Environment and Social Impact Assessment and Environment and Social Management Plan of Improvement of Talchowk-BegnasRoad-P23.i

Pokhara Metropolitan City

TABLE OF CONTENTS

Acronym	
BoQ	Bill of Quantity
CBOs	Community Based Organizations
CBS	Central Bureau of Statistics
DIZ	Direct Influence Zone
DPR	Detailed Project Report
DTMP	District Transport Master Plan
DTO	District Transport Office
DUDBC	Department of Urban Development & Building Construction
EA	Environmental Assessment
EHS	Environment, Health and Safety
EPR	Environmental Protection Rule
ESIA	Environmental Impact Assessment
ESMP	Environmental and Social Management Plan
FGD	Focus Group Discussion
FR	Feasibility Report
GAP	Gender Action Plan
HIV AIDS	Human Immunodeficiency Virus Infection and Acquired Immune Deficiency Syndrome
HR	Human Resources
IDA	International Development Association
IEE	Initial Environmental Examination
IIZ	Indirect Influence Zone
ILO	International Labor Organization
IP	Indigenous People
ISR	Implementation Status Review
KII	Key Informant Interview
NGO	Non-Governmental Organization
NUGIP	Nepal Urban Governance and Infrastructure Project
OP	Operational Policy
OP/BP	Operational Policy/Bank Policy
PAP	Project Affected Person
PCO	Project Coordination Office
PCU	Passenger Car Unit
PIM	Project Implementation Manual
PIU	Project Implementation Unit
PMC	Pokhara Metropolitan City
PPE	Personal Protective Equipment
RAP	Resettlement Action Plan
RoW	Right of Way
SHE	Safety, Health and Environment
STD	Sexually Transmitted Disease
TOR	Terms of Reference
ULG	Urban Local Governments

List of Appendix

List of Table

List of Figures

CHAPTER 1: INTRODUCTION

1.1. Project description

Nepal has recently transitioned from a unitary to a federal government system, comprised of three tiers of government with seven provinces and 753 local governments for which new legislation, institutions, and administrative procedures are being formalized as constitutionally prescribed. To enable the federal implementation process and to support Urban Local Governments (ULGs) in the efficient provision of assigned service delivery responsibilities in the context of rapid urbanization, the proposed Nepal Urban Governance and Infrastructure Project (NUGIP), with support from the World Bank (WB), aims to address two main challenges under the new federal context: (i) limited institutional systems and capacities of ULGs; and (ii) critical gaps in core municipal services and infrastructure.

The development objective of NUGIP is to expand municipal infrastructure and strengthen institutional and financial systems in participating ULGs in Nepal. NUGIP comprises three components. The first component is investment support for strategic city-wide municipal infrastructure development and local/regional economic development projects (International Development Association (IDA) allocation of USD 130 million). This component will provide financial resources to participating ULGs for financing critical infrastructure requirements, focusing on improving access and quality of core municipal services such as drinking water supply, solid waste management, municipal roads, storm water drainage and street lights. The second component is the capacity building and technical support for improved institutional and financial systems (indicative IDA allocation: USD 10 million). This component would provide capacity building support and technical assistance to participating ULGs for targeted improvements in institutional and financial systems at the local level. The third component is the project management, co-ordination and monitoring (indicative IDA allocation: USD 10 million): This component would provide the technical support to the Ministry of Urban Development (MoUD) at the federal level, and the participating ULGs at the local level, for project implementation, coordination, monitoring and reporting.

1.2. Project objectives

The following are the key results of the project objectives.

- Improved access to core municipal services
    - ✓ solid waste management
    - ✓ municipal roads and drainage
    - ✓ wastewater management
- Developed and implemented own revenue source plans by the participating municipalities
- Improved access to urban living conditions

The present study is on a sub-project located in PMC. The sub-project was chosen based on its economic value addition and urban development requirements. The selection of the sub-projects is based on technical, environmental, social and financial sustainability.

1.3. Project details

The project area for this proposed sub-project is located in Pokhara Metropolitian City (PMC) of Kaski District, Province No 4. The sub-project involves capacity augmentation and rehabilitation of a3.2 kilometer section of the Talchowk-Begnas road commencing from Talchowk junction on Prithvi Highway to the KhudiKhola Bridge. It passes through flat lands with gentle slopes and irrigated canals in many places. Thisroad currently has a single-lane operational paved carriageway and does not segregate slow-moving vehicles and pedestrians. The road section requires capacity augmentation and pavement reconstruction to maintain acceptable levels of service. The 30-metre Right of Way (RoW) of the road was acquired in 1977 and the compensation for the land was provided in 1980 by the Government of Nepal (GoN). At present, the road alignment including the RoW is under the jurisdiction of the PMC.

A long list of sub-projects was prepared based on the information obtained from the Stakeholder Consultative Workshop (SCW) meeting for PMC. Amongst them, the "Improvement of Talchowk-Begnas Road" sub-project was one of the infrastructure sub-projects selected with high priority for the first year investment, and a feasibility study was carried out and forwarded for developing a detailed project report (DPR) of the subproject. The importance of this sub-project is to help ensure that the road can adapt to growing traffic volume as well as to improve the livelihood of the locality and tourist attraction to Begnas Lake.

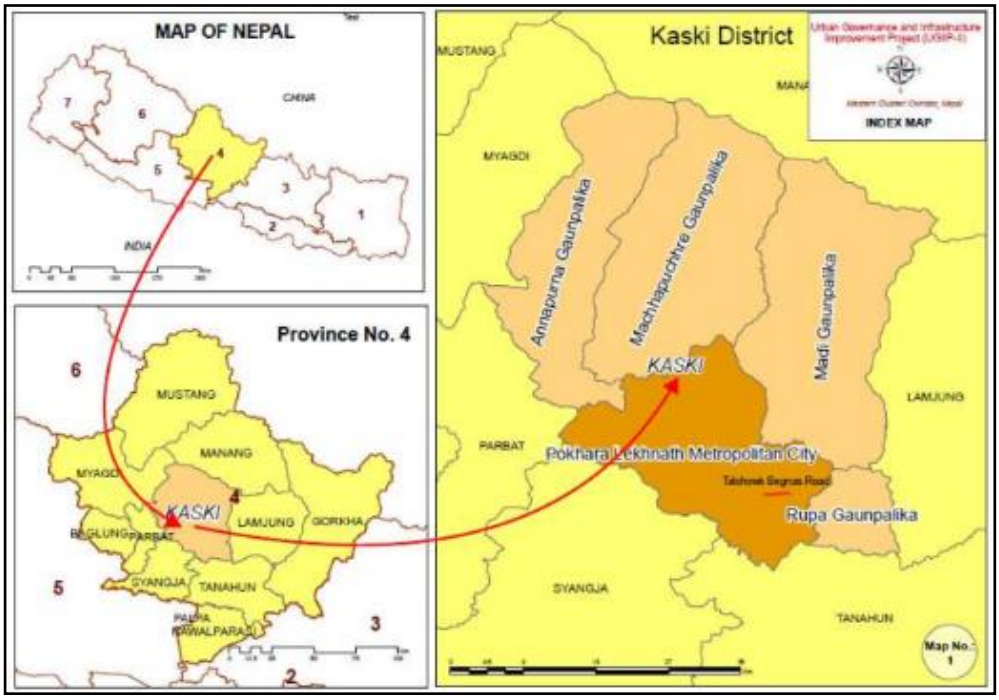


Figure 1–1. Project location map

Table 1-1. Existing and Proposed Road Characteristics

SN	Description	Existing Scenario	Proposed Scheme
1	Length of Road	3.2 km	3.284km
2	Right of Way (RoW)	30 m	30 m
3	Traffic (Passenger Car Unit, or PCU)	5,885 PCU (traffic count in 2019at CH 0+400)	29,006 PCU (traffic count in 2041 at CH0+400)
4	Carriageway	4.5 m	14 m (4 lanes,divided carriageway)
5	Pavement type	Flexible pavement with 80 mm BT and 250 mm gravel layer.	Flexiblepavement as per IRC: 37-2018
6	Median/Landscape or Green land areas	No median but Grass on shoulderportion	1.5 m on median from 0+000 to 3+284 (3.284 km length). 1.0 m Green zone beyond parking area.
8	Cycle track	Nil	1.5 m Provided from Ch 0+00 to 3+284 on LHS and RHS of road.
9	Drain cum footpath	Earthen drain at few stretches of varying width 1 to 2.5 m. No dedicated footpath	2 m RCC drain cum interlock tile footpath on LHS and RHS of the road.
10	Cross drainage Structures	16 slab culverts and 2 minor bridges (CH 1+930 and 3+220) in poor condition.	10 Culverts and 5 minor Bridges (CH 0+880, 1+760, 1+980, 3+070 and 3+260) 3 culverts (ch 0+980,ch 2+005 and ch 2+085) disused as no natural water stream exists at these locations
11	Embankment/ Cutting	Approximately 1.5 m above groundlevel from CH 0+200 to CH 3+284.	Approximately 1.5 m above ground level from CH 0+200 to CH 3+284.
12	Protection Works	Nil	Retaining wall/slope protection measures as per requirement
13	Traffic signs/signage and road marking	Nil	Provided all along the road to ensure maximum safety to pedestrian and vehicular traffic.
14	Road furniture (street lights, delineators, etc.)	Nil	Provided all along the road
15	Utility	All wires and cable are hanging above ground and are in unmanaged condition	Dedicated utility duct is provided throughout the section - 1
16	Trees and plants	Unmanaged plantation	As per requirement along the alignment.

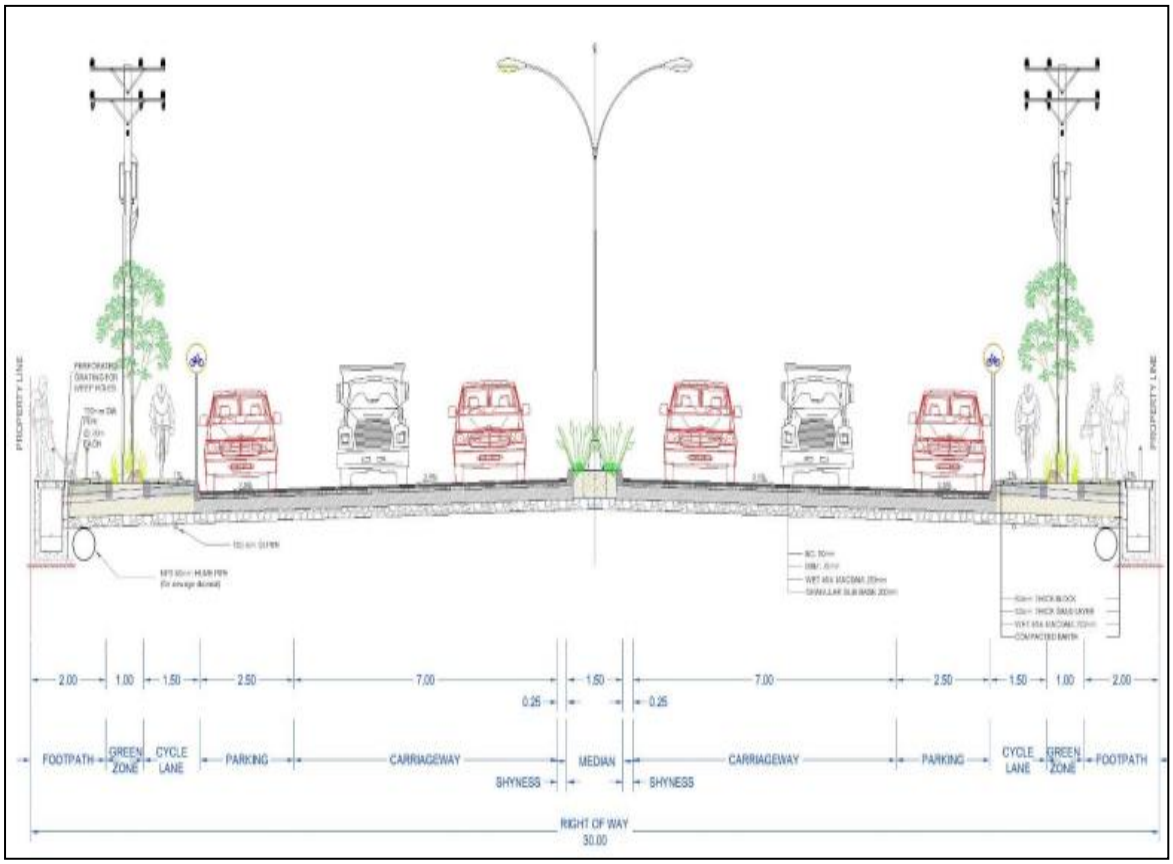


Figure 1–2. Schematic of 4 Lanes

Carriageway

Based on the traffic volume studied during the design, the carriagewaywidth forTalchowk-Begnas Road of 4 lanes (3.5 m each) has been provided.

Kerb

Barrier kerbs are designed to discourage vehicles leaving the pavement. Mountable kerbs are provided at median.

Median

A median of 1.5m in width is provided between the carriageways of 7 m, as per the provision in Nepal Urban road standard. The median has been raised to 0.15 m from the road surface for the segregation of traffic from the carriageway. The median is discontinued at significant branch roads, minor intersections and major intersections.

Selection of Catchment Area / Zoning of Project

The hydrological catchment area of the project road covers about 38 sq.km including various lakes. The catchment area map has been prepared by considering topographical sheets, based on topography and water shed lines. The highest geological altitude at upstream of the catchment area is about 1,440m at Kalikasthan-Deumadi area, whereas, lowest geological altitude is about 685m at Begnas Lake area.

For the designing of run-off at various major drainage crossing, the overall catchment area has been subdivided into various sub-catchment area by demarking in corresponding topographical map with clear stream lines. The sub-catchment area consists of various inflowing steams which concentrate toward the concerned cross drainage (Figure 1–5).

Parking Lane

Provision for parking is provided throughout the alignment at required locations as per the survey investigation for parking. A width of 2.5 m for parallel parking has been provided. Separate parking provision for cars and motorcycles has been provided.

Cycle Lane

A separate cycle lane of 1.5m in width is provided throughout the alignment on both sides of the road. The provision of a cycle lane helps to reduce the traffic congestion, andincrease the safety of cycle commuters.

Electrical Lights and Bollard Lights

One hundred and forty-five electrical lights poles are proposed to be installed in the median throughout the alignment at interval of 20 m in the median. Meanwhile, 986 bollard lights are proposed to be installed in the footpath and cycle lane area to guide vehicular traffic from not entering into these areas. The provision of electrical lights and bollard lights increase the visibility of road, increasing the driving efficiency, and helping to reduce the number of traffic accidents. Besides, these lights also add to the aesthetic value of the road.

Road crossings

Zebra crossings, in combination with cycle crossings, have been provided at locations with high pedestrian crossing areas as well as settlement areas. A total of 12 such crossings have been provided along the alignment. In addition to that, two branch roads at 0+300 and 1+080 with large widths have also been provided with zebra crossing.

1.4. Pokhara Metropolitan City

The adjacent Lekhnath Municipality merged with Pokhara Municipality in May 2017 forming the present dayPMC as the largest city in terms of the area it occupies in Nepal. It is located at the geographical coordinates of 28°15′50″N and 83°58′20″E. It is also the capital of Gandaki Province, and is the headquarters of Kaski District comprising of 33 wards. Pokhara is one of the largest valleys in Midhills of Nepal. The PMC is a famous tourist destination in Nepal. The total area occupied by the city is 465 sq km. The city is surrounded by Annapurna, Machhapuchre, MadiandRupaGaupalikas[1]of

[1]Gaupalika is a rural municipality

KaskiDistrict, and other districts, namelyParbat, Syangja and Tanahu. The PMC is a strategically located tourist destination in relation to other tourist locations of Western Nepal.

1.5. Physiography

The PMC is located 200 km west of the capital city Kathmandu at an altitude varying from 827 meters in the south to 1,740 meters in the north in the Midhills region of Nepal. The Pokhara valley is formed of Seti gandaki River which is the tributary to the Trishuli River. The Gandaki River originates in Annapurna massif of north-central Himalayas of Nepal. The Setigandaki River flows through the Pokhara valley. Geomorphologically, river benches are obvious of the Setigandaki in Pokhara. The Machhapuchre (6993m) is close by the city. The PMC is also noted with high geological relief, river escarpments, karst topography and glacial lakes (e.g. Phewa and Begnas lakes). Despite the high relief within short geological formation, the PMC is built on broad flat plain.

1.6. Temperature and climate

Climatically, the PMC falls into a humid subtropical climate regime. Temperatures range from 25°C to 35°C in the summer, and from -2°C to 15°C in the winter. The winter season is marked by thick fog clouds at the lower elevation. The variation in the precipitation between the driest and wettest months is 870 mm in a year.

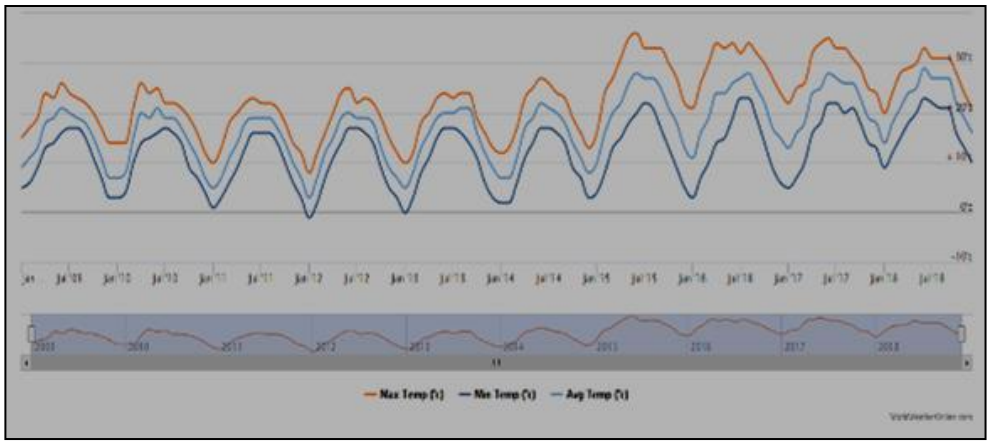


Figure 1–3. Temperature regime of Pokhara[2]

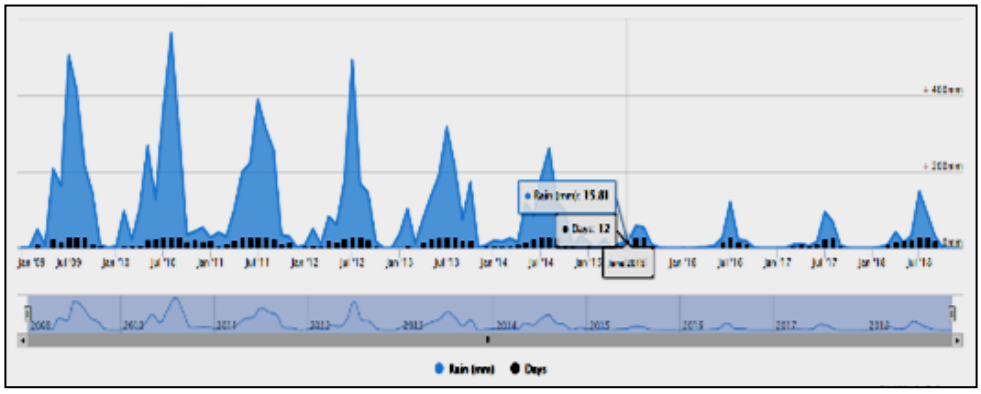


Figure 1–4. Average rainfall in Pokhara3

1.7. Water resources

The PMC is rich in water resources with several rivers such as Seti, Bijayapur, Kahu, Kali, Yamdi, Fusre, Buloudi and Herpan. The PMC is dotted with lakes (i.e.: Phewa, Begnas, Rupa, Maidi, Khaste and Gunde and Niureni, Dipang and Kamal referred often as Pokhari or ponds. The topographic map also shows drainage pattern in the area.

[2]https://www.worldweatheronline.com/pokhara-weather-averages/np.aspx

[3]Ibid.

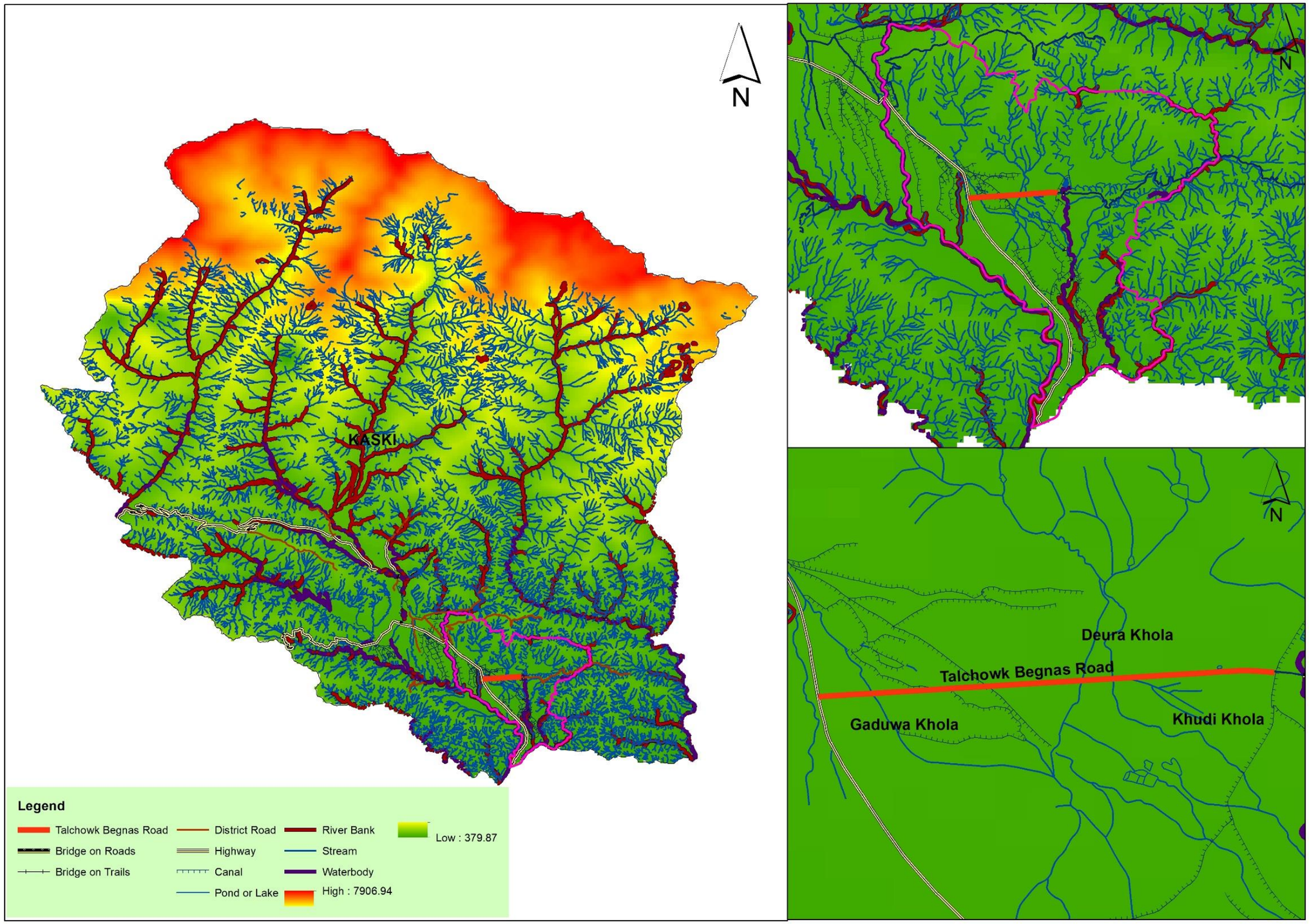


Figure 1–5. Drainage pattern of project districts and project site

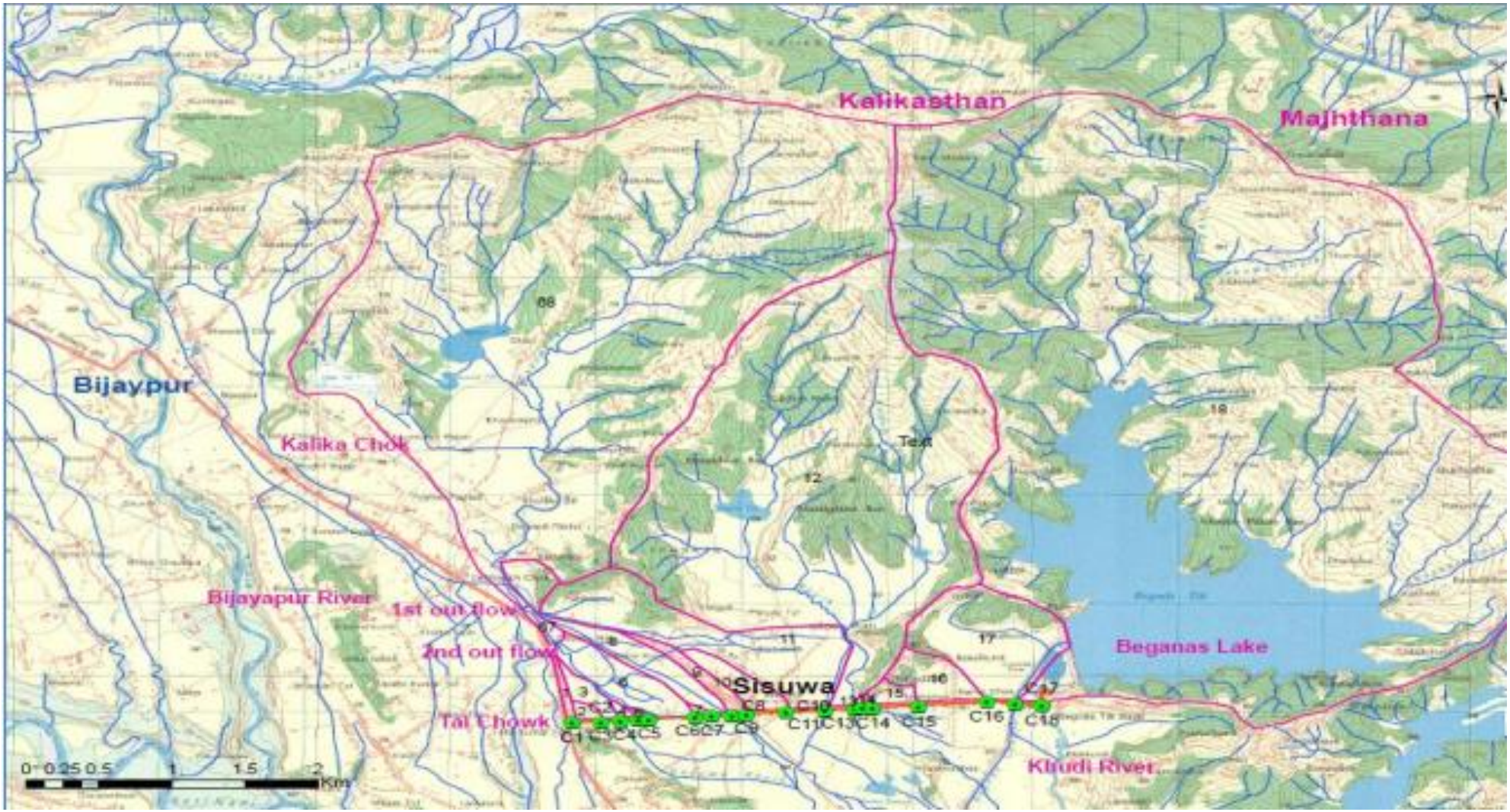


Figure 1–6. Culverts in the RoW

The nearest rain gauge station is in Pokhara Airport which is 8.7 km aerial distance from Talchowk. .The precipitation in Kaski District is rainfall with an average annual rainfall in the district is 12,500mm to 3,000mm. The rainfall occurs mainly in the monsoon between the months of May to September.

1.8. Catchment Area

The hydrological catchment area of the sub-project road covers about 38 sq.km including various lakes. The highest geological altitude at upstream of the catchment area is about 1,440m at Kalikasthan-Deumadi area, whereas, lowest geological altitude is about 685m at Begnas Lake area. For the designing of run-off at various major drainage crossing, the overall catchment area has been subdivided into various sub-catchment area by demarking in corresponding topographical map with clear stream lines. The sub-catchment area consists of various inflowing steams which concentrate toward the concerned cross drainage. Table 1-2 provides the hydrology of cross drainage structures and streams

Table 1-2. Hydrology of Cross Drainage Structures and Streams

Catchment Points	Chainage	Existing structure	Area of Catchment (sqkm)	Discharge (m3/s)	Rainfall intensity (mm/hr: I50)	Additional Discharge from Road side drain (m3/s)	Total estimation discharge (m3/s)	Existing Clear Depth (m)	Proposed Clear Depth (m)	Existing Flow Depth (m)	Proposed Depth of Flow (m)	Remarks
C1	0+020	Slab Culvert: road crossing	0.032	1.52	258.09	0.00	1.52	1.141	1.141	0.841	0.841	Culvert
C3	0+350	Slab Culvert: u/s with narrow irrigation canal	0.1	2.84	255.86	0.30	3.13	1.114	1.114	0.814	0.814	Culvert
C4	0+480	Slab Culvert: u/s with narrow irrigation canal from Gaduwa Khola	0.014	0.54	284.25	0.12	0.66	0.959	0.959	0.659	0.659	Culvert
C5	0+550	Slab Culvert: u/s with narrow irrigation canal from Gaduwa Khola	0.024	1.09	300.79	0.06	1.16	1.744	1.744	1.444	1.444	Culvert
C6	0+880	Slab Culvert: Gaduwa Khola	1.806	42.95	197.22	0.17	43.11	1.384	1.6	0.884	1.1	Bridge
C8	1+120	Slab Culvert: 1~2m wide irrigation canal	0.375	12.42	240.13	0.22	12.63	0.761	1.25	0.361	0.85	Culvert

C9	1+220	Slab Culvert: road crossing at Sisuwa junction	0.099	4.10	242.36	0.09	4.19	0.774	0.8	0.474	0.5	Culvert
C10	1+490	Slab Culvert: road crossing	0.141	4.62	254.35	0.24	4.87	0.3	0.949	0.649	0.649	Culvert
C11	1+760	Slab Culvert: 3~4 wide irrigation canal from Deuralik hola	2.911	85.13	226.97	0.24	85.37	1.134	1.7	0.534	1.1	Bridge
C12	1+980	Slab Culvert: Road crossing of Deurali river	4.367	113.74	226.97	0.20	113.94	1.619	1.8	1.019	1.2	Bridge
C14	2+085	Slab Culvert: road crossing	0.009	0.38	304.89	0.10	0.48	1.211	1.211	0.911	0.911	Culvert
C15	2+400	Slab Culvert: road crossing	0.056	2.37	304.89	0.29	2.66	1.327	1.327	1.027	1.027	Culvert
C16	2+880	Slab Culvert: road crossing	0.197	7.35	298.32	0.44	7.79	7.026	7.026	6.726	6.726	Culvert
C17	3+070	Slab Culvert: Irrigation Canal from Beganas Lake	3.901	102.79	210.61	0.17	102.97	0.5	2.986	2.486	2.486	Bridge
C18	3+260	Bridge: KhudiKhola from Beganas lake	12.778	257.16	210.61	0.17	257.34	3.119	3.119	2.219	2.219	Bridge

Source: DPR 2019

1.9. Topography and geology

The Pokharavalley is covered by fan deposits of 4 to 5 km owing to aggradations from the Annapurna massif.Figure 1–7oblique view of the Pokhara region shows the fan-shaped Pokhara Formation ponding several lakes and tributaries and 2012 rock-ice avalanche and Figure 1–8 geology of the region including project site and shows the shaded relief map from 15masl (meter above sea level).[4]

[4]Ibid.

Figure 1–7. Topography and geological setting of Pokhara

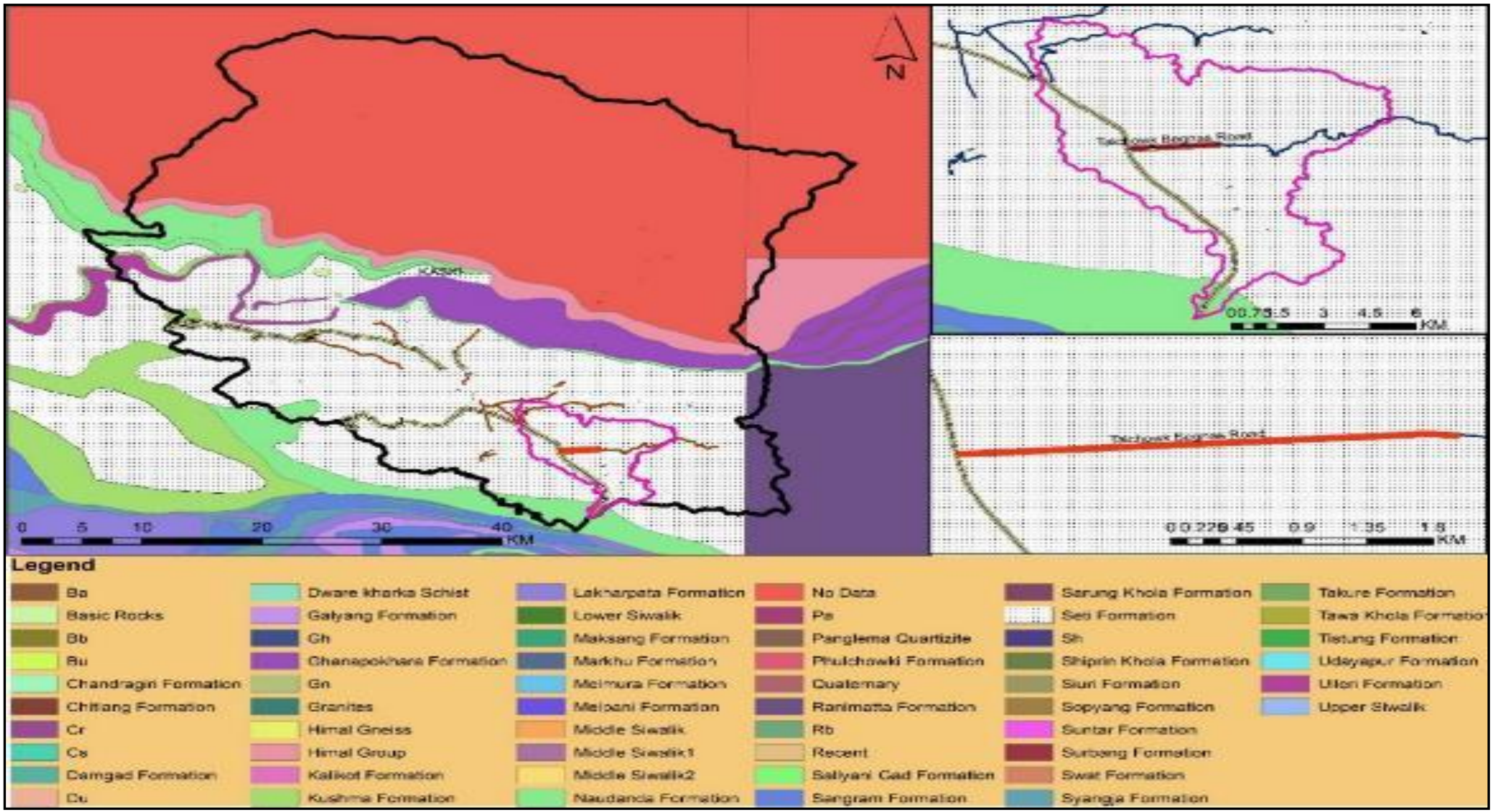


Figure 1–8. Geological characteristics of Pokhara valley including PMC

The California Bearing Ratio (CBR) value of soil was found to be 6 % at Talchowk, indicating solid stability for road construction. Generally the terrain of the road alignment is flat however some sections of road may require soil filling of earth materials in the undulated section. There are several cross drainage in the road alignment.

1.10. Agriculture

There is limited availability of land for agriculture in the core metropolitan area due to congested settlement covering most of the agricultural land. Traditional farming is practiced in most of the areas of the PMC. However, paddy, maize, wheat, millet and barley are the major cereal agricultural products. As a substitute for the subsistence agriculture, they are shifting production from cereal crop to high value crops as vegetable and jute farming as seasonal and non-seasonal as well as horticulture. Varieties of vegetables farming includes radish, green leafy vegetables, gourd, marrow, pumpkin tomato, potato, cauliflower, cabbage, carrots, and fruit farming includes orange, lemon, banana, mango and papaya. Similarly, spices grown are ginger, garlic, pepper and onion. Hemja alone produces about 9,700 metric tons of potatoes. Most of the agriculture fields have good access to irrigation facilities. Fisheries are also being done in the lakes. Besides, plenty of livestock farming including cow, buffalo, pig, goat and poultry are being undertaken.

1.11. Industry

PMC, compared to other parts of the country, has had significant development in industrial sector. A salient feature of industrial sector is the success of tourism industry. The PMC, as the tourism capital of the country, has 3,190 tourism-oriented trades, contributing to thriving business and market-oriented productions. The highest number of product-oriented industries counts to at least 3,512 registered in Domestic and Small Industry Development Committee. Industries producing noodles, biscuits, chocolates, Bhujia, are famous for exports.

1.12. Trade & Services

As PMC is the largest metropolitan city in Nepal, there are many markets in the city area of this Metropolitan City. Trades of the different types of the goods occur in the city area of the Metropolitan City. There are about 10,635 shops registered in Domestic and Small Industry Development Committee. These shops are categorized as product oriented, tourist oriented, service oriented, agriculture and forest-oriented. General stores with daily needs like clothing, foods are the major business trade established in the Metropolitan City while schools, colleges, hospital, health post, banks, cooperatives, NGOs are the major service affiliated business of Pokhara. There are two 5-star hotels and approximately 305 other hotels that include five 3-star, fifteen 2-star and non-star hotels in the city. Also, a number of small hotels, lodges and restaurants have been opened in the Metropolitan City targeting local people and foreign tourists. Vehicle showrooms, furniture showrooms, engineering

consultancy services etc. are also located in different parts of the Metropolitan City which show the urbanization trend of the area.

Since the 1990s Pokhara has experienced rapid urbanization. As a result, service-sector industries have increasingly contributed to the local economy overtaking the traditional agriculture. An effect of urbanization is seen in high real estate prices, which are amongst the highest in the country. The major contributors to the economy of Pokhara are manufacturing and service sector including tourism; agriculture and the foreign and domestic remittances. Tourism, service sector and manufacturing contribute approximately 58% to the economy, remittances about 20% and agriculture nearly 16%.

1.13. Land use/Land cover

The PMC is rapidly urbanizing with population growth. The subsequent impacts are felt in the increasing multiple hazards and risks because of unsustainable land use practices because of haphazard built-up areas development (Rimal et. al. 2015[5]).Rimal (2015) indicates that urban cover of the Seti watershed has increased by 60 percent from 24.03 km² in 1990 to 54.20 km² in 2013, which has led to conversion of 29.19 km² of cultivated land in the built environment. TheFigure 1–9shows the level of urbanization over little more than two decades.

[5] "Growing City and Rapid Land Use Transition: Assessing Multiple Hazards and Risks in the Pokhara Valley, Nepal" by Bhagawat Rimal and et. al in Land 2015, 4, 957-978; doi:10.3390/land4040957

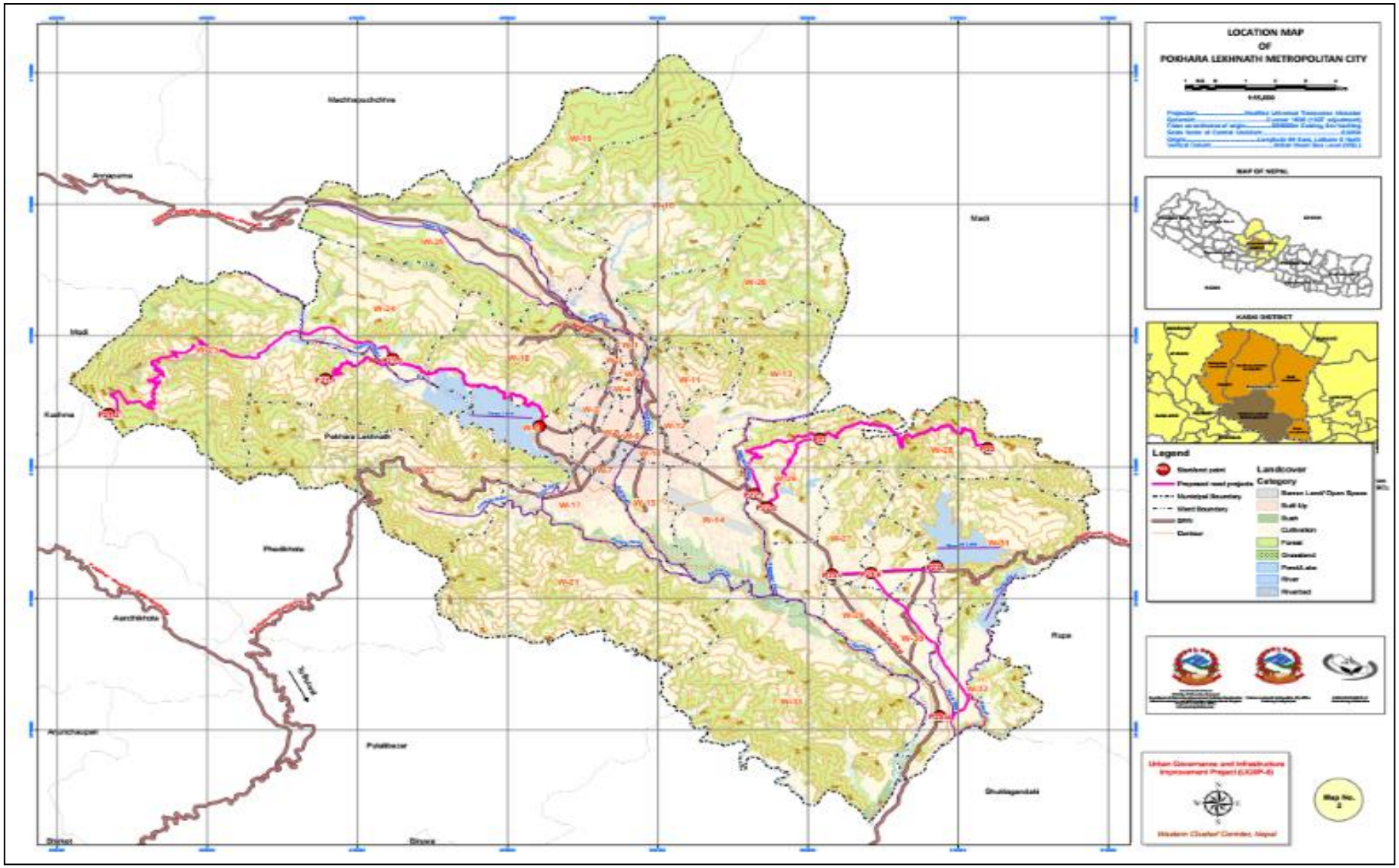


Figure 1–9. Level of Urbanization of PMC

1.14. ESIA Methodology

The study is undertaken following an overarching approach for Environmental and Social Impact Assessment (ESIA) and subsequently developing an Environmental and Social Management Plan (ESMP), following guidance provided by the Environmental and Social Management Framework (ESMF). A consultative and participatory process wasadopted in conducting the ESIA and preparing the ESMP for the sub-project. The strategies to undertake the ESIA and preparing the ESMP required both qualitative and quantitative information gathering at both primary and secondary levels. The project team at Project Coordination Office (PCO) of Department of Urban Development and Building Construction (DUDBC), the World Bank, different national and local level stakeholders involved in NUGIP and the interaction with the community and related stakeholders on technical, environmental and social issues and consultants' observation of the intervention sites were undertaken. The ESIA/ESMP is in compliance with the GoN and the World Bank's policies and builds on the recent approaches and incorporates learning and previous experiences. The stepwise process in the preparation of ESIA/ESMP includes the following activities.

1. Reviewed scope of works in the Terms of Reference (TOR) for the ESIA/ESMP, Project Implementation Manual (PIM), feasibility reports of the sub-project
2. Reviewed applicable laws of the GoN and the WB policies.
3. Consulted project team, PCO, stakeholders, WB and experts.
4. Reviewed the DPR of the Talchowk-Begnas project, consulted PCO and DPR consultants.
5. Followed checklist for environmental and social data of DPR.
6. Prepared safeguard (including resettlement) checklists prior to the field visit.
7. Visited sub-project site and consulted municipality office, district level.
8. Conducted consultations, Focus Group Discussions (FGDs), Key Informant Interviews (KII), with several stakeholders including police, land revenue office (LRO), schools, health posts, clubs, mother groups and Community Forest User Groups (CFUGs).
9. Collected primary data for physical, biological, and socio economic baseline information. For socio economic information, 20% households' survey was carried. Instrumentationmonitoringwereperformed for air, water, and noise. For biological assessment, vegetation survey was carried out.

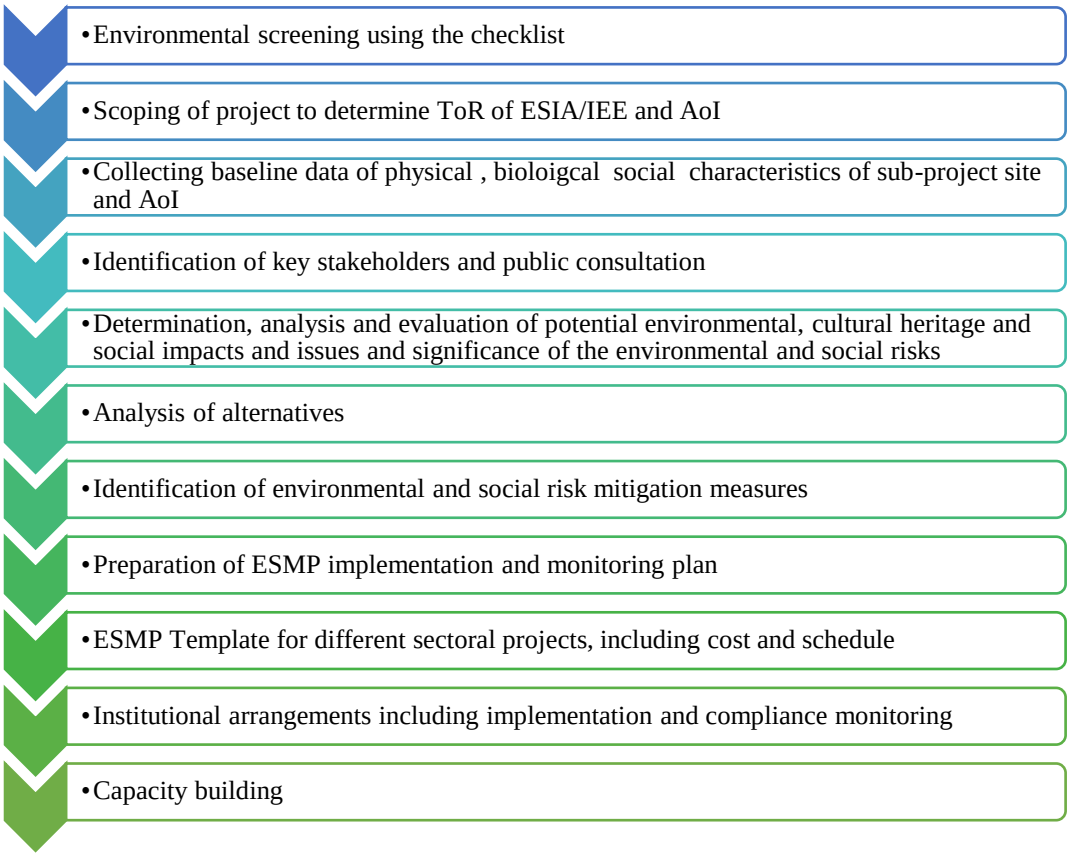


Figure 1–10. ESIA Process for all sub-projects

Baseline study

Baseline data was collected for both environmental and social aspects in conducting the ESIA and was used in developing the ESMP, based on the ESMF (**Error! Reference source not found.**).

Stakeholder Analysis

A stakeholder analysis was carried out during the ESIA stage. The following activities were carried out during the analysis:

1. Identified stakeholders of the sub-project
2. Consulted stakeholders
3. Incorporated feedback from the stakeholders into project design
4. Incorporated recommendations and mitigation measures during construction and operation
5. Involved stakeholders in stages of project implementation for ownership.

Gender assessment and GBV status analysis

The following activities were undertaken for gender assessment.

1. Review of the legal policy framework of GoN
2. Review of the set-up, capacity, and constrains within relevant institutions
3. Analyze the culture amongst women of different cultural groups
4. Analyze potential positive and negative impacts on women

5. Analyze barriers, challenges, and constrains for the participation of women
6. Identify potential entry points and interventions to enhance gender sensitivity
7. Recommend project planning and implementation teams in addressing gender context

Assessment of potential environmental and social impacts

1. Likely Beneficial Impacts
2. Likely Adverse Impacts

Environmental and social screening

Every sub-project under the NUGIP is subject to an environmental and social screening process. The screening process establishes the level of environmental and social assessment required. The screening process intends to identify relevant possible environmental and social concerns as well as suggest any further investigation and assessment as necessary. Primarily, the environmental and social screening exercise is undertaken to determine the key environmental and social issues/concerns and the nature and magnitude of the potential impacts that are likely to arise on account of the proposed sub-projects. The fundamental environmental and social issues to be identified were determined by the type, location, sensitivity and scale of the municipal investment and sub-grant intervention. The results were used to determine the need for detailed assessment and theextent and type of environmental and social assessment. The results of screening are provided in table 4.1

World Bank Safeguard Policies

The WB classifies projects into one of the four categories, depending upon the type of project or specific components which have inherent environmental risks, location proximity to environmentally, socially and culturally important areas, sensitivity, potential impacts which may be irreversible or environment sensitive to changes, the scale and extent of environmental and social issues of the project, and the nature and magnitude of its potential environmental impacts.

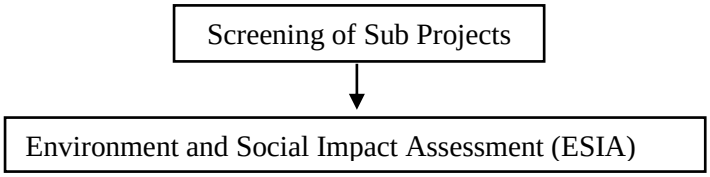


Figure 1–11. Flow of preparation of safeguard instruments for the project

Revision and modification of ESMP

The ESIA and ESMP is an ‘up-to-date’ document that will be publicly disclosed and disseminated. Unexpected situations in the sub-project or component design would therefore be assessed and appropriate management measures will be incorporated by updating the ESMP. Such revisions will also cover any modifications introduced in the design of sub-project at any stage of the project. Also, based

on the experience of application and implementation of such a framework, provisions and procedures would be updated as applicable and when required with due process.

Alternative analysis

Alternative analysis is considered as an integral part of an ESIA study, which involves an examination of alternative ways of achieving the objectives of a proposed sub-project. The alternative analysis for a roads project includes the development of an alternative transportation network for the enhancement of safe and faster connectivity of the rural area to market centers and there by improve the economic conditions of the people living in the zone of influence. The alternatives, in this regard, could be alternative road alignment and alternative design. The various possible alternatives are discussed in the following sub-sectors:

a. No-project alternative

This alternative does not allow the implementation of the proposal. The no-projectoption will conserve some of the environmental adverse impacts at the expense of low level social and physical development..

b. Option for Alternative alignment and Rational for selection of present alignment

Talchowk-Begnas Road is a feeder road with a RoW of 30 m. It has the strategic importance in terms of rural linkage. This road continues joining further to the Rupa Rural Municipality. The complete road is the most direct and shortest route to Begnas Lake, one of the major tourist destination points. There are no other feeder roads within the vicinity of this road. There area number of other municipal roads coming and meeting as artilleries to this main Talchowk-Begnas road, which have RoW of 15 m and cannot be an alternative solution to this road. Also, there is not enough space on either side of adjoining roads for widening as part of improvement, and without widening they cannot meet the 20 years of expected traffic demand. Hence, there no other viable improvement option to this alignment.

c. Alternative route and Construction Approach

The proposed road is already in operation and the project is related to its up-gradation. Hence the alternative to this route is ruled out. The construction approach follows both the manual labor and mechanized equipment.

Traffic Management during construction

An alternative road will be used during the upgrading of the Pokhara-Begnas road. The PMC will consult with the local people regarding the selection of alternative route prior the beginning of the construction. Please refer to the ESMP.

Raw materials to be used

The physical resources consumed for the upgrading of the proposed road will mainly include soil, sand for filling purpose, aggregates for road sub surface, boulders for gabions, stone for dry masonry wall and sand. The stones and fine aggregates such assandhave to be transported from a licensed quarry.

CHAPTER 2: ENVIRONMENT AND SOCIO-ECONOMIC BASELINE

2.1. Background

A detailed ESIA was carried out as per the GoN's national laws and the WB safeguard policies, and Environmental Health and Safety (EHS) Guidelines, and covering any separate or additional requirements as per national laws. Further, the project's Detailed Design Report (August 2019) presents the results ofatopographical survey of all stations to be rehabilitated, including the existing conditions of the following physical environment:

• Carriageway, shoulder, footpath, median, existing and potential parking spots, land useandroad side drain location including its width, depth, type / shape, material ofconstruction etc.

• Tree details such as location, name of species, religious/social significance and girth.Details of road side vegetation and forest such as location, size, type etc.

• Location and details of over ground utilities like electrical and telecom lines, poles,junction boxes, transformers etc.

• Location and details of underground services like electrical cables, telephone cables,cable chambers, water pipelines (material of construction and diameter), valve chamberswith sizes, sewerage lines (material of construction and diameter) and manholes withsizes.

• Location and details of any water bodies, natural drainage / canals. Relevantdocumentation for ownership / jurisdiction to be provided if they fall under Dept. ofIrrigation.

• Details of cross drainage structures like culverts and bridges mentioning type, number ofspans, length, width, deck / crown level, invert level, formation level and road level.

• Highest Flood Level (HFL) data of natural drains, ponds, lakes and rivers along the road.

• Location of gates / doors, height of boundary walls, and fencing of the existing housesand / or commercial establishments along with ramp.

• Location and RoW of connected roads (Min 50mtrs beyond the RoW of the existing road).

• Location of existing signage boards or advertisements boards.

• Location and area of existing as well as potential Bus / Auto stands / commercial vehiclesetc.

• Existing landscaping features, landmarks, road furniture etc.

• Important landmarks like religious structures, schools, hospitals, cooperatives and otherimportant establishments along the road.

• Location of vendors and vending zones, street parking and type of parking.

2.2. Physical environment

Topography

The Talchowk-Begnas road is located in the PMC of Kaski District, Province No 4 The PMC does not have aTransport Master Plan. As the road is under the authority of the PMC, it is called a municipal road. The road lies in the plain terrain. The altitude variation in the road alignment is between 682 m to 723 m from sea level. The road is extended from east to west and almost like a straight line that passes by the settlements and agriculture land.

Plain Topography near Talchowk including Green Space

Road Near Sisuwa at 0+900

Plain Topography near Sisuwa

Road in Talchowk at starting Area

Figure 2–1. Pictures showing the Topography

Geology and soil

Geologically, the sub-project site lies in the lesser Himalaya having Seti formation, which comprises of grey greenish grey gritty chlorite muscovite sandstones gritstones with conglomerates and white massive quartzite. The sub-project site is not on the geological faultlines. The soil composition of the road area is dominated by sandy soil. The shows the geological pattern of project site.

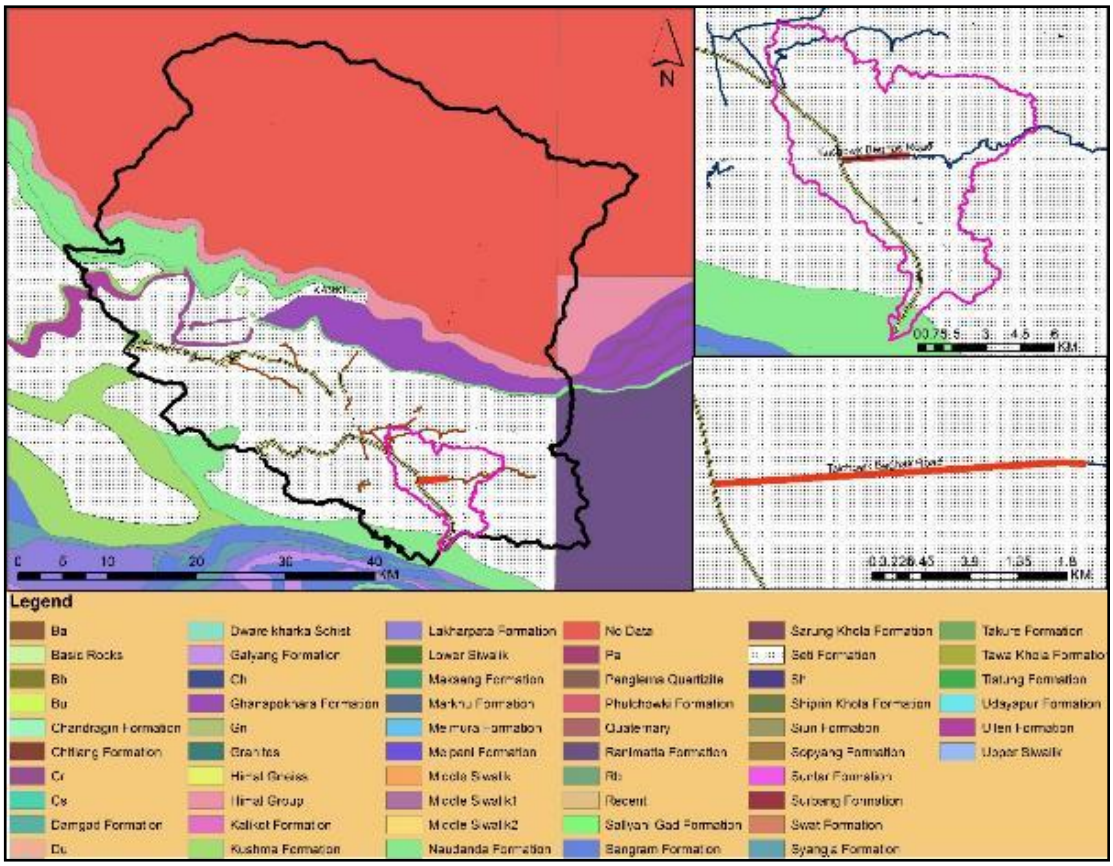


Figure 2–2. Geology of Project Site

2.2.1. Hydrology and meteorology[6]

The major rivers in the hydrological drainage basin of the Kaski District are the Seti, MadiandBijayapurriverswith its tributaries. The nearby project is within Begnas Lake, Deura River, Aduwa River, BagadiRiver. Only DeuraandGaduwarivers crosses the road alignment and present Khudi River bridge is the end point of the project. Since, the sub-project area is situated in valley plain at down hills of various mountainous areas such as Lamjung Himalaya, Annapurna and Machhapuchre peaks and various lakes within its catchment area, the surface drainage system is very important to be considered while designing, upgrading or re-constructing the proposed road section. The map below **Error! R eference source not found.**shows the drainage pattern of the project sites.

[6]Feasibility Study of Report Improvement of Talchowk Begnas Road (P23.i) Pokhara Metropolitan City .

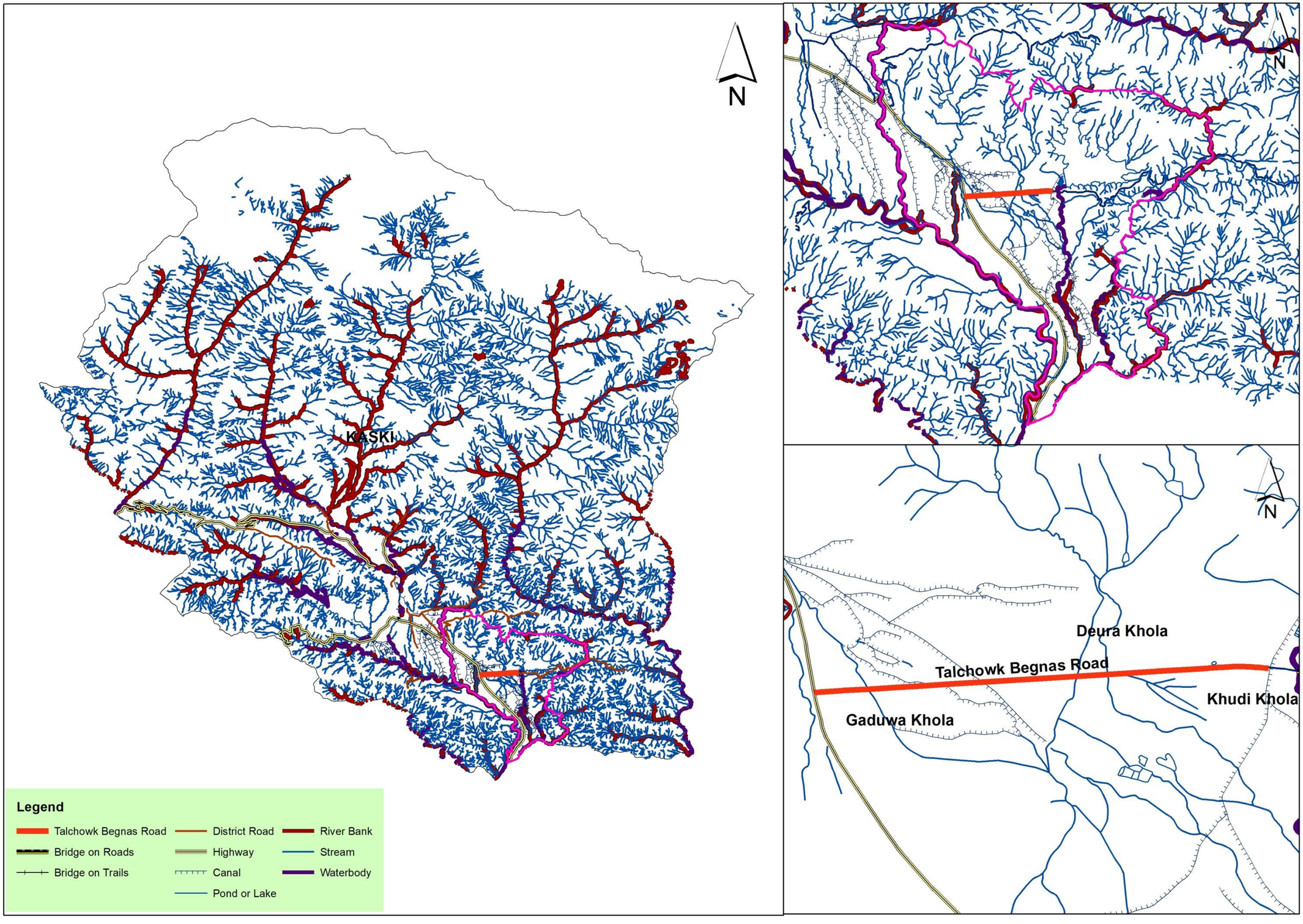


Figure 2–3: Drainage Pattern of Project Site

Annual average rainfall around the sub-project area is2138mm(Pokhara Airport Gauging Station). Annual average rainfall varies from minimum 1250mm to a maximum of 3,000 mm. The snowfall is rare and exceptional form of precipitation along project area. Pokhara has rainfall from January to November, but the most rainy days are during the monthsfrom May to September.

Water Course: The GaduwaKhola and DeuraKhola crosses the proposed road alignment in 2 locations. The DeuraKhola is also the tributary of KhudiKhola. DeuraKhola has several other small seasonal tributaries that crosses the road. The details of these water courses are presented in report.

Present landuse[7]

The present land use of Kaski Districts includes cultivated land (40.5%), followed by forest (37.6%). Other land types in thedistrictareais settlement (14.17%), grassland (1.1%), pond/Lake (2.3%), Bush (1.10%), river (1.2%), riverbed (1.4%), open spaces (0.5%) and embankment (0.1%). The surrounding land types in project site are mostly settlements and cultivated land. Figure 2–4shows the land use type of the project site.

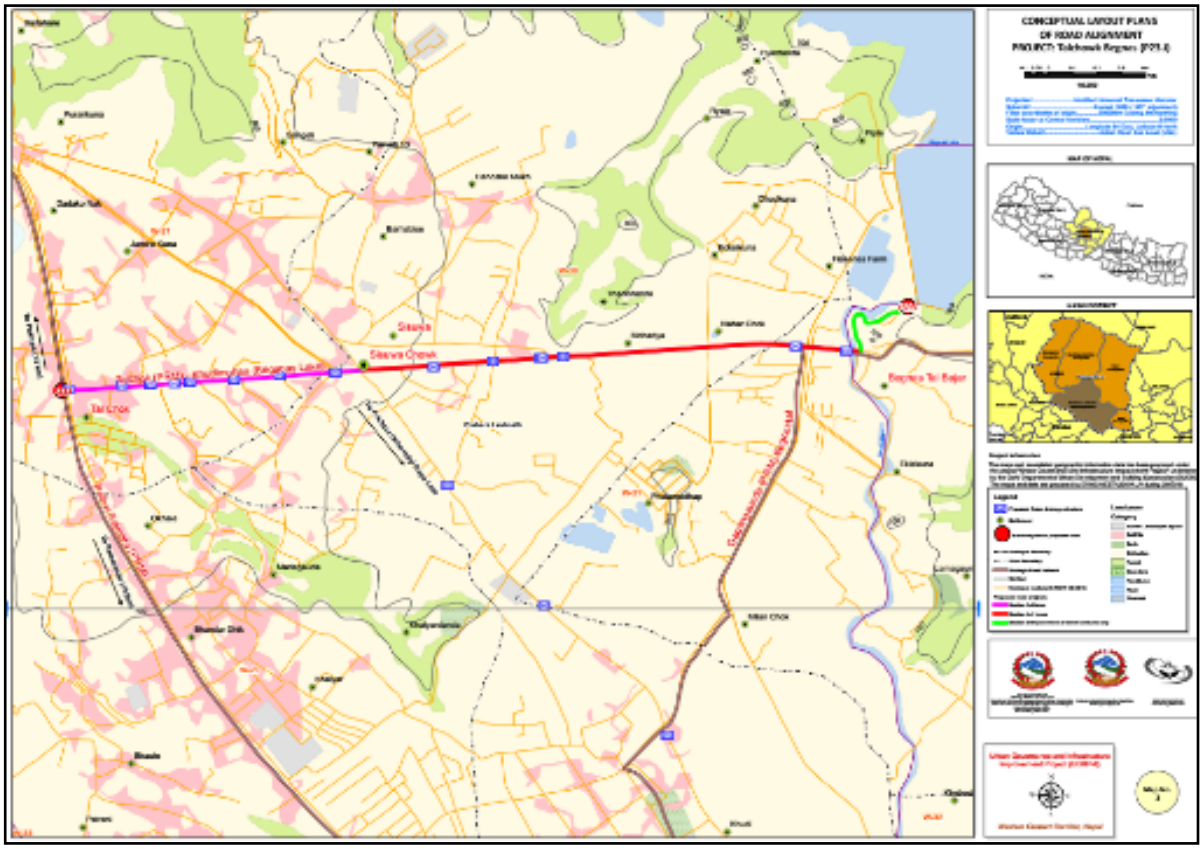


Figure 2–4. Land use type in project site

Noise and air quality

[7]Feasibility Study of Report Improvement of Talchowk Begnas Road (P23.i) Pokhara Metropolitan City

The Talchowk-BegnasRoad connects with the Prithvi Highway at Talchowk. The vehicles passing alongthis road contribute to air and noise pollution. The vehicle count in the existing road is shown in Table 2-1. Table 2-1. Vehicle Count (Source: Survey, 2018)and air quality with temp, humidity and wind is shown inTable 2-2 which indicates that continuous rain observed during monitoring duration lead to the air pollutants were probably washed away due to rain.

Table 2-1. Vehicle Count (Source: Survey, 2018)

Station	**Normal AADT in Pcus 2021**												
	>= 3 Axle Truck	2 Axle Truck	Mini Truck	Large Buse	Mini Bus	Micro Bus	Car/Jeep /Taxi	Utility/ Pick up	3 Wheeler	Tractor	Motor Cycle	Bicycle	Total
Talchowk	43	193	200	495	1219	200	958	261	43	410	2251	157	6431
Begnas Buspark	10	66	146	384	1285	146	667	83	0	170	1296	72	4324

Table 2-2. Ambient Air Quality Details[8]

Particulate Size, (µm)	**Weight of Dust, (mg)**	**Percentage Weight Fraction**	**Cumulative Weight Percentage**
PM>10 µm	0.1	10	100
7.0 µm to 10 µm	0.1	10	90
3.3 µm to 4.7 µm	0.1	10	80
2.1 µm to 3.3 µm	0.2	20	70
4.7 µm to 7.0 µm	0.1	10	50
<0.43 µm	0.1	10	40
0.43 µm to 0.65 µm	0.1	10	30
1.1 µm to 2.1 µm	0.1	10	20
0.65 µm to 1.1 µm	0.1	10	10
Total	1	100.0	0

Indicators→	Total Suspended Particulates (TSP)	Particulate Matter of Aerodynamic Size 10 micron (PM10)	Particulate Matter of Aerodynamic Size 2.5 micron (PM2.5)
NAAQS Limits for 24 hour averaging time, 2012 (GoN)	230µg/m3	120 µg/m3	40 µg/m3

[8]Sampling Point: Talchowk, Pokhara Municipality – 27 (28º9'47.8"N, 84º3'43.5"E, Altitude: 706m, Starting Monitoring Date: 22 - 06 – 2019, Ending Monitoring Date: 23 - 06 – 2019, Monitoring Duration:1440 minutes, Monitoring Instrument: Low Volume Air Sampler (Anderson Type), Flow Rate: 28.3L/min, Total Air Volume: 40.752m^3.

Total Suspended Particles: 24.54µg/m³; Respirable Particulate Matter (PM_{10}): 90% of TSP = 22.08µg/m³ and Respirable Fine Particle ($PM_{2.5}$): 70% of TSP = 17.17µg/m³

The observed concentrations of TSP, PM10 and PM2.5 comply with the prescribed national ambient NAAQS 2012. The ratio of PM10:TSP and PM2.5:PM10 were about 0.89 and 0.78 respectively. The average air temperature during the monitoring duration was 24 degree Celsius. The average wind speed was 1.08m/s. The resultant wind was blown at172 degree for 45% of the monitoring duration with 16.7% calm hours(Figure 2–5)**.** The dominant wind was lightair (about 79.2%) as per Beaufort wind scale**(**Figure 2–6**).** The air pollutants directed along the observed average wind direction.The metrological parameters of the site arelistedbelow**Error! Reference source not found.**.

Figure 2–5. Wind rose Based on Air Blowing From the Site

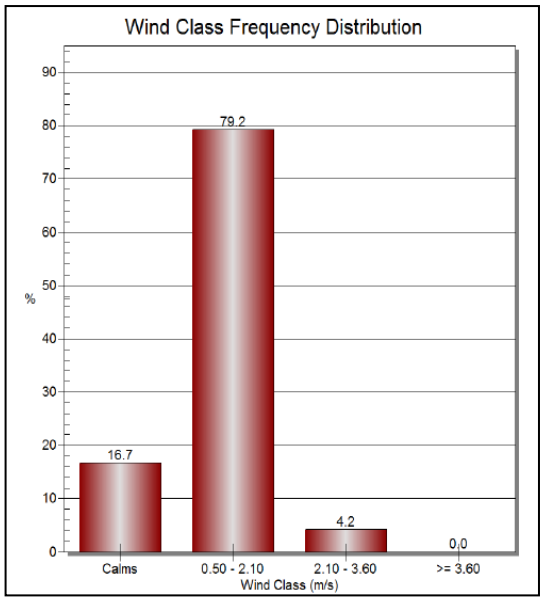


Figure 2–6. Dominant Wind and Frequency Classification

Gaseous Pollutants

The monitored gases were not detected. In the site as indicated in the following table.

Table 2-3. Gaseous Pollutants in the Site[9]

Gases	n	Volume of Air Drawn per Stroke, (ml)	No. of Draws	Calculated Concentration, (ppm)
SO_2	2	100	5	<0.08
NO_2	2	100	5	<0.08
CO	1	100	5	<1

The air and noise of the rest of the surrounding areas is also affected by the local city vehicles and the noise created in this section. The characteristics of the road including settlement in the project site as illustrated in Appendix J.

The noise is measured at the site during the survey and found within the permissible limit. Expert judgment reveals that there were vehicles plying on the road and partly the width of the road is dirt road. The noise level is depicted in Table 2-4.

Table 2-4.Sound pressure measurement at Tal Chowk

Average Sound Pressure Level, dB(A)	Time Zone, Hr							
	06:00	08:00	11:00	13:00	15:00	18:00	21:00	23:00
Equivalent Sound Pressure Level, (L_{eq})	56	65	76	66	68	69	58	55

Drinking water

Because of the intervention, water supply pipelines requires replacement. The alternative planning for the water supply system is required as the existing water supply system will be affected during the construction period. There are two drinking water schemes in the project area, which are the Lekhnath and Red Cross water supply. The water quality analysis of Red Cross is free from contamination and safe for drinking. All observed values complied with the national drinking water quality standards and the water quality report from the testing laboratory is enclosed.

Table 2-5. Water Quality of Red Cross Water Supply. Source: Water Sampling During the Field Visit

S. N.	Parameters	Test Methods	Observed Values	NDWQS, Nepal
1.	pH at 23°C	Electrometric, 4500 - H+B,: APHA	7.3	**6.5 - 8.5**

[9]Sampling Point: Talchowk, Pokhara Municipality – 27, Coordinates: 28°9'47.8"N, 84°3'43.5"E, Altitude: 706m, Starting Monitoring Date: 22 - 06 – 2019, and Method : Gas Detector Tube

2.	Electrical Conductivity, (μS/cm)	Conductivity Meter, 2510 B, APHA	163.3	**1500**
3.	Turbidity, (NTU)	Nephelometric, 2130 B, APHA	4	**5**
4.	Total Hardness as $CaCO_3$, (mg/L)	EDTA Titrimetric, 2340 C, APHA	82	**500**
5.	Total Alkalinity as $CaCO_3$, (mg/L)	Titrimetric, 2320 B, APHA	109.25	-
6.	Chloride, (mg/L)	Argentometric Titration, 4500 - Cl- B, APHA	N. D. (<1)	**250**
7.	Ammonia, (mg/L)	Direct Nesslerization, 4500 - NH3 C APHA	0.15	**1.5**
8.	Nitrate, (mg/L)	UV Spectrophotometric Screening, 4500 - NO3- B, APHA	1.70	**50**
9.	Nitrite, (mg/L)	NEDA, Colorimetric, 4500 - NO2- B, APHA	0.04	-
10.	Calcium, (mg/L)	EDTA Titrimetric, 3500 - Ca B & 3500 - Mg B APHA	25.65	**200**
11.	Magnesium, (mg/L)		15.55	-
12.	Iron, (mg/L)	Direct Air - Acetylene AAS, 3111 B, APHA	1.11	**0.3**
13.	Manganese, (mg/L)		0.04	**0.2**
14.	**Arsenic, (mg/L)**	**SDDC, 3114 B: APHA**	**N. D. (<0.01)**	**0.05**

Water resources and drainage channels crossing Talchowk Road

The Khudi River water is turbid in nature due to presence of suspended solids, and other turbid materials. The eutrophication is probable at observed total phosphorous level. Therefore parameters are responsible degradation of water quality of Khudi River. The river has degraded water quality and lies in medium level of pollution range. The water quality at Gaduwa and Deuda rivers are of comparable to Khudi River based on the qualitative judgment of the river. Both rivers are not perennial rivers.

Table 2-6.Khudi River Quality (Ambient Water Quality) (Source: Field Water Sampling)

S. N.	Parameters	Test Methods	Observed Values
1.	pH at 23°C	Electrometric, 4500 - H^+B,: APHA	**6.9**
2.	Electrical Conductivity, (μS/cm)	Conductivity Meter, 2510 B, APHA	**180.3**
3.	Turbidity, (NTU)	Nephelometric, 2130 B, APHA	**18**
4.	Total Dissolved Solids, (mg/L)	Oven Drying Method, 180°C, 2540 C, APHA	**310**
5.	Total Hardness as $CaCO_3$, (mg/L)	EDTA Titrimetric, 2340 C, APHA	**86**
6.	Total Alkalinity as $CaCO_3$, (mg/L)	Titrimetric, 2320 B, APHA	**109.25**
7.	Chloride, (mg/L)	Argentometric Titration, 4500 - Cl^- B, APHA	**N. D. (<1)**

8.	Nitrate, (mg/L)	UV Spectrophotometric Screening, 4500 - NO_3^- B, APHA	**0.89**
9.	Total Phosphorous, (mg/L)	Ascorbic Acid, 4500 - P E, APHA	**0.29**
10.	Chemical Oxygen Demand, (mg/L)	Potassium Dichromate Reflux, 5220 B, APHA	**13**
11.	Arsenic, (mg/L)	SDDC, 3114 B: APHA	**N. D. (<0.01)**
12.	Iron, (mg/L)	Direct Air - Acetylene AAS, 3111 B, APHA	**1.11**
13.	Manganese, (mg/L)		**0.12**
14.	Lead, (mg/L)		**<0.01**
15.	**Zinc, (mg/L)**		**0.05**

Khudi is the major river under the Bridge. The upgrading of the road and demolition of bridge and its construction will have a major impact on the Khudi River. Hence the impact of Khudi River could be significant as compared to other small tributaries. It is for this reason, for the baseline River water quality the Khudi is considered.

Sewage and Solid Waste Management

The planning norms and standard 2015 by DUDBC dictates that a city-sized municipal area should have a municipal solid waste management system with collection points, transfer station (if disposal site is more than 10 km away), segregation reduce, reuse and recycle of waste and a medium sized (25-500MT per day) sanitary landfill site. Currently, the PMC manages its sewage and solid waste at asolid waste management site situated at Bachhebuduwa. Five containers operate throughout the metropolitan city, pumping septic waste from septic tanks of households and transporting them to the site where it is treated. However, there are no transfer stations. There is no segregation at source level. No sewage network system exists in the PMC. The existing sewerage management site is on its 14thyear of a 15year design period. Hence, the PMC should seek an alternative site for the sewerage management and in the process develop a sewerage network as well. The site falls within the 3km restriction radius of the proposed regional international airport

.Road Network and Transportation

Kaski District has 19 district roads of class "A" and 23 district roads of class "B". Most of the district roads are gravel surface, which are mostly all-weather roads. Moreover, construction quality of the road is poor and needs to be upgraded to all-weather roads to provide accessibility throughout the year to the people to improve overall transport situation of the district. Different roads need different types of interventions.

Prithvi Highway connects the metropolitan to the capital, Kathmandu (200 km) while Sidhhartha Highways connects Pokhara to Bhairawa via Putalibazar (184 km). Pokhara-Baglung-Benin (90km) highway is the road inter-linkage to famous destination spots of Mustang region having theJomsom domestic airport operating flights to Kathmandu, Bhairawa, Bharatpur and Manang (only seasonal).

Providing accessibility alone cannot provide improved transportationinameaningful way if regular and reliable public transport facilities are not there in parallel. Again, riding quality and safety of road are also equally important. Without acceptable standards of comfort and safety, no road can provide reliable and enduring good services. In fact, transport connectivity is incomplete by road construction alone if functional transport facility with quality services inclusive of safe roads is not there for the general public. Pokhara has an extensive, privately-operated public transportation system running throughout the city, adjoining townships and nearby villages. The public transport mainly consists of local and city buses, micros, micro-buses and metered-taxis.

Nevertheless, PMC as the administrative center as well as capital of Province No. 4, internal mobility and accessibility to all adjoining local places, district units and local government bodies is crucial for overall administrative and strategic management of the region. The District Transport Master Plan (DTMP) of Kaski District was prepared in 2014 which contributes towards planned development of transport sector supporting the overall development of transport network and management of the municipality and the district as a whole. According to the DTMP, the planning and development of transportation sector has been carried out. In the current scenario, efforts have been made to follow and implement the transport development plan as stated in the DTMP. After the integration of the former Lekhnath Municipality into Pokhara Lekhnath Metropolitan City, forming a bigger Pokhara Metropolitan City, the planning of transportation sector is to be revisited and revised accordingly. Preparation of investment plans for road and transport development is necessary for a better financial planning and projection of resources. Proper roads network system preferably with metallic surface should be constructed joining all the wards to the municipal center for easy accessibility and mobility in a planned way. Construction of bus parks, bus stops, and bus lay-bys is another important step to be undertaken as soon as possible to avoid ever growing traffic congestions and traffic management problem within the core city area of metropolitan city.

Situation of existing Road and cross drainage structures inventory and alignment details

The existing road is black topped. The pavement has severe distress like alligator cracks, patchwork, edge break, raveling, rutting and potholes. The road width varies from 3.7m to about 6.8m at some places. But the average road width is about 4.5m. The road passes through two major market areas i.e. Talchowk andSisuwa.

2.3. Biological Environment

The Tal Chowk-Begnas Road traverses through agriculture land. Neither private nor government forest areas is nearby or along the road alignment. The common tree species observed within the ROW of the road during the field visits are *DalbergiaSissoo, Meliaazedarach, Saracaindica, Ficus species, Cinnamomumcamphora, Musa paradisiacal* and*Bamboosa vulgaris* which are mostly planted. During the FGDs, it was revealed that some agricultural activities are still prevalent in the RWina seasonal level.

All vegetation including forests and agriculture within the ROW was assessed and inventoried and is presented in Appendix E

Table 2-7. List of birds found in the project district

SN	Local Name	English Name	Scientific Name
1	Jureli	Bulbul	Pycnonotuszeylanicus
2	Dhikur	Dove	Zenaidamacroura
3	Bhangera	Sparrow	Passer species
4	Rupi	Common myna	Acridotherestristis
5	Cag	Crow	Corvussplendens
6	Bakulla/Cattle Egret	Egret	Bubulcus ibis
7	Gauthali	Swallow	Hirundorustica

Table 2-8. List of fauna found in the project district

SN	Local Name	English Name	Scientific Name
2	Kharayo	Rabbit	Lepusnigricollis
3	Lokharke	Squirrel	Tamiopsmacclellandii
5	Nyaurimuso	Mongoose	Herpestesedwardsii
6	Badar	Monkey	Macacamulatta

Table 2-9. List of reptiles found in the project district

SN	Local Name	English Name	Scientific Name
1	Bhyaguto	Frog	Ranatigrina
2	Sirish	Bronzeback tree snake	Dendrelaphistristis
3	Sarpa	Common cat snake	Boigatrigonata

Table 2-7, 2-8 and 2-9 illustrates presence of fauna and flora in the project district. Because the project area is predominately a residential and commercial settlement area, there is no natural habitat for flora and fauna listed in the table. These available species in the district are not specific to the project siteand hence not directly impacted by the project.

In addition, once we include some data on fauna and avifauna in baseline, we need to describe about the project impact on them in Impact and mitigation chapter. If there are no impacts, we need to indicate that categorically.

2.4. Summary of Socio-economic environment

2.4.1. Socio-economic overview

A total of 175 households were surveyed in the project area during the field study. The project affected Wards 27, 30 and 31 of the Pokhara Metropolitan City have multi-ethnic composition. Brahmin, Chhetri,Janjati and Dalit are major castes and ethnicity of the area. Two-thirds of households of the surveyed area belongs to Hill-Brahman and followed by Chhetri (16.0%) and Gurung (12.0%). Average family size in the surveyed area is4.5, with the family size in Damai and Newarisbeing higher than other

castes and ethnicities. The nuclear family is the dominant family structure in the sub-project area with only 15% household living in a joint family arrangement. The majority of respondents (90%) in the project area follow the Hindu religion, followed by Buddhist (8.6%). Further details of the social economic environment are provided in Appendix D.

Economically, the project area is well off, thus the living standards of most people in the sub-project area is good in comparison to national average. The sub-project area is one of the major tourist destinations of Pokhara because of the Begnasand Rupa Lakes. The land value of the project area is remarkably high. The economy of the area is supported mainly by tourism, trade and business. The tourism-related business and service sector hold significance share to the local economy which is growing day by day. Other livelihood activities in the project area are agriculture, service, local trade, oversees employment/remittance and daily labor. There is an increased inflow of domestic and foreign tourists in the project area due to the Begnas and Rupa lakes, which demands good road services in the area.

Unlike other parts of the country, about half of the households are headed by female in the study areas because of overseas migration of male members. A total of 67single women-headed households are found in the study area. Among them 46 are widowed and 21 divorced/separated. Twenty to 50 percentage of total houses in the area have members who are overseas employment.

Health and education condition in the sub-project area appears to be better than the national average. All the households in the surveyed area have toilets, indicating that the local people are sensitive towards the health issues. The people of the sub-project area have good access to basic services such as education, health, police and other government services. It is reported thatthe majority of local people visit the hospital and medical doctor in case of illness. There are four schools and sevenprivatehealth clinics in the vicinity of the sub-project area. Potable water supply is the main source of drinking water, accessed by96% of households. All the households in the surveyed area connected with the national grid and use Liquid Petroleum Gas (LPG) as the main source of cooking energy. The sub-project area has a high literacy rate (89.1%), which is higher than the national average.

The trend of out-migration to other parts of the country and overseas for employment and high education is an increasing trend. Two thirds of households in the sub-project area are members of groups or organizations which indicate the local people are rich in social capital.

2.4.2. **Gender disparities and GBV**

Women's literacy rate (57.4%) is higher than the national average (44.5%).Women's exposure, access to property and participation in social affairs and development activities is an increasing trend. Women's access and ownership on fixed property such as land and house is in increasing trend because of 25 percent tax rebate incentive offered by the GoN. Women's participation and involvement in non-

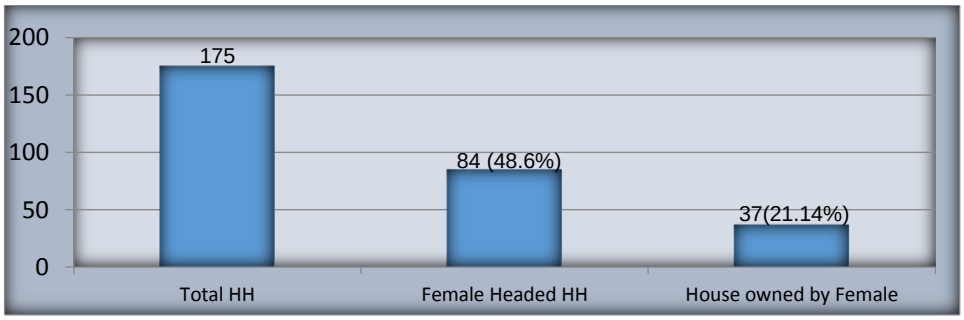
agriculture sectors has been gradually increasing. Both men and women are interested to work or participate in public works including road construction.

Even though the subproject is in an urban area, a significant gender gap is noticed in work force participation and higher education in the socioeconomic survey conducted as part of the ESIA. The ratio of Male: Female in project direct impact area is 1.05:1.

Female-headed households

The socioeconomic survey identified 175 households in which 84 (48.6%) are female-headed, which is higher than the national average of31.3% (Source: World Bank org/indicator).Among the 84 female-headed households, 43 households (51%) weredue to the male member being in overseas employment; 4 are single women. The other remaining causes of female-headed household are husband working outside of Pokhara, and Pewa (property gifted from girl's family) and property owned by woman is not considered as family property.

Despite women comprising 51.5 percent of Nepal's total population and around 75 per cent of women are engaged in agriculture as their primary occupation, women often do not have ownership of land that they have been tilling for years. Of the total surveyed households, 36 (20.6%) families are engaged in agriculture as a primary source of livelihood and amongst those 9 (25%) women own the land. In Nepal, about 20% women have ownership on land (CBS, 2012). Of the total surveyed population, 21.14% of women have land registered in their names, slightly higher than the national figure. Women's access to ownership on fixed property such as land and houses has been increasing in the recent years. One of the reasons identified was the provision of tax exemption while registering land in a women's name[10].



Source: Socioeconomic survey 2019

Figure 2–7. Total Household, Female Headed Household and female Owned Household

[10] Financial Bill 2015/16 {25 per cent to 50 per cent tax exemption on registration when land is owned by a woman; a 35 per cent tax exemption for single women; and joint registration of land in the names of husbands and wives with a fee of NPR100 (If husband want to include his wife's name in existing property paper)

Women Participation in Public Sphere

In Nepal women participation in public spheres is increasing over the last few decades. In the subproject impact area, participation of women in the public sphere is very high. Out of 175 surveyed HH, 112 HH reported as a member of different organization. Among them, women from 84 HH have membership in different community based organization (CBO). But only two women are in primary post in non-women group. It indicates the woman's positions are still marginalized and subordinated.

There is no visible discrimination and differentiation to access and utilizations of public space by caste, ethnicity, religion, sex, age, class in the project impact area as this is a scattered urban settlement. Alcoholism, gambling and drug abuse are present in the area. In project area, social deviances like concept of witch, discrimination of widow and untouchibility are very rare. Social evils like Girl trafficking are not reported at the project impact area.

Wage gaps

Gender wage gap is visible in same category of work. Women are generally paid less than men. In the project impact area, the general wages for man and woman are 1,200NPR and 800NPR per day correspondingly. This indicates the inequalities and discriminations for women in the labor market.

FGDs

During the social study, 4 FGDs were carried out in which one with women group and three with mixed group. The total participants in the FGDs were 54 including (34 females and 20 males).

Table 2-10. FGD Participants

Location	No of Participants	Male	Female
Begnas 31, Ward Office	17	0	17
Mohariya, Pokhara Metropolitan city	15	7	8
Sisuwa, Pokhara Metropolitan city	11	6	5
Talchowk, Pokhara Metropolitan city	11	7	4
Total	54	20	34

The major social problems of the area are reported to be alcoholism, drug-taking and domestic violence against women. Cases of women and girl trafficking have not beenformallyreported. Many domestic violence cases against women are not reported formally.

2.4.3. Community perceptions of the subproject

Local people and community members are aware of the sub-project and its positive contribution towards the local economy and local development. Approximately 96% of the local people are found positive towards the project and expressed their willingness and commitment to provide every support for timely completion of the project. They urged for the timely commencement and completion of the project.

CHAPTER 3: LEGAL AND REGULATOTY REQUIREMENT

3.1. Key applicable national social laws and regulations

A summary of applicable rules and regulations is provided under the Chapter 2 of the NUGIP ESMF. The sectoral and cross-sectoral guidelines and standards promulgated by the GoN in various periods are adequate to mainstream the environmental and social safeguard dimensions in the project preparation and implementation phases. This ESIA has given due attention on the above guidelines and standards in the identification and prediction of the project's impact and in the design of the mitigation actions and monitoring protocols.

In 2019 the PMCpublished a Gazette entitled "Infrastructure Development Management Act". According to this Act, the PMCwill prepare a master plan of roads, set up road standards, and categorize roads within the metropolitan area. The PMC will also develop the transport operation standards, emphasizing mass transport system. In addition, the Act has the mandate to bring all the roads RoW and ownership of roads in metropolitan in the name of PMC.

Under the Constitution of Nepal, local governments have the autonomy to enact new laws applicable to their municipality. Where the local government enacts new laws alongside federal, provincial laws, the law which provider stronger protection with regards to environmental and social risk management will apply and supersede the weaker law.

3.2. The World Bank Safeguard Policies

Table 3-1represents the World Bank Safeguard policies that are triggeredinthe sub-project environmental and social assessment.

Table 3-1. World Bank Safeguard Policies relevant to Project

World Bank OP	Objective & Brief Description
Environmental Assessment (EA) OP/BP 4.01	An Environmental Assessment is conducted to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. Any World Bank project that is likely to have potential adverse environmental risks and impacts in its area of influence requires an EA indicating the potential risks, mitigation measures and environmental management framework or plan.
Natural Habitats OP/BP 4.04	The Natural Habitats Policy is triggered by any project (including any subproject under a sector investment or financial intermediary loan) with the potential to cause significant conversion (loss) or degradation of natural habitats, whether directly (through construction) or indirectly (through human activities induced by the project). The policy has separate requirements for critical (either legally or proposed to be protected or high ecological value) and non-critical natural habitats. The Bank's interpretation

World Bank OP	Objective & Brief Description
	of "significant conversion or degradation" is on a case-by-case basis for each project, based on the information obtained through the EA.
Forestry OP/BP 4.36	This policy is triggered by forest sector activities and other Bank sponsored interventions, which have the potential to impact significantly upon forested areas. The Bank does not finance commercial logging operations but aims to reduce deforestation, enhance the environmental contribution of forested areas, promote afforestation, reduce poverty and encourage economic development
Physical Cultural Resources OP/BP 4.11	The Bank seeks to assist countries to manage their physical cultural resources and to avoid or mitigate adverse impact of development projects on these resources. This policy is triggered for any project that requires an EA.
Involuntary Resettlement OP/BP 4.12	Key objectives of the World Bank's policy on involuntary land acquisition are to avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs; assist displaced persons in improving their former living standards, income earning capacity, and production level, or at least in restoring them; encourage community participation in planning and implementing resettlement; and provide assistance to affected people regardless of the legality of land tenure. The policy covers not only physical relocation, but any loss of land or other assets resulting in relocation or loss of shelter; loss of assets or access to assets; loss of income sources or means of livelihood whether or not the affected people must move to another location. When the policy is triggered, a Resettlement Action Plan must be prepared. An abbreviated plan may be developed when less than 200 people are affected by the project. In situations, where all the precise impacts cannot be assessed during project preparation, provision is made for preparing a Resettlement Policy Framework. The Resettlement Action Plan / Resettlement Policy Framework must ensure that all the Bank's policy provisions detailed in OP 4.12 are addressed particularly the payment of compensation for affected assets at their replacement cost

CHAPTER 4: ENVIRONMENTAL AND SOCIAL SCREENING, SCOPING, IMPACT IDENTIFICATION, PREDICTION AND MANAGEMENT

4.1. Introduction

This chapter is on environmental and social impacts in terms of magnitude, extent and duration likely to occur during construction and operation phases. The issues are separated as beneficial and adverse environmental impacts, including direct, indirect, and induced impacts in the project influence area. The impacts will be related to activities to be carried out during construction of the project and the operation stage of the project. The operational phase impacts of the project will be associated with the activities carried out within the premises. In addition, closure and decommissioning phase impacts of the project are also highlighted. The impacts of the project during each of its life cycle stages (construction, operation and decommissioning) can be categorized into impacts on the biophysical environment, health and safety impacts and socio-economic impacts. The Environmental and Social Management Plan (ESMP) will have measures to avoid, minimize, mitigate, and compensate the adverse impacts and measures to enhance the beneficial impacts. Based on the Safeguard Policies OP/BP 4.01 and OP/BP 4.12 are triggered

4.2. Zone of Influence of the Project

Direct Impact area of the project is considered as RoW of the project. Similarly the Indirect impact is fall within 50 meter from the edge of the RoW and the impacted Wards are 27,30 and 31.Likewise, other areas that are directly affected by the project in an environmentally and socially adversemanner are considered part of the area of influence of the project.

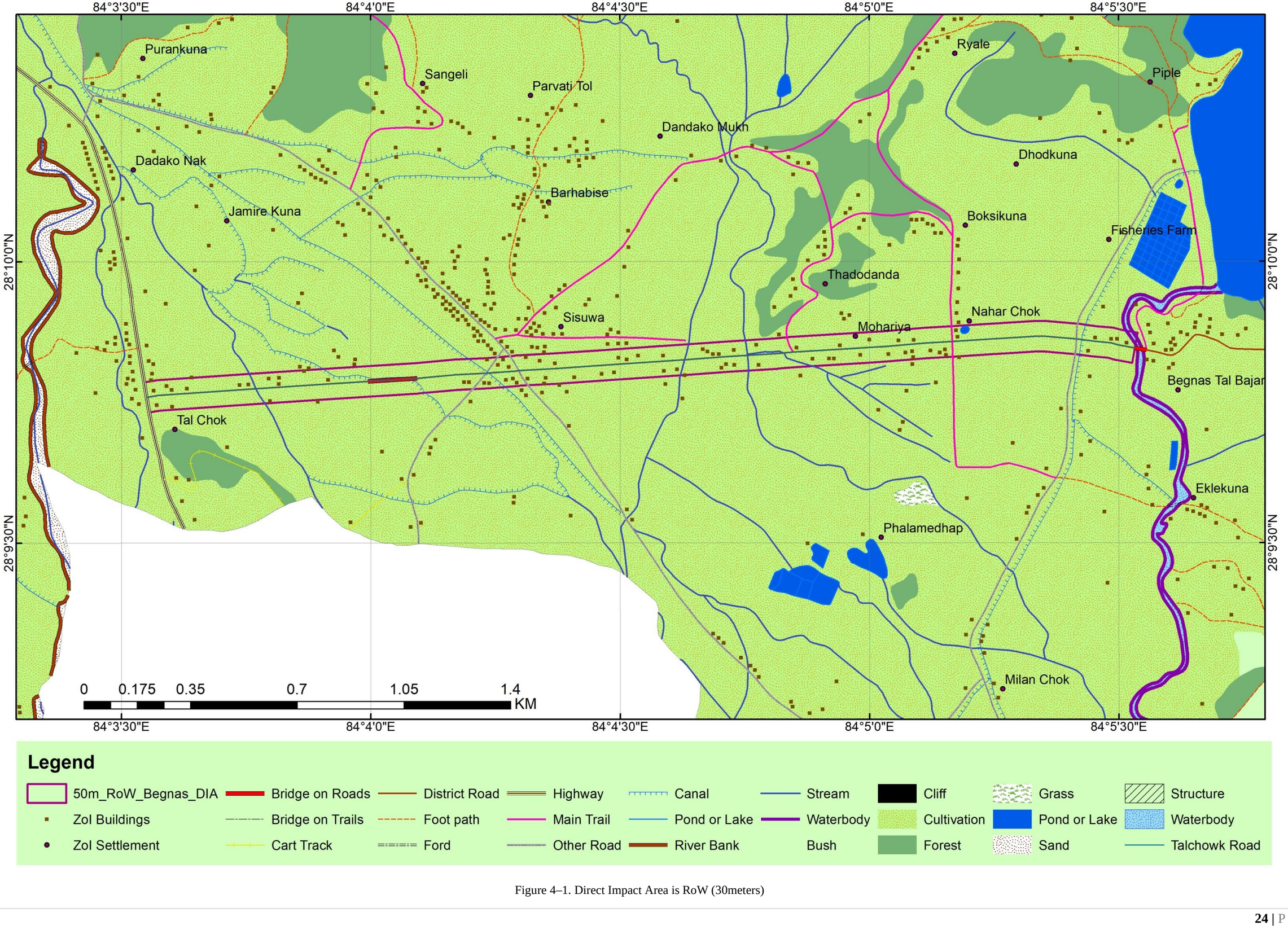


Figure 4–1. Direct Impact Area is RoW (30meters)

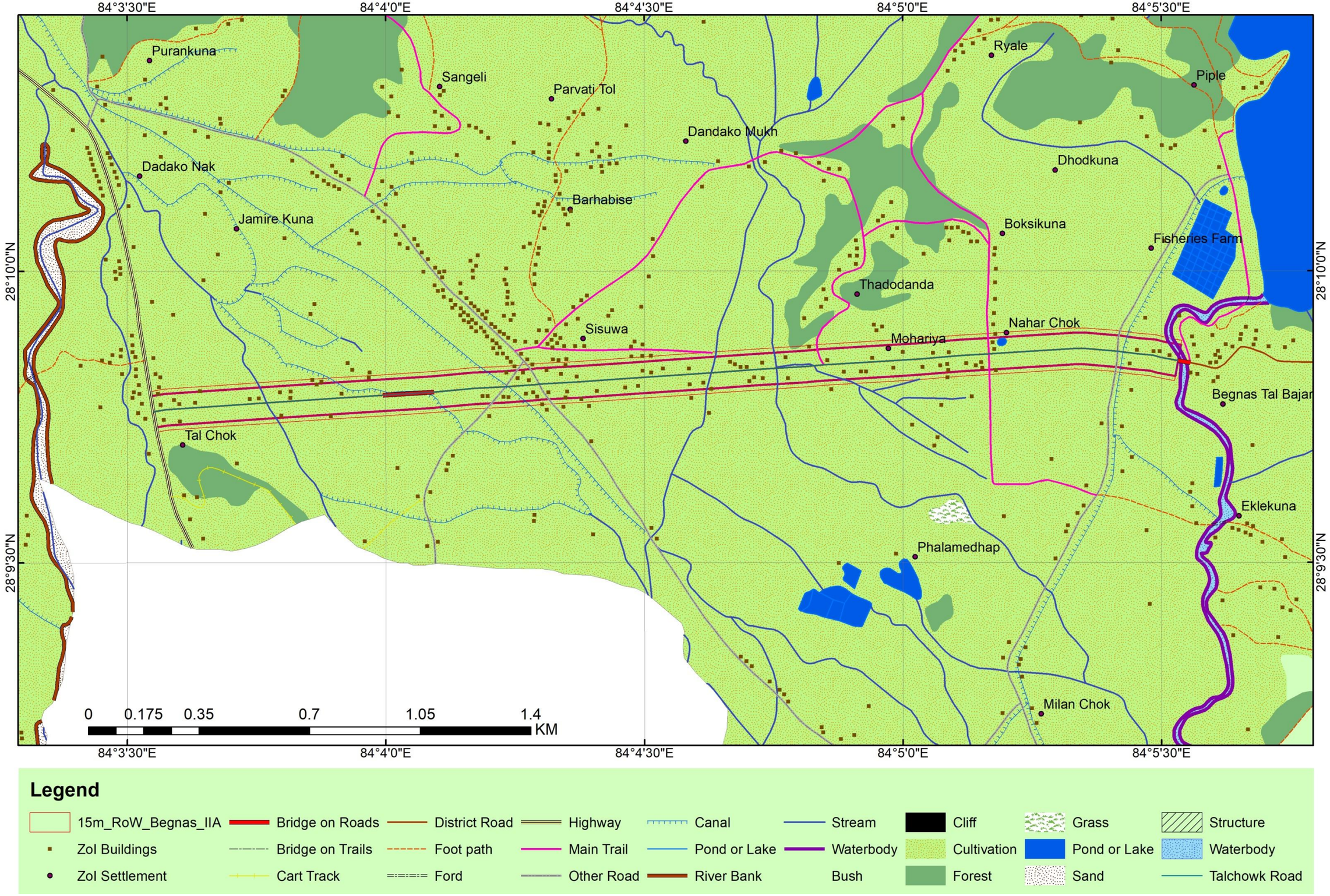


Figure 4–2. Indirect Impact Area with 50 for the Edge of the RoW showing landuse Pattern with Buildings

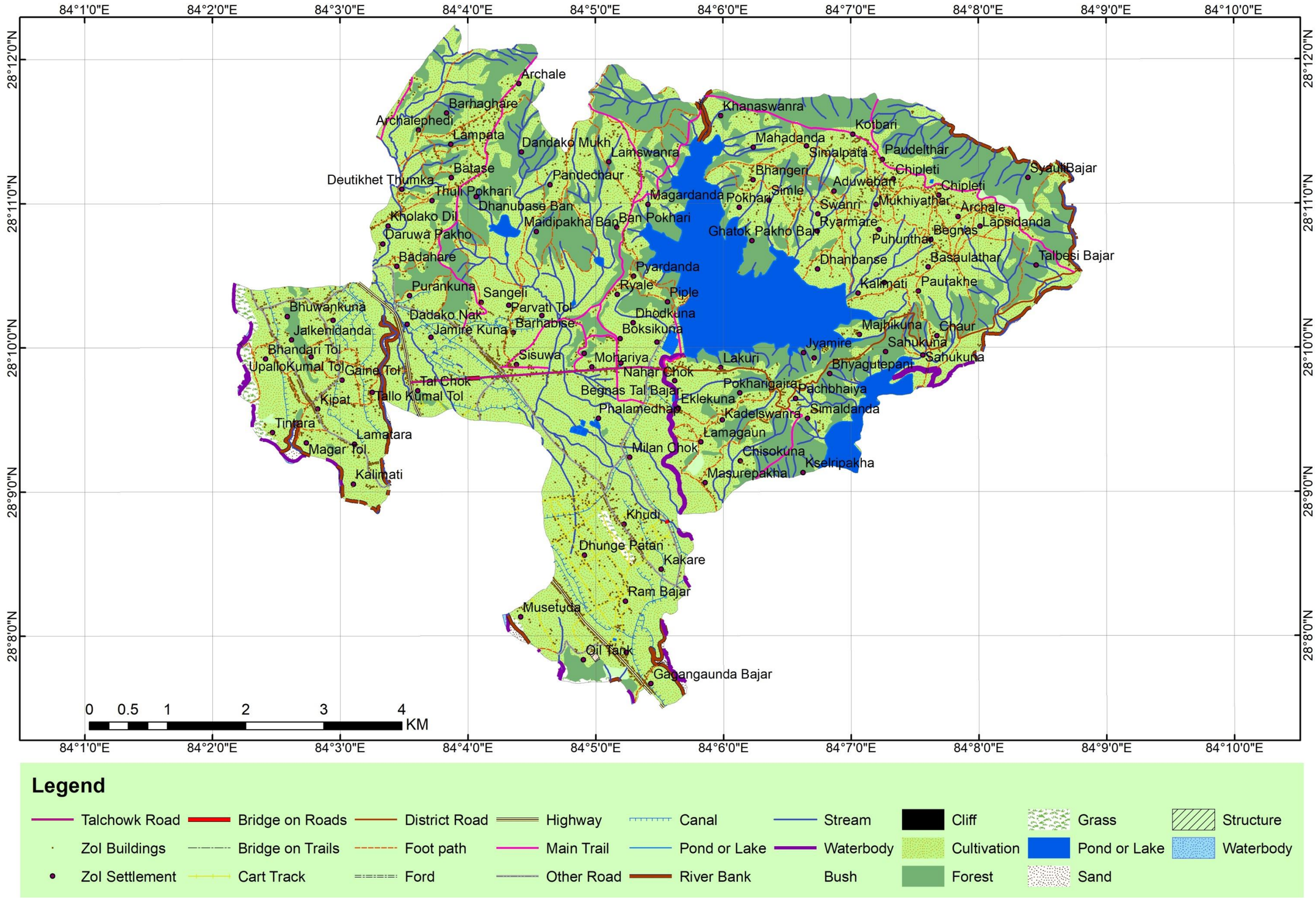


Figure 4–3. Zone of Influence Map

4.3. EnvironmentalandSocial Screening Checklist

Table 4-1. Checklist for Environment Screening

SN	Particulars	Yes	No	Can't Say	Remarks
	Is the site vulnerable to major natural or induced hazards such as landslides flooding storm surge, Severe wind damage, earthquakes, fire, explosion, others (specify)	Yes			Possibility of Earthquake Natural Disaster only
	Is the project area adjacent to or within any of the following environmentally sensitive areas? Cultural heritage site historical religious traditional or cultural significance Protected areas national parks wildlife reserves hunting reserve conservation areas buffer zone etc. Wetland/Ramsar site/Simsar Forest Special areas for protecting biodiversity Breeding/ nesting ground of wildlife occurrence of migratory species Migration route Wildlife Corridor Any site of national or International Importance	Yes			It is near the Begnas Lake which is a Ramsar Site which is approximately in 600 meter distance from the project site. This doesn't trigger the conservation area protection requirements by GoN and Ramsar Convention.
	Likely impacts on trees including Timber and fruit bearing and vegetable cover	Yes			Itis in RoW belonging to PMC. 10 seedlings will be planted for every tree to be cut
	Possibility of degradation of land and ecosystem of surroundings		No		
	Is the project area densely populated?	Yes			Appropriate mitigating measures are in the ESMP to prevent environment and social impacts
	Heavyweight development activities big Industries nearby and Type		No		
	Alteration of surface water hydrology of waterways due to the protect resulting in increased sediment in streams affected by increase soil erosion at construction site?	Yes			Appropriate mitigating measures in ESMP
	Chance of deterioration of surface water due to silt runoff and sanitary waste from worker base camps and chemicals used in construction	Yes			Appropriate mitigating measures in ESMP
	Does the sub project requires significant extraction of surface or groundwater		No		
	Increased risk of water pollution from Oil grease fuel spills and other materials		No		

	Impact on water quality due to release of sewage sludge	No	
	Possibility of flooding due to sewage	No	
	Possibility of increased air pollution during pre-construction and operation phase	Yes	Dust control as mitigating measure in ESMP
	Other pollution concerns relating to the inconveniences in living conditions that may trigger cases of Upper respiratory problems?	Yes	During construction,aappropriate mitigating measures are in the ESMP
	Risk and Vulnerabilities related to occupational health and safety due to physical chemical biological hazards during project construction and operation	Yes	Physical and Chemical Hazards only, No Biological hazards
	Noise and vibration due to Civil works	Yes	Appropriate mitigating measures in ESMP
	Possibility of poor sanitation and solid waste disposal	Yes	Appropriate mitigating measures in ESMP
	Creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents	No	
	Accident risk associated with pre construction and operation phases	Yes	Vehicle accidents, work related hazards etc.
	Large population influx during project construction and operation that causes increased burden on social infrastructure and services such as water supply and sanitation systems	No	
	Risks to community health and safety due to transport storage and use of construction materials such as gravel and sand and all other disposable Fuel and other chemicals during construction and operation	Yes	Fire hazard, occupational hazard, obstruction due to storage of materials etc.
	Interference with other utilities and blocking of access to resource utility and households with entrances in the ROW	Yes	
	Generation of solid waste and hazardous waste during construction and operation of project	No	

Table 4-2, Checklist for Social Screening

SN	Particulars	Details
	Proposed Site Location	
	Land Requirement for the Project	It is an up-gradation of existing road so not land required.
	Land ownership off the project area by the government or private Lanes	Government
	Does the project requires acquisition of government land structures?	No

		If please mentioned the area of land, number of affected structures households	
		Present use of government land that will be used for the project activities with persons households using	No
		Does the project required acquisition of private land and structure? If yes please mention the area of land number of effective structures houses	No
		Present use a government land that will be used for the project activities with persons households using for agriculture residential commercial and other purposes	The land will be used for the construction of the project only.
		Does the project require relocation of encroachers and squatters If yes please elaborate number of it and nature	No
		Does the project require relocation of community facilities government establishment or any objects that are out of religious and cultural and historical significance	Yes relocation of Temple (Small Durga Temple) of CH1+230 to the space between green zone and cycle area where 2.5m space is available in same chainage. Bus passenger waiting area of CH 1+220 has been shifted to CH 1+260 on both sides and waiting area of CH 2+630 has been shifted to CH 2+500 on both sides.
		Proposed project located in an area where residents are All mainstream Indigenous people Majority mainstream are non-indigenous people Majority indigenous people	Majority mainstream are non-indigenous people
	Potential social impacts of the project		
		Involuntary resettlement of people? (physical displacement and economic displacement)	Resettlement is not required in this project
		Impacts on the poor, women and children, indigenous people or other for vulnerable groups	No such impact on poor women and children, indigenous people, and/or economic displacement.
		Will Community facilities require relocation?	Yes,watersupply pipes from the existing road section will be shifted to beneath the footpath of new road section
		Will the sub project disturb any traditional activity on adjoining or nearby	No
		Poor Sanitation and solid waste disposal in construction camps and work sites	Yes
		Possible transmission of communicable diseases such as STI and HIV AIDS from workers to local population	Yes, it is possible as large influx of labors will be in

			project site during construction phase
		Population influx during project construction and operation that causes increased burden on social infrastructure and services such as water supply and sanitation systems	Yes
		Social conflicts relating to inconveniences in the living condition while the construction interferes with preexisting roads	Yes
		Describe any other impacts that have not been covered in the screening	Gender-based violence;road stability and management; impact on Lekhnath Water Supply system and Electric poles; impact on existing infrastructure
		Describe alternatives if any to avoid or minimize displacement from private and public lands	No such displacement from private and public lands
		RAP /ARAP requirement	Yes RAP

4.4. Impact Summary

Overall Impact Summary

Summary	Proposed Road
What are the main potential environment and social issues/ risks /impacts/ concerns and/or potential positive impacts	The major positive aspects of road improvement project include easier transportation facility, decreased travel time, decreased travel cost, increased employment opportunities, increased land value, and fostering the community-based tourism industry.The sub project component will most likely create the opportunities for local contractors and suppliers of the construction materials therefore stimulating income generation opportunities for local and employment for the low-skilled local workers. The subproject provides accessibility to 5 schools, 1 temple and 2 hospitals. Similarly, 1 religious tree (Chautara) of CH 0+880(left side), 5 taps at left side of the road alignment and 2 bus waiting areas (CH1+220 right side and CH 2+630 right side) including two major natural drainages (CH 0+880 and CH 3+260) along the alignment are likely to be affected during the time of construction. Of the number of tress affected, none of them are related to have livelihood harvesting use. The environmental impacts like air, water, noise pollution, obstruction to drainage, issues of waste, issues related to health and safety (accidents), obstruction of natural drainage, issues related to

	management of traffic, labor camp, spoil disposal area (specific impacts are also spelled out in impact section of report)
Expected positive impacts/benefits to the local communities	The improved economic access to the areas will potentially make them more attractive for business and investments thus stimulating economic growth and employment opportunities. The proposed sub project will help to provide in easy road access, reduce travel time, provide travel and transportation cost saving, promote employment generation, provide easy access to social service facilities, promote market creation for local product, increase land values as beneficial impacts related with the road improvement project. These positive impacts have to be enhanced adopting appropriate benefit augmentation measures up to the KhudiKhola Bridge. Other positive impacts of this sub-project include socio-economic benefits, environmental benefits, disaster risk management, climate resilience.
Options Analysis	The road already exist and only upgrading work is required. The ROW is clear,minor issues can be mitigated and managed through proper mitigation measures outlined in ESMP. An alternative route will be used by the road users during the construction phase. ESIA team has identified DandaNakh to Sisuwa Chowk as one of thealternative route which could be used during the construction period. This is already in operation (black top road with clear RoW, with no environmental and social issues)Considering all the above, no alternative analysis of proposed project is required.

Impacts as per the National EIA Guidelines Numerical Scale

Numerical Scale mentioned in National EIA Guidelines (1993) is used to analyze the impact of the proposed subproject. The numerical scale is presented in **Error! Reference source not found.**. The combine score b elow 40 shall be termed as insignificant impact (IS). The scores ranging between 40 and 79 shall be termed as significant impact (S), scores ranging between 80 and 99 shall be termed as very significant (VS) and the scores above 100 shall be termed as highly significant impact (HS).

4.5. Adverse Impacts - Physical Environment (Pre-Construction and Construction Phases)

4.5.1. Land use

The land within RoWwasacquired in 1977. The acquired land is permanently converted within the width of the proposed road. Hence, impact from construction will be direct in nature, low in magnitude, site-specific in extent and of long-term in duration. The indirect area of influence adjacent to RoWcontains built structures and cultivated lands.

4.5.2. Quarry operation

The construction of road will require boulders, sand and aggregates in activities like gravelling, construction of retaining walls and other structures. The quarry site will be from the government approve side. The contractor will obtain such materials from the licensed contractor (who has also obtained environmental clearance from the concerned entity) Those places if not restored properly, might lead to other environmental problems, such as river bank cutting leading to erosion of agricultural area. The other potential adverse impacts of quarrying are accelerated erosion, disturbance in natural drainage patterns, water logging and water pollution. The random excavation and collection of boulders from inside the Kotreriver can even destroy the spawning ground of fishes. The proposed two quarry sites are at Kotre, 9.5 km from the project site, which is a government-approved site easily accessible from the highway (Figure 4–4). The Kotre site quarry site environmental clearance report must be provided by the supplier prior the supply of raw materials for the road rehabilitation. Anticipated impactsdue to transporting construction materials will be direct in nature, medium in magnitude, local in extent and of short term in duration.

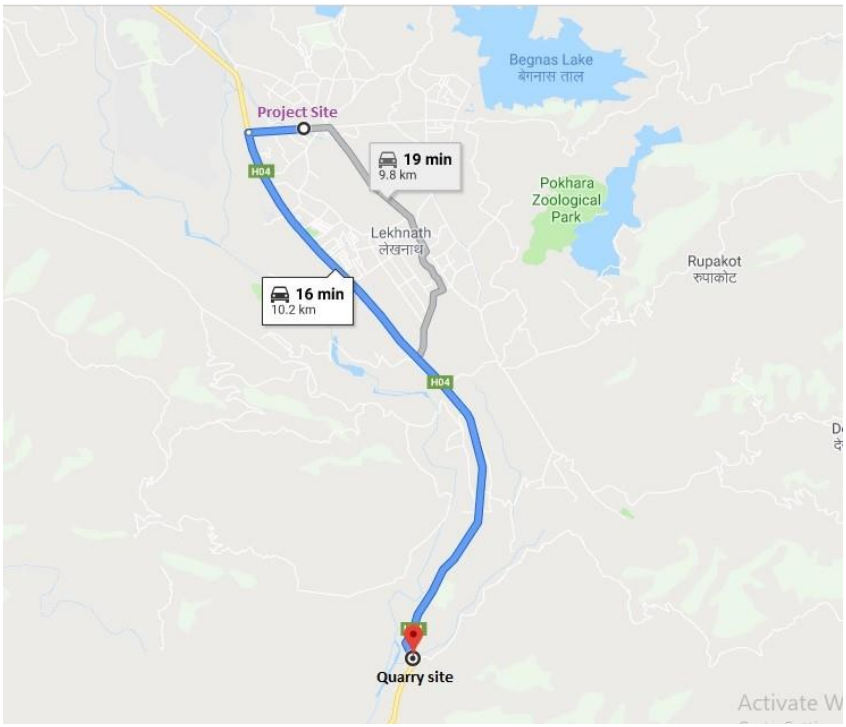


Figure 4–4. Distance between the Project and Quarry Sites

4.5.3. Stockpiling area and construction material

The construction materials need to be stockpiled on the land near to its application site. Stockpile of material may change the landscape and land use for a certain period. The impact will be direct in nature, medium in

magnitude, site-specific in extent and of short term in duration. The site for the storage and stockpiling will be assessed upon the finalization of DPR.

4.5.4. Noise, air and water pollution

The main construction activities that cause air pollution are earth works (excavation and dredging), asphalt plants etc. These activities generate dust and noise, which directly affect the air quality. In addition, vehicles and machinery emit smoke and fine particles. These substances will increase the local air pollution significantly during the construction stage. Burning of fossil fuels would result in far more environmental pollution due to emission of sulfur oxides (SO_x), nitrogen oxide (NO_x), carbon dioxide (CO_2) and particulates.

Noise impacts will be significant during construction periods due to increase of vehicular movements and machinery equipment. The contaminated soil, oil or bitumen from construction activities if disposed near to river/stream affects aquatic fauna and flora. The construction debris, paints, oil and grease is likely to create water pollution both surface and subsurface. The dust and silt from the construction sites will also create water pollution of the receiving streams. The water pollution during the demolition of KhudiBridge is also one of the major concern of the project. If workers living in tents/camps do not have access to toilet facilities, open defecation may be practiced, which may contaminate water sources, causing health problems.

The anticipated impacts on air, noise and water pollution will be direct in nature, low in magnitude, local in extent and of short-term in duration.

4.5.5. Solid waste generation

Some quantities of solid waste will be generated as a result of clearances, excavations and the final construction of the selected roads. Such waste will consist of surplus materials, surplus soil and excavated materials among others. Such solid waste materials can cause negative impacts to the environment through blockage of drainage systems, choking of water bodies and negative impacts on human and animal health.

Table 4-3Environmental Mitigation Plan for the use of construction equipment

Environmental feature	Project Activities	Material/equipment to be used	Impacts/Waste generated	Mitigation measures
LAND	Planning and Design Phase	No anticipated physical activities or processes		
	Site clearance	Caterpillars Power Saws	Cut vegetation Rock debris Noise by power saw	Top soil to be reused for tree, flower plantation, remaining soil to be used for backfilling. Wood to be used for multiple uses by local people

AIR /LAND	Excavation/earthworks including removal of top soil	Excavation equipment including caterpillars and haulers	Noise Roots Soil Vibration	Top soil to be used for agricultural field, plantation. The photographic and videographic evidences of structures prior the construction are recommended to find the status of the structures prior the construction. Less noisy and less vibrating equipment selection are recommended. The noise barriers in susceptible receptors like in schools are proposed (e.g.double glazed windows)
	Transportation of materials and maintenance of equipment	Trucks	Used oil, lubricants, air fumes etc.	Reuse, regular and periodic maintenance
WATER	Building materials/construction materials	Cement, soil, timber ,glass, bitumen, oil paper, piles, water and other wastes	Stone, timber broken glass, waste water, plastic, greases spills	Follow 3 R approach
WASTE	Human consumables	Stationeries, medicines, reagents, waste food and water	Used paper, thrown-away clothing, computers, photo	Sell waste paper to dealers. All obsolete materials should be carefully sorted, stored and sold to dealers. Waste from toilets of camps should be managed properly (septic tank)

4.5.6. Road stability and management

During the operation phase, heavily-loaded vehicles may frequently pass through this route to haul raw materials, which may result in the destabilization of the road. On top of that, natural erosion, inadequate or inappropriate drainage work, faulty construction may also damage the road. The impact will be direct in nature, medium in magnitude, site specific in extent and of long term in duration.

.

4.5.7. Water pollution

The inappropriate driver practices connected with car/truck washing in streams and rivers which can cause local water pollution by leakage of fuel, lubricants and hydrocarbons can cause hazardous to people, animals and crops. The impact will be indirect in nature, low in magnitude, site specific in extent and of long term in duration. Drainage management to for water clogging and regular cleaning.

4.6. Adverse Impacts - Biological environment (Pre-Construction and Construction Phases)

The TalChowk-BegnasRoad passes through agricultural land with residential houses and commercial establishments. Neither private nor government forest areas are nearby or along the road alignment. There are no houses or buildings on government land. The common tree species observed within the ROW of the road during the field visits are Sisau (*DalbergiaSissoo), Neem (Meliaazedarach), Saracaindica,Pipal (Ficus species), Kapur (Cinnamomumcamphora), Musa paradisiacal* and*Bamboosa vulgaris* which are mostly planted. During the focus group discussions (FGDs), local people said that paddy and vegetable are grown within the ROW in some parts of the road section which are seasonal. All the vegetation including trees and agriculture within the ROW, and which need to be felled, were assessed and inventoried, and a summary is presented inTable 4-4. One religious Pipal tree in the RoW which is at chainage 880 meter will be protected and will not be removed. The impact will be direct in nature, medium in magnitude, site specific in extent and of long term duration.

Table 4-4. Summary of the vegetation and tree species found within the RoW of the road to be felled

Description	Total	Remarks
Number of trees	22	Including 3 fork stand (standalone trees are 19)
Volume of trees	836.79 cft	
Number of poles	135	Including 19 fork stand (standalone poles are 116)
Volume of poles	481.88 cft	
Total Sapling/Shrubs	237	
Total Seedlings/Herbs	131	When and where it will be plantedis in ESMP, including types of species and maintenance

4.7. Adverse Impacts- Socio-economic and Cultural (Pre-Construction and Construction phases)

4.7.1. Impact on Physical Resources

a) Effect of Change in Land Use

The widening and upgrading works of road formation and drainage construction will be within the existing ROW, therefore additional land will not be required. Site-specific major works, such as intersection improvement, bank stabilization and drainage improvement also will not require additional land. The major component of the sub-project is the earth-filling necessary for road widening, and borrows pits for earth and gravel need to be identified. The extraction of earth from nearby areas will cause depression in the ground surface will result in water logging problems.

b) Obstruction to Structures:

During the construction phases, there will be obstruction to structures along the RoW of the road. The obstruction is due to change in elevation of the road. As per the DPR, 89 structures will be impacted. Project specific details are included in appendix H.

c) Loss of Standing Agricultural Crops due to Construction

There is no encroachment of any standing agricultural crops in the ROW. Therefore there is no loss of agricultural crops due to construction and no consequential income loss.

d) Impact on Personal Business/Enterprise, Trade Shop/Fishery

There are no personal businesses (for example, general stores, small cold stores), group business, registered companies,and business in processing production and manufacturing (including protective works, clothing and fish farming)present within the ROW. There are no businesses expected to be directly affected by the sub-project.

e) Relocation of Temple and Public Utilities

A small Durga Temple(CH 1+230 right side) built by a women's group near to Sisuwa Chowk is within the RoW and requires reallocation. Stakeholders including the women's group are not against the relocation of the temple, and have provided written consent for the unconditional relocation of the temple. There are two bus passenger waiting areas, one in Sisuwa Chowk(Ch1+220 right side), and the other in Mohoriya(CH 2+630), and another 2 Bus Operation Committee Contact Booths are in front of new light Boarding School(CH1+220), which lie within the RoW and need to be relocated prior to the construction phase.

f) Disruption of Water Resources Related Infrastructure

Despite the careful planning, five water taps and three small irrigation channels (CH 1+120, CH 1+760 and CH 3+070) for local use and a potable water supply (Lekhnath Water Supply Scheme) system will be affected by the construction activities.Those water taps will be shifted on the same chaingae in the area of green zone of 2.5m. Culverts are designed for those irrigation channels and the existing Lekhnath Water Supply Scheme will be relocated underneath the footpath of new road section.

4.7.2. Impact on Social Services and Cultural Resources

a. Education (School Buildings)

The existing educational establishments are not located within the ROW but one Private Boarding School (New Diamond Boarding School) is located near to the ROW. Even though the project does not directly

cause inconvenience to the school, and only school buses are parking in the road edge, their access may be hindered and inconvenienced during construction work.

b. Temporary Disturbances in House Owner's Mobility and Shop Consumer

c. 12 households and 6 shopkeepers may not be able to access their home or shop where construction will be carried during the construction period however it would be for very short time and temporary in nature. Some temporary structures during the construction would be made and permanent ramp is provided for those houses in the DPR (included in BOQ). **Road Safety Concerns and Health and Sanitation in Community**

During the construction phase, an increased number of construction vehicles will be plying the road therefore accidents may be more likely to occur. Hence, more stringent traffic management measures and information signboards need to be placed with the precautionary measures. The haphazard disposal of construction waste will adversely affect the sanitation environment in the area and this problem needs to be minimized through regulatory measures and public awareness. However the road may pose some adverse impacts on the environment at the operational stage, such as increase in traffic accidents due to higher vehicles speed, which must be controlled by putting up speed limit signs and enforcing them. It is recommended that traffic signs are placed at appropriate locations for road safety purposes. The movement of trucks and other equipment in the project area during the works implementation will cause noise and dust if the works will be in dry weather. This noise and dust may also affect the businesses in the vicinity of the construction works.

d. Occupational Health and Safety

Because of the engineering and construction activities including minor excavations, concrete work, and sub-base stone lying among others, construction workers will be exposed to risks of accidents and injuries. Such injuries can result from the hand tools and construction equipment and risk of vehicular accidents to local residents.

e. Social Disturbance / Risk of GBV and HIV AIDs

The construction works may cause disturbance to the local population with interactions of non-local workers with residential communities. The trafficking of girls and women can arise during the construction phase. Further, it may lead to GBV at household level and afterwards because the frequency of visitors or tourists may increase. This project may lead to an influx of commercial sex workers into the township or lead to contractor workers and other personnel engage in risky sexual behavior that may lead to infections in HIV-AIDS or other sexually transmitted diseases.

f. Traffic Management Issues

The flow of traffic along or near the proposed area will be affected and diversions would require managing traffic. Safety barriers and warning signs need to be erected for safety. Half width working approach with signalized traffic control will be adopted to manage the traffic. During the construction phase the school going children might face problems in crossing the roads and walk in the side alignment of the road, especially in rainy season.Safety barriers and warnings signs will be erected where required to ensure safe movement of traffic. An alternative route will be identified to ease the flow of vehicles especially during the rush hour, peak travel periods to ease road congestion.

4.8. Adverse Impacts – Socio-economic and cultural (Operational Stage)

There are expected to be no adverse impacts on the local economy during the operational stage, and significant long-term benefits are expected to arise from the proposed sub-project. However, the market will be competitive and the urbanization and semi-urbanization effect may contribute to a higher cost of living. The scale and trend of plotting of agricultural land will increase and there are possibilities of converting the agriculture land into residential and commercial areas. Some industries that are located near the road may also have tendency to relocate to other places with the purpose of developing their properties as commercial areas.

4.9. Beneficial Impacts - Social-economic and cultural (Pre-Construction, Construction Phases)

4.9.1. 4.6.1 Employment Generation and Increase in Income

The sub-project will generate skilled and unskilled employment opportunities throughout the project life—from construction to operations. Priority will be given on sourcing labor requirements locally. In cases that skilled workers are not locally unavailable, they will be recruited from other parts of country. The labor requirements of the different stages vary, creating a cycle of recruitment and termination. Aside from the income generation resulting from employment, those who will be given the opportunity to work for the project will also benefit in terms of gaining experience and training. The enhanced qualifications will empower them to get other jobs if terminated or recruited by other companies. Their acquired skills, and earnings from their income received, may also be useful in setting up their own business or services. Those employed by the project and those who are gainfully earning from businesses induced by the operations of the project will be in a better position to send their children to school. Undoubtedly, project impacts can be considered significant, positive, long term, and cumulative people lives changed for the better. The residual impact is the up-lift of the quality of life of the sub-project beneficiaries.

4.9.2. 4.6.2 Increase in Trade and Business

Business opportunities are created during the construction and operation of the road for products and services such as basic building materials, construction equipment, laundry, clothing, food services, cleaning services, excavation, construction material supply, etc. Indirect economic impacts will also occur from increased demand for products and services due to the increased workforce in the area. Business opportunities are greatest during construction and will continue though at a reduced rate during operations. Business opportunities are a positive impact to host communities which has a multiplier effect. Other members of the households that are engaged in lucrative businesses also benefit from the income generated. It is significant since it affects a wider portion of the local population and has long term benefits such as when children and dependents get better education and health care. The improved road condition will welcome more tourists into the area, which can help women and persons with disabilities to start their own business.

4.9.3. 4.6.3 Development of Social Services

Increased employment opportunities, trade and business and other income opportunities will direct considerable amounts of money into the local economy in the area. This will logically increase the income level of the individual household and the local body of the area. In the situation when the increased amount of resources, as well as local bodies, this can help to improve social services such as education/school and health care services.

4.10. Beneficial Impacts – Social and cultural (Operation stage)

The qualitative beneficial impacts that are likely to occur when the rehabilitated road is in operation are as follows:

4.10.1. Improved Transportation Facilities and Decrease Congestion

The rehabilitation and upgrading of the road will produce benefits through better access and mobility and effective transportation facility. The transportation of goodsare expected to became cheaper, particularly vegetables and livestock. Importantly, the journey will be more comfortable, the wear and tear of the vehicles will be less, and fuel and maintenance cost of the vehicles also will be less, which will lead to an increase in private savings.

4.10.2. Rise of Land Value

Road upgradation often leads to increased land values along the road corridor and subsequently enhances local peoples/farmers' capability for borrowing loans on collateral. High value lands are acceptable to banks

and financial institutions to provide loans. This impact will be an indirect, high, significant, local and long-term in nature.

4.10.3. 4.7.3 Improvement in Trade and Business

The improved road surface will ensure continued and smooth flow of products and commodities. It is envisaged that trade and business activities will be further promoted not only in the area but also expanded into others areas having links to this road.

4.10.4. 4.7.4 Increase in Tourism Sector

Begnas Lake of PMC is a famous lake. Due to its recreational importance and natural beauty, the lake is a main attraction for international and national tourists. Hence the road improved transportation will help to promote this area as more easily accessible tourism areas also benefits the local economy.

4.10.5. 4.7.5 Enhancement of the Social Services

This sub-project will increase the availability of safe and quick access to social services, development of the economic center, and increase in economic levels, which will help to improve school education and promote higher education outside the sub-project area. Similarly, local people may spend more on health care, sanitary facilities, education facilities and other social services.

4.10.6. 4.7.6 Enhancement of Mobility and Reduced workload

The improved mobility will improve comfort for women, children and the elderly. School children, differently-able and elderly people will therefore benefit from this road after completion. The differently-able people will also benefit from improvement of this road as the road improvements include a cycle lane for wheelchair users and tactiles for the visually impaired and white-cane users. Different signs, lights and solar lights for the evening can make self-mobility easier. The improved road condition can help people walking along the foot paths, and using cycles and wheelchairs along the cycle lane. This can reduce the rate of accidents along this route. The workload of women may decrease after the construction of the road given that women may not have to wash clothes every day because of the reduced dust impacts from the upgraded road. Because of such changes, women will benefit from time saved.

4.11. Social Mitigation measures

4.11.1. Working conditions and management of worker relationship

The Talchowk-Begnas road sub-project will provide reasonable working conditions and terms of employment, and will conformto requirements for working conditions established by national laws and WB safeguard policies. Nepali law requires equal employment opportunity. Based on experiences in similar

projects, it is estimated that 160 labor personnel is required for the sub-project. Talchowk-Begnas road project will give preference to the recruitment of qualified skilled and unskilled local villagers. Migrant workers will likely be engaged by the contractors during construction. The Talchowk-Begnas road project will contractually require the contractor to engage migrant workers on substantially equivalent terms and conditions to local workers carrying out similar construction work. During construction, temporary accommodations will be constructed by the contractor and in compliance with national and international standards for quality, security, safety, and professional competency and no forced labor will be used.

4.11.2. Occupational Health and Safety (OHS)

The policy applies to employees and contractors, including subcontractors. To protect the safety of workers, Talchowk-Begnas road project will provide safety equipment with reference to the provisions of Nepali Law and the World Bank Group Occupational Safety Guidelines. The Talchowk-Begnas road project is obligated to report on its occupational health and safety conditions to the PCO quarterly.In order to maintain a healthy environment for the labor force, the project management should put in place suitable measures to clean the environment associated with labor camps. This will include proper disposal of human waste. The contractor needs to put in place mechanisms for the collection of all wastes generated (solid wastes, organic wastes, food remains, garbage etc.), in the labor camps, segregate the various wastes and arrange for subsequent disposal through either efficient incineration or disposal in a sanitary landfill.

4.11.3. Child and forced labor

In conformance with Nepali law and the WB policies,Talchowk-Begnas Road project will not employ children under the age of 16. However, children above the age of 14 can perform some types of labour e.g. non-hazardous/non-harmful.

4.11.4. Community health and safety and reduction of incidences of diseases

As a precaution to prevent the spread of HIV/AIDS in the project area, the PMC and other stakeholders must organize and support education programs to create public awareness regarding HIV/AIDS and other sexually transmitted diseases (STDs). In order to protect the community members especially vulnerable groups such as women, children, infirmed and elderly from project workers, there will be a need for the project contractor to create awareness around STD prevention and contraception.

4.11.5. Management of labor force

The labor force engaged in the rehabilitation of the road and construction have the potential to degrade the environment of the project area as discussed in earlier sections of the ESIA. The project management should therefore put in place mechanisms to deter the work force from engaging in cutting of trees for fuel wood,

charcoal burning, and building material and for any other purposes. The contractor should use pre-fabricated material (which can later be retrieved at the end of the project) in building the labor camps. This will deter the labor force from unnecessary cutting and trampling of vegetation and enhance the protection of the scanty natural vegetation of the project area.

4.11.6. Addressing Gender Issues in Construction, Operation and Monitoring

During project construction and operation, the ESMP should be implemented and activities monitored via the project management system and in accordance with monitoring indicators. In the case of procurement of goods and services, the PCO should ensure that gender-related issues are addressed through terms of contracts and contractor management monitoring. Stakeholder engagement should be continued throughout the project lifecycle, together with any activities related to capacity-building. Receiving feedback from relevant stakeholders is a valuable monitoring tool and any grievance should be dealt with in a timely manner and efficiently. Progress of implementation of the ESMP including results of monitoring should be described in the annual report to the PCO on environmental and social matters. The PCO should also consider reporting gender-related issues as part of any public reporting.

4.11.7. Limited access to elderly people and differently-able during construction

Diversions and proper crossings should be in place along the road for elderly and differently-able people during the construction phase. Elderly people should have access to socialize and meet people and their families to nurture their mental needs and health. The design should incorporate disabled-people's needs and incorporate periodic maintenance of disabled0friendly designs. As the mobility of differently-able people will be impacted during construction, this should be addressed properly. After completion of the road improvement, training and using of such facilities should be arranged through the PMC.

4.11.8. Safety to school children and pedestrians

During the construction phase, other roads should be used or diversions established, and should be child, elderly and differently able person-friendly. Crossings near school areas should be safe, and the school area should be highlighted properly. An attendant from the school and/or from the contractor should be present at the school crossing during starting and closing times, or in peak traffic hours. Appropriate signage during construction and implementation should be displayed to enhance the awareness of potential safety hazards. After the completion of the road improvement, awareness should be created amongst school children, members from mother and women groups, and other pedestrians (people using the road everyday for work or business) of the road signs, and using the road safely through awareness-raising programs in schools, women groups, local media and FM radio.

CHAPTER 5: RESETTLEMENT ACTION PLAN

5.1. Background and Objectives of the Resettlement Action Plan (RAP)

5.1.1. Aims of the RAP

The aim of this Resettlement Action Plan (RAP) is to provide the policy and procedures of land acquisition, compensation and resettlement of affected persons, if required. It has been prepared based on the findings of a resettlement impact assessment undertaken during detail project design and from updated information collated between December, 2018 andSeptember2019. The assessment aimed to identify the impacts on property and income sources of affected persons with documentation of loss of land, houses, trees etc. within the construction width of the proposed road

This RAP identifies safeguard measures including compensation, resettlement and rehabilitation assistances to the affected persons, consistent with the provisions of Resettlement Policy Framework (RPF) provided in the NUGIP Environmental and Social Management Framework (ESMF). This RAP particularly addresses the following considerations associated with road improvement and upgrading works. Social considerations have been incorporated into the road design:

- Private and community resources affected by the project (e.g. houses and infrastructures, which require the provision of appropriate entitlements
- Organizational and institutional requirements for the implementation of compensation, resettlement and rehabilitation activities
- Implementation schedules and monitoring mechanisms
- Compensation, resettlement and rehabilitation cost estimate

5.1.2. Policy and Principles of the RAP

This RAP has been prepared based on the following policy and principles of the NUGIP ESMF and RPF, which arein harmony withGoN policies and the World Bank Policy on Involuntary Resettlement (OP 4.12). Both the WB policy and GoN legislation emphasize avoiding or minimizing involuntary resettlement. Where the acquisition of private property is unavoidable, involuntary resettlement should be an integral part of project design and preparation.

The acquisition of private assets and the displacement of people will be avoided or minimized to the extent possible, through the incorporation of social considerations into alignment selection and road design. Where asset acquisition and population displacement are unavoidable, the pre-project living standards of affected persons will be restored. Community consultation ensures people's views, concerns and suggestions are incorporated into implementation procedure.

An institutional framework will be developed as an integral part of the sub-project to ensure that appropriate social impact management mechanisms are set up and maintained during implementation. These mechanisms and arrangements will ensure that compensation, resettlement and rehabilitation are carried out timely and effectively.

5.2. Operational framework and Methodology of the RAP

5.2.1. Operational Framework

As the project authority, the PCO within the DUDBCwill assume overall responsibility for the management procedures as mentioned in the RAP. Key activities to be undertaken to ensure effective implementation of resettlement, compensation and rehabilitation activities are:

- Implementation of procedures to (i) minimize adverse social impacts including acquisition of land and assets throughout the planning, design and implementation phases and (ii) accurately record all project-affected persons, by means of census and asset verification and quantification exercises, and the issuing of identification;
- Establishment of systems and procedures for the co-ordination of resettlement and compensation activities;
- Establishment or strengthening of grievance redress mechanismsatthe Ward level or Metropolitan level where it is appropriate and practicable to address the social issues associated with the project. The objectives of this will be to: (a) ensure ongoing dissemination of project information to affected households, (b) structure, regulate and strengthen communication between roadside communities, (c) involve affected communities and local government structures in social impact management, grievance resolution and monitoring;
- Distribution of copies of the approved Entitlement Policy, and follow-up community meetings to ensure full comprehension of its contents;

- Capacity-building initiatives to create a supportive environment for the implementation of RAP activities, including training on accepted resettlement and rehabilitation practices, training in the establishment of compensation plans for affected household;
- Coordination with relevant government line agencies (as required)
- Collaboration with non-governmental agencies to provide grassroots expertise and resources in areas such as project information campaigns and impact monitoring.

5.2.2. Definitions

The following definition will be applied in the RAP:

- **Compensation:** The payment in cash or kind for private property acquired by the NUGIP/ Metropolitan, based on replacement value as defined by the Compensation Determination Committee (CDC).
- **Compensation Determination Committee (CDC):** The district-level committee established under Section 13 (2) of the *Land Acquisition Act* 2034 (1977) to determine replacement value and compensation rates for property acquired under the Act.
- **Cut-off Date for Eligibility to Entitlement:** The cut-off date for eligibility to compensation and assistance will be the date of the joint census of affected households and affected assets. The cut-off date is August 20, 2019
- **Entitled Person:** Any person who is entitled to compensation due to the loss of privately owned assets and other rehabilitation assistance.
- **Project Affected Person (PAP):** Any person directly affected by the project through the acquisition of assets belonging to him/her of his/her household or community. This includes any person whose rights, standard of living, subsistence and income-generating capacity are adversely affected through the acquisition of assets, whether full/partial, or permanent/temporary.
- **Project Affected Family (PAF):** The group of people residing in one house and operating as a single economic unit, who are adversely affected by the project. Major children over the age of 18 years will be entitled to rehabilitation measures as outlined in the Entitlement Matrix but not to compensation for properties held by other members of the household.
- **Rehabilitation:** The measures taken to mitigate identified social impacts, including compensation, resettlement and rehabilitation and transition allowances where required.
- **Replacement Cost:** With regard to land and structures, "replacement cost" is defined as follows: For agricultural land, it is the pre-project or pre-displacement, whichever is higher, market value of land of equal productive potential or use located in the vicinity of the affected land, plus the cost of preparing the land to levels similar to those of the affected land, plus the cost of any registration and transfer taxes. For houses and other structures, it is the market cost of the materials to build a replacement structure with an area and quality similar to or better than those of the affected structure, or to repair a partially affected structure, plus the cost of transporting building materials to the construction site, plus the cost of any labor and contractors' fees, plus the cost of any registration and transfer taxes.
- **Titleholder:** The person in whose name the project-affected land and/or building is registered and the person who is authorized by law to receive the compensation granted for the acquisition of land.

- **Tenant:** A person occupying/using land of a titleholder according to the stipulations of the Land Act, 2021 (1964).
- **Vulnerable Groups:** Social categories whose livelihoods may be particularly vulnerable to disturbances created by the project. These groups may include tribal groups, *Dalits* and landless persons who rely on access to local agricultural work and other support systems built up around the agricultural resources base.

5.2.3. Methodology

The methodology includes review of the sub-project DPR report to understand the project foot prints, visit of project sites by team of experts, and verification of physically and economically displaced households and structures.

A socioeconomic survey information of project affected wards 27, 30, and 31 were collected. In addition to it, 20% of the household survey were conducted from 50 meter each side from the edge of the RoW.

The cadastral maps and the list of land owners of the project alignment are included in Appendix J. Compensation for all land within the RoW was provided 40 years ago and now all land within the RoW is under the jurisdiction of PMC. Written evidencewasprovided by PMC confirming that all land within the RoW is under the ownership of PMC, andis included in Appendix O and P.

5.3. Assets inventory and relevant consultations

As noted above, the acquisition of all land within the 30 meterRoW was completed in 1977 and compensation for the land was provided in 1980 by the Government of Nepal. An asset inventory was carried out to determine structures which are still standing in the RoW. Consultationsregarding the identified assets were organized with providing prior verbal notice to the concerned persons and institutions. Consultations were held during the period December 2018toSeptember 2019 including with the Lekhnath Water Supply Committee, the women's group responsible for the Durga Temple, the Bus Operating Committee, and other affected persons. These structures and further details of the consultations are provided in the table below:

Table 5-1. Assets Inventory and relevant consultations

SN	Type of Asset within RoW	Details of Asset	Proposed Action	Consultations and Consent
1	Two bus passenger waiting huts, two ticket counters	One bus passenger waiting hut is located inSisuwa	All structures will be relocated tothe edge of the RoWbeforeupgrading of the road commences.	Consultations were held with theMohoriyaCommittee on 1 September 2019, and with the

SN	Type of Asset within RoW	Details of Asset	Proposed Action	Consultations and Consent
		Chowk, and the other is located at Mohoriya Chowk. Two Bus Operation Committee ticket boothsare located in front of new light Boarding School.		Sisuwa Public Bus Shelter Committee on 2 September, 2019. The committees have provided "no objection"/consent for demolition and relocation of the bus passenger waiting areas. The project will allocate NPR450,000.00 for the construction of 1 bus shed, 2 ticket counter. Meeting was held with the ward and community representative and agreed to the project's proposal. The consultation details and consent is enclosed in Appendix O.
2	Durga Temple	Newly constructed Durga temple. Women's group, ChetansilMahilaSamuha, is responsible for management of the temple.	Propose to relocate the temple to an alternative location. Interacted with the women's group, and ward and they have agreed to relocate temple to an appropriate place.	A consultation with the women's group which established temple, ChetansilMahilaSamuha,was undertaken on 2 September, 2019. They are voluntarily willing to relocate and rebuild the temple in suitable place, and have provided consent that they do not wish to receive compensation.The consent letter and consultation details are enclosed in Appendix K. Relocation cost of NRs 250,000 is included in BoQ.
3.	145 electric and telephone poles	145 electrical poles are within the ROW	The poles require relocation. This is detailed under the physical impact and mitigation chapter.	Relocation of poles was discussed in a metropolitan level consultation meeting. Relocation costs of NRs 60,32,144.80 are provided in the ESMP and is included in BoQ..
4.	Main water supply pipe line of	The main water supply pipeline of	The pipeline will be relocated. Impacts and mitigation measures are	A meeting was held with the water supply committee and the

SN	Type of Asset within RoW	Details of Asset	Proposed Action	Consultations and Consent
	Lekhnath Water Supply System	the Lekhnath Water Supply System runs through the ROW and needs to be relocated prior to the commencement of upgrading.	addressed under physical environment impact and its mitigation chapter.	replacement cost estimate was provided by the committee, based on which replacement cost is calculated. Relocation costs of NRs 80,63,472.88 are provided in the ESMP and is included in BoQ.
5.	**Relocation of 5 tap stands**	Relocation cost of NPR25,000 per tap, for a total of NPR125,000.00	Needs to be removed in the pre-construction phase.	Discussions were held with users, ward and the funding agency (Nepal Red Cross). The users and ward has agreed to relocate in suitable places.Relocation cost is NRs1 50,000 and is included in BOQ.
6.	Structure of Mr Bastola	The structure falls within the RoW. The structures attached to a main housewhich is also by MrBastola and which lies outside the RoW. The structure is currently used as a small temporary shop.	The structure needs toberemoved during the pre-construction phase**.**	A consultation with house owner was held and the owner has consented removing the structure within which falls in RoW. The owner will remove the structure prior commencement of construction. The owner has provided written consent/ commitment letter to relocate the structure, signed on 1 September 2019, which is provided at Appendix L.

5.4. Grievance redress

As part of the implementation stage the PIU, PMC project engineers and Environment and Social staffs will directly interact and consult with the project affected persons. These would comprise of consultations towards relocation of the PAPs, relocation of cultural properties, and towards addressing the impacts on

common property resources (CPRs) such as places of religious importance, community buildings, trees, etc. With the implementation of the rehabilitation provisions in progress, consultations and information dissemination will be undertaken to let the affected persons informed of the progress. Implementation stage also involves redress of grievances in case of rehabilitation aspects as well as relocation of common property resources through the grievance redress mechanisms.

The affected persons and groups identified above will be able to raise any grievances related the relocation of the above assets with the subproject grievance redress mechanism (GRM), to help ensure the successful implementation of resettlement measures. At first instance, the project-affected grievant should raise their grievance with the information office of the project, and the information office will determine whether it can be resolved within the project, at the ward level, or whether another mechanism should be used.PAPs will be exempt from all administrative fees incurred, pursuant to the grievance redressed procedures except for cases filed in court. More details regarding the GRM are provided under Chapter 9 Grievance Redress Mechanism.

5.5. Entitlement Matrix

An Entitlement Matrix, as outlined in the ESMF,willbe followed. Relevant sections of the entitlement matrix for the sub-project have been provided below:

Type of Loss	Entitlement Unit	Description of Entitlements	Implementation Measures
1. House and other Structure			
Loss of structure	Non-titleholder, Squatter on public land	Cash compensation for full or partial loss at replacement cost, according to building type.	Compensation for smal temporary shop in RoW has already been received from the PMC, including relocation allowances, prior demolition of house.
2. Community and Cultural Assets/ Facilities			
Loss of bus shelters	Local Management Committee	Restoration of affected structures by the project leaving such facilities in a better condition than they were before; or cash compensation at full replacement cost.	NPR 150,000 has been calculated for the removal and reconstruction of bus shelter. Consent from bus operator has been obtained.
Reconstruction of Lekhnath water supply system	Concerned department	Restoration of affected structures by the project leaving such facilities in a better condition than they were before; or cash compensation at full replacement cost.	Calculation of cost for reconstruction of water supply system has been calculated and included in mitigation cost.

Relocation of electric poles	Concerned department	Restoration of affected structures by the project leaving such facilities in a better condition than they were before; or cash compensation at full replacement cost.	Compensation payment as per Nepal Electricity Norms for relocation of the poles should be completed prior construction. The cost for relocation is inclcuded in mitigation budget
Relocation of five tap stands	Local management committee/ user group	Restoration of affected structures by the project leaving such facilities in a better condition than they were before; or cash compensation at full replacement cost.	Cost for relocation has been provided.The relocation cost is included in budget
3. Temples			
Demolition and relocation of temple	Women's group	Restoration of affected structures by the project leaving such facilities in a better condition than they were before; or cash compensation at full replacement cost.	Unconditional, written consent has been obtained from women's group, secure funds for demolition and relocation.
4. General Counseling			
All project impacts	Persons within and adjacent to the road corridor	General counseling on project impacts; construction schedules and acquisition dates; valuation, compensation and grievance resolution mechanisms; construction employment procedures; and local development initiatives.	This will be achieved through the periodic distribution of information sheets and consultation with local officials. Cooperation with GoN ministries and departments such as Department of Agriculture, Forest Local Development to support effective resource utilization and community development.

CHAPTER 6: SEA/SH PREVENTION AND RESPONSE ACTION PLAN

6.1. SEA/SH - National Scenario

Nepal ranks 118 out of 160 countries on the Gender Inequality Index[11]. In relation to that, most women face various kinds of violence throughout their lives. Violence against women is gender based where there is unequal distribution of power dynamic between men and women.The Nepal Demographic and Health Survey (NDHS) 2016 records that 23 percent of women experience physical violence, with significant differences across various social groups. The experience of violence is highest amongst Madhesi Dalit women at 44 percent, with the rate amongst Muslim women at 38 percent, and amongst hill Brahmin women at nine percent. By province, women's experience of physical violence varies from 12 percent in Province 4 up to 34 percent in Province 2. About 12 percent of women experience emotional violence with 17 percentto 19 percent amongstMadhesi Brahman Chhetri, hill Dalit and Newar women,respectively experiencing it. Seven percent of women age 15-49 have experienced sexual violence. Divorced, separated, or widowed women are much more likely to have experienced sexual violence (20 percent) compared with currently married women (8 percent) and never married women (2 percent). Women with only primary or no education are more vulnerable to sexual violence than educated women.

The current status of gender inequality and gender-based violence (GBV)in Nepal reveals the serious need to mainstream gender sensitivity and GBV risk mitigation measures, and more specifically, sexual exploitation and abuse, and sexual harassment (SEA/SH) risk mitigation measures at all organization levels and in all phases of project cycles. In Nepal, SEA/SH is prevalent due to unequal gender relations and discrimination towards women in both the public and private sphere. It has direct implications on the reproductive health status of women and on the physical, emotional, and mental health of their children.

Based on the SEA/SH Risk Assessment checklist and assessment carried out for NUGIP by the World Bank, the Project's SEA/SH risks are assessed to be "Low". An SEA/SH Risk Mitigation Action Plan has been developed for NUGIP based on this assessment and includes specific measures that aim to prevent and mitigate GBV, in particular SEA/SH risks that the project activities might trigger. The Plan has also addressed "Table – 1: Recommended actions to address SEA/SH Risks in IPF Projects" as per the "Good Practice Note" published by the World Bank in September 2018. The SEA/SH Risk Mitigation Action Plan

[11]UNDP Human Development Report 2017

is included under Chapter 7 of the ESMF for NUGIP. The plan applies to all subproject under NUGIP and provides recommended actions for addressing and mitigating SEA/SH risks.

6.2. The Purpose of SEA/SH Risk Mitigation Action Plan

The Pokhara subproject draws upon NUGIP SEA/SH Risk Mitigation Action Plan to address and mitigate against any SEA/SH risk during subproject implementation, and will make any adjustments as required to meet subproject specific SEA/SH risks that were identified during ESIA preparation. The purpose of the action plan is to identify the issues, stakeholders, possible service providers and assess their capacity and document the legal and institutional mechanisms that aid in accessing grievance redressal. The subproject will focus on sensitizing the communities and other stakeholders and strengthening institutional capacities. A survivor-centric approach is followed whereby all through the subproject, victim/survivors' care and providing access to different referral mechanisms are considered key aspects of this plan.

SEA/SH Risk Mitigation Action Plan Principal and Approach

The survivor-centric approach is a human-rights based approach which aims to create a supportive environment in which the survivor's rights are respected and in which she is treated with dignity and respect (UNICEF 2010). This approach helps to promote survivor's recovery and ability to identify and express needs and wishes, as well as to reinforce the survivor's capacity to make decisions about possible interventions (GPN – Addressing SEA/SH in civil works, World Bank 2020)

The key principals of this approach are:

i) To treat victimized women and girls with dignity and respect instead of being exposed to victim blaming attitude.
ii) Do not deal the issue through the feeling of powerlessness.
iii) To maintain privacy confidentiality and safety instead of exposure.
iv) Do not discriminate survivor based on gender, age, race/ethnicity, ability, sexual orientation, HIV status or any other characteristics.
v) Enable timely access to quality services as required by the survivor
vi) Ensure informed consent of the survivor since the survivor has the right to understand the options and decide whether to talk about the incidence or not

6.3. SEA/SH risk in the Talchowk-Begnas Road subproject area

SEA/SH risks in the subproject were screened and assessed as part of the ESIA. During preparation of the ESIA, four FGDs which were conducted in the sub-project area, one of which was conducted with the only women group at Begnas Taal Ward 31 Office, and other three FGDs were conducted at Talchowk 27,

Sisuwa 30, Moeiya 31. Both FGDs undertaken at Ward 31 indicated that alcoholism and gambling were major social problems. Incidents of GBVwere stated by the participants to be to occur on average between 3 to 6 times per month. In 1 to 2 cases, the survivor reached out to police office, and the remaining caseswereresolved informally. As the area has some Dohori-Sanjha restaurants (night clubs) most of the incidents involve the refusal of customers to pay the service providers, and the consumption of alcohol. Participants of the FGD undertaken at Talchowk Ward no 27 indicated that a major social problem was also related to a Dhohori-Sanjha restaurant and the noise made by drug users. The FGDatSisuwa Ward no 30 identified similar problems as in other FGDs. With Pokhara being a tourist spot, risk of child labour is also prevalent as well a commercial sex work leading to high risks of sexually transmitted disease.

6.4. Additional SEA/SH Risks in relation to Labor Influx

Amongst all required human resource needed for the subproject, skilled labour requirements will be less and unskilled labour will be high. All labour requirements cannot be met through hiring from the local community, for various reasons including worker unavailability and lack of skilled labour, therefore the contractor will hire labor externally according to need. In many cases,labor influx is compounded by influx of other people who appear in the project area along with the development of the project for various reasons including to seeking opportunities to sell goods, and services.

The social impacts resulting from labor influx are critical to address, as even a modest labor influx may lead to negative impacts on the host community. Pre-existing social issues in the host community, including those indicated above during the FGDs,can easily be exacerbated by the influx of labor. In the area of Talchowk-Begnas road project, a few cases of drug abuse and disputes after alcohol consumption in the night club has been observed which can increase with the influx of labor. Below are potential risks in the subproject area which are associated with labor influx:

I. **Risk of social conflict:** Conflicts may arise between the local community and laborers for various reasons. Tensions may also arise between different groups within the labor force, and pre-existing conflicts like high consumption of alcohol, drug abuse and dispute/fights in the local Dohori-Sanjh may be exacerbated.

II. **Increased risk of illicit behavior and crime:** The influx of workers and service providers into communities may increase the rate of crimes and/or a perception of insecurity by the local community. Such illicit behavior or crimes can include theft, physical assaults, substance abuse, prostitution and human trafficking. Local law enforcement may not be sufficiently equipped to deal with the temporary increase in local population.

III. **Influx of additional population followers:** Additional people who may move into the subproject area for a number of reasons. These can be people who expect to get a job with the project, family

members of workers, as well as traders, suppliers and other service providers These people can also include sex workers who seek opportunities in new project area.

IV. **Burden on and competition for public service provision:** The presence of construction workers and service providers (and in some cases family members of either or both) can generate additional demand for the provision of public services, such as water, electricity, medical services, transport, education and social services. This is particularly the case when the influx of workers is not accommodated by additional or separate supply systems.

V. **Increased risk of communicable diseases and burden on local health services:** The influx of people may bring communicable diseases to the project area, including sexually transmitted diseases (STDs), or the incoming workers may be exposed to diseases to which they have low resistance. This can result in an additional burden on local health resources. Local health and rescue facilities may also be overwhelmed and/or ill- equipped to address the big accidents that can occur.

VI. **Child labor and school dropout:** Increased opportunities for the hostcommunitytosellgoodsand services to the incoming workers can lead to child labor to produce and deliver these goods and services, which in turn can lead to enhanced school dropout. Additionally, since the requirement for unskilled labor is high, child labor issues could potentially eventuate.

VII. **Increased pressure on accommodations and rents, traffic and inflation of price:** Depending on project worker income and form of accommodation provided, there may be increased demand for accommodations, which may lead to price increases and crowding out of localresidents.Delivery of supplies for construction workers and the transportation of workers can lead to an increase in traffic, rise in accidents, as well as additional burden on the transportation infrastructure.

VIII. **Other SEA/SH related risk:** Construction workers are predominantly males of younger age. Those who are away from home for work and separated for long periods from their family may act outside their sphere of social control. This can lead to inappropriate and criminal behavior,such as sexual harassment of women and girls,exploitative sexual relations,and illicit sexual relations with minorsfrom the local community.

6.5. Mitigating against SEA/SH risks

Mitigation measures against the risk of SEA/SH in the subproject are outlined below:

a. **Reduce labor influx by using local manpower:** Use of locallyavailable labor is an effective mitigation measure against laborinflux.The contractor can recruit unskilled labor locally and for skilled labor, which is comparatively lower in number can recruit locally as well as borrowed as required. For skilled labor, training should provide to local workers to help maintain the road in thelong term. Such trained

staffs are needed afterwards for the operation and maintenance of the road on regular basis and by providing training for the locals is beneficial for both community and the contractor.

b. **Awareness programs:** Both the workers and the locals should receive awareness programs related to possible problems they might face during the project period. The risk of conflict between laborers and the community and conflict within labors, SEA/SH, women trafficking, sexually transmitted disease, HIV AIDS are the topics on which awareness should be raised amongst both the laborer and community. This could be achieved through programs in schools and communities, for women working in DohoriSanjha, messages through local FM radio, and placing hording boards with messages in appropriate places.

c. **School-Based Awareness Programs:** The road alignment has four schools, with almost half students being girls. School-based awareness programs should conducted to inform the students about the possible risks and harms they might face during construction of the road. These awareness programs can teach them about accepting gifts, ignoring verbal assaults and other labor-related issues, and reporting incidents to the authorities so that the authorities can assist in preventing further incidents.

d. **Management of Alcohol and drug abuse:** The open market of alcohol should be managed and monitored by local authorities. The Code of Conduct (COC)for laborers should clearly mention that consumption of alcohol and drug abuse in the host community is strictly prohibited and that their work can suspended where such rulesare broken. This information should be provided to the host community through different means, which can help to prevent alcohol and drug abuse-related issues.

e. **Building Capacity for SEA/SH mitigation:** The host community may not be aware of the kinds problems they might face resulting from the influx of labor. Police, local government's GRM unit and organizations like mothers group, local clubs, and teachers/counselors of the schools from alongside the RoW, social mobilizers and NGOs working in the area should provide proper training to address problems related to influx of labor. Trainings can be helpful to manage small problems locally and manage the situation properly as mother's group is doing similar work at present regarding to the issues emerged in the community.

f. **Managing the influx of other people into the area:** Other individuals followers, along with labors who move into the area, should be monitored by the PIU, community and local authorities, as these individuals may get involved in situations of conflict with locals, as they both use the same communities/markets. Laborers and others who enter the area need to share the same health facilities, public transport, water and other necessary supplies and resources. To reduce potential conflicts arising from sharing these facilities, the subproject should arrange alternative mechanisms to address the needsof their labor and staff to the extent possible and if in case these two parties has to share the facilities,rules for sharing facilities should be implemented.

g. **Communicable diseases**: The influx of people may bring communicable diseases to the project area. ForSTDs and diseases to which locals may have low resistance, the nearby health authorities should be prepared for upcoming health issues.

h. **Child labor and school dropout:** Child labor and school dropouts should be monitored closely by community and local authorities. The contractor should be penalizedifchildren are used in construction or any other job in relation to the subproject. Code of conduct

i. **Increased pressure on accommodations and rents, traffic and inflation of price:** If the contractor recruits local labor and/or laboraccommodation is provided in the camp, it may not create much pressure on community resources. But if the labor remainsinthecommunity,orusescommonresources during the construction phase then there may be increased pressure on resources.

j. **SEA/SHrelated to female workers**: In order to mitigated against SEA/SH related risks with respect to female laborers, female labor-centric facilities such as separate female toilets, separate female camps, separate family camps and mother's rooms should be provided in the labor camp and on the site.

6.6. SEA/SH Risk Mitigation Action Plan

As noted above, the subproject will draw on the SEA/SH Risk Mitigation Action Plan developed for NUGIP, which is included in the NUGIP ESMF, to address and mitigate against SEA/SH risks in the Pokhara subproject.The NUGIP SEA/SH Risk Mitigation Action Plan is provided belowand incorporates specific SEA/SH risk mitigationrelatedactivitiesfor the Pokhara subproject.

Table 6-1. SEA/SHRisk Mitigation Action Plan

Objective	Indicator	Pokhara subproject measures	Timeline	Responsibility	Cost (NPR)
Include the assessment of SEA/SH risks (as low SEA/SH risk) as part of the social/gender assessment in project's Environmental and Social Impact Assessment (ESIA)	Low SEA/SH risks highlighted and preliminary mitigation measures identified Mapping completed of available, quality services in the project affected area	Consultations have been conducted and identified SEA/SHrisks in project areas identified and include the main measure agreed to with the PCO Map out SEA/SH prevention and response services in project area of influence – reference to be made from the service mapping that already exists at the national level	December 2018 to June 2019 (as part of ESIA)	PCO/PIU	Included in ESIA cost
Reflect SEA/SHrisks, and measures to address them, inthesubproject ESMP and contractor ESMP including the costs	SEA/SHRisk Mitigation Action Plan included in the ESMP Procurement for SEA/SH-related activities and costs outlined in the contract.	SEA/SHRisk Mitigation Action Plan provided and SEA/SHrelated costs are included in the ESMP and contract documents to mitigate risks.	Year 1 (during preparation of ESMP)	PCO/PIU	SEA/SH costing is included in ESMP
Develop plan for stakeholder engagements and inform communities in project areas of SEA/SHrisks and options for response	Number of awareness and consultations held	The plans for stakeholder engagements during the subproject implementation include awareness raising activities (specialized service providers/contractors/NGOs identified and hired under contract) and awareness and consultations carried out. This plan will be implemented during the project construction.	During preparation of ESMP, beginning of construction, and during construction	PCO/PIU	ESIA covers stakeholder consultation costs; construction phase stakeholder engagements costs should be inbuilt into overall budget

Objective	Indicator	Pokhara subproject measures	Timeline	Responsibility	Cost (NPR)
Formulate and adopt code of conduct (CoC) including sections on safety of women and girls	CoC developed, included in all contracts, and staff, consultants, contractors trained.	Developed CoCshould be included in all contractsand also in the PIM. Training on the CoC should be provided to all.	Prior to contractor mobilization and duringproject period.	PIU/PCO/Contractor	The awareness and orientation program cost to be inbuilt in PIU and at individual contractor level in BoQ
Hiring a Gender Specialist expertise on SEA/SHto advise and monitor action plan during project implementation	Appointment of Gender Specialist with 5 yearsexperiencewithSEA/SH expertise Measure effectiveness of the SEA/SH Action plan over a certain number of months	Gender Specialist (hired for NUGIP at the project level) will provide support for subproject mitigation measures Coordinate, report to and work closely with the NUGIP gender specialist on the implementation and monitoring of SEA/SH action plan	Year 1	PCO / PIU	Included in Project Cost
Project Construction					
Codes of Conduct signed and understood	Number of people oriented and trained on CoC Number of people who signed CoCs	EnsureCoCs are clearly understood by those signing it CoCsmust signed by all those with a physical presence at the project site. Train project-related staff on the behavior obligations under the CoCs. Disseminate CoCs (including visual illustrations) and discuss with employees and surrounding communities.	During subproject implementation	Contractor, PIU	Built into overall project cost
Awareness on SEA/SH	Number of people made aware of SEA/ SH issues	Raise awareness amongst women in the community, school children	During subproject implementation	PIU, Contractor, Gender	3 trainings, 2 times a year for 3 group

Objective	Indicator	Pokhara subproject measures	Timeline	Responsibility	Cost (NPR)
	Number of personswhoparticipated in awareness IEC material on SEA/SH, CoC etc displayed in the work sites, labor camps, surrounding communities.	andstudents and female workers in Dohori-Sanjh (Night Clubs) Undertake stakeholder engagements and conduct community awareness raising programs and conduct training about SEA/SH risk mitigation measures for project workers and the local community, for example, CoC, GRM, how to report and provide multiple entry-points.Includes: - Community based-awareness program - School based awareness program - Awareness program for women working in Dohori-Sanjha(Night Clubs) The project should work with women's groups to support the awareness programs.		Specialist, Ward office CBO/NGOs working in area	@Rs 20,000 per training. Total: NPR3,600,00 Additional costs: Rs. 2,000,00.00
Establish and strengthen grievance redressal	Availability of an effective GRM with multiple channels to initiate a complaint relating to / parallel SEA/SH Number of GRM members trained. Inclusive GRM system in place.	The GRM allows for the appropriate referral ofsub project-related complainants. At the subproject level, select one women member as first point of contact for the survivors of SEA/SH and provide appropriate training to them. Undertake stakeholder engagements as outlined in the ESMP and conduct community awareness raising about SEA/SHriskmitigation measures, taking	During subproject implementation	Gender specialist of the Project	Built into overall project cost and SEA/SH awareness raising outlined above

Objective	Indicator	Pokhara subproject measures	Timeline	Responsibility	Cost (NPR)
	Number of SEA/SH issues which have been referred to GBV Services Providers	support from local women's groups, for example, CoC, GRM, how to report and provide multiple entry-points Maintain proper documentation is maintained for complaint registration and management			
Implement appropriate subproject-level activities to reduce SEA/SHrisks prior to civil works commencing	Documentation of measures taken to reduce SEA/SHrisks.	Have separate, safe and easily accessible facilities for women and men working on the site. Establish locker rooms and/or latrines for workers and project staff, well-lit areas and include the ability to lock themfrom the inside. Visibly display signs around the project site (if applicable) that signal to workers and the community SEA/SH is prohibited. As appropriate, public spaces around the subproject grounds should be well-lit.	During subproject implementation	PIU, Gender Specialist of the project.	Include in Project Cost
Project Monitoring					
Report in the quarterly progress report and review during Implementation Status Review (ISR) missions	Successful implementation of agreed SEA/SHAction Plan (Y/N)	Reports SEA/SH-related issues in the quarterly progress report review during ISR missions	Project period	PCO, PIU, Gender specialist	

Note: The requirements of the SEA/SH Risk Mitigation Action Planmust be included in contractor's management plan.

CHAPTER 7: ENVIRONMENT AND SOCIAL MANAGEMENT PLAN

7.1. Background

This Environmental and Social Management Plan (ESMP) for the Improvement of Talchowk-Begnas Road identifies the principles, approach, procedures and methods that will be used to control and minimize the environmental and social impacts of all construction and operational activities associated with the project development. It is intended to ensure that commitments made to minimize project's related environmental and social impacts are upheld throughout all project phases. TheESMP, including the monitoring plan, has been identified as an important process in the protection of socio-cultural environment of the project area. This will reveal changes and trends brought about by the presence and operations of the construction of road and other infrastructures. The management and monitoring program will involve the following: a) collection and analysis of appropriate environmental social and cultural data; b) preparation of periodic reports including an annual environmental and social performance report to DUDBC and the WB and liaison with other relevant bodies (e.g. ministries, departments and relevant agencies); c) identification of unexpected environmental and social impacts; and d) formulation of mitigation measures for the unexpected negative impacts.

7.2. Institutional role

As per the Local Self-Governance Act, 2055 (LSGA) municipality is anautonomous and corporate body with perpetual succession. Its apex body is the Municipal Council,formed from the local election for the carrying out local governance. Municipality leads from themunicipal board, which constitutes from mayor, deputy mayor, chairpersons of ward level and twonominated members. The Municipality is responsible for physical development, water resource, environment, sanitation, education, sports development, culture, transport, health service, social welfare,industry and tourism development related activities at municipality level. The Ward Committee isconcentrated on keeping inventory, sanitation and cleanliness, look after of public places andproperties, and assists in the operation & establishment of health services, schools, street lighting,control strayed quadrupeds, environment and culture conservation.In accordance with the LSGR, 2056 rule 117, the Municipal Councilconstitutes various committees and sub-committees to render necessary advice, with the support of various committees such as Advisorycommittee, Infrastructure & construction committee, Agriculture, forest and environmentcommittee, Population & social development committee, Organization & administration committee,Water resource & land development committee.

For NUGIP, different institutions will support the municipality and will be involved in the ESMP implementation and roles of these institutions are given in Table 7-1including the environmental management organizational structures (Figure 7–1)

Table 7-1. Institutional role

Institution	Role	Responsibility	Remarks
Project Implementation Unit, NUGIP	Execute project, provide backup support to PMC in technical matters	Overall coordination and supervision of the NUGIP at metropolitan level	Executing agency
Supervision Engineer	Design, monitoring and supervision of work and reports to PIU	Overall technical input (design, supervision)	Consultant
Contractor	Subproject road construction	Responsible for overall activities related to the construction of road	Construction Agency
Environment and Social Safeguards Unit	Support PIU, and Contractor for ensuring environment and social safeguards	Environment and Social Safety Monitoring during construction phase	Consultant
Local Road Coordination Committee (LRCC)	Local level Coordination committee	Coordinate infrastructure issues among beneficiaries and institutions a local level.	Local group

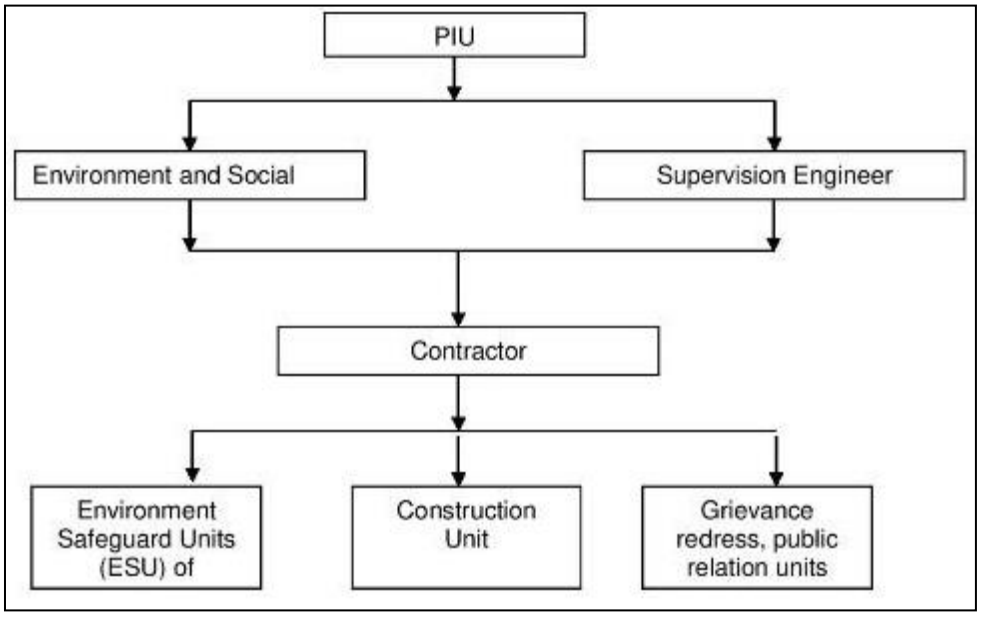


Figure 7–1. Environmental management organizational structure

7.3. BaselineData Collection

Environmental base line monitoringinvolves the systematic collection of data to determine the actual environment effects of the project, compliance of the project with regulatory standards, and the degree of implementation and effectiveness of the environmental protection. It is the survey that documents detailed information on the pre-project conditions of physical, biological, socio-economic and cultural resources. Since the proposed sub-project implementation period is immediately after the approval of ESIA/ESMP, there will have no any significant changes in the baseline condition. Hence the baseline monitoring will not be carried out; rather the information in the ESIAreport itself will be treated as baseline data of the project.

7.4. Implementation of mitigation measures

The mitigation measures willbe integrated into project design and the agreements/contract documents. The project bid documents willinclude the implementation and reporting of the ESMP. The contractor will abide with the contractual requirements, BOQ, and ESIA/ESMP and will ensure that all the environmental and social requirements are fulfilled. The impact of the construction on the environment willbe kept to a minimum and appropriate measures as brought out to in the ESMP are taken to mitigate any adverse effects during the construction. The Environment, Health, and Safety requirements of the construction contractor willbe clearly spelled out in the contract document and the necessary cost will be included in the BOQ. The contractor is required to submit the Contractor's Environment, Health, and Safety Management Plan within 45 days of the commencement of the work. The client/consultant will review the Contractors EHS plan and provide approval along with necessary improvements. The regular monitoring will be followed by the PIU/Environmental and Social Monitoring team. It is in this context, the construction contractor is required to provide 1) a sound working environment to all employees involved in the design andconstruction of road as per national legislations, standards, and guidelines. 2) Must ensure HSE objectives are met during the entire construction, 3) Prepare and submit ESMP plan during construction period of the project. The EHSMP should include; policy statement, roles and responsibilities, site regulations, risk management and hazard identifications, HSE trainings, PPE, Inspection and auditing, site security, medical care and first aid , 4) The contractor must ensure Environmental Management and Mitigations addressing ESMP and mitigation management.

Using this approach, the mitigation measures will automatically become part of the project construction and operation phase. By including mitigation measures in the contract or in specific items in the Bill of Quantities (BOQ), monitoring and supervision of mitigation implementation could be covered under the normal engineering supervision provision of the contract.

7.5. Adverse impacts mitigation measures

Table 7.2. Adverse impactsmitigationmeasures

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
Physical and chemical environmental - Pre-construction Stage				
	Impact on property from vibrations due to the use of heavy machinery and other construction activities	Establish photographic and video graphic evidences of structures and properties in and alongside RoW.	Contractor	BoQ
	Demolition of bridge	Proper management of stockpiling of materials, health and safety and security of pedestrians, alternative route during demolition	Contractor,ward, PMC, traffic police	BoQ
	Obstruction due to 145 electric and telephone poles in the ROW	Relocate the electric poles along the alignment in coordination with the local electricity office and telecommunication authority. Should be completed prior the beginning of the road construction	PIU and Contractor	NRs 60,32,144.80 (Included in contract BOQ)
	Removal and re-construction of Water Supply Pipe lines of Lekhnath Water Supply Scheme)	The project must work in close coordination with Lekhnath Water Supply Management Committee regarding disruption of water supply system, alternative means of supply during the disruption, re-establishment of system. Reconstruct existing water supply in close coordination with Lekhnath Water Supply Management Committee. This must be completed prior the construction of road.	PIU with support of contractor	The Lekhnath Water Supply Committee has worked out the detail cost for removal and reconstruction of water supply scheme which is NRs 80,63,472.88(Included in BOQ)
Physical and Chemical environmental -Construction Stage				
	Land use change	Fertile topsoil will be removed before filling the agriculture land area for road. The sites will be stabilized with different technologies.	Contractor	Included in the project detail cost

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
		The prior notification for plantation of crop should be given in advance.		
	Protection of water courses crossing the road and alongside the ROW	Construct silt traps and ripraps to maintain the river channels. Dredge the river bottom to ensure free flow of the water	Contractor	Included in the project detail cost
	Quarry Operation	Sand and aggregates will not be allowed to excavate from middle or inside of the Kotreriver which will conserve the spawning ground of fishes. The materials will also not be allowed to be excavated from the bar of theKotre river. After completing it, the bank of the river will be recovered by protective structure. This will be done with prior approval from concerned agencies. If the materials are obtained from third party, the third party must have license for supply along with environmental clearance) of quarry. Protective structures will be constructed to protect the agricultural land along the ROW, the access road, and the quarry site, after the completion of the extraction; those sites will be closed and rehabilitated to suit the local landscape by providing necessary structures. At present the 2 quarry sites for material has been proposed at Kotre site	Contractor	Included in the project detail cost
	Issues associated with stockpiling	Only barren land will be used for stockpiling and proper insulator cover and proper drain will be managed to store the chemical to avoid the leakage of chemicals.Stock of sand will be set wet to prevent it from blowing with the wind; water sprinkler will be used for this purpose. The places used for the stockpiling of construction materials will be cleaned	Contractor	Included in the project detail cost

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
		promptly after the completion of the project. The area could be leased or rented based on price not lower than the prevailing market price.		
	Construction Safety	RCC covered drain must be provided throughout the alignment in integration with footpath. Storm water collected should be disposed through the nearest culvert sections. The project will ensure that the construction site is not an immediate cause of danger to workers at the construction site and the public near the construction site. The contractor will assign a safety officer and the PIU's safeguard specialist will monitor the implementation of the occupational health and safety measures before, during and after construction.Hazards will be identified, and workers will correctly wear PPE, will properly use safety equipment, and will follow work safety arrangements. Safety signs and information will be provided. Workers and people at the construction site will be provided with proper training, and to help ensure that workers are trained on what to do in the event that an accident occurs on site.	Contractor	Included in the project BOQ
	Traffic Management	Vehicular movement may be restricted due to closure of road for reasons including construction, floodsor other natural calamity. In such a situation, emergency work has to be executed by implementing traffic management procedures. The following are methods which can be employed for traffic management in emergency situations: 1) Inform the Pokhara city government of the scheduled road closure	PMST and Contractor	Included in BOQ

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
		and the alternative routes identified to divert the normal traffic flow, 2) the contractor assigns a project worker to manage the traffic flow especially during peak working hours to ensure smooth traffic flow, 3)if the road is closed, or might be closed soon, inform road users about it as soon as possible; reduce pressure by effectively disseminating information, including on alternative routes, through the communication media; if the road is closed, indicator signs should be erected in adequate numbers to provide information about it; 4) provide advance notice to stop vehicles by erecting indicator signs at a necessary distance in order to reduce congestion at the site of work, thus enabling making of proper security arrangements,5) Provide information on use of alternative routes by providing adequate road signs as required with the help of traffic police. 6) Similarly, if it is possible to operate traffic only on one lane, do so even by taking the help of the traffic police and by making provision for adequate number of signs, lights and watchmen.7)Prior the construction, the alternative traffic route must be decided involving PMC, traffic, local wards, and local representatives.		
	Protection of Khudi River	Retaining wall to protect erosion	Contractor	Included inthe BoQ
	Air /Noise, vibration and Water pollution	Construction schedule maybe altered in such a way that the construction activities will be avoided around settlement areas in morning and evening hours, where progress of work is	Contractor	Costs for activities to control all pollution will be included in the BoQ

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
		not impacted. Horns will be avoided near settlements, schools etc. Install sanitary facilities for workers to avoid open defecation by construction of temporary toilet. Provide PPEs to construction workers and to use them whilst working or moving through active construction sites. Mitigation measures for air and noise pollution include sprinkling water on the construction site, restricting horns of vehicles being blown, speed control,reducing vibration effects of compacting equipment. Stockpiles of construction materials will be done away from roadways and from riverbanks, and careful steps of taking any necessary action to avoid pollution of water streams as a result of project activities will be regularly monitored. All potentially polluting activities will be avoided, mitigated and monitored by the contractor, the PIU and the Pokhara city government to minimize the pollution and to ensure activities comply with pollution-specific standards. In order to avoid pollution of air, noise, and vibrations from machineryin susceptible receptors like school areas, hospitals and health facilities. A noise barrier andabarricade will be designed and put in place in these areas for noise and vibration proofing. When necessary, adouble panel windowsin such areas will be installed to be financed by the project. The PIU safeguard specialist will select whether barricade or double glazing		The national standards for water to be disposed in inland water will bemeet. Consultations with people residing close to RoW and in susceptible receptor areawill be held prior to finalizing design for noise and vibration proofing. The cost of Barricade is approximately Rs 800/sq ft, which will be included in theBoQ.

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
		window is applicable in discussion with relevant stakeholders.Waste water from camps should be properly treated, provision of septic tanks in camps and offices will be provided by the contractor.		
	Waste management	Solid waste including construction debris should be properly managed using 3 R principles	Contractor	Included in contract document
	Protection of Large religious trees: Pipal tree (*Ficus religiosa)* lying in ROW, Resting place (Chautara) within ROW	Chautarahaving a religious Pipal tree in chainage is proposed to be protected with the boundary wall. Installation of traffic signs showing the constricted carriageway due to the presence of Chautara is proposed in order to warn the motorists.	Contractor	Included in the BOQ
	Tree cutting	Replacement of cut trees with seedlings	Contractor	Cost is included in BoQ
	Obstruction of access to structures	Proper engineering measures to provide access to structures as per DPR, including the provision of constructing steps and ramps	Contractor	NRs 780,912.36 (Cost is included in BoQ)
Physical and chemical environment - Operational Phase				
	Road Stability and Drainage Management	Road side tree plantation, construction of gabion wall and drainage system (Surface and sub-surface drainage works). 10 Culverts and 5 minor Bridges (CH 0+880, 1+760, 1+980, 3+070 and 3+260) 3 culverts are discarded because there are no natural water streams exist at these locations. Average drainage area of catchment draining through these structures is 12.8 square Km. The drainage system integrated to the road up-gradation project will include design not only to drain off the storm water from the road, but also to mitigate possible inundation along the	Contractor	Included in DPR

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
		settlements that exist along the project alignment, Ensure proper compaction as per design		
	Air pollution	There should be a consensus between metropolitan, District Transportation Office, Transportation Entrepreneur, and the local people regarding the operation of conditioned vehicles	DTO, transportation entrepreneur, local people	Costs to be included in BoQ
	Water pollution	The operation of proposed work doesn't pose serious threat on water bodies; however washing vehicles on fresh water streams will be avoided.	Drivers, Ward, local people	Costs to be included in BoQ
	Disaster Risk	Nepal lies in Seismic zone-V, hence all the design will be based on IS 1893 to withstand the earthquake. The road is provided with safety features, which likely reduce the chance of accidents in the road alignment.	PCO	The cost is inbuilt to project design and construction cost

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
	Road Safety	Road safety components such as rumble strips, road humps, visibility improvement at intersections and branch roads, pedestrian crossings, barring significant trees like Pipal trees with boundary walls and installing proper signs, traffic signs and signals has been incorporated and recommended. Pedestrian crossings (zebra crossing) is proposed in intersections, major junctions, and branch roads and even in road alignment with major places such as schools and commercial establishments in order to cross the road safely across the flow of vehicular traffic. Signalized pedestrian crossings are proposed in order to separate when each type of traffic (pedestrians of road vehicles) can use the crossing. Road humps are proposed in cross road connections (branch roads) as a part of traffic calming devices that use vertical deflection to slow motor-vehicle traffic in order to improve safety conditions. The objective of the Road Safety Interventions is to assess it for potential shortfalls in safety and recommend corrective strategies to eliminate/reduce risks of crashes. Various road safety interventions are proposed to make the road safer and reduce traffic accidents. Improvement of intersections through provision of roundabouts, traffic signs installation and improving visibility Proper Traffic signs and signals and road markings throughout the alignment.	PMC (Project) and Contractor	Costs to be included in BoQ

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
		Provision of guard rails, street lights, bollard lights, rumble strips, road humps, pedestrian crossings, parking area, covered drain throughout the alignment Provision of separate cycle lane and footpath Use of Reflective Pavement Marker (RPM) for lane marking and delineation for night-time visibility. Delineators and Object Markers Roadway delineators are intended to mark the edges of the roadway to guide drivers on the alignment ahead. Object markers are used to indicate hazards and obstructions within the vehicle flow path, for example, channelizing islands close to the intersections.		
Biological Environment– construction stage				
	Vegetation clearing	22 trees, 237 saplings/shrub, 131 seedlings/herbs need to be removed. The trees, saplings, hers will be replanted outside ROW as far as practicable Total plantation proposed is 1:10 (1 removal of RoW plants equivalent to 10 plantations), with these total plants to be planted in RoW will be (259 no X10) = 2590 no. The local plantsspecies will be selected.	PIU	500,000.00 for maintenance after plantation. The cost for road side plantation is included in DPR.
Biological environmental – Operational stage				

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
	Impact on Vegetation and wildlife	Since the project doesn't passes through biologically critical areas, encouraging local people for protection of roadside vegetation by plantation.	Project/Contractor/ Local Bodies	No additional cost
Social – Construction Stage				
	Loss of houses/property	Compensation for loss of property as per the RAP	PCO	The government already completed the land acquisition and compensation in 1980. Compensation for one structure encroaching in the ROW has been provided by the PMC as detailed in the RAP
	Safety of pedestrians including children, elderly and general public	Diversions should be child and elderly friendly as well as to other general pedestrians. Crossings near school areasshould be safe and the school area should be highlighted. An attendant from the school or/and from contractor should be present at the school starting and closing times. (or during peak hours). Appropriate signage will be displayed use during construction and implementation of the project to enhance awareness around the potential safety hazards of the construction.	Contractor	Safety signs, awareness raising programs: Rs. 300000.00
	Health and Sanitation	Proper awareness of using latrines, construction of latrine for worker, Piyus(a chlorine solution) will be provided to workers to purify drinking water.	Contractor	Included in the project design cost
	Protecting the workforce (No child and Forced labor	No child and forced labor will be employed in project.	Contractor	Responsibility should clearly spell out in BoQ

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
	Occupational Health and safety; provision of PPE to workers	Safety equipment will be provided to the workers. They will also be provided with insurance to cover physical damage to workers. For example, suitable overalls, safety footwear, dust masks, gas masks, respirators, gloves, ear protection equipment etc. should be made available to workers, and workers must receiving training to use the equipment. Workers will also be provided with insurance to cover physical damage to workers. Potable water and basic first aid kit will available. Proper OHS measures will be adopted through OHS plan by the contractor.	Contractor	Contractor 's responsibility: should be spelled out in contract document
	Traffic and Transport Management	a) Mobilization of equipment of materials will occur at night(between 6PM-9 AM) b A detailed Traffic and Transportation Plan is to be contained in the Contractor Document b) Road Safety Traffic Safety such as street lights, traffic control devices and other features shall be covered through "*Traffic Signs Manuals Vol-I and Vol II*" and "*Road safety manual*" published by the DOR. This will be incorporated in detail during DPR phase using the same code. The feasibility study incorporates provision of guide rails in case of steep fall and sharp bends for safety. Similarly, provision of covered drains in settlement has been considered. The provision of proper road signage and markings, and street lights along the alignment will be added to the safety features. The horizontal and vertical control features will be designed based on the safe	Project contractor	

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
		stopping distance and visibility criteria for safer road. It is, however, advisable to conduct road safety audit during the design phase to avoid any serious safety issues before the project is implemented. If, it is not done, road safety audit should be done after the construction of the road before it is opened to general public (official handover to the municipality). Bus bays are one of the most crucial factors to be considered in market areas as well as settlement areas. Bus bay has been incorporated in NRS Clause 13.5. c) Provision of alternative routes to ease decongestion and built up of traffic		
	Community Health, Safety and Security	a) Carry out site management practice such as the fencing around work area and road signage b) Increase public awareness of safety, health and environmental issues by providing information directly and indirectly through campaign c) Display appropriate signage for use during construction and implementation of the project to enhance awareness creation on the potential hazards of the project	Project Contractor	Project contractor
	Limited Access for elderly and Differently-able People	Diversions and proper crossings willbe available for elderly and differently-able people in the construction phase to ensure their mobility is not impacted during construction. Elderly people should have access to socialize and meeting people and family to nurture their mental need/health.	Contractor (engineer must ensure this in design)	Construction is contractor's responsibility

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
		The design should incorporate the disabled-friendly measures and will incorporate periodic maintenance.		
	Working conditions and management of worker relationship	The contractor for the TalchowkBegnas road shall provide reasonable working conditions and terms of employment, and in conformance to working conditions established by National law. During construction, temporary accommodations will be constructed by the contractor and will comply with national and international standards for quality, security, safety, and professional competency. Workers will not be forced to use any of the services provided by TalchowkBegnas road project	Contractor	Responsibility should be clearly spell out in BoQ
	HIV-AIDS Management	a)Awareness creation and sensitization to workers and other persons post- project to reduce or eliminate chances of infections of HIV-AIDS and other sexually transmitted diseases b)Distribute HIV & AIDS awareness materials in collaboration local health related agencies	PIU, Contractor	NPR300,000.00
	GBV risks	GBV impact mitigation measures activities such as awareness raising program, skills training program. Specific measures: a) Hiring of gender expert for 18 month @150,000.00 as per GBV b) GBV related activities and trainings as stipulated in GBV action plan Cases of women and child abuse seem to be higher in other tourist areas elsewhere. As a precautionary measure, the ward in this alignment of 27, 30 and 31 should undertake awareness raising activities on this issue.	Project Office Project Contractor PMC in close coordination with wards 27, 30 and 31 along with NGO/CBO/Local people	NPR 1,800,000 NPR 2,080,000

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
	Girls/Women Trafficking	Awareness program will be developed and implemented	PIU in close coordination with Women Development Office, PMC, NGO/Clubs working in this area and related fields	NPR250,000.00
	Workforce Impacts on Communities,-disease, cultural drain on local resource ,etc.	a) Conduct local cultural awareness orientation training for workforce. b) Implement Public Health Awareness Raising Plan to address communicable diseases prevention, hygiene and sanitation, safe sex practices and other community Health issues c) Impact Monitoring of Local resources, address gap, and problem as needed	Contractor	Contractor's responsibility
	Management of Complaints and/or Grievances	Employ a grievance redress mechanism incorporating a negotiation and/or mediation team or party	Project Contractor	Meeting allowances for project period NPR 300,000.00
	SEA/SH risks	SEA/SH risk mitigation related activities as stipulated in SEA/SHRisk Mitigation Action Plan. These include SEA/SH awareness raising activities, trainings and stakeholder engagements such as: - Community based-awareness program - School based awareness program - Awareness program for women working in Dohori-Sanjha(Night Clubs) The project should work with women's groups to support the awareness programs.	Project Office Project Contractor, PIU, PMC in close coordination with wards 27, 30 and 31 along with PMC, NGO/CBO/Local people, Women Development Office,Clubs working in this area and related fields	Approx. NPR 5,600,00

Project stage	Impact	Mitigation Measure	Responsibility	Cost (Remarks if any)
		Gender Specialist for NUGIP will provide support in implementing subproject mitigation measures.		
Social – Operational Stage				
	Encroachment of ROW	The PMC through the ward and local GoNoffices will work with wards and local bazaar committees/groups to discourage encroachment into the ROW.	PMC	Cost will be borne by PMC
	Traffic accidents and associated risks (children, elderly, and general public)	Raise awareness amongst people to follow the traffic signs, encourageusethe pedestrian/cycle lanes and installation of speed bumps to control speed near designated pedestrian crossing areas will be arranged. After the completion of the road upgrading, school children, members from mothers and women group and frequent road users(people using the road every day for job or business) should be aware about the road signs, safety and road using method through awareness programs in schools, women group and local media and FM radio.	PMC	Required cost bear by PMC
	Limited access for elderly and differently-able people	Provide training on the use of facilities, maintain signboards, lights, instructions in strategic locations.	PMC	Regularly

7.3 Impact and Compliance monitoring

Impact monitoring involves the monitoring of environmental and social changes and estimates inherent variation within the environment, identifies long term trends in the natural system, and derives conclusions by making comparison against a standard or target. Compliance monitoring is carried out to understand the implementation status of environmental and social requirements as documented in the ESMP.

Table 7.3. Compliance monitoring of project

Parameters	Responsible Implementing agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency	Reporting Schedule	Reporting Authority
Compliance with the benefit augmentation and impact mitigation measures listed above	Contractor / Environmental Safeguard Unit	As relevant for the specific parameter	Visual observation, routine / regular supervision, record books, questionnaire survey from respective stakeholders etc.	During the construction phase	Environmental and Social Safeguard Unit	Trimester	PIU
Compliance with the relevant legal measures as discussed in the ESMF/ESIA	Contractor / Environmental Safeguard Unit	As relevant for the specific parameter	Visual observation, routine / regular supervision, record books, questionnaire survey from respective stakeholders etc.	During the construction phase	Environmental and Social Safeguard Unit	Trimester	PIU

Table 7-24. Selected monitoring indicators

Monitoring Sector	Parameters selected
Slope, stream protection	Effectiveness of slope protection, stream protection works
Socio-economic development in road alignment and ZoI	Number of employment opportunities created Number of workers received training on enhancement of technical skills Change in transportation costs and time Number and type of enterprises, cottage industries established Change in status of basic services and utilities in the ZoI for e.g. education institutions, access to health infrastructures, water supply, energy status, trade and commerce ventures, shift in livelihood strategies among the populace from the ZoI Condition of affected infrastructures Occupational health and safety measures provided to workers Increase in number of people receiving social service facilities (school, health post) Increase in land value No. of accidents related to road State of settlement condition (no. of houses, shops, sanitation condition) Number and status of porter's livelihood

7.4 Monitoring activities and methods

The following table identifies the specific compliance monitoring activities. Phase-wise/chronological details are provided for the methods, schedules, responsible implementing agency and the responsible monitoring agency. Compliance monitoring refers primarily to the pre-construction and construction stage of the project.The following government standards will be taken as reference for monitoring.

Table 7.5. Impacts and monitoringof the project

Parameters	Verifiable Indicators	Verification methods	Monitoring locations	Schedule	Responsible monitoring agency	Cost
Change in Land Use	Changing Agricultural land, forest land, settlement area and barren land	Site observation, photos, discussion with communities	DIZ, IIZ and project affected wards	Continuously during construction (Yearly)	PIU	
Quarrying of Construction Materials	Initiated erosion, changes in river regime, erosion by river systems, degradation of	Site observation, photos Records from local health centres	Quarry site areas	During construction (Quarterly)	PIU	

	vegetation, water logging, waterborne diseases					
Noise and dust pollution	Total Suspended Solid, Particulates, noise level (national standards - appendixF)	Visual inspection, measurement, and comparison with baseline data,	At construction sites and at sensitive spots	During construction and operation (Quarterly)	PIU	
Use of bitumen and their storage, heating, spreading	Contamination of bitumen near water sources, land contamination and affected peoples	Visual inspection, measurement, and comparison with baseline data,	In and around the construction sites	During construction (Quarterly)	PIU	
Road safety measures	Speed controls, traffic signboards, ROWencroachment, Pedestrian/ cycle laneand speed bumps	Observation, photos and interaction with local peoples	In and around the ROW	Throughout project, once in a year	PIU	
Road accidents	Type and number of accident occurred Adequacy of occupational safety measures provided	Observations, photos, spot checks, interview with local peoples	Road alignment	Throughout project, once in a year	PIU	
Cultural, religious and historical sites	Cultural and religious infrastructure, people	Records, observations, interview with local people	Project area	During operation (once a year for 2 years)	PIU, PMC,Wards	

	perception, practices					
Occupational and safety hazard	Safety equipment like helmets, globes, boots etc., insurance, potable water, basic first aid kit	Observation, records and interview with workers	Construction camp and working area	During construction (daily)	PIU, wards	
Possible township/ribbon development along the road	Congestions to road users Number of accidents, ROWencroachment	Records, observations	Project Area	During operation (once a year for 2 years)	PM, wards	

7.5 ESMP for beneficial and adverse impact

The measures and actions proposed for augmenting the identified beneficial aspects (Table 7-3) of the road development project, as well as proposing a set of mitigation and precautionary measures to minimize or set off the potential adverse impacts are outlined below.

Table 7-36. Beneficial impacts of the project

Impact	Enhancement/Mitigation Measure	Enhancement/Mitigation Mechanism/Responsibility	Cost (Remarks if any)
Construction Stage			
Employment opportunities for local people	Involve local people as per skills, qualifications (priority-based to the extent possible)	Contractor (Monitoring by PIU)	No additional cost
Employment to the women and disadvantaged groups	The contractor will coordinate with representative of disadvantaged and women group to employ those people, as many as possible	PIU, spelt out in contract, contractor will abide	No additional cost
Skills enhancement	Organize skills enhancement training targeting the local youths, women, vulnerable, disadvantaged and skills enhancement of project workers	PIU	Rs 400,000(for the people inthedirect influence area)
Operation Stage			

Improved access and reduced travel time /transport cost	Fixing the minimum transportation cost in agreement withDTO, transport entrepreneurs and local people	PMC, Transport entrepreneurs and local people	No additional cost
Environmentally friendly construction	The upgraded road will have a cycle track which helps to promote the use of non-motorized vehicles and reduces carbon emissions	PMC	No additional cost
Maintaining open and green areas	A Green Utility Zone (Greenery) will be provided under the road upgrading, with various trees which will provide shelter from the heat, will create cool surroundings, and will improve the aesthetics of the road. A green area separating the footpath and cycle lane is proposed throughout the alignment. The green area will have tree plantations at certain intervals. In addition, tree plantations at dedicated locations between the cycle lane and carriageway has been proposed (approx. 92 locations).	PMC	Include in project cost
Change in livelihood through the promotion of business and industry	PMCwill facilitate measures to promote the establishment of new businesses and enterprises The PIU will create the suitable environment to promote business and industries based on local resources	PMC PIU in coordination with local CBO/NGO/GoN offices	No additional cost
Gender and social empowerment	The subproject will serve to mainstream women, dalit, and other marginalized people by providing several income generating trainings and programs	PIU in collaboration with local organizations	NRs. 500,000

7.6 Costs of executing the Environmental and Social Management Plan (ESMP)

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 cost of executing the ESMP includes cost of suggested mitigation measures such as of slope stabilization, awareness, waste management, bioengineering measures and tree plantation, etc. under the mitigation measures of the project.

The total cost for the ESMP is outlined below inTable 7.7.

Table 7.7. Cost of ESMP

Activities/Measure	Total Cost (NPR)	Remark
Environment Mitigation (Pre construction phase)	10,884,489.22	Include compensation cost for Lekhnath water supply scheme and shifting electric poles
Construction phase mitigation including GBV	6,430,000.00	
Environment Monitoring and Management Unit	12,900,000.00	
Capacity Building Trainings	1,500,000.00	
Total	31,714,489.22	

7.7 Monitoring Cost

Environment and Social Unit of the PIU is responsible for monitoring the impact of proposal implementation. The monitoring cost of the project provided the table below.

Table 7.8. Environmental monitoring cost PMC

Particulars of Activities	Months	Unit Cost (NPR)	Total Cost (NPR)
Establishment of Environmental and Social Unit			
Remuneration of expert **Environment Expert** **Social Expert**	 18 18	 150,000.00 150,000.00	 5,400,000.00
Office operation cost including vehicle	18	300,000.00	5,400,000.00
Stationery and reports	18	50,000	900,000.00
Laboratory analysis of water, noise monitoring	LS		120,000.00
Total			12,900,000.00

7.8 Institutional arrangements

Existing capacity of PMC in environmental and social issues

PMC has an environmental and social department. The activities of the Social department include registration of vital events (births, deaths), targeted group development (women, children, indigenous groups, elderly citizens), needs-based skill development programs (including vegetable farming, cattle/poultry farming, handicrafts). The Environmental department is mostly engaged in plantation, greenery promotion and landscaping, pond conservation, and solidwaste management.As indicated by the departments, they were not engaged by the PMC in the subproject planning process. The capacity of the department in the preparation, implementation and monitoring of environmental and social safeguard issues is limited.Further details assessing theinstitutional capacity is provided under Appendix H of the NUGIP ESMF.

Sub-project institutional arrangements

The MoUD has set up a PCO under DUDBC in Kathmandu for NUGIP. A Project Implementation Unit (PIU) will be established in the PMC for the implementation of theImprovement of Talchowk-Begnas Road sub-project. To ensure that the sub-project is efficiently implemented and completed in accordance with environmental and social safeguards requirements, technical assistance will be delivered through a Design and Supervision Consultancy (DSC).The role of the PIU/DSC will include the conduct of public consultations and implementation of the RAP and ESMP provided in this document.TheMoUD will have an environmental and social safeguard specialist who will facilitate and oversee implementation and compliance monitoring of PMC.

Reporting and documentation

As part of the ESMP, reports need to be produced at regular time intervals by the PIU. The trimester ESMP compliance reports will be prepared and submitted by the contractor to the PMC. The agreement/contract document will categorically include provision of environmental protection, health and safety, waste management and other environmental mitigation measures identified during the ESIA. It will spell out clearly that measures that will be taken in case of non-compliance to help ensure compliance with the provisions. The ULL will monitor implementation and compliance on a day-to-day basis. A supervision team in the DSC will regularly monitor the construction activities. The MOUD will conduct independent monitoring. This ESMP also makes the provision for a set of monitoring activities that are designed to ensure the effectiveness of the proposed management. The monitoring activities will also help to improve/maintain an environmentally and socially sound and acceptable level once the subproject is complete.

8. STAKEHOLDER ENGAGEMENT AND CONSULTATATIONS

8.1 Stakeholder engagement overview

Regular stakeholder engagement and consultations are necessary to ensure widespread and meaningful participation of key stakeholders with focus on the project affected people. Successful implementation of the subproject requires coordinated efforts of various stakeholders at different levels. Hence, communication and consultations at different levels were used as a tool to inform and educate stakeholders about the proposed project intervention.

There are two key objectives of effective stakeholder engagement and consultations. First, it is to keep all stakeholders informed of the project activities, and any potential beneficial and adverse impacts. Second, it is to ensure that stakeholders actively participate at all levels of the project cycle, to enable sharing of valuable local knowledge involvement in the development of mitigation plans to minimize the potential negative impacts of the project, and so are well equipped to take over the responsibilities of operation and management once the project phases out. These will ultimately contribute towards narrowing down the gaps between the project officials and beneficiaries, and to help create a conducive environment to mitigate against the adverse social and environmental issues through optimal cooperation from the project beneficiaries themselves.

Community participation can be effective if local people are empowered. The method of community participation needs to be planned to reflect the community profile and nature of the project. Different communication methods are integrated together communicates the community as focus group discussions, meetings, and workshop. The plan ensures the following:

- Ensure local ownership
- Include different types of stakeholder's group in participation process
- Generate and respond to feedback

Public consultation and community participation helps to remove such uncertainty and at the same time help the project implementation with its methodology as well as work plan. It is assisted in the identification of the problems associated with the project, as well as the needs of the population likely to be impacted. This participatory process helps in reducing the public resistance to change and enabling the participation of the local people in the decision-making process. The involvement of the various stakeholders ensures that the affected population and other stakeholders are informed consulted and are allowed to participate at

various stages of project preparation. Different strategies have been adopted for communication/ consultation during implementation stages.

Stakeholder engagement strategy outlines engagement through the project development phases and recommends a set of stakeholders' engagement activities to be carried out throughout the project development phases. This chapter also outlines the disclosure to be made and other communications to be made during the project cycle.

8.2 Stakeholder Engagement Procedures and process

The subproject will draw on existing mechanisms and procedures established at the local level to carry out stakeholder engagements. PMC forums will be the primary mechanism for engaging with stakeholders and community participation, to ensure that projects identified reflect local needs and priorities. Other mechanisms for community engagement and consultations include community-based user committees in construction supervision and operations and maintenance, as a social accountability and safeguard mechanism. The stakeholder consultations will draw on mechanisms already established at the local level. Where mechanismsfor stakeholder engagement do not already exist, a mechanism elaborated below will be followed:

Stakeholder Mapping

The primary objective of stakeholder analysis is to map the stakeholders, their role, operational network, representation requirements and impact on type of activity in the project to strategically prioritize consultations with them. The stakeholder interactions will be through:

- Focused group discussions (FGD)
- Public consultations
- Key informant interview (KII)
- Indigenous and women groups discussion
- Consultation with institutional stakeholders

The stakeholder mapping is undertaken through formal and informal consultations and their interests concerned with the project activities should be identified throughout the project cycle. The stakeholders identified for the subproject are presented in table below:

Table 8-1. Stakeholder roles and responsibilities

Government Level	Stakeholder	Primary/ Secondary	Roles and Responsibilities
Federal Level	MoUD DUDBC	Primary	Facilitate the implementation of the subproject, coordinate with

Government Level	Stakeholder	Primary/ Secondary	Roles and Responsibilities
			agencies, undertake monitoring and reporting to the WB
	Department of Roads Ministry of Forest & Environment Department of National Parks & Wildlife Conservation Ministry of Women, Children and Senior Citizen	Secondary	Support coordination, and sectoral policy implementation
Local Level	PMC Ward Offices Tole Development Committees	Primary	Support the process of subproject selection, identify beneficiary and their needs, support coordination, support grievance and dispute resolution
	Electricity authority Forest authority Land Survey Land Revenue Office Irrigation department Water supply & sanitation office Traffic Police District Coordination Committee	Secondary	Provide specialized inputs on local conditions, permissions, technical input limitations and needs of the public, provide compensation estimation, provide required assistance during project implementation, and support monitoring
Subproject Level	Ward representative Associations (Business) and user groups such as road, water, irrigation, forest Women/Mothers groups Shopkeepers and vendors Farmers group Households	Primary	Engage and participate in consultations, support in project implementation
	Extended users of the project	Secondary	

8.3 Mechanism for Consultation

The consultationprocess envisages involvement of all the stakeholders' at each stage of subproject planning and implementation. Involvement of the community is not limited to interactions with the community but also disclosing relevant information pertaining to the project tasks. Community participation is and will be ensured at all stages. Dissemination of project information to the community and relevant stakeholders will be carried out by the PIU. The community will be made aware of the project alternatives and necessary feedback will be obtained, other stakeholders will be involved in the decision making to the extent possible.

The outcome of consultations is incorporated as appropriate into the design and ESMP. As part of such consultations, the draft ESMP will be presented and explained to the people on the content and process of the implementation of the plans. Consultations with project affected persons and their profiling are conducted as per the requirements of ESIA, and preparation of the RAP.

7.5.1. Public/Community Consultation Plan

All consultations on social and environmental issues will be carried out during implementation of the project will be done in an inclusive manner, including vulnerable social groups (such poor household, caste, persons with disabilities, among others) and women.Details of Talchowk-Begnas Road Project Consultation Plan are presented below.

Table 8-2. TalchowkBegnas Road Project Consultation Plan

Objective and Target Goal	Method	Frequency/Timeline	Responsibility
I)Build Local Ownership			
Introduce Project DPR Report and its components	Group Meeting/Workshops	End of June 2019	DPR Consultant/ PCO/Metropolitan
Maintain efforts for two-way communication with relevant stakeholders through the project	Face to face meeting with concerned stakeholders	Minimum bi-monthly throughout the project	PCO, Design Supervision Consultant, Ward Level Authority
II) Start Consultation Process with Potentially Affected Communities			
Identify communities to be potential affected by project	Electronic and face to face communication with relevant stakeholders and implementing agencies	Jan-July 2019	PCO, DPR Consultant Metropolitan Ward Authority
Consult with community representatives and ensure that their concerns with the	Face to face meeting with community representative (includes social officer of	Jan-July 2019	PCO, DPR Consultant Metropolitan Ward Authority

Objective and Target Goal	Method	Frequency/Timeline	Responsibility
proposed project are addressed	metropolitan, women's representative etc.)		
Ensure that the views and needs of vulnerable segment(if required) of communities, including but not limited to poor, women, elderly, and are addressed by the subproject	Face to face meeting with affected communities' representative (including social officer of metropolitan, women's representative etc.)	July-December 2019	PCO, Design and Supervision Consultant Metropolitan Ward Authority
III) Implementation Phase			
Maintain effective communication with PIU	Electronic and face to face communication with representative of relevant agency /organization	Throughout the project, as required	PCO, Design and Supervision Consultant Metropolitan Ward Authority
Raise awareness of project activities among potential beneficiaries	Media advertisements and targeted campaign	Throughout the project, as required	PCO, Consultant/ Metropolitan
Maintain consultation process with a potential affected communities and beneficiaries	Face to face meeting with affected communities' representative (including social officer of metropolitan, women's representative etc.)	Minimum bi-annually with affected communities	PCO, Design and Supervision Consultant Metropolitan Ward Authority
Monitoring and evaluation community involvement	Face to face meeting with affected communities' representative	Annually through the project	PCO, Design and Supervision Consultant Metropolitan Ward Authority
Reports outlining progress of activities related to engagement and communication	Collation of progress report, self-evaluation by PCO	Annually through the project	PCO
Agreement on operation and maintenance system	Electronic or face to face communication with relevant stakeholder Face to face meeting with local authority	Minimum annually	PCO, Design and Supervision Consultant Metropolitan Ward Authority

8.4 Information Disclosure

For the success of the project, all information about the proposed activities and their expected results will be publicly shared with the affected people and interested stakeholder. In collaboration with the relevant local authorities, NGOs and other community groups, the project will disclose all the relevant information in the various stages of project cycle. Agencies working for environmental and social aspects will also be informed about the ongoing and planed activities, to identify jointly appropriate protective or corrective measures. The following approaches will be adopted to make information accessible to all the concerned stakeholders throughout the project cycle.

- Mass Media: Use local media like newspaper, radio and TV.
- Meeting/Workshops
- Distribution of project documents: Certain project documents will be disclosed in Nepali (or other relevant local language) .Project-related information materials will be distributed prior to each construction work to local officials, PAPs and other concerned offices like PMC, Ward, Tole Committee etc.

An Information Centre will be established at PMC Office during implementation to disseminate all the documents related to the project activities. Based on the public information disclosure policy, PCO and PMC will unveil the information through its website. The information dissemination plan for Talchowk-Begnas Road project is presented in table below.

Table 8-3. Information dissemination plan

Means of Communication	Timeline & Frequency	Responsibility	Resources
PMC Website (project details, grievance mechanism)	At the start of the project which will be maintained throughout the project	PIU/ Information Officer	Information Officer
Newspaper and local Radio (project salient features, dates, grievance mechanism etc.)	Project implementation phase Weekly basis	PIU, PMC Information Officer	Radio-program/Talk show (30 min.) FM Radio Clip
Project leaflets and Fact Sheet	Project details, Implementing agencies, project period - 2 times	PIU, Information Officer	Doubled sided color A4 500 copy @ 500 per copy
Face to face engagements - meetings, focus group discussion with relevant stakeholders	Project Main Activities, Financial Assistance, Implementing agencies, project period etc. 2 time in year	PIU, Information Officer	

8.5 StakeholderConsultationsduring ESIA Preparation

Several stakeholder consultations were undertaken in order to prepare the ESIA, comprising a metropolitan town hall meeting, group consultations and key information interviews (KIIs). Details of these consultations, including key concerns and issues raised, are detailed below:

a) Metropolitan meeting

Table 8-4. PMC stakeholder Consultation Meeting

Place	Date	No. of Participant	Type of Participants/ Informants	Issued Raised
Pokhara Metropolitan Meeting Hall	9 December	27	Mayor, Officials From Pokhara Metropolitan, Representative from Mother's Group, Representative from Electricity Authority Pokhara, Representative from NEST Pvt.Ltd, Forest officer (DFO), Representative From L.W.S.C., Ward Chairperson of ward no: 30, Representative from ward no 31,32,29 and 28, Representative of Traffic Police, Representative from Drinking Water Cooperation, Representative from Naubise Tole, Representative of D.M.C, Project Director (UGIIP-2), Officials from (UGIIP-2), Officials from PCO, PCO Consultants, PWC Consultants	Efforts will be made to start project as soon as possible Suggestions of local people will be appreciated and incorporated Efforts will be made to avoid or minimize public resources assets(Water resources, Electricity Pole etc.) disturbance Local people will be consulted at the road upgrading time

b) Group consultations

Settlement /Ward	Participants	Issues Raised	Measures	Responsible Agencies
Talchowk/ 27	26	Compensation was received 40 years ago. Road construction should be robust and for the long-term. Road safety measures should be applied to prevent accidents Locals will help during construction if needed.	DPR provides the safety measures required during and after construction. Safety measures will be applied to control road accidents. Locals will be encouraged to engage.	**Metropolitan Project Office /Contractor**

		Feedback should be incorporated		
Sisuwa, 30	14	Affected household offered their consent Participation of local stakeholders is inevitable to construct road better Road construction should begin as soon as possible Community assets should be compensated if affected	Affected parties (household and shopkeeper) provide consent Efforts will be made to start project soon Affected community structure will be compensated	**Project Office/Metropolitan**
Khudi Bridge, 31	12	Efforts should be made to start project immediately Disturbance of assets should be avoided as far as possible Consultation with local people should be done at the time of construction Suggestions of local people should be incorporated	Efforts will be made to start the project soon Efforts will be made to avoid or minimize assets disturbance Local people will be consulted at the road upgrading time. Suggestions of local people will be appreciated	**Project Office /Ward Level Authority**
New Diamond School, 28	12	Parking provision for New Diamond School and protection of public toilet wall at the roadside of New Diamond School should be managed Road construction works should be started immediately Suggestion of local people should be incorporated in road construction	Efforts will be made to construct compound wall of Public Toilet and bus parking space during the construction to School Efforts will be made to start the project as soon as possible Suggestions of local people will be appreciated and incorporated	**Project Office/Metropolitan**
Consultation with impacted households whose access is obstructed	**89**	**PMC will inform the individual houses that will be impacted along with mitigations proposed in DPR**	**Consultations are ongoing**	**PMC/PCO**

c) Key Informant Interviews (KII)

Three KIIswere conducted during completion of the ESIA.The details of KIIs are provided in Table 8-5 below:

Table 8-5. Details of Key Informant Interview (KII)

Place	Date	Details of Key Informant	Issued Discussed during the Interview
Talchowk	9 December 2018	50 years Male Ethnic Group: Chhetri Ex-Chairperson of Chamber of Commerce ,Lekhnath Municipality	Due to the small black top now in this road is one of the major cause of the accidents , as everyone wants to drive from there The proposed cycle lane can attract more tourists to come to this area by using cycle or we promote that way but safety measures are must. From the business point of view if the road condition improves the traders will come and we can target more tourist oriented businesses to this area The environment of the area will be better for the new investors and Talchowk is the major trade centre. Generate more employment opportunities from the new business this road is going to create. This is no one left behind getting the compensation. This is one of the first road project in Nepal where the land owners compensate by the Government.
Sisuwa Chowk	9 December, 2018	72 Years, Elderly Man Physical Disable (wheel Chair User)	It is very difficult for him to use his wheelchair by his own hand in the narrow road as he cannot move from the gravel area by the road side and it is very risky. During in rainy season this becomes more difficult. He enquired whether the road has a separate lane for people like him. He is concerned about the road safety for the people with different abilities and kids from this area. To address concerns, the project will obtain a schedule of disabled and children and provide transportation through alternative routes for such differently able people. The contractor will maintain the roster of such people including their phone number and facilitate them in travel in areas under construction through alternative arrangements.
Tal Chowk	9 December	Women Group/mothers group	The road condition is worse during the rainy season compared with the dry season as the whole road is covered by the runoff water and new drivers are unaware where the big puddles are so they have accidents there. Mothers are worried about their kids as they prefer to walk from the blacktopped area and this might leads them to an accident.

			Road safety measures are needed after the construction of the road and there needs to be an alternative route during the construction phase. Regarding the Durga temple, the mothers group acknowledged that the temple needs to be relocated for upgrading the road. They express their willingness to relocate the temple to appropriate place prior to the construction of road.

9. GRIEVANCE REDRESS MECHANISM (GRM)

9.1 Grievance Redress Mechanism overview

A grievance redress mechanism is established to allow stakeholders including PAPs to raise any concerns or complaints, or to appeal any disagreeable decisions, practices and activities arising from the project including compensation for land and assets. Stakeholders will be made fully aware of their rights and the procedures.

9.2 Current Grievance Redress Processes

Currently all grievances including environmental and social issues are directly submitted to PMC's judicial committee (NyayikSamiti). NyayikSamiti is a three-member committee comprising the deputy mayor and two people from the executive committee or ward. Theviews of Environmental and Social Development Unit are taken in decision making process, if the judicial committee determines that is required. Grievances can also be submitted to District Administrative Officer (DAO) at District level or to Ward Chairman at Ward Level. Beside judicial committee, PMC also has a separate kiosk to register gender-based grievances/cases. These mechanisms and procedures are not fully operational so need to be strengthened further to perform its role more effectively.

9.3 Proposed Grievance Redress Mechanism

Existing mechanisms for grievance redress at the local level will be drawn upon under the project to enable grievant to lodge issues, complaints and requests for information, to help support and build the capacity of local governments.

9.3.1 Structure of the GRM

The project will follow the existing Grievance Redress procedures. Since existing grievance procedures are not fully operational, the following Grievance Redress Mechanism is proposed

The grievant should first raise any project-related grievances with the information office of the subproject, which will decide whether the grievance can be resolved by the ward or other mechanism. A dedicated person will be placed as a grievance officer to look after grievances issues. The person will refer the cases according to the nature of grievances to the concerned entities. The records shall be kept properly.

At the Ward level, the staffing of the grievance redress committee (GRC) will include Ward Chairman, Environmental and Social Officers from respective Municipality.

The second level will be at the municipality level, and will comprise the NyayikSamit. The Nyayik Samiti will discuss the environmental and social concern with E&S section/department of municipality to redress grievance pertaining to gender, vulnerable community, and other social and environmental issues in transparent and effective manner.

The third level will be at the PCO level, comprising members from the PCO. Those engaged as the monitoring unit for ESMP, RAP implementation can be the part of the committee.

Special project grievance mechanisms such as on site provision of complain hearings allows project affected persons to get fair treatment on time. The subproject will also handle issues regarding the compensation damages done during construction.

9.3.2 Processes of the GRM

Grievances shall be submitted through various mediums, including in person, in written form to a noted address, through a toll-free phone line or through direct calls to concerned officials, and emails. The PCO will appoint a person (Operator) at PCO- Kathmandu to receive such calls and online messages. The person (Operator) based on nature of complaint, will forward the same to the information office or ward committee. A ticket or a unique number will be generated for all such call, messages and letters. The complainant will follow up based that unique number with Operator at PCO-Kathmandu. All complaints will be responded within two weeks at any level. In case response is not received from 1stlevel within 15 days, the complaint will be escalated to next level. If complaint remains unaddressed at 1st and 2nd within maximum 30 days after registering the compliant, it will be elevated to 3rd level at PCO level. The PCO within 7 days of time should instruct the concerned person at PMC level to arrange for a hearing within maximum 5 days of time. Effort will be given by all levels of GRCs to conduct hearing and resolve the concern at their level up to the satisfaction of complainant within the stipulated timeframe. In case 1st and 2nd level GRCs are unable to resolve the concern up to the satisfaction of complainant, these GRCs' or Complainant may approach to 3rd level of GRC at PCO Level. After conducting hearing at any level of GRC, the decision will be communicated to complainant within maximum 30 Days of time.

All local contact information and options for complaint submission will be available on site, on Toles, Wards, PMC Office, PCO on information boards and PMC websites. A half yearly report on Grievance Redress by the subproject project will be prepared and will be sent to PMC's GRCs by Wards' GRCs and ultimately to GRC of PCO. The PCO will forward the same to the World Bank.

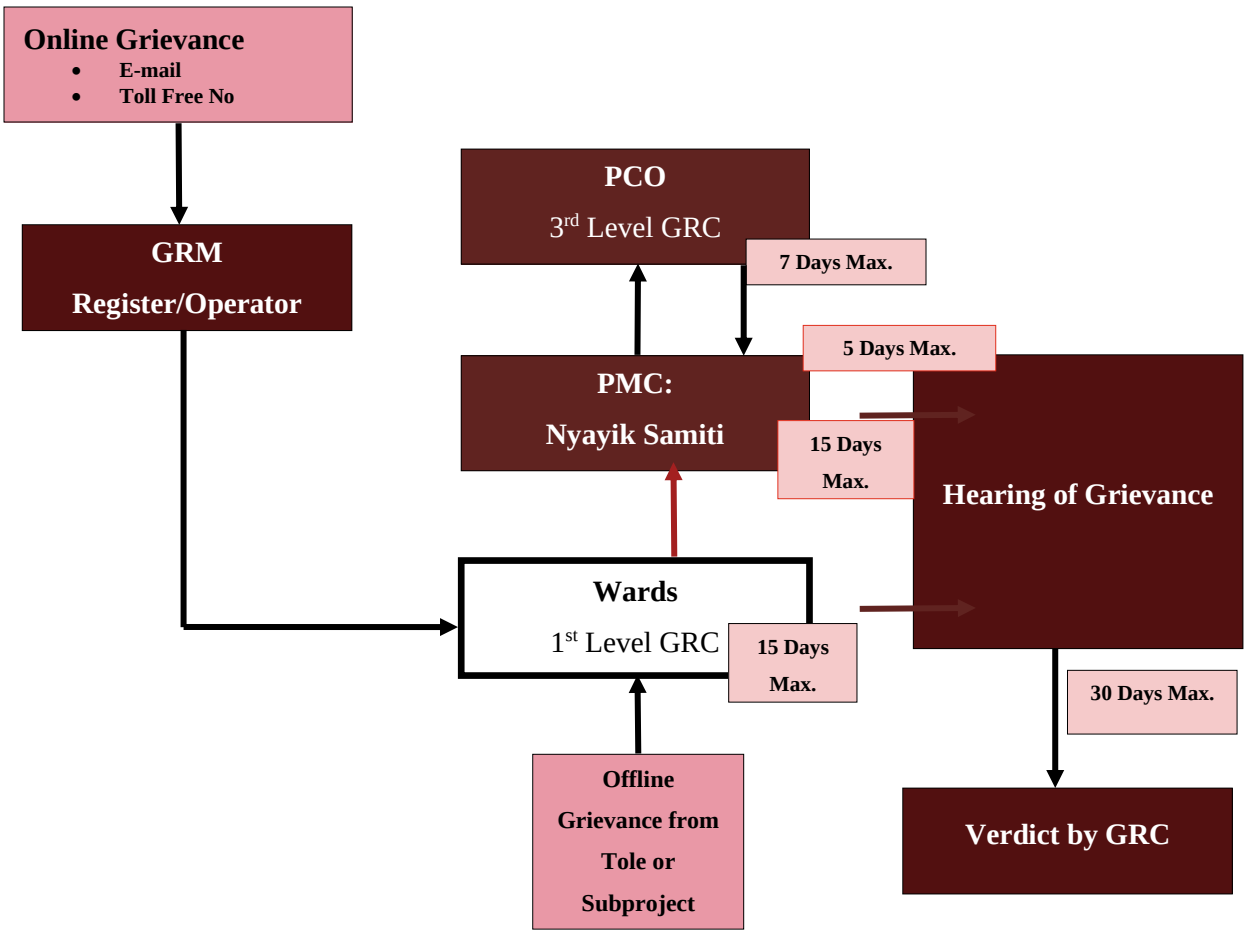


Figure 9–1. Grievance Redress Process

9.3.3 Further details of the GRM

The functions of grievance mechanism include redressing grievances of community / beneficiaries /project affected persons in all project respects, providing rehabilitation and resettlement assistance and related activities, and hearing grievances from workers involved in the project at any level or phase. The system should be established to report back to the concerned community or persons regarding the decision on the complaint. The grievances related to women should be dealt by women officer. As required, the social mobilizers will be recruited. GRC will deal/hear the issues related to Environment, R&R and individual grievances and will give its decision/verdict within 30 days after hearing the aggrieved person. The final verdict of the GRC will be given by the Head of GRC in consultation with other members of the GRCs and will be binding to all other members.

Potential grievances which may need to be addressed are listed below:

i. Rehabilitation & Resettlement and Compensation issue

ii. Loss of livelihood
iii. Access to resource /utility/facility
iv. Ambient air and noise Quality
v. Impact on water quality/resource
vi. Grievance from vulnerable community
vii. Gender related issues
viii. Grievances from workers
ix. Safety and risk repeated to project development

9.4 Other Mechanisms for Grievance Redress

All complainants have the option to approach court/judiciary or the World Bank's Grievance Redress Service in case he or she is not satisfied with the verdict provided.

Appendix

Appendix A: Meteorological Parameters

Time, (Hr)	Air Temperature, (^{0}C)	Wind Speed, (m/s)	Wind Direction, (Bearing)
12:30	26	0.4	120
13:30	26	0.8	190
14:30	25	2	260
15:30	25	1.4	292
16:30	25	1	172
17:30	24	0.6	300
18:30	24	0.2	200
19:30	24	0.6	92
20:30	24	0.2	120
21:30	24	0.6	108
22:30	24	1.2	112
23:30	24	1	132
0:30	24	1.4	220
1:30	24	0.8	200
2:30	21	1.4	150
3:30	21	2.6	320
4:30	21	0.8	240
5:30	22	1.4	132
6:30	22	0.8	106
7:30	23	1.2	112
8:30	23	0.4	290
9:30	23	1.6	180
10:30	23	2	180
11:30	24	1	210

Appendix B:Ratings and Summary of Beneficial and Adverse Impact

Magnitude		Extend		Duration	
High (H)	60	Regional (R)	60	Long term(LT)	20
Medium (M)	20	Local (L)	20	Medium Term (MT)	10
Low (L)	10	Site Specific (SS)	10	Short Term (ST)	5

Summary of Beneficial Impacts					
Impact	Nature	Magnitude	Extent	Duration	Rating
Socio Economic (Construction Stage)					
Employment opportunity of locals	Direct	M 20	L 20	ST 05	S 45
Increase income and local business	Indirect	M 20	L 20	M 10	S 50
Women/disadvantage group employment	Direct	M 20	L 20	ST 05	S 45
Local labors technical skill enhancement	Direct	M20	L20	LT20	S 60
Socio Economic (Operation Stage)					
Improved access, reduced travel/transportation Cost	Direct	H 60	R 60	LT 20	HS 140
Increase in Employment Opportunities	Indirect	H 20	L 20	LT 20	S 60
Increase land value	Indirect	M 20	L 20	LT 20	S 60
Agriculture/livestock production improvement	Indirect	H 60	R 60	LT 20	HS 140
Gender and Social Empowerment	Indirect	M 20	L 60	LT 20	HS 100
Livelihood enhancement by business/industry	Indirect	M 20	L 20	LT 20	S 60
Summary of the adverse impacts					
Physical and Chemical Environment (Pre Construction and Construction stage)					
Change in land use Pattern	Direct	L 10	SS 10	LT 20	S 40
Site clearance (Pre construction)	Direct	L 10	SS 10	LT 20	S 40
Removing electrical lines and Lekhnath water supply schemes (Pre construction)	Direct	M20	SS 10	LT 20	S 50
Requirement for construction materials (Quarry Operation, extraction of soil)	Direct	M 20	L 20	ST 5	S 45
Impacts associated with Development of Construction staging and storage area	Direct	L 10	SS 10	LT 20	S 40
Increased traffic, Traffic congestion , accidents	Direct	L 10	SS 10	LT 20	S 40
Stockpiling of Construction Materials	Direct	M 20	SS 10	ST 5	IS 35
Noise /Air/ Pollution	Direct	L 10	L 20	ST5	S 40
Operational stage					
Road stability and Management	Direct	M 20	SS 10	LT 20	S 50
Air/Noise pollution	Indirect	L 10	SS10	LT 20	S 40
Water pollution	Indirect	L 10	SS 10	LT 20	S 40
Biological Environment (Construction stage)					
Vegetation clearing	Direct	M 20	SS 10	LT 20	S 50
Impact on wildlife	Direct	L 10	SS 10	LT 20	IS 40
Socio-Economic Environment (Construction stage)					
Loss of Agriculture land	Direct	M 20	SS 10	LT 20	S 50

Loss of Built up Structure	Direct	M 20	SS 10	LT 20	S 50
Occupational health and safety of workers	Direct	M 20	L 20	ST 5	S 45
Health and Sanitation	Indirect	M 20	L 20	ST 5	S 45
Operational stage					
Encroachment on ROW	Indirect	M 20	SS 10	LT 20	S 50
Possibility of Road accident	Indirect	L 10	L 20	LT 20	S 50
Population Pressure on social services and facilities	Indirect	M 20	L 20	LT 20	S 60

NESS/Lab, M-03/R1.1

QS Test Report / Certificate

NS Accreditation No. Pra. 01/053-54

Entry No. : NCL - 726 (W) (2) - 06 - 2019
Date Received : 24 - 06 - 2019

Sample : Drinking Water (Red Cross Tap)
Date Completed : 27 - 06 - 2019

Client : DUDBC
Sampling Date : 23 - 06 - 2019

Sampled By : Jit Bahadur Khatri
Location : Pokhara Maharagar Palika-27, Taalchowk

S. N.	Parameters	Test Methods	Observed Values	NDWQS, Nepal
1.	pH at 23°C	Electrometric, 4500 - H^+ B.; APHA	7.3	6.5 - 8.5
2.	Electrical Conductivity, (µS/cm)	Conductivity Meter, 2510 B, APHA	163.3	1500
3.	Turbidity, (NTU)	Nephelometric, 2130 B, APHA	4	5
4.	Total Hardness as $CaCO_3$, (mg/L)	EDTA Titrimetric, 2340 C, APHA	82	500
5.	Total Alkalinity as $CaCO_3$, (mg/L)	Titrimetric, 2320 B, APHA	109.25	-
6.	Chloride, (mg/L)	Argentometric Titration, 4500 - Cl^- B, APHA	N. D. (<1)	250
7.	Ammonia, (mg/L)	Direct Nesslerization, 4500 - NH_3 C APHA	0.15	1.5
8.	Nitrate, (mg/L)	UV Spectrophotometric Screening, 4500 - NO_3^- B, APHA	1.70	50
9.	Nitrite, (mg/L)	NEDA, Colorimetric, 4500 - NO_2^- B, APHA	0.04	-
10.	Calcium, (mg/L)	EDTA Titrimetric, 3500 - Ca B & 3500 - Mg B APHA	25.65	200
11.	Magnesium, (mg/L)		15.55	-
12.	Iron, (mg/L)	Direct Air - Acetylene AAS, 3111 B, APHA	1.11	0.3
13.	Manganese, (mg/L)		0.04	0.2
14.	Arsenic, (mg/L)	SDDC, 3114 B: APHA	N. D. (<0.01)	0.05

N. D.: Not Detected

Note:
NDWQS: National Drinking Water Quality Standard - 2063; AAS: Atomic Absorption Spectrophotometer; UV: Ultraviolet; EDTA: Ethyelenediaminetetraacetic acid; NTU: Nephelometric turbidity unit; NEDA: N-1-Naphthyleethylenediamine dihydrochloride; APHA: American Public Health Association.

Remarks: Except iron, all observed values compiled the prescribed NDWQS for drinking water.

(Analyzed By) (Checked By)

Nepal Environmental & Scientific Services (P) Ltd. Kathmandu

(Authorized Signature)

Note:
1. This report/certificate is in reference to Laboratory Quality Control Manual, QS (018), section OPT.
2. The result listed refer only to the tested samples & applicable parameters. Endorsement of products is neither inferred nor implied.
3. Liability of our institute is limited to the invoiced test parameters & amount only.
4. Samples will be destroyed after one month from the date of issue of test certificate unless otherwise specified.
5. This report should not be reproduced wholly / partially for any advertizing media without our permission.
6. The clients are requested to take back their hazardous samples along with the report/certificate.

NESS/Lab, M-03/R1.1

QS Test Report / Certificate

NS Accreditation No. Pra. 01/053-54

Entry No. : NCL - 726 (W) (2) - 06 - 2019
Sample : River Water (Khudi Khola)
Client : DUDBC
Sampled By : Jit Bahadur Khatri

Date Received : 24 - 06 - 2019
Date Completed : 27 - 06 - 2019
Sampling Date : 23 - 06 - 2019
Location : Pokhara Mahanagar Palika-27, Taalchowk

S. N.	Parameters	Test Methods	Observed Values
1.	pH at 23°C	Electrometric, 4500 - H^+ B,: APHA	6.9
2.	Electrical Conductivity, (µS/cm)	Conductivity Meter, 2510 B, APHA	180.3
3.	Turbidity, (NTU)	Nephelometric, 2130 B, APHA	18
4.	Total Dissolved Solids, (mg/L)	Oven Drying Method, 180°C, 2540 C, APHA	310
5.	Total Hardness as $CaCO_3$, (mg/L)	EDTA Titrimetric, 2340 C, APHA	86
6.	Total Alkalinity as $CaCO_3$, (mg/L)	Titrimetric, 2320 B, APHA	109.25
7.	Chloride, (mg/L)	Argentometric Titration, 4500 - Cl B, APHA	N. D. (<1)
8.	Nitrate, (mg/L)	UV Spectrophotometric Screening, 4500 - NO_3^- B, APHA	0.89
9.	Total Phosphorous, (mg/L)	Ascorbic Acid, 4500 - P E, APHA	0.29
10.	Chemical Oxygen Demand, (mg/L)	Potassium Dichromate Reflux, 5220 B, APHA	13
11.	Arsenic, (mg/L)	SDDC, 3114 B: APHA	N. D. (<0.01)
12.	Iron, (mg/L)	Direct Air - Acetylene AAS, 3111 B, APHA	1.11
13.	Manganese, (mg/L)		0.12
14.	Lead, (mg/L)		<0.01
15.	Zinc, (mg/L)		0.05

N. D.: Not Detected

Note:
ND/WQS: National Drinking Water Quality Standard - 2063; AAS: Atomic Absorption Spectrophotometer; UV: Ultraviolet; EDTA: Ethylenediaminetetraacetic acid; NTU: Nephelometric turbidity unit; NEDA: N-1-Naphthylethylenediamine dihydrochloride; APHA: American Public Health Association.

Remarks: The water was found turbid in nature due to presence of iron. The eutrophication is probable at observed total phosphorous level.

(Analyzed By) (Checked By)

Nepal Environmental & Scientific Services (P.) Ltd. Kathmandu 1998

(Authorized Signature)

Note:
1. This report/certificate is in reference to Laboratory Quality Control Manual, QS (018), section OPT.
2. The result listed refer only to the tested samples & applicable parameters. Endorsement of products is neither inferred nor implied.
3. Liability of our institute is limited to the invoiced test parameters & amount only.
4. Samples will be destroyed after one month from the date of issue of test certificate unless otherwise specified.
5. This report should not be reproduced wholly / partially for any advertizing media without our permission.
6. The clients are requested to take back their hazardous samples along with the report/certificate.

NESS/Lab, M-03/R1.1√

QS Test Report / Certificate

NS Accreditation No. Pra. 01/053-54

Entry No. : NCL - 728(A) (1) - 06 - 2019
Sample : Air
Client : DUDBC
Location : Taalchowk, Pokhara Municipality - 27

Date Received : 24 - 06 - 2019
Date Completed : 28 - 06 - 2019
Monitored By : NESS (Jit)

Ambient Air Quality

Sampling Point : Taalchowk, Pokhara Municipality - 27
Latitude : 28°9'47.8"N
Longitude : 84°3'43.5"E
Altitude : 706m
Starting Monitoring Date : 22 - 06 – 2019
Ending Monitoring Date : 23 - 06 - 2019
Monitored By : JitBahadur Khatry
Monitoring Duration : 1440 minutes
Monitoring Instrument : Low Volume Air Sampler (Anderson Type)
Flow Rate : 28.3L/min
Total Air Volume : 40.752m^3

Particulate Size, (µm)	Weight of Duct, (mg)	Percentage Weight Fraction	Cumulative Weight Percentage
PM>10 µm	0.1	10	100
7.0 µm to 10 µm	0.1	10	90
3.3 µm to 4.7 µm	0.1	10	80
2.1 µm to 3.3 µm	0.2	20	70
4.7 µm to 7.0 µm	0.1	10	50
<0.43 µm	0.1	10	40
0.43 µm to 0.65 µm	0.1	10	30
1.1 µm to 2.1 µm	0.1	10	20
0.65 µm to 1.1 µm	0.1	10	10
Total	**1**	**100.0**	**0**

Notes: Continuous raining was observed during monitoring duration. The air pollutants were probably washed away due to rain.

Nepal Environmental & Scientific Services (P.) Ltd. Kathmandu 1992

Note:
1. This report/certificate is in reference to Laboratory Quality Control Manual, QS (017).
2. The result of parameters refers only to the tested samples. Endorsement of products is neither inferred nor implied.
3. Liability of our institute is limited to the invoiced test parameters &amount only.
4. Samples will be destroyed after three months from the date of issue of test certificate unless otherwise specified.
5. This report is not to be reproduced wholly / partially & cannot be used as an evidence in the Court of Law & should not be used in any advertizing media without our permission in writing.
6. The clients are requested to take back their hazardous samples along with the report/certificate.

NESS/Lab, M-03/R1.1√

QS Test Report / Certificate

Total Suspended Particles : 24.54µg/m³

Respirable Particulate Matter (PM_{10}) : 90% of TSP = 22.08µg/m³

Respirable Fine Particle ($PM_{2.5}$) : 70% of TSP = 17.17µg/m³

Indicators→	Total Suspended Particulates (TSP)	Particulate Matter of Aerodynamic Size 10 micron (PM_{10})	Particulate Matter of Aerodynamic Size 2.5 micron ($PM_{2.5}$)
NAAQS Limits for 24 hour averaging time, 2012 (GoN)	230µg/m³	120 µg/m³	40 µg/m³

Remarks: The observed concentrations of TSP, PM_{10} and $PM_{2.5}$ complied the prescribed national ambient NAAQS 2012. The ratio of PM_{10}:TSP and $PM_{2.5}$:PM_{10} were about 0.69 and 0.78 respectively.

(Monitored By) (Checked By)

Nepal Environmental & Scientific Services (P.) Ltd. Kathmandu 1992

(Authorized Signature)

Note:
1. This report/certificate is in reference to Laboratory Quality Control Manual, QS (017).
2. The result of parameters refers only to the tested samples. Endorsement of products is neither inferred nor implied.
3. Liability of our institute is limited to the invoiced test parameters &amount only.
4. Samples will be destroyed after three months from the date of issue of test certificate unless otherwise specified.
5. This report is not to be reproduced wholly / partially & cannot be used as an evidence in the Court of Law & should not be used in any advertizing media without our permission in writing.
6. The clients are requested to take back their hazardous samples along with the report/certificate.

NESS/Lab, M-03/R1 .1√

QS Test Report / Certificate

Gaseous Pollutants

Sampling Point : Taalchowk, Pokhara Municipality - 27
Latitude : 28°9'47.8"N
Longitude : 84°3'43.5"E
Altitude : 706m
Starting Monitoring Date : 22 - 06 – 2019
Method : Gas Detector Tube

Gases	n	Volume of Air Drawn per Stroke, (ml)	No. of Draws	Calculated Concentration, (ppm)
SO_2	2	100	5	<0.06
NO_2	2	100	5	<0.06
CO	1	100	5	<1

Remarks: All the monitored gases were not detected..

(Monitored By) (Checked By)

Nepal Environmental & Scientific Services (P.) Ltd. Kathmandu

(Authorized Signature)

Note:
1. This report/certificate is in reference to Laboratory Quality Control Manual, QS (017).
2. The result of parameters refers only to the tested samples. Endorsement of products is neither inferred nor implied.
3. Liability of our institute is limited to the invoiced test parameters &amount only.
4. Samples will be destroyed after three months from the date of issue of test certificate unless otherwise specified.
5. This report is not to be reproduced wholly / partially & cannot be used as an evidence in the Court of Law & should not be used in any advertizing media without our permission in writing.
6. The clients are requested to take back their hazardous samples along with the report/certificate.

NESS/Lab, M-03/R1.1√

QS Test Report / Certificate

Metrological Parameters

Sampling Point : Tasichowk, Pokhara Municipality - 27
Latitude : 28°3'47.8"N
Longitude : 84°3'43.5"E
Altitude : 706m
Starting Monitoring Date : 22 - 06 – 2019
Ending Monitoring Date : 23 - 06 - 2019

Time, (Hr)	Air Temperature, (°C)	Wind Speed, (m/s)	Wind Direction, (Bearing)
12:30	26	0.4	120
13:30	26	0.8	190
14:30	25	2	260
15:30	25	1.4	292
16:30	25	1	172
17:30	24	0.6	300
18:30	24	0.2	200
19:30	24	0.6	92
20:30	24	0.2	120
21:30	24	0.6	108
22:30	24	1.2	112
23:30	24	1	132
0:30	24	1.4	220
1:30	24	0.8	200
2:30	21	1.4	150
3:30	21	2.6	320
4:30	21	0.8	240
5:30	22	1.4	132
6:30	22	0.8	106
7:30	23	1.2	112
8:30	23	0.4	290
9:30	23	1.6	180
10:30	23	2	180
11:30	24	1	210

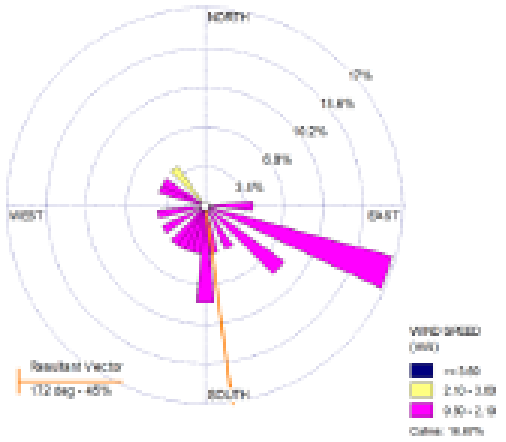
(Monitored By) (Checked By) (Authorized Signature)

Nepal Environmental & Scientific Services (P.) Ltd. Kathmandu 1992

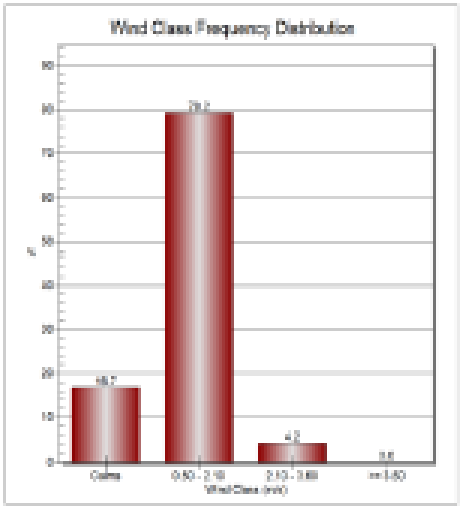
Note:
1. This report/certificate is in reference to Laboratory Quality Control Manual, QS (017).
2. The result of parameters refers only to the tested samples. Endorsement of products is neither inferred nor implied.
3. Liability of our institute is limited to the invoiced test parameters &amount only.
4. Samples will be destroyed after three months from the date of issue of test certificate unless otherwise specified.
5. This report is not to be reproduced wholly / partially & cannot be used as an evidence in the Court of Law & should not be used in any advertizing media without our permission in writing.
6. The clients are requested to take back their hazardous samples along with the report/certificate.

NESS/Lab, M-03/R1 .1√

QS Test Report / Certificate



Windrose (Based on Air Blowing From Site)



Frequency Classification

Remarks: The average air temperature during the monitoring duration was 24 degree Celsius. The average wind speed was 1.08m/s. The resultant wind was blown at172 degree for 45% of the monitoring duration with 16.7% calm hours. The dominant wind was lightair (about 79.2%) as per Beaufort wind scale. The air pollutants directed along the observed average wind direction.

(Monitored By)

(Checked By)

Nepal Environmental & Scientific Services (P.) Ltd. Kathmandu 1992

(Authorized Signature)

Note:
1. This report/certificate is in reference to Laboratory Quality Control Manual, QS (017).
2. The result of parameters refers only to the tested samples. Endorsement of products is neither inferred nor implied.
3. Liability of our institute is limited to the invoiced test parameters &amount only.
4. Samples will be destroyed after three months from the date of issue of test certificate unless otherwise specified.
5. This report is not to be reproduced wholly / partially & cannot be used as an evidence in the Court of Law & should not be used in any advertizing media without our permission in writing.
6. The clients are requested to take back their hazardous samples along with the report/certificate.

Appendix D: Social Baseline Information

a. Population and Demography

The Pokhara Metropolitan City has 81,456 households and 413,934 populations (CBS 2011). The sex ratio (Male: Female) is 85.3 (men per 100 women), withMale 201,107males(48.6%) and 212,827 females (51.4%). PMC is divided into 33 wards. Population, gender and density in the threeproject-affected wards are presented in theTable below:

Population Size, Growth and Distribution as per Census 2011

Affected Wards	Total Household	Total Population	Male	Female	Area in sq. KM.	Average house hold size	Sex ratio (M:F)	Population Density
27,28,31	14,858	59,498	27,394	32,104	77.45	3.98	85.3	768

b. Ethnicity

The project- affected wards of 27, 30 and 31 have multi-ethnic compositions. Brahmin, Chhetri,Janjati and Dalit are major castes and ethnic groups of the area. The socioeconomic survey found that the area is heterogeneous in terms of caste and ethnic composition. However, two third of the household belongs to Hill-Brahmin and followed by Chhetri (16.0%) and Gurung (12.0%). The other caste and ethnic groups like Damai, Newar, Magar and Tamang are very nominal in figures consisting about 8% of the total population.The survey data shows that the average family size is 4.5. However, the family size is higher in Damai and Newar than other caste and ethnic groups as shown in table below.

Caste and Ethnic Diversity in the Project Area. Source: Field survey, 2019

Caste& Ethnic Group	Household		Population		Average family size
	No.	%	No.	%	
Brahmin	113	64.6	513	65.60	4.5
Chhetri	28	16.0	123	15.73	4.4
Gurung	21	12.0	85	10.87	4.0
Damai	5	2.9	26	3.32	5.2
Newar	4	2.3	21	2.69	5.3
Magar	3	1.7	11	1.41	3.7
Tamang	1	0.6	3	0.38	3.0
Total	175	100.0	782	100.0	4.5

c. Female headed households

The socio-economic survey identified 175 household in which 51.4% household head is male and the rest are female. As compare to national figures, female-headed households in the proposed project area is higher, particularly because of overseas migration of male members. The survey data shows that 36% were male absentee households among the 175 households.

Household Distribution by Gender Source: Field survey, 2019

Sex	No. of House Owner	Percentage
Female	85	48.6
Male	90	51.4
Total	175	100.0

d. Status of Woman Headed Household

In the project area there are 67single women-headed households. Amongst them 46 are widowed and 21are divorced/separated. Twenty to 50 percent of total houses in the area are in overseas employment and women are staying with their kids and elders at home. The women whose husbands are overseas are generally settled in urban areas where there areeducation, health facilities and other opportunities for kids and elderly in the family from nearby areas. (Source: Field Survey, 2019).

e. Status of Women's Ownership

Women's access to ownership on fixed property such as land and house is in increasing trend because of 25 percent tax rebate incentive offered by the government if the land and property is registered in the name of women. The male to female ratio in the area is 1:1(Source: Field Survey, 2019)

f. Women Participation

Women's participation and involvement in non-agriculture sectors have been gradually increasing. Both men and women contribute in agriculture activities. Both men and women are interested to work or participate in public works including road construction.

g. Social Group and Activities

In the project area five different social groups are active and functional. About 21% females are involved as member of those user groups. Males are commonly more active in the users groups. After the local election women have also become members in the Wards. Apart from this, some women and mother groups are also functional in the area.

h. Religion

The survey shows that about 90% of households follow the Hindu religion, 8.6% are Buddhist and a small number of households are Christians.

Various Religions Practiced in the Area. Source: Field survey, 2019

Religion	Number of Household	Percentage
Hindu	157	89.7
Buddha	15	8.6
Christian	2	1.1
Not stated	1	0.6
Total	175	100.0

i. Age and Sex composition

Sex ratio is almost equal. However, the male and female populations vary in different age groups, as provided in the table below. Female population in the age group 15-59 is higher in comparison to the male population in the same age group, given outmigration of men, and large in the age groups 0-14 and 60 plus. The larger male population in age group 0-14 reflects higher fertility rate of male population due to patriarchal value system. Likewise, the large male population in age group 60 plus can reflect higher life expectancy rate of male as compared to female.

Distribution of Population by Age and Sex Structure. Source: Field survey, 2019

Age Group	Female		Male		Total	
	No	%	No	%	No	%
0-14	57	14.6	75	19.2	132	16.9
15-59	284	72.6	250	63.9	534	68.3
60+	50	12.8	66	16.9	116	14.8
Total	391	100.0	391	100.0	782	100.0

j. Family structure

The nuclear is the dominant family structure in the project area. However, about 15% households live in joint family.

Distribution of Household by Family Structure. Source: Field survey, 2019

Family structure	Household	
	Number	%
Joint	26	14.9
Nuclear	149	85.1

Total	175	100.0

k. Migration

The trend of migration to city centers within the country oroverseas for higher education and job opportunities is found to be medium in the project area. Temporary migration for the education and better opportunities are the common trend in the project area. The main causes of in-migration from nearby districts are due to the opportunities available in the PMC.

l. Absentee Household and Population

The survey shows that 40% absentee households in the project area and absentee population is 12.5%. The largest proportion reported to migrate overseas destinations whereas a small proportion reported in country migration

Absentee Household and Population Distribution. Source: Field survey, 2019

Absentee	Total	Absentee	%	Within country		Aboard	
Household	175	70	40.0	7	10.0	63	90.0
Population	782	98	12.5%	8	1.0	99	11.5

Distribution of Destination of Absentee Household and Population. Source: Field Survey, 2019.

Destination place	Absentee Household		Absentee Population	
	No	%	No	%
Arabian Countries	23	25.6	22	34.9
Developed countries	51	56.7	30	47.6
India	16	17.8	11	17.5
Total	90	100	63	36.0

m. Settlement and Housing Patterns

Settlement patterns in the project area generally reflect the distribution of arable land and the development of market areas in the road routes. Accordingly, most of the areas exhibit a stratified settlement pattern. The settlement in the business areas, like Talchowk and Sisuwa are clustered.

n. Occupation and Livelihood

Mixed type of economic activities can be seen along the road alignment. The people residing in the main and lateral roads are within business areas comprising of retail stores catering for food and daily

commodities. Mostly, the businesses are run by the house owner themselves and are sometimes rented out. Along the road side, a number of petrol stations and restaurants are available.

Main business seasons for hotel and restaurant business nearby Lake is in the month of September to January, when all other activities become secondary. Major livelihood activities in project area are farming, trader, civil worker, army, police, private company employee, retired, entrepreneur (shop, restaurant) and medical practice.

The Project Affected Family (PAF)areinvolved in different occupations like study, business, job, agriculture, foreign employment, pension and so on. The table below shows that a slightly more than one fourth population reported student as their occupation. The data also illustrated that there is no wider variations in proportion of populations in various occupations. Likewise, 11.5% population reported unemployed whereas about 5% population involved in foreign employment. About 5% are physically disabled population are inactive in the workforce. Similarly, gender differences and gap can be seen in occupation especially in employment. In these occupations, men's involvement is comparatively higher than women.

Distribution of population by Occupation

Source: Field survey, 2019

Occupation	Female		Male		Total	
	No	%	No	%	No	%
Student	109	27.88	113	28.90	218	27.88
Business	53	13.55	64	16.37	109	13.94
Other	65	16.62	33	8.44	101	12.92
Job	32	8.18	63	16.11	95	12.15
Unemployed	50	12.79	18	4.60	90	11.51
Agriculture	42	10.74	37	9.46	80	10.23
Foreign employment	10	2.56	29	7.42	39	4.99
Unable to work	13	3.32	14	3.58	37	4.73
Pension	0	0.00	4	1.02	4	0.51
Total	374	100.0	375	100.00	749	100.0

A. Disparity in Wages

There is no equal wage rate for the men and women. Women receive only half of wages what the men receive especially in agricultural sector[12]. It is also reported that the practice of working women who come

[12]The qualitative data indicates that construction related work women receive 25 percent less.

from outside to work in the project area with their small child is very rare. Student do not come with their mother for wage labor.

B. Land

Land is the main source of livelihood, power and prestige in Nepal (Regmi, 1999). All the households surveyed reported owning a parcel of land. Total land is 455,118.22 sq.m. An average landholding is 2600.68 sq.m

Landholdings in the Area. Source: Field survey, 2019

Number of households	Own landholding	Total land holding m^2	Average landholding^2
175		455,118.22	2,600.68

C. Livestock

Table below indicates slightly more than one third households owning livestock suggesting livestock is not the dominating way of living for the people in the project area.

Distribution of Household with Livestock and Without Livestock. Source: field survey, 2019

Livestock at House	No.	%
No	111	63.4
Yes	64	36.6
Total	175	100

For 167 livestock in 64 households, average livestock is 2.6 heads per household. The dominant livestock is buffalo, cow, goat and pig. Dairy production is the key aspect of the livestock rearing. The poultry farming is another prominent agriculture activity in the project area. Both local and improved varieties of livestock are available in the project.

Distribution of Livestock (Source: Field survey, 2019)

Livestock	Local		Improved		Total	
	No	%	No	%	No	%
Buffalo	59	85.5	10	14.5	69	39.9
Cow	11	26.8	30	73.2	41	23.7
Goat	23	100.0	0	0.0	23	13.3
Small Buffalo	15	100.0	0	0.0	15	8.7
Pig	12	100.0	0	0.0	12	6.9
Calf	5	71.4	2	28.6	7	4.0
Total	125	74.9	42	25.1	167	100.0

Fowl	141	0.7	21333	99.3	21474
Honey bee	6	100.0	0	0	6

Yes	58	90.6
No	6	9.4
Total	64	100.0

D. Standing Plants

The field survey reports that 25 (14.3%) households have standing plants in their own land. Out of 25 households, 14 households reported fodder, timber, religious valuable trees whereas 15 households reported fruit trees. The higher numbers of standing trees are fruit trees followed by fodder, timber and religious trees (e.g.Pipal and Parijat).

Distribution of Household with Standing Plants on Land. Source: Field Survey, 2019

Plants	Household	%
No	150	85.71
Yes	25	14.29
Total	175	100.00

Household Distribution with Standing Plants. Source: Field Survey, 2019

Tree species	No of Household	No of plants
Fodder & timber	10	23
Religious valuable trees	4	5
Fruit trees	15	61
Flower plant	1	1
Maize field	1	-

E. Cooking Energy

Table below shows use of cooking energy at household level. All households use Liquid Petroleum Gas (LPG) for cooking purpose.

Table below Distribution of Household by Cooking Energy at Household. Source: Field survey, 2019

Cooking energy	Household	
	No	%
LP Gas	175	100.0
Others	0	0.0
Total	175	100.0

F. Lighting Energy

All the households in the project area use electricity for lighting purpose.

Distribution of household by lighting energy at household. Source: Field survey, 2019

Cooking energy	Household	
	No	%
Electricity	175	100.0
Others	0	0.0
Total	175	100.0

G. Education

80% and 66 % people of Talchowk and Sisuwa attained high school respectively whereas 65% of Talchowk and 51% of Sisuwa have obtained Bachelor's degrees. For Talchowk communities, the highest educational attainment is Master Degree. The education facilities in the area offer sufficient High School level of education. For advance degree, local people go to Pokhara (Pokhara University is within 2Km distance from Talchowk), Chitwan and Kathmandu. There are four Schools namely Shree Shanti Basic High School (community), Diamond Higher Secondary School (Private), New Light English Boarding High School (Private), Shree NabaJyotiSanatanDurga Secondary School (Community).

Schools in RoW and Nearby Project Vicinity (Source: ESIA Study December, 2018)

Schools	Name and Type of School	Number of students
Talchowk	Shree Shanti Basic High School (Community School)	200, Girl=120Boys=80
Talchowk	Diamond Higher Secondary School (Private)	1200, Boys = 660, Girls = 540
Sisuwa	New Light English Boarding High School (Private)	960, Girls= 432, Boys= 528
Sisuwa	Shree NabaJyotiSanatanDurga Secondary School (Community School)	320, Girls=184, Boys=136

H. Literacy Status

89.1% population is literate in the project area. Women literacy rate in the project is 57.4% (Table 2-27).

Distribution of Population by Literacy Status. Source: Survey 2019

Literacy Status	Male	%	Female	%	Total	%
Illiterate	25	6.5	59	15.2	84	10.9
Literate	358	93.5	328	84.8	686	89.1

I. Local Education Status

The table below shows education status of people living in the project area. The number of students pulation attending secondary school is higher compared to other levels. About the same proportion of population in basic and higher level education. However, gender gap can be seen in higher level but not in basic and school level education.

Education Levels above the Age of 5 (Source: Field survey, 2019)

Educational status	Male		Female		Total	
	No	%	No	%	No	%
Basic	86	23.1	79	21.0	165	22.0
Secondary	159	42.7	157	41.6	316	42.2
higher education	89	23.9	65	17.2	154	20.6
Literate	19	5.11	22	5.8	41	5.5
Illiterate	19	5.11	54	14.3	73	9.7
Total	372	100	377	100.0	749	100.0

J. Training

Only 5% individuals reported to receive training from various organizations mostly related to non-agriculture such as tailoring and driving. In the ESMP there is training component. This information flags the context for that scenario.

Distribution of individuals by received training. Source: Field survey, 2019

Trainings	Nature of Training received	No of individual
Agriculture & livestock	Scientific farming & livestock management	4
	Dairy production	1
	Poultry farming	1
Non-agriculture	Child rights	1
	Driving	6
	Electrician	2
	Hotel	1
	Tailoring	13
Others		10

K. Health Status

Local people of the project area mainly rely on government health posts and private clinic. As per the field survey there are 1 Health Post and 1 Hospital, 7 private clinic and 1 Ayurveda Center in the project affected wards.

L. Toilet

All households in the project area have permanent toilet

Distribution of household by access of toilet facility at household Source (Field survey, 2019)

Toilet	Household	
	No	%
Yes	175	100.0
No	0	0.0
Total	175	100.0

M. Water Supply and Sanitation

96% population in the project area relies on the public water supply system as the main source of drinking water. The remaining households use groundwater for drinking.

N. Membership in organization

More than two third households are involved in various organizations such as TolBikasSastha (Tol Development Committee), Mother or Women groups, Youth groups, Cooperatives, Farmer's cooperative, Saving groups etc.

Distribution of Household with affiliation in organization. Source: Field survey, 2019

Membership	No of household	%
Yes	119	68.0
No	56	32.0
Total	175	100.0

The key suggestions are not to delay in road construction, construct drainage, reinstallation of uprooted electricity poles standing on the side of the road, expansion of road in double-lane, installation of street light, no damage or harm to standing structure and provide compensation to the project affected individual and household for the loss.

O. Directly Affected Land and Infrastructures

The Land acquisition started in 1974 and completed in 1977 and compensation was distributed from 1977. All the land owners received compensation. No new land acquisition is required. All the parcels in theRoW have been transferred to departments of road. During the field visit no cropping were noted. The legal document is received from the PMC

(i) Structures to be affected

Only one temporary structure with shop is situated in the RoWand already has received compensation and is mentioned under the RAP Chapter.

Table 9-1Details of House Owner

Details of Heir of the Property	Total family members	House	Other income source	Contact
Eldest, Mr. Buddhi Narayan Bastola	5 Husband-1, wife-1, son-2, daughter-1	1 *pakki*modern house near the affected old house	Owner of 2 Buses	9846026400
Middle Son, (38 year)	4 Husband-1, wife-1, son-2	1 pakki modern house near the affected old house	Worked at hospital as ambulance driver	
Youngest Son (35 years)	4 Husband-1, wife-1, son-2	1 pakki modern house near the affected old house	Worked as driver in public bus, wife also own fruit and vegetable shops	

(ii) Bus Shelters

There are 3 bus-shelters (1 small temporary Shed for bus waiting in SisuwaChowk and another 2 Bus Operation Committee Contact Booths are in front of new light Boarding School) which lie within the RoW need to be relocated during the construction phase.

(iii) Temple and Shrines

A small Durga Temple is built by local women group near to SisuwaChowk which falls within the RoW and needs relocation. During the consultation, the group is willing to move the temple to different place.

Information of Income Loss, Affected Indigenous Peoples and Women Headed Household

The project activities will not have direct impact to income loss. No permanent structure lies within the ROW of indigenous people and the road expansion will neither directly or indirectly effect adversely to the indigenous group in the living and cultural practices . There is no adverse impact to woman headed households in their livelihood prospect by the project construction. During the consultation, women explained their drudgery will by reduced because of the dust impact in to their household because of as ii is road condition. The dust leads to extra work for them in cleaning house and washing clothes. It also reduced their anxiety of children's safety issues from road traffic as it is.

P. Gender Issue in Talchowk-Begnas Road Project

It is reported that women are discriminated and exploited by their own family member. Due to seasonal absence of migration of males, women carry out both household and outside work. Male and female literacy is found nearly similarly in the project area communities. Women responsibilities mainly include the household works, care for the children education and elderly peoples in house. While in general, men are responsible for outside works. If there is no male in the household, women perform all those work. In this situation women work load is very high. The main issues where there trends to be a gender perspective involve safety and travel patterns.

Q. Safety Issues

Women not only tend to be the majority uses of public buses in the project area usually have higher safety concerns in relation to existing road condition than men. Women respondents express their views that women prefer not to travel late in the evening and night when lighting is poor, for fear of aggressions. Similarly, overcrowded public transport in office time can increase the risk of sexual harassment. Female scotty/cycle ridersreveals different safety perception to man, with preference for clear, wider and they are at higher risk situations they tend to priorities observance of traffic rules over personal safety. Female pedestrians often express fear of road accidents linked to speeding.

The major problems related to road safety are roads and other required safety features, poor shoulders, inadequate safety barriers at step vehicle drops, poor road condition, and lack of awareness of traffic rules to all stakeholders, random road side parking and narrow section at built-up areas. Most of the accidents having any human injury are reported to the police office. Accidents with minor injury and small damage to the vehicle are settled at the accident site with mutual understanding. According to the local police officer fairly large number of accident are never reported to the police. Generally, only those accidents with high injury or property damage or with dispute are reported and recorded in the police office.

R. Proposed solutions have included for safety issues

- Traffic calming measure such as speed humps
- Drop Krebs for pedestrians, pram and disabled road crossing
- Provision of better and stronger lightening in key spots
- Proper road safety crossing and safety signing at major places like hospital and school area
- Violence against Women (VAW) Status of Project Area

At the inner area of project ZOI there are a few cases of women violence events which resolve by formal and non-formal way. However, majority of the disputes are solve by locally. The key causes for women violence are caused by men drinking alcohol and economic instabilities. At the inner settlement of project area vicinity, social deviances like concept of witch, discrimination of widow and untouchability are is

found very few. Women and girl trafficking case is not reported. The major social problems of the area are making noise and dispute/fighting by drinking alcohol. Only half of the violent events are reported to the police by women in the project.

Domestic violence is estimated to occur in the majority of households in Nepal, though it is rarely reported to the police or the court. In the road alignment alcohol and drug taking is considered as one of the major problems in the area. The public consultation also revealed the presence of gender based violence (GBV) to women in the project area. Beating to wife is the most common violence within household. Some women were still being victim of physical and psychological abuse directly and indirectly or knowingly or unknowingly. Women are generally not inclined to disclose such facts. The consultation with women also illustrates the priority for male child and otherwise bears physical violence. The social stigma such as 80% women suggested discrimination in division of labor and 90% are undermined in decision making.

Most of the women have known about the legal provision of GBV and known towards the organization working for women and GBV issues. Shakti Nepal (NGO), Sathi and Women and Children Development Office is working in the project to create awareness women's right and reducing the GBV at household or community level. The local women expressed views during the consultation as the project can lead to an influx of sex workers into the township. Such changes lead to contract workers and other personnel engage in unwanted sexual behavior that may resulting to HIV-AIDS infection or other Sexually Transmitted Diseases (STDs).

S. Status of Women Land Ownership

Women ownership of land is 47.43 % and male is 52% Women's has access to ownership on fixed property like land and house due to government's policy of 25 percent tax rebate on the sell and purchase of land and house.

Women Participation

Women's participation and involvement in non-agriculture sectors have been gradually increasing. Both men and women contribute in agriculture sector. Both men and women are interested to work or participate in public works including road construction. There is no equal wage rate for the women and men. Women receive half of the men as agriculture labor.

Gender Based Violence (GBV) Risk Mitigation Action Plan Gender Analysis

The socio economic survey of project directly impact households reveal that people living in RoWdoing similar kind of business which is oriented towards the visitors ofBegnas Tal as this is one of the popular tourist area of Pokhara. Most of the house owners are staying in the area from few generations. The

beginning of the road Talchowkis connected with the Prithvi Highway and end is connected withBegnas Tal area. In spite of being urban area, significant gender gap is noticed in work force participation and higher education in survey. The community type is scattered but Hindu hill Brahmans are in majority (64.5%), followed by Chhetri (16%), Gurung (12%) and other caste. The ratio of Male: Female in project direct impact area is 1.05:1.

T. Female Headed Household and Ownership on Fixed Property

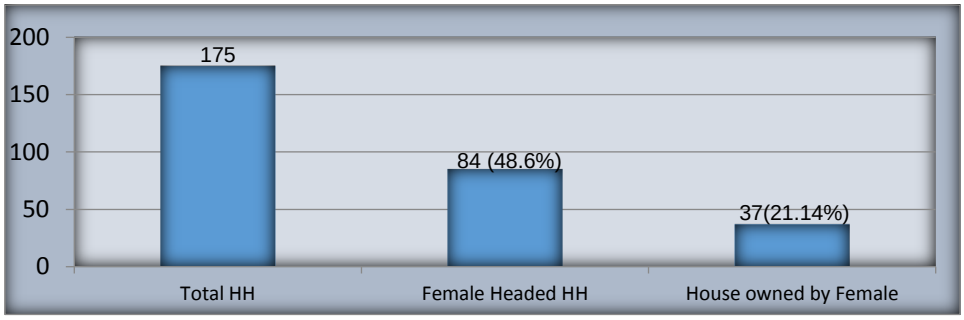
The socio-economic survey 2019 identified 175 household in which 84 (48.6%) household head is female. As compare to national figure 31.3%, female headed household in the proposed project area is higher. (Source: data.worldbank org/indicator).Among them 43 HH 51%) was found due to overseas employment and 4 are single women. The other remaining causes of female headed household are husband working out of Pokhara, Pewa (property gifted from girl's family) and property owned by woman doesn't consider as family property.

Considering that women constitute 51.5 percent of Nepal's total population and around 75 per cent of women are engaged in agriculture as their primary occupation, it is ironic to find that women often don't have ownership of land that they have been tilling for years. Of the total surveyed households, 36 (20.6%) families are engage in agriculture as a primary source of livelihood and among them 9 (25%) women owned the land.

In Nepal, about 20% women have ownership on land and the rest lag behind to it (CBS, 2012). Of the total surveyed population, 21.14% of women have land registered in their names. This is slightly higher than the national figure. Women's access to ownership on fixed property such as land and house has been increasing in the recent years. One of the reasons identified was the provision of tax exemption while registering land in a women's name13.

Total Household, Female Headed Household and female Owned Household

[13] Financial Bill 2015/16 {25 per cent to 50 per cent tax exemption on registration when land is owned by a woman; a 35 per cent tax exemption for single women; and joint registration of land in the names of husbands and wives with a fee of Rs.100 (If husband want to include his wife's name in existing property paper)



Source: survey 2019

U. Women Participation in Public Sphere

In Nepal women participation in public spheres is increasing over the last few decades. In the project impact area women participation in public sphere is very high. Out of 175 surveyed HH, 112 HH reported as a member of different organization. Among them, women from 84 HH have membership in different community based organization (CBO). But only 2 women are in primary post in non-women group. It indicates the woman's positions are still marginalized and subordinated.

There is no visible discrimination and differentiation to access and utilizations of public space by caste, ethnicity, religion, sex, age, class in the project impact area as this is a scattered urban settlement. Alcoholism, gambling and drug abuse are present in the area. In project area, social deviances like concept of witch, discrimination of widow and untouchibility are very rare. Social evils like Girl trafficking are not reported at the project impact area.

V. Wages

Gender wage gap is visible in same category of work. Women are generally paid less than men. In the project impact area, the general wages for man and woman are 1200 and 800 per day correspondingly. This indicates the inequalities and discriminations for women in labour market.

W. Focused Group Discussions

During the social study, 4 FGDs were carried out in which one with women group and three with mixed group. The total participants in the FGDs were 54 including (34 females and 20 males).

Location	No of Participants	Male	Female
Begnas 31, Ward Office	17	0	17
Mohariya, Pokhara Metropolitan city	15	7	8
Sisuwa, Pokhara Metropolitan city	11	6	5
Talchowk, Pokhara Metropolitan city	11	7	4
Total	54	20	34

Appendix E: Vegetation in RoW in Tal Chowk to SisuwaChowk (Four Lane)

	Species name	DBH (Centimeter)	Height (meter)
Tree	Peepal, Ficus religiosa	95.5	14
	Kapur, Cinnamomumcamphora	39	11
	Litchi, Litchi chinensis	26.4	10
	Pakhuri (Tri-forked), *Ficusglaberima*	46, 54, 45.1	11.5
	Lapsi, Choerospondiasaxillaris	32	11
	Peepal (Bi-forked), *Ficus religiosa*	65.7, 70	13
	Sisso, Dalbergia sissoo	30.5	10.3
	Sisso, Dalbergia sissoo	44	12
B. Pole	Ashoka, Saracaindica	14.7	8
	Ashoka, Saracaindica	13.2	7.2
	Seemal, Bombyx ceiba	10.2	6
	Paheleful,	14.5	3.5
	Kapur, Cinnamomumcamphora	29.2	11
	Gul mohar (Tri-forked), *Delones regia*	18, 13.6, 11	6
	Sisso, Dalbergia sissoo	22.8	7
	Bakaino (Bi-forked), *Melia azedarach*	18.2, 28	8
	Swami (Bi-forked), *Ficusbenjamina*	11.5, 18.6	8.1
	Aaru, Prunus persica	16	7.5
	Sisso, Dalbergia sissoo	17.1	6.7
	Bakaino (Bi-forked), *Melia azedarach*	12.9, 15.8	8
	Bakaino, Melia azedarach	15	7
	Bakaino, Melia azedarach	20.8	7
	Kapur, Cinnamomumcamphora	12, 19.9	6
	Litchi, Litchi chinensis	14	9
	Kapur (Bi-forked), Cinnamomumcamphora	13.7, 12.5	6
	Katahar, Artocarpusheterophyllus	21.5	7
	Aap, Magniferaindica	11	6
	Sisso, Dalbergia sissoo	13.5	6.5
	Sisso, Dalbergia sissoo	12.3	7
	Sisso, Dalbergia sissoo	14.2	6
	Sisso (Bi-forked), *Dalbergia sissoo*	18.6, 16.1	8
	Sisso, Dalbergia sissoo	15	6
	Sisso, Dalbergia sissoo	11.5	6
	Bakaino, Melia azedarach	14.5	6.3
	Sisso (Tri-forked), *Dalbergiasissooo*	12, 11.7, 10.3	8
	Sisso, Dalbergia sissoo	15	7
	Sisso, Dalbergia sissoo	17	7
	Sisso, Dalbergia sissoo	11	6
	Peepal, Ficus religiosa	13	4
	Mewa, Carica papaya	16.8	4.2
	Bar, Ficus bengalensis	22	7
	Peepal, Ficusreigiosa	13.5	6.7
	Pakhuri, Ficusglaberima	16	6.5
	Sisso, Dalbergia sissoo	23.5	10
	Khanyu (Tri-forked), *Ficussemicordata*	16, 13, 10.2	7
	Supari, Areca catechu	14	9
	Peepal, Ficusreigiosa	11.7	6
	Mewa, Carica papaya	12	5.7
	Ashoka, Saracaindica	11.4	6
Saplings	Ashoka, Saracaindica	30	
	Parijat, Nyctanthes arbor-tristis	4	
	Amba, Psidium guajava	2	

	Aap, Magniferaindica	4	
	Paheleful	1	
	Mewa, Carica papaya	4	
	Raatoful, Bougainvillea spectabilis	1	
	Sisso, Dalbergia sissoo	19	
	Bakaino, Melia azedarach	3	
	Bamboo, Bamboosa vulgaris	Patch <30	
	Banana, Musa paradisiaca	Patch <10	
	Amriso, Thysanolaenalatifolia	Patch	
	Banana, Musa paradisiaca	Patch<20	
	Bar, Ficus bengalensis	1	
	Peepal, Ficus religiosa	1	
	Unknown	1	
	Aaru, Prunus persica	3 (Small patches)	
	Amala, Phyllanthus emblica	1	
	Kafal, Morus alba	1	
	Khanyu, Ficussemicordata	3	
	Kapri	2	
	Banana, *Musa paradisiaca*	Patch <10	
	Banana, Musa paradisiaca	Patch <15-20	
	Banana, Musa paradisiaca	Patch <10	
	Banana, Musa paradisiaca	Patch <15	
	Banana, Musa paradisiaca	Patch<15	
	Banana, Musa paradisiaca	Small patch	
	Parijat, Nyctanthes arbor-tristis	1	
	Kapur, Cinnamomumcamphora	1	
	Dhupi, Juniperusindica	1	
	Dalchini, Cinnamomumtamala	1	
Seedlings	Aap, Magniferaindica	4	
	Amba, Psidium guajava	15	
	Tulsi, Ocimum sanctum	2	
	Kapur, Cinnamommcamphora	1	
	Flowers,	Patch <20	
	Lemon, Citrus limon	1	
	Ajambari,	4	
	Bakaino, Melia azedarach	1	
	Tulsi, Ocimum sanctum	1	
	Tulsi, Ocimum sanctum	3	
	Tulsi, Ocimum sanctum	22	
	Aank, Calotropis gigantea	1	
	Gulab, Rosa sps.	2	
	Mewa, Carica papaya	1	
	AntareFul	Patch<10	
	Khursaniful	4	
	Nilkanda, Durantaerecta	1	
	Bayar, Zizipusjujuba	Long patch	
	Dudhilo, Ficusnemoralis	1	
	Swami, Ficusbenjamina	1	
	Parijat, Nyctanthes arbor-tristis	2	

List of vegetation in RoW from Sishuwa Chowk to Khudi Bridge (Two Lane Section)

	Local name	Botanical name	DBH (Centimeter)	Height (Meter)
A. Tree	Sisoo	*Dalbergia sissoo*	39.8	9
	Swami	*Ficusbenjamina*	31.8	3.2
	Pakhuri	*Ficusglaberima*	48.6	14.3
	Bar	*Ficus bengalensis*	44	11
	Peepal	*Ficus religiosa*	34.1	14
	Pakhuri	*Ficusglaberima*	30.6	6
	Rudraksha	*Elaeocarpus ganitrus*	33.3	15.1
	Peepal	*Ficus religiosa*	46.6	4
	Peepal	*Ficus religiosa*	38	11
	Sisoo	*Dalbergia sissoo*	46	17
	Dumri	*Ficusracemosa*	49	15
	Kapur	*Cinnamomumcamphora*	13.3	5
	Amba	*Psidium guajava*	10.6	4.9
	Sissoo (biforked)	*Dalbergia sissoo*	13 15	6.7
	Painyu	*Prunus cerasoides*	112	4.2
	Aap	*Magniferaindica*	14.3	4
	Neem	*Azadirachtaindica*	20	8.1
	Supari	*Areca catechu*	13.1	6.3
	Neem	*Azadirachtaindica*	27.3	7.6
	Sisoo	*Dalbergia sissoo*	28.3	11
	Painyu	*Prunus cerasoides*	13	5
	Parijat	*Nyctanthesarbor-tristis*	20.5	10
	Aap	*Magniferaindica*	27.5	10
	Parijat	*Nyctanthesarbor-tristis*	12	3.7
	Sisoo	*Dalbergia sissoo*	14	4.2
	Sisoo	*Dalbergia sissoo*	21.1	8
	Khaniyu	*Ficussemicordata*	23.1	4
	Kaphal	*Morus alba*	13.2	5.1
	Bar	*Ficus bengalensis*	17	7.2
	Swami (forked)	*Ficusbenjamina*	13.2, 15.8	6.1
	Katahar	*Artocarpus heterophyllus*	21.2	9
	Aap	*Magniferaindica*	18.3	7
	Pakhuri	*Ficusglaberima*	24	12
	Khaniyu	*Ficussemicordata*	10.5	4.2
	Khaniyu	*Ficussemicordata*	12.5, 12, 13	4
	Sisoo	*Dalbergia sissoo*	22	7
	Sisoo	*Dalbergia sissoo*	15.1	6.8

	Local name	Botanical name	DBH (Centimeter)	Height (Meter)
	Kalkiphool	Callistemon citrinus	15	5.6
	Tejpatta	Cinnamomum tamal	28	5
	Bar	Ficus bengalensis	17	8.3
	Peepal	Ficus religiosa	25	8.5
	Sisoo	Dalbergia sissoo	21	8.3
	Pakhuri	Ficusglaberima	22	7.8
	Sisoo	Dalbergia sissoo	21	8.3
	Champ	Mitcheliachampaca	11.7	7
	Khaniyu	Ficussemicordata	22.3	9
	Kalkiphool	Callistemon citrinus	17.5	3
	Khaniyu	Ficussemicordata	18	7
	Kabro (forked)	Ficuslacor	18, 24.8	7
	Tejpatta	Cinnamomumtamala	23.3	7.2
	Chiuri	Aesandrabutyracea	16.9	8
	Ashoka	Saracaindica	13	6
	Ashoka	Saracaindica	12.8	6
	Kalkiphool (forked)	Callistemon citrinus	14.8, 15.7	7
	Ashoka	Saracaindica	17.3	5.6
	Ashoka	Saracaindica	17.5	5.2
	Ashoka	Saracaindica	17.8	5
	Ashoka	Saracaindica	16.8	5.1
	Ashoka	Saracaindica	17.5	5
	Ashoka	Saracaindica	17.3	5
	Khaniyu	Ficussemicordata	13.3	5
	Nibaro	Citrus sps.	12.6	5
	Sisoo	Dalbergia sissoo	12.3	8
	Sisoo	Dalbergia sissoo	14.7	7
	Kapur	Cinnamomumcamphora	19	8
	Pakhuri (Forked)	Ficusglaberima	14, 15.5, 15.1	6
	Pakhuri	Ficusglaberima	22	6
	Pakhuri	Ficusglaberima	13	6
	Pakhuri	Ficusglaberima	16.9	4
	Sisoo	Dalbergia sissoo	11.8	4
	Khaniyu	Ficussemicordata	15	5
	Sisoo	Dalbergia sissoo	14.9	7.1
	Tejpatta	Cinnamomumtamala	20.4	6
	Kapur	Cinnamomumcamphora	23.5	7
	Pakhuri (Forked)	Ficusglaberima	27.3, 29.9	9
	Ashoka	Saracaindica	21	9

	Local name	Botanical name	DBH (Centimeter)	Height (Meter)
	Peepal	Ficus religiosa	19	8
	Aap	Magniferaindica	12.2	4
	Kapur	Cinnamomumcamphora	17.4	7
	Neem	Azadirachtaindica	19.8	7.3
	Parijat	Nyctanthesarbor-tristis	15	4
	Amba	Psidium guajava	12.1	4.3
	Sisoo	Dalbergia sissoo	21.7	8.3
	Sisoo	Dalbergia sissoo	29.9	12
	Bakaino	Melia azedarach	13.4	3
C. Seedlings				
	Banana	Musa paradisiacal	53 patches	
	Sisoo	Dalbergia sissoo	16	
	Khanyu	Ficussemicordata	7	
	Litchi	Litchi chinensis	1	
	Pakhuri	Ficusglaberima	2	
	Khursaniphool		6	
	Ashoka	Saracaindica	6	
	Amba	Psisiumguajava	24	
	Parijat	Nyctanthesarbor-tristis	24	
	Maltatro		4	
	Kagati	Citrus limon	2	
	Bello	Ficuschincha	6	
	Kutmero	Litseamonopetala	6	
	Suntala	Citrus aurantium	1	
	Aap	Magniferaindica	5	
	Mewa	Carica papaya	5	
	Amilo	Citrus sps.	2	
	Teak	Tectona grandis	1	
	Kabro	Ficuslacor	1	
	Kalkiphool	Callistemon citrinus	7	
	Nibharo	Citrus sps.	2	
	Bamboo	Bambusa vulgaris	2 patches	
	Kadipatta	Murrayakoenigii	1	
	Aakhapakuwa		1	
	Bamboo (small)	Bambusa vulgaris	2 patches	
	Tejpatta	Cinnamomumtamala	2	
	Bahramaasephool		4	
	Supaari	Areca catechu	1	

	Local name	Botanical name	DBH (Centimeter)	Height (Meter)
	Amriso	Thysanolaenalatifolia	1 patch	
	Kapur	Cinnamomumcamphora	3	
	Monkey puzzle	Araucaria araucana	1	
	Ghantiphool	Abutilon ranadei	2	
	Antarephool		Patch of 5-15	
	Kapash	Gossypium hirsutum	2	
	Ipil Ipil	Leucanealeucocephala	1	
	RaatoGucchephool	Bougainvillea spectabilis	3	
	Aaru	Prunus persica	1	
	Taanki	Bauhinia variegata	1	
	Gulab	Rosa sps.	3	
	Peepal	Ficus religiosa	1	

D. Samplings

Local name	Botanical name	Total number	
Amba	Psidium guajava	1	
Dhupi	Juniperusindia	4	
Tulsi	Oscimum sanctum	27	
Lalupate	Euphorbia pulcherima	7	
Aap	Magniferaindica	1	
Amriso	Thysanolaenalatifolia	11	
Nilkanda	Durantaerecta	2	
Bayar	Zizipusjujuba	4	
Bakaino	Melia azedarach	1	
Parijat	Nyctanthesarbor-tristis	1	
Tulsi	Oscimum sanctum	5	

Appendix F: Government of Nepal Standard

A. Inland surface waters from combined wastewater treatment plant discharged into inland surface water

Characteristics	Tolerance Limits
Total Suspended solids, mg/l, *max*	50
pH	5.5 to 9.0
Biochemical oxygen demand (BOD) for 5 days at 20 degree C, mg/l, *max*	50
Oils and grease, mg/l, *max*	10
Phenolic compounds, mg/l, *max*	1
Mercury (as Hg), mg/l, *max*	0.01
Zinc (as Zn), mg/l, *max*	5
Ammonical nitrogen, mg/l, *max*	50
Chemical Oxygen Demand, mg/l, *max*	250

B. National Drinking Water Quality Guidelines

Categories	**Parameters**	**Maximum Concentration Limits, (MCLs)**	**Remarks**
Physical	Turbidity, (NTU)	5(10)	-
	pH	6.5 ~ 8.5*	-
	Color, (TCU)	5(15)	-
	Taste &Odor	Unobjectionable	-
	Total Dissolved Solid, (mg/l)	1000	-
	Electrical Conductivity, (micromhos/cm)	1500	-
Chemical	Iron, (mg/l)	0.3(3)	-
	Manganese, (mg/l)	0.2	-
	Arsenic, (mg/l)	0.05	-
	Cadmium, (mg/l)	0.003	-
	Chromium, (mg/l)	0.05	-
	Cyanide, (mg/l)	0.07	-
	Fluoride, (mg/l)	0.5 ~ 1.5*	-
	Lead, (mg/l)	0.01	-
	Ammonia, (mg/l)	1.5	-
	Chloride, (mg/l)	250	-
	Sulphate, (mg/l)	250	-
	Nitrate, (mg/l)	50	-
	Copper, (mg/l)	1	-
	Total Hardness, (mg/l)	500	-
	Calcium, (mg/l)	200	-
	Zinc, (mg/l)	3	-
	Mercury, (mg/l)	0.001	-
	Aluminium, (mg/l)	0.2	-
	Residual Chlorine, (mg/l)	0.1 ~ 0.2*	**Only for chlorinated systems**
Micro-Biology	E-Coli, (MPN Index / 100ml)	0	-
	Total Coliform, (MPN Index / 100ml)	**0(95)%**	-

/fli6«o vfg]kfgL u'0f:t/ dfkb08sfof{Gjoglgb]{lzsf, @)^@, g]kfn /fhkq, v08 %^ sf7df8f}+,efu #, ;+Vof (, g]kfn ;/sf/, ef}lts of]hgftyflgdf{0f dGqfno, @)^#

C. National Ambient Air Quality Standards for Nepal

Parameters	Units	Averaging Time	Concentration in Ambient Air, Maximum
TSP	$\mu g/m^3$	24 - hours	230
PM_{10}	$\mu g/m^3$	24 - hours	120
$PM_{2.5}$	$\mu g/m^3$	24 - hours	40
Sulfur Dioxide	$\mu g/m^3$	Annual	50
		24-hours	70
Nitrogen Dioxide	$\mu g/m^3$	Annual	40
		24-hours	80
Carbon Monoxide	$\mu g/m^3$	8hours	10000
Lead	$\mu g/m^3$	Annual	0.5
Benzene	$\mu g/m^3$	Annual	5
Ozone	$\mu g/m^3$	8-hours	157

Ref.: Section 62, Number 19, Nepal Gazette, Part 5, 2069/04/29, Notice 2

D. National Sound Pressure Level, Nepal

Microenvironment	**Sound Pressure Level, L_{eq}dB(A)**	
	Daytime	Nighttime
Industrial Area	75	70
Commercial Area	65	55
Rural Settlement Area	45	40
Urban Settlement Area	55	50
Mixed Settlement Area	63	55
Pristine Area	50	40

Ref.: Section 62, Number 30, Nepal Gazette Part 5, 2069/7/13

E. Diesel Powered Generator Emission Limits (g/kWh)

Category, (kW)	**CO**	**HC**	**NOx**	**PM**
kW< 8	8	1.3	9.2	1
8 = kW < 19	6.6	1.3	9.2	0.85
19 = kW < 37	6.5	1.3	9.2	0.85
37 = kW < 75	6.5	1.3	9.2	0.85
75 = kW < 130	5	1.3	9.2	0.7
130 = kW < 560	5	1.3	9.2	0.54

Ref.: Section 62, Number 30, Nepal Gazette Part 5, 2069/7/13

The minimum height of the chimney should be maintained not less than 11m for the industrial boiler utilizing solid or liquid fuel.

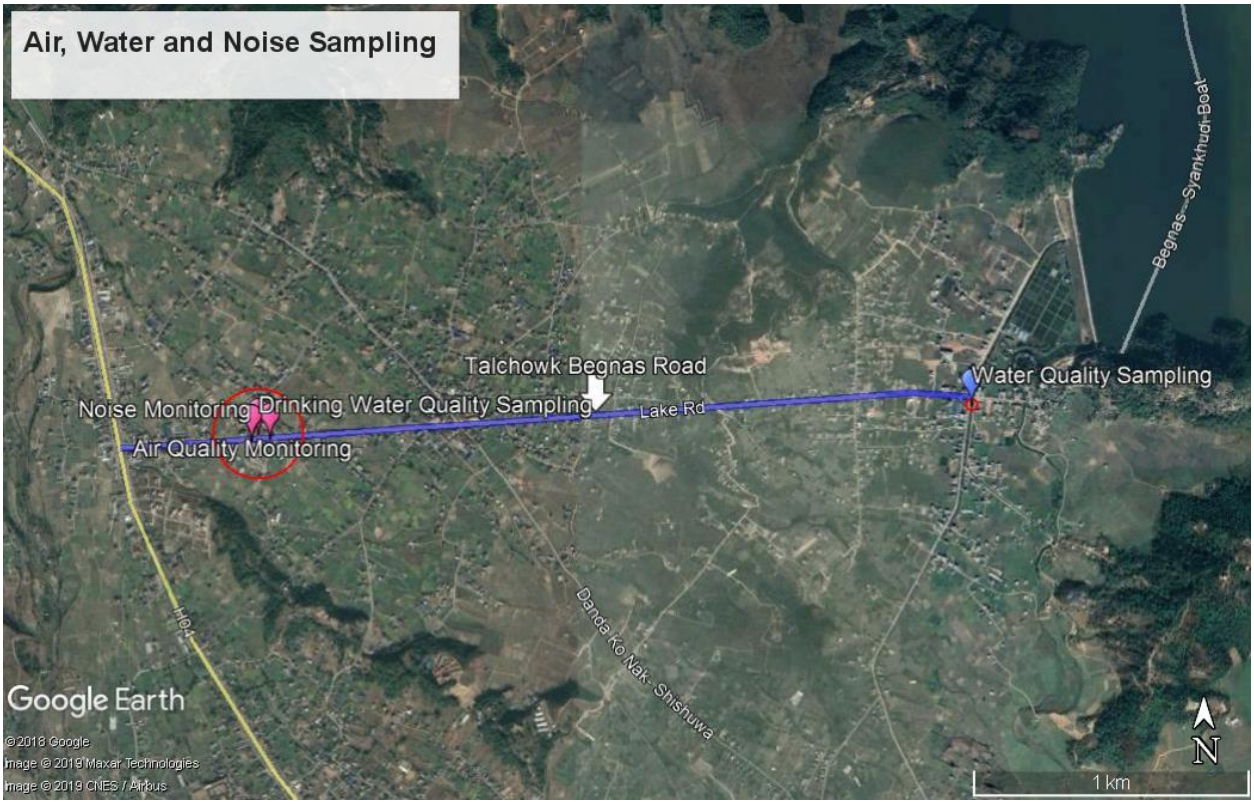
Appendix G: List of People Consulted for ESIA/ESMP

Name	Address/organization	Mobile
Man Bahadur G.C	Mayor, Pokhara Metropolitan	9850030612
Babu Ram Giri	Chairperson of Chamber of Commerce Lekhnath Municipality	9850021690
KalpanaAdhikari	Chairperson, Navajyoti Mother group	9846198075
Buddhi Maya	LalupateAmaSamuha	9846296579
SreeramPokharel	Ward Chairperson , Ward No. 30	9846030869
Purna Kumar Gurung	Ward Chairperson, Ward No. 27	9851030242
Murli Mishra	Traffic Police	9851077507
BalaramBaral	Retired Civil Servant, Talchowk Town Management Committee	984645349 0
DamoderTiwari	Retired Civil Servant, Entrepreneur Talchowk	9856020174
Laxmi Prasad Tripathi	Previous WardChairperson	9858022067
Shiva Giri	TolBikashSamiti Chair	98560616904
HariBastakoti	Entrepreneur, Owner Shivam Party Palace	9856060857

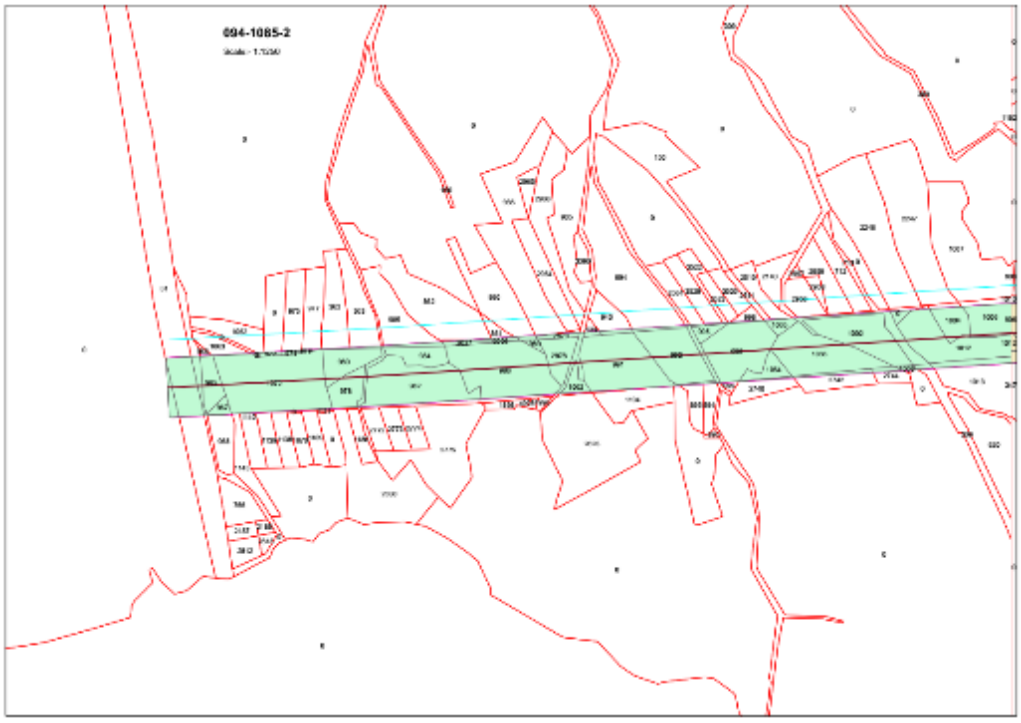
Appendix H: Project Specific Details

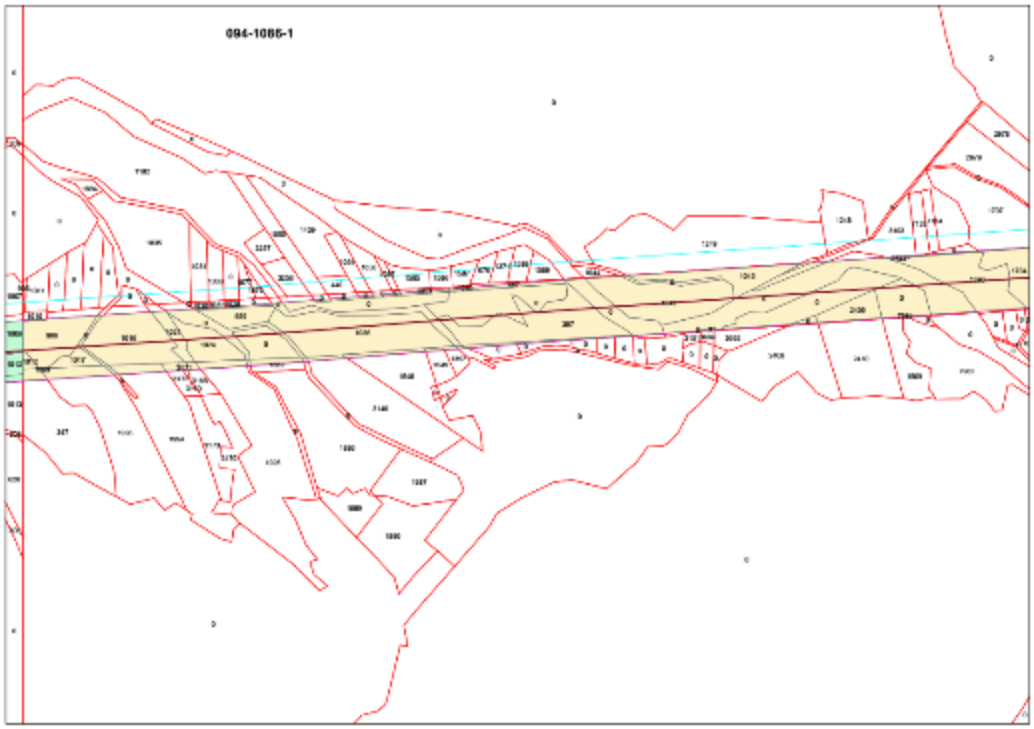
Sub Project Title	ESIA of Talchowk-Begnas Road (P23i)
Nature of the project (New/Expansion Redevelopment/Up-gradation)	Up-gradation
Brief about project components	Length of Road: 3.6km Right of Way: 30 m Traffic: 5885 PCU (traffic count in 2019 at CH 0+400) Carriageway: 14 m (4 lanes divided carriageway) (Resurfacing the existing carriageway Parking: I. Dedicated place for parking on the edge of carriageway at suitable location from Ch 0+00 to 3+284, ensuring no obstruction to traffic movement Cycle Track: Provided from Ch 0+00 to 3+284 on both side of road.
Project municipality	Pokhara Metropolitan City
Project wards	Ward 4
Terrain-flat Ridge, undulating, Hilly, Valley	Terrain-Flat
Current land use agriculture grazing Barren forest etc	The project area consists of different settlements like commercial, residential, agriculture and open / barren land. Some of the major areas are Talchowk, Sisuwa and Begnas. The area also consists of about 50% of cultivated lands. Trees can be seen along the alignment at some places.
Type quantity of construction materials resources needed	Construction materials such as sand, gravel, pebbles and boulders can be obtained in abundant from Kotrekhola and adjacent Seti River quarry site, which is at a distance of about 9.5 km fromthe project site. For other major construction materials such as cement, gabion wire and bituminous materials can be purchased from nearby market of Lekhnath and from major market of Pokhara and aboard.
Quantity of debris that needs to be disposed	Substantial Spoil will be generated
Any hazardous materials mixed with debris	No

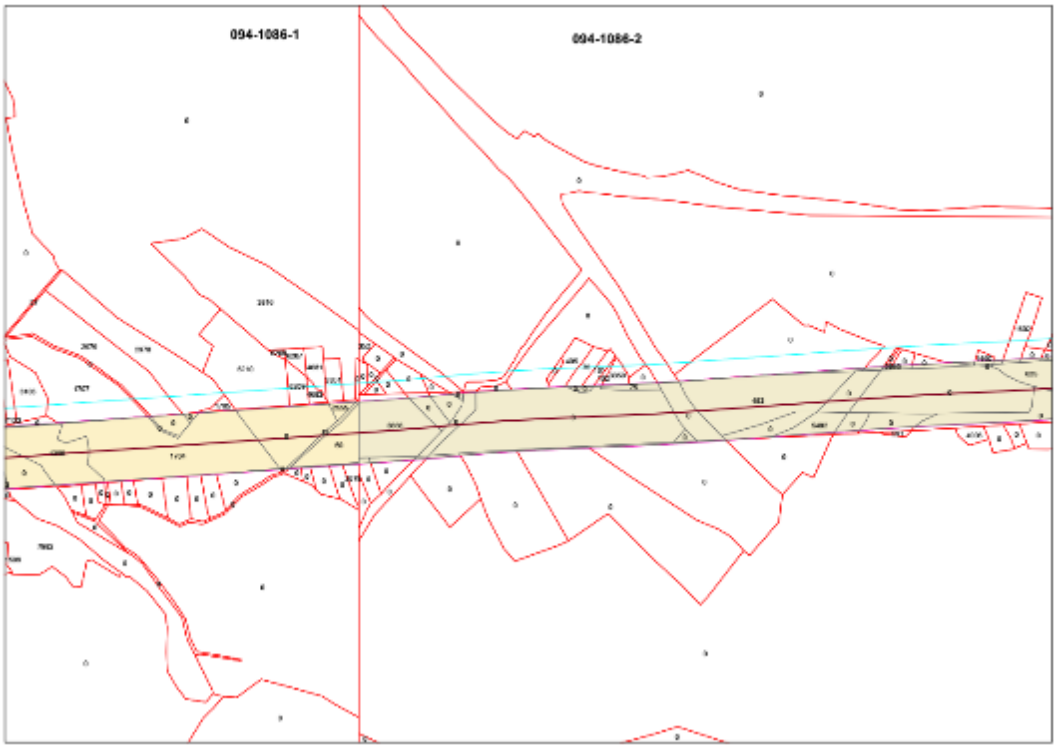
Appendix I:Sampling Points

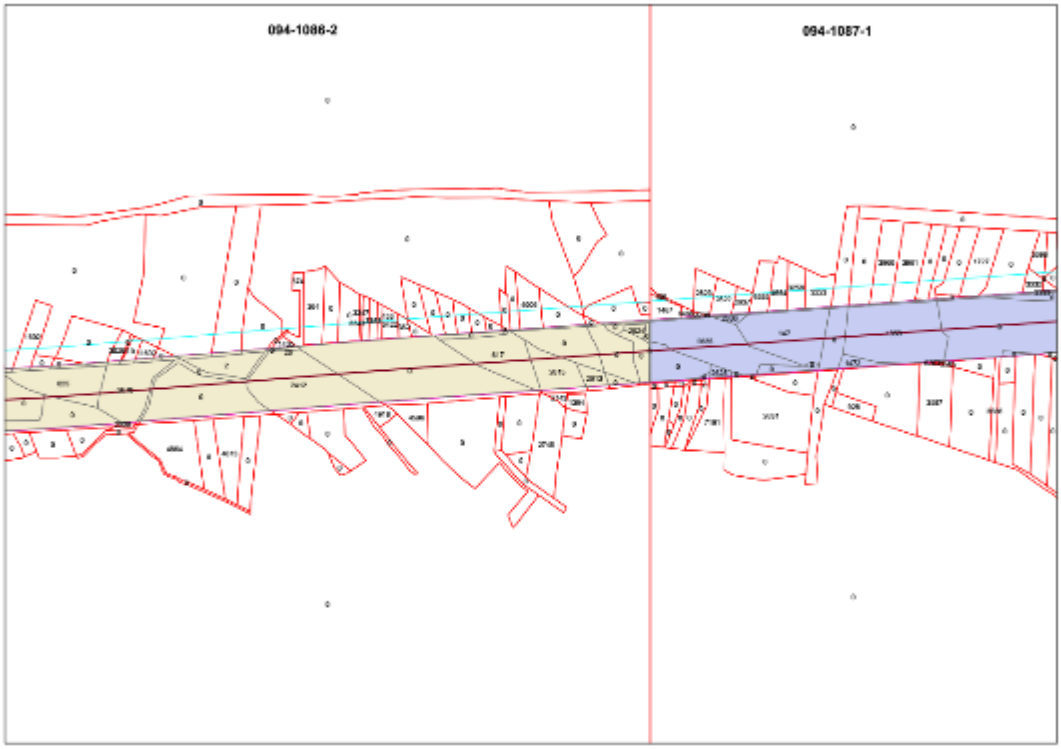


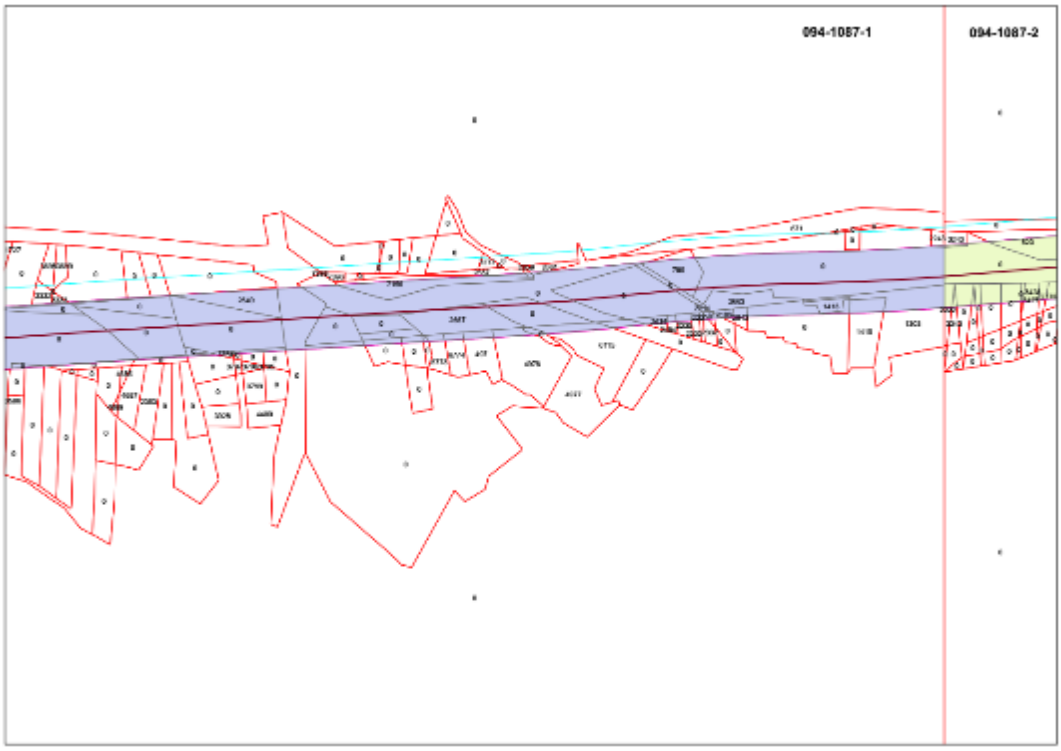
Appendix J:Cadastral Map

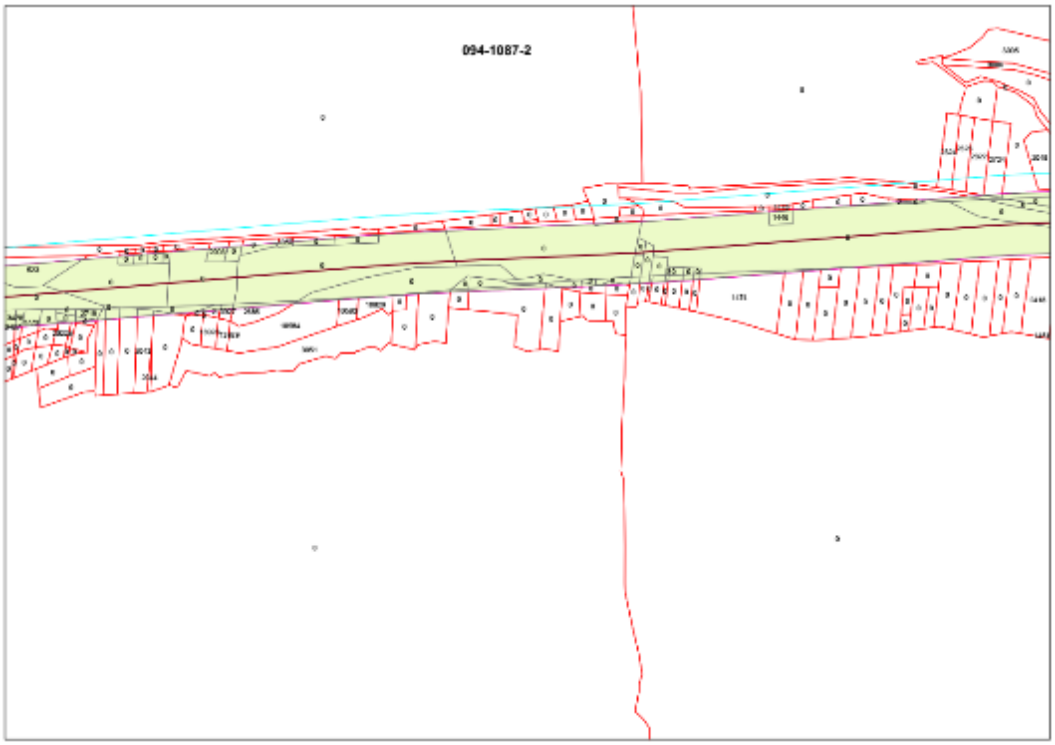


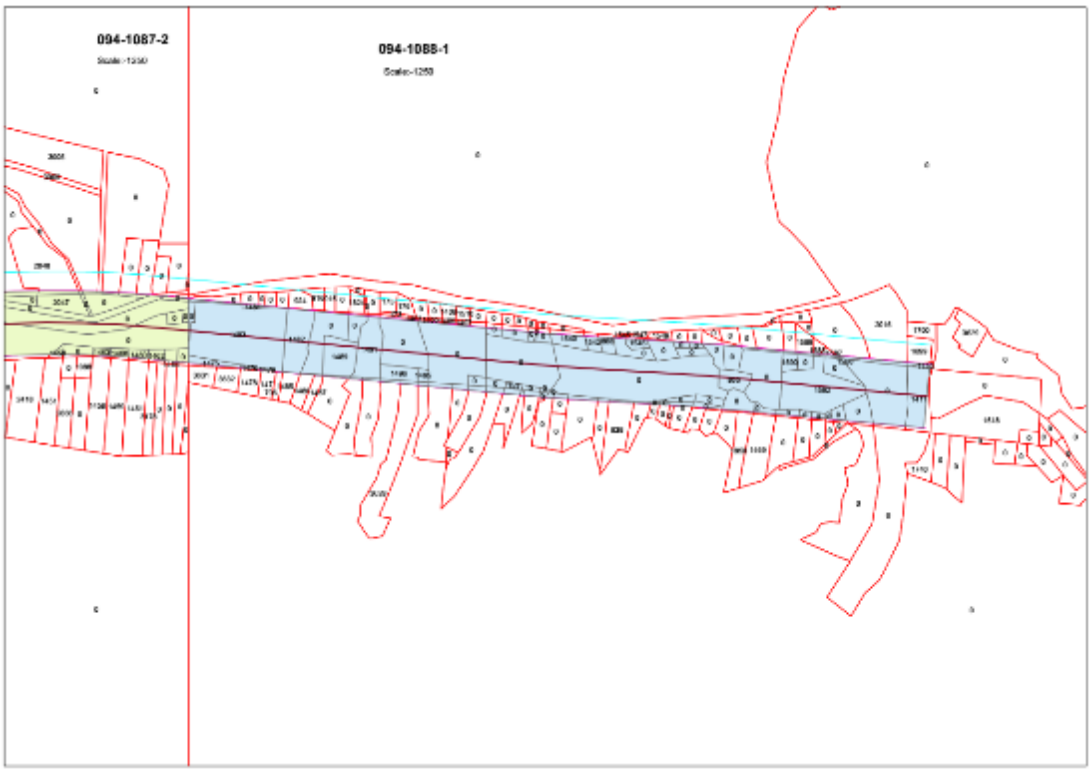



094-1086-1
094-1086-2


094-1086-2
094-1087-1


094-1087-1
094-1087-2


094-1087-2


094-1087-2
094-1088-1

S.N.	Parcel	VDC	Ward	Sheet No.	Total Area (m2)	Clip Area (m2)	Remaining Area (m2)
1	0	Arghau	1	9410852	87653.06	68.15	87584.91
2	51	Arghau	9	9410852	5513.67	386.70	5126.96
3	0	Arghau	9	9410852	480.41	76.11	404.30
4	1012	Arghau	9	9410852	828.53	820.51	8.02
5	968	Arghau	9	9410852	315.20	0.22	314.99
6	1145	Arghau	9	9410852	322.81	0.03	322.78
7	1194	Arghau	9	9410852	429.98	0.09	429.89
8	0	Arghau	9	9410852	917.57	0.64	916.93
9	895	Arghau	9	9410852	185.12	9.09	176.03
10	894	Arghau	9	9410852	166.40	7.18	159.23
11	999	Arghau	9	9410852	29.33	0.22	29.10
12	2742	Arghau	9	9410852	326.12	54.26	271.85
13	2744	Arghau	9	9410852	137.74	28.15	109.59
14	1003	Arghau	9	9410852	23.36	18.34	5.02
15	0	Arghau	9	9410852	170.29	0.41	169.88
16	1013	Arghau	9	9410852	781.75	119.21	662.54
17	966	Arghau	9	9410852	24.10	1.72	22.38
18	0	Arghau	9	9410852	53.59	0.49	53.11
19	1063	Arghau	9	9410852	178.42	4.39	174.03
20	1062	Arghau	9	9410852	332.01	0.47	331.54
21	975	Arghau	9	9410852	398.61	1.79	396.82
22	0	Arghau	9	9410852	400.12	1.57	398.55
23	977	Arghau	9	9410852	406.35	2.01	404.34
24	362	Arghau	9	9410852	534.70	5.51	529.18
25	363	Arghau	9	9410852	570.25	12.21	558.03
26	985	Arghau	9	9410852	694.00	49.41	644.58
27	2027	Arghau	9	9410852	55.66	49.49	6.17
28	2006	Arghau	9	9410852	6.83	6.83	0.00
29	861	Arghau	9	9410852	98.66	21.41	77.25
30	990	Arghau	9	9410852	790.41	19.31	771.11
31	2879	Arghau	9	9410852	58.61	46.73	11.88
32	994	Arghau	9	9410852	1547.84	37.73	1510.11
33	998	Arghau	9	9410852	74.32	7.08	67.24
34	2564	Arghau	9	9410852	285.98	6.71	279.27
35	3529	Arghau	9	9410852	321.96	6.09	315.87
36	3522	Arghau	9	9410852	167.27	1.34	165.93
37	3523	Arghau	9	9410852	164.47	0.14	164.33
38	2511	Arghau	9	9410852	99.17	0.98	98.20

39	2510	Arghau	9	9410852	263.55	1.68	261.87
40	967	Arghau	9	9410852	65.91	65.91	0.00
41	965	Arghau	9	9410852	229.35	229.35	0.00
42	972	Arghau	9	9410852	19.71	19.71	0.00
43	974	Arghau	9	9410852	13.91	13.91	0.00
44	979	Arghau	9	9410852	3.15	3.15	0.00
45	1072	Arghau	9	9410852	1541.63	1525.14	16.49
46	980	Arghau	9	9410852	342.11	342.11	0.00
47	978	Arghau	9	9410852	281.91	271.71	10.20
48	984	Arghau	9	9410852	251.28	251.28	0.00
49	982	Arghau	9	9410852	1124.25	1029.89	94.36
50	986	Arghau	9	9410852	1300.67	1234.92	65.75
51	989	Arghau	9	9410852	30.02	30.02	0.00
52	2878	Arghau	9	9410852	275.94	275.94	0.00
53	1062	Arghau	9	9410852	118.70	102.02	16.68
54	991	Arghau	9	9410852	1030.10	1014.23	15.87
55	993	Arghau	9	9410852	682.83	682.83	0.00
56	995	Arghau	9	9410852	84.94	84.94	0.00
57	996	Arghau	9	9410852	811.24	811.00	0.24
58	1065	Arghau	9	9410852	77.83	77.71	0.12
59	1064	Arghau	9	9410852	164.11	164.11	0.00
60	1002	Arghau	9	9410852	713.55	713.55	0.00
61	1066	Arghau	9	9410852	867.97	867.97	0.00
62	0	Arghau	9	9410852	62.82	37.37	25.45
63	1004	Arghau	9	9410852	278.13	243.46	34.67
64	1006	Arghau	9	9410852	420.80	347.46	73.34
65	939	Arghau	9	9410852	48.41	18.97	29.44
66	940	Arghau	9	9410852	280.97	29.36	251.61
67	309	Arghau	9	9410852	2235.02	212.05	2022.97
68	0	Arghau	9	9410852	3.98	3.98	0.00
69	150	Arghau	9	9410852	3954.79	219.11	3735.68
70	862	Arghau	9	9410852	1356.53	5.38	1351.15
71	936	Arghau	9	9410852	1635.68	1.75	1633.92
72	2740	Arghau	9	9410852	267.79	10.93	256.86
73	309	Arghau	9	9410852	488.32	20.75	467.57
74	0	Sisawa	1	9410861	1591.22	1493.31	97.91
75	1010	Arghau	9	9410861	55.91	4.66	51.26
76	1043	Arghau	9	9410861	1131.59	1122.86	8.74
77	57	Sisawa	3	9410861	144.82	14.30	130.52
78	0	Sisawa	3	9410861	71.87	14.41	57.46
79	2544	Sisawa	3	9410861	10.42	10.42	0.00

80	7133	Sisawa	3	9410861	209.90	0.66	209.25
81	3103	Sisawa	3	9410861	1092.72	92.82	999.90
82	1707	Sisawa	3	9410861	1413.03	7.38	1405.66
83	0	Sisawa	3	9410861	19.79	17.05	2.74
84	0	Sisawa	3	9410861	2.53	0.67	1.86
85	0	Sisawa	3	9410861	904.51	875.21	29.29
86	1704	Sisawa	3	9410861	2437.74	2410.24	27.50
87	51	Sisawa	3	9410861	64.86	64.08	0.78
88	2555	Sisawa	3	9410861	74.47	57.63	16.83
89	50	Sisawa	3	9410861	473.78	473.78	0.00
90	0	Sisawa	3	9410861	19.33	19.19	0.14
91	0	Sisawa	3	9410861	125.28	122.11	3.18
92	0	Sisawa	1	9410861	842.18	825.50	16.68
93	0	Sisawa	1	9410861	407.66	396.78	10.88
94	0	Sisawa	1	9410861	31.10	24.19	6.91
95	0	Arghau	9	9410861	62.87	50.35	12.52
96	0	Arghau	9	9410861	351.69	351.69	0.00
97	0	Arghau	9	9410861	355.00	304.04	50.96
98	1028	Arghau	9	9410861	30.65	5.39	25.26
99	0	Arghau	9	9410861	63.33	15.28	48.05
100	0	Arghau	9	9410861	12.08	8.76	3.32
101	0	Arghau	9	9410861	471.64	425.67	45.97
102	0	Arghau	9	9410861	10.60	4.14	6.46
103	0	Arghau	9	9410861	22.18	7.21	14.96
104	0	Arghau	9	9410861	28.28	7.83	20.45
105	0	Arghau	9	9410861	31.39	11.23	20.16
106	0	Arghau	9	9410861	48.18	14.94	33.24
107	1059	Arghau	9	9410861	64.89	28.01	36.88
108	0	Arghau	9	9410861	306.70	290.70	16.00
109	0	Arghau	9	9410861	852.81	852.81	0.00
110	0	Arghau	9	9410861	405.82	374.36	31.46
111	0	Arghau	9	9410861	73.17	71.95	1.22
112	0	Sisawa	3	9410861	99.06	0.47	98.59
113	0	Sisawa	3	9410861	263.04	2.37	260.67
114	2679	Sisawa	3	9410861	91.10	3.59	87.50
115	0	Sisawa	3	9410861	138.58	2.68	135.90
116	0	Sisawa	3	9410861	145.40	3.52	141.88
117	0	Sisawa	3	9410861	37.19	1.66	35.53
118	0	Sisawa	3	9410861	42.35	1.43	40.93
119	0	Arghau	9	9410861	37.74	11.60	26.14
120	0	Sisawa	1	9410861	0.78	0.19	0.59

121	0	Sisawa	1	9410861	7.82	5.03	2.79
122	0	Arghau	9	9410861	278.14	5.56	272.57
123	0	Arghau	9	9410861	81.99	0.03	81.96
124	0	Arghau	9	9410861	119.13	3.77	115.36
125	0	Arghau	9	9410861	89.00	3.28	85.72
126	0	Arghau	9	9410861	74.12	5.09	69.04
127	0	Arghau	9	9410861	100.73	18.80	81.93
128	0	Arghau	9	9410861	151.57	31.26	120.32
129	0	Arghau	9	9410861	152.57	5.50	147.07
130	0	Arghau	9	9410861	177.18	4.76	172.42
131	1397	Arghau	9	9410861	103.13	9.59	93.55
132	1882	Arghau	9	9410861	169.63	65.18	104.45
133	3168	Arghau	9	9410861	135.12	19.74	115.38
134	1024	Arghau	9	9410861	412.63	412.63	0.00
135	3171	Arghau	9	9410861	20.33	13.22	7.11
136	3172	Arghau	9	9410861	141.84	33.30	108.54
137	1994	Arghau	9	9410861	1943.77	110.93	1832.84
138	1995	Arghau	9	9410861	1941.48	169.35	1772.13
139	347	Arghau	9	9410861	1542.59	57.96	1484.63
140	1012	Arghau	9	9410861	40.98	40.98	0.00
141	1009	Arghau	9	9410861	3.95	3.95	0.00
142	1017	Arghau	9	9410861	141.58	141.58	0.00
143	906	Arghau	9	9410861	714.23	614.81	99.42
144	1016	Arghau	9	9410861	1045.25	967.11	78.14
145	1021	Arghau	9	9410861	191.94	166.89	25.06
146	1025	Arghau	9	9410861	2729.10	80.54	2648.56
147	3140	Arghau	9	9410861	1586.19	33.09	1553.10
148	1549	Arghau	9	9410861	178.15	14.28	163.88
149	1548	Arghau	9	9410861	994.99	66.61	928.38
150	397	Arghau	9	9410861	1265.19	1265.19	0.00
151	1045	Arghau	9	9410861	497.61	474.54	23.07
152	2409	Sisawa	1	9410861	306.33	292.66	13.67
153	7981	Sisawa	1	9410861	2.75	1.33	1.42
154	1390	Sisawa	3	9410861	919.84	899.01	20.82
155	667	Arghau	9	9410861	128.81	79.30	49.51
156	1060	Arghau	9	9410861	9.80	4.02	5.78
157	1030	Arghau	9	9410861	33.68	4.17	29.51
158	1032	Arghau	9	9410861	33.09	5.43	27.66
159	659	Arghau	9	9410861	279.95	279.95	0.00
160	1036	Arghau	9	9410861	1489.28	1489.28	0.00
161	0	Sisawa	3	9410862	208.67	46.71	161.96

162	0	Sisawa	3	9410862	193.02	188.54	4.47
163	0	Sisawa	3	9410862	215.77	8.39	207.37
164	3666	Sisawa	3	9410862	1003.37	932.30	71.07
165	0	Sisawa	3	9410862	159.58	136.66	22.92
166	0	Sisawa	3	9410862	15.97	9.18	6.79
167	0	Sisawa	3	9410862	133.51	117.11	16.40
168	405	Sisawa	3	9410862	218.47	0.85	217.62
169	75	Sisawa	3	9410862	156.10	1.56	154.54
170	101	Sisawa	3	9410862	96.10	1.50	94.59
171	102	Sisawa	3	9410862	32.26	1.25	31.02
172	3350	Sisawa	3	9410862	107.65	4.21	103.44
173	0	Sisawa	3	9410862	81.79	2.60	79.19
174	0	Sisawa	3	9410862	40.05	0.45	39.60
175	0	Sisawa	3	9410862	1404.00	1.78	1402.21
176	0	Sisawa	3	9410862	2109.23	32.88	2076.35
177	0	Sisawa	3	9410862	101.76	51.97	49.79
178	0	Sisawa	3	9410862	13.76	1.25	12.51
179	3565	Sisawa	3	9410862	21.72	4.84	16.88
180	0	Sisawa	3	9410862	78.91	18.28	60.63
181	0	Sisawa	3	9410862	4.76	4.76	0.00
182	1460	Sisawa	3	9410862	49.53	15.88	33.65
183	0	Sisawa	3	9410862	281.36	281.36	0.00
184	0	Sisawa	3	9410862	1711.76	1711.76	0.00
185	0	Sisawa	3	9410862	2966.22	2962.96	3.27
186	0	Sisawa	3	9410862	348.81	348.81	0.00
187	0	Sisawa	3	9410862	247.76	243.22	4.54
188	483	Sisawa	3	9410862	1553.01	1552.79	0.22
189	5482	Sisawa	3	9410862	242.94	217.15	25.79
190	0	Sisawa	3	9410862	118.73	102.11	16.62
191	0	Sisawa	3	9410862	398.42	397.05	1.37
192	0	Sisawa	3	9410862	23.74	6.94	16.80
193	0	Sisawa	3	9410862	172.73	168.06	4.68
194	0	Sisawa	3	9410862	41.44	41.44	0.00
195	2624	Sisawa	3	9410862	49.80	49.80	0.00
196	0	Sisawa	3	9410862	16.63	16.25	0.37
197	0	Sisawa	3	9410862	18.23	18.23	0.00
198	0	Sisawa	3	9410862	4.44	1.02	3.42
199	0	Sisawa	3	9410862	39.22	1.84	37.39
200	0	Sisawa	3	9410862	72.33	1.64	70.69
201	0	Sisawa	3	9410862	106.25	1.39	104.86
202	0	Sisawa	3	9410862	127.54	1.00	126.54

203	0	Sisawa	3	9410862	168.26	0.51	167.76
204	0	Sisawa	3	9410862	45.67	0.00	45.67
205	0	Sisawa	3	9410862	254.16	206.70	47.47
206	625	Sisawa	3	9410862	612.39	612.40	0.00
207	0	Sisawa	3	9410862	797.83	639.54	158.29
208	2670	Sisawa	3	9410862	674.62	658.35	16.28
209	0	Sisawa	3	9410862	1128.67	1010.47	118.20
210	2	Sisawa	3	9410862	287.60	287.60	0.00
211	0	Sisawa	3	9410862	154.25	151.83	2.42
212	0	Sisawa	3	9410862	2263.95	2078.78	185.16
213	0	Sisawa	3	9410862	1.05	1.05	0.00
214	26	Sisawa	3	9410862	18.18	18.13	0.05
215	0	Sisawa	3	9410862	17.22	1.96	15.27
216	1435	Sisawa	3	9410862	39.22	4.12	35.11
217	0	Sisawa	3	9410862	15941.15	29.03	15912.12
218	0	Sisawa	3	9410862	135.11	13.96	121.15
219	1602	Sisawa	3	9410862	288.27	13.70	274.57
220	0	Sisawa	3	9410862	66.34	14.84	51.50
221	0	Sisawa	3	9410862	62.88	30.10	32.78
222	0	Sisawa	3	9410862	505.51	13.52	491.99
223	30264	Sisawa	3	9410862	95.60	10.83	84.77
224	0	Sisawa	3	9410862	14.31	0.45	13.86
225	0	Sisawa	3	9410862	71.87	11.71	60.16
226	11692	Sisawa	3	9410862	79.32	14.72	64.60
227	0	Sisawa	3	9410862	45.76	20.08	25.68
228	0	Sisawa	3	9410862	2678.07	30.17	2647.90
229	0	Sisawa	3	9410862	931.67	23.27	908.39
230	0	Sisawa	3	9410862	397.27	15.37	381.89
231	0	Sisawa	3	9410862	500.51	500.51	0.00
232	0	Sisawa	3	9410862	67.44	67.44	0.00
233	2412	Sisawa	3	9410862	1274.14	1160.64	113.50
234	617	Sisawa	3	9410862	657.02	655.22	1.81
235	2615	Sisawa	3	9410862	422.41	374.75	47.66
236	0	Sisawa	3	9410862	61.33	40.63	20.69
237	2613	Sisawa	3	9410862	125.14	102.76	22.38
238	0	Sisawa	3	9410862	73.34	0.26	73.08
239	0	Sisawa	3	9410862	140.87	1.90	138.97
240	4006	Sisawa	3	9410862	266.90	6.47	260.43
241	0	Sisawa	3	9410862	256.69	17.35	239.34
242	0	Sisawa	3	9410862	6759.68	2.08	6757.60
243	0	Sisawa	3	9410862	7.16	7.16	0.00

244	0	Sisawa	3	9410862	14.61	14.61	0.00
245	75	Sisawa	3	9410862	67.38	67.38	0.00
246	0	Sisawa	3	9410862	35.22	35.22	0.00
247	0	Sisawa	3	9410862	354.53	21.86	332.67
248	0	Sisawa	3	9410862	724.33	18.13	706.20
249	0	Sisawa	3	9410862	1521.56	22.24	1499.32
250	0	Sisawa	3	9410862	822.65	0.10	822.55
251	0	Sisawa	3	9410862	2602.71	39.39	2563.32
252	0	Sisawa	3	9410862	3244.99	20.17	3224.81
253	0	Sisawa	3	9410871	329.08	329.08	0.00
254	0	Sisawa	3	9410871	100.82	100.82	0.00
255	0	Sisawa	3	9410871	205.55	205.55	0.00
256	0	Sisawa	3	9410871	407.88	407.88	0.00
257	2667	Sisawa	3	9410871	562.81	562.81	0.00
258	2211	Sisawa	3	9410871	9.20	9.20	0.00
259	2243	Sisawa	3	9410871	50.05	3.06	47.00
260	2663	Sisawa	3	9410871	274.40	274.39	0.00
261	785	Sisawa	3	9410871	353.09	298.19	54.90
262	0	Sisawa	3	9410871	1047.06	1047.06	0.00
263	0	Sisawa	3	9410871	3250.33	2421.66	828.67
264	0	Sisawa	3	9410871	1891.56	1599.57	292.00
265	7156	Sisawa	3	9410871	505.45	388.63	116.81
266	2657	Sisawa	3	9410871	135.41	17.10	118.31
267	2661	Sisawa	3	9410871	83.15	4.76	78.39
268	0	Sisawa	3	9410871	171.20	5.02	166.17
269	0	Sisawa	3	9410871	11.95	6.71	5.24
270	0	Sisawa	3	9410871	14.04	8.10	5.94
271	2628	Sisawa	3	9410871	55.00	45.72	9.28
272	0	Sisawa	3	9410871	395.52	377.98	17.54
273	2635	Sisawa	3	9410871	1032.31	1027.95	4.35
274	0	Sisawa	3	9410871	109.29	87.51	21.78
275	0	Sisawa	3	9410871	13.52	13.52	0.00
276	147	Sisawa	3	9410871	879.87	879.87	0.00
277	0	Sisawa	3	9410871	298.52	291.95	6.56
278	1472	Sisawa	3	9410871	106.10	88.75	17.35
279	1359	Sisawa	3	9410871	1319.44	1310.00	9.44
280	0	Sisawa	3	9410871	23.86	22.55	1.31
281	0	Sisawa	3	9410871	294.99	294.99	0.00
282	0	Sisawa	3	9410871	726.65	726.65	0.00
283	0	Sisawa	3	9410871	22.38	22.38	0.00
284	2649	Sisawa	3	9410871	384.83	369.07	15.76

285	0	Sisawa	3	9410871	1064.96	1064.96	0.00
286	1467	Sisawa	3	9410871	148.00	11.12	136.88
287	6466	Sisawa	3	9410871	30.97	4.18	26.79
288	2738	Sisawa	3	9410871	16.55	6.30	10.25
289	2822	Sisawa	3	9410871	174.38	7.43	166.95
290	2637	Sisawa	3	9410871	102.38	5.76	96.62
291	4555	Sisawa	3	9410871	210.75	6.14	204.61
292	3259	Sisawa	3	9410871	194.83	5.92	188.91
293	4554	Sisawa	3	9410871	200.19	6.11	194.07
294	3223	Sisawa	3	9410871	234.34	8.47	225.87
295	0	Sisawa	3	9410871	359.51	6.29	353.22
296	2823	Sisawa	3	9410871	190.43	0.06	190.38
297	0	Sisawa	3	9410871	473.88	7.66	466.22
298	3960	Sisawa	3	9410871	434.60	7.19	427.41
299	3961	Sisawa	3	9410871	490.59	16.65	473.94
300	0	Sisawa	3	9410871	193.00	0.83	192.17
301	0	Sisawa	3	9410871	37.73	17.39	20.34
302	1727	Sisawa	3	9410871	389.24	0.76	388.48
303	0	Sisawa	3	9410871	581.68	18.17	563.51
304	3333	Sisawa	3	9410871	30.77	6.08	24.68
305	3332	Sisawa	3	9410871	90.66	7.85	82.81
306	0	Sisawa	3	9410871	775.54	16.72	758.82
307	0	Sisawa	3	9410871	227.48	4.75	222.73
308	0	Sisawa	3	9410871	192.21	2.24	189.97
309	0	Sisawa	3	9410871	757.96	0.54	757.42
310	0	Sisawa	3	9410871	114.55	114.55	0.00
311	0	Sisawa	3	9410871	2075.92	2064.96	10.96
312	1303	Sisawa	3	9410871	1119.30	370.36	748.94
313	1413	Sisawa	3	9410871	93.09	93.08	0.00
314	1415	Sisawa	3	9410871	503.04	108.89	394.15
315	0	Sisawa	3	9410871	1013.23	209.86	803.37
316	2843	Sisawa	3	9410871	59.81	28.11	31.70
317	2635	Sisawa	3	9410871	70.74	48.05	22.69
318	2484	Sisawa	3	9410871	39.66	13.53	26.12
319	2335	Sisawa	3	9410871	80.21	23.99	56.22
320	2333	Sisawa	3	9410871	51.12	14.16	36.95
321	0	Sisawa	3	9410871	21.23	14.61	6.62
322	0	Sisawa	3	9410871	99.61	5.16	94.44
323	2331	Sisawa	3	9410871	27.43	6.88	20.55
324	2332	Sisawa	3	9410871	67.05	3.40	63.65
325	2107	Sisawa	3	9410871	1.20	1.20	0.00

326	2106	Sisawa	3	9410871	40.66	32.21	8.45
327	0	Sisawa	3	9410871	14.25	3.69	10.56
328	3764	Sisawa	3	9410871	20.41	10.16	10.25
329	0	Sisawa	3	9410871	68.54	12.43	56.10
330	0	Sisawa	3	9410871	115.68	14.88	100.80
331	0	Sisawa	3	9410871	266.09	12.71	253.38
332	0	Sisawa	3	9410871	507.78	0.00	507.78
333	0	Sisawa	3	9410871	111.19	3.40	107.79
334	0	Sisawa	3	9410871	509.50	0.01	509.49
335	0	Sisawa	3	9410871	3263.14	477.63	2785.51
336	0	Sisawa	3	9410871	208.70	45.94	162.76
337	0	Sisawa	3	9410871	152.12	29.08	123.04
338	0	Sisawa	3	9410871	38.25	5.83	32.41
339	6773	Sisawa	3	9410871	153.09	25.20	127.89
340	0	Sisawa	3	9410871	47.65	21.44	26.20
341	6774	Sisawa	3	9410871	191.45	28.84	162.60
342	4978	Sisawa	3	9410871	884.07	59.01	825.06
343	497	Sisawa	3	9410871	332.60	48.92	283.68
344	0	Sisawa	3	9410871	495.87	53.64	442.23
345	6115	Sisawa	3	9410871	879.10	116.73	762.37
346	0	Sisawa	3	9410871	7198.75	55.94	7142.80
347	0	Sisawa	3	9410871	75.71	75.71	0.00
348	2636	Sisawa	3	9410871	38.95	38.95	0.00
349	0	Sisawa	3	9410871	84.53	13.17	71.36
350	0	Sisawa	5	9410872	32218.26	1.74	32216.52
351	0	Sisawa	3	9410872	32.30	32.30	0.00
352	0	Sisawa	3	9410872	2257.55	2109.31	148.24
353	0	Sisawa	3	9410872	87.45	87.45	0.00
354	0	Sisawa	3	9410872	57.82	41.22	16.61
355	0	Sisawa	3	9410872	59.20	11.72	47.47
356	0	Sisawa	3	9410872	62.17	8.10	54.08
357	0	Sisawa	3	9410872	12.64	12.64	0.00
358	0	Sisawa	3	9410872	45.57	44.59	0.98
359	0	Sisawa	6	9410872	29.01	17.63	11.39
360	0	Sisawa	6	9410872	810.61	810.61	0.00
361	0	Sisawa	6	9410872	18.78	18.78	0.00
362	0	Sisawa	6	9410872	41.51	41.51	0.00
363	0	Sisawa	6	9410872	9.06	7.53	1.53
364	0	Sisawa	6	9410872	23.33	9.25	14.08
365	0	Sisawa	6	9410872	89.83	1.14	88.69
366	0	Sisawa	6	9410872	94.03	9.92	84.11

367	0	Sisawa	6	9410872	1144.34	42.74	1101.60
368	1446	Sisawa	6	9410872	82.76	74.11	8.65
369	0	Sisawa	6	9410872	30.93	30.93	0.00
370	0	Sisawa	6	9410872	48.44	48.44	0.00
371	0	Sisawa	6	9410872	72.26	72.25	0.00
372	0	Sisawa	6	9410872	70.84	70.84	0.00
373	0	Sisawa	6	9410872	7.60	7.60	0.00
374	0	Sisawa	6	9410872	9.60	9.60	0.00
375	0	Sisawa	6	9410872	17.52	17.52	0.00
376	0	Sisawa	6	9410872	27.33	27.33	0.00
377	0	Sisawa	6	9410872	5964.41	5674.78	289.63
378	1450	Sisawa	6	9410872	24.07	14.19	9.88
379	0	Sisawa	6	9410872	75.43	60.59	14.84
380	1463	Sisawa	6	9410872	37.78	31.15	6.63
381	1468	Sisawa	6	9410872	43.99	33.44	10.55
382	1460	Sisawa	6	9410872	50.39	37.66	12.73
383	0	Sisawa	6	9410872	41.02	33.10	7.92
384	1464	Sisawa	6	9410872	40.46	32.12	8.35
385	1462	Sisawa	6	9410872	48.70	37.15	11.55
386	0	Sisawa	5	9410872	284.98	259.17	25.81
387	0	Sisawa	5	9410872	56.53	56.53	0.00
388	2047	Sisawa	5	9410872	172.59	172.59	0.00
389	0	Sisawa	5	9410872	15.96	15.96	0.00
390	0	Sisawa	5	9410872	155.57	155.58	0.00
391	0	Sisawa	5	9410872	237.71	2.01	235.69
392	0	Sisawa	5	9410872	385.84	18.50	367.34
393	2048	Sisawa	5	9410872	650.03	33.38	616.65
394	0	Sisawa	5	9410872	785.06	57.20	727.86
395	2724	Sisawa	5	9410872	332.61	8.44	324.18
396	0	Sisawa	5	9410872	1536.48	7.08	1529.40
397	0	Sisawa	5	9410872	1291.55	8.28	1283.27
398	0	Sisawa	5	9410872	214.47	11.32	203.15
399	0	Sisawa	5	9410872	198.43	7.99	190.44
400	3243	Sisawa	3	9410872	80.65	10.93	69.72
401	0	Sisawa	3	9410872	1177.42	1149.58	27.83
402	523	Sisawa	3	9410872	624.70	389.64	235.06
403	0	Sisawa	3	9410872	1133.02	1099.77	33.25
404	0	Sisawa	3	9410872	39.96	31.52	8.44
405	0	Sisawa	3	9410872	38.41	30.96	7.44
406	0	Sisawa	3	9410872	41.47	34.81	6.66
407	0	Sisawa	3	9410872	21.50	18.56	2.94

408	2003	Sisawa	3	9410872	89.26	61.31	27.96
409	0	Sisawa	3	9410872	847.68	811.89	35.79
410	0	Sisawa	3	9410872	97.90	50.97	46.92
411	1957	Sisawa	3	9410872	30.01	14.49	15.51
412	0	Sisawa	3	9410872	89.48	53.22	36.25
413	0	Sisawa	3	9410872	94.79	72.23	22.57
414	0	Sisawa	3	9410872	863.76	863.75	0.01
415	0	Sisawa	3	9410872	2234.23	2204.06	30.17
416	0	Sisawa	6	9410872	75.74	15.83	59.90
417	0	Sisawa	6	9410872	18.89	4.89	14.00
418	0	Sisawa	6	9410872	83.69	18.63	65.06
419	0	Sisawa	6	9410872	26.90	4.90	22.00
420	0	Sisawa	6	9410872	59.48	8.13	51.35
421	0	Sisawa	6	9410872	88.49	2.78	85.71
422	0	Sisawa	6	9410872	88.53	13.69	74.85
423	0	Sisawa	6	9410872	106.25	19.04	87.21
424	0	Sisawa	6	9410872	297.39	4.97	292.42
425	0	Sisawa	6	9410872	304.46	8.09	296.37
426	0	Sisawa	6	9410872	325.18	0.25	324.93
427	1474	Sisawa	6	9410872	1000.41	74.10	926.32
428	0	Sisawa	3	9410872	12.67	1.44	11.23
429	0	Sisawa	3	9410872	40.71	16.76	23.95
430	13927	Sisawa	3	9410872	45.85	14.10	31.75
431	0	Sisawa	3	9410872	92.21	82.66	9.54
432	2685	Sisawa	3	9410872	225.77	49.26	176.52
433	0	Sisawa	3	9410872	20.60	15.87	4.72
434	3428	Sisawa	3	9410872	51.24	31.71	19.52
435	0	Sisawa	3	9410872	66.72	29.38	37.34
436	0	Sisawa	3	9410872	77.11	10.18	66.93
437	0	Sisawa	3	9410872	77.77	55.27	22.49
438	3343	Sisawa	3	9410872	93.99	14.07	79.93
439	3300	Sisawa	3	9410872	97.43	49.07	48.37
440	2773	Sisawa	3	9410872	100.68	62.66	38.01
441	3427	Sisawa	3	9410872	125.07	61.05	64.03
442	0	Sisawa	3	9410872	190.93	85.11	105.83
443	0	Sisawa	3	9410872	199.33	88.39	110.94
444	0	Sisawa	3	9410872	227.96	95.94	132.02
445	0	Sisawa	3	9410872	21.70	21.70	0.00
446	2719	Sisawa	3	9410872	53.27	53.26	0.01
447	0	Sisawa	3	9410872	30.71	13.93	16.78
448	0	Sisawa	3	9410872	32.63	31.96	0.67

449	2022	Sisawa	3	9410872	76.68	5.22	71.47
450	0	Sisawa	3	9410872	170.26	14.87	155.38
451	0	Sisawa	3	9410872	296.44	35.77	260.67
452	0	Sisawa	3	9410872	351.44	38.29	313.15
453	2043	Sisawa	3	9410872	296.03	24.38	271.65
454	0	Sisawa	3	9410872	477.32	10.74	466.58
455	0	Sisawa	3	9410872	276.29	6.29	270.01
456	0	Sisawa	3	9410872	698.13	59.54	638.60
457	0	Sisawa	3	9410872	89.22	10.66	78.56
458	0	Sisawa	3	9410872	379.91	11.67	368.24
459	0	Sisawa	3	9410872	262.20	1.97	260.23
460	0	Sisawa	3	9410872	47.42	1.02	46.40
461	10584	Sisawa	3	9410872	833.65	16.60	817.06
462	10583	Sisawa	3	9410872	115.24	3.89	111.35
463	10829	Sisawa	3	9410872	148.22	2.13	146.09
464	0	Sisawa	6	9410872	53.64	14.77	38.87
465	0	Sisawa	3	9410872	5.74	5.74	0.00
466	0	Sisawa	3	9410872	92.01	92.01	0.00
467	0	Sisawa	3	9410872	68.84	49.34	19.49
468	0	Sisawa	3	9410872	61.10	1.90	59.20
469	0	Sisawa	6	9410881	316684.00	25.03	316658.96
470	0	Sisawa	6	9410881	804.82	767.39	37.43
471	0	Sisawa	6	9410881	44.40	25.15	19.25
472	0	Sisawa	6	9410881	79.19	50.50	28.69
473	0	Sisawa	6	9410881	23.40	14.04	9.36
474	0	Sisawa	6	9410881	9.48	4.65	4.83
475	0	Sisawa	6	9410881	111.22	103.12	8.10
476	0	Sisawa	6	9410881	103.40	92.37	11.02
477	0	Sisawa	6	9410881	114.03	72.30	41.72
478	1592	Sisawa	6	9410881	655.13	655.13	0.00
479	0	Sisawa	6	9410881	19.21	0.05	19.16
480	0	Sisawa	6	9410881	43.38	0.78	42.60
481	0	Sisawa	6	9410881	30.18	1.36	28.83
482	0	Sisawa	6	9410881	124.33	4.40	119.92
483	838	Sisawa	6	9410881	307.52	10.93	296.59
484	0	Sisawa	6	9410881	149.06	6.84	142.23
485	0	Sisawa	6	9410881	323.41	23.86	299.55
486	0	Sisawa	6	9410881	163.29	6.67	156.62
487	0	Sisawa	6	9410881	13.97	8.77	5.21
488	0	Sisawa	6	9410881	112.34	19.05	93.29
489	0	Sisawa	6	9410881	156.00	21.24	134.76

490	0	Sisawa	6	9410881	501.05	22.08	478.96
491	0	Sisawa	6	9410881	267.65	20.59	247.05
492	0	Sisawa	6	9410881	127.62	16.28	111.34
493	0	Sisawa	6	9410881	455.78	21.91	433.87
494	3628	Sisawa	6	9410881	689.64	13.26	676.38
495	0	Sisawa	6	9410881	313.28	9.32	303.96
496	0	Sisawa	6	9410881	333.09	5.42	327.67
497	0	Sisawa	6	9410881	319.12	8.27	310.85
498	1487	Sisawa	6	9410881	75.72	1.48	74.23
499	1486	Sisawa	6	9410881	106.27	1.72	104.56
500	1485	Sisawa	6	9410881	100.79	0.42	100.37
501	0	Sisawa	6	9410881	35.98	0.03	35.95
502	0	Sisawa	6	9410881	19.49	0.25	19.24
503	0	Sisawa	6	9410881	51.11	2.14	48.97
504	0	Sisawa	6	9410881	84.18	19.14	65.04
505	0	Sisawa	6	9410881	76.34	6.22	70.12
506	0	Sisawa	6	9410881	170.14	10.91	159.24
507	0	Sisawa	6	9410881	92.66	6.03	86.63
508	1589	Sisawa	6	9410881	91.05	7.25	83.80
509	1586	Sisawa	6	9410881	4.68	3.35	1.33
510	1587	Sisawa	6	9410881	21.79	6.42	15.36
511	1588	Sisawa	6	9410881	33.74	2.88	30.86
512	0	Sisawa	6	9410881	500.30	18.30	482.00
513	2016	Sisawa	6	9410881	761.61	26.51	735.10
514	1699	Sisawa	6	9410881	150.30	7.86	142.44
515	1413	Sisawa	6	9410881	18.28	11.04	7.24
516	1411	Sisawa	6	9410881	329.23	258.99	70.24
517	0	Sisawa	6	9410881	630.13	607.03	23.10
518	0	Sisawa	6	9410881	39.28	28.71	10.58
519	0	Sisawa	6	9410881	22.77	16.41	6.36
520	0	Sisawa	6	9410881	22.49	15.32	7.16
521	0	Sisawa	6	9410881	13.94	10.18	3.76
522	0	Sisawa	6	9410881	45.76	37.90	7.85
523	0	Sisawa	6	9410881	149.07	132.71	16.36
524	866	Sisawa	6	9410881	130.76	130.76	0.00
525	0	Sisawa	6	9410881	125.78	114.01	11.77
526	0	Sisawa	6	9410881	38.43	28.84	9.59
527	0	Sisawa	6	9410881	446.24	446.24	0.00
528	0	Sisawa	6	9410881	50.17	50.17	0.00
529	1590	Sisawa	6	9410881	58.07	58.07	0.00
530	0	Sisawa	6	9410881	117.87	117.87	0.00

531	0	Sisawa	6	9410881	41.78	28.77	13.01
532	1542	Sisawa	6	9410881	56.97	45.49	11.48
533	1540	Sisawa	6	9410881	124.84	89.86	34.98
534	888	Sisawa	6	9410881	60.66	48.80	11.86
535	1546	Sisawa	6	9410881	54.62	44.15	10.47
536	0	Sisawa	6	9410881	111.03	102.29	8.74
537	0	Sisawa	6	9410881	40.04	0.30	39.74
538	0	Sisawa	6	9410881	15.69	15.68	0.01
539	0	Sisawa	6	9410881	20.51	19.44	1.06
540	0	Sisawa	6	9410881	54.05	54.05	0.00
541	0	Sisawa	6	9410881	17.98	17.98	0.00
542	153	Sisawa	6	9410881	21.01	21.01	0.00
543	0	Sisawa	6	9410881	32.79	32.79	0.00
544	0	Sisawa	6	9410881	38.70	38.70	0.00
545	0	Sisawa	6	9410881	3.19	3.19	0.00
546	0	Sisawa	6	9410881	50.41	50.41	0.00
547	0	Sisawa	6	9410881	4.16	4.16	0.00
548	0	Sisawa	6	9410881	6.39	6.39	0.00
549	0	Sisawa	6	9410881	21.39	20.10	1.29
550	0	Sisawa	6	9410881	1584.52	1584.52	0.00
551	0	Sisawa	6	9410881	34.00	25.50	8.49
552	0	Sisawa	6	9410881	35.26	35.26	0.00
553	1475	Sisawa	6	9410881	85.65	59.92	25.73
554	1476	Sisawa	6	9410881	16.69	11.33	5.36
555	1479	Sisawa	6	9410881	4.94	3.06	1.88
556	1482	Sisawa	6	9410881	348.64	343.55	5.09
557	0	Sisawa	6	9410881	35.12	35.12	0.00
558	1481	Sisawa	6	9410881	16.03	15.87	0.17
559	1483	Sisawa	6	9410881	1227.56	1226.06	1.50
560	1489	Sisawa	6	9410881	271.67	271.67	0.00
561	0	Sisawa	6	9410881	350.01	337.14	12.87
562	0	Sisawa	6	9410881	91.92	82.51	9.42
563	1491	Sisawa	6	9410881	316.35	308.77	7.58
564	1496	Sisawa	6	9410881	117.80	117.80	0.00
565	1495	Sisawa	6	9410881	31.64	31.64	0.00
566	0	Sisawa	6	9410881	478.48	453.17	25.31
567	0	Sisawa	6	9410881	691.97	691.97	0.00
568	0	Sisawa	6	9410881	64.56	14.41	50.15
569	0	Sisawa	6	9410881	7.67	7.67	0.00
				Total	**669895.24**	**98541.87**	**571353.37**

Appendix K: Public Consultation

Field Survey

Environmental and Social Safeguards

NUGIP

Pokhara Metropolitan City

Attendance Sheet

Date: Venue:

S.N	Name	Organization/title	Telephone	Signature
1				
	Bijay Neupane			

pwd.

24/2/19

Field Survey

Environmental and Social Safeguards

NUGIP

Pokhara Metropolitan City

Attendance Sheet

Date: 8/12/2018 Venue: Tal chowk, Shivam Party P.

S.N	Name	Organization/title	Telephone	Signature
1	Babu Ram Giri	I.C.C.I. Past-President	9856021690	[illegible]
2	Chandra Tiwari		9846296580	[illegible]
3	Balaram Baral	Bazar Bebasthapan	9846453920	[illegible]
4	Kharic Bahadur Gurung	Talchowk	9846169279	[illegible]
5	Harishchandra Gaire	"	9856021570	[illegible]
6	Damodar Tiwari	"	9856020174	[illegible]
7	Pabitra Regmi	[illegible]	[illegible]	[illegible]
8	Shaligram [illegible]		9846080535	[illegible]
9	Salil Devkota	Env. Specialist, NUGIP	9851065103	[illegible]
10	Gita Baral	Member/Advisor of WG	9846042076	[illegible]
11	Hari Basnet	Shivam Party Palace	9856060817	Hari
12	[illegible]	Chirperson WG	9846198075	[illegible]
13	Nira Tiwari	Scretary W.G.		[illegible]
14	BISHWA NATH OJHA	POKHARA 7	9846149258	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]
16	Sushil Babu Aryal	Resettlement Expert, NUGIP	9841259953	[illegible]
17	[illegible]	ESSC, Nugip	9841349726	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]		
20	Shweta Chauhan	PwC	8130867932	Shweta
21	S.P. Kattel, PhD	PIOC	9851206566	[illegible]
22	Ramu Subedi	Social Dev Expert	9851034770	[illegible]
23				
24				
25				
26				
27				
28	Gita Adhikari	Social Development Exp	9851187890	Gita

Field Survey

Environmental and Social Safeguards

NUGIP

Pokhara Metropolitan City

Attendance Sheet

Date: 9 Dec. 2018 Venue: Sishuwa chautk, Kaski, Ward No-30

S.N	Name	Organization/title	Telephone	Signature
1	Bharat Raj Marasine	Pok. 30	9846027904	[signature]
2	Mahadev Tiwari	P 30	[illegible]	[signature]
3	Som Lal Kandel	P. 30	[illegible]	[signature]
4	Anand Thapa	P. 30	9804114492	[signature]
5	Bhumandal Tamrakar	Pokhara - 30	9856009617	[signature]
6	Ramesh Thapa	" 30	9824119886	[signature]
7	Saroj Tiwari	" 30	9856014008	[signature]
8	Rajendra Ojha	" - 30	98560-22088	[signature]
9	Padam. LAL. BARAL.	30	9814159715	[signature]
10	Baburam Thapa	" 30	9804199220	[signature]
11	Arjun Kumar Tamrakar	" 30	9846023065	[signature]
12	Kedprasad Gautam		98560 98C67 51339	[signature]
13	Karnabahadur		9856039067	[signature]
14	Laxmi Prasad Tripathi	Pokhara - 30	9858022869	[signature]
15	Imarnath Subedi	Pokhara - 30	9846940451	[signature]
16	Gauri Prasad Ghising	Social Safeguard [illegible]	9851181509	[signature]
17.	Gita Adhikari	Spouse	9151157856	[signature]
18	Dibya Pokharel	GESI, NUGIP	9841349776	[signature]

Stakeholders Consultation Workshop

NUGIP

Pokhara Metropolitan City

Attendance Sheet

Date: 9 Dec-2018 Venue: Pokhara Muncipality Meeting Hall

Purpose: Dissemination of project related information, environmental and social safeguard requirements of project, screening of EnS issues, collection of comments and suggestions

S.N	Name	Organization/title	Telephone	Signature
1	Buddhi Maya	[illegible]	9946223520	
2	Sandip Duwadi	NEST Pvt. Ltd	9846383444	
3	Sanjeev Dhungana	NEST Pvt. Ltd.	9804198710	
4	Mohan Singh [illegible]	Lalitpate Tamu Samaj	9846024632	
5	Birat Sharma	Engineer, Nepal Electricity Authori	9846819797	
6	Ananda [illegible]	Engineer "	9856078733	
7	Santosh Pokharel	Forest officer, DFO Kaski	9856073972	
8	Shivasee Lamichhane	Pokhara - 32		
9	Narayani Bhattarai (Karmachari)	Water supply [illegible]	9846231348	
10	[illegible] Ram Tiwari		9846045944	
1[illegible]	Sushil Babu Aryal	PCO, Kath	9856023047 / 9841259953	
12	Babu Ram Giri	LCCI Past Preside	9856021690	
13	Ramu Subedi	Social Dev Expert	9851034221	
14	ROSHAN SHRESTHA	PROJECT DIRECTOR	9851167210	
15	Laxman Timilsina	M.p.s, pokhara metropolitan city	9856036733	
16	Er. Sarada M. Kafle	Pokhara Metropolita city	9856023291	
17	Er. Raju Regmi	Pokhara Metropolitancity	9856032484	
18	Sangita Baral	UGIIP-II, Engineer	9846001131	
18.	Bishnu Pd Baral	Drinking Water [illegible]	9856061919	
19	[illegible]	[illegible]	[illegible]	
20	Kamal Thapa	Word No 31	9856003031	
21	Bishnu P. Tiwari	Word 28	9846640307	
22	Dr. Naresh Rimal	Consultant	9843151047	
23	Raviram pokharel	Env. Expert / PCO	9841659999	
24	Shiva Kumari giri	presiden Nawbise [illegible]	9856061690[illegible]	
25	MURARI Mishra	Traffic Police	9851077587	
26	Dr. S.P. Kattel	PWC	9851206566	
27	Shweta Chauhan	PwC	8130867932	
28	Ajay B Mathema	PWC	9860671778	
29	Ram Mani Adhikari	D.M.C.	9846029105	

Stakeholders Consultation Workshop

NUGIP

Pokhara Metropolitan City

Attendance Sheet

Date: Venue:

Purpose: Dissemination of project related information, environmental and social safeguard requirements of project, screening of EnS issues, collection of comments and suggestions

S.N	Name	Organization/title	Telephone	Signature
20	Chet Bahadur [illegible]	Pokhara metropolitan 29	9856005029	[illegible]
21	Mohan Gurung	,, ,, 29	9845523825	[illegible]
22	Gopi Raj Paudel	,, ,, 30	985606[illegible]	[illegible]
23	Ashok Dware	PMC office	9846000940	[illegible]
24	Krishna [illegible] Bhandari	L.C.C.I	9856024699	[illegible]
25	[illegible]	[illegible]	984619806[illegible]	[illegible]
26	[illegible]	[illegible]	9856022067	[illegible]
27	[illegible]	P.M.N	9856090112	[illegible]
28				
29				
30				

Field Survey

Environmental and Social Safeguards

NUGIP

Pokhara Metropolitan City

Attendance Sheet

Date: 9/12/2078 Venue: Begnastal, (Khudi Mohan)

S.N	Name	Organization/title	Telephone	Signature
1	Deepak Koirala	Rice Mill (John)	9808508712	
2	Sabri Paral Koirala	,,	9846650285	
3	Bhuwan Kandel	Business, Sulav Home	9846715301	
4	Jagdish Tiwari	Moria	9846028462	
5	Basanta Dhakal	[illegible] Business	9846025448	
6	Krishna Gurung	Mukta Kirana Pasal	9846035268	
7	Basu Dev Koirala	Miraj Shop wine House	9824157728	
8	Samar Bdr. Pariyar	Tailor ([illegible])		
9	Uma Devi Gurung			
10	Eye Bdr Gurung	061-560136	Ayo Medical Firm	

Meeting Minute

Pokhara

शहरी शासकीय क्षमता तथा पूर्वाधार आयोजनाको अन्तर्गत को विश्व बैंकको प्राविधिक सहायता (Financial Assistance) शहरी विकास तथा भवन विभाग (DUDBC) तथा आयोजित आज मिती २०७४/०८/२३ गते पोखरा महानगरपालिका को सभाहलमा (9 Dec 2015)

तालचोक - बेगनास सडक को स्तरोन्नति आयोजना को वातावरणीय तथा सामाजिक प्रभाव लेखाजोखा (Environmental and Social Impact Assessment) गर्ने सिलसिलामा आयोजना सँग सम्बन्धित विभिन्न सरोकारवाला (Stakeholders) वनकार्यालय, विद्युत प्राधिकरण, खानेपानी कार्यालय, वडा अध्यक्ष (स्थानिय निकाय) आमा समूह को प्रतिनिधित्व मा योजना कार्यान्वयन निकाय (पोखरा महानगरपालिका) को आयोजना मा परामर्शदाता हरुको विज्ञ समूह सहित को सरोकार निकायहरुँगा को परामर्श बैठक (Stakeholders Consultation Meeting) मा निम्न विषयहरुमा छलफल (Discussion) गरियो र निम्न बमोजिम को निष्कर्षमा पुगीयो।

बैठकको एजेन्डा :

(१) आयोजनाको बारेमा प्राविधिक, सामाजिक, आर्थिक तथा वातावरणीय पक्षहरुको बारेमा जानकारी।

(२) आयोजनाको पूर्वतयारीको सन्दर्भमा आवश्यकीय पर्ने तथ्य, तथ्यांक, कानुनी कागजपत्र (नक्सा, कोट) को दस्तावेज हरु अध्ययन टोली लाई उपलब्ध गर्ने गराउने बारे।

(३) आवश्यकीय प्रतिवेदन (Required Report ESMP) तयारी गरी आयोजना को गतिविधिलाई अगाडि बढाउन पहल गर्ने बारे।

४) सम्बन्धित निकायहरु (विद्युत प्राधिकरण शाखा कार्यालय), वन कार्यालय र महानगरपालिका बिच एक आपसमा समन्वय गर्ने गराउने बारे।

FGD in Women Group 2076/02/21, Beganasn Lake in 31 Ward Office, Pokhara Metropolitan City

Key issues of FGD

1. The major social problems of the area are making noise and dispute/fighting by drinking alcohol. Average women violence events at the village is 3 to 6 in which 1 to 2 is go to police office and the rest resolve at village socially. The key causes for women violence are drinking alcohol and economic transition.
2. Women participation in public sphere is very low. It is due to lack of sufficient time to participate in public sphere, busy at household chores and no or neglect by the concerned organization.
3. At the village, social deviances like concept of witch, discrimination of widow and untouchibility are very rare.
4. There is no equal wage rate for the women and men. Women receive half of the men get. Sometime manual working women who come from outside come to work with their small child, but it is very rare. However, they do not being the school age going children with them while working for wage labour.
5. Women's participation and involvement in non-agriculture sectors have been gradually increasing. Girl trafficking is not at the village.
6. There is no discrimination and differentiation to access to public property by caste, ethnicity, religion, sex, age, class in the village.
7. Local people are interested to work or participate in public works including road construction. There is no women's violence due to outsider workers.
8. Women's has access to ownership on fixed property like land and house due to government's policy on tax.

Name of participant	Sex	Location
Shanti Ranabhat	Female	Begnas 31, Ward Office
SudhaBaral	Female	Begnas 31, Ward Office
ShobhaAdhikari	Female	Begnas 31, Ward Office
RanjuBaral	Female	Begnas 31, Ward Office
SarmilaTimsina	Female	Begnas 31, Ward Office
Rita Gautam	Female	Begnas 31, Ward Office
Amrita Ranabhat	Female	Begnas 31, Ward Office
RadhaShrestha	Female	Begnas 31, Ward Office
Maya Shrestha	Female	Begnas 31, Ward Office
ManjuShrestha	Female	Begnas 31, Ward Office
Rita Subedi	Female	Begnas 31, Ward Office
SunitaTimsina	Female	Begnas 31, Ward Office
Mina Ranabhat	Female	Begnas 31, Ward Office
BhadrikaRanabhat	Female	Begnas 31, Ward Office
SubadraKoirala	Female	Begnas 31, Ward Office
ShantaBanjara	Female	Begnas 31, Ward Office
Amrita Ranabhat	Female	Begnas 31, Ward Office

FGD with Mixed Groups 2076/02/19, Talchowk, Ward No 31, Pokhara Metropolitan City

Key issues of FGD

1. The main social problem of the village is making noise by Dhohori-Sanjha restaurant. Average 4 women's violence events occur every month in the village due to drinking alcohol and economic transition.
2. It was reported that about 5 road accidents occur at the proposed road. The main accidental zones are Talchowk, Hamalchowk, Bijulichok.
3. For women's capacity enhancement, skill development training is needed.
4. The main sources of earning livelihood to the people reside in the proposed project road are service, business and foreign employment.
5. There are several local organizations working in the proposed project road area. They are Women Group, Saving cooperative, Tol Sudhar Committee, Agriculture cooperative. In the area, there is drinking water user group is functional, although international organization is not working.
6. There is lack of working force in the village.
7. The main health problems are asthma, blood pressure, diabetes, cough and fever.
8. There is no historical and cultural valuable site or place.
9. The main way of grievance mechanism is dialogue, police office and ward committee.

Name of participants	Sex	Location
Chandra Tiwari	Male	Talchowk, Pokhara Metropolitan City
DamodarTiwari	Male	Talchowk, Pokhara Metropolitan City
BhanubhaktaPoudel	Male	Talchowk, Pokhara Metropolitan City
SaradaTiwari	Female	Talchowk, Pokhara Metropolitan City
Kamal ThapaMagar	Male	Talchowk, Pokhara Metropolitan City
SunitaTiwariAdhikari	Female	Talchowk, Pokhara Metropolitan City
TilKumariThapaMagar	Female	Talchowk, Pokhara Metropolitan City
NagendraAdhikari	Male	Talchowk, Pokhara Metropolitan City
NiraSubedi	Female	Talchowk, Pokhara Metropolitan City
SalikramTiwari	Male	Talchowk, Pokhara Metropolitan City
Jaya Narayan Bastola	Male	Talchowk, Pokhara Metropolitan City

FGD with Mixed Groups, Date: 2076/02/25, Sisuwa, Ward No 30, Pokhara Metropolitan City

Key issues of FGD

:

1. The main social problem of the village is making noise by drinking alcohol. Average 4 to 5 women's violence events occur every month in the village due to drinking alcohol.
2. It was reported that about 5 road accidents occur at the proposed road. The main accidental zone areSisuwachowk, Trikada, Moriya and Talchowk.
3. For women's capacity enhancement, skill development training and women's development training are essential.
4. The main sources of earning livelihood to the people reside in the proposed project road are business and foreign employment.
5. Several local organization working in the proposed project road area. They are Himchuli Women Group, Himchuli Youth Club, Gurung Upliftment Organization. In the area, there is drinking water user group is functional, although international organization is not working.
6. There is lack of working force in the village.
7. The main health problems are thyroid, blood pressure, diabetes, cough and fever.
8. There is no historical and cultural valuable site or place.
9. There are two private schools on the side of the road. They are Diamond and Gyankunja. In addition, there is a community hospital, known as Lion Community Hospital, on the side of the proposed road.
10. The main way of grievance mechanism is dialogue and ward committee.

Name of the participants	Sex	Location
TaratKurmariGhale	Female	Sisuwa, Pokhara Metropolitan City
Krishna Maya Gurung	Female	Sisuwa, Pokhara Metropolitan City
Man KumariGurung	Female	Sisuwa, Pokhara Metropolitan City
Ganesh BahadurGurung	Male	Sisuwa, Pokhara Metropolitan City
Om BahadurGurung	Male	Sisuwa, Pokhara Metropolitan City
SagarShingGurung	Male	Sisuwa, Pokhara Metropolitan City
SomBahadurGurung	Male	Sisuwa, Pokhara Metropolitan City
BimalaGurung	Female	Sisuwa, Pokhara Metropolitan City
SudipGurung	Male	Sisuwa, Pokhara Metropolitan City
SaradaGurung	Female	Sisuwa, Pokhara Metropolitan City
ChitraBahadurGurung	Male	Sisuwa, Pokhara Metropolitan City

FGD with Mixed Groups, 2076/02/27, Mohariya, Ward No 31, Pokhara Metropolitan City

Key issues of FGD

1. The main social problem of the village is gambling. Average 2 to 4 women's violence events occur every month in the village due to drinking alcohol and economic.
2. It was reported that about 5 road accidents occur at the proposed road. The main accidental zone is Moriya Chowk.
3. For women's capacity enhancement, skill development training and women's development training are essential.
4. The main sources of earning livelihood to the people reside in the proposed project road are service, business, farming and foreign employment.

5. There are several local organization working in the proposed project road area. They are tolBikas samiti, Women Development, Dairy Cooperative. In the area, there is drinking water user group is functional, although international organization is not working.
6. There is lack of working force in the village.
7. The main health problems are thyroid, blood pressure, diabetes, Uric-acid.
8. There is no historical and cultural valuable site or place. However, there a rest place on the roadside known as Madan-Aashrit.
9. There are two private schools on the side of the road. They are Diamond and Gyankunja. In addition, there is a community hospital, known as Lekhnath Community Hospital, on the side of the proposed road.
10. The main way of grievance mechanism is dialogue and ward committee and Pokhara Nagar Bikash Samiti.

Name of the participants	Sex	Location
Buddhiraj Banjara	Male	Mohariya, Pokhara Metropolitan City
PatrirajSubedi	Male	Mohariya, Pokhara Metropolitan City
Khim Kumari Kandel	Female	Mohariya, Pokhara Metropolitan City
Anuja Banjara	Female	Mohariya, Pokhara Metropolitan City
Rita Lamichhane	Female	Mohariya, Pokhara Metropolitan City
Prem Kumari Kandel	Female	Mohariya, Pokhara Metropolitan City
Tika Devi Banjara	Female	Mohariya, Pokhara Metropolitan City
Santosh Tiwari	Male	Mohariya, Pokhara Metropolitan City
Babita Karki	Female	Mohariya, Pokhara Metropolitan City
Laxmi Tiwari	Female	Mohariya, Pokhara Metropolitan City
Kalpana Tiwari	Female	Mohariya, Pokhara Metropolitan City
Ramjibi Banjara	Male	Mohariya, Pokhara Metropolitan City
Chirinjibi Banjara	Male	Mohariya, Pokhara Metropolitan City
Surya Tamang	Male	Mohariya, Pokhara Metropolitan City
Madhab Sapkota	Male	Mohariya, Pokhara Metropolitan City

Appendix L:Road Inventory and Conditions

From (km)	To	Terrain (P-Plain/R-Rolling/M-Hilly)	Landuse(Built-up/agro/forest/Industry/Barren)	Name of village/town	Formation width	Carriage way			Shoulder+			Embankment Height (m)	Detail of cross roads		Remarks
						Type (BT/CC/ER/GR)	Width (m)	Condition(G/F/P/VP)	Type (BT/CC/GR/ER)	Width (m)	Condition (G/F/P/VP)		Location (Km)	Carriage way width (m)	
0+000	0+050	P	Built-up	Talchowk	7	BT	4.50	P	E	1	P	0			
0+050	0+100	P	Built-up	Talchowk	7	BT	4.50	P	E	1	P	0			
0+100	0+150	P	Built-up	Talchowk	7	BT	4.50	P	E	1	P	0			
0+150	0+200	P	Built-up	Talchowk	7	BT	4.50	P	E	1	P	0			
0+200	0+250	P	Built-up	Talchowk	7	BT	4.50	P	E	1	P	0			
0+250	0+300	P	Built-up	Talchowk	7	BT	4.50	P	E	1	P	0	0+290	5.10	To residences
0+300	0+350	P	Agro	Talchowk	7	BT	4.50	P	E	1	P	0	0+360	6.50	To residences
0+350	0+400	P	Agro	Talchowk	7	BT	4.50	P	E	1	P	1			
0+400	0+450	P	Built-up	Talchowk	7	BT	4.50	P	E	1	P	1			
0+450	0+500	P	Built-up	Talchowk	7	BT	4.50	P	E	1	P	0.5	0+535	3.00	Diamond School
0+500	0+550	P	Built-up	Talchowk	7	BT	4.50	P	E	1	P	0.5			
0+550	0+600	P	Built-up	Talchowk	7	BT	4.50	P	E	1	P	1			
0+600	0+650	P	Built-up	Talchowk	7	BT	4.50	P	E	1	P	1			
0+650	0+700	P	Built-up, Agro	Talchowk	7	BT	4.50	P	E	1	P	1.5	0+700	4.00	To residences
0+700	0+750	P	Agro	Talchowk	7	BT	4.50	P	E	1	P	2			
0+750	0+800	P	Agro	Talchowk	7	BT	4.50	P	E	1	P	2			
0+800	0+850	P	Agro	Talchowk	7	BT	4.50	P	E	1	P	1.5			
0+850	0+900	P	Built-up	Talchowk	7	BT	4.50	P	E	1	P	1.5			
0+900	0+950	P	Built-up	Sisuwa	7	BT	4.50	P	E	1	P	1			
0+950	1+000	P	Built-up	Sisuwa	7	BT	4.50	P	E	1	P	1.5	1+000	3.50	Holy Mount School
1+000	1+050	P	Built-up	Sisuwa	7	BT	4.50	P	E	1	P	0			
1+050	1+100	P	Built-up	Sisuwa	7	BT	4.50	P	E	1	P	0	1+120	11.20	(LHS)Budi Bazar,
1+100	1+150	P	Built-up	Sisuwa	7	BT	6.50	P	E	0.25	P	0.2			(RHS)Raja Chautara
1+150	1+200	P	Built-up	Sisuwa	7	BT	6.50	P	E	0.25	P	0.2			
1+200	1+250	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	0.2			
1+250	1+300	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	0.2			

From (km)	To	Terrain (P-Plain/R-Rolling/M-Hilly)	Landuse(Built-up/agro/forest/Industry/Barren)	Name of village/town	Formation width	Carriage way			Shoulder+			Embankment Height (m)	Detail of cross roads		Remarks
						Type (BT/CC/ER/GR)	Width (m)	Condition(G/F/P/VP)	Type (BT/CC/GR/ER)	Width (m)	Condition (G/F/P/VP)		Location (Km)	Carriage way width (m)	
1+300	1+350	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	0.2			
1+350	1+400	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	0.2			
1+400	1+450	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	0.2			
1+450	1+500	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	0.5			
1+500	1+550	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	0.5			
1+550	1+600	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	0			
1+600	1+650	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	0			
1+650	1+700	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	1	1+720	4.00	To residences
1+700	1+750	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	1			
1+750	1+800	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	1			
1+800	1+850	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	0.5			
1+850	1+900	P	Built-up	Sisuwa	7	BT	5.00	P	E	1	P	0.5			
1+900	1+950	P	Built-up	Sisuwa	7	BT	4.00	P	E	1	P	0			
1+950	2+000	P	Built-up	Sisuwa	7	BT	4.00	P	E	1	P	0	2+080	7.00	(RHS)To Good luck resort
2+000	2+050	P	Built-up	Begnas	7	BT	4.00	P	E	1	P	1.5			
2+050	2+100	P	Built-up	Begnas	7	BT	4.00	P	E	1	P	1			
2+100	2+150	P	Built-up	Begnas	7	BT	4.00	P	E	1	P	1			
2+150	2+200	P	Built-up	Begnas	7	BT	4.00	P	E	1	P	2			
2+200	2+250	P	Built-up	Begnas	7	BT	4.00	P	E	1	P	2	2+250	3.00	Shree Navajyoti School
2+250	2+300	P	Built-up	Begnas	7	BT	4.50	P	E	1	P	0.5			

From (km)	To	Terrain (P-Plain/R-Rolling/M-Hilly)	Landuse(Built-up/agro/forest/Industry/Barren)	Name of village/town	Formation width	Carriage way			Shoulder+			Embankment Height (m)	Detail of cross roads		Remarks
						Type (BT/CC/ER/GR)	Width (m)	Condition(G/F/P/VP)	Type (BT/CC/GR/ER)	Width (m)	Condition (G/F/P/VP)		Location (Km)	Carriage way width (m)	
2+300	2+350	P	Built-up	Begnas	7	BT	4.50	P	E	1	P	1.5			
2+350	2+400	P	Built-up	Begnas	7	BT	4.50	P	E	1	P	2			
2+400	2+450	P	Built-up	Begnas	7	BT	4.50	P	E	1	P	2			
2+450	2+500	P	Built-up	Begnas	7	BT	4.50	P	E	1	P	2			
2+500	2+550	P	Built-up	Begnas	7	BT	4.50	P	E	1	P	2			
2+550	2+600	P	Built-up	Begnas	7	BT	6.00	P	E	0.5	P	2	2+590	7.20	(RHS)Khudi
2+600	2+650	P	Built-up	Begnas	7	BT	6.00	P	E	0.5	P	1.5			(LHS) Majhthana
2+650	2+700	P	Built-up	Begnas	7	BT	6.00	P	E	0.5	P	0.5			
2+700	2+750	P	Built-up	Begnas	7	BT	6.00	P	E	0.5	P	2			
2+750	2+800	P	Built-up	Begnas	7	BT	6.00	P	E	0.5	P	0.5	2+780	3.00	To Residences
2+800	2+850	P	Built-up	Begnas	7	BT	6.00	P	E	0.5	P	1.5	2+880	3.00	To Residences
2+850	2+900	P	Built-up	Begnas	7	BT	6.00	P	E	0.5	P	1.5			
2+900	2+950	P	Built-up	Begnas	7	BT	6.00	P	E	0.5	P	1			
2+950	3+000	P	Built-up	Begnas	7	BT	6.00	P	E	0.5	P	1.5	3+000	4.00	(RHS) To PuranaBato
3+000	3+050	P	Built-up	Begnas	7	BT	5.50	P	E	0.75	P	1.5			

From (km)	To	Terrain (P-Plain/R-Rolling/M-Hilly)	Landuse(Built-up/agro/forest/Industry/Barren)	Name of village/town	Formation width	Carriage way			Shoulder+			Embankment Height (m)	Detail of cross roads		Remarks
						Type (BT/CC/ER/GR)	Width (m)	Condition(G/F/P/VP)	Type (BT/CC/GR/ER)	Width (m)	Condition (G/F/P/VP)		Location (Km)	Carriage way width (m)	
3+050	3+100	P	Built-up	Begnas	7	BT	5.50	P	E	0.75	P	0.3			
3+100	3+150	P	Built-up	Begnas	7	BT	5.50	P	E	0.75	P	1.5			
3+150	3+200	P	Built-up	Begnas	7	BT	5.50	P	E	0.75	P	1.5			
3+200	3+250	M	Built-up	Begnas	6	BT	5.50	P	E	0.25	P	1.5			
3+250	3+300	M	Built-up	Begnas	5.5	BT	3.70	P	E	0.9	P	0			
3+300	3+350	M	Forest	Begnas	5.5	BT	4.50	P	E	0.5	P	0			
3+350	3+400	M	Forest	Begnas	5.5	BT	4.50	P	E	0.5	P	0			
3+400	3+450	M	Lake	Begnas	5.5	ER	4.50	P	E	0.5	P	0	3+460	6.00	To Residences
3+450	3+500	P	Lake	Begnas	5.5	ER	4.50	P	E	0.5	P	0			
3+500	3+550	P	Lake	Begnas	5.5	ER	4.50	P	E	0.5	P	0			

Appendix M: Right of Way Clearance Letter from Pokhara Metropolitan City

पोखरा महानगरपालिका

नगर कार्यपालिकाको कार्यालय

गण्डकी प्रदेश, नेपाल

फोन नं.: ०६१-५२०३९२, ५२११०५
फ्याक्स: ०६१-५२०६००
E-mail: info@pokharamun.gov.np

प.सं.:
च.नं.: ११०५४

मिति: २०७६/७/२२

श्री विश्व बैंक
नेपाल च्याप्टर, काठमाडौं

विषय : जानकारी सम्बन्धमा

उपरोक्त सम्बन्धमा पोखरा महानगरपालिका वडा नम्बर २७ को तालचोकदेखि वडा नम्बर ३१ को बेगनासताल बसपार्क सम्मको प्रस्तावित सहरी शासकीय क्षमता तथा पूर्वाधार सुधार आयोजनामा पर्ने सडकको मापदण्ड भित्र परेको (right of way) को जग्गा पूर्णत् खाली गरिसकिएको र उक्त सडकको क्षेत्राधिकार भित्र कुनै पनि विवाद नरहेको र मापदण्ड भित्र रहेको सम्पूर्ण जमिन महानगर मातहत आइसकेको व्यहोरा जानकारी गराउँदछौं । यदि काम गर्ने शिलशिलामा कहीं कतै विवाद सिर्जना भएमा त्यसलाई महानगरपालिकाले सहजीकरण वा समन्वय गरी समाधान गरिने व्यहोरा जानकारी गराइन्छ ।

मानबहादुर जिसी
प्रमुख
पोखरा महानगरपालिका

श्री पोखरा महानगरपालिका कार्यालय
पोखरा ।

मिति- ०७६।०८।१५

विषय :- सहमति प्रदत्त गरेको बारे ।

प्रस्तुत विषयमा पोखरा महानगरपालिका वडा नं. २७ को तालचोक देखि वडा नं. ३१ को बेगनासताल वसपार्क सम्मको विद्यमान मोटरबाटोलाई शहरी शासकीय क्षमता तथा पूर्वाधार सुधार आयोजनाको सहयोगमा विस्तार तथा स्तरोन्नति गर्नको लागि उक्त सडकको मापदण्ड (ROW) अनुसारको जग्गा पोखरा महानगरपालिकाको क्षेत्रधिकार भित्र आइसकेको र त्यस सडकको प्रस्तावित मापदण्ड भित्र पोखरा महानगरपालिका वडा नं. ३० बस्ने म बुद्धिराज बास्तोलाको घर पर्ने भएकोले उक्त उक्त मापदण्ड भित्र पर्ने मेरो घर नियमानुसार भत्काई सडक स्तोरन्नति गर्ने कार्यमा सहयोग गर्ने प्रतिवद्धता व्यक्त गराउदछु ।

महानगर प्रमुख श्री मान बहादुर जि.सी.ज्यू
वडा नं. ३० का वडाध्यक्ष श्री धीराज पौडेलज्यू,
सहितको रोहबरमा महानगर प्रमुखज्यूको
कार्यकक्षमा भएको सहमति ।

०७६।८।१५
(नि.प्र.प्र.अ.)

(बुद्धिराज बास्तोला)
पोखरा महानगरपालिका -३०
9846026400-

"नतिजामुखी प्रशासन: समृद्धि र सुशासन"

पोखरा महानगरपालिका

नगरकार्यपालिकाको कार्यालय

कास्की

पोखरा महानगरपालिका
नगर कार्यपालिकाको कार्यालय
न्यूरोड, कास्की
गण्डकी प्रदेश नेपाल

फोन नं. ५२११०५,५०२
फ्याक्स: ५२०६००

पत्र संख्या: ०७६/७७
चलानी नं.: ९९९४

मिति : २०७६।०५।१५

श्री शहरी शासकीय क्षमता तथा पूर्वाधार सुधार आयोजना ॥
बबरमहल काठमाण्डौ

विषय: सिफारिस सम्बन्धमा ।

प्रस्तुत विषयमा पोखरा महागरपालिका वडा नं. २७ को तालचोक देखि वडा नं. ३१ को बेगनासताल बसपार्क सम्मको विद्यमान मोटरबाटोलाई तहाँ आयोजनाको सहयोगमा विस्तार तथा स्तरोन्नती गर्नको लागि उक्त सडकको मापदण्ड (ROW) अनुसारको पोखरा महानगरपालिकाको क्षेत्र अधिकार भित्र आईसकेको र त्यस वडाको प्रस्तावित मापदण्ड भित्र यस महानगरपालिका अर्न्तगत वडा नं. ३० बस्ने बुद्धिनाथ वास्तोलाको घर पर्ने भएको र उक्त घर स्वयंले भत्काई निर्माण कार्यमा सहयोग गर्न भनि निजले मिति २०७६/०५/१५ गते को मन्जुरीनामा दिएको आधारमा उक्त सडकको निर्माण कार्य अघि बढाउन सिफारिस साथ अनुरोध छ ।

.....
(गंगालाल सुवेदी)
नि. प्रमुख प्रशासकीय अधिकृत

नि. प्रमुख प्रशासकीय अधिकृत

Date: Sept 1, 2019

Subject : Understanding Made.

Regarding the above subject, the existing motorable road from Talchowk, ward no 27 to Begnas Buspark, ward no 31 of PMC going to be improved and extend with the support of UGIIP. The ROW has been brought in to the jurisdiction of PMC and the waiting hut lies inside the above ROW,ward 30.We express our unconditional and with pleasure commitment to demolish the above said waiting hut as per regulation to support the road construction.

Management Committee of Waiting Hut: **Shisuwa Passenger Waiting Hut**

Members of management committee: Coordinator-Buddhinath Bastola,Signed

Members:
Rajkumar Shrestha,Signed
Laxman Bastola,Signed
Kul Prasad Gautam,Signed
Rabindranath Bhattarai,Signed
Dhurba Gautam,Signed

Certified

for

Roshan Shrestha
Act. Project Director

Date: Sept 1, 2019

Subject : Understanding Made.

Regarding the above subject, the existing motorable road from Talchowk, ward no 27 to Begnas Buspark, ward no 31 of PMC going to be improved and extend with the support of UGIIP. The ROW has been brought in to the jurisdiction of PMC and the Mohoriya waiting hut lies inside the above ROW, ward 30.We express our unconditional and with pleasure commitment to demolish the above said waiting hut as per regulation to support the road construction.

Management Committee of Waiting Hut: **Mohoriya Passenger Waiting Hut**

Members of management committee: Coordinator-Sukra Bahadur Timelsina,Signed

Members:

Krishna Prasad Adhikari, Signed
Nanda Prasad Adhikari, Signed
Dhakaram Kadel, Signed
Gangaram Ranabhat, Signed
Ram Prasad Bastola, Signed
Rajendra Lamichhane, Signed

Certified

for Roshan Shrestha
Act. Project Director

Date: Sept 1, 2019

To,
The Pokhara Metropolitan City Office,
Pokhara

Subject : Understanding Made.

Regarding the above subject, the existing motorable route from Talchowk, ward no. - 27 to Begnas Buspark, ward no 31 of PMC going to be improved and extend with the support of UGIIP. The ROW has been brought in to the jurisdiction of PMC and the house of mine, Buddhinath Bastola residing in PMC ward no. 30 lies inside the above ROW & I express my commitment to demolish the above said my house as per regulation to support the road construction.

Signed By:
Buddhinath Bastola
Pokhara Metropolitan City

Note:
This is the understanding made in presence of also PMC mayor Mr. Man Bahadur GC, and ward chairman of ward no. -30, Mr. Shreeram Pokharel.

signed by
Officiating Chief Administrative Officer.

Certified

for. Roshon Shrestha
Act. Project Director

Date: Sept 1, 2019

Subject: Understanding Made

Regarding the above subject, the existing motorable route from Talchowk, ward no 27 to Begnas Buspark, ward no 31 of PMC going to be improved and extend with the support of UGIIP. The ROW has been brought in to the jurisdiction of PMC and the Durga Temple lies inside the above ROW. We express our unconditional and with pleasure commitment to demolish the above said temple and reconstruct in appropriate place as per regulation to support the road construction.

Name of the management committee:- Chetansil women Group

Members of the management committee.

President: Rabati Sharma, signed
Members:- Gita Jamarkattel, signed
Kamala Poudel, signed
Bisnumaya Adhikari, signed
Anuradha Gurug, signed

Certified

for Roshan Shrestha
Act. Project Director

Date: Sept 1, 2019

Urban Governance and Infrastructure
Improvement Project-II
Babarmahal, Kathmandu

Subject: Recommendation

With reference to the above mentioned subject, the existing motor able road of Pokhara Municipality from talchowk, ward no 27 to begnas lake buspark ward no 31 being upgraded by your Project where the ROW of this road is already under the jurisdiction of Pokhara Municipality. A house of Buddhinath Bastola, resident of ward no 30 falls within the ROW, so attaching the written consent letter dated Sept 1, 2019 to support the project by demolishing himself his house. So, request to proceed the necessary process ahead for the construction of this road.

Signed by
Gangalal Subedi
Officiating Chief Administrative Officer

Certified

for. Roshan Shrestha
Act. Project Director

मिती :- २०७६/०५/१६

विषय :- सहमति प्रदान गरेको बारे ।

उपरोक्त विषयमा पोखरा महानगरपालिका वडा नं. २७ को [illegible] वडा नं. [illegible] [illegible] सम्पर्क सम्मको विद्यमान [illegible] शहरी [illegible] [illegible] [illegible] सहयोगमा विस्तार तथा [illegible] उक्त सडकको मापदण्ड [illegible] [illegible] पोखरा महानगरपालिकाको [illegible] यस सडकको [illegible] [illegible] पोखरा महानगरपालिका वडा नं. १० मा पर्दछन, [illegible] प्रतिष्ठालय पर्ने [illegible] [illegible] पर्ने उक्त धातु प्रतिष्ठालय [illegible] सडकको [illegible] [illegible] आवश्यक सहयोग, प्रतिबद्धता तथा सहमति व्यक्त गर्दछौं ।

[illegible] धातु प्रतिष्ठालय [illegible] समितिका तर्फबाट केन्द्रीय धातु प्रतिष्ठालय संरक्षण समिति

धातु प्रतिष्ठालय व्यवस्थापन समितिका पदाधिकारीको सही

संयोजक :- शुक्र बहादुर [illegible]
सदस्य - कृष्ण प्रसाद अधिकारी
" - नन्द प्रसाद अधिकारी
" - [illegible] राज [illegible]
" - [illegible] राज [illegible]
- [illegible]
- [illegible] लामीछाने

मिती: २०७६।०२।१६

विषय - सहमति प्रदान गरेको बारे ।

[illegible] पोखरा महानगरपालिका वडा नं. २७ [illegible] ... सहयोग, प्रतिबद्धता तथा सहमति व्यक्त गर्दछौं ।

सहमति प्रदान गर्ने [illegible] प्रतिक्षालय व्यवस्थापन समितिको नाम: [illegible] प्रतिक्षालय [illegible] समिति

[illegible] प्रतिक्षालय व्यवस्थापन समितिका पदाधिकारीको सही

संयोजक - श्री बुद्धि नाथ बाल्कोला

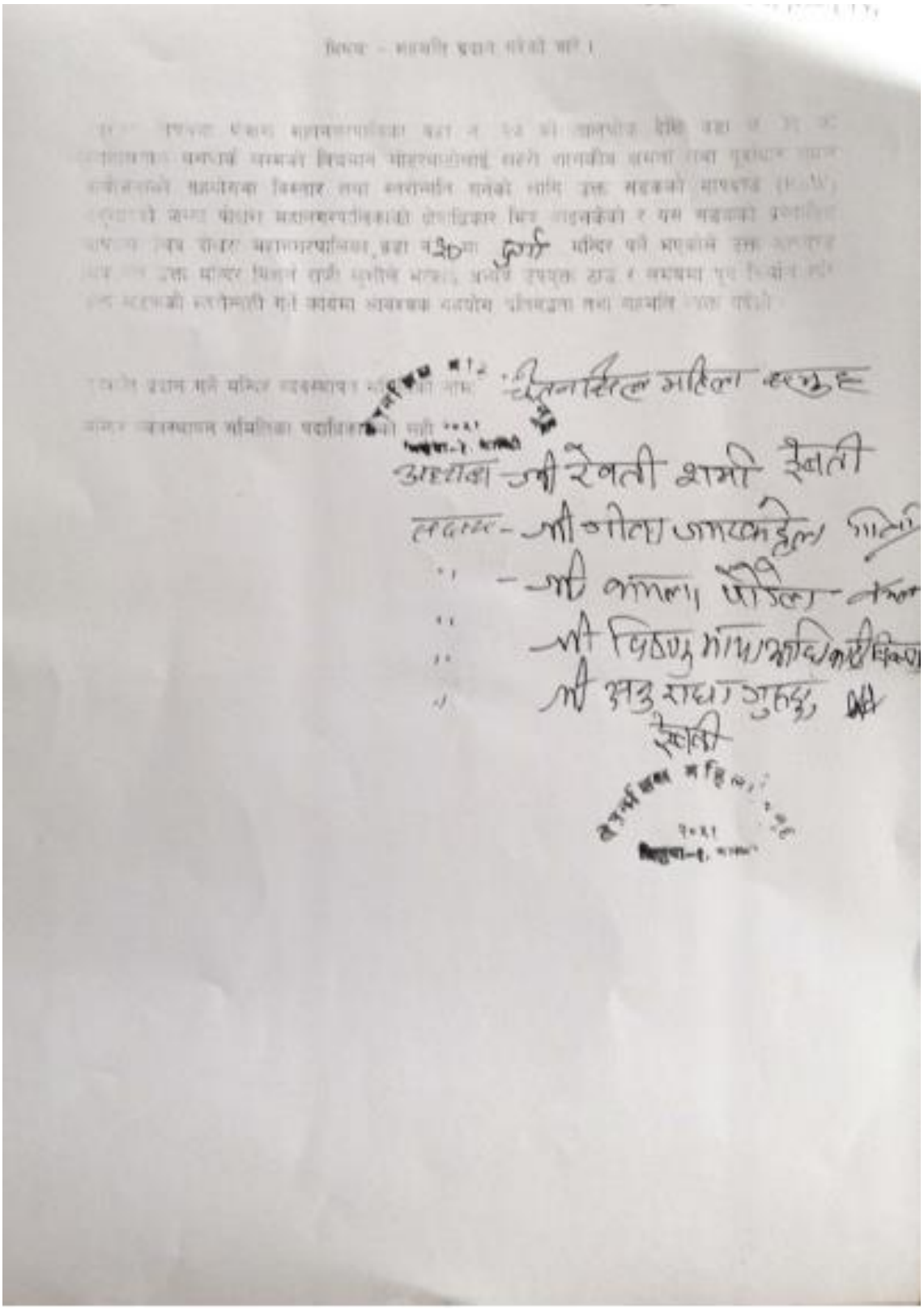
सदस्य श्री राज कुमार श्रेष्ठ

" श्री लोकनाथ बाल्कोला

" श्री कुल प्रताप गौतम

" श्री रविन्द्र नाथ भट्टराई

" श्री ध्रुव गौतम



UWSSIP-B '33'
२०७६।०५।१६

पोखरा महानगरपालिका
नगरकार्यपालिकाको कार्यालय
कास्की

फोन नं. ५२११०५,४०२
फ्याक्स: ५२०६००

पत्र संख्या: ०७६/७७
चलानी नं.: १९३४

मिति : २०७६।०५।१५

श्री शहरी शासकीय क्षमता तथा पुर्वाधार सुधार आयोजना ॥
बबरमहल काठमाण्डौ

ESIA को लागि ...

विषय: सिफारिस सम्बन्धमा ।

प्रस्तुत विषयमा पोखरा महानगरपालिका वडा नं. २७ को तालचोक देखि वडा नं. ३१ को बेगनासताल बसपार्क सम्मको विद्यमान मोटरबाटोलाई तहाँ आयोजनाको सहयोगमा विस्तार तथा स्तरोन्नती गर्नको लागि उक्त सडकको मापदण्ड (ROW) अनुसारको पोखरा महानगरपालिकाको क्षेत्र अधिकार भित्र पाईसकेको र स्वस्थ वडाको प्रस्तावित मापदण्ड भित्र यस महानगरपालिका अन्तर्गत वडा नं. ३० बस्ने बुद्धिनाथ बास्तोलाको घर पर्ने नएको र उक्त घर स्वयंले भत्काई निर्माण कार्यमा सहयोग गर्ने भनि मिति २०७६/०५/१५ गते को मन्जुरीनामा दिएको आधारमा उक्त सडकको निर्माण कार्य अघि बढाउन सिफारिस साथ अनुरोध छ ।

(गंगालाल सुवेदी)
नि. प्रमुख प्रशासकीय अधिकृत

नि. **प्रमुख प्रशासकीय अधिकृत**

श्री पोखरा महानगरपालिका कार्यालय
पोखरा ।

मिति- ०७६।०८।१४

विषय :- सहमति प्रदान गरेको बारे ।

प्रस्तुत विषयमा पोखरा महानगरपालिका वडा नं. २७ को तालचोक देखि वडा नं. ३१ को बेगनासताल बसपार्क सम्मको विद्यमान मोटरबाटोलाई शहरी शासकीय क्षमता तथा पूर्वाधार सुधार आयोजनाको सहयोगमा विस्तार तथा स्तरोन्नति गर्नको लागि उक्त सडकको मापदण्ड (ROW) अनुसारको जग्गा पोखरा महानगरपालिकाको क्षेत्राधिकार भित्र आइसकेको र त्यस सडकको प्रस्तावित मापदण्ड भित्र पोखरा महानगरपालिका वडा नं. ३० बस्ने म बुद्धिराम दोस्तोलाको घर पर्ने भएकोले उक्त उक्त मापदण्ड भित्र पर्ने मेरो घर नियमानुसार भत्काई सडक स्तोरन्नति गर्ने कार्यमा सहयोग गर्ने प्रतिबद्धता व्यक्त गराउँदछु ।

महानगर प्रमुख श्री मान बहादुर जिसी ज्यू
वडा नं. ३० का वडाध्यक्ष श्री धीराज पोख्रेल ज्यू
सहितको रोहबरमा महानगर प्रमुखको
उपस्थितिमा गरेको सहमति ।

०७६।८।१४
(वि.अ.उ.अ.)

(बुद्धिराम दोस्तोला)
पोखरा महानगरपालिका -३०
९८४६०२६४००

"नतिजामुखी प्रशासन: समृद्धि र सुशासन"

Appendix N:Photographs of field engagement

Entry Point of Talchowk-Begnas Road Project, Pokhara Metropolitan.

Meeting with the local people at the Talchowk, gathering information on ROWof this road

Schools in road alignment

Public toilet near school

Schoolin road alignment

School in road alignment

School in road alignment

Schoolnear road alignment



Public consultation Meeting with the local people at Talchowk

Field observation and discussion about the ROW

K

KII with differently-able elderly people


Affected structures (Small temple and waiting place in ROWatSisuwaChowk)


Public consultation meeting with the local people at SisuwaChowk



Consulting local women group **Collecting water sample** **Measuring noise**


Public places (school, community hospital, cow farm near roadalignment)

Affected house and shops, SisuwaChowk

House owned by 3 brothers of affected house

Stakeholder consultation, 9 December2018

Stakeholder participants

Tripatriate meeting of NUGIP, PCO and PWC at Pokhara

Water quality sampling (Redcros water supply and Khudi River)

Air and noise monitoring

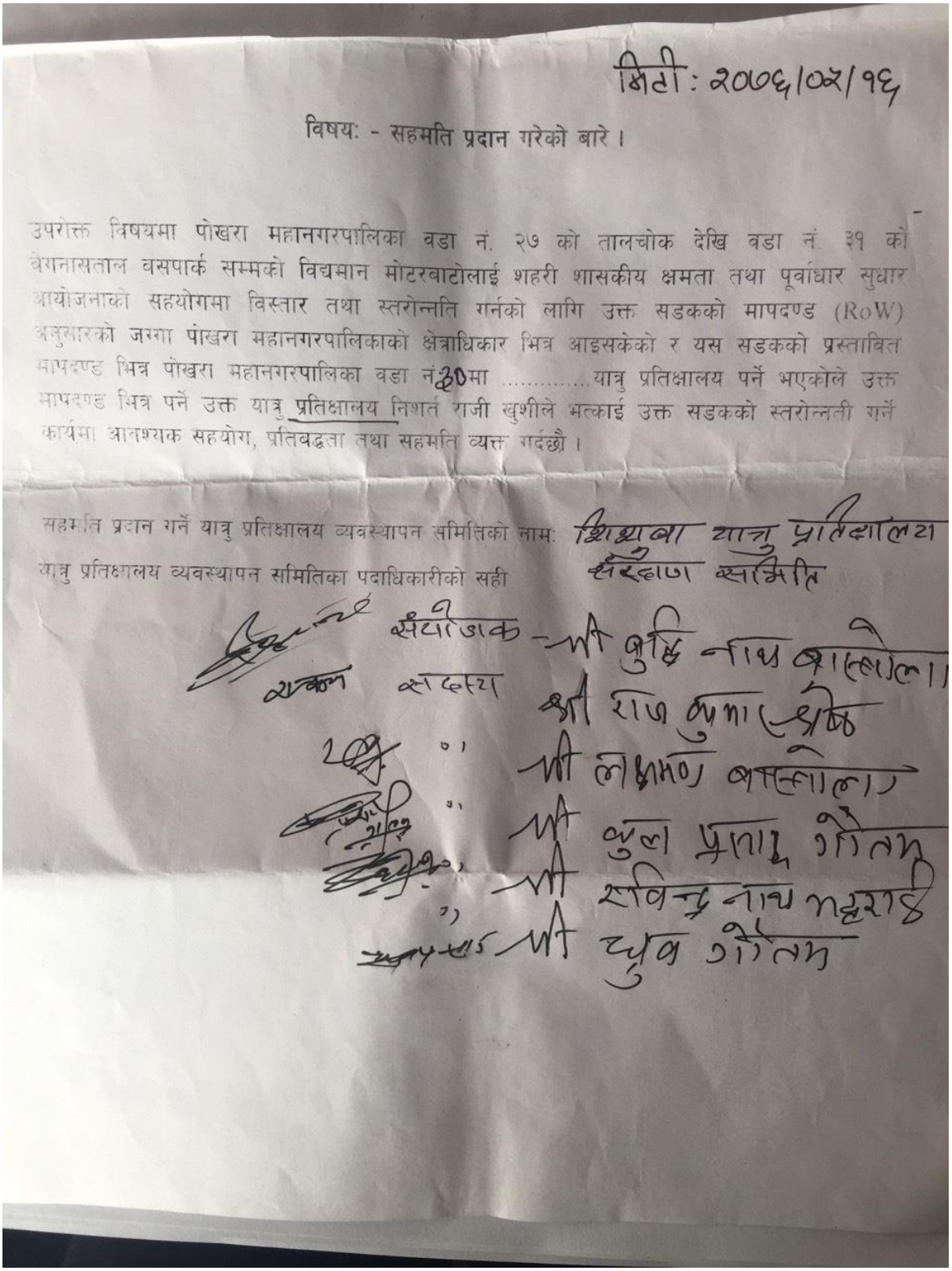
FGD with local residents at Moriya

House Hold Survey at Trikang **Road affected house at Sisuwachok**

House Hold survey at Mohariya

House Hold Survey at NaharChowk

Appendix O:Letter of Approval 1



मिती: २०७६/०२/१६

विषय: - सहमति प्रदान गरेको बारे ।

उपरोक्त विषयमा पोखरा महानगरपालिका वडा नं. २७ को तालचोक देखि वडा नं. ३१ को बेगनासताल वसपार्क सम्मको विद्यमान मोटरबाटोलाई शहरी शासकीय क्षमता तथा पूर्वाधार सुधार आयोजनाको सहयोगमा विस्तार तथा स्तरोन्नति गर्नको लागि उक्त सडकको मापदण्ड (RoW) अनुसारको जग्गा पोखरा महानगरपालिकाको क्षेत्राधिकार भित्र आइसकेको र यस सडकको प्रस्तावित मापदण्ड भित्र पोखरा महानगरपालिका वडा नं ३०मा .....यात्रु प्रतिक्षालय पर्ने भएकोले उक्त मापदण्ड भित्र पर्ने उक्त यात्रु प्रतिक्षालय निशर्त राजी खुशीले मत्काई उक्त सडकको स्तरोन्नती गर्ने कार्यमा आवश्यक सहयोग, प्रतिवद्धता तथा सहमति व्यक्त गर्दछौ ।

सहमति प्रदान गर्ने यात्रु प्रतिक्षालय व्यवस्थापन समितिको नाम: शिखरबा यात्रु प्रतिक्षालय संरक्षण समिति

यात्रु प्रतिक्षालय व्यवस्थापन समितिका पदाधिकारीको सही

संयोजक - श्री बुद्धि नाथ कालचोला

सदस्य श्री राज कुमार श्रेष्ठ

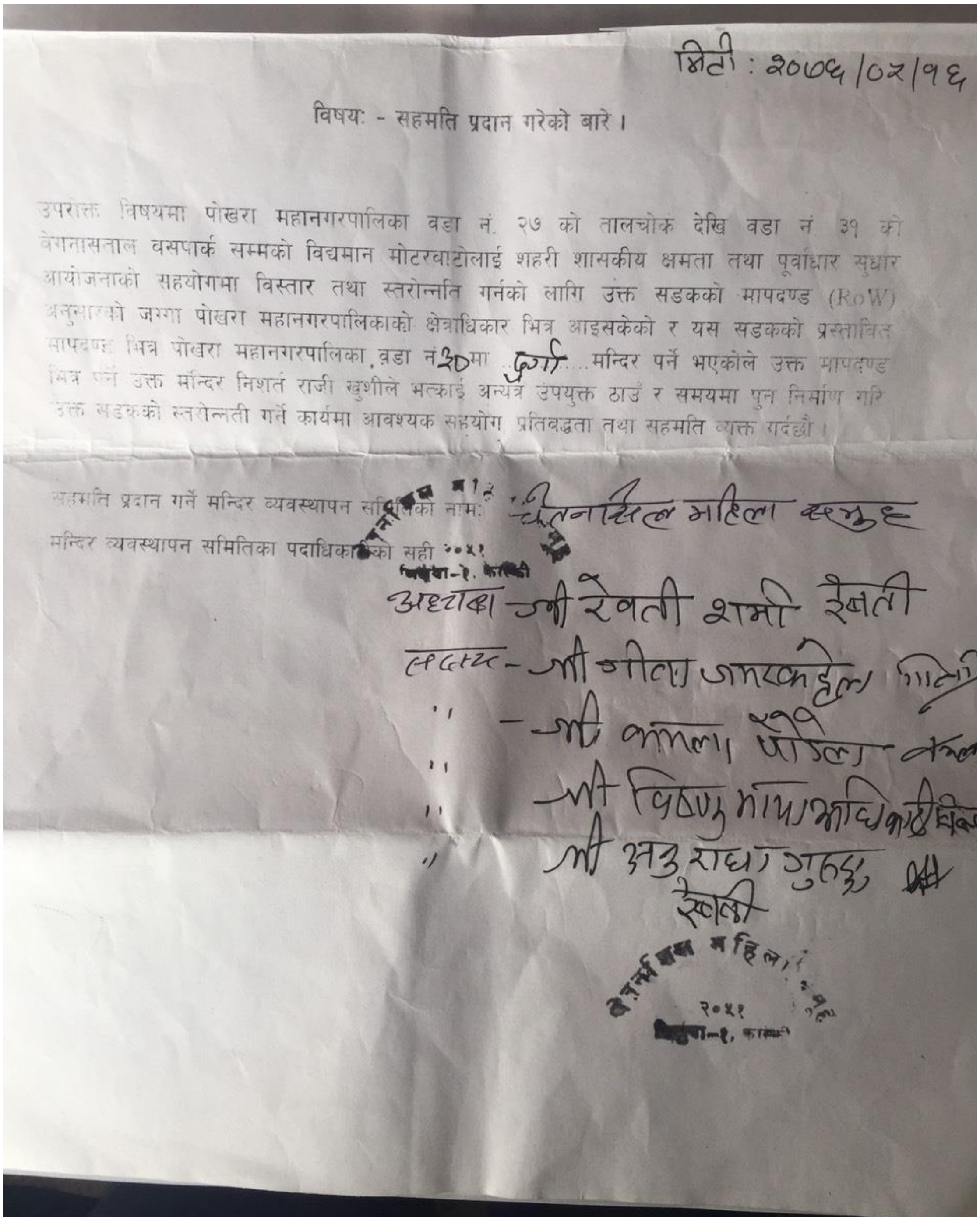
" श्री लक्ष्मण कालचोला

" श्री बुला प्रसाद गौतम

" श्री रविन्द्र नाथ मझरा

" श्री ध्रुव गौतम

Appendix P: Letter of Approval 2



मिती : २०७५/०२/१६

विषय: - सहमति प्रदान गरेको बारे ।

उपरोक्त विषयमा पोखरा महानगरपालिका वडा नं. २७ को तालचोक देखि वडा नं. ३१ को बेगनासताल बसपार्क सम्मको विद्यमान मोटरबाटोलाई शहरी शासकीय क्षमता तथा पूर्वाधार सुधार आयोजनाको सहयोगमा विस्तार तथा स्तरोन्नति गर्नको लागि उक्त सडकको मापदण्ड (RoW) अनुसारको जग्गा पोखरा महानगरपालिकाको क्षेत्राधिकार भित्र आइसकेको र यस सडकको प्रस्तावित मापदण्ड भित्र पोखरा महानगरपालिका, वडा नं २० मा ...दुर्गा... मन्दिर पर्ने भएकोले उक्त मापदण्ड भित्र पर्ने उक्त मन्दिर निशर्त राजी खुशीले भत्काई अन्यत्र उपयुक्त ठाउँ र समयमा पुन निर्माण गरि उक्त सडकको स्तरोन्नती गर्ने कार्यमा आवश्यक सहयोग, प्रतिबद्धता तथा सहमति व्यक्त गर्दछौं ।

सहमति प्रदान गर्ने मन्दिर व्यवस्थापन समितिको नाम: चेतनाशील महिला समूह

मन्दिर व्यवस्थापन समितिका पदाधिकारीको सही

अध्यक्ष - श्री रेवती शर्मा

सदस्य - श्री गीता जमरकट्टेल

" - श्री कमला पौडेल

" - श्री विष्णु माया अधिकारी

" - श्री अञ्जु राधा गुरुङ

Appendix Q:Estimation of Ramp

S.N.	Description	Unit	Nos	Length	Breadth	Height	Quantity	Rate	Amount
1	Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter for all leads and lifts, dressing of sides and bottom and backfilling with approved material	Cum	2	0.3	0.3	0.6	0.11	95.51	10.31
2	Providing and laying of hand pack stone soling with 150 to 200 mm thick stones and packing with smaller stone on prepared surface as per Drawing and Technical Specification).	Cum	2	0.3	0.3	0.1	0.02	6375.60	2.07
3	Providing and placing cement concrete M10/40 including compaction, curing, testing etc., all complete (SS/SP- 2000)	Cum	2	0.3	0.3	0.1	0.02	9752.33	175.54
4	Providing and placing M10 concrete including compaction, curing and testing, all complete	Cum	2	0.3	0.3	0.4	0.07	9752.33	702.17
5	**Metal works**	**Unit**	**Nos**	**Length**	**Total length**	**Weight per m (kg/m)**	**Total weight (kg)**	**Rate**	**Amount**
	Supplying and fabrication and installation of MS work at any height including cutting,placing,welding,bolting and one coat of primer as per drawing specification and instruction of Consultant. (Considering 5 number of stairs)								
a	3 mm thick MS Flat plate for landing 20X4	Rm	5	3	15	0.79	11.85	170	2014.5
b	ISA50X50X4	Rm	2	1.56	3.12	3.044	9.49728	170	1614.538
c	ISMC 100	Rm	2	1.4	2.8	6.8	19.04	170	3236.8
d	Square steel hollow section (25X25X3)	Rm	2	1.56	3.12	2.04	6.3648	160	1018.368
	Total for one set of staircase (5 stairs)								**8774.30**
S.N	**Description**	**Nos**	**Rate**	**Amount**					

A	**Total amount for ramp throughout the section**	**89**	.877 4.30	**780,912 .36**					

S.N.	Description	Unit	Rate
1	Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter for all leads and lifts, dressing of sides and bottom and backfilling with approved material	Cum	94.61
2	Formation of embankment from borrow site including compaction in layers not exceeding 150mm compaction depth, watering and necessary haulage etc. as per specification, all complete work.	Cum	1064.57
3	Providing and laying of hand pack stone soling with 150 to 200 mm thick stones and packing with smaller stone on prepared surface as per Drawing and Technical Specification).	Cum	5934
4	Providing and placing cement concrete M10/40 including compaction, curing, testing etc., all complete (SS/SP- 2000)	Cum	9865.37

S.N	CHAINAGE	SIDE	HOUSE RL	ROAD RL		Difference (m)	OFFSET (m) from the edge of the road	REMARKS
				EXISTING	PROPOSED	(Proposed RL-House RL)		
1	0+025	L	674.851	674.851	674.675	-0.176	0	ok
2	0+035	L	675.235	674.609	674.626	-0.609	0.8	ok
3	0+048	L	674.466	674.498	674.561	0.095	1.5	ok
4	0+053	L	674.496	674.306	674.537	0.041	0	ok
5	0+063	L	674.858	674.305	674.487	-0.371	0	ok
6	0+086	L	674.674	674.203	674.374	-0.3	2.67	ok
7	0+098	L	674.872	674.161	674.314	-0.558	3.38	ok
8	0+128	L	674.683	673.881	674.166	-0.517	4.06	ok
9	0+145	L	673.984	673.881	674.082	0.098	0.85	ok
10	0+155	L	674.906	673.961	674.033	-0.873	2.45	ok
11	0+175	L	674.261	673.881	673.929	-0.332	1	ok
12	0+202	L	674.006	673.877	673.729	-0.277	1	ok
13	0+263	L	673.248	673.388	673.314	0.066	3.45	ok
14	0+280	L	672.586	673.062	673.199	0.613	0	4 steps
15	0+293	L	672.896	673.062	673.127	0.231	3.75	1 steps
16	0+308	L	672.83	672.67	673.008	0.178	2.25	1steps
17	0+340	L	672.173	672.28	672.291	0.118	1.75	1 steps
18	0+428	L	672.482	671.791	672.193	-0.289	2.65	2 steps
19	0+435	L	672.478	671.791	672.145	-0.333	2.15	2 steps
20	0+446	L	672.329	671.791	672.07	-0.259	1.9	2 steps
21	0+463	L	672.143	671.859	671.955	-0.188	9.5	ok
22	0+473	L	671.535	671.782	671.887	0.352	4.05	ok
23	0+492	L	671.851	671.677	671.758	-0.093	11	ok
24	0+517	L	671.711	671.262	671.584	-0.127	1.2	ok
25	0+523	L	671.251	671.262	671.531	0.28	0	2 steps
26	0+532	L	671.313	671.262	671.435	0.122	1	ok

27	0+568	L	670.376	670.667	670.851	0.475	0	3 steps
28	0+572	L	671.066	670.667	670.579	-0.487	0	3 steps
29	0+592	L	669.841	670.421	670.385	0.544	3.5	ok
30	0+602	L	668.554	670.222	670.192	1.638	2.45	9 steps
31	0+610	L	669.738	670.222	670.037	0.299	0	2 steps
32	0+655	L	670.113	669.273	669.164	-0.949	1.05	5 steps
33	0+673	L	666.646	668.967	668.815	2.169	2	12 steps
34	1+012	L	662.79	662.17	662.671	-0.119	1	ok
35	1+021	L	662.427	662.17	662.552	0.125	0.5	ok
36	1+032	L	662.571	661.864	662.406	-0.165	1.5	ok
37	1+040	L	662.497	661.864	662.3	-0.197	1.5	ok
38	1+048	L	662.318	661.864	662.193	-0.125	0	ok
39	1+053	L	662.193	661.533	662.127	-0.066	0	ok
40	1+062	L	662.565	661.533	662.004	-0.561	0	ok
41	1+112	L	661.581	661.009	661.343	-0.238	1.5	ok
42	1+128	L	662.206	660.84	661.131	-1.075	1.5	ok
43	1+150	L	661.306	660.241	660.839	-0.467	0	ok
44	1+167	L	660.098	660.241	660.613	0.515	0	3 steps
45	1+216	L	659.75	659.378	659.962	0.212	0	1 steps
46	1+222	L	659.709	659.378	659.89	0.181	0.5	ok
47	1+234	L	659.715	659.312	659.748	0.033	2	ok
48	1+256	L	659.691	659.155	659.486	-0.205	1	ok
49	1+290	L	658.785	658.871	659.083	0.298	0	2 steps
50	1+332	L	658.8	658.497	658.584	-0.216	0	1 step
51	1+408	L	657.644	657.572	657.681	0.037	0	ok
52	1+422	L	656.994	657.218	657.515	0.521	0	3 steps
53	1+484	L	655.646	656.452	656.778	1.132	1	6 steps
54	1+495	L	656.64	656.267	656.647	0.007	0	ok
55	1+503	L	656.38	656.019	656.552	0.172	1	ok
56	1+512	L	656.269	656.019	656.445	0.176	1.5	ok

57	1+554	L	655.575	655.523	655.947	0.372	0	2 steps
58	1+563	L	655.543	655.366	655.84	0.297	0	2 steps
59	1+572	L	655.288	655.366	655.733	0.445	0	3 steps
60	1+579	L	655.092	655.24	655.65	0.558	0	3 steps
61	1+586	L	655.092	655.24	655.567	0.475	0	3 steps
62	1+610	L	654.347	654.855	655.326	0.979	3	6 steps
63	1+688	L	653.564	653.632	654.787	1.223	1	7 steps
64	1+782	L	652.615	652.15	654.132	1.517	1	9 steps
65	1+825	L	651.537	651.64	653.527	1.99	0.5	12 steps
66	1+837	L	651.681	651.071	653.292	1.611	2.5	ok
67	1+862	L	651.073	651.071	652.801	1.728	5.7	ok
68	1+869	L	651.107	650.689	652.664	1.557	0	9 steps
69	1+915	L	650.217	650.065	651.762	1.545	0	9 steps
70	2+015	L	648.207	648.79	649.806	1.599	0	9 steps
71	2+020	L	649.025	648.79	649.715	0.69	1.5	4 steps
72	2+030	L	649.062	648.56	649.542	0.48	1.5	3 steps
73	2+093	L	647.633	648.262	648.617	0.984	2.5	ok
74	2+101	L	646.851	648.011	648.503	1.652	3	ok
75	2+126	L	647.17	647.635	648.149	0.979	0.5	6 steps
76	2+245	L	646.604	645.937	646.328	-0.276	0	ok
77	2+257	L	646.604	645.937	646.13	-0.474	0	ok
78	2+269	L	646.576	645.439	645.932	-0.644	0	ok
79	2+368	L	643.029	643.973	644.299	1.27	0	8 steps
80	2+398	L	642.776	643.778	643.804	1.028	0	6 steps
81	2+407	L	642.776	643.778	643.656	0.88	0.5	5 steps
82	2+414	L	643.248	643.425	643.541	0.293	0	2 steps
83	2+452	L	642.583	642.959	642.914	0.331	1	2 steps
84	2+463	L	642.086	642.636	642.732	0.646	2	4 steps
85	2+510	L	640.382	642.003	641.957	1.575	2	9 steps
86	2+585	L	639.58	640.653	640.72	1.14	-4.65	7 steps

87	2+601	L	639.38	640.12	640.456	1.076	0	6 steps
88	2+610	L	639.205	640.12	640.308	1.103	0.5	6 steps
89	2+628	L	639.009	639.965	640.011	1.002	4.5	ok
90	2+639	L	639.009	639.965	639.829	0.82	0	5 steps
91	2+656	L	638.608	639.492	639.549	0.941	-3.75	6 steps
92	2+664	L	639.856	639.492	639.417	-0.439	0	ok
93	2+672	L	639.087	638.921	639.285	0.198	0	ok
94	2+710	L	638.218	638.503	638.662	0.444	1.5	3 steps
95	2+760	L	637.974	637.488	638.062	0.088	4.7	ok
96	2+803	L	637.554	637.453	637.663	0.109	0	ok
97	2+809	L	638.07	637.453	637.607	-0.463	2.5	ok
98	2+815	L	638.082	637.161	637.552	-0.53	0.5	ok
99	2+835	L	637.09	637.161	637.366	0.276	0.5	2 steps
100	2+960	L	637.817	636.143	636.207	-1.61	0.5	ok
101	2+973	L	637.531	636.143	636.086	-1.445	0.5	ok
102	2+980	L	637.721	636.079	636.022	-1.699	0	ok
103	2+991	L	635.193	635.923	635.919	0.726	1.5	4 steps
104	3+000	L	636.994	635.923	635.836	-1.158	0	ok
105	3+030	L	636.895	635.51	635.558	-1.337	0	ok
106	3+036	L	636.864	635.51	635.504	-1.36	0.5	ok
107	3+045	L	636.703	635.51	635.434	-1.269	0	ok
108	3+080	L	636.27	634.711	635.3	-0.97	0	ok
109	3+095	L	634.265	635.134	635.291	1.026	1	6 steps
110	3+100	L	635.988	635.134	635.289	-0.699	0.5	ok
111	3+163	L	635.694	634.834	635.254	-0.44	1.2	ok
112	3+178	L	635.546	634.857	635.246	-0.3	0.5	ok
113	3+220	L	636.011	634.79	635.223	-0.788	2	ok
114	3+228	L	635.755	634.88	635.218	-0.537	1	ok
115	0+032	R	674.938	674.709	674.64	-0.298	-1.35	ok
116	0+035	R	674.782	674.609	674.626	-0.156	2	ok

117	0+045	R	675.112	674.313	674.576	-0.536	1	ok
118	0+053	R	674.385	674.232	674.537	0.152	0.5	ok
119	0+070	R	674.185	674.232	674.453	0.268	1	2 steps
120	0+080	R	674.185	674.232	674.404	0.219	1.5	ok
121	0+123	R	674.32	674.128	674.191	-0.129	1.5	ok
122	0+140	R	674.289	673.969	674.108	-0.181	1	ok
123	0+153	R	675.004	673.828	673.926	-1.078	2	ok
124	0+188	R	672.982	673.905	673.808	0.826	1	5 steps
125	0+211	R	675.078	673.926	673.668	-1.41	1	ok
126	0+223	R	675.032	673.64	673.586	-1.446	1.5	ok
127	0+260	R	674.637	673.289	673.355	-1.282	3	ok
128	0+314	R	672.876	672.615	672.967	0.091	1	ok
129	0+353	R	671.102	672.171	672.702	1.6	2	9 steps
130	0+540	R	669.79	671.38	671.333	1.543	1	9 steps
131	0+655	R	669.716	669.237	669.164	-0.552	0	ok
132	0+668	R	669.38	668.903	668.912	-0.468	2	ok
133	0+906	R	664.293	663.744	664.297	0.004	0.5	ok
134	0+925	R	663.468	663.687	663.933	0.465	1	3 steps
135	0+943	R	663.473	663.408	663.622	0.149	0.5	ok
136	0+970	R	663.124	663.019	663.229	0.105	1.5	ok
137	0+998	R	662.547	662.446	662.857	0.31	5	2 steps
138	1+012	R	661.378	662.052	662.671	1.293	4	ok
139	1+035	R	660.872	661.808	662.366	1.494	0.5	9 steps
140	1+040	R	660.8	661.808	662.3	1.5	1	9 steps
141	1+050	R	662.11	661.656	662.167	0.057	0.75	ok
142	1+105	R	662.285	660.037	661.436	-0.849	2	ok
143	1+113	R	662.867	661.109	662.658	-0.209	1	ok
144	1+125	R	660.833	660.84	661.171	0.338	2	2 steps
145	1+167	R	660.606	660.338	660.613	0.007	1	ok
146	1+175	R	660.643	660.048	660.507	-0.136	0	ok

147	1+195	R	660.534	659.709	660.241	-0.293	0	ok
148	1+212	R	659.017	659.709	660.015	0.998	-6	6 steps
149	1+232	R	659.509	659.252	659.771	0.262	0	2 steps
150	1+248	R	659.251	659.252	659.581	0.33	1	2 steps
151	1+300	R	659.392	658.788	658.964	-0.428	0	ok
152	1+309	R	659.769	658.788	658.857	-0.912	1	ok
153	1+318	R	658.791	658.788	658.75	-0.041	0	ok
154	1+363	R	658.498	658.071	658.215	-0.283	0	ok
155	1+408	R	657.891	657.556	657.681	-0.21	0	ok
156	1+483	R	655.807	656.529	656.79	0.983	1.5	6 steps
157	1+558	R	654.109	655.468	655.899	1.79	2	11 steps
158	1+588	R	655.015	654.981	655.543	0.528	2	3 steps
159	1+620	R	654.655	654.769	655.257	0.602	2	4 steps
160	1+632	R	654.655	654.541	655.174	0.519	0.5	3 steps
161	1+642	R	654.322	654.204	655.105	0.783	2.5	5 steps
162	1+740	R	652.633	652.837	654.429	1.796	1	11 steps
163	1+852	R	651.311	651.079	653	1.689	1.5	9 steps
164	1+885	R	649.172	650.445	652.35	3.178	2.5	19 steps
165	1+920	R	650.064	650.035	651.664	1.6	0	9 steps
166	2+040	R	648.899	648.667	649.379	0.48	0.5	3 steps
167	2+180	R	647.239	647.247	647.385	0.146	0.5	ok
168	2+198	R	646.231	646.848	647.104	0.873	5	5 steps
169	2+238	R	644.946	646.12	646.444	1.498	0	9 steps
170	2+245	R	646.012	646.12	646.328	0.316	0	2 steps
171	2+255	R	647.468	645.858	646.163	-1.305	1.5	ok
172	2+304	R	645.311	645.09	645.355	0.044	0.5	ok
173	2+342	R	644.021	644.589	644.728	0.707	1	4 steps
174	2+356	R	645.821	644.375	644.497	-1.324	0	ok
175	2+364	R	645.541	644.375	644.365	-1.176	0	ok
176	2+391	R	642.365	643.71	643.92	1.555	1.5	9 steps

177	2+432	R	642.086	643.003	643.244	1.158	1	7 steps
178	2+445	R	642.672	642.939	643.029	0.357	2.5	2 steps
179	2+490	R	642.136	642.423	642.287	0.151	2	ok
180	2+504	R	640.613	641.945	642.056	1.443	2.5	ok
181	2+583	R	641.32	640.585	640.753	-0.567	0.5	ok
182	2+593	R	640.391	640.585	640.588	0.197	0.5	ok
183	2+613	R	641.168	640.227	640.258	-0.91	0	ok
184	2+623	R	640.768	639.879	640.092	-0.676	0	ok
185	2+630	R	640.272	639.879	639.978	-0.294	-1.92	ok
186	2+635	R	640.246	639.879	639.895	-0.351	0	ok
187	2+680	R	638.944	639	639.153	0.209	2.5	ok
188	2+738	R	638.296	638.138	638.283	-0.013	1	ok
189	2+878	R	636.38	636.67	636.967	0.587	5	ok
190	2+913	R	638.827	636.242	636.643	-2.184	4	ok
191	2+970	R	635.14	636.029	636.114	0.974	0	6 steps
192	2+991	R	637.144	635.782	635.87	-1.274	5	ok
193	3+025	R	635.36	635.558	635.604	0.244	5	ok
194	3+042	R	634.945	635.392	635.456	0.511	1	3 steps
195	3+087	R	634.603	635.06	635.295	0.692	1	4 steps
196	3+092	R	634.549	634.981	635.293	0.744	1	4 steps
197	3+100	R	636.097	634.981	635.289	-0.808	1	ok
198	3+128	R	634.804	634.714	635.273	0.469	2.3	3 steps
199	3+142	R	633.733	634.698	635.265	1.532	5	ok
200	3+150	R	633.669	634.698	635.262	1.593	1.5	9 steps
201	3+160	R	635.006	634.843	635.256	0.25	0.5	1 steps
202	3+168	R	633.707	634.843	635.251	1.544	0.5	9 steps
203	3+175	R	636.919	634.707	635.247	-1.672	3	ok
204	3+212	R	636.478	634.907	635.227	-1.251	0.5	ok
205	3+220	R	635.335	634.985	635.234	-0.101	0	ok
206	3+232	R	635.36	634.985	635.216	-0.144	0	ok