed project area consists of a total of 5 educational institutions ranging from primary level to Secondary level educational institutions. There is a higher secondary school in Kaule 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 50 percent.

42 ***Health Facility*****:** There are altogether 3 health posts/sub health posts in various settlements.

43 ***Communication*****:** All of the settlements almost have telephone with poor facility of CDMA and MOBILE connection.

44 ***Transportation*****:** Only porter carry vegetables, milk, maize, rice and other local products from the area.

45 ***Electricity*****:** There is no any electricity facility.

46 ***Water Supply*****:** Piped drinking water supply is available to some settlements.

47 ***Irrigation*****:** No irrigation facility has been observed in ZoI of the project area.

48 ***Other Infrastructures/services*:** There is a Suspension Bridge, Agricultural Service Sub-Centre, diary firms and Veterinary Service Sub Centre are also available in the project area.

49 ***Industries*:** Cottage and other industries are not well developed within the ZoI. There are some Water mills and ghatta in some settlements. Many people have skills of weaving bamboo baskets; woolen cloths etc. and these skills can be commercialized to increase their income.

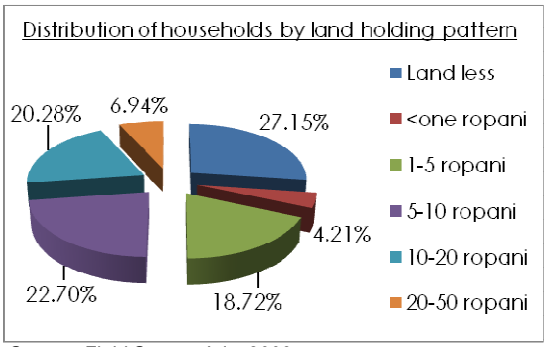
50 ***Financial Institutions*:** There is absence of bank and finance institution.

51 ***Community Development Facilities/Organizations*:** Community based organizations particularly, women saving and credit groups are found in three settlements. Play grounds, ghat (cremation site) and community centers are found in majority of the settlements.

52 **Public Services and Infrastructures affected during road construction:** Dahakhani Water Supply pipe Ch 9+020- 9+280) and Water Supply pipe in Mayatar Ch 18+200-18+600 will be affected during road construction.

4.3.12 Land Holding Pattern

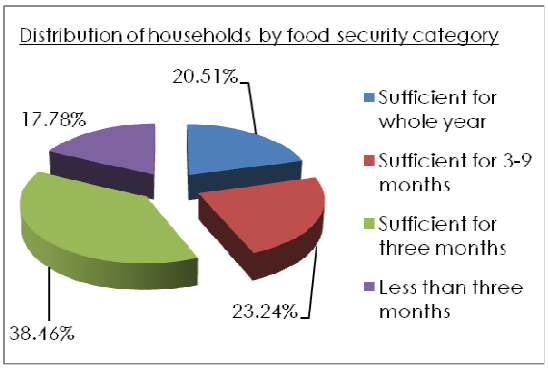
53 Land holding pattern within the ZoI of the road project demonstrates that 27.15% of households are land less, 4.21% of households have less than one ropani land (approximately 1 ha = 20 ropani), 18.72% households have 1-5 ropani of land, while 22.7% households fall under 5-10 ropani land holding category, 20.28% of the households have 10-20 ropani land and 6.94% households are having more than 20 - 50 ropani land.



Source: Field Survey July, 2009

4.3.13 Food Security

54 Large percentage of the households is food deficit for varied time period. About 23.24% have food sufficiency for three to nine months. 17.78% have food sufficiency for less than three months & 38.46% have sufficient food for three months, 20.51 % of households have food sufficiency for whole year while none of households are reported as food surplus ones.



Source: Field Survey July, 2009

4.3.14 Migration Pattern

55 Permanent migration takes place in limited scale towards Bharatpur, along prithvi highway and other places like Kathmandu. However, people migrate to foreign countries like India for employment opportunity almost from all the settlements. Seasonal migration occurs during slack farming season from Mangsir to Poush mainly in various parts of India. This shows poor economic status of the people in the proposed road corridor. This could be reduced by providing employment opportunities at the local level.

4.3.15 Settlement Pattern

56 Most of the settlements within ZoI of the project are scattered type. Housing pattern of these settlements are mostly one or two storied, CGI sheet roofed buildings. Some of them are also thatch roofed buildings.

4.3.16 Potential for Development

57 The potential of the Subproject area are as mentioned in Table 4.4 below.

Table 4.4: Development Potentialities in Various Sectors

SN	Sector	Devlopment potentiality
1	Agriculture	Ginger, tomato, lemon,orange, beans, Amliso within the whole ZoI
2	Small and Cottage Industry	Bamboo products, furniture, dairy within the whole ZoI
3	Trade and business	Development of several rural market centres at various places along the road alignment and main market centres at Upradanggadi, Banspur and Tolang.
4	Tourism	Upradanggadi Fort in Dahakhani VDC

Source: Field survey, July, 2009

4.3. 17 Religious, Cultural and Historical Sites

58 There are no any religious, cultural and historical sites along the road alignment.

5.0 Project Alternatives

59 Alternative study is an integral part of the IEE study. The various alternatives considered in the IEE study are with and without road options, alternative road route, alternative design and construction approaches. These assessments on alternatives of the Subproject is discussed as in the following subsections

5.1 No action option

60 The objective of the proposed road project is to improve access to poor people to goods, market and services. The access problems, they are facing now are linked to the poverty and include both physical and non-physical barriers of social disadvantage and exclusion. The road connects potential area of fruits, cash crops, vegetables to the nearest markst for selling of their products in Narayanghat, Mugling and Fishling Bazar. The Upradanggadhi, Dumkin, Mayatar, Orlang, Lyamdar are very potential area for vegetable, and fruits. Besides these construction activities provide temporary employment opportunity for local people for eight months. 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 Alternative Routes

61 Two alternative routes were investigated during desk study as well as walkover survey. The alternative routes were evaluated primarily based on the proximity to the settlement, slope stability, road length, terrain topography and loss of agriculture land, forest as well as private property.

Route-1

62 This route connects Upradanggadhi, Suparedanda, Bayodanda, Lyamdar, Terse, Mayatar, Thapagaon, Basnetgaon, Hapani, Banspur Guchhibang and Tolang. Total length of Road is 25.30 Km. Major Portion of this alignment passes through forest area, barren land and through rocky area. Extensive blasting will be required for the construction of this alignment, because of hard rock, steep slope and number of cross drainages. More than eight loops are required in this alignment. Hence this alignment is avoided.

Route-2

63 This route connects Upradanggadhi, Suparedanda, Bayodanda, Lyamdar, Terse, Mayatar, Dumkin, Orlang, Rigdikhola, Goganpani, Banspur Guchhibang and Tolang. It is 20.50 Km long. The other major settlements influenced by the route are Bayodanda,Terse, mayatar, Dumkin, Banspur, Guchhibang and Tolang Major portion of the alignment passes through thin forest, barren land. Some segments of this alignment falls on agricultural land. The alignment of the road is an existing pedestrain track.

64 The second alignment is recommended, as it requires only four loops, easy to construct and the road is an existing pedestrain track which need not to acquire substantial land and clearing of trees.

5.3 Alternative Design and Construction Approach

65 The proposed road has been designed considering the both RBG and Contractor Modality. The construction work will not be carried by only using the labours but equipment and machineries will be used where manual work is not possible.

5.4 Alternative Schedule

66 The construction of road will be carried out over the span of one year. Construction activities of road will be appropriate during the dry weather mainly October to June. No any construction activities began during rainy season. The people are generally free from farming activities. Plantation and bio engineering work will began in rainy season.

5.5 Alternative Resources

67 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 easily available during roadway excavation in nearby areas of various sections of the road whereas fine aggregates and sand has to be transported from Shakti Khola 0+000 13 KM lead and Rigdi Khola (21+430) 9 km far from the road. The proposed construction will optimally use the local labour force and local materials and flexible road structures.

5.6 Project Alternatives

68 Construction of other supporting roads could be the options for achieving the transportation and access. The proposed road project can be the best option to serve the home-to-home services. Construction of Shaktikhor-Prithivy Highway (Fisling) road links chitwan district with Prithivi highway at Fishling.This is shorter route to reach Prithvi Highway from Bharatpur of Chitwan district and Makawanpur district (only 68 KM from Bharatpur). The proposed road project is the best alternative for cheap and efficient transportation.

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

69 The identification and assessment of impacts has been carried out by considering the proposed proposal activities examined in terms of its current condition and likely impacts during construction and subsequent operation phases. The impacts have been predicted in terms of their nature, 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

70 *Impacts:* Employment opportunity for local people during construction of the road, without gender biasness, is 146,937 person days, with 7,713 for skilled and 139,224 for unskilled labor. The amount of money earned as wages will directly support various economic activities of the people, and assist to empower women and indigenous people. It will assist towards enterprise development with multiplier effect if wage is used for economic investments. This is one of the direct and significant impacts of the project but it is of short-term and local in nature.

71 *Measures:* Work will be implemented through RBG and Contractor. 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.

Skill Enhancement

72 *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.

73 *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.

Enterprise Development and Business Promotion

74 *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. Development of several rural market centres at various places along the road alignment and main market centres at Upradanggadi, Mayatar, Orlyang, Banspur and Tolang. This impact is direct, low significance, local and short term in nature.

75 *Measures:* Training in cooperatives, and promote use of local products.

Community Empowerment and Ownership

76 *Impacts:* During construction various road construction coordination committees and road building groups will be constituted in order to facilitate in implementation of the road. In this process, they will be oriented and trained to build and safeguard community infrastructures which will result in community empowerment and feeling of ownership. This impact is indirect, low, local and short term.

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

Women and Indigenous People Empowerment

78 *Impacts:* Women and indigenous people in particular may be benefited more from improved access to the market centers and various service providing agencies like health centers, banks, training

institutes, women development office etc. Frequency of visit to such agencies will increase awareness level and empowerment. The impact will be indirect, significant, local and for long-term.

79 *Measures:* Programs under Gender Action Plan (GAP), IPDP of social plan will be provided whose budget is included in social plan of the project.

6.1.2 Operation Stage

Improvement in Accessibility and Saving of Time and Transportation Cost

80 *Impacts:* Construction of road will enhance the access of people to social services, and quick transportation of goods. This road helps to connect the district headquarter with the Dhading district and Kathmandu. After construction of this road, it will takes 4 hours to travel Upradanggadi toTolang instead of whole day and more than 50% cost will reduce. This impact is direct, high, regional and long term.

81 *Measures:* Proponent will undertake regular maintenance of the road.

Increase in Trade, Commerce and Development of Market

82 *Impact:* Improved access will increase economic activities and markets like Upradanggadi, Banspur and Tolang markets will grow. Production of ginger, tomato, lemon, orange, beans and amliso will increase due to cheaper transportation and better market access. Sale of farm and livestock products will increase in the bigger markets of Chitwan district. This will support the economy of rural area. The impact will be indirect, significant, local and long term in nature.

83 *Measures:* DDC/VDCs shall manage planned growth with required infrastructure facilities in the market areas. Agriculture extension services, market linkages and networking for better market price will be coordinated with district agriculture office.

Appreciation of Land Value

84 *Impacts:* Construction of road will increase the land values by twice of the current land value. Mainly the land value will increase in Upradanggadi and Tolang. This will uplift the economy of local people. Financial institutions may accept their land as mortagage for lending. The impact is indirect, high, local and for long term.

85 *Measures:* Awareness program shall be organized on use of high value land to get bank loans for setting up enterprise ventures.

Enhancement of Community Development Services

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

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

6.2 Adverse Impacts and Mitigation Measures

6.2.1 Construction Stage

88 The proposed road will be constructed according to Contractor modality and RBGs where manual works are possible. The likely impacts on physical, biological, socio-economic and cultural resources of the proposed road area and respective mitigation measures are presented hereunder.

Physical Environment

Change in Land Use pattern

89 *Impacts:* Construction of road will convert 1.82 ha. of cultivated land, 2.54 ha.of barren land, 0.17 ha built up land, 2.132 ha.of forest land into road. The impact will be high, direct, local and for long term.

90 *Measures:* Agreement for voluntary donation of land by the owner shall be done, otherwise compansation for privateland shall be provided. Prepare perspective resettlement plan along road corridor, Avoid disposal of construction material and spoils in agricultural field. Site selected for camp sites will be on land of lower values and where the effect will be temporary. The sites shall be rehabilitated soon after use or compensation will be given in private land.

Road way excavation and slope erosion

91 *Impacts:* There are some landslide prone areas at Ch 11+300 to 20+540 and 28+300 along the road alignment. Deep and steep slope excavation may cause unstability of slope and cause landslide. Few flood problem can be seen along road alignment where natural drainage crosses the road at chainage 22+580. The likely impact is medium, site specific and medium term depending on cases.

92 *Measures:* The mitigation measures will avoid high excavation, benching in case of high excavation, adoption of bio-engineering techniques such as Grass plantation, brushlayering, Tree plantation. River embankment protection shall be carried out by Gabion and plantation. No construction work during rainy season; and use of soft engineering structures (dry wall) for spoil management.

Spoil Disposal

93 *Impacts:* Unmanaged disposal of spoil may cause blockage of natural drainage systems, loss of organic fertile top soil and farmlands, crops and forest, waterlogging. The impact from spoil disposal will be direct, low, local and long term in nature.

94 *Measures:* As far as possible spoil shall be safely managed locally at excavation sites by providing toe wall in order to retain earth mass at the spot with minimum, environmental damage. Emphasis will be given to balanced cut fill and re-use of excavated materials. Spoil will be reused to reclaim land or eroded areas if any. In case of excessive spoils, disposal site shall be provided including proper drainage, vegetation and adequate protection as instructed by the Engineer. Toe walls shall be provided to retain spoil. Compaction and trimming the slope of disposed spoils including bioengineering measures are proposed (Grass, Shrubs, Tree plantation). To manage spoil disposal locally low cost dry masonry walls are proposed in the following change in order to retain earth mass.

Table 6.1: Toe Wall for Safe Spoil Disposal

SN	Chainage	Cumulative length of dry stone toe wall	Volume
1	9+500 to 29+300	2,337.74 meter	3,025.04 cum

Source: Field survey, July, 2009

Quarry/ Borrow Operation

95 *Impacts:* Potential adverse impacts are accelerated due to unmanaged and haphazard quarrying/borrowing of construction spoils resulting landslide, disturbance in natural drainage patterns, water logging and water pollution. The likely impact will be direct, medium in magnitude, site specific in extent and short term in duration.

Measures: Plenty of stone will available during roadway excavation. Only soft structures are proposed in the project, so practically sand is not necessary to borrow. Stones available during excavation shall be collected along road length and utilize in gabion and dry wall structure construction.

Air, Noise and Water Pollution

96 *Impacts:* Although the air quality of the project area is not measured, the air will not be polluted significantly. Dust emission will be major problem during both the construction and operation stages of the road. Impact on air quality will be direct, low, local, reversible and for short term.

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

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

99 *Measures:* The mitigation measures will include use of face mask by the workers working in the areas of high dust generation; avoid disposal of excavated materials in the water bodies; Use of ear muffles, helmet to lessen noise pollution during rock breaking and quarrying.

Drainage Management

100 *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.

101 *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 XII.

Location of Camp Sites and Storage Depots

102 *Impacts:* Camp will not be required if works are carried out by RBGs. Contractor will establish camp if he bring labors from outside the area. Siting of camp may cause encroachment of forest, agriculture land, and alteration of drainage, solid waste and waste water problems. Impact will be direct, medium significance, site specific and short-term.

103 *Measures:* The mitigation measures will be use of local labors to avoid camp; rent local house instead of camp to keep labors; siting camp away from productive lands and forest areas; pay compensation for using private farm or lands for storage or camp; fuel and chemical storage areas will be on paved surface with surrounding catch drain to protect soil from leakage. Camp sites will be provided with first aid facility and pit latrine; soak pit will be provided for water and solid waste management. Appropriate camp sites have been observed at at 11+800 near Upradanggadhi, and at 21+580 near Kaule, (13+000) near Lyamdar, (23+900) near Banspur and (25+900) near Guchibang,

Biological Environment

Loss or Degradation of Forests and Vegetation

104 *Impacts:* The road is new construction with 5 m of average width and 2.132 ha forest area will be cleared. Total 2994 nos of trees need to be cut down which are 2196 nos of trees from Government forests and 798 nos of trees from private land. The impact will be direct, high, local and long term. The number of tree need to remove during road construction is given in Annex XV.

Measures: There are not any endangered and protected species along the alignment that need to be cut down during road construction. Bioengineering and plantation of tree of local species will restore losses of trees and vegetation therefore there is no significant impact on them. Compensatory plantation of trees will be done in 60,391 numbers in forest areas at 1:25 ratio + 10 % and in private land compensatory plantation will be done in 798 numbers at 1:1 ratio. Forest watchmen at 8 numbers will be employed for six months for monitoring and maintenance of tree plantation. The total cost of compensatory tree plantation including cost of forest watchmen is estimated as NRs. 3,235,883.00.

Impact on Wildlife Due To Loss of Habitat and Poaching

105 *Impacts:* The proposed area is not a significant habitat of wildlife and bird species. However, there are forest areas where common species of wildlife exists. Construction workers may disturb, harass or kill such wildlife that might wonder out of their habitat areas. The impact will be indirect, medium, local and short term in nature.

106 *Measures:*

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

107 *Impacts and Measures*: There will be no impact on endangered or protected flora and fauna.

Socio-economic Environment

Loss or Degradation of Farm Land and Productivity

108 *Impacts:* There will be permanent loss of 1.82 ha of agricultural land due to road construction. This will lead to annual loss of approximately 2 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.

109 *Measures:* 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

110 *Impacts:* One kuchha house and Cattle shed of *Santa Bahadur Praja* like wise a kuchha house of *Mani Ram Praja* will be fully damaged at Ch 9+080 and 9+120. It is necessary to relocate beyond RoW. Impact will be direct, medium significance, site specific and long-term in nature.

111 Measures*:* Full compensation for private house shall be provided. Cost for relocation shall be incorporated in resettlement Plan which is estimated as NRs. 1,511,322.

Impact on Community Infrastructure

112 *Impacts:* Pipeline of two water supply scheme will partially damage during road construction as well as two community irrigation schemes will damage due to deposition of spoils from uphill as mentioned below. Impact will be direct, high, site specific and short-term in nature.

113 *Measures:* Damaged segment of existing Water supply system shall be reconstructed immediately from the project cost; spoils deposited in the canal shall be cleaded and removed from the canal. If excavations will occure during irrigation period it shall be removed daily without disturbing irrigation facility or this segment shall be excavated during non irrigation period. Cost for reconstruction of this infrastructure shall be included in BOQ.

Table 6.2: Affected community structures and Mitigation Measures

Type of Public Service and Infrastructure	Chainage/ Location	Impact	Mitigation measurs
Kabilas Water Supply Scheme implemented by DWSS	9+020- 9+280	Damaged during road construction	Reinstate. 80mm dia GI pipe-260meter, One WO valve chamber and Fittings. Cost for reconstruction shall be included in BOQ
WS scheme in Mayatar implemented by GWS	17+400- 17+900	Damaged during road construction	Reinstate. About 550 meter HDPE 40/10 mm, fittings. Cost for reconstruction shall be included in BOQ
Blockage of irrigation canal due to disposal of spoils from uphill	19+900- 20+350 and 21+640- 21+930	Will damage during excavation of roadway, spoils from uphill will block canal alignment	Clearance and removal of debrises from canal after completion of construction of road ways

Source: Field survey, July, 2009

Occupational Health and Safety Matters

114 *Impacts:* During construction of both road and bridge, 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.

115 *Measures:* 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 generation to local people and workers on HIV/AIDS and other communicable diseases.

Decline in Aesthetic Value

116 *Impact:* Landscape degradation and scar on topography due to the road; quarrying operations; and indiscriminate dumping of spoil on open land. The likely impact will be direct, low in magnitude, local in extent and short term in duration.

117 *Measures:* Discourage indiscriminate dumping of spoil material; quarry sites will be properly closed to suit the local landscape and plantation of local trees species along the road.

Impacts on Cultural, Religious and Archeological Sites

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

6.2.2 Operation Stage

Physical Environment

Road embankment and Management

119 *Impacts:* Road embankment erosion, water logging may occur at only few chainages 21+130-21+390. Destabilization of slope (quarrying stones or soil, animal grazing, irrigated cultivation, opening of branch roads), poor maintenance of road, and blockage of drains can lead to road damage. The impact will be direct, medium, local and long term nature.

120 *Measures:* The mitigation measures to be adopted include immediate clearance of slides and restoration of slopes; regular maintenance of bio-engineering and civil structures for slope protection; restoration of rill and gully formation. Operation and maintenance cost is estimated as 1,587,747.00 which is included in project cost.

Impact Due to Air, Noise and Water Pollution

121 *Impacts:* Dust will be generated from the earthen road and vehicles emit gaseous pollutants. Continued dust pollution may cause adverse health impact to the people living in the vicinity. As the road is of district road category and the vehicular movement is not expected to be very high. Thus, the impact will be direct, low, local and long term.

122 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.

123 The disposal of spoil and household wastes, washing of vehicles in water bodies may degrade the water quality. The impact will be direct, low, local and long term.

124 *Measures:* Measures to be adopted will include plantation of local species trees along the RoW on both sides of road; restrict horn near forest, health posts, schools and settlements; provide speed limit for vehicle at sensitive areas.

Biological Environment

Depletion of Forest Resources

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

126 *Measures:* 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 Wildlife and Poaching

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

128 *Measures:* Mitigation measure will be to erect appropriate sign boards informing drivers on prohibition of blowing horns in the forest areas. Community and authorities will remain vigilant and alert on illegal felling of timber and killing of wildlife.

Socio-economic and Cultural Environment

Unplanned New Settlement and Market Center Development

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

130 *Measures:* The mitigation measures to be adopted include awareness program, demarcation of ROW, regulation of settlement with proper planning; plantations of trees in the RoW so that it is not encroached; provide proper drainage in market areas. Awareness raising program and authorities and VDCs will control encroachment of RoW.

Change in Social Behavior

131 *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.

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

Road Safety Measures

133 *Impacts:* Movement of vehicles and inadequate road safety measures may invite accidents. The impact will be direct, medium, local and long term in nature.

134 *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.

Impact on local porter

135 *Impacts:* Porters will lose their work when road will in operation. The likely impact will be direct, medium in magnitude, site specific in extent and long term in duration.

136 *Measures*: Skill development/income generation training from the project will be given to Porters who will lose work. Some porters shall be hired for care taker of the plantation for 6 months; High priority will be given to involve them in road construction work in RBG.

7.0 Environmental Management Plan

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

7.1 Institutions and Their Roles

Table 7.1: Concerned Institutions and Their Roles

Institution	Role	Responsibility in the Project	Remark
Ministry of Environment	Mandated to formulate and implement environmental policies, plans and programs at national level	Facilitate when needed on environmental safeguards	No direct responsibility in the project
Ministry of Local Development (MLD)	It is concerned line ministry, executive agency and concerned agency as per EPA/EPR. Environment Management Section is responsible to look into safeguard matters for the ministry.	▪ 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.	▪ 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

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

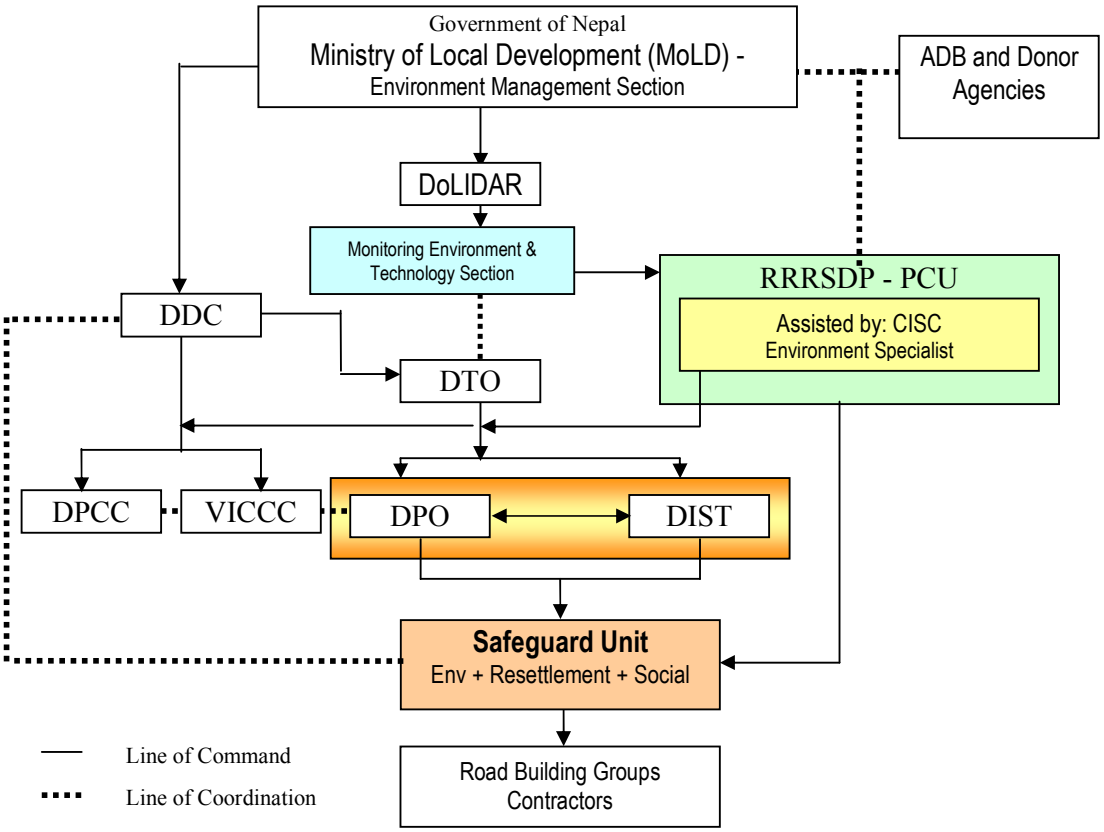
7.2 Reporting

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

140 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.

141 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

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

Table 7.2: Beneficial Impacts and Proposed Enhancement Measures

Activity	Effect	Related Beneficial Impacts	Type of Impact *)				Benefit Augmentation Measures	Responsible Agencies	
			Nat	Mag	Ext	Dur		Executing Agency	Supporting Agency
Construction Stage									
Construction of road	Employment Generation and Increase in Income	Increase in income level	D	H	L	ST	Work will be implemented through RBG and Contractor. Maximize manual work through local, poor, vulnerable and women. Training in income generation and skill enhancement. Skilled 7713 nos, unskilled 139224 nos	DDC/DTO/ DIST	DPCC / VICCC / CISC/PCU
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/PCU
Construction of road	Enterprise Development and Business Promotion	Enhancement in local economy	D	L	L	ST	Training in cooperatives, and promote use of local products.	Contractor/ RGB	DIST/ CISC/PCU
Construction coordination committee and RBG program	Community Empowerment and Ownership	Increase in income and ownership.	IN	L	L	ST	Coordination committees will be constituted and training will be given to them.	DPO/DIST	DDC/DTO / CISC/PCU
Operation of Road	Women and Indigenous People Empowerment	Poor, indigenous and women will have easy and frequent access to social services (education, health, community development, bank, training)	IN	H	L	LT	Programs under Gender Action Plan (GAP), IPDP of social plan will be provided whose budget is included in social plan of the project.	VDC / DDC	VDC / DDC
Operation Stage									
Operation of Road	Improvement in Accessibility and Saving of Time and Transportation Cost	Saving in travel time and travel cost. After construction of this road, it will takes 4 hours to travel Upradanggadi toTolang instead of whole day and more than 50% cost will reduce	D	H	R	LT	Proper maintenance (regular, emergency) , continuation of bioengineering	DTO/DDC	DoLIDAR
Operation of Road	Increase in Trade, Commerce and Development of Market centers	Upradanggadi, Banspur and Tolang markets will grow. Production of ginger, tomato, lemon,orange, beans, Amliso will increase due to cheaper transportation and better market access	IN	H	L	LT	Manage planned growth with required infrastructure facilities in the market areas. Agriculture extension services, market linkages and networking for better market price.	DPO	DDC/VDC

Activity	Effect	Related Beneficial Impacts	Type of Impact *)				Benefit Augmentation Measures	Responsible Agencies	
			Nat	Mag	Ext	Dur		Executing Agency	Supporting Agency
Operation of Road	Appreciation of Land Value - Mainly the land value will increase in Upradanggadi and Tolang	Improvement in local economic condition	IN	H	L	LT	Awareness program shall be organized on use of high value land to get bank loans for setting up enterprise ventures.	DDC/DPO	DDC/VDC
Operation of Road	Enhancement of Community Development Services	Ease of access to social service and raise in quality service	IN	H	R	LT	Keep road maintained to ensure access facility that will attract development of other social services facilities	Local people, DDC, VDC	DDC, VDC

Table 7.3: Adverse Impacts and Proposed Mitigation Measures

Activity	Potential Negative Effects	Related Adverse Impacts	Type of Impact *)					Mitigation Measures	Responsibility for Mitigation Measure	
			Nat	Mag	Ext	Dur	Rev		Executing Agency	Supporting Agency
Construction Stage										
Physical Environment										
Construction of Road, site clearance	Change in land use	Construction of road will convert 1.82 ha. of cultivated land, 2.54 ha.of barren land, 0.17 ha built up land, 2.132 ha.of forest land into road.	D	H	L	LT	IR	Compansation for privateland shall be provided. Prepare perspective resettlement plan along road corridor, Avoid disposal of construction material and spoils in agricultural field	DDC/DTO	DIST
Site clearance, excavation	Road way excavation and slope erosion	Tree clearance, erosion and water logging. Ch 11+300 to 20+540 and 28+300 along the road alignment. Flood problem can be seen at chainage 22+580.	D	M	SS	MT	Re	Adoption of bio-engineering techniques such as Grass plantation, brushlayering, Tree plantation. River embankment protection shall be carried out by Gabion and plantation. No construction work during rainy season; and use of soft engineering structures (dry wall) for spoil management.	DDC/DTO	DIST
Construction of Road, earth excavation	Spoil Disposal	Gully erosion, landslide, disruption of road, damage to farmland, water pollution etc.	D	L	L	LT	Re	As far as possible spoil shall be safely managed locally at excavation sites by providing toe wall in order to retain earthmass. Emphasis will be given to re-use of excavated materials. Provision of Toe walls (3,025.04 cum) at Ch. 9+500 to 29+300 shall be provided to retain spoil. Bioengineering measures (Grass, Shrubs, Tree plantation) will be done for slope protection.	DDC/DTO	DIST/VICCC/ VDC

Activity	Potential Negative Effects	Related Adverse Impacts	Type of Impact *)					Mitigation Measures	Responsibility for Mitigation Measure	
			Nat	Mag	Ext	Dur	Rev		Executing Agency	Supporting Agency
Construction of Road	Drainage Management	Erosion, landslide, damage to farmland	IN	M	SS	MT	Re	Proper drainage structures and proper spoil disposal, Avoid blockage or diversion of natural channels due to construction of road and disposal of spoils.	DDC/DTO	DIST
Construction works, operation of construction vehicles, material hauling and unloading etc. Slope cutting, spoil and waste disposal.	Air pollution due to dust from exposed surface, from construction equipments and vehicles	Affect on local people and workers health and affect on agriculture.	D	L	L	ST	Re	Use of face mask by the workers working in the areas of high dust generation; avoid disposal of excavated materials in the water bodies; Use of ear muffles, helmet to lessen noise pollution during rock breaking and quarrying.	DDC/DTO / RBGs	DIST
	Noise pollution	Disturbance and annoyance.	D	L	L	ST	Re	Restrict horn near school, health posts, settlement, and forest areas.	DDC/DTO / Contractor	DIST
	Water pollution due to sediment level, spills and leakage of oils and chemicals to water bodies	Risk of water borne diseases	D	L	L	ST	Re	Proper spoil management, and prevention of leakage and spills of construction chemicals, restriction in urination and defecation in open areas	DDC/DTO/ Contractor/ RBGs	DIST/VICCC
Quarry operation	Quarry/borrow operation and its potential effect on instability, landslide	Change in river regime, instability, land slide; damage to forest, farmland and property; water pollution	D	M	SS	ST	Re	Proper selection and management of quarry sites, rehabilitation of quarry/borrow sites after completion of work. Recommended quarry sites are 0+000, 21+430	DDC/DTO/ Contractor/ RBGs	PCU/CISC/DIST/ VICCC
Construction of road	Location of Camp Sites, Storage Depots	Encroachment of forest, agriculture land, solid waste,and waste water may cause pollution	D	M	SS	ST	Re	Locate camp site away from productive land and forest area (potential sites at 11+800, 13+000, 21+580, 23+900, 25+900); use local labor and local houses as camp; pay compensation to land owner of camp area; proper storage of chemical and materials.	DPO /DIST/ Contractor	DIST/VICCC
Storage of Chemicals and operation of machineries	Spillage of fuels and chemicals.	Pollution to the nearby water sources and soil. Health hazards to the workers	D	M	L	ST	Re	Store fuels and chemicals on paved surface with surrounding catch drain to protect soil from leakage. Provide information signboards. Use of safety gears. Close monitoring during operation of machineries.	DTO/DIST/ Contractor	PCU/CISC/DIST
Biological Environment										
Clearance of vegetation necessary for road formation	Loss or Degradation of Forests and Vegetation	Loss of environmental benefits from vegetation, disturbance in ecological function (2.132 ha forest area will be cleared. 2994 nos of trees (2196 from Government forests and 798 nos from private land) need to be cut down	D	H	L	LT	Re	Minimize cutting of tree, vegetation and bio-engineering measures. Compensatory plantation of 60,391 numbers of trees in forest at ratio 1:25 +10% will be done and in 798 numbers of trees in private land at ratio of 1:1.	DDC/DTO/ DPO/DFO	DFO/CFUGs/DIST

Activity	Potential Negative Effects	Related Adverse Impacts	Type of Impact *)					Mitigation Measures	Responsibility for Mitigation Measure	
			Nat	Mag	Ext	Dur	Rev		Executing Agency	Supporting Agency
Construction activity	Impact on Wildlife due To Loss of Habitat and Poaching	Killing and harrasing of wildlife; Loss of biodiversity and valuable species of wildlife	IN	M	L	ST	IR	Coordination with DFO to control the activities like illegal Poaching and poaching by enforcing acts and regulations strictly. Do not disturb wildlife, Workers will be given orientation and strict instructions not to harm wild flora and fauna.	DDC/DTO/ DFO	DFO/CFUGs/DIST
Social-economic Environment										
Acquisition of land for maintaining road width*	Loss or Degradation of Farm Land and Productivity (1.82 Ha)	Reduced production, hardship, food shortage	D	H	L	LT	IR	Minimize productive land acquisition through alignment selection, Compensation for affected people.	DDC/DTO/ DPO	CDC DIST/VICCC
Construction of road	Loss of private properties	Damage of private property, lack of shelter for some month (One house and Cattle shed of Santa Bahadur Praja will be fully damaged at CH 9+120)	D	H	SS	LT	IR	Proper compensation shall be provided for house owner to relocate his house.	DDC/DTO/ DPO	CDC DIST/VICCC
Construction of road	Impact on Community Infrastructure	Lack of water supply, scarcity of water in the community (Two water supply schemes at Ch 9+020-9+280 and 18+200-18+600)	D	H	SS	ST	Re	Reconstruction of damaged section of these water supply schemes shall be done as soon as possible	DPO Contractor	DPO/DDC
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	IR	Occupational health and safety regulations, first aid facility at sites with health treatment arrangements, contingency planning; Proper drinking water and toilet facility for construction crew	DDC/DTO / Contractors	DIST/CISC
Construction of Road	Decline in aesthetic value	Disturbances in working areas and scar on topography.	D	L	L	ST	Re	Discourage indiscriminate dumping of spoil material; quarry sites will be properly closed to suit the local landscape and plantation of local trees species along the road.	DPO in assistance by DIST / Contractors	PCU / CISC / Users Committee / VDC
Operation Stage										
Physical Environment										
Quarrying, operation of construction equipments	Road embankment and Management	Road embankment erosion, water logging may occur at only few chainages 21+130-21+390. Destabilization of slope (quarrying stones or soil, animal grazing,	D	M	L	LT	Re	The mitigation measures to be adopted include immediate clearance of slides and restoration of slopes; regular maintenance of bio-engineering and civil structures for slope protection; restoration of rill and gully formation.	DDC/DTO/ VDC	DoLIDAR , DFO, Water Induced Disaster Control Division Office

* 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
		irrigated cultivation, opening of branch roads), poor maintenance of road, and blockage of drains can lead to road damage.								(WDCDO)
Operation of vehicles, Inadequate drainage	Air, Noise and Water Pollution	Disturbance to students, patients, wildlife, effect to nearby agriculture land and crops	D	L	L	LT	Re	Speed limit for vehicles, no horn signs, Regular maintenance of drainage.	DDC/DTO	DoLIDAR/Local administration
Biological Environment										
Road operation	Depletion of Forest Resources	Loss of timber, forest resources and benefits	IN	M	L	LT	IR	Enforcement of law, vigilance and monitoring, participation of community	DFO/ CFUGs/VDCs	DDC/CDO
Road operation	Disturbance to the Wildlife and Illegal Poaching	Loss of biodiversity	IN	L	L	LT	IR	Warning traffic signal, Awareness training to driver to limit speed and horn use. Community and authorities will remain vigilant and alert on illegal felling of timber and killing of wildlife.	DTO/ CFUGs	DDC/CDO / DFO
Social-economic Environment										
Easy Access by road operation	Unplanned New Settlement and Market Center Development - Expansion of settlement area and market can be observed at Upradanggadi, Banspur and Tolang.	Encroachment of Row, increased accidents, delay in traffic movement, depletion of local resources, water pollution	D	M	L	LT	IR	Awareness program, enforcement of law, planning of land development, plantation of trees.	DDC/DTO	CDO / VICCC
Impact on local porter	Loss of employment	Unemployment and poverty	D	M	SS	LT	Re	Skill development/income generation training from the project will be given to Porters who will lose work. Some porters shall be hired for care taker of the plantation for 6 months; High priority will be given to involve them in road construction work in RBG	DDC/DTO	VICCC/DPCC
Operation of Road	Change in Social behavior	Social and cultural conflicts	IN	M	L	LT	IR	Awareness raising programs to the communities about negative social behavior like gambling, excess use of alcohol.	DTO	DDC/DoLIDAR
Operation of Road	Road Accidents	Increase in accidents	D	M	L	LT	IR	Appropriate road safety measures, Safety signs along the road.	DTO	DDC/DoLIDAR

* Legend *Value in parenthesis is level of significance*:

Nature- IN= Indirect ; D= Direct ;Magnitude- L= Low; M= Medium; H= High; Extent- SS= Site Specific ; L= Local; R= Regional; N= National; CB=Cross-boundary
Duration- ST= Short Term; MT= Medium Term ;LT= Long term ; Re=Reversible; IR= Irreversible

7.4 Mitigation Cost

143 The estimated cost for benefit augmentation measures like awareness raising program, skill training, promotion of small scale industries, and income generation activities will be covered by the Community Empowerment Component and Livelihood Enhancement Skills Training (LEST) program of the RRRSDP. Costs for income generation and awareness program activities for Affected Persons (APs) are included in Social Action Plan. The design and cost estimate for most of the suggested mitigation measures such as slope stabilization, quarry site management, spoil disposal, supply of safety gears, accidental insurance of RBGs, bio-engineering measures, tree plantation, land slide rehabilitation will be incorporated in the project cost. Therefore, most of the mitigation measures suggested would be a part of main project cost. All proposed mitigation measures will be integrated in the project design so that these measures may automatically form part of the construction and operational phases of the project. The indicative cost for environmental enhancement and mitigation is presented in the **Table 7.4**.

Table 7.4: Cost Estimate for Environmental Enhancement and Mitigation Measures

SN.	Environmental Protection Measures	Estimated Budget (NRs.)	Remarks
	1. Benefits Augmentation Measures		
1.1	Training to DDC/DTO/DPO/DIST to conduct environmental monitoring and reporting	50,000.00	To be included in project cost
1.2	Training to Naike of RBGs/ Excavator operator	50,000.00	To be included in project cost
1.3	Enhancement in Technical Skills (Bio-engineering)	100,000.00	To be included in project cost
	Sub-Total (1)	**200,000.00**	
	2. Adverse Impacts Mitigation Measures		
2.1	Bio-engineering	2,365,881.02	To be included in BoQ
2.2	Insurance of RBGs	150,000.00	To be included in project cost
2.3	Information Signboard	30,000.00	To be included in BoQ
2.4	Relocation of services(Reconstruction of Water Supply system)	562,077.06	To be included in BoQ
2.5	Repair of community irrigation canal	300000.00	To be included in BOQ /RBG
2.6	Spoil management (Toe Wall for the retaining and stabilization of spoils)	2,471,907.81	To be included in BoQ
2.7	Relocation of private/public infrastructures, Reinstate of quarry, stockpiling etc.	400,000.00	To be included in project cost
2.8	Social Plan Cost	1,674,900.00	To be included in Social plan
2.9	Resettlement cost and compensation cost	1,511,321.58	To be included in Resettlement and compensation cost
2.10	Occupational health and safety(First aid boxes, Helmets, gloves, masks, boots, etc,)	225,000.00	To be included in Project cost
2.11	Tree plantation including compentary 61189 Nos (60691 nos. in forest ares and 798 nos. in private land) + watchman for 6 months	3,235,883.00	To be included in project cost
2.12	Environment Management Cost for operation and Maintenance of Road	1,587,746.76	To be included in project cost
	Sub-Total (2)	**14,514,717.23**	
	Total	**14,714,717.23**	

7.5 Implementation of Mitigation Measures

144 The mitigation measures will be integrated into project design and tender documents so that the mitigation measures will automatically become part of the project implementation and operation.

Mitigation measures will be included as separate items in the Bill of Quantities, and monitoring will be done based on these. The Proponent and the contractor will be bound by the parameters identified in the IEE Report and specific mitigation measures spelled in the contract. The final acceptance of the completed works will not occur until all the environmental clauses have been satisfactorily implemented.

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

7.6 Environmental Monitoring

7.6.1 Monitoring Responsibility

146 The Proponent will develop in-built monitoring mechanism to safeguard environment during construction and operation stages. The DPO will be supported by DIST in the district, and PCU will be supported by CISC at center to ensure effective monitoring and undertaking corrective actions, as required. A Safeguard Unit will be established in DPO. The social, resettlement and environment specialists / officers from DPO/DIST will work in cooperation under the Safeguard Unit. They will undertake Subproject level monitoring under supervision and coordination of Specialists from PCU/CISC.

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

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

Table 7.5: Environmental Monitoring Cost

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

149 Thus, total environmental monitoring and management cost is NRs 14,614,717.23.

7.6.2 Types of Monitoring and Monitoring Parameters

150 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.

151 Environmental Monitoring for this sub project are:

a. 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.

b. 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 Shaktikhor-Prithivy Highway (Fisling) **Road Construction Works**

Parameters/Indicators	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
Final alignment selection as per IEE /EMP recommendation	DPO / DIST	Alignment incur minimum requirements to acquire land from forest, agri. land, and minimum nos. of tress to clear.	Look the alignment on topo map with landuse resources; verify it by walkthrough along final road alignment	Preconstruction phase	PCU / CISC; DoLIDAR
Land and property acquisition and compensation Voluntary land acquisition	Proponent with assistance of DIST	Cadastral records, Land and properties acquisition procedures; Procedures followed during voluntary donation of Land; Preparation of inventory of structures likely to be affected Payment of compensation	Public consultation, photos; geo-referencing; Check inventory against cadastral records and discuss with land owners Check record of pending compensation	Pre-construction phase before construction begins	CFC / PCU (CISC) / DOLIDAR / MoLD
Compliance to Environmental Protection Measures, including pollution prevention, water and soil management, cut and fill, waste management, spoils, sensitive habitats and critical sites, protection of fauna and flora	Contractor /RBG	Arrangement specified in the Code of Practice and in Manuals relating to environmental protection; EMP detail in IEE Document; records and observations on pollution, waste management, spoil deposit. Protection of wildlife and sensitive habitats, forests; and Use of fuelwood for heating and cooking.	Site inspection; Discussion with local people; Records; Photos; Sampling and laboratory tests.	During construction period and include in monthly report	DPO / DIST at district and PCU/CISC at center
Protect environment from air & noise pollution	Contractor / RBGs	Dust level and noise level at work sites, major settlements and sensitive spots like health centres and schools; Crusher operated during night	Visual observation, Observation of good construction practices and discussion with residents and workers; DIST to measure air/noise level at sensitive spots.	Once in a month during construction; measurement once during peak construction	DPO / DIST at district and PCU/CISC at center
Protect water bodies from pollution	Contractor / RBG DPO / DIST	Visual observation, observation of open defecation and pit toilets at work sites/waste management/spoil disposal around water sources; Parameters like pH, hardness, DO, Turbidity for drinking water.	Site inspection, test of site-selected samples of local streams water using standard field kit, record of waterborne disease	Observation once in a month during construction; Upon demand for testing with field kit	DPO / DIST at district and PCU/CISC at center
Use of local labour, particularly vulnerable groups and women	DPCC / VICCC / RBGs / Contractor	Percentage of employment of local labour, especially vulnerable groups and women and their wage rate.	Verification from records	During the entire period where labour work is contracted	DPO / DIST at district and PCU/CISC at center
Awareness and orientation training on road construction locally employed labourers	DPO / DIST	Training programmes for skill development, occupational safety and environmental protection associated with road construction works; employment generation skill	Training records, assess feedback from participants	Beginning of construction and during construction	DPO / DIST at district and PCU/CISC at center (DTO)
Compliance to occupational health and safety matters	DPO / DIST; Contractor (if involved)	Health and safety regulations, first aid and medical arrangements, contingency plan, number and type of safety equipments such as mask, helmet, glove, safety belt.	Spot checks at work sites, accident records, safety equipment at site; discussion with workers	throughout construction stage	DPO / DIST at district and PCU/CISC at center
Measures to avoid pressure on forest	Contractor / RBG /	Use of firewood or fossil fuel by construction crew, events of	Record verification, interview with local people	Once a month	DPO / DIST at district

Parameters/Indicators	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
and wildlife	DIST	Poaching and poaching of wildlife	and CFUGs	during construction	and PCU/CISC at center / CFUGs
Clean up and reinstatement of the construction sites (camps, quarries, borrow pits)	Contractor	Decommissioned sites indicate no adverse/residual environmental impacts, and are rehabilitated to the satisfaction of the supervisor and land owners	Site observation; Comparing photos; Consultation with land owners	At end of construction period	DPO / DIST at district and PCU/CISC at center
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 Shaktikhor-Prithivy Highway (Fisling) Road Construction Works

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

8.0 Conclusion and Recommendation

8.1 Conclusion

152 The IEE study of the proposed Shaktikhor-Prithivy Highway (Fisling) road sub-project does not pass through any environmentally sensitive and restricted area; there is no significant private and public loss during road construction. Most of the adverse impacts predicted are of low significance and short term as well as of reversible nature. The beneficial impacts with the facility of access to market centers and location of social services will enhance productivity in rural area and improve the quality of life of the people. In addition, local people will get direct employment as workers which will contribute significantly in improving their livelihood. These benefits from the implementation of the proposed road project are more significant and long term in nature against the adverse impacts most of which could be mitigated or avoided.

153 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

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

155 A key consideration in selecting the road alignment is to minimize the acquisition of valuable agricultural land for camp sites. No substantial quantity of agricultural and built up areas will have to be acquired for construction of the proposed road.

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ANNEXES

Annex I: Terms of Reference

Annex II: Rapid Environmental Assessment (REA) Checklist

Rapid Environmental Assessment (REA) Checklist

Instructions:

- This checklist is to be prepared to support the environmental classification of a project. It is to be attached to the environmental categorization form that is to be prepared and submitted to the Chief Compliance Officer of the Regional and Sustainable Development Department.
- This checklist is to be completed with the assistance of an Environment Specialist in a Regional Department.
- This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB checklists and handbooks on (i) involuntary resettlement, (ii) indigenous peoples planning, (iii) poverty reduction, (iv) participation, and (v) gender and development.
- Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title: Nepal / RRRSDP

Name of the sub Project: Shaktikhor-Prithivy Highway (Fisling) road Subproject

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

SCREENING QUESTIONS	Yes	No	REMARKS
▪ Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?		✓	
▪ Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?		✓	
▪ Increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?	✓		During road construction there will be increase in human and different construction activities that may cause the air pollution.
▪ Noise and vibration due to blasting and other civil works? ▪ dislocation or involuntary resettlement of people		✓	
▪ Other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?		✓	
▪ Hazardous driving conditions where construction interferes with pre-existing roads?		✓	
▪ Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?		✓	
▪ Creation of temporary breeding habitats for mosquito vectors of disease?		✓	
▪ Dislocation and compulsory resettlement of people living in right-of-way?		✓	
▪ Accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials and loss of life?		✓	
▪ Increased noise and air pollution resulting from traffic volume?		✓	
▪ Increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?		✓	

Source: field survey, July, 2009

Annex III: Abstract of Cost

Office of District Development Committee
District Technical Office/District Project office
Rural Reconstruction and Rehabilitation Sector Development Program (RRRSDP)

Cost Estimate on Engineering Basis

SN	Description of works	Unit	Quantity	Rate (NRs)	Amount NRs
1	**General**				
1.1	Insurance of workers,Plants and materials,loss or damage to equipments and third party insurance.	LS	1		1000000
1.2	Providing site office for supervision team	LS	1		200000
1.3	Supply of 4-wheel, 4-door and 4-cylinder pickup on hire for supervision staff of client and consultant for ... month including full compensation for driver, fuel, lubricants, regular servicing, insurance all complete (average movement 5000 km/month)	LS	1		1560000
1.4	Additional testing of materials as instructed by the Engineer if required.	PS			60000
1.5	Relocation of services(Reconstruction of Water Supply system)	LS	1	562077.058	562077.06
1.6	Supply and delivery in office store of 4 strock Indian motorbike 150cc. Wonership will be handed over to client immediately after endorsement including helmet, helemt lock, disc lock,miscellenous expencies like insurance,registration fees all complete.	No.	1	195000	195000
1.7	Supply and erection of contract information board in GI sheet of 1200x1500 mm size including full compensation for labour, material transportation and other incendential all complete	No.	10	3000	30000
	Sub-Total (1)				**3607077.06**
2	**Clearance Works**				
2.1	Site clearance work including srhubs removal	sq.m	87500	11.12	973000
2.2	Cutting of trees having girth of above 30 cm when measured at 1.0 m. above ground including the removal of trunk, branches and stumps up to a lead of 100m. Along the lead route for trees of size				
	Above 30 cm. to 60 cm girth	No.	740.00	83.43	61,738.20
	Above 60 cm to 90 cm girth	No.	851.00	111.24	94,665.24
	Above 90 cm to 180 cm girth	No.	915.00	417.15	381,692.25
	Above 180 0to 270 girth	No.	488.00	834.3	407,138.40
	Sub-Total (1)		2,994.00		1918234.09
3	Excavation in roadway, drain and Structures including removal and satisfactory disposal of all materials upto a lead of 50.0m. along the lead route.				
	a) Ordinary Soil	Cum.	31001.86	71.81	2226243.57
	b) Hard Soil	Cum.	135000.9	81.37	10985023.23
	c) Ordinary Rock	Cum.	12584.12	231.24	2909951.91

	d) Medium Rock	Cum.	11941.78	462.48	5522834.41
	e) Hard Rock	Cum.	8354.36	1745.54	14582869.55
3.2	Excavation in drain and Structures including removal and satisfactory disposal of all materials upto a lead of 50.0m. along the lead route.				
	a) Ordinary Soil	Cum.	1468.411	278.1	408365.1
	b) Hard Soil	Cum.	6148.9711	556.2	3420057.74
	c) Ordinary Rock	Cum.	734.20551	1112.4	816730.21
	d) Medium Rock	Cum.	550.65413	2224.8	1225095.31
	e) Hard Rock	Cum.	275.32707	8343	2297053.7
3.3	Backfilling to structure, foundations pits, side drains etc. from excavated materials including, all complete.	Cum.	3544.16	69.53	246425.44
	Sub-Total (3)				**44640650.17**
4	**Structure Works**				
4.1	Providing Coursed Random Rubble masonry work in 1:4 cement sand mortar including full compensation for all labour, materials and other incidentals	Cum.	489.93996	4561.74	2234978.71
4.2	Providing and placing cement concrete M10/40 in the foundation and caping of Stone Masonry Wall including compaction,curing,testing etc.	Cum.	18.26886	4866.8	88910.89
4.3	Providing, preapring and istalling formworks for concrete works including necessary supports and removing after completion.	sq.m	12.74	297.5274	3790.50
4.4	Providing course rubble Dry Stone Masonry works all complete as per drawing.	Cum.	4402.63	1828.15	8048668.03
4.5	Providing and laying 20 cm dry stone pitching in causeway all complete as per drawing.	sq.m	640	272.4255	174352.32
4.6	Providing and laying 15 cm dry stone pitching in drain all complete as per drawing.	sq.m	6270	204.319125	1281080.91
4.7	Supply, laying and Construction of Dry Stone Masonry Toe Wall for the retaining and stabilization of spoils	Cum.	3025.0356	817.15	2471907.81
	Sub-Total (4)				**14303689.17**
5	**Gabion Works**				
5.1	Supply, fabrication and assembling of gabion boxes of hexagonal mm mesh type 100mm X 120 mm with mesh wire 10 SWG, selvedge wire 8 SWG Bending wire 12 SWG and Stone filleing in gabions including nd fixing of gabions in position, tying with binding	Cum.	5605	2487.145615	13940451.17
5.2	Supply and place Geotextiles as per design drawings all complete.	sq.m	3036	101.5	308154
	Sub-Total (5)				14248605.17
	Total A (1+2+3+4+5)				**78862700.8**
6	**Bio-Engineering Works**				
6.1	Bio-Engineering works including supply of materials all complete as per drawing, design@ 3% of Total Budget.				2365881.02
6.2	Tree plantation including cost of plants, transportation and bomboo fencing				
	Private forest-798	No.	798	47	37506.00
	Government forest- (2196*25)+10%=60691	No.	60391	47	2838377.00
	Forest Heralu 8 nos for 6 months	6	8	7500	360000
	Total (B) of Sub-total 6				**5601764.02**

	Total C (A+B)				84464464.82
	(O) OVERHEAD @ 15% of C				12669669.72
	Total D (O+C)				**97134134.54**
	(P) Contingencies @ 4% of D				2914024.04
	Total E (D+P)				100048158.6
	(Q) VAT @ 13% of E				13006260.62
	Total F(E+Q)				**113054419.2**

Annex IV: RRRSDP Environmental Checklist

A. GENERAL SOCIO-ECONOMIC SITUATION OF THE INFLUENCE AREA[2]

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

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

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

2. Economic activities/main occupation

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

3. Existing services and infrastructures

S N	Service/Infrastructure Category	Settlement Code											
		A	B	C	D	E	F	G	H	I			
1	**EDUCATION**												
1.1	Campus (no.)/Higher secondary Students (no.)												
1.2	High School (no.)/ Lower secondary Students (no.)												
1.3	Primary School (no.) Students (no.)												
2	**HEALTH**												
2.1	Hospital/health centre (no)Capacity (beds)												
2.2	Health Post (no.) Sub-Health Post (no.)												
3	**COMMUNICATION**												
3.1	Telephone/fax												
3.2	Mobile/CDMA												
3.3	Post Office												
4	**ELECTRICITY SUPPLY**												
4.1	from Micro-hydro												
4.2	from Mini-hydro												
4.3	from National Grid												
4.4	from Solar System												
5	from Diesel Generator												
5	**BUSINESS & COMMERCE**												
5.1	Hotels & Lodges (no.)												
5.2	Restaurant & Tea Stall (no)												
5.3	Grocery Shops (no.)												
5.4	Other Shops (no.)												

S N	Service/Infrastructure Category	Settlement Code											
		A	B	C	D	E	F	G	H	I			
	(e.g. stationery, medicine, tailoring, etc.)												
6	**DRINKING WATER SUPPLY SCHEMES**												
6.1	Gravity-Flow Scheme (capacity)												
6.2	Tube-wells (no.)												
6.3	Spring/Dug-wells (no.)												
7	**IRRIGATION SCHEMES**												
7.1	Surface Irrigation (ha.)												
7.2	Groundwater (ha.)												
8	**OTHER INFRASTRUCTURES**												
8.1	Micro-hydro scheme (no. & capacity.....kw)												
8.2	Water Mill (no.)												
8.3	Suspension Bridges (no.)												
8.4	Wooden Bridges (no.)												
8.5	Other Bridges (specify)												
9	**INDUSTRY**												
9.1	Weaving Industry (no.)												
9.2	Rice & flour Mills (no.)												
9.3	Other Industries (specify)												
10	**FINANCIAL INSTITUTIONS**												
10.1	Bank (no.)												
10.2	Cooperative												
11	COMMUNITY USE												
11.1	Ghat (no.)												
11.2	Hatia/Bazaar (no.)												
11.3	Playground (no.)												
11.4	Community Centre (no.)												
11.5	Others (specify)												

4. Land holding pattern

Land holding Pattern	Settlement Code (HH No.)												Remarks
	A (19)	B (46)	C (45)	D (94)	E (97)	F (78)	G (72)	H (21)	I (18)				
Landless													
< 1 ropani													
1 to 5 ropani													
5 to 10 ropani													
10 to 20 ropani													
20-50 ropani													
> 50 ropani													

8 Food grain availability

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

Source: field survey, 2009

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

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

7. Migration for employment

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

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

Name of settlement:

(b) Seasonal migration in search of work.

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

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

B. DEVELOPMENT POTENTIAL ACCORDING TO SETTLEMENT

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

S. N.	Name of Area	Description of Development Potential
1	Upradang gadhi	Tourism
2		

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

S.N.	Sectors to get direct benefit	Describe how it will benefit
1	Agriculture production	
2		

C. HISTORIC AND CULTURAL RESOURCES WITHIN THE SETTLEMENT

Type of Resource	Name/specification	Affecting activities	Location from project
Temples			
Monuments			

Annex V: Public Notice

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

प्रारम्भिक वातावरणीय परीक्षणसम्बन्धी राय सुझावका लागि सार्वजनिक सूचना

प्रथम पटक प्रकाशित मिति: २०६६/२/१४

ग्रामीण पुनर्निर्माण तथा पुनर्स्थापना आयोजना (RRRSDP) अन्तर्गत एसियाली विकास बैंक, डिफिड तथा स्वीस सरकार विकास निगोगको अनुदान सहयोग तथा ओफिडको ऋण सहयोग तथा नेपाल सरकार, जिल्ला विकास समिति र लाभग्राहीसमेतको लगानीमा निर्माण गर्ने प्रस्ताव गरिएको १. बनकट्टा-बगई ग्रामीण सडक, २. शक्तिखोर दाहेचोक ग्रामीण सडक उपआयोजना प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन कार्यान्वयन गर्ने सिलसिलामा वातावरण संरक्षण नियमावली, २०५४ (पहिलो संशोधन, २०५६) को नियम ७ (२) अनुसार यो सार्वजनिक सूचना प्रकाशित गरिएको छ ।

प्रस्तावकको नाम: जिल्ला विकास समितिको कार्यालय/जिल्ला प्राविधिक कार्यालय, चितवन ।

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

१. बनकट्टा-बगई ग्रामीण सडक अन्तर्गत: गर्दि, बघौडा, कल्याणपुर र अयोध्यापुरी गा.वि.स.हरू
२. शक्तिखोर-दाहेचोक ग्रामीण सडक अन्तर्गत: शक्तिखोर, दाहखानी, बण्डिभञ्ज्याङ, काउले र दाहेचोक गा.वि.स.हरू ।

प्रस्तावको विवरण:

प्रस्तावित १. बनकट्टा-बगई ग्रामीण सडक उपआयोजना गर्दि गा.वि.स. को बनकट्टा रिउखोलाबाट शुरु भई अयोध्यापुरी गा.वि.स.को बगई (रिउ खोला) मा टुङ्गिन्छ । यो सडक बनकट्टा, चन्दपुरी, सैरेखा, गर्दि, धुव, बरखा, बिरौली, सिधुवा, बसन्तपुर, कल्याणपुर, कितनपुर, देवेन्द्रपुर, तिवनपुर, खरकट्टा, कृष्णनगर, बगही, गोविन्दबस्ती, बस्तीहक भएर जान्छ । यस सडकको जम्मा लम्बाई २४ कि.मि. रहेको छ ।

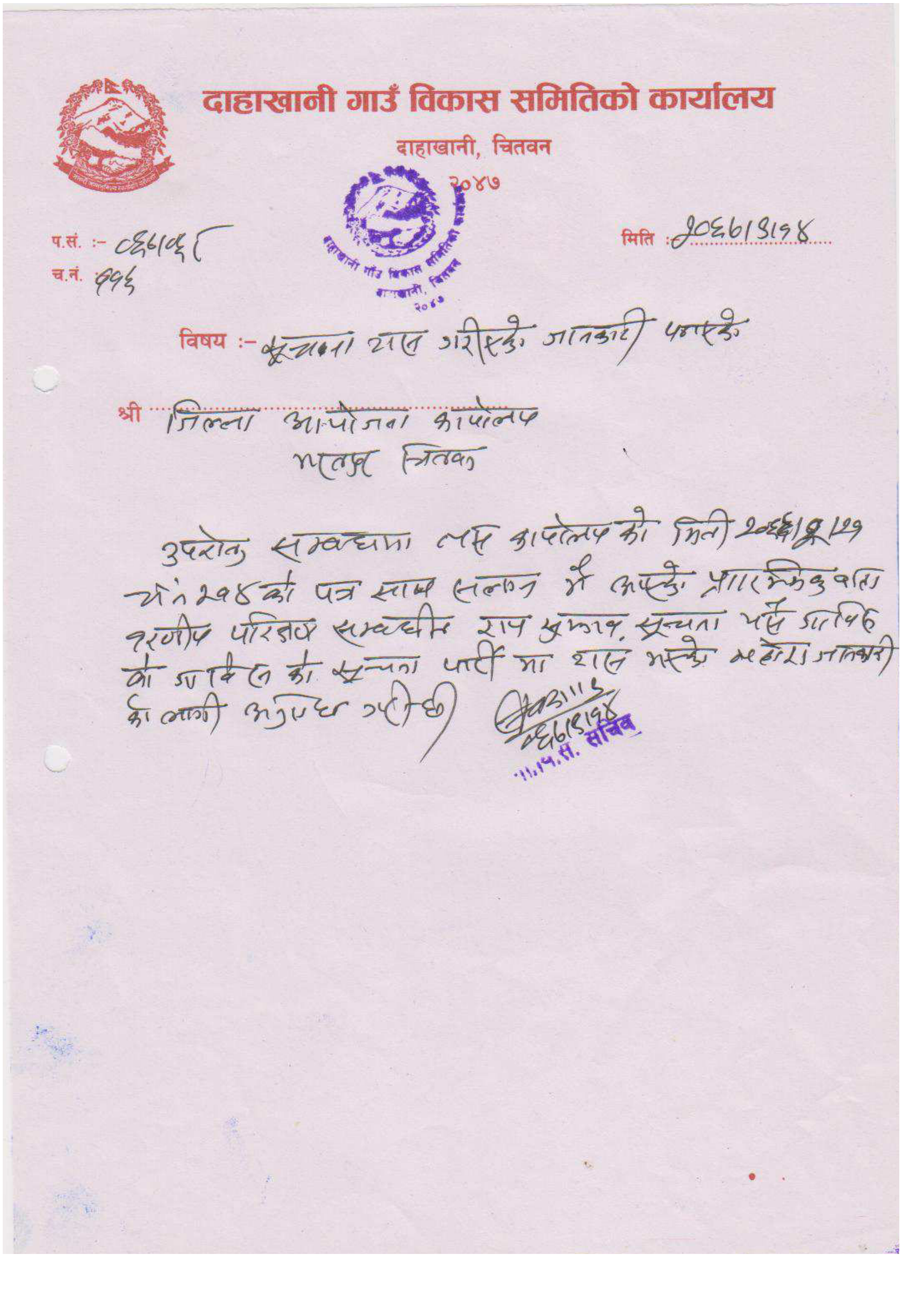
प्रस्तावित २. शक्तिखोर दाहेचोक ग्रामीण सडक उपआयोजना शक्तिखोर गा.वि.स.को नयाँबजार शक्तिखोलाबाट शुरु भई दारेचोक गा.वि.स.को तोलाडमा टुङ्गिन्छ । यो सडक नयाँबजार, समक्याङ, भण्डरधान, कोलार, बतासेडाँडा, गढी, चौतारा, सिस्नेरी, माभाखर्क, पन्यभञ्ज्याङ, दुम्कौम, मान्दाङ (माथाटार), मैतेस, धापागाउँ, बस्नेतगाउँ, हर्पन, बाँसपुर, गुछिबाँझ र तोलाङ भएर जान्छ । यस सडकको जम्मा लम्बाई ३६ कि.मि. रहेको छ ।

उक्त प्रस्तावको कार्यान्वयनबाट वातावरणमा पर्न सक्ने प्रभावको बारेमा सम्बन्धित गा.वि.स., विद्यालय, स्वास्थ्य चौकी, वन उपभोक्ता समिति तथा अन्य सरोकारवाला व्यक्ति वा संस्थाले यो सूचना स्थानीयपत्रमा प्रकाशित भएको मितिले १५ (पन्ध्र) दिनभित्र आफ्ना रायसुझाव पठाई सहयोग गरिदिनुहुन अनुरोध गरिन्छ । साथै यसै प्रयोजनको राय सुझाव स्थानीय पूर्वाधार विकास तथा कृषि सडक विभाग, लाजिम्पाट तथा स्थानीय विकास मन्त्रालय वेबसाइट, काठमाडौंमा पनि पठाउन सकिनेछ ।

राय सुझाव पठाउने ठेगाना:
जिल्ला विकास समितिको कार्यालय, चितवन ।
टेलिफोन नं.: ०५६-५२०१४७
फ्याक्स नं.: ०५६-५२२५५७

जिल्ला प्राविधिक कार्यालय, चितवन
टेलिफोन नं.: ०५६-५२७८२०
फ्याक्स नं.: ०५६-५२७८२०

Annex VI: Deed of Enquiry (Muchulka)



दाहाखानी गाउँ विकास समितिको कार्यालय

दाहाखानी, चितवन

२०४७

प.सं. :- ०६८।०६९

च.नं. ११६

मिति : २०६८।३।१४

विषय :- सूचना टाँस गरिएको जानकारी पठाइएको

श्री जिल्ला आयोजना कार्यालय
भरतपुर चितवन

उपरोक्त सम्बन्धमा त्यस कार्यालयको मिति २०६८।२।२९ च.नं. २९४ को पत्र साथ संलग्न भै आएको प्रारम्भिक वातावरणीय परिक्षण सम्बन्धि राय सुझाव सूचना यस कार्यालयको सूचना पाटीमा टाँस गरेको व्यहोरा जानकारीका लागि अनुरोध गरिन्छ।

०६८।३।१४

गा.वि.स. सचिव

श्री काउले गाउँ विकास समितिको कार्यालय

हात्तीवाङ्, चितवन

२०४७

प.सं. :- ०६४/०६५/६६ मिति :- २०६६/१२/१९

च.नं. :-

विषय :- सूचना टाँस जानकारी पठाएको

श्री जिल्ला आयोजना कार्यालय
भरतपुर चितवन।

प्रस्तुत विषयमा त्यहाँको च.नं. २१४/०६५/०६६ मिति ०६६/१२/२१ को पत्रसाथ संलग्न भै आएको प्रारम्भिक वातावरणीय परीक्षण सम्बन्धि सूचना तथा राय सुझाव सूचना यस गाविस. को मिति ०६६/१२/१६ गते देखि विभिन्न सार्वजनिक स्थलमा पनि प्रस्तुत गरी जानकारी गराईएको र १ प्रति कार्यालयको सूचना पाटीमा टाँस गरिएको व्यहोरा अवगत लागि अनुरोध गरिन्छ।

रामनाथ अधिकारी
(गा.वि.स. सचिव)

राय तथा सुझावहरु

(१) सा.पु. निर्माण तथा पुनःस्थापना आयोजना संचालन भै बाटोमा पर्ने, घरगोठ हटाउनुपरेमा, जग्गा विशेष गरी जमा कटान, पुरानो गर्नुपर्ने भएमा - सार्वजनिक खानेपानी, सिंचाई कुलो भत्किएमा, मुआब्जा तथा क्षति रकम व्यवस्था गरिनु पर्ने।

(२) वन जंगल, जडीबुटी, पानीको संरक्षणमा ध्यान दिनु पर्ने।

(३) आयोजना संचालन निर्माण गर्दा जनताले हक्क खोज्दा भएमा आयोजना निकायले स्थानीय व्यक्तिलाई सहयोग दिनु पर्ने। आपसी समाधान गर्दै आयोजना सम्पन्न गर्न यस गाविस. ले संलग्न हुने।

गाउँ विकास समितिको कार्यालय

चण्डीभञ्ज्याङ्ग, चितवन

प. सं. :
च. नं. : ६६

मिति ०६/६/१५

विषय : सूचना पाई भएको जानकारी

श्री जिल्ला समन्वय कार्यालय
भरतपुर, चितवन ।

उपरोक्त सम्बन्धमा यस कार्यालयमा चि.नं. ४१४ मिति २०५५।२।१७ को पत्रानुसार प्राप्त भएको वातावरणीय प्रभाव सम्बन्धी सूचना यस कार्यालयको सूचना पाटीमा टाँस गरेको व्यहोरा जानकारीको लागी अनुरोध छ ।

०६/६/१५

गा.वि.स. सचिव

नेपाल सरकार
भौतिक योजना तथा निर्माण मन्त्रालय

सडक विभाग

डिभिजन सडक कार्यालय, भरतपुर

चितवन

०५६-५२०५१८

प.सं.:-०६४।०६६
च.नं.:- ४८

मिति २०६४।२।२८

विषय :- सूचना टाँस गरेको जानकारी पठाएको बारे ।

श्री जिल्ला प्राविधिक कार्यालय
भरतपुर, चितवन ।

प्रस्तुत विषयमा त्यस कार्यालयको प.सं.०६३।०६६ मिति २०६४।२।१९ च.नं.२०० को सूचना प्राप्त भई व्यहोरा अवगत भयो । सो सूचना यस कार्यालयको सूचना पाटीमा आजैका मितिमा टाँस गरिएको व्यहोरा अनुरोध छ ।

....
(राजेन्द्र राज शर्मा)
डिभिजन प्रमुख
डिभिजन प्रमुख

फोन नं. ०५६-५२०११

नेपाल सरकार
भूमि सुधार तथा व्यवस्था मन्त्रालय
भूमि सुधार तथा व्यवस्थापन विभाग

मालपोत कार्यालय चितवन

भरतपुर, चितवन

पत्र संख्या:
चलानी नं: ६५०
पत्र संख्या र मिति:

मिति २०६६।२।२५

विषय: जानकारी पठाइएको।

श्री जिल्ला प्राविधिक कार्यालय
जिल्ला आयोजना कार्यालय भरतपुर, चितवन।

उपर्युक्त विषयमा यस कार्यालयको च.नं. २१६, मिति २०६६।०१।०६ को सूचनासहितको पत्र प्राप्त भई महोदय अवगत भएको र सो सम्बन्धमा प्राप्त सूचना यस कार्यालयको सूचना पाटीमा टाँस गरी सो महोदय जानकारीको लागि अनुरोध छ।

नेपाल सरकार

उद्योग मन्त्रालय

घरेलु तथा साना उद्योग विभाग

घरेलु तथा साना उद्योग कार्यालय

भरतपुर, चितवन

फोन: फ्याक्स: ०५६-५२०७३०

पत्र संख्या:

चलानी नम्बर: 2220

मिति: २०६६।३।२२

विषय: जानकारी सम्बन्धमा।

श्री जिल्ला प्रशासन कार्यालय

चितवन।

उपरोक्त विषयमा त्यस कार्यालयको च.नं. ४२८ मिति २०६६।३।१४ को पत्र सम्बन्धमा सार्वजनिक सूचना अधिकारीको रूपमा सूचना अधिकारी तोक्नु गरिएको व्यहोरा जानकारी गराइन्छ।

१६।३।२०६६

प्र. प्रमुख उद्योग अधिकृत

नेपाल सरकार
सूचना तथा संचार मन्त्रालय
हुलाक सेवा विभाग

फोन नं. ०५६-५२०७७
हुलाक कोड नं. ४४२००

चितवन जिल्ला हुलाक कार्यालय

प.सं.:

च.नं.: ७३५

उक्त पत्र संख्या र मिति :

मिति: २०६६।०२।१४

विषय : सुचना फाँरमको जानकारी पठाइएको ।

श्री जिल्ला प्राविधिक कार्यालय
चितवन ।

प्रस्तुत विषयमा त्यहाँको च.नं. २११ मिति ०६६।२।१२ को पत्र साथ प्राप्त सुचना फारम कार्यालयको सूचना पाटीमा टाँस गरिएको व्यहोरा अनुरोध छ ।

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निमित्त वरिष्ठ हुलाक अधिकृत

Annex VII: Name of the Organizations

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

SN	Name or Organization	Address	Remarks
1	Office of Village Development Committee, Shaktikhor	Shaktikhor	
2	Office of Village Development Committee,Dahakhani	Dahakhani	
3	Office of Village Development Committee, Kaule	Kaule	
4.	Office of Village Development Committee, Chandibhanjyang	Chandibhanjyang	
5	Post office, Bharatpur	Bharatpur	
6.	Department of road, Bharatpur	Bharatpur	

Source: Field Survey, July, 2009

Annex VIII: List of persons consulted

List of persons consulted

S.N.	Name	Address	Occupation
1	Yam Bahadur Thapa	DFO, Bharatpur	Forest Officer
2	Laxman Prasad Paudel	DADO, Bharatpur	Senior agriculture officer
3	Arjun Prasad Khanal	WDCDO, Bharatpur	Officer
Shaktikhor VDC			
1	Arjun Pangane	Shaktikhor	VDC Secretary
2	Kusum Bdr.Parja	Shaktikhor	Social Worker
3	Santi Thapa Magar	Shaktikhor	Teacher
Dahakhani VDC			
1	Amar Bdr.Gurung	Dahakhani	Business
2	Tej Bdr.Gurung	Dahakhani	Social Worker
Kaule VDC			
1	Gopi B.K.	Kaule	Teacher
2	Purna Bdr.Gurung	Kaule	Social Worker
3	Kumar Gurung	Kaule	Social Worker
Chandibhanjyang VDC			
1	Man Bdr.Gurung	Chandibhanjyang	Social Worker
2	Suk Bdr.Gurung	Chandibhanjyang	Social Worker
3	Hira Bdr. Gurung	Chandibhanjyang	Social Worker
	Darechowk VDC		
1	Indra Bdr.Gurung	Darechowk	Teacher
2	Sushil Gurung	Darechowk	Social Worker
3	Nilkantha Lamichhane	Darechowk	VDC Secretary

Source: Field Survey, July, 2009

Annex IX: Summary of meeting minutes with local people

Annex X: Recommendation Letters and Suggestions from VDCs

Annex XI
XI a. Distribution of households by occupation
XI b. Summary of public services & infrastructures
XI c. Land holding pattern of settlements within ZoI
XI d. Number of households belonging to different food security category

Annex XI a: Distribution of households by occupation

VDCs Name	Agriculture & Livestock	Labour & Porter	Business/ Commerce	Cottage Industry	Employees
Dahakhani	520	177	120	75	320
Kauke	980	1217	350	50	78
Chandibhanjyang	920	1002	150	20	95
Total	**2420**	**2396**	**620**	**145**	**493**
Average (%)	39.48	39.45	10.21	2.39	8.12

Source: Field Survey, July, 2009

Annex XI b: Summary of public services and infrastructures according to settlement

VDCs Name/	School (no)	Health post (no)	Post office (no.)	Communication(no) CDMA/Mobile	Hydro power (no)	Solar (no)	Shops/lodge (no)	Water supply (no)	Irrigation (kulo)	Mill (no)	Bridge (no)	Community organization (no)	Fin. Institution (no)	Community Centre	Industry (no)
Dahakhani	1	1	1	15	-	15	3	1			-		-		
Kauke	3	1	1	13	-	23	2	1		1	2		-		
Chandibhanjyang	1	1	1	20	-	12	2	-			-		-		
Total	**5**	**3**	**3**	**48**	**0**	**50**	**7**	**2**		**1**	**2**		**-**		

Source: Field Survey, July, 2009

Annex XI c: Land holding pattern of settlements within ZoI

VDCs Name	Number of HH						
	Land less	<one ropani	1-5 ropani	5-10 ropani	10-20 ropani	20-50 ropani	Total
Kaule	307	34	147	183	112	28	811
Chandibhanjyang	37	17	52	93	143	61	403
Dahakhani	4	3	41	15	5		68
Total	**348**	**54**	**240**	**291**	**260**	**89**	**1282**
Percentage	27.15	4.21	18.72	22.70	20.28	6.94	**100**

Source: Field Survey, July, 2009

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

VDCs Name	Surplus	Sufficient for whole year	Sufficient for 3-9 months	Sufficient for three months	Less than three months	Total
Kaule		159	190	333	129	811
Chandibhanjyang		99	104	120	80	403

Dahakhani		5	4	40	19	68
Total		**263**	**298**	**493**	**228**	**1282**
Percentage		20.51	23.24	38.46	17.78	**100**

Source: Field Survey, July, 2009

Annex XII: Detail of Drainage Structures

a. Side Drainage

Earthen Drain

Chainage		Length (m)
From	To	
09+340.00	09+793.38	453.38
10+241.25	10+277.22	35.97
10+312.27	10+324.89	12.62
10+490.16	10+593.64	103.48
11+160.00	11+200.00	40.00
11+420.00	11+500.00	80.00
11+540.00	12+160.00	620.00
12+200.00	12+320.00	120.00
12+354.54	12+560.85	206.31
12+584.83	12+604.88	20.05
12+880.00	12+910.52	30.52
13+200.00	13+378.32	178.32
13+640.00	13+720.00	80.00
13+920.00	14+060.00	140.00
14+280.00	14+334.00	54.00
14+540.00	15+380.00	840.00
15+579.30	15+660.00	80.70
15+807.84	15+891.82	83.98
16+200.00	16+280.00	80.00
17+020.00	17+140.00	120.00
17+500.00	17+580.00	80.00
17+640.00	17+740.00	100.00
17+780.00	17+845.17	65.17
18+232.67	18+820.00	587.33
18+980.00	19+443.64	463.64
19+530.72	19+820.00	289.28
19+880.00	20+020.08	140.08
20+220.00	20+320.00	100.00
20+367.37	20+980.00	612.63
21+120.00	21+180.00	60.00
21+289.71	21+300.00	10.29
21+316.40	21+380.00	63.60
21+814.58	22+000.00	185.42
22+237.44	22+380.00	142.56
22+413.77	22+620.00	206.23
22+760.00	22+900.00	140.00
22+960.00	23+180.00	220.00
23+224.72	23+920.00	695.28
23+960.00	24+080.00	120.00
24+160.00	24+420.00	260.00
24+453.81	24+460.00	6.19
24+497.45	24+540.00	42.55
24+560.00	25+220.00	660.00
25+340.00	25+380.00	40.00
25+480.00	25+622.87	142.87
25+680.00	25+738.41	58.41
25+780.00	25+900.00	120.00
26+840.00	27+040.00	200.00
27+120.00	27+280.00	160.00
27+340.00	27+400.00	60.00
27+440.00	28+040.00	600.00
28+080.00	28+260.00	180.00
28+300.00	28+600.00	300.00
28+800.00	28+940.00	140.00
29+140.00	29+520.00	380.00

Dry stone Drain i=>8%

Chainage		Length (m)
From	To	
9+100	9+120	20.00
9+260	9+300	40.00
9+360	9+460	100.00
10+000	10+030	30.00
10+340	10+360	20.00
10+580	10+630	50.00
10+710	10+740	30.00
11+160	11+200	40.00
11+460	12+000	540.00
12+200	12+400	200.00
12+460	12+610	150.00
12+860	12+900	40.00
13+270	13+400	130.00
13+640	13+690	50.00
13+950	14+060	110.00
14+260	14+350	90.00
14+500	14+860	360.00
15+110	15+400	290.00
15+810	15+880	70.00
16+220	16+280	60.00
17+510	17+970	460.00
18+230	18+500	270.00
18+600	18+820	220.00
19+160	19+450	290.00
19+520	20+080	560.00
20+220	20+500	280.00
20+600	20+800	200.00
20+900	21+200	300.00
21+280	21+400	120.00
21+900	21+960	60.00
22+210	22+600	390.00
22+760	23+300	540.00
23+440	23+800	360.00
24+000	24+340	340.00
24+520	25+380	860.00
25+480	25+900	420.00
26+820	27+500	680.00
27+560	27+700	140.00
27+760	28+180	420.00

28+400	29+520	1120.00

b. Cross Drainage

Causeway

Chainage		Length(m)
From	To	
On floor		
9+076	9+084	8.00
10+033	10+041	8.00
10+696	10+704	8.00
10+953	10+961	8.00
11+018	11+026	8.00
11+298	11+310	12.00
12+618	12+626	8.00
13+620	13+628	8.00
14+340	14+352	12.00
17+179	17+187	8.00
17+751	17+763	12.00
22+742	22+750	8.00
25+660	25+672	12.00
27+539	27+547	8.00

Annex XIII: Toe Wall for Spoil Disposal

Chainage: 9+500 to 29+420

Supply, laying and Construction of Dry Stone Masonry Toe Wall for the retaining spoils

S.N.	Chainage		Length	Height	Area	Quantity	Remarks
	From	To	m	(m.)	sq.m.	cu.m.	
1	09+500.00	09+530.00	30.00	1.50	1.294	38.82	
2	09+540.00	09+570.00	30.00	1.50	1.294	38.82	
3	09+700.00	09+750.00	50.00	1.50	1.294	64.70	
4	10+241.25	10+290.00	48.75	1.50	1.294	63.08	
5	10+520.00	10+560.00	40.00	1.50	1.294	51.76	
6	11+260.00	11+300.00	40.00	1.50	1.294	51.76	
7	12+060.00	12+100.00	40.00	1.50	1.294	51.76	
8	12+407.36	12+450.00	42.64	1.50	1.294	55.18	
9	12+500.00	12+550.00	50.00	1.50	1.294	64.70	
10	12+780.00	12+810.00	30.00	1.50	1.294	38.82	
11	12+881.18	12+920.00	38.82	1.50	1.294	50.23	
12	13+060.00	13+100.00	40.00	1.50	1.294	51.76	
13	14+860.00	14+900.00	40.00	1.50	1.294	51.76	
14	15+045.21	15+070.00	24.79	1.50	1.294	32.08	
15	15+100.00	15+140.00	40.00	1.50	1.294	51.76	
16	15+163.60	15+200.00	36.40	1.50	1.294	47.10	
17	15+241.19	15+300.00	58.81	1.50	1.294	76.10	
18	17+380.00	17+400.00	20.00	1.50	1.294	25.88	
19	17+540.18	17+580.00	39.82	1.50	1.294	51.53	
20	18+502.18	18+550.00	47.82	1.50	1.294	61.88	
21	18+597.88	18+610.00	12.12	1.50	1.294	15.68	
22	19+036.28	19+070.00	33.72	1.50	1.294	43.63	
23	19+160.00	19+200.00	40.00	1.50	1.294	51.76	
24	19+660.00	19+760.00	100.00	1.50	1.294	129.40	
25	20+000.00	20+060.00	60.00	1.50	1.294	77.64	
26	20+367.37	20+400.00	32.63	1.50	1.294	42.22	
27	20+600.00	20+660.00	60.00	1.50	1.294	77.64	
28	20+660.00	20+705.00	45.00	1.50	1.294	58.23	
29	20+816.63	20+900.00	83.37	1.50	1.294	107.88	
30	21+682.78	21+710.00	27.22	1.50	1.294	35.22	
31	21+814.58	21+840.00	25.42	1.50	1.294	32.89	
32	22+413.77	22+450.00	36.23	1.50	1.294	46.88	
33	22+480.00	22+520.00	40.00	1.50	1.294	51.76	
34	22+555.06	22+600.00	44.94	1.50	1.294	58.15	
35	22+760.00	22+790.00	30.00	1.50	1.294	38.82	
36	23+000.00	23+030.00	30.00	1.50	1.294	38.82	
37	23+180.00	23+220.00	40.00	1.50	1.294	51.76	
38	23+540.00	23+600.00	60.00	1.50	1.294	77.64	
39	23+880.00	23+910.00	30.00	1.50	1.294	38.82	
40	24+010.76	24+070.00	59.24	1.50	1.294	76.66	
41	24+500.00	24+590.00	90.00	1.50	1.294	116.46	
42	24+640.00	24+690.00	50.00	1.50	1.294	64.70	
43	24+740.00	24+810.00	70.00	1.50	1.294	90.58	
44	25+480.00	25+540.00	60.00	1.50	1.294	77.64	
45	25+940.00	25+960.00	20.00	1.50	1.294	25.88	
46	26+300.00	26+330.00	30.00	1.50	1.294	38.82	
47	27+180.00	27+230.00	50.00	1.50	1.294	64.70	
48	27+360.00	27+400.00	40.00	1.50	1.294	51.76	
49	28+580.00	28+620.00	40.00	1.50	1.294	51.76	
50	28+820.00	28+850.00	30.00	1.50	1.294	38.82	
51	29+040.00	29+100.00	60.00	1.50	1.294	77.64	
52	29+300.00	29+420.00	120.00	1.50	1.294	155.28	
			2,337.74			**3,025.04**	

Annex XIV: Structure for Slope Stabilization

Dry Retaining Wall

Chainage		Length
From	To	(m)
09+060.00	09+082.00	22.00
09+411.00	09+418.00	7.00
09+430.00	09+440.00	10.00
09+720.00	09+731.00	11.00
09+907.88	09+934.88	27.00
10+136.36	10+152.36	16.00
10+428.05	10+452.05	24.00
10+640.00	10+645.00	5.00
10+720.00	10+738.00	16.00
10+800.00	10+815.00	15.00
10+900.00	10+912.00	12.00
10+980.00	10+995.00	15.00
11+040.00	11+045.00	5.00
12+040.00	12+050.00	10.00
12+165.46	12+179.00	13.54
12+248.90	12+257.90	9.00
12+474.80	12+479.80	5.00
12+546.26	12+557.26	11.00
12+680.00	12+685.00	5.00
12+814.08	12+819.08	5.00
12+937.88	12+948.88	11.00
13+040.00	13+050.00	10.00
13+080.00	13+086.00	6.00
13+122.00	13+127.00	5.00
13+140.00	13+146.00	6.00
13+200.00	13+209.00	9.00
13+378.92	13+390.92	12.00
13+420.00	13+431.00	11.00
13+740.00	13+745.00	5.00
13+840.00	13+858.00	18.00
13+900.00	13+910.00	10.00
14+140.00	14+155.00	15.00
14+160.00	14+165.00	5.00
14+500.00	14+511.00	11.00
14+580.00	14+587.00	7.00
15+244.39	15+260.00	15.61
15+360.00	15+373.00	13.00
15+400.00	15+410.00	10.00
16+240.00	16+252.00	12.00
16+347.06	16+354.06	7.00
17+343.00	17+352.00	9.00
17+660.00	17+670.00	10.00
18+140.00	18+152.00	12.00
18+280.00	18+287.00	7.00
18+369.80	18+374.80	5.00
18+393.32	18+406.32	13.00
18+479.23	18+485.23	6.00
18+720.00	18+732.00	12.00
18+820.00	18+835.00	15.00
18+880.00	18+910.00	30.00
18+960.00	18+970.00	10.00
19+000.00	19+015.00	15.00
19+480.00	19+492.00	12.00
19+580.00	19+592.00	12.00
19+920.00	19+929.00	9.00
20+033.33	20+042.33	9.00
20+080.00	20+090.00	10.00
20+160.00	20+175.00	15.00
20+220.00	20+231.00	11.00
20+500.00	20+512.00	12.00
21+067.35	21+078.00	10.65
21+300.00	21+308.00	8.00
21+500.00	21+515.00	15.00
21+520.00	21+525.00	5.00
21+560.00	21+578.00	18.00
21+620.00	21+635.00	15.00
21+740.00	21+755.00	15.00
21+860.00	21+868.00	8.00
22+160.00	22+166.00	6.00
22+220.00	22+235.00	15.00
22+280.00	22+285.00	5.00
22+328.03	22+333.03	5.00
22+387.55	22+395.00	7.45
22+440.00	22+449.00	9.00
22+710.44	22+719.00	8.56
22+940.00	22+958.00	18.00
23+080.00	23+095.00	15.00
23+179.48	23+184.48	5.00
23+224.72	23+229.72	5.00
23+440.00	23+445.00	5.00
23+450.00	23+459.00	9.00
23+480.00	23+495.00	15.00
23+660.00	23+665.00	5.00
23+703.67	23+712.67	9.00
23+860.00	23+870.00	10.00
23+920.00	23+938.00	18.00
24+220.00	24+227.00	7.00
24+440.00	24+450.00	10.00
24+480.00	24+495.00	15.00
24+555.94	24+577.94	22.00
25+320.00	25+335.00	15.00
25+640.00	25+650.00	10.00
25+680.00	25+693.00	13.00
25+738.41	25+746.00	7.59
25+760.00	25+775.00	15.00
26+120.00	26+125.00	5.00
26+380.00	26+393.00	13.00
26+620.00	26+626.00	6.00
26+780.00	26+790.00	10.00
26+960.00	26+975.00	15.00
27+060.00	27+078.00	18.00
27+100.00	27+115.00	15.00
27+160.00	27+176.00	16.00
27+300.00	27+309.00	9.00
27+480.00	27+498.00	18.00
27+500.00	27+522.00	22.00
27+740.00	27+748.00	8.00
28+200.00	28+212.00	12.00
28+280.00	28+295.00	15.00
28+500.00	28+506.00	6.00
28+620.00	28+635.00	15.00
28+640.00	28+648.00	8.00
28+700.00	28+720.00	20.00
28+720.00	28+730.00	10.00
28+920.00	28+938.00	18.00
28+980.00	29+000.00	20.00
29+000.00	29+018.00	18.00
29+060.00	29+075.00	15.00
		1,367.40

Gabion Wall

Chainage		Length (m)
From	To	
09+174.00	09+182.00	8.00
09+180.00	09+196.00	16.00
09+238.09	09+246.09	8.00
10+020.00	10+030.00	10.00
10+030.00	10+038.00	8.00
11+520.00	11+536.00	16.00
11+560.00	11+576.00	16.00
12+340.00	12+348.00	8.00
12+347.00	12+355.00	8.00
12+580.00	12+588.00	8.00
12+720.00	12+728.00	8.00
12+726.00	12+736.00	10.00
12+980.00	12+994.00	14.00
12+995.36	13+003.36	8.00
13+006.85	13+018.85	12.00
13+120.00	13+128.00	8.00
13+180.00	13+196.00	16.00
13+314.92	13+322.92	8.00
14+560.00	14+578.00	18.00
15+460.00	15+476.00	16.00
16+870.46	16+880.46	10.00
16+940.00	16+956.00	16.00
16+956.19	16+964.19	8.00
16+960.00	16+970.00	10.00
17+320.00	17+338.00	18.00
17+340.00	17+348.00	8.00
17+960.00	17+968.00	8.00
18+600.00	18+620.00	20.00
18+660.00	18+680.00	20.00
18+680.00	18+696.00	16.00
19+840.00	19+860.00	20.00
19+860.00	19+876.00	16.00
20+040.00	20+052.00	12.00
20+060.00	20+076.00	16.00
20+075.25	20+083.25	8.00
20+340.00	20+350.00	10.00
20+350.66	20+360.66	10.00
20+360.00	20+368.00	8.00
20+498.66	20+506.66	8.00
20+980.00	20+996.00	16.00
21+020.00	21+036.00	16.00
21+087.00	21+101.00	14.00
21+100.00	21+116.00	16.00
21+280.00	21+288.00	8.00
21+306.58	21+314.58	8.00
21+380.00	21+388.00	8.00
21+383.53	21+397.53	14.00
21+400.00	21+420.00	20.00
21+660.00	21+676.00	16.00
21+720.00	21+736.00	16.00
22+400.00	22+410.00	10.00
22+540.00	22+556.00	16.00
22+816.36	22+824.36	8.00
23+200.00	23+216.00	16.00
23+220.00	23+228.00	8.00
23+672.31	23+680.31	8.00
23+937.11	23+945.11	8.00
23+940.00	23+956.00	16.00
24+093.56	24+101.56	8.00
24+100.00	24+120.00	20.00
25+740.00	25+754.00	14.00
25+753.18	25+761.18	8.00
26+140.00	26+156.00	16.00
27+200.00	27+216.00	16.00
28+060.00	28+076.00	16.00
28+680.00	28+692.00	12.00

Cement mortar Masonry Wall

Chainage		Length (m)
From	To	
10+380.00	10+402.00	22.00
12+180.00	12+199.06	19.06
22+355.00	22+367.00	12.00
22+895.00	22+905.00	10.00
22+150.00	22+159.00	9.00

Annex XV: List of trees to be removed

Annex XVI: Details of Affected Structures

Summary of resettlement plan cost

Item		Unit	Total loss	Amount(NRs)	Remarks
1. DIRECT COSTS					
1.1	Compensation for private land	(sqm)	18834.62	150750.00	
1.2	Compensation for structures	No	3	105273.8	2 residentail house and 1 sed
1.3	Dismantling Costs for Structure	(sqm)	3	15000	Lumsum
1.4	Compensation for Standing Crops			686947.78	Lumsum
	Sub-Total			**957971.58**	
2. INDIRECT COSTS					
2.1	Movement Allowance	LS:	2 HHs	6000.00	
2.2	Rental Stipend	LS:	3 HHs	12000.00	
2.3	Deed Transfer Assistance	LS:	37 HHs	100000.00	Including NRs. 18500.00@transportation and daily allowance.
2.5	Official Deed Transfer fees and others	LS	43 plots	100000.00	
2.6	Appreciation Program for APs	LS:	37	50000.00	Lumsum
	Sub Total			**268000.00**	
3	Livelihood Enhancement Skills Training (LEST)	**LS:**		**259,000.00**	For APs
	Sub total (2+3)			527000.00	
4	Contingency (5%)			**26350**	heading (2+3)
	Grand Total NRs.			**1511321.58**	heading (1+2+3+4)

Details of Affected private structures

Annex XVII: Photographs