

Initial Environmental Examination

Document Stage: Draft
Project Number: 55346-001
July 2023

Nepal: Urban Resilience and Livability Improvement Project – Improvement to Road, Drains and Other Infrastructure in Five Towns (Tilottama, Devdaha, Sainamaina, Lumbini and Sidharthnagar) in Western Urban Corridor

Prepared by the Department of Urban Development and Building Construction, Government of Nepal for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 20 May 2023)

Currency unit	-	Nepalese rupee (NPR)
NPR 1.00	=	\$ 0.01
\$ 1.00	=	NPR 131.91

ABBREVIATIONS

ADB	-	Asian Development Bank
BES	-	Brief Environment Study
BOQ	-	Bill of Quantities
CBD	-	Convention on Biodiversity
CBS	-	Central Bureau of Statistics
CHS	-	Community Health and Safety
CRO	-	Complaint Receiving Officer
DSC	-	Design Supervision Consultant
DOTM	-	Department of Transport Management
ECC	-	Environmental Clearance Certificate
EHSO	-	Environmental Health and Safety Officer
EIA	-	Environmental Impact Assessment
EMP	-	Environmental Management Plan
EPA	-	Environment Protection Act
EPR	-	Environment Protection Rule
GoN	-	Government of Nepal
GRM	-	Grievance Redress Mechanism
IBAT	-	Integrated Biodiversity Assessment Tool
IEE	-	Initial Environmental Examination
ISPC	-	Institutional Strengthening and Community Participation Consultant
IUCN	-	International Union for Conservation of Nature
IUDP	-	Integrated Urban Development Plans
LPG	-	Liquefied Petroleum Gas
MoFE	-	Ministry of Forests and Environment
MOM	-	Management, Operation and Maintenance
MoUD	-	Ministry of Urban Development
NWP	-	National Water Plan
OHS	-	Occupational Health and Safety
PCR	-	Physical Coordination Unit
PIU	-	Project Implementation Unit
PMCDC	-	Project Management and Capacity Development Consultant
PCU	-	Project Management Unit
PPE	-	Personal Protective Equipment
REA	-	Rapid Environmental Assessment
RM	-	Rural Municipality
RoW	-	Right of Way
RP	-	Resettlement Plans
RUDP	-	Regional Urban Development Project
SDC	-	Supervision and Design Consultants
SECs	-	Small Ethnic Communities
SPS	-	Safeguard Policy Statement, 2009

- WHO - World Health Organization
WUC - Western Urban Corridor

WEIGHTS AND MEASURES

%	-	Percentage
°C	-	degree Celsius
µg/m ³	-	Microgram per cubic meter
dBA	-	decibels audible
ha	-	Hectare
km	-	Kilometer
m ³	-	cubic meter
mm	-	Millimeter

NOTE

In this report, "\$" refers to United States dollars.

This initial environmental examination is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature. Your attention is directed to the "terms of use" section on ADB's website.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

CONTENTS

	Pages
EXECUTIVE SUMMARY	I
I. INTRODUCTION	1
A. Background	1
B. Subproject Scope and Location	2
C. Purpose of Initial Environmental Examination	4
D. Methodology	4
E. Structure of IEE Report	5
II. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK	5
A. ADB Safeguard Policy Statement, 2009	5
B. National Environmental Legislations	8
C. International Environmental Agreements	15
D. Applicable Environmental Standards	16
III. DESCRIPTION OF THE PROJECT	18
A. Tilottama Municipality Subprojects	18
B. Siddharthanagar Municipality Subprojects	27
C. Devdaha Municipality Subprojects	32
D. Sainamaina Municipality Subprojects	38
E. Lumbini Sanskritik Municipality Subprojects	42
IV. DESCRIPTION OF BASELINE ENVIRONMENT	51
A. Project Influence Area	51
B. Physical Environment	51
C. Biological Environment	64
D. Socio-economic and Cultural Environment	77
E. Site Environmental Features	86
V. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES	118
A. Planning and Design Phase	118
B. Pre-Construction Phase Impact and Mitigation Measures	123
C. Construction Phase Impact and Mitigation Measures	125
D. Operational Phase Impacts and Mitigation Measures	136
E. Cumulative Impacts and Mitigation Measures	139
F. Unanticipated Impacts during Construction and Operation	139
VI. ENVIRONMENTAL MANGEMENT PLAN	140
A. Institutional Arrangement	140
B. Environmental Management Plan (EMP)	146
C. Environmental Monitoring Program	172
D. Capacity Development Training	174
E. Environmental Management and Monitoring Plan Implementation Cost (Indicative)	176
VII. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION	179
A. Consultation and Participation	179
B. Public Consultation Conducted	179
C. Future Consultations during Detailed Design Stage	182
D. Information Disclosure	182

VIII.	GRIEVANCE REDRESS MECHANISM	183
IX.	MONITORING AND REPORTING	187
X.	CONCLUSION AND RECOMMENDATION	188

TABLES

Table 1: Subprojects Requiring Environment Assessment as per GoN-EPR, 2020	9
Table 2: Relevant Government Laws and Regulations	10
Table 3: International Environmental Agreements and standards ratified by GoN	15
Table 4: Standards for Ambient Air Quality	17
Table 5: Standards for noise levels for both GoN and WHO	17
Table 6: Existing Condition and Proposed Scope of the Drivertole – Shivapur	18
Table 7: Existing Condition and Proposed Scope of Pathardanda -Tinau Road	20
Table 8: Proposed Scope for Cold Storage	23
Table 9: Agricultural produce to be Stored in Cold Storage	23
Table 10: Bahluhipul Medical college Batatol Mukhiya Tol Piparahiya road section	33
Table 11: Banchauki Mayadevi Path Mildanda Buddha Circuit Road Section	34
Table 12: Ward 8 Hat Bazar – Maya Devi Marga - Banaha Devdaha - Judhapani Link Road	35
Table 13: Existing Condition and Proposed Sainamaina Ring Road 1 (Panbari- Saljhandi)	39
Table 14: Existing Condition and Proposed Saina Maina Ring Road 2 (Duimuhan Chowk- Thali)	40
Table 15: Description of FAO's Soil Type	62
Table 16: Community Forest along and nearby Panbari-Saljhandi Road -Sainamaina	65
Table 17: Community Forest along and nearby the road alignments -Devdaha	65
Table 18: Major Vegetation found in the Project Area	70
Table 19: List of Mammals found in the Project Area	70
Table 20: List of Birds found in the Project Area	70
Table 21: List of Herpetofauna found in the Project Area	71
Table 22: List of Fishes found in the Project Area	71
Table 23: List of trees to be cut down and saved in the Road Subprojects	71
Table 24: Key Biodiversity Areas	73
Table 25: Details of Protected Areas	74
Table 26: Species with Potential to Occur	74
Table 27: Present Land Use in Project Area	77
Table 28: Population Distribution in the Project Affected Municipality (Caste/ Ethnicity)	79
Table 29: List of Monuments around the Project Area within Rupandehi District	81
Table 30: Site Environmental Features of the Road Projects Proposed in Devdaha Municipality	89
Table 31: Site Environmental Features of the Road Projects Proposed in Lumbini Sanskrithik Municipality	92
Table 32: Site Environmental Features of the Road Projects Proposed in Saina Maina Municipality	98
Table 33: Site Environmental Features of the Road Projects Proposed in Tilottama Municipality	101
Table 34: Site Environmental Features of the Road Projects Proposed in Siddharthanagar Municipality	104
Table 35: Environmental Management Plan Matrix (Construction Phase) – Applicable for all Project Components	147
Table 36: Environmental Management Plan – Operational Phase – Roads and Drains Component	169

Table 37: Environmental Management Plan – Operational Phase – Cold Storage Facility (Tilottama)	170
Table 38: Environmental Monitoring Program	172
Table 39: Environmental Monitoring Plan (Sampling & Analysis)	174
Table 40: Sample Lecture and Seminar Training Program for Environmental Management	175
Table 41: Indicative Environmental Management Plan Budget for Bill of Quantities (BOQ)	177
Table 42: Summary of Public consultations conducted for the subprojects in Western Urban Towns	179

FIGURES

Figure 1: Location of Project Towns	3
Figure 2: Proposed Roads, Drains and Infrastructures in Five Municipalities	4
Figure 3: Location of Subprojects in Tilottama Municipality	22
Figure 4: Location of Proposed Cold Storage Site & Access Roads	25
Figure 5: Location of Proposed Cold Storage Site & Access Roads	26
Figure 6: Layout Plan of the Proposed Cold Storage with other Facilities	27
Figure 7: Location of Subprojects in Siddharthanagar Municipality	31
Figure 8: Typical Cross Section of Road of Bimanghaat to North Road	32
Figure 9: Location of Subprojects in Devdaha Municipality	37
Figure 10: Location of Subprojects in Sainamaina Municipality	41
Figure 11: Location of Subprojects in Lumbini Sanskritik Municipality	43
Figure 12: Location of Proposed Bus Terminal Area	44
Figure 13: Layout of Lumbini Bus Terminal Development Plan	45
Figure 14: Conceptual drainage design at Bus Terminal	46
Figure 15: Location of Proposed Bus Terminal Area	47
Figure 16: Proposed Municipal Building Site, Access Road and Building Footprint	48
Figure 17: Photographs of the Road Sections proposed in Municipalities of West Urban Corridor	49
Figure 18: Tilottama Municipality	52
Figure 19: General View of Timottama Town	53
Figure 20: Devdaha Municipality	54
Figure 21: General View of DevdahaTown	55
Figure 22: Sainamaina Municipality	56
Figure 23: General View of Sainamaina Town	57
Figure 24: Lumbini Municipality	58
Figure 25: General View of LumbiniTown	59
Figure 26: Sidharthnagar Municipality	60
Figure 27: General View of Sidharthnagar Town	61
Figure 28: Soil Classification of the Rupandehi District	62
Figure 29: Monthly Climatology in the Project Area	63
Figure 30: Integrated hydrological hazard map of the Rupandehi District	64
Figure 31: Community Forest along and nearby the Panbari-Saljhandi Road (Sainamaina)	67
Figure 32: Community Forest along and nearby proposed three road alignments (Devdaha)	68
Figure 33: Community Forest nearby the Drivertole-Shivapur Road (Tilottama)	69
Figure 34: Chitwan National Park within the 50-km radius of the Subproject site	74
Figure 35: Lumbini Crane Sanctuary with in Lumbini Master Plan Area	76
Figure 36: Present Land Use of the 5 Municipalities	78
Figure 37: Lumbini World Heritage Site	84
Figure 38: Lumbini Master Plan	85

Figure 39: Monuments around the Project Area within Rupandehi District	87
Figure 40: Subproject components nearby the Lumbini World Heritage Site	88
Figure 41: Implementation Arrangement for Safeguard Implementation	141
Figure 42: Public Consultation in the Western Urban Towns	181
Figure 43: Grievance Redress Procedures – URLIP	185

APPENDICES

Appendix 1: Details of Tree Survey	192
Appendix 2: COVID 19 Guideline	207
Appendix 3: Minutes of Consultations at Western Urban Corridor Towns	210
Appendix 4: Sample Grievance Registration Form	234
Appendix 5: Sample Environmental Site Inspection Report	235

EXECUTIVE SUMMARY

The Urban Resilience and Livability Improvement Project (URLIP) will support to improve municipal infrastructures and governance of the selected project municipalities, thereby contributing to achieve inclusive economic growth and improved livability. This will be achieved through the following three outputs: (i) Output 1: Municipal infrastructure for resilience developed; (ii) Output 2: Tourism assets revitalized, and management improved; and (iii) Output 3: Capacity of municipalities, provincial governments, and Department of Urban Development and Building Construction (DUDBC) strengthened. The DUDBC under the Ministry of Urban Development (MOUD) is the executing agency and is responsible for technical and project management matters including engineering, safeguards, and social aspects. The project will support seven municipalities (Pokhara, Janakpur, Devdaha, Lumbini Sanskritik, Sainamaina, Siddharthnagar, and Tilottama). The Implementing Agencies are municipalities.

Subproject scope. This sub-project covers the infrastructure improvements to be carried out under Output 1 of the URLIP at the five municipalities of Devdaha, Lumbini Sanskritik, Sainamaina, Siddharthnagar and Tilottama. These five municipalities form part of West Urban Corridor (WUC). Proposed infrastructure improvements are as follows: **Tilottama Municipality** Improvements to Roads and Drains amounting to a total length of 13.17 km at two locations. Construction of a 40,000 metric ton (MT) Cold Storage Facility on a 35,576 sq. m land. **Siddharthnagar Municipality.** Improvements to roads and drains of total length 23.7 km at 27 road sections. **Devdaha Municipality.** Improvements to roads and drains of total length 16.18 km at 3 road sections. **Sainamaina Municipality.** Improvements to roads and drains of total length 14.73 km at two road section. **Lumbini Sanskritik Municipality** Improvements to roads and drains of total length 3.95 kms at two road sections; Bus terminal building and Municipality office building.

Categorization. The proposed WUC Sub-project is classified as Environmental Category “B” per ADB’s Safeguards Policy Statement (SPS), 2009 and accordingly this initial environmental examination (IEE) has been prepared. Per Government of Nepal (GON) regulations, Roads and Drainage components, bus terminal, and municipal building require conducting a Brief Environmental Study (BES) while the Cold Storage Facility require preparation of the IEE Report. The implementing agency shall prepare and submit BES and IEE reports to the Ministry of Urban Development, the line agency, for review and issue of Environmental Clearance.

Description of the Environment. The improvement of roads and drains works under the sub-project will be implemented along existing road alignments in urban and peri-urban areas in each of the five municipalities. The existing roads are either earthen, damaged bituminous carpet or damaged cement concrete road. Majority of the road lengths have suffered wear and tear with cracks, potholes, broken edges and depressions that impact the safety of the users. Additionally, the drainage system is poor that currently results in localized flooding in the low-lying areas. A brief profile of each of the municipalities is provided in the paragraphs below:

Tilottama Municipality is located in Rupandehi District of Lumbini zone. The municipality lies in Province No. 5 spreading between 27°33’ to 27°39’ N latitude and 83°25’ to 83°33’E longitudes. Tilottama municipality has Rohini River and Devdaha municipality in the east, Tinau river and Siyari and Shuddhodhan village in the west, Butwal sub-metropolitan municipality in the north and Omasatiya village and Siddharthnagar municipality in the south. The total area of this municipality is 126.2 sq. km. There are 17 wards with a population of 149,657 (2021 census). Landuse of Tilottama Municipality is undergoing changes from agricultural / vacant / open areas to built-up areas. Large tracts are still under agriculture, and community forests.

Siddharthanagar Municipality lies on the southern part of Rupandehi District of Lumbini Province and is located at 83°26' E longitude and 27°31' N latitude. With the total area of 36.03 sq. km. the municipality is located at an altitude of 110 meters above MSL and has a tropical climate. The maximum temperature noted is 45.20°C and minimum temperature reached 2.40°C while average rainfall is 1436.5 mm. Siddharthanagar has 13 wards with a population of 76,307 (Census 2021 Initial Report). 77% of the land area is agricultural and rest are residential and public spaces. However, the Municipality is rapidly developing considering its proximity to the new International Airport and agricultural areas are being converted to residential and commercial areas. There are a number of park spaces within the Municipality besides the plantation along the bank of the Danda River.

Devdaha municipality lies in Rupandehi district of province 5. It is located 57 km east of Lumbini. The municipality has a population of 75,658 (Census 2011) and a number of households 14,667 with a population density of 552 person/ sq.km. The municipality is surrounded by Nawalparasi district in the east, Butwal sub-metropolis in the west, Tilotama municipality in the west, Palpa district in the north and Omsatiya rural municipality in the south. The total area covered by the municipality is 136.96 sq. km and is divided into 12 wards. Devdaha is a historically significant place as it is identified as the maternal hometown of Queen Mayadevi, the mother of Lord Sakyamuni Buddha. It is believed that Prince Siddhartha had spent few years of his childhood at Devdaha. The land use of this municipality is dominated by forest which covers approximately 74.89 sq.km (54.69%) followed by cultivation area of 47.41 sq. km (34.62%) and residential area of 9.33 sq. km (6.82%). Municipality has a sub-tropical climate with temperature ranging from minimum 6°C to 43°C. The average annual rainfall is 1174 mm.

Sainamaina municipality covers an area of 162.18 sq. km and has a population of 55822 based on the 2011 census the population and expected to reach to 66282 by 2019 on the basis of growth rate of 2.17% per year. It consists of 11 wards. The northern portion of the Municipality is hilly and forested (about 57% of the total area) while the southern portion is non-forested.

Lumbini Sanskritik is a municipality situated in Rupandehi District of Lumbini Province in Nepal. Lumbini, a Buddhist pilgrimage site where Lord Buddha was born, lies at the centre of this Municipality, making the area an important pilgrimage and tourist site. It has a population of 72497 (Census 2011) within a total area of 112.21 sq.m and is divided into 13 wards. Owing to its religious, cultural and archaeological importance, Lumbini was declared a UNESCO World Heritage Site in 1997. This site is located within the larger Lumbini Master Plan area developed in 1978. To assist in its economic development, it was declared a 'cultural municipality' in 2014, following a notification of the Government of Nepal. The declaration helped to boost tourism activities in the region, which is also one of the major sources of income for the local people. The tree survey along these road alignments has revealed the presence of 226 trees of various tree species.

In Sainamaina, Devdaha and Tilotama, a portion of the road alignments pass through community forest areas. Innovative design solutions such as splitting the road midway and creating tree islands, reducing width of road at certain sections and straightening road alignments etc. are incorporated locally to conserve the trees. In cases where it is not possible to retain, and the trees need to be cut, compensatory afforestation is proposed. Roads passing through forests included in the subproject are existing earthen roads that provide access to habitations and schools located in forests within the municipal area. Project will improve all weather connectivity to local community. No notable impacts envisaged as these are existing, and there will be no notable increase in traffic.

Screening with Integrated Biodiversity Assessment Tool (IBAT) confirms that there is no ecologically sensitive area within 10-km radius of the subproject locations in each of the towns. Lumbini Crane sanctuary located within the Lumbini heritage master plan area and surrounding farmlands are habitat for threatened species of Sarus cranes (IUCN VU category) and is an important bird area. In Lumbini Sanskrithik, proposed municipal building site is about 600 m from the outer boundary of Lumbini master plan area within which UNESCO World Heritage Site (the birthplace of Lord Buddha) is located. The nearest project area i.e., access road from proposed bus terminal ends at Vishnupura Road that runs along the periphery wall of the Lumbini heritage area. The work on these project components do not impact the Heritage Site. Mitigation measures for addressing “chance-finds”, dust, noise etc., have been included in the EMP.

Potential Environmental Impacts and Mitigation Measures. Potential negative impacts were identified, especially those concerning pre-construction, construction and operation phases. Planning principles and design considerations have been reviewed and incorporated into the site planning and design process wherever possible. Measures such as local changes in alignment and cross section design are considered for minimizing the removal of trees. However, 170 of total 226 trees would be impacted from the implementation of the road improvement sub-project. 56 trees including the Simal (*Bombax cieba*) tree species, which are considered protected species in Nepal, present in Lumbini and Siddharthnagar towns (6 number of trees along the project roads) are saved. No Simal trees will be cut for the project. There are also Sissoo (*Darburgia sissoo*) trees, which are popular for housing nests of mainly local birds, some of which are saved, and 11 trees, of which 8 are present in the Siddharthnagar sub-project area, needs to be removed for the project. Various measures such survey of trees for active nests prior to removal, avoiding breeding season etc., included in the EMP to avoid any impacts. Compensatory afforestation in the ratio of 1:10 (i.e., 10 trees to be planted for one tree cut) will be taken up. None of the components however are located close to Lumbini crane sanctuary or farmlands. Sites are in urban areas in Lumbini, and the sites of bus terminal and municipal building although has agricultural lands around, these are being converted into residential layouts. No impacts therefore envisaged. Various measures included to avoid any damage or disturbance to flora fauna while working in community forests or works close to agricultural lands in Lumbini.

The road designs are combined with improvements in drainage systems that are achieved by incorporating lateral drains and cross drainage structures to ensure safe conveyance of storm water during rainfall events. Appropriate drainage planning and design of municipal building and bus terminal components will be ensured to accommodate the existing drainage lines in the sites. Due to low-lying of proposed site with access road on higher elevation, detailed drainage assessment will be conducted during the detailed design of Bus Terminal Building in Lumbini, and a proper drainage system will be put in place to avoid flooding / water logging of the facility and the surrounding area. The existing drainage channel that runs through the site will be suitably accommodated as lined open channel of adequate capacity, along with necessary provision of lateral drains and cross drainage works. Prior permission from Irrigation Department/Canal agency will be obtained. Various design considerations are already included in conceptual designs such as raising ground level of the site, providing a proper drainage channel section to convey water through existing coverts, and taking all necessary measures to avoid flooding in and around the site. These will be further reviewed and finalized during the detailed design. The proposed bus terminal, municipal building and cold storage facilities are provided with necessary amenities such as water supply, sanitation including on-site treatment, solid waste management facilities, parking etc. The measures taken up ensured that the environmental impacts arising due to the project design or location are not significant. The roads and drain works will involve straightforward construction. Works in densely populated areas and busy roads may have significant but temporary impacts. Potential construction-related impacts include noise, dust

generation, silt generation, soil and water contamination from chemicals spills and leaks, construction waste generation, and occupational and community health and safety risks including the spread of COVID-19, among others. These are localized, temporary and avoidable, mitigated and/or minimized to acceptable limits with the implementation of mitigation measures in the Environmental Management Plan (EMP). All road works will be confined on existing road and side drains alignments, and within existing rights-of-way (ROWs). The construction of cold storage facility, bus terminal building and municipality building will be confined within the available area.

Environmental Management Plan. An Environmental Management Plan (EMP) has been developed and included as part of this IEE, which outlines the following: (i) mitigation measures for environmental impacts during implementation; and (ii) an environmental monitoring program, and the responsible entities for mitigating, monitoring, and reporting. Also, in accordance with this EMP, the Contractor will be required to prepare a site-specific environmental management plan (SEMP). Contractor will submit its SEMP for approval to the Project Implementation Unit (PIU). The EMP and SEMP will (i) ensure that the activities are undertaken in a responsible non-detrimental manner; (ii) provide a pro-active, feasible, and practical working tool to enable the measurement and monitoring of environmental performance on site; (iii) guide and control the implementation of findings and recommendations of the environmental assessment conducted for the subproject; (iv) detail specific actions deemed necessary to assist in mitigating the environmental impact of the subproject; and (v) ensure that safety recommendations are complied with. Copies of the EMP and SEMP shall be kept on-site during the construction phase. The Contractor will be responsible for the organization, direction, and execution of environmental management related activities during construction of the proposed subproject. The Contractor will also undertake all activities in accordance with the relevant environmental requirements, including consent documentation and other regulatory and/or statutory and contractual requirements.

The Environmental Monitoring Program suggested in the EMP would need to be carried out by the Contractor during the construction period. The Environmental Monitoring Program would involve monitoring the air quality, surface water quality, groundwater quality, noise levels etc. The results of the Environmental Monitoring Program should be included in the periodic reports submitted by the Contractor to the PMCDC / PIU / PCU, as the case may be.

Implementation Arrangement. The Ministry of Urban Development acting through Department of Urban Development and Building Construction (DUDBC) will be the Executing Agency (EA) and the respective municipalities will be Implementing Agency (IA) of the WUC Sub-project. The Project Coordination Unit (PCU) under the DUDBC will be responsible for the overall implementation of the project and ensure compliance to ADB environmental safeguards requirements. The PCU will work closely with the Project Implementation Unit(s) (PIUs) at the Municipality level. The Project Management and Capacity Development Consultants (PMCDC) and Design and Supervision Consultant (DSC) will each include an Environmental Safeguard Specialist who will support in the efficient overall implementation of environmental safeguards of the project. The PMCDC will submit quarterly monitoring reports to PCU, and the PCU will send semi-annual monitoring reports to ADB. ADB will post the semi-annual environmental monitoring reports on its website as part of its disclosure requirements.

The Contractor will be required to (i) obtain all statutory clearances (other than Environmental Clearance) prior to commencement of civil works; (ii) establish an operational system for managing environmental impacts; (iii) prepare a SEMP based on the EMP of this IEE, and submit to PIU for approval; (iv) carry out all of the monitoring and mitigation measures set forth in the approved SEMP; and (v) implement any corrective or preventative actions set out in safeguards monitoring reports that the PCU will prepare from time to time to monitor implementation of this

IEE, EMP, and SEMP. The Contractor shall allocate an adequate budget and resources for compliance with these EMP measures, requirements and actions.

Consultation, Information Disclosure and Grievance Redress Mechanism. The WUC Sub-project has undertaken meaningful consultations during the project preparatory stage. Forty-one public consultations were conducted in all the municipalities put together to elicit the stakeholders view on the project. These consultations were held with the public representatives, elected members at the ward level and the residents during December 2022 - June 2023. As part of the process, information on the sub-project components were provided to the participants at these consultations. Their views were incorporated into the IEE and in the planning and development of the subproject. This draft IEE will be made available to the public through the ADB, DUDBC / PCU websites. The consultation process will be continued during project implementation, to ensure that stakeholders are fully engaged in the project and could participate in its development and implementation. A project-specific Grievance Redress Mechanism (GRM), described in this draft IEE, will be established to receive, record, and redress public complaints in a time bound and effective manner.

Monitoring and Reporting. PCU and PIU, with support from DSC and PMCDC, will be responsible for monitoring the project implementation and compliance with EMP requirements. The Contractor will submit monthly reports to the PIU with jurisdiction over the subproject. The PIU will submit quarterly environmental monitoring reports to PCU. The PCU shall consolidate quarterly reports from the PIUs and prepare semi-annual environmental monitoring report (SEMRs) which shall be submitted to ADB. PCU and ADB will post the cleared SEMRs on the project website and ADB website, respectively. ADB will monitor the project on an ongoing basis until a project completion report is issued.

Conclusion and Recommendations. The proposed subproject is unlikely to cause any significant adverse impacts to the environment and people. Potential negative environmental impacts are mainly associated with construction and can be mitigated through proper engineering practice and the mitigation measures included in the EMP. Various planning and design measures are integrated to mitigate operational phase impacts. Site specific drainage measures are needed at the proposed Bus Terminal in Lumbini, and these are included in the preliminary designs and specified in the EMP. The citizens of the five towns in WUC will be the major beneficiaries of this subproject that will result in key environmental benefits such as, but not limited to, reduction in flooding areas, improved road and pedestrian safety to users resulting from improved road infrastructure and drainage facilities. This IEE is prepared based on the preliminary designs of roads and drains, and feasibility study /conceptual designs of bus terminal, municipal building and cold storage facilities. This IEE shall be updated by the PCU, with support from PMCDC, based on final detailed design and submitted to ADB for review, clearance, and disclosure. No work can commence until the updated IEE is approved by ADB and disclosed and provided to the Contractor, and the SEMP is approved by the PIU. Based on the findings of the IEE, the classification of the project as Category "B" is confirmed. PCU will obtain environmental clearance from the Ministry of Urban Development prior to invitation of bids or award of contract.

I. INTRODUCTION

A. Background

1. The Urban Resilience and Livability Improvement Project (the project) aims to improve livability and sustainability of urban services by project municipalities. The project is aligned with the following impact: inclusive economic growth and improved living standards.¹ The project will have the following outcome: improved resilience, livability and sustainability of urban service delivery by project municipalities. The project will develop municipal infrastructures aligned with the priorities set in the municipalities' investment plans. The project supports seven municipalities: Tilottama, Siddharthnagar, Sainamaina, Lumbini Sanskirtik, Devdaha, Janakpur and Pokhara. Five out of seven municipalities are from the West Urban Corridor (WUC) viz, Tilottama, Siddharthnagar, Sainamaina, Lumbini Sanskirtik and Devdaha. The Department of Urban Development and Building Construction (DUDBC) on behalf of Ministry of Urban Development (MoUD) will be the Executing Agency and individual project municipalities will be the Implementing Agency. The project will support the following three outputs.

2. **Output 1: Municipal infrastructure for resilience improved.** Investments will use an integrated approach by ensuring a well-coordinated urban infrastructure system and, where feasible, employing green solutions to reduce inundation, improve mobility, and promote nonmotorized transport through cycle lanes and footpaths. Together, these investments aim to improve the livability of residents, support the sustainable growth of tourism, and enhance local economies. The project will (a) construct or rehabilitate 150 kilometers (km) of stormwater drains; (b) reconstruct 100 km of the urban roads with at least 45 km of footpaths with old age, women, children, and people with disabilities responsive features and cycle lane to promote non-motorized transport, and (c) construct cold storage in Tilottama to ensure food security during climate and disaster events.

3. **Output 2: Tourism assets revitalized, and management improved.** The project adopts a combination of strategic planning, infrastructure development and customer service to support natural, cultural, and heritage-based tourism by enacting protective zoning around natural and heritage sites, expanding tourism activities and promoting visitor's universal access and positive experience.² Output 2 will support to: (a) prepare and execute seven natural and heritage management plans through gender equality and social (GESI)-responsive, participatory approaches, (b) improve seven cultural and natural heritage sites with GESI-responsive tourism infrastructure and recreation amenities such as cycle route connecting seven lakes of Pokhara municipality, Bindabasini area street, Phewa organic trail, Pokhara Santiban Batik (Forest) conservation, Janakpur Ratnasagar, Lumbini global park, and Panchase eco-development, (c) improve 150,000 square meters of green spaces – Siddharthnagar Dandha River Corridor and greening initiatives of public spaces in all municipalities – with gender and climate-resilient inclusive design feature, and (d) ensure at least 30% of the socio-economic development program spend on socioeconomic infrastructure and activities related to tourism and GESI. The project will construct at least seven GESI-friendly public toilets in cultural and natural heritage sites and support Lumbini Sarus Crane Conservation and Biodiversity Awareness.

4. **Output 3: Capacity of communities, municipalities, province, and Department of Urban Development and Building Construction strengthened.** The project supports implementing prioritized reforms, municipalities' digital transformation, institutional strengthening and capacity building actions. Key actions of output 3 include increasing own source revenue by

¹ Government of Nepal, National Planning Commission. 2020. Fifteenth-Year. Kathmandu.

² Cultural, natural, and heritage assets under municipalities' jurisdiction.

implementing a comprehensive financial management improvement plan (CFMIP) – an institutional reform measure for revenue enhancement (broadening own source revenue coverage, digital tax billing and collection, and tax administration), budgeting procedure for better expenditure management, internal and external audit, procurement and asset management, and financial management procedures. The second action is to address carbon emissions and climate and disaster-related risks by preparing decarbonization and risk-sensitive urban plans and enforcing development control³, preparing seven heat action plans to ensure well-coordinated response actions during an extreme heat event tailored to high-risk groups, establishing Pokhara municipal emergency operation center, installing an electronic building permit system that factors in climate and disaster-risk zoning and will also support the issuance of digital tax bills. The third action is strengthening institutions and capacity by establishing and equipping O&M units in each municipality, maintaining a robust database of public assets, including infrastructure, utilities, cultural and natural heritage sites, and public land, constructing an energy-efficient and disaster-resilient municipal office building for Lumbini Sanskrithik municipality, conducting training and workshop for staff, including eligible women staff and female-elected representatives of cities, provinces, and DUDBC, on municipal finance, natural ecosystems, decarbonization, and urban resilience planning, and support internship, skill improvement in traditional and local art, and tourist guide certification programs for women and disadvantage group implemented.⁴

B. Subproject Scope and Location

5. This sub-project covers the infrastructure improvements carried out under Output 1 of the URLIP at the five municipalities of Devdaha, Lumbini Sanskrithik, Sainamaina, Siddharthnagar and Tilottama. These five municipalities are also known as the West Urban Corridor (WUC), and Figure 1 shows the location of towns. Towns are located close about 10-20 km from each other, The infrastructure improvements carried out under the WUC subproject in five municipalities include are as below: roads and drains works of 73 km long covering 38 roads in five WUC municipalities, a bus terminal and municipal office building in Lumbini Sankritik municipality and a cold storage facility in Tilottama municipality.

³ Including seismic microzoning and multi-hazard disaster risk assessment of Pokhara.

⁴ GESI action plan (accessible from the list of linked documents in Appendix 2).

Figure 1: Location of Project Towns

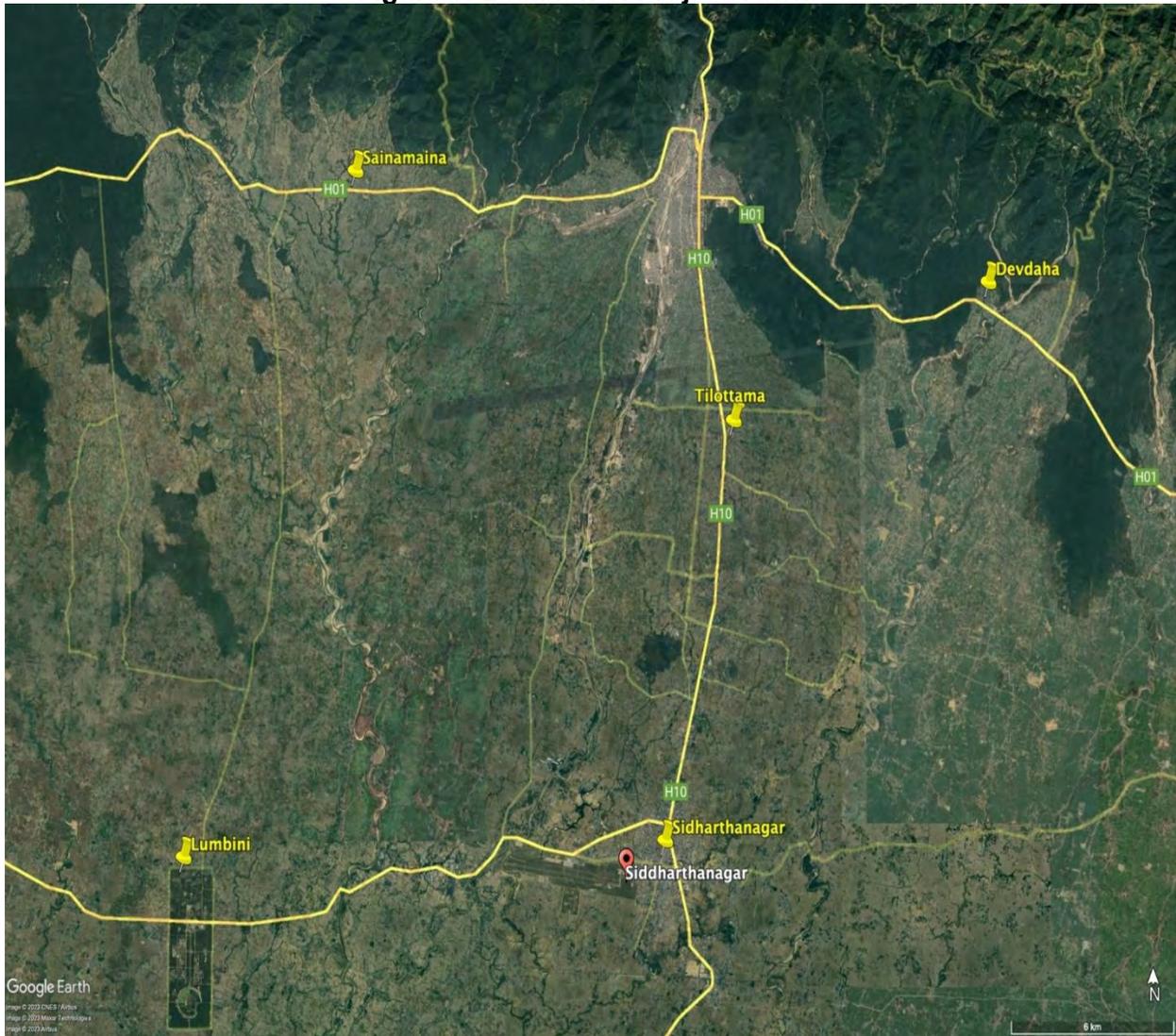
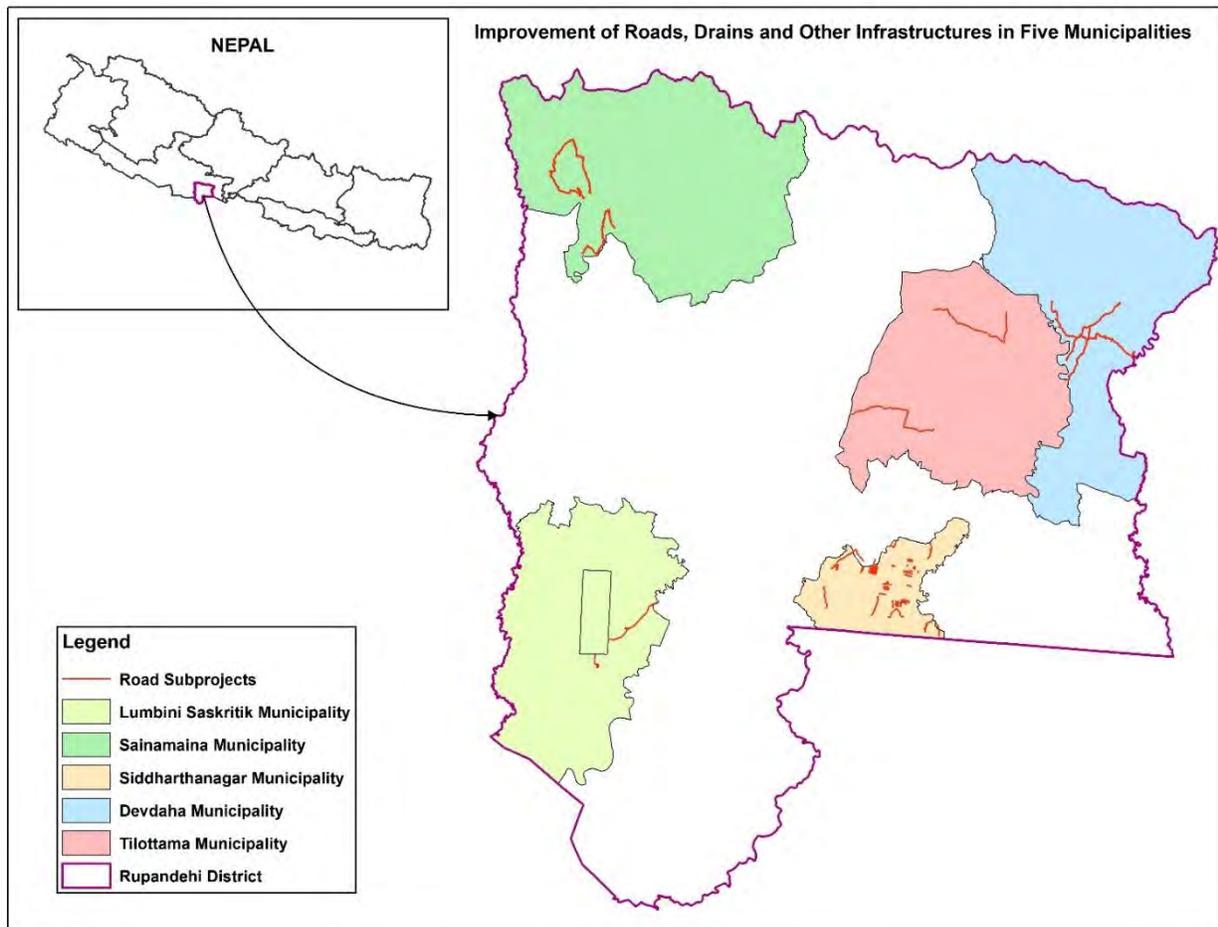


Figure 2: Proposed Roads, Drains and Infrastructures in Five Municipalities



C. Purpose of Initial Environmental Examination

6. This subproject is classified as Category B for environment per ADB SPS 2009, and this IEE is prepared accordingly. The objective of the IEE is to provide an overview of the environmental issues viz., legal compliance, environmental impacts, mitigation measures to be employed, monitoring and reporting aspects to be covered during the implementation and operation of the WUC subproject by the PCU, PIU, its Consultants and Contractors. This is to ensure that the project is implemented in an environmentally responsible manner, ensuring that all negative effects are prevented or mitigated, and positive impacts are enhanced.

D. Methodology

7. This IEE report was prepared by carrying out site visits, conducting stakeholder consultations, and primary and secondary data collection, assessing the existing environmental conditions at the sub-project locations, identifying the potential environmental impacts that may occur during project implementation and developing the relevant mitigation measures including monitoring. Baseline environmental monitoring for air quality, noise level, surface water quality and groundwater quality will be done before the start of construction activities. The Integrated Biodiversity Assessment Tool (IBAT) was used to screen potential risks on the protected areas or critical habitat that may exist around the project sites.

8. During the IEE study, public consultations were conducted with the ward representative, officials of respective municipalities and community people. Their views were incorporated into the IEE and in the planning and development of the subproject. This IEE is prepared based on the preliminary designs of roads and drains, and feasibility study /conceptual designs of bus terminal, municipal building and cold storage facilities.

E. Structure of IEE Report

9. The report has been structured to include the following chapters:

- (i) Introduction;
- (ii) Policy, Legal, and Administrative Framework;
- (iii) Description of the Project;
- (iv) Description of the Environment;
- (v) Anticipated Environmental Impacts and Mitigation Measures;
- (vi) Environmental Management Plan;
- (vii) Information Disclosure, Consultation, and Participation;
- (viii) Grievance Redress Mechanism;
- (ix) Monitoring and Reporting;
- (x) Conclusion and Recommendations.

II. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

A. ADB Safeguard Policy Statement, 2009

10. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for environmental assessment are described in ADB SPS, 2009. ADB environmental safeguards are triggered if a project is likely to have potential environmental risks and impacts. A project is classified based on the most environmentally sensitive component, and assigned with one of the four environmental categories (A, B, C, or FI) defined in the SPS. These categories are as follows.

- (i) **Category A:** Project that is likely to have significant adverse environmental impacts which are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment (EIA), including an environmental management plan (EMP), is required.
- (ii) **Category B:** Project with potential adverse environmental impacts that are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination (IEE), including an EMP, is required.
- (iii) **Category C:** Project that is likely to have minimal or no adverse environmental impacts. An EIA or IEE is not required, although environmental implications need to be reviewed.
- (iv) **Category FI:** Project is classified as category FI if it involves the investment of ADB funds to, or through, a financial intermediary.

11. Initial screening using ADB's rapid environmental assessment (REA) checklist was conducted for the subproject and results of the rapid assessment show that the project is unlikely to cause any significant adverse impacts, and therefore classified under Category B per ADB

SPS. Thus, this IEE report has been prepared following ADB SPS requirements for project with Category B classification.

12. **Environmental Assessment.** Environmental assessment shall include a description of environmental and social baseline to provide an understanding of current conditions forming the benchmark against which subproject impacts are assessed. Environmental impacts and risks will be analyzed for all relevant stages of the project cycle, including design and planning stage, construction, operations, decommissioning, and post-closure activities such as rehabilitation or restoration. This IEE may be used as a model document for other future roads and roadside drains subprojects.

13. **Environmental Planning and Management.** The PCU shall prepare an environmental management plan (EMP) to be included in the IEE report. The EMP shall describe and address the potential impacts and risks identified by the environmental assessment. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the subproject's impact and risks. The EMP shall include the proposed mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators.

14. **Public Disclosure.** The PCU shall submit the following to ADB for review, clearance and disclosure. ADB will disclose acceptable reports received and endorsed by the DUDBC on ADB website so affected people, other⁵ stakeholders, and the public can provide meaningful inputs into the subproject design and implementation.

- (i) Draft / updated / final IEE upon receipt;
- (ii) a new or updated IEE and corrective action plan prepared during subproject implementation, if any, upon receipt; and
- (iii) environmental monitoring reports submitted during subproject implementation upon receipt.

15. **Consultation and Participation.** The PCU and PIU shall carry out meaningful consultation⁶ with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. The consultation process and its results are to be documented and reflected in the environmental assessment report.

16. **Grievance Redress Mechanism.** The PCU shall establish a mechanism to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the subproject's environmental performance. The grievance mechanism shall be scaled to the risks and adverse impacts of the subproject.

⁵ Per ADB SPS, 2009, prior to disclosure on ADB website, ADB reviews the "borrower's/client's social and environmental assessment and plans to ensure that safeguard measures are in place to avoid, wherever possible, and minimize, mitigate, and compensate for adverse social and environmental impacts in compliance with ADB's safeguard policy principles and Safeguard Requirements 1-4." Upon its receipt of acceptable safeguard documents and endorsement by PCU, ADB discloses the same on ADB website.

⁶ Per ADB SPS, 2009, meaningful consultation means a process that (i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle; (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) enables the incorporation of all relevant views of affected people other stakeholders into decision making, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues.

17. **Monitoring and Reporting.** The PCU shall monitor, measure and document the progress of implementation of the EMP. If necessary, PCU will identify the necessary corrective actions, and reflect them in a corrective action plan. PCU will prepare and submit to ADB semi-annual environmental monitoring reports that describe progress with implementation of the EMP and compliance issues and corrective actions, if any. For subprojects likely to have significant adverse environmental impacts during operation, reporting will continue until ADB issues a project completion report.

18. **Unanticipated Environmental Impacts.** Where unanticipated environmental impacts become apparent during subproject implementation, PCU shall update the environmental assessment and EMP or prepare a new environmental assessment and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.

19. **Pollution Prevention and Control Technologies.** During the design, construction, and operation of the subproject the PCU and PIU shall apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards such as the International Finance Corporation (IFC) World Bank Group's Environmental, Health and Safety Guidelines. These standards contain performance levels and measures that are normally acceptable and applicable to subprojects. When the government regulations differ from these levels and measures, the subproject shall achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific subproject circumstances, DUDBC through PCU will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

20. **Occupational Health and Safety.** The PCU shall ensure that workers are provided with a safe and healthy working environment, considering risks inherent to the sector and specific classes of hazards in the subproject work areas, including physical, chemical, biological, and radiological hazards. PCU shall ensure to take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work by (i) identifying and minimizing, so far as reasonably practicable, the causes of potential hazards to workers; (ii) providing preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (iii) providing appropriate equipment to minimize risks and requiring and enforcing its use; (iv) training workers and providing them with appropriate incentives to use and comply with health and safety procedures and protective equipment; (v) documenting and reporting occupational accidents, diseases, and incidents; and (vi) having emergency prevention, preparedness, and response arrangements in place.

21. **Community Health and Safety.** The PCU shall ensure to identify and assess the risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning of the project, and will establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts.

22. PCU shall ensure to apply preventive and protective measures for both occupational and community health and safety consistent with international good practice, as reflected in available national standards on Environmental, Health and Safety. Where national standards are not available, internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines will be adhered to⁷. PCU shall also adhere to necessary protocols in response to emerging infectious diseases such as the corona virus disease (COVID-19)

⁷ World Bank Group, 2007. Environmental, Health, and Safety General Guidelines. Washington, DC. .

consistent with the guidelines of relevant government healthcare agencies and the World Health Organization.

23. **Physical Cultural Resources.** The PCU is responsible for siting and designing the subproject to avoid significant damage to physical cultural resources. Such resources likely to be affected by the subproject will be identified, and qualified and experienced experts will assess the subproject's potential impacts on these resources using field-based surveys as an integral part of the environmental assessment process. When the proposed location of a subproject component is in areas where physical cultural resources are expected to be found as determined during the environmental assessment process, chance finds procedures shall be included in the EMP.

24. **Environmental Audit.** When the subproject involves existing activities or facilities, PCU is responsible to ensure that relevant external experts will perform environmental audits to determine the existence of any areas where the subproject may cause or is causing environmental risks or impacts. If the subproject does not foresee any new major expansion, the audit constitutes the environmental assessment for the subproject.

25. **Bidding and Contract Documents.** IEE, which contains the EMP, shall be included in bidding and contract documents and verified by PIU. The PCU and PIU shall also ensure that bidding and contract documents include specific provisions requiring contractors to (i) comply with all other conditions required by ADB⁸ and (ii) to submit to PIU, for review and approval, a site specific environmental management plan (SEMP), including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; (iii) monitoring program as per SEMP; and (iv) budget for SEMP implementation, among others as may be required. No work can commence prior to approval of SEMP. A copy of the EMP and/or approved SEMP will be always kept on site during the construction period. Non-compliance with, or any deviation from, the conditions set out in the EMP and/or SEMP constitutes a failure in compliance and shall require corrective actions.

26. **Conditions for Award of Contract and Commencement of Work.** PCU shall not award any works contract under the subproject until (i) relevant provisions from the EMP are incorporated into the works contract; (ii) this IEE is updated to reflect subproject's detailed design and PCU has obtained ADB's clearance of such updated IEE; and (iii) For GoN requirements MoUD approves Brief Environmental Study (BES)/IEE (i.e., compliance with EPR, 2020) and other necessary permits from relevant government agencies shall be obtained. For "design, build, and operate" type contracts, PCU shall ensure no works for a subproject which involves environmental impacts shall commence until (i) relevant provisions from the EMP are incorporated into the works contract; and (ii) this IEE is updated to reflect subproject's detailed design and PCU has obtained ADB's clearance for such updated IEE.

B. National Environmental Legislations

27. Most of the national policies and laws of GoN are oriented towards achieving environmentally sound economic development and growth, and conservation of natural resources

⁸ Contractors to comply with (i) all applicable labor laws and core labor standards on (a) prohibition of child labor as defined in national legislation for construction and maintenance activities; (b) equal pay for equal work of equal value regardless of gender, ethnicity, or caste; and (c) elimination of forced labor; and with (ii) the requirement to disseminate information on sexually transmitted diseases, including HIV/AIDS, to employees and local communities surrounding the project sites..

and cultural heritage of the country. The following are the summaries of the relevant policies, acts and regulations, and guidelines.

28. The Constitution of Nepal, 2015. This is the fundamental law of the country, and the sections pertaining with environmental protections are as follows:

- (i) Article 30 (1) of the constitution guarantees a “clean environment” as a fundamental right and elaborates that “every citizen shall have the right to live in a clean and healthy environment”.
- (ii) Article 30 (3) encourages the state to formulate necessary legal frameworks to balance the environment and development.

29. Nepal has enacted comprehensive environmental policies and laws that cover a broad range of environmental and sector issues. Environmental Protection Act (EPA) of 2019 and Environmental Protection Regulations (EPR) of 2020 are two important legal frameworks for environmental protection. According to the EPA and EPR, all development projects should first be screened using criteria that are based on the scale of project stipulated in the Schedules 1, 2 and 3 of EPR to determine the level of environmental assessment required. Projects that could result in some environmental impacts are required to conduct brief environment study (BES), projects having the moderate environmental impacts are required with initial environmental examination (IEE), and large projects that could result in major and adverse environmental impacts are required to go through an environmental impact assessment (EIA) process. The EPA makes necessary arrangements to disclose EIA reports to the general public to render opinions and suggestions.

30. **Environment Protection Act 2019 (2076 BS).** The act emphasizes on new aspects like provisions of BES, IEE and EIA under the jurisdiction of local authority, provincial government, and central government. This act is a pre-requirement for any type of development project in the country to comply with the environment safeguards. Article 2 (3) 1 of this act has given provision of environmental assessment. This clearly mentions that the environment assessment is a prerequisite before implementation of any project. The detail of the criteria is indicated in Environment Protection Rules 2020.

31. **Environment Protection Rules 2020 (2077 BS).** This rule has defined thresholds and equivalent environmental assessment (i.e., BES, IEE and EIA). As per EPR 2020, for the upgrade, expansion, rehabilitation and reconstruction of 10 to 50 km length national highway or feeder road requires Initial Environmental Examination (IEE). In addition to this, the establishment of cold storage with the capacity to store more than 1000 metric tons requires IEE. As per EPR 2020, following requirements are necessary for IEE.

Table 1: Subprojects Requiring Environment Assessment as per GoN-EPR, 2020

S.N.	Subproject Component	Parameter	Unit	Total Quantity	Environment Study Requirement (EPR,2020)
1.	Road and Drains Component at all Five Municipalities	Length	Kms	72.52	BES
2.	Bus Terminal at Lumbini Sanskrithik Municipality	Area	Sq.m	11,775	BES
3	Municipal Office Building at Lumbini Sanskrithik Municipality	Area	Sq.m	NA	BES
4	Cold Storage Facility at Tilottama Municipality	Area	Sq.m	35,476	IEE
		Storage	Tons	3,000	

S.N.	Subproject Component	Parameter	Unit	Total Quantity	Environment Study Requirement (EPR,2020)
		Capacity			
		Warehouse Capacity	Tons	5,000	

32. **Other relevant government laws and regulations.** The implementation of subprojects proposed under the project will be governed by government environmental acts, rules, policies, and regulations.

33. Table 2 summarizes the applicable national and local laws, regulations, and standards for environmental assessment and management, including applicable international environmental agreements.

Table 2: Relevant Government Laws and Regulations

S.N.	Policies, Acts, Regulations, Guidelines	Relevant Provisions
1	Fifteenth Five Years Plan, 2020–2024, Nepal	<ul style="list-style-type: none"> Requires all projects to be formulated and constructed based on methods that optimally utilize local skills and resources and generate employment opportunities. Attention is paid towards minimizing the impacts of climate change and protecting environment. It aims to minimize adverse impacts on people, property, culture, environment and economy by disasters. The policy aims to integrate disaster risk management in all development activities in order to reduce loss of people and property.
2	National Transportation Policy, 2058 BS	<ul style="list-style-type: none"> The principal objective of the National Transport Policy is to develop a reliable, cost effective, safe facility oriented and sustainable transport system that promotes and sustains the economic, social, cultural and tourism development of Nepal as a whole. For the attainment of the above through and objectives the following strategies will be followed: (i) The Government shall clearly indicate the limit and scope of work to be done from the central level and take responsibility of transport structure to be constructed from the central level. (ii) Making the decentralized governance system more strengthened and by maximum utilizing the source and means of local level, the development and promotion of transport system shall be done from the local level itself. (iii) Maximum private Sector involvement will be encouraged in the expansion and preservation of the transport system.
3	Forest Act 2076 (2019)	<ul style="list-style-type: none"> Pertaining to the chapter 12, Section 42(1), if there is no other alternative to the using of forest area for the operation of a national priority project, plan of which investment is approved by the Investment Board, project of national pride and it appears from the environment examination referred to in the prevailing law that the operation of such plan does not result in significant adverse effects on the environment, the Government of Nepal may give approval, as prescribed, to use any part of the national forest for the purpose of operating such plan, Similarly, in providing the forest area for the operation of a plan pursuant to sub-section (1), to the extent possible, a land that is adjoining to the national forest area near the project site and

S.N.	Policies, Acts, Regulations, Guidelines	Relevant Provisions
		situated in the same geographical and ecological belt and has such landscape where forest can be developed shall be provided for the purpose of planting trees at least in the area equal to the forest area that has to be used.
4	Forest Regulations, 2079 (2022)	<ul style="list-style-type: none"> • Pertaining to Rule 87 (2) in case of the development project related to the use of forest land, the coordination has to be done with the concerned division forest office during the feasibility study and environmental study. • Rule 88, Application needs to be submitted in case of use of national forest land from the feasibility study and application need to submitted to the Ministry of Forests and Environment through the subjective ministry • Rule 89, following Rule 88, the Ministry of Forests and Environment direct Division Forest Office through its respective department for the detail field information and the that information should also be submitted to provincial ministry. • Rule 90, following Rule 89, Division Forest Office should submit the information with field monitoring (if necessary) to the Ministry of Forests and Environment. The ministry will ensure the use of forest land if the applicable information and letters are received, and give permission to the respective project by binding in the rule's states in the Forest Regulations. • Rule 91, following the Rule 90, after the decision made by the government of Nepal for the permission to use the forest land, development project should make the availability of the applicable land for the forest development as per the Forest Act (2076), Section 42 (2). • Rule 92, following the Rule 91, in case of failure in the availability of the applicable land, it has to go through the Land Acquisition Facilitation Committee in the district level. • Rule 93, following the Rule 92, in case failure of the land acquisition through the Committee respective department should give permission to the project for the Collection of amounts in the government fund as per the land purchases for development project specified in Shedule-51. • Rule 93 (5), the compensation of loss of 1 tree loss should be made with plantation of 10 trees with the amount base on the cost of the trees in the ratio of 1:10 and Rule 93 (5), the amount must include bi-annual production or purchase of trees, trees transportation, afforestation of 1600 trees per hectare, fencing and boundary for the protection of trees and require number of people for look after.
5	Conservation Area Government Management Area Rules 2001	<ul style="list-style-type: none"> • Contains a number of regulatory measures to minimize environmental impacts within the forests, national parks, wildlife reserves and conservation areas. Prior to implementation, the EPA 2076 B.S. (2019 AD) requires a proponent to undertake BES, IEE or EIA for a proposed project and have the report approved by the concerned ministries. The introduction of the exotic species on the specific location may requires an IEE before the implementation of the project as per the EPR, 2020 Appendixes 1, 2 and 3 Rule 3 a, b, and c.
6	Ancient Monument	<ul style="list-style-type: none"> • It was enacted to integrate the conservation and protection of ancient monument and archeological properties. The act mentions

S.N.	Policies, Acts, Regulations, Guidelines	Relevant Provisions
	Preservation Act, 2013 (1956) and Rules, 1989 (and amended till date)	<p>any ancient monuments and artistic objects of hundred years old shall be regarded archeologically important objects and Department of Archeology (DoA) shall preserve such objects.</p> <ul style="list-style-type: none"> As per the Act and rules, works as such excavation, laying of water, sewer lines, repairing road etc., in the monument protection / conservation zone, require prior permission of Department of Archaeology. Application in the prescribed format need to be submitted to DOA.
7	Water Resource Act, 1992	<ul style="list-style-type: none"> Water Resource Act, 1992 of clauses 3, 7, 18, 20, 22 and 24 implies state ownership of any surface/stream bodies of Nepal and stresses the utilization of water resources by any individual or organization without causing harm to others. It embodies that the Government of Nepal can fix, monitor and formulate regulations pertaining to water quality standards, pollution tolerance levels and development of water resources. It prohibits any action that may pollute water resources surpassing the threshold value. It has prioritized use of water resources in the successive order: drinking/domestic use, irrigation, fishery, electricity, water transport, and recreation. It urges that utilization of resources should be carried out without causing any considerable damage to the environment such as soil erosion, floods, landslides and other similar natural hazards. The Act fails to address the license mandatory for the extraction of water even from the land owner.
8	Water Resource Regulation, 1993	<ul style="list-style-type: none"> Water Resources Act was published in Nepal Gazette in (2050/5/1). Persons, who interested to use the water resources on institutionalized basis, may form a consumer's association consisting of at least Seven persons as officials and members. There shall be a Water Resources Committee in each District for the purpose of issuing license pursuant to Sub-section (1) of Section 8 of the Act in order for the utilization of Water Resources contained within Nepal. Government of Nepal, may, giving due consideration for the types, structure, capacity of the project relating to utilization of water resources of the Act, prohibit from using the house or land situated within the area of the project specifying the fixed distance for the site for a specified water resources for the purpose of Sub-section (3)
9	Irrigation Rules, 2000 (Amendment in 2060)	<ul style="list-style-type: none"> Irrigation Rules, 2000 Chapter 2 has the provision of the formation of the user's association in a format as prescribed in schedule –1 and the procedure for the transfer of the project. Under Rule 12, Users' association may plant trees on the side or right of way of a Canal, Branch or Secondary Canal, Minor or Tertiary Canal, Water course or Field Channel after the approval of community forest work - plan according to the prevailing Forest Act and Rules from the concerned Forest Office. In the course of determining the place for plantation there shall be coordination with concerned Irrigation Office. Until the work plan pursuant to Sub rule (1) is approved, Users' Association may sell the rotten or fallen trees lying on the side of Canal, Branch or Secondary Canal, Minor or Tertiary Canal, Water course or Field Channel and the trees which need pruning may be pruned upon the approval of committee. Similarly, under the Chapter 6, there is the provision of irrigation project which shall be constituted to implement the large-scale

S.N.	Policies, Acts, Regulations, Guidelines	Relevant Provisions
		irrigation project as designated by the GoN. It also deals with the function, duties and power of the designated project committee, staff and the establishment of the Project Unit Office.
10	Irrigation Policy (2013)	<ul style="list-style-type: none"> • Irrigation Policy document sets out the rationale for subsector development and policy objectives and approach for project development, water user associations, irrigation service charges and irrigation system operation and maintenance
11	Soil and Watershed Conservation Act, 2039 BS	<ul style="list-style-type: none"> • In order to properly manage the watersheds of Nepal, the Soil and Watershed Conservation Act 1982 was enacted. Section 3 of the Act empowers GoN to declare any area as a protected watershed area. Section 4 of the Act provides that a watershed conservation officer has the authority to implement the following works in protected watershed areas: <ul style="list-style-type: none"> • Construct and maintain dam, embankment, terrace improvements, diversion channels and retaining walls, • Protect vegetation in landslide-prone areas and undertake afforestation programs, and • Regulate agricultural practices pertinent to soil and watershed conservation. • Under Section 10 of the Act, power is extended to the Watershed Conservation Officer to grant permission to construct dams, drainage ditches, canals, cut privately owned trees, excavate sand, boulders and soil, discharge solid waste, and establish industry or residential areas within any protected watershed. The Act outlines the essential parameters necessary for proper watershed management (including rivers and lakes). The Act is applicable to protected watersheds.
12	Soil and Watershed Conservation Regulations, 2042 BS	<ul style="list-style-type: none"> • In exercise of the powers conferred by Section 25 of the Soil and Watershed Conservation Act 1982, the Government of Nepal has framed Soil and Watershed Conservation Regulations, 2042 BS. Pursuant to sub-rule (1) of rule 10 natural calamity clause (a), (b), (c), (d), (e), (f), (g) of section 10 of the Act and (h) if anyone has to do the work mentioned in the reason to do so. An application has to be submitted to the Watershed Conservation Officer in the format of open schedule 4 (2) After receiving the application as per sub-rule (1), the watershed protection officer in case of any action contrary to the purpose of the Act, in the format of Schedule 5 as per schedule. will allow.
13	Water Induced Disaster Management Policy 2015 (2072)	<ul style="list-style-type: none"> • The latest policy of Government of Nepal which recognizes the climate change as one of the main causes for the water induced disaster in Nepal. • This policy is introduced to achieve the objectives of the National Water Resources Strategy and National Water Plan on water induced disaster management sector through participation and coordination of public, cooperatives and private sector institutions. It encourages people to participate with voluntary contribution of land for flood protection works. • It has the main objective of making the infrastructures sustainable and has the policy on involving communities, cooperatives and private sector. It stresses the need for medium and long-term disaster prevention and control programs and make them climate resilient and environment friendly.

S.N.	Policies, Acts, Regulations, Guidelines	Relevant Provisions
14	Land Acquisition Act, 2034 BS (1978AD)	<ul style="list-style-type: none"> Government can acquire land at any place in any quantity by giving compensation pursuant to the act for any public purposes or for operation of any development project initiated by government institutions.
15	Labor Act, 2074 (2017 AD)	<ul style="list-style-type: none"> This labor Act was made under the management of parliament under sub-clause 1 of clause 296 of Constitution of Nepal. Sub-section 3 of Section 2 states that the employees should not be compelled to other work other than they are assigned for. In addition, Sub-section 5 of Section 2 states about prohibition of child labor in any organization and sub-section 6 of Section 2 states that there should not be any kind of discrimination among the employee's regard of religion, ethnicity, gender, origin, language or intelligence or other kind of characters.
16	Child Labor (Prohibition and Regulation) Act, 2056 (2000 AD)	<ul style="list-style-type: none"> As per section 3 of this act, no child having not attained the age of 14 years shall be engaged in works as a laborer.
17	Solid Waste Management Act, 2068 (2011 AD)	<ul style="list-style-type: none"> This act has been formulated with a goal of minimizing solid waste production from the target area by setting rules and regulation on solid waste management (SWM) in the country in order to develop better environment for the systematic and effective management of solid waste and to involve all the concern stakeholders in SWM practice. The main features of this act are discussion of 3R principle (Reduce, Reuse and Recycle). 3R principle seems to be very beneficial as it not only increases the life of landfill site but also save the money, which could be used for other infrastructure development. Section 4 of the act assign the local body to manage or use the solid waste discharged or dumped in collection center, transfer station or treatment plant or collected during cleaning.
18	Solid Waste Management Rules, 2070 (2013 AD)	<ul style="list-style-type: none"> The solid waste management rule was formulated as per the provision made in article 50 of the Solid Waste Management Act, 2068. This regulation has emphasized the segregation of waste at source, and mentioned that the responsibility of proper disposal, and management of source belongs to the producers themselves. Section 3 of the rule describes the segregation, and management of solid waste. It has been mentioned that it is essential to segregate degradable, and non-degradable solid waste at the source.
19	The National Parks and Wildlife Conservation Act, (1973AD)	<ul style="list-style-type: none"> This Act deals with the conservation and management of wildlife and habitat. The Act restricts entry into national parks without prior permission of the concerned authority. Hunting of animals or birds, building or occupying houses, shelters or structures, occupying, clearing or planting or growing in any part, cutting, felling, removing or overshadowing any tree and removing any quarry or any other activities in national parks are banned. Wildlife Reserve Regulation, 1977, entry, construction of houses or sheds, clearance of forest and forest products, quarrying and overnight stay in a reserve area is prohibited unless authorized in writing by the relevant GoN authority. Buffer Zone Management Regulation, 1994, clearance of forests and forest products, acquisition of land, use of quarry sites and hunting in buffer zones is restricted unless written approval of the relevant GoN authority is obtained.

S.N.	Policies, Acts, Regulations, Guidelines	Relevant Provisions
20	Local Self Governance Act (1999AD)	<ul style="list-style-type: none"> This Act gives Local Government the functions, duties and power to, among others; (i) conserve and protect their local environment and natural resources; (ii) plan, implement and / or operate and maintain local water supply projects; (iii) implement and / or arrange for implementation local sanitation / sewerage and drainage projects; (iv) protect cultural heritage and religious sites and / or (v) monitor project activities within their jurisdictions.
21	National Tourism Act (1978AD)	<ul style="list-style-type: none"> This Act facilitates to increase tourist arrival in the country and encourages tourists and their handling agents in Nepal to minimize environmental impact during their visit. The Act also shows serious concerns about visitors' health, facilities and welfare and empowers the Government to generate tourism revenue and establish plough-back mechanism for tourism infrastructure development.

C. International Environmental Agreements

34. Table 3 below lists of the international environmental agreements that Nepal is party to, and their relevance with WUC Project.

Table 3: International Environmental Agreements and standards ratified by GoN

International Convention	Year*	Relevant Provisions	Remarks
World Heritage Convention	1978	Parties to ensure the protection and conservation of the cultural and natural heritage situated on territory of, and primarily belonging to the State. World Heritage sites are identified as per this convention.	The project components will not impact physical cultural resources and natural heritage during project implementation and operation.
Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention)	1987	Parties to conserve and wisely use wetlands (i.e., maintaining their ecological character) as a contribution towards achieving sustainable development locally and throughout the world. This convention will identify the Ramsar areas.	The project components are not located in wetlands as classified as Ramsar site.
Convention on Biodiversity (CBD)	1992	Parties to require the environmental assessment of projects that are likely to have significant adverse effects on biological diversity with a view of avoiding or minimizing such effects. The CBD also identified the biodiversity identified the hot spot areas.	The project will not impact biodiversity hot spot area in the country.
UN Framework Convention on Climate Change	1992	Parties to take precautionary measures to anticipate, prevent or	The project will help the Government of Nepal comply with this agreement.

International Convention	Year*	Relevant Provisions	Remarks
		minimize the causes of climate change and mitigate its adverse effects.	The project will ensure implementation of resilience of farmers to climate change improved.
Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and their Disposal	1996	Parties to, among others, minimize the amount and toxicity of hazardous waste generated, manage the hazardous and other wastes they generate in an environmentally sound manner and as close as possible to the source of generation.	The project will ensure implementation of its EMP as measure to avoid or minimize the generation and disposal of any hazardous wastes.
Convention on International Trade in Endangered Species of Wild Fauna and Flora	1975	Parties to control the trade of certain wildlife species to prevent further endangering of their survival. CITES classifies species according to the following criteria viz., species threatened with extinction; species which could become endangered; and species that are protected. Nepal is rich in biodiversity and has number of protected species	IBAT reports are generated for all project components to ensure the conservation and protection of endangered species of wild fauna and flora.
International Labour Organization (ILO) Convention of Indigenous and all Peoples	2007	Highlights the need to recognize indigenous and tribal people's specific knowledge, skills and technologies as the basis for their traditional economies and self-determined development process.	Applicable to projects where indigenous and tribal peoples are present.

*(Year) - Year last amended.

D. Applicable Environmental Standards

35. **National Ambient Air Quality Standards for Nepal, 2003.** As shown in the table below, the air quality standards for Nepal have set standards for 7 parameters: total suspended particles (TSP), PM₁₀, Sulphur Dioxide (SO₂), Nitrogen Oxide (NO₂), Carbon Monoxide (CO), Lead (Pb) and Benzene. The World Health Organization (WHO) Air Quality Guidelines has set quality standards for 4 parameters PM₁₀, PM_{2.5}, SO₂ and NO₂. According to ADB SPS 2009, when host country regulations differ from international levels and measures, the project will achieve whichever is more stringent. Both policies provide guidelines and comply with the more stringent standards during construction period.

Table 4: Standards for Ambient Air Quality

Parameter	Averaging Period	Nepal's Ambient Air Quality Standard ($\mu\text{g.m}^3$) *	WHO Air Quality Guidelines ($\mu\text{g.m}^3$) **	
			Global Update 2005	Second Edition^ 2000
TSP	Annual	-	-	-
	24-hour	230	-	-
PM ₁₀	Annual	-	20	-
	24-hour	120	50	-
PM _{2.5}	1-year	-	10	-
	24-hour	-	25	-
SO ₂	Annual	50	-	-
	24-hour	70	20	-
	10-minutes	-	500	-
NO ₂	1-year	40	40	-
	24-hour	80	-	-
	1-hour	-	200	-
CO	8-hour	10,000	-	10,000
	15-minutes	100,000	-	100,000
Pb	1-year	0.5	-	0.5
Benzene	1-year	20	-	-

Source: *National Ambient Air Quality Standard for Nepal, 2003. Obtained from Environment Statistics of Nepal, 2011, National Planning Commission Secretariat, Central Bureau of Statistics, Nepal. **Environmental, Health and Safety General Guidelines, 2007. International Finance Cooperation, World Bank Group.

^Air Quality Guidelines for Europe, Second Edition, 2000. WHO Regional Office for Europe, Copenhagen.

36. Emission standard for diesel generator EPR-14, 2020. The emissions standards set for new DGs imports is equivalent to Bharat Stage III standards, and for in-use DGs is equivalent to Bharat S Inventories and Black Carbon Emissions in Kathmandu Valley, Nepal. Emissions standards are set for 4 major pollutants: CO, HC, NO_x, and PM.

37. National Noise Standard Guidelines, 2012. The guidelines have set the standards for noise levels, measured in dBA, for industrial, commercial, rural residential, urban residential, mixed residential and quiet areas. It also has provision of standard values for the noise level generated by water pumps and DG as well.

38. For international standards, WHO Noise Level Guidelines has set the noise levels measured in dBA for two areas residential and commercial areas. The project will achieve whichever is more stringent. Both policies provide guidelines to follow and comply with the more stringent standards during construction period.

Table 5: Standards for noise levels for both GoN and WHO

Receptor/Source	National Noise Standard Guideline 2012 (dBA)		WHO Guidelines Values for Noise Levels Measured Out of Doors*(One Hour LA _q in dBA	
	Day	Night	07:00-22:00	22:00-07:00
Industrial Area	75	70	70	70
Commercial Area	65	55		
Rural Settlement Area	45	40	55	45
Urban Residential Area	55	50		
Mixed Residential Area	63	55		
Quiet Area	50	40	-	-
Water Pump	65		-	

Receptor/Source	National Noise Standard Guideline 2012 (dBA)		WHO Guidelines Values for Noise Levels Measured Out of Doors*(One Hour LA _q in dBA	
	Day	Night	07:00-22:00	22:00-07:00
Diesel Generator	90		-	

*Guidelines for Community Noise, WHO, 1999

III. DESCRIPTION OF THE PROJECT

39. Description of subproject components under the URLIP proposed in five WUC municipalities of Tilottama, Devdaha, Saina Maina, Lumbini and Sidharthnagar provided in this section. These details are based on the preliminary designs of roads and drains, and feasibility study /conceptual designs of bus terminal, municipal building and cold storage facilities. These will be finalized with detailed site surveys and investigations as needed during the detailed design. This IEE report will be updated with detailed designs to reflect any changes.

A. Tilottama Municipality Subprojects

40. The details of four components proposed in Tilottama Municipality are as follows.

41. **Driver tole-Shivapur Road** - The road starts from Driver Tole which is connected with Siddhartha Highway at one end and Sukhaura Khola Bridge on another end which ultimately joins to East-West Highway. The total road length is 6.81 km. The road alignment is blacktopped with few graveled roads section. The road passes through Ward no 1, 8 and 11 of Tilotamma Municipality. The ROW of road is 13 m, but from Driver Tole to Namuma Tole (From Ch: 0+000 to Ch: 3+000), the RoW is 11.5m. The existing road width varies from 6-10m. There are also existing canals at roadsides of the alignment. In case of existing canal sections, the road cross sections will vary as dismantling of canals are not recommended. The end part of about 800 m, drain is already constructed. It passes through 4.77 km of settlement area and 2.04 km of agricultural land with sparse settlement.

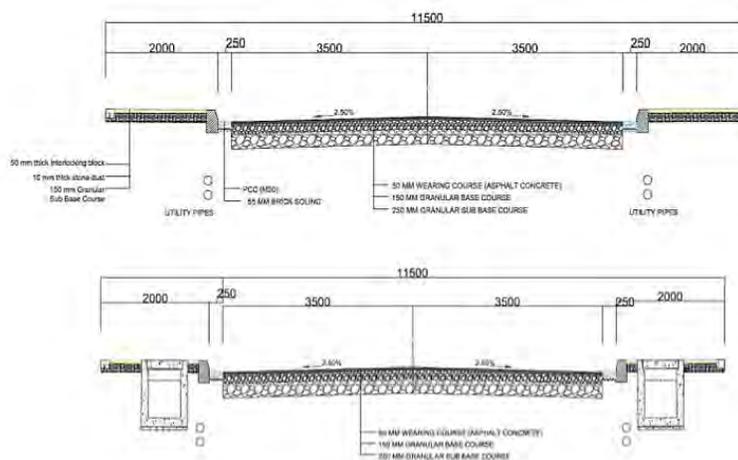
Table 6: Existing Condition and Proposed Scope of the Drivertole – Shivapur

SN	Elements of component	Existing Scenario	Proposed Scheme
1	Length of Road	6.81 km	6.81 km
2	Right of Way (ROW) Declared by municipality	13m but Row is 11.5 m in selected section (Driver Tole to Namuna Tole)	13m but Row is 11.5 m in selected section (Driver Tole to Namuna Tole)
3	Total Road Width	6 to 10 m	11.5 m (Along the existing canal sections total road width varies)
4	Carriageway	Average 8 m	7.5 m
5	Pavement type	Blacktopped with few graveled roads section	Double lane upgradation with the 50mm surface course of asphalt concrete, 150mm of base course and 250mm of sub base course with proper grade and camber
6	Side Drain	-10m of Side Drain along the left side of road. -232m of covered Drain along the left side of the road. -331m of covered Drain along the right side of the road.	PCC surface drain of width 0.25m (included in carriage way width) Storm water drain size of Type A –0.45 X 0.65m Storm water drain size of Type B –0.6 X 0.8 m Storm water drain size of Type C-

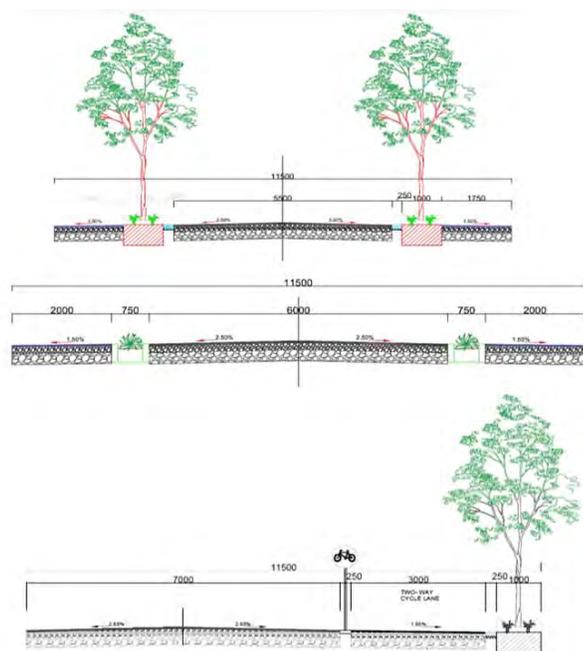
SN	Elements of component	Existing Scenario	Proposed Scheme
		-66m of Side Drain along the right side of the road. During heavy rainfall, Pluvial flooding in few road sections where road is graveled and blacktopped is damaged Water doesn't flow to drain due to no proper camber slope at some sections	0.75 X 0.95 m
7	Cross drainage Structures	-10 Nos Pipe Culverts -6 Nos Side Hume Pipes -8 Nos Slab Culverts -11 Nos of Side RCC Slabs	15 Hume-pipe culverts 12 slab culverts Existing Slab culverts needs to be dismantled and reconstruct Rehabilitation of existing side pipe crossings and slabs in order to make double lane
8	Protection works	Retaining walls at some locations	Retaining wall/slope protection measures as per requirement.
9	Utility	All wires and cable are hanging above ground and are in unmanaged condition	Shifting of electric poles and telephone poles with coordination with municipality.

Source: Feasibility Study Report, 2023

Cross-Sectional Elements



42. **Cross-sectional Elements:** For sections where footpaths are not obligatory, cross sections with cycle track and verge can be provided as shown in the figure below:



Source: Feasibility Study Report, 2023

43. **Pathardanda-Tinau Road** - This road starts from Pathardanda of Ward no. 15 and ends to Tinau River Bridge of ward no. 14 of Tilottama Municipality connecting Siddhartha Highway to Siyari Rural municipality. The majority of road alignment sections is blacktopped. The road alignment passes through Ward no. 15, 13 and 14 of the Municipality. The existing road width varies is 8 m - 12 m. It passes through 3.0 km of agricultural land at left side and other remaining parts are settlement area.

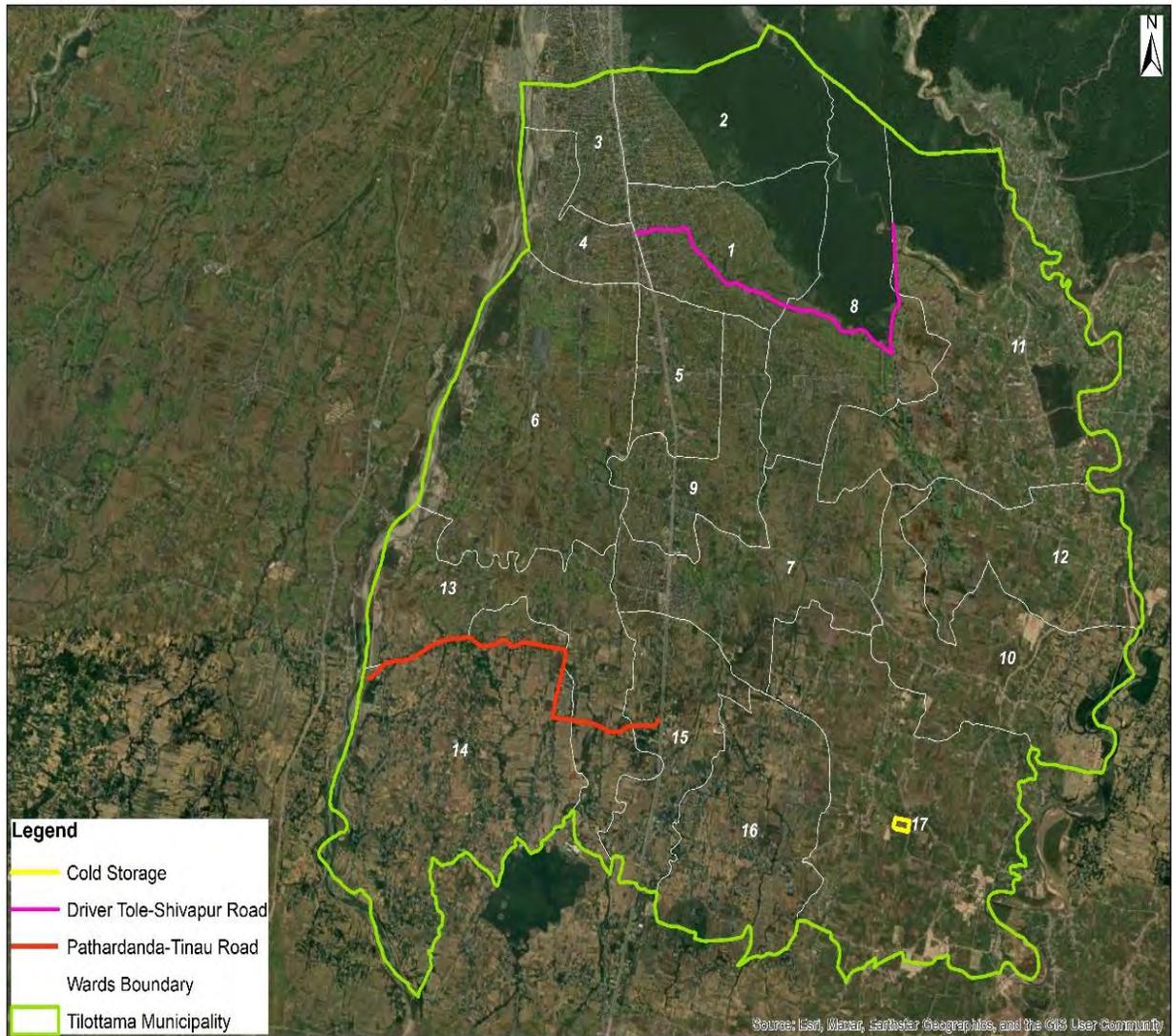
Table 7: Existing Condition and Proposed Scope of Pathardanda -Tinau Road

SN	Elements of component	Existing Scenario	Proposed Scheme
1	Length of Road	6.36 km	6.36 km
2	Right of Way (ROW) Declared by municipality	15 m (11 m site cleared road)	15 m Road width designed is 11.5 m including footpath
3	Total Road Width	8 to 12 m	11.5 m
4	Carriageway	Average 10 m	7.5 m
5	Pavement type	Majority Section is Blacktopped (DBST)	Double lane upgradation with the 50 mm surface course of asphalt concrete, 50 mm DBM, 150 mm of base course and 250 mm of sub-base course with proper grade and camber slope
6	Side Drain	-1314m of side drain on the left side of the road -28m of the covered drain on the left side of the road -232.33m of side drain on the right side of the road -20m of covered drain on the right side of the road	PCC surface drain of width 0.25m (included in carriage way width) Storm water drain size of Type A – 0.45 X 0.65m Storm water drain size of Type B – 0.6 X 0.8 m Storm water drain size of Type C – 0.75 X 0.95 m

SN	Elements of component	Existing Scenario	Proposed Scheme
		No Pluvial flooding in road surface Water logging in cultivation lands in roadsides	
7	Cross drainage Structures	-11 Nos of Pipe culverts -7 Nos of Side Hume Pipes -14 Nos of Slab culverts -1 No of Side RCC Slabs	14 Hume-pipe culverts 9 slab culverts to be dismantled and re-construct. -Rehabilitation of existing side pipe crossings and slabs in order to make double lane
8	Protection works	Retaining walls at some locations	Retaining wall/slope protection measures as per requirement.
9	Road furniture (streetlights, delineators etc.)	Only in some sections	Streetlights of height 9 m @ 25 m interval.
10	Utility	All wires and cable are hanging above ground and are in unmanaged condition	Shifting of electric poles and telephone poles with coordination with municipality.

Source: Feasibility Study Report, 2023

Figure 3: Location of Subprojects in Tilottama Municipality



Source: Google Earth and Department of Survey-Nepal, 2023

44. **Cold Storage Component.** The proposed site for cold storage is located in Ward-17, Gangoliya of the Tilottama municipality. Geographically the proposed location is situated at $27^{\circ}34'15.41''\text{N}$, $83^{\circ}30'39.23''\text{E}$ at an average elevation of 118m above MSL. It lies at a distance of 4.6k m from Kotihawa, the nearest place on the Siddhartha Highway. The project site is proposed in government land surrounded by the farmland. The total area is 32,760 m². The components of the cold storage are Cold Storage (30,000 ton), Warehouse (40,000 ton), Administration office building with canteen and dormitory, guidepost, engineering house, and wholesale shops. The Tilottama Municipality started the project by black toping the road to the site and the rest of the access road will be paved as part of this project. The estimated length of the road is 250 m.

Table 8: Proposed Scope for Cold Storage

No.	Building name	Size(width*Length*height)	Floor	Function
1	Cold Storage (30000 MT)	65.4m x 38.45m x 5.2m	2	5 chambers for cooling products
2	Warehouse (40000 MT)	71.1mx 25.45mx 7.0m	2	Stored dried products
3	Administrative office	13.4m x 15.2m x 3.3m	1	Roof Terrace available
4	Canteen building	12.85m x 8.7m x 3.2m	1	Food, drinks services
5	Dormitory building	25.0m x 10m x 5.5m	2	Employees' accommodation
6	Director's quarter	9.6m x 8.1m x 5.4m	1	Accommodation for director
7	Retail shops	26m x 7.9m x 4.05m	1	Selling products
8	Electric Substation	Electricity Supply from National Grid		Power supply
9	Water Supply	Onsite Borewells		Water Supply
10	Control Center with mechanical equipment	21m x 10.45m x 3.05m	1	Cooling system
11	Guard post	4.05m x 4.05m x 2.5m	1	Security guarding
12	Toilet with septic tank	9.5m x 6.0m x 3.45m	1	
13	Compost plant	20m x 10 m		
14	Sports area	38m x 25m		Two badminton courts and gym device
15	Park with pond	Area=1,300 m ² . Depth=0.8 - 1.0m		
16	Parking for freight truck and staff, visitors	16 parking for truck, 10 parking for vehicle, 20 parking for motorbike		

Source: Feasibility Study Report, 2023

45. **Products to be Stored:** The major vegetables and fruits found in Tilottama and surrounding areas will be stored in the cold storage. The main agricultural products of Rupandehi district are: mango, bananas for fruits, tomato and potatoes, cauliflower, cabbage, onions, radishes, and lentils for vegetables and grains. These should be stored in cold storage. The average amount of those ago-products is gained for the last five years production and the estimated amount table is shown as flows. The stored amount is estimated as 40% of average yearly amount.

Table 9: Agricultural produce to be Stored in Cold Storage

No.	Agro-product	Stored period (weeks)	Harvest Season In Terai	Stored temperature	Average yearly production	Stored Amount (Ton)
1	Potato	24-26	Feb.-Mar.	3-4°C RH 85-90%	51,180	20,000
2	Mango (Unripe)	2-3	Jun-July	5°C RH 85%	3,462	1,400
3	Banana (Green)	2-3	Feb.-Sep.	13-14°C RH 90-95%	9,100	3,600
4	Cauliflower	3-4	Nov.-Feb.	0 °C RH 90-95%	20,166	8,000
5	Cabbage	12-16	Nov.-Feb.	0-2°C RH 90-95%	16,903	6,700
6	Tomato	1-4	Aug.-Oct.	12-15°C RH 85-90%	7,590	3,000
7	Onion	28	Apr.-May	0°C	7,864	3,100

No.	Agro-product	Stored period (weeks)	Harvest Season In Terai	Stored temperature	Average yearly production	Stored Amount (Ton)
				RH 70-75%		
8	Radish	8-16	Nov.-Mar.	0°C RH 90-95%	7,733	3,100
9	Lentils	1-2	Feb.-Mar.	7-10°C RH 85-90%	7,432	3,000

46. **Operation.** Due to the large quantity of product stored at one time, the cold storage and warehouse should be operated with forklifts to move and store products. The ideal layer for a store is two floors. Since the forklift lift standard height is 3.0m, the preferred height of the ground level will be 2.5 m and the first-floor height will be 2.7 m. The cold storage consists of 5 chambers, in which each will be kept at a different temperature according to the product. Each chamber will be controlled by thermal sensors, which can be operated and managed in the main control center. Together with the mechanical forklift, the manual pallet jack would be used together.

47. **Power supply:** The power supply will be managed from the national grid line. The electricity distribution line is at 250m distance from main road. The electric substation with transformer will be established within the project site and make continuous power supply. Besides NEA power there will be back-up provision with required capacity of generator during power-cut-off

48. **Water Supply:** The water source will be the boring with pumping, that will be established within the site. The water will be treated and purified before used for the cold storage purposes.

49. **Flood Protection.** The site is in a plain area at 119 meters above sea level, which is prone to flooding. The surrounding farming area floods 1 to 2 times in a 10-year period. The site can be raised to a certain level to prevent flood damage. If the whole site is lifted to 1.0 m above ground level, the earth work cost will be estimated to be significantly higher than the normal design approach. Thus, the whole site will be elevated to 0.5 m and the buildings of cold storage and warehouse will be elevated to 0.7 m in order to prevent damage caused by flooding.

50. Following are the construction features of Cold Storage per feasibility study, these will be reviewed and finalized during the detailed design.

- (i) **Foundation:** Superstructure and Foundation which may be among conventional Footing Type, Pile Foundation, Raft Foundation. The design shall meet the NBC standards and seismic zone norms for earthquake proof designs.
- (ii) **Cold chamber:** Multi commodity cold stores facilities for short term storage / transit storage which are provided with separate pre-cooling chambers generally have storage capacities ranging from 30 MT to 150 MT depending on frequency of container loading.
- (iii) **Ante Room:** The cold rooms should be provided with at least one common ante room area to avoid direct infiltration of warm ambient air into the cold rooms. The ante room also serves as warm-up chambers for produce stored so they do not get wet due to condensation on unloading for dispatch.
- (iv) **Walls:** 230 mm Brick walls / solid concrete blocks with sand- cement plaster. However, in RCC structure or pre-fabricated structure, insulated panel boards may also be provided in place of masonry walls.

- (v) **Roof:** RCC slabs or Truss Roof with G. S / Pre-coated G.S. Sheet cover. RCC slab to have proper water proofing with reflective color paint / Chi na mosaic finish. Slab to have proper slope for rain water drainage.
- (vi) **Partition walls:** All walls are to be 230 mm thick with minimum 25 mm thick plaster on both sides. After curing of the plaster insulation of wall, ceilings and floor is carried out. Thermocol or expanded polystyrene, cork is widely used for insulation. PUF panels are available to insulate the cold storage.

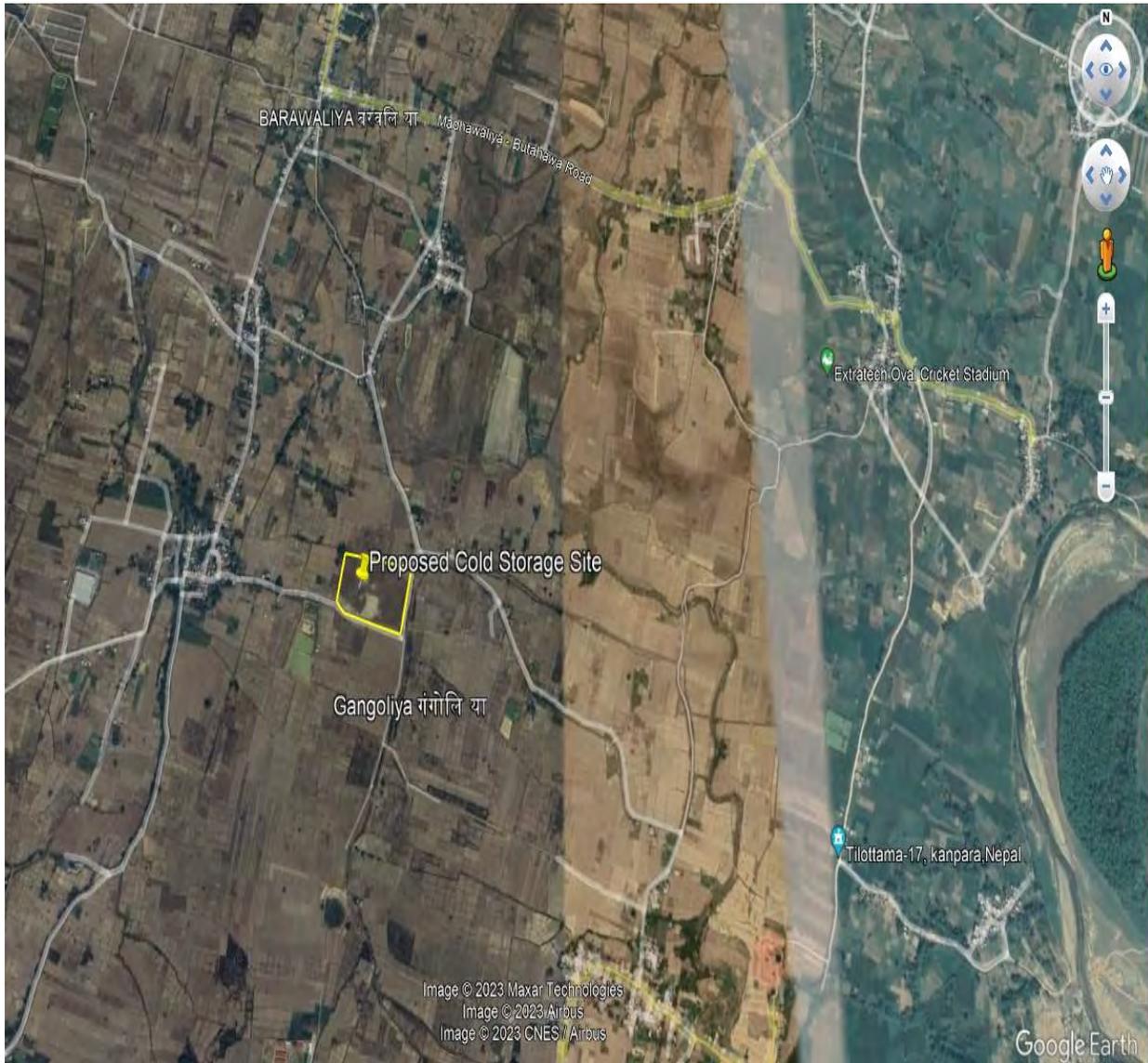
51. **Cold Storage Access Road.** The proposed cold storage site is located 1.32 km from Madhwaliya-Bhuthawa road section at Bhuthawa which is a graveled road. Access from Siddhartha Highway is at a distance of 4.6 km. Under the project, it is proposed to improve the 4.6 km access road.

Figure 4: Location of Proposed Cold Storage Site & Access Roads



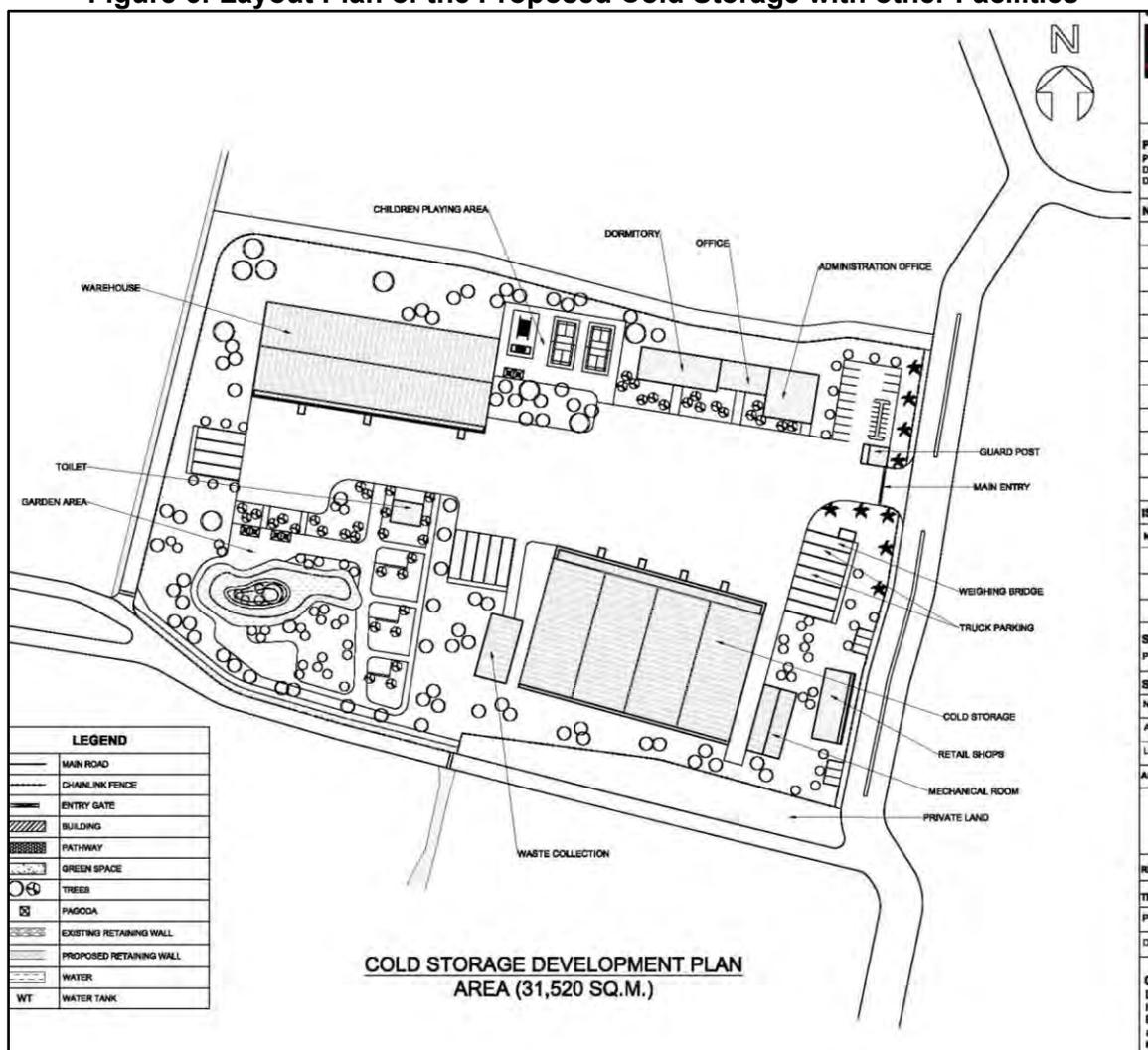
Source: Google Earth, 2023

Figure 5: Location of Proposed Cold Storage Site & Access Roads



Source: Google Earth, 2023

Figure 6: Layout Plan of the Proposed Cold Storage with other Facilities



Source: Feasibility Study Report, 2023

B. Siddharthanagar Municipality Subprojects

52. The proposed subprojects lie in the Siddharthanagar Municipality of Rupandehi District. The components are construction of road, drainage, footpath and road furniture in 27 road sections covering 23.7 km within the Municipality. Brief description of each section is as follows.

53. **Simapath-Ranigaun-Sakuni_road (0.82 km)** - The Simapath-Ranigaun-Sakuni_Road Road is regarded as a significant transportation route starts from Sakuni path and ends at Simapath. The entire road section lies in ward no 1. The ROW of this road is 8m. The existing road is gravel Road up to CH 0+700 whereas from CH 0+700 to end, the road is black topped. There is not any existing drain up to Ch 0+700, however a new drain is being constructed at the end section of this road. The drainage flow direction is from Sakuni path to the end.

54. **Sakunipath to Danda khola Road (0.725 km)** - The proposed road starts from Sakuni path and ends at Danda khola with minimal settlement and road is also proposed to link Danda Corridor Boating station. The ROW of this road is 8m. The existing road is a graveled without drain facilities. The majority of the proposed road area sides is cultivation area; this. The drainage

flow direction is from Sakuni Path to end. The road passes through the government office (Jal Tatha Mausam Bigyan Karyala) on the left side of road. There are altogether 11 Junctions on this road.

55. **Bimaanghat to North (0.902 km)** - The Road starts from Bimaanghat and ends at Lumbini road (Feeder Road). This road is located at ward No. 4. The ROW of this road is 18m. There is an existing canal crossing at the road section. The existing slab culvert over the canal is 6.2x12.1m. There is no existing drain. There is a settlement area, but the road is clear. The road serves as a lifeline for the local population, enabling them to access essential facilities such as healthcare, education and employment opportunities.

56. **Rahim Path 1(0.171 km)** - The Road starts in between from Amar path. The ROW of this road is 7m and lies in ward no 6. The Existing condition of road is poor having no drainage system. The road passes through the dense settlement area.

57. **Rahim Path2 (0.168 km)** - The Road starts in between from Amar path and lies in ward no 6. The ROW of this road is 7m. The Existing condition of road is poor. There is collector drain of 1.5m width at right side design by RUDP and small brick masonry drain at left side of the road.

58. **Bhimkaali Path (0.519 km)** - The Road starts from Bhimkaali Path adjoining Siddhartha Highway and passes through the dense settlement area. The existing condition of the road is poor, although there is drain at right side. The drainage water flows from start to end and the road. The scarifying of premix carpet is required. The existing road width varies from 7 - 8.5m.

59. **East of Gallamandi to Durga Colony (New Colony Road) (0.580 km)** - This road is a short but important transportation route connecting the east of Gallamandi to the Durga colony road. The road lies within ward 13 boundary having densely populated area. The ROW of this road is 7m. In this section there are two roads parallel at IUDP canal line and one road is dead end. The Existing condition of road is poor, and it is earthen road. There is no existing drainage system. There is heavy Settlement area.

60. **Udhyog puri road (Buddha Colony) (0.710 Km)**: Udhyog Puri Road is a prominent thoroughfare in Siddharthanagar, known for its commercial activities and the presence of various industries and businesses. The road is lined with shops, offices, and factories, contributing to the economic development of the area. The existing road is graveled without drainage system. Junction improvement is required in this road section.

61. **Radhakrishna, Annapurna path all linked roads (1 KM)** - Radhakrishna and Annapurna Path are connected roads located in Siddharthanagar Municipality ward no. 1. They form part of a network of roads in the area, linking various neighborhoods and establishments. The combined length of the linked roads is 1 km. The road starts from Siddhartha Highway near by Nepal-India boarder (boarder 300m distance) and ends at RUDP road. The ROW of this road is 7m. The existing road is an earthen road. There is newly constructed 130m length and 3.6m width of RCC road. There is no proper drainage system.

62. **Benipur East South Boarder Road (0.892 km)** - Benipur East South Boarder Road is 0.892 kilometers in length and serves as an important route in the area. The road lies in ward 1 of Siddharthanagar municipality and half of the road section pass through Rohini Rural Municipality. The road starts from Benipur and ends at Nepal India Border. The ROW of this road is 8m. The road passes through cultivation area. The existing condition of road is poor, and it is earthen road. There is no drainage system. There is very low settlement area.

63. **Ward no 2- Ward no 4-connecting road (0.892 km)** - The Road starts from Meodihawa and ends at airport corridor road. The road lies in ward 2. The ROW of this road is 12m. This road proposed for airport corridor link up road. The road is completely Gravel Road. From chainage 0+000 to 0+175, there is brick masonry drain of sized 1.5x0.75m at both sides. The Existing Road width is 9.7m. The road passes through cultivation area with minimal settlement.
64. **Darkhasuwa West Siddhartha Yatayat (0.892 km)** - The road starts from Siddharth highway and ends at Laxmi path. The road lies in ward 3. The ROW of this road is 7m and 8m as per provided plan. There are four parallel road sections proposed I this road stretch.
65. **Siddhartha Colony/Manmohan Path (1.2 km)** - The colony road passes through different parallel roads in this section like Manmohan Path, Pragati Path, Shiva Path, Siddhartha Path and Mayadevi Path. The road lies in ward 3. The ROW of this road is 7m. The Existing condition of road is poor and it is earthen road. There is no existing drainage system. There is Average Settlement area. Shifting of one Transformer is required. Dismantling of six building boundary walls is required. One Buddha statue junction improvement is required in Siddhartha colony.
66. **Sugarmill Link Road (3.432 km)**- The Row of the road is 10.5 meters with the middle horizontal section having the same width as the remaining portions. This road is at ward 4. The drainage water outflow needs to be planned at each junction point along the Bimanghat to North Road. The current road width is 8 - 10 meters. Due to being situated in a low-lying area, there is an existing issue with drainage on the road. The road's condition is poor. There is no drainage system in place, and there are areas where settlement occurs on average.
67. **Maya Devi Colony (1.033 km)** - The Road lies in ward 4 with 7m and extends from Lumbini Road to Mayadevi Colony. The existing earthen road width is slightly wider at 7.1 meters without drain facilities. There are no existing drains along the road. Additionally, electric poles need to be shifted on both sides of the road at a distance of 30 meters. Furthermore, the relocation of one transformer is necessary. It is important to note that the area where these activities will take place is commercially developed.
68. **Durga Colony all linked road to Nirwana Hotel (1.399 km)** - The road begins at RUDP Road and ends at Durga Mandir. The Road lies in ward 13. The Row of the road is 7 meters. Currently, the road is in poor condition and the existing road is earthen. There are few drain sections present along the road. There are three parallel roads in the vicinity. The settlement area in this region is moderate, indicating a moderate level of development and population density.
69. **Kishorpur to Airport Road (0.426km)** - The road begins at RUDP road at Alpha and Omega Chowk and ends at Airport Corridor Road. The Road lies in ward 2 and 6. The road has a right of way (ROW) of 9 meters. Currently, it is an earthen road and is in poor condition. There is an existing drain on the left side of the road at the beginning of the road. The existing road width is 8 - 10 meters, providing a relatively wider path. Additionally, there is extensive cultivation throughout the chainage of the road, indicating a high agricultural presence in the area.
70. **Trisuli –Path, Deurali-path, Saptarishi- path (0.634 km)**: This road comprises of three different urban roads: **1 Trisuli path (0.634 km)**: The road starts from the Siddharthanagar Ward office 7 and ends to JanakPath-12. The Road lies in ward 13. The Row of road is 6m. The existing road is an earthen type road and the settlement is good. There is no existing drain on the road. **Deurali – Path (0.230 km)** The road starts from JanakPath-12 and end at Durga Mandir, Dandagau. The Road lies in ward 13. The Row of road is 7m. The Existing Road is a blacktopped road with drain on both side of road. Drain cover should be provided also; it needs scarifying. The condition of the drain is good. The settlement area is very high. **Saptarishi – path (0.127 km)**

The road starts from Himali path and end at Gargi path. The Row of road is 6m. The existing road is Black topped road. The Road lies in ward 7. There is an existing drain on right side of road without cover slab. The settlement area is very high.

71. **Uchami Path to South (Way to Dhurva Adhikari) 0.607 km** - The road begins at Uchami Path and ends at the southern part of the road. The Road lies in ward 8. It has a right of way (ROW) width of 7 meters. Currently, the road is in poor condition and earthen. The settlement in this area is very low, indicating a sparse population. As part of the project, one boundary needs to shift. Furthermore, there is an existing canal perpendicular to the road, measuring 4.8 meters in width. The area surrounding the road has a significant cultivation area, suggesting that agriculture plays a prominent role in this region.

72. **Abhay Durga Path (0.333 km)**- The road begins at Modern Public School, located on the left side of the road, and ends at a link road called Sachin Path. The road lies in Ward no 8. Along this road, there are three link roads, with the other two being perpendicular to the main road. The right of way (ROW) for the road is 6 meters. Currently, the road is an earthen type road. There are existing drains on both sides of the road, extending from the starting point to the box road, but they lack drain covers. The existing road width, including the drains, is 7 meters, but the actual road width is 5.2 meters. To improve the road, it is necessary to lower the road and drain levels. Additionally, the settlement area along this road is high, indicating a densely populated and developed region.

73. **Dumdumuwa Road to Gonahiya Road - 1.167 km.** The road starts from Prabat Path, which is an existing RUDP road, and extends to Dumdumuwa. The Road lies in ward 9. This road alignment is a completely new route designed to connect with another RUDP road. The right of way (ROW) for the road varies, with sections having a width of 7 meters and others having a width of 8 meters, as per the provided plan. The purpose of this road is to establish a transportation link between Prabat Path and Dumdumuwa, benefiting the local residents and visitors in the area. Dumdumuwa and Gonahiya are smaller towns or localities located within or near Siddharthanagar. This road likely serves as a crucial commuting route between these areas and potentially connects to other major roads or highways.

74. **Doghari Gaau East Chowk to Sahari Bikash Sadak 1.373 km** - The road starts from Doghari Gaau and extends to Bhujauli-Sishwa Road. The Road lies in ward 10 & 11. The right of way (ROW) for the road is 10 meters. Doghari Gaau East Chowk and Sahari Bikash Sadak are both locations within Siddharthanagar. Doghari Gaau East Chowk is likely an intersection or junction within the Doghari Gaau area, while Sahari Bikash Sadak refers to a road associated with urban development. The road currently has a blacktopped (pre-mix) surface, indicating a higher quality road compared to an earthen or gravel road. There are no existing drains along the road. The traffic volume on the road is not heavy.

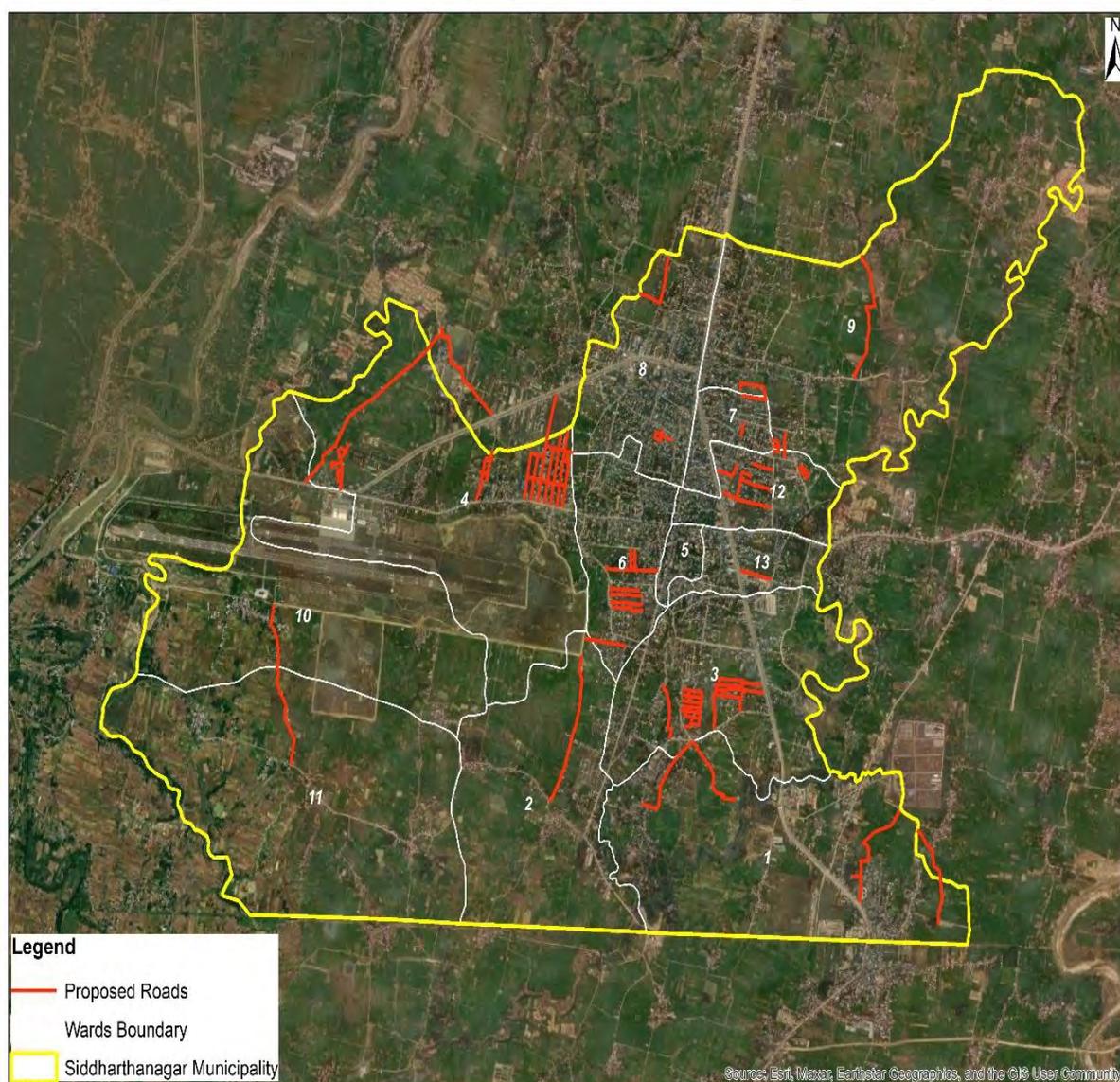
75. **Suvarna path 0.28km** - The road starts from Siddhartha Highway and ends at Rudra path. The Road lies in ward 12. The Row of road is 6m. AT the start of the chainage there is a Sai Global Academy on the left side of the road. The existing road is black topped road. There is an existing side drain on both side of the road. Scarifying of existing premix roads should be done. There is High settlement in this section.

76. **Bhimkali Path – Janta Path Branch Roads (North side) 0.632 km** - The road starts from the Bhimkali path and ends at Janta path. The Road lies in ward 12. The Row of road is 7m. The existing road is Gravel type road. The existing width of road is 5 - 8 m. The road is in the F shape. There is high settlement in this area. There is a Budhha jyoti school in the left side of the school.

77. **Others Road - 0.632 km** The Row of roads is 6m. The Roads lies in ward 12. The road starts between the Buddha H2O Mineral Plant and Kashi Novel Academy of chainage 0+226. Whereas another road has a change of 0+298. There is existing drain on only one side of Road. The road is clear. There is medium settlement in those area. As there are primary school and College near the road area

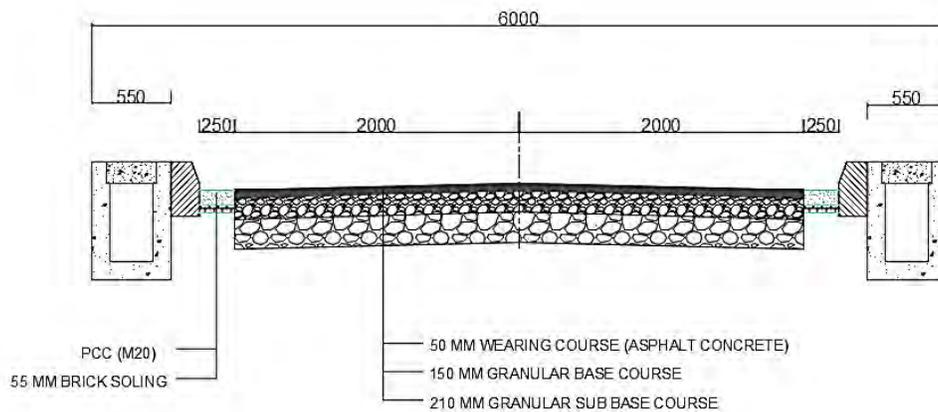
78. **Lacoul Road** - The Road starts from Siddhartha Highway and ends at OYO Lacoul hotel. The Road lies in ward 13. The Row of road is 6m. The existing road is earthen type road. The width of existing road is 5.6m including drain. The settlement in these is area is low as there are only few houses in these roads.

Figure 7: Location of Subprojects in Siddharthanagar Municipality

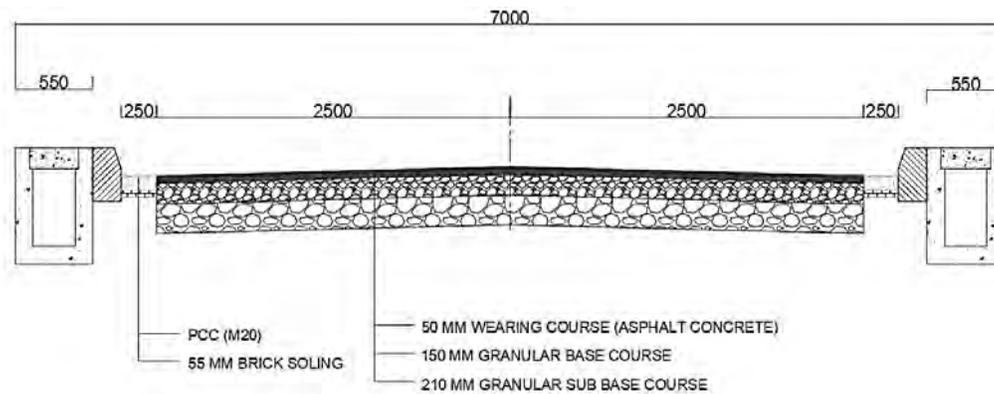


Source: Google Earth and Department of Survey-Nepal, 2023

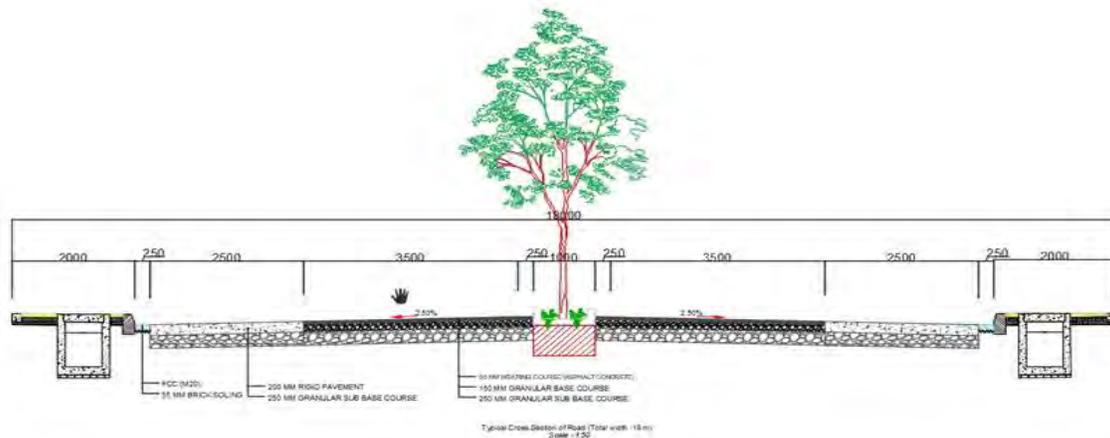
Figure 8: Typical Cross Section of Road of Bimanghaat to North Road



Typical Cross Section of Road (Total width -6 m)
Scale - 1:20



Typical Cross Section of Road (Total width -7 m)
Scale - 1:20



Typical Cross Section of Road (Total width -18 m)
Scale - 1:20

Source: Feasibility Study Report, 2023

C. Devdaha Municipality Subprojects

79. Under the scope of URLIP, three roads are proposed to rehabilitate and reconstruct integrating drainage and road component. Three road sections (i) Banchauki Mayadevi-Mildanda Buddha Circuit Road of 4.96 km, (ii) Bhaluhpul Medical College Bhatatol Mukhiya Tol Piparahiya

Singha-Municipality of 7.47 km and (iii) Ward 8-Haatbazar-Mayadevi-Banaha-Tilottama12-Judapani Road of 3.75 km are proposed for project financing. Brief description of each section is as follows:

80. **Bhaluhipul Medical College-Bhatatol-Mukhiya Tol- Piparahiya Singha-Municipality Road (7.47 km):** The Bhaluhipul Medical College – Bhatatol - Mukhiya Tol - Piparahiya Singha - Municipality Road is significant transportation route located in Devdaha Municipality. This road is the easy access to reach the medical college and an alternative route to reach Devdaha Municipality office. The road serves as a vital link connecting East- West Highway and serves communities within the region. The main motive of proposing this road is to make a connecting road to Devdaha Medical College.

81. The Road starts from Bhaluhipul connecting East West Highway and ends at Singha after 100m of Devdaha Municipality office. The RoW of this road is 12 m. The proposed road passes through Ward no 3, Ward no 4, Ward no 8 & Ward no 9. The existing road passes through Milan Community Forest in Ward no 9 having least settlement.

Table 10: Bahluhipul Medical college Batatol Mukhiya Tol Piparahiya road section

SN	Elements of component	Existing Scenario	Proposed Scheme
1	Length of Road	7.47 km	7.47 km
2	Right of Way (ROW) Declared by municipality	12 m	12 m
3	Total Road Width	5-11 m	11.5 m
4	Carriageway	Average 5.5 m	7.5 m
5	Pavement type	Most of the road sections are poor premix carpet and remaining sections are gravel road.	Double lane upgradation with the 50 mm surface course of asphalt concrete, 150 mm of base course and 250 mm of sub base with proper grade and camber
6	Side Drain	There is 3.85 Km earthen drain in both side and 54m length of canal along the road and canal (Singha Canal) crossing in road sections. During heavy rainfall, Pluvial flooding in few road sections where road is graveled and blacktopped is damaged.	PCC surface drain of width 0.25m (included in carriageway width) Storm water drain size of Type A – 0.45 X 0.65m Storm water drain size of Type B – 0.6 X 0.8 m Storm water drain size of Type C – 0.75 X 0.95 m. The size of side drain will be different in Canal sections. 289 households directly get benefit from the proposed drain.
7	Cross drainage Structures	- 7 Nos Pipe Culverts - 20 Nos Slab Culverts - 2 Nos of Side RCC Slabs - Bhaluhi Khola Bridge (30m) - Ghodaha Khola Bridge (74 m) - Bangali Khola Bridge (37.5m)	Rehabilitation of existing pipe culverts and slabs in order to make double lane and adding structures as per requirement.
8	Protection works	Protection works like river training works are only at passing bridge area of river	Retaining wall/slope protection measures as per requirement.

SN	Elements of component	Existing Scenario	Proposed Scheme
9	Road furniture (streetlights, delineators et)	Nil	Streetlights of height 9 m @ 25 m interval.
10	Utility	All wires and cable are hanging above ground and are in unmanaged condition - 1 Transformer	Shifting of electric poles, transformers and telephone poles with coordination with municipality.

Source: Feasibility Study Report, 2023

82. **Banchauki Mayadevi - Mildanda Buddha Circuit Road (4.96 Km):** The Road is one of the important roads, which connects the Buddha Circuit route in Devdaha Municipality of Nepal. The road directly connects to the East- west highway and passes through Buddha Circuit serves as a vital link connecting several important areas and communities within the religion. The road starts from Sheetalnagar adjoining East-West Highway and ends at Devdaha marga, which directly connects to the Buddha Circuit. The RoW of this road is 12 m. The proposed road passes through Ward no 3, Ward no 7 & Ward no 8. The existing road stretched passes through Buddha Maya Community Forest. The settlement is scattered in this road section area.

Table 11: Banchauki Mayadevi Path Mildanda Buddha Circuit Road Section

SN	Elements of component	Existing Scenario	Proposed Scheme
1	Length of Road	4.96 km	4.96 km
2	ROW Declared by municipality	12 m	12 m
3	Total Road Width	4-11.5 m	11.5 m
4	Carriageway	Average 6 m	7.5 m
5	Pavement type	The road sections are combination of premix carpet section and gravel section.	Double lane upgradation with the 50 mm surface course of asphalt concrete, 150 mm of base course and 250 mm of sub base with proper grade and camber
6	Side Drain	There is drain and 35 m of brick canal at both side in road sections. -455m of Drain along the left side of the road. -655m of Drain along both side of the road. The proposed road is not in flooded zone.	PCC surface drain of width 0.25m (included in carriage way width) Storm water drain size of Type A – 0.45 X 0.65m Storm water drain size of Type B – 0.6 X 0.8 m Storm water drain size of Type C – 0.75 X 0.95 m.
7	Cross drainage Structures	- 2 Nos Pipe Culverts - 12 Nos Pipe Crossings - 26 Nos of Side RCC Slabs	Rehabilitation of existing pipe culverts and slabs in order to make double lane and adding structures as per requirement.
8	Protection works	Nil	Retaining wall/slope protection measures as per requirement.
9	Traffic signs/signage and road marking	Nil	Provided all along the road to ensure maximum safety to pedestrian and vehicular traffic.
10	Road furniture (streetlights, delineators et)	Nil	Streetlights of height 9 m @ 25 m interval.

SN	Elements of component	Existing Scenario	Proposed Scheme
11	Utility	All wires and cable are hanging above ground and are in unmanaged condition -1 Transformer	Shifting of electric poles, transformer and telephone poles in coordination with municipality.

Source: Feasibility Study Report, 2023

83. Ward 8-Haatbazar-Mayadevi-Banaha-Tilottama 12-Judapani Road (3.75 Km): The Ward 8-Haatbazar-Mayadevi-Banaha-Tilottama 12-Judapani Road is the route located in Devdaha area of Nepal. The road starts from Maya Devi Park under Lumbini Buddhist University area and ends at Rohini River, which is the boundary of Devdaha Municipality and Tilottama Municipality. The starting point is also the proposed Infrastructure Development construction site of Lumbini Buddhist University. The road serves as a vital link connecting Haatbazar (Local Market) of that area and connecting access road of Devdaha and Tilottama Municipality. The RoW of this road is 12m. The proposed road passes through Ward no 3 and Ward no 8. The existing road stretched passes through Buddha Maya Community Forest.

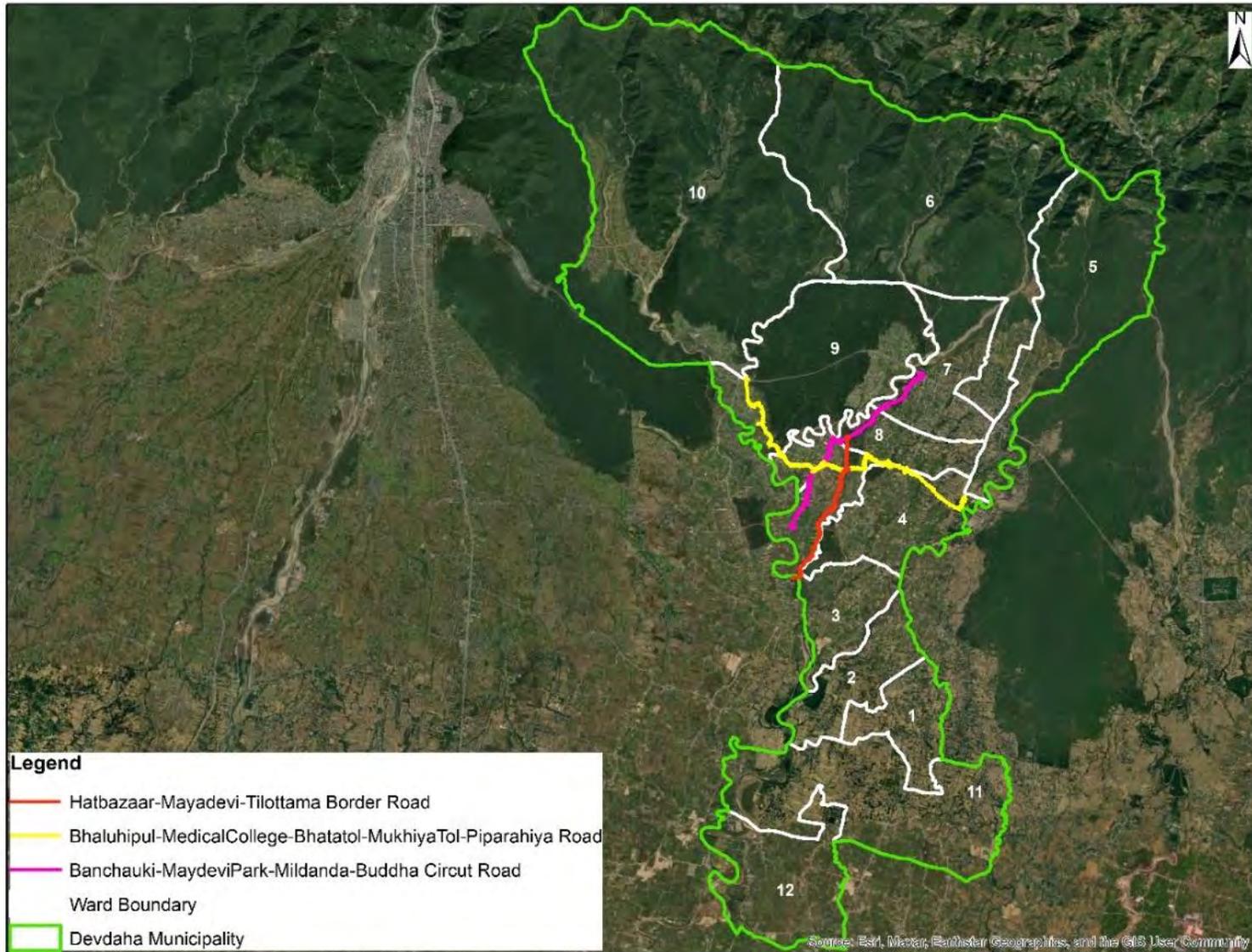
Table 12: Ward 8 Hat Bazar – Maya Devi Marga - Banaha Devdaha - Judhapani Link Road

SN	Elements of component	Existing Scenario	Proposed Scheme
1	Length of Road	3.75 km	3.75 km
2	ROW Declared by municipality	12 m	12 m
3	Total Road Width	4-11.5 m	11.5 m
4	Carriageway	Average 5.5 m	7.5 m
5	Pavement type	Most of the road sections are premix carpet and remaining sections are gravel road. Road section having interlocking block in 80 mX6m.	Double lane upgradation with the 50 mm surface course of asphalt concrete, 150 mm of base course and 250 mm of sub base with proper grade and camber
6	Side Drain	There is earthen drain and earthen canal in road sections. -925m of earthen canal along the left side of the road. -1142 m of earthen canal along the right side of the road. -1246m of Earthen Drain along the left side of the road. -371 m of Earthen Drain along the right side of the road. -246 m of Earthen Drain along the both side of the road. During heavy rainfall, fluvial flooding at the last section of road nearby riverside.	PCC surface drain of width 0.25m (included in carriageway width) Storm water drain size of Type A – 0.45 X 0.65m Storm water drain size of Type B – 0.6 X 0.8 m Storm water drain size of Type C – 0.75 X 0.95 m. The size of side drain will be different in Canal sections. 104 households directly benefit from the proposed drain.
7	Cross drainage Structures	- 1 No Pipe Culvert - 6 Nos Pipe Crossing - 2 Nos Slab Culverts	Rehabilitation of existing pipe culverts and slabs in order to make double lane and adding cross drainage structures as per requirement.

SN	Elements of component	Existing Scenario	Proposed Scheme
8	Protection works	Protection works like river training works are only at passing bridge area of river	Retaining wall/slope protection measures as per requirement.
9	Utility	All wires and cable are hanging above ground and are in unmanaged condition - 1 Transformer	Shifting of electric poles, transformers and telephone poles in coordination with municipality.

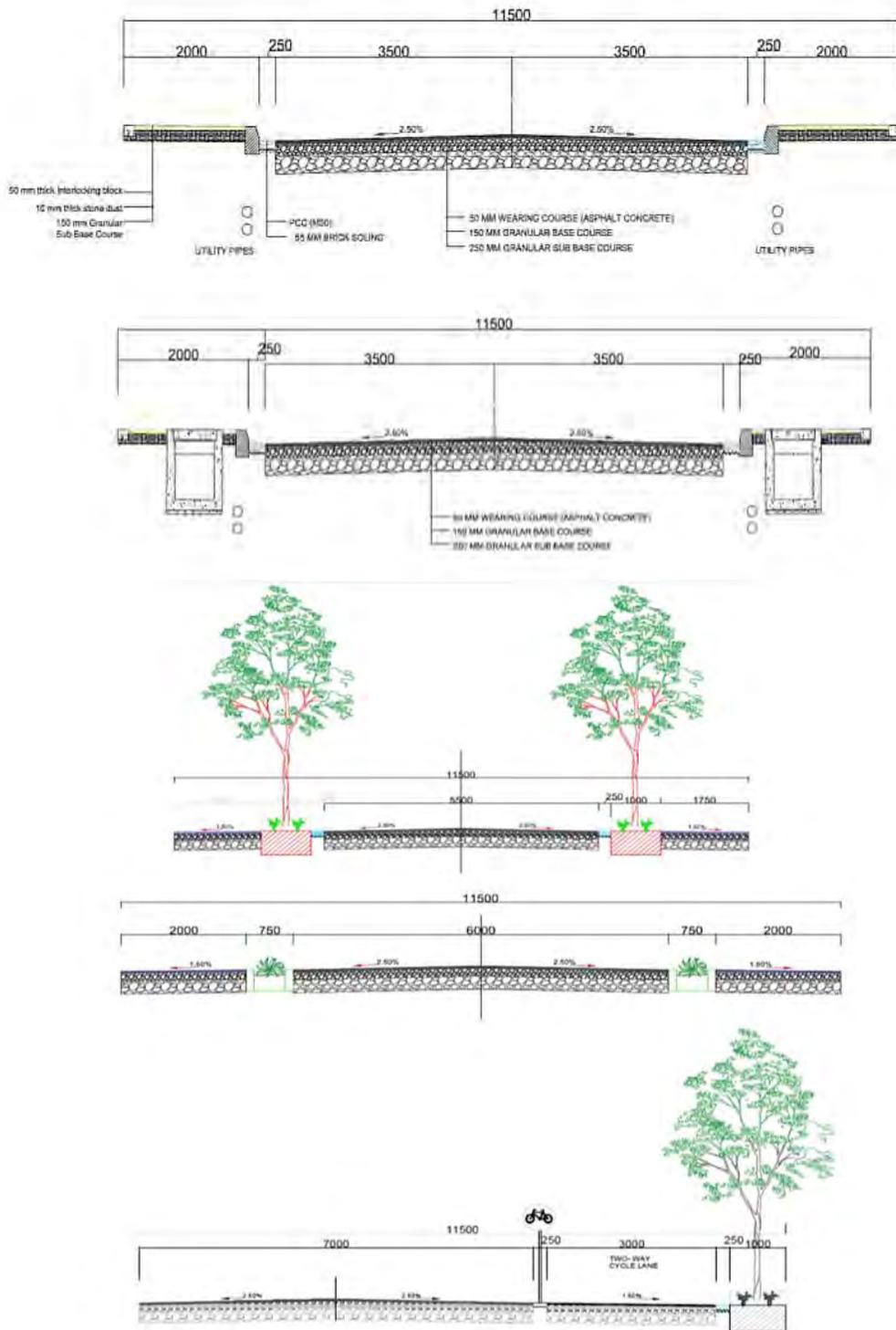
Source: Feasibility Study Report, 2023

Figure 9: Location of Subprojects in Devdaha Municipality



Source: Google Earth and Department of Survey-Nepal, 2023

Cross-Sectional Elements



Source: Feasibility Study Report, 2023

D. Sainamaina Municipality Subprojects

84. Under the scope of URLIP, two road sections under Sainamaina Municipality are proposed to rehabilitate and reconstruct integrating drainage and road component. The proposed road

section passes through flat lands with almost plain slopes and moves through mostly settlements and agricultural lands.

85. **Sainamaina Ring Road 1 (Panbari - Saljhandi Section)**-The road starts from Panbari wetland near Kanchan River bridge and ends at Pahili Khola bridge, Saljhandi near Bankatti of ward number 10 in Saina Maina Municipality. The road is 9,473 m in length. Both the starting and end point of the road meets the East – West Highway (NH -01). The existing road width varies from 10 m to 12 m with blacktopped road at urban sections and 5 – 7 m width for gravel road of the alignment section. The proposed scheme of Panbari - Saljhandi Road compared to the existing scenario is described in the table below.

Table 13: Existing Condition and Proposed Sainamaina Ring Road 1 (Panbari- Saljhandi)

S. N.	Description	Existing Scenario	Proposed Scheme
1.	Length of Road	9.47 km	14.42 km
2.	Right of Way (RoW)-Declared by municipality	15m (11 m road is clear in site)	15m Road width designed is only 11.5m including footpath.
3.	Total Road Width	-4 to 8 m at urban sections. -3.5 to 8.5m at graveled and earthen road at most sections.	11.5 m
4.	Carriageway	Average 4.5 m	7.5 m
5.	Pavement type	Some sections are blacktopped and most of the sections are graveled and earthen.	Double lane upgradation with the 50mm surface course of asphalt concrete, 150mm of base course and 250mm of sub base course with proper grade and camber.
6.	Side Drain	-50m of side drain along the left side of the road. -252.54m of side drain along the right side of the road. -35m of covered drain along the right side of the road.	PCC surface drain of width 0.25m (included in carriage way width). Storm water drain size of Type A – 0.45 X 0.65m Storm water drain size of Type B – 0.6 X 0.8 m Storm water drain size of Type C – 0.75 X 0.95 m
7.	Cross drainage Structures	- 26 Pipe Culverts -11 Side RCC Slabs -18 Slab Culverts -1 under construction bridge	32 Hume-pipe culverts 18 slab culverts to be dismantled & reconstructed. Rehabilitation of existing side pipe crossings & slabs in order to make double lane.
8.	Protection Works	Retaining walls at some locations.	Retaining wall/slope protection measures as per requirement.
9.	Traffic signs/signage and road marking	Present at some locations.	Provided all along the road to ensure maximum safety to pedestrian and vehicular traffic.
10.	Road furniture (streetlights, delineators, etc.)	Only in some sections.	Street lights of height 9m at 25 m interval.
11.	Utility	All wires and cable are hanging above ground and are in unmanaged condition	Shifting of electric poles and telephone poles with coordination with municipality and NEA.

Source: Feasibility Study Report, 2023

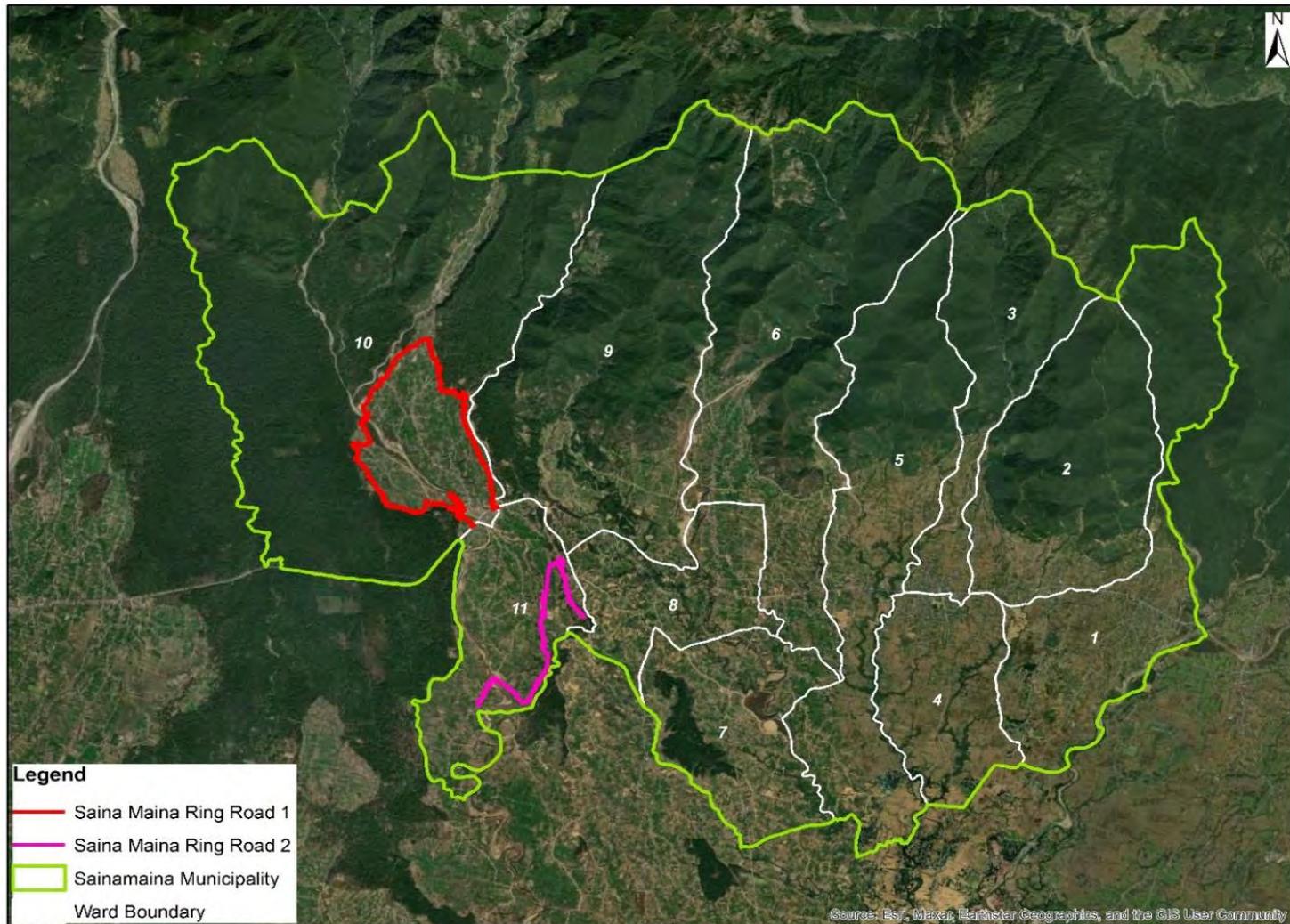
86. **Saina Maina Ring Road 2 (Duimuhan chowk - Thali Section)** The road starts from Duimuhan Chowk and ends at Thali of ward number 11 of Saina Maina Municipality. The total length of the road is 5,261 m. The existing road from Ch: 0+000 to Ch: 0+540, is graveled and the remaining all is blacktopped except under construction bridge section at Ch: 2+980. A new bridge is being constructed at Ch: 0+420 over Kanchan River and with 7.5 m width and footpath 1.5 m on either side. The current clear road width is 30 feet (9 meters) only with 7 m carriage way and 2 m shoulder width.

Table 14: Existing Condition and Proposed Saina Maina Ring Road 2 (Duimuhan Chowk-Thali)

SN	Description	Existing Scenario	Proposed Scheme
1.	Length of Road	5.26 km	14.42 km
2.	Right of Way (RoW)-Declared by municipality	15m (11 m road is clear in site)	15m Road width designed is only 11.5m including footpath
3.	Total Road Width	-4.5 to 8 m for blacktopped sections -4 to 9 m for graveled sections	11.5 m
4.	Carriageway	Average 4.5 m	7.5 m
5.	Pavement type	Some sections are graveled and some are blacktopped.	Double lane upgradation with the 50mm surface course of asphalt concrete, 150mm of base course and 250mm of sub-base course with proper grade and camber.
6.	Side Drain	-13m of side drain along the left side of the road.	PCC surface drain of width 0.25m (included in carriage way width) Storm water drain size of Type A – 0.45 X 0.65m Storm water drain size of Type B – 0.6 X 0.8 m Storm water drain size of Type C- 0.75 X 0.95 m
7.	Cross drainage Structures	-9 pipe culverts -1 side Hume pipe -4 slab culverts -1 Bridge -1 under construction bridge.	14 Hume-pipe culverts 9 slab culverts to be dismantled & reconstructed. Rehabilitation of existing side pipe crossings and slabs in order to make double lane.
8.	Protection Works	Retaining walls at some locations.	Retaining wall/slope protection measures as per requirement.
9.	Traffic signs/signage and road marking	Present at some locations.	Provided all along the road to ensure maximum safety to pedestrian and vehicular traffic.
10.	Road furniture (street lights, delineators, etc.)	Only in some sections.	Street lights are provided of height 9m at 25 m interval.
11.	Utility	All wires and cable are hanging above ground and are in unmanaged condition.	Shifting of electric poles and telephone poles with coordination with municipality and NEA.

Source: Feasibility Study Report, 2023

Figure 10: Location of Subprojects in Sainamaina Municipality



Source: Google Earth and Department of Survey-Nepal, 2023

E. Lumbini Sanskritik Municipality Subprojects

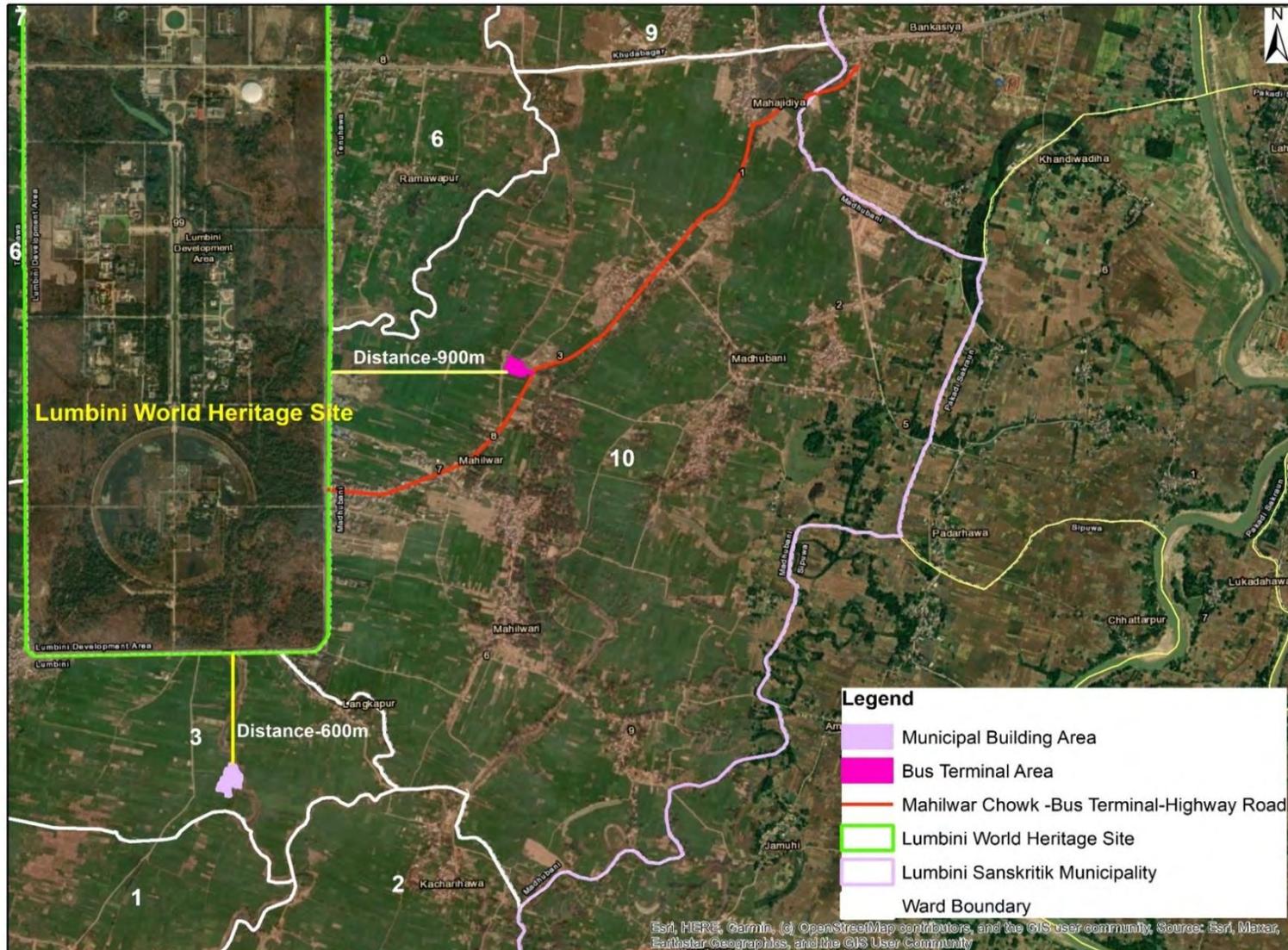
87. Under the scope of URLIP, roads, Municipal Building and Bus terminal in Lumbini Sanskritik Municipality. The proposed roads, bus terminal and municipal building are located within 1 km distance from the Lumbini World Heritage Site (Figure 7). The nearest project component is the Mahilwar Chowk-Bus Terminal Road that starts from Vishnupura road which border the Lumbini World Heritage Site.

88. **Mahilwar Chowk-Proposed Bus Terminal-Highway Road (3.96 km):** The starting location of the proposed road to bus terminal is Mahilwar chowk from Vishnupura road. The Vishnupura road is the main road that surrounds the Lumbini world heritage site. The proposed road is the existing road located within ward number 10 and 4 of Mayadevi Rural Municipality and ends at Jhulanipur. (Information will be incorporated once the Feasibility study is done).

89. **Bus Terminal:** The Bus Terminal is located in Ward-10, Madhubani of the Lumbini Sanskritik Municipality. Geographically the proposed location is situated at 27°40'45.1164" North and longitudes 83°30'25.272". It lies at a distance of 2.5 km from Jhulanipur, the nearest place on the Siddhartha Highway. The site size of the proposed Bus Terminal is 11,775m². The main concept of the Bus Terminal is to separate the area into two main zones. The primary objective is to accommodate the daily departures and arrivals of driving buses. Its gross floor area (GFA) is 735m² with 1 story, the inside accommodate ticket booths, cafeteria, shops, waiting lounge, and administrative office. The sub-function of the Bus Terminal is to provide long-term parking for buses and trucks. The entrances to the two zones are separated by different gates. In front of the terminal building will be a pick-up and drop-off point for taxis and private vehicles as well as the intra-bus stop. The bus terminal will be developed with all the amenities and facilities for terminal users, staff, drivers and other vehicle operators and workers. These include drinking water, sanitation, adequate lighting, etc., Given the low-lying nature of land, and a drain flowing through the into Koiliwaha river, a proper drainage system will be provided to avoid flooding of terminal or surrounding area. It is proposed to raise the ground level of the site by 2-3 m. A conceptual drainage design is developed as part of feasibility study is given in Fugure 15. Detailed site investigations and surveys will be conducted during the detailed design, and drainage system design will be finalized.

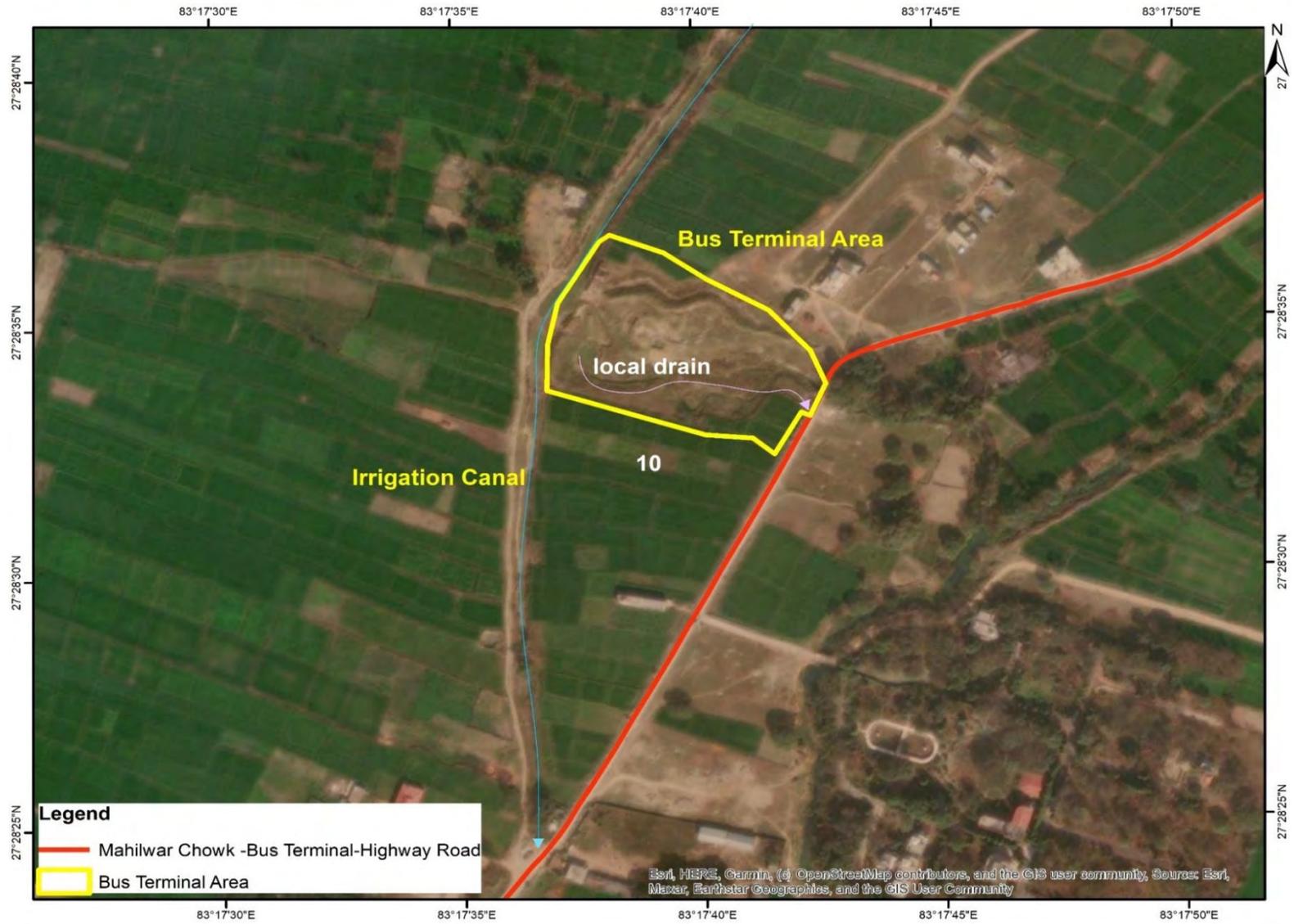
90. **Municipal Building and Access Road:** The Lumbini Sanskritik Municipality has proposed the construction of the Municipal building in ward no. 3 of Lumbini Sanskritik Municipality and is 600m distance at southern side from the Lumbini World Heritage Site. The proposed building area is 158817.19 sq.km. The proposed building will cover an area of about 1400 sq. m(approximately 30 m x 45 m), which is about 9% of the total available land area. Site is located close to River Telar, and a minimum 20 m distance will be maintained from the riverbank. The building will be of five floors (ground + 4 floors) and will be provided with all necessary amenities and facilities, including drinking water supply, toilets / sanitation with on-site septic tank (sealed bottom and sides) and soak pit, solid waste collection bins, parking, lighting, fencing etc., An access road of 7 m wide, and 200 m long will be constructed from the nearest road. This will be a new road, and land is currently vacant, and there are no trees. Surrounding area is being developed as residential layouts.

Figure 11: Location of Subprojects in Lumbini Sanskritik Municipality



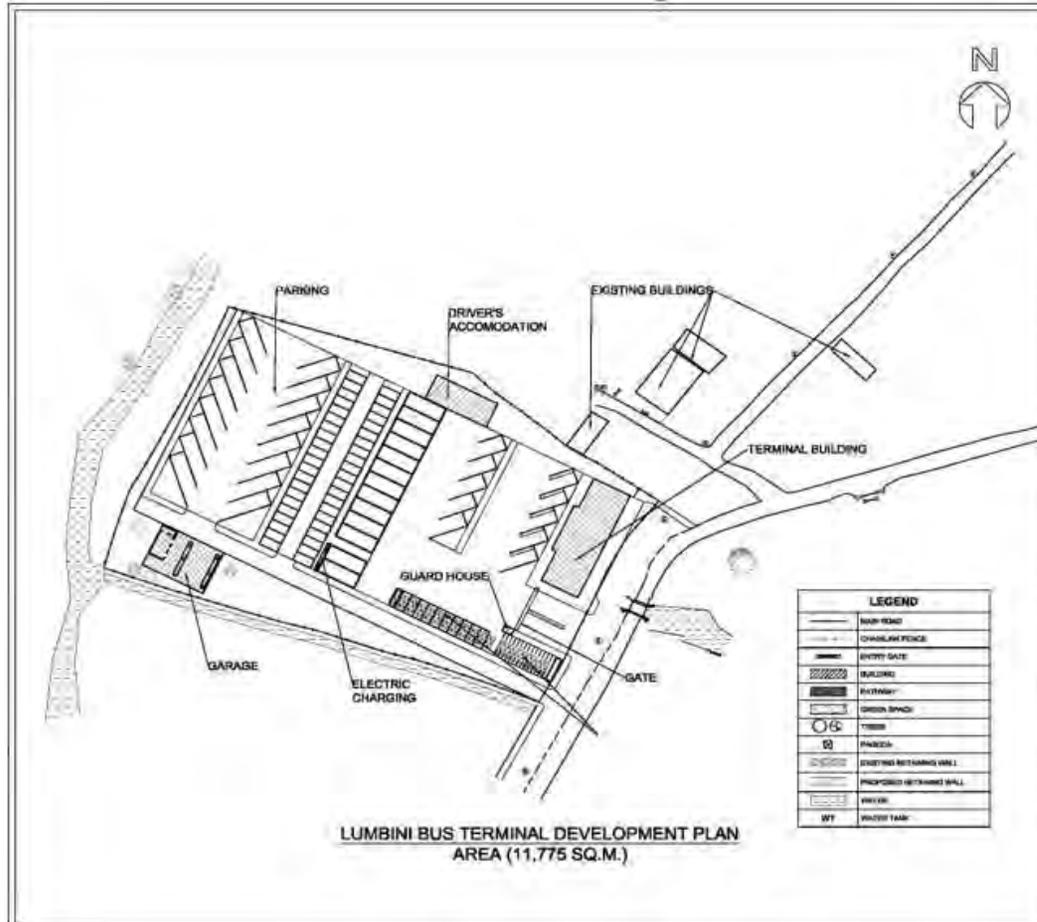
Source: Google Earth and Department of Survey-Nepal, 2023

Figure 12: Location of Proposed Bus Terminal Area



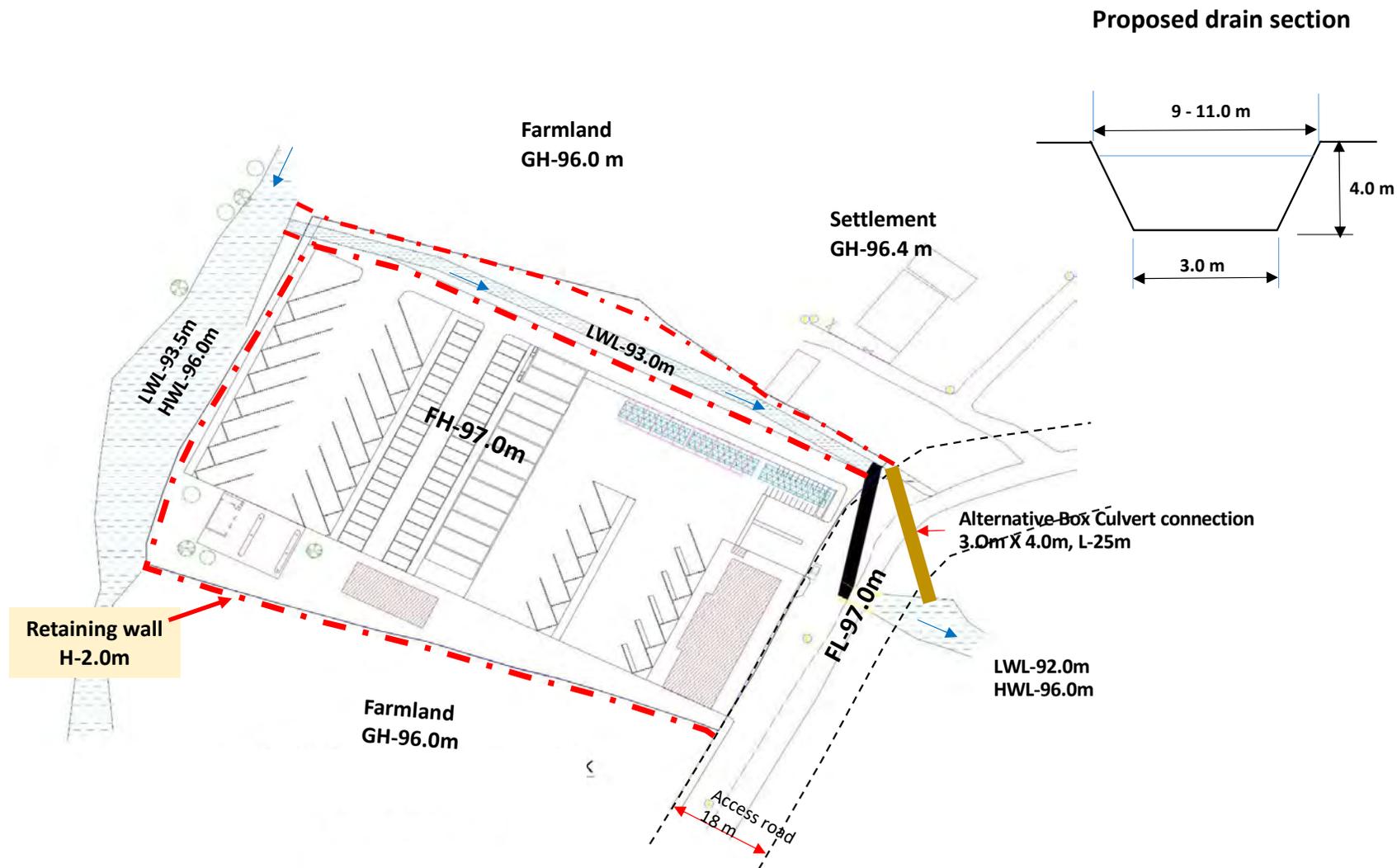
Source: Google Earth and Department of Survey-Nepal, 2023

Figure 13: Layout of Lumbini Bus Terminal Development Plan



Source: Feasibility Study Report, 2023

Figure 14: Conceptual drainage design at Bus Terminal



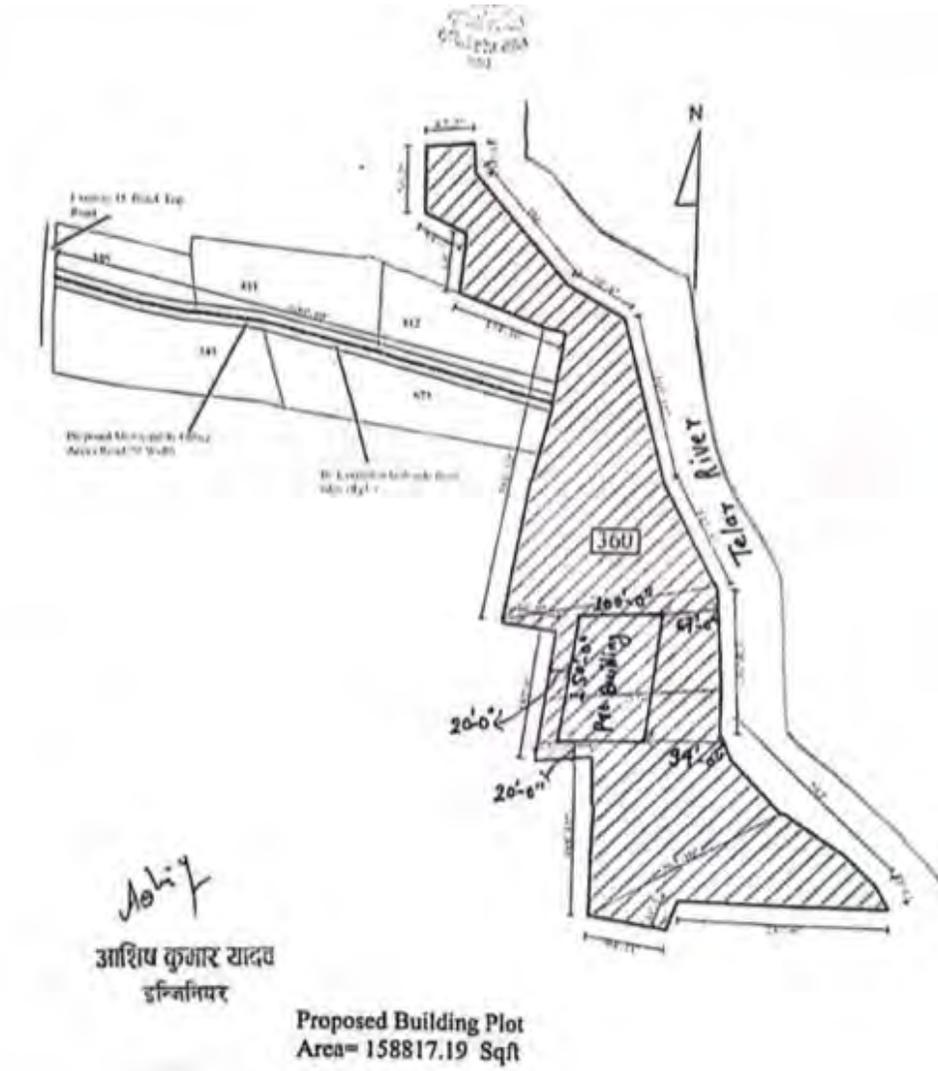
Note: This figure is as per the conceptual design and feasibility study and dimensions and levels of units shown are tentative; the drainage design will be finalized during the detailed design after the detailed site surveys to ensure proper collection and conveyance of canal emergency discharges and surface runoff from the site and surrounding area to river via existing culvert on the access road.

Figure 15: Location of Proposed Bus Terminal Area



Source: Google Earth and Department of Survey-Nepal, 2023

Figure 16: Proposed Municipal Building Site, Access Road and Building Footprint



Source: Lumbini Sanskritik Municipality, 2023

Figure 17: Photographs of the Road Sections proposed in Municipalities of West Urban Corridor



Road Section of Panbari to Saljhandi Road (Sainamaina)



Road Section of Duimuhan Chowk to Thali Road (Sainamaina)



Road Section of Udhyog puri Road (Siddharthanagar)



Road Section of Benipur East South Boarder Road (Siddharthanagar)



<p>Road Section of Bhaluhpul Medical College-Bhatatol-Mukhiya Road (Devdaha)</p>	<p>Road Section of Haatbazar-Mayadevi-Banaha-Tilottama (Devdaha)</p>
	
<p>Road Section of Bus Terminal Road (Lumbini Sanskritik)</p>	<p>Access Road Alignment to the proposed New Municipal Building (Lumbini Sanskritik)</p>
	
<p>Road Section of Driver Tole - Shivapur Road (Tilottama)</p>	<p>Road Section of Pathardanda-Tinau Road (Tilottama)</p>

Source: Field Visits conducted by Team

IV. DESCRIPTION OF BASELINE ENVIRONMENT

A. Project Influence Area

91. The primary objective in this chapter is to provide an environmental baseline of the proposed subprojects in Tilottama, Devdaha, Sainamaina, Siddharthanagar and Lumbini Sanskritik Municipalities. Baseline data includes an inventory of physical, ecological and socio-economic parameters. Baseline environmental data presented in this chapter are based on available secondary information. No sampling for air quality, noise and water quality was conducted. Baseline environmental monitoring will be conducted before the start of construction.

92. The primary impact area will be confined along the alignment of the roads and proposed project sites for cold storage, bus terminal and municipal building. Delivery of construction materials to the site would extend the project influence area. This means that during transport of construction materials, the impact area is extended along the roads being traversed by the transporting equipment.

B. Physical Environment

93. **Location and Topography.** Tilottama, Devdaha, Sainamaina, Siddharthanagar and Lumbini Sanskritik Municipalities lies in Rupandehi district of Lumbini Province. Tilottama Municipality is surrounded by Rohini River and Devdaha Municipality in the east, Tinau River and Siyari and Sudhodhan Rural Municipality in the west, Butwal Sub-metropolitan City in the north and Omsatiya and Siddharthanagar Municipality in the south. The six lane Belahiya-Siddharthanagar-Butwal road section of the Siddhartha Highway passes through the mid of Tilottama Municipality and divides the Municipality into eastern and western part. Similarly, Sainamaina Municipality is situated in the lap of Chure hills and is 15 km north from the birthplace of Lord Buddha, Lumbini. It is surrounded by Butwal sub-metropolitan city in the east, Badhganga Municipality of Kapilvastu district in the west, Sitganga Municipality of Arghakhanchi district, Rainadevi Chahara and Tinau Municipality of Palpa district in the north and Shudhdodhan, Kanchan and Gaidhawa municipalities in the south. Siddharthanagar is considered as an industrial town as well as an economic center for the Western Nepal. The topography of three municipalities Lumbini Sanskriti, Tilottama and Siddharthanagar are on the flat lands with elevation ranges 120m to 200m. Other two Municipalities Devdaha and Sainamaina are located on both flat land and chure hill with elevation ranges 130m to 980m.

94. Project towns are located in the western part of Nepal, about 250 km west of capital city Kathmandu. Largest town is Sidharthangar, spread over 36.03 sq. km and housing 76,307 population. Area and the population of the other four towns are as follows: Tilottama 126.2 sq.km and 149,657 population, Sainiama 162.18 sq.km and 55,822 population, Devdaha 136.96 sq.km and 75,658 population and Lumbini Sanskritik 112.21 sq.km and 72497 population (Census 2011). Municipalities are spread over large expanses of lands covered with urban areas, peri-urban and small habitations, agriculture and forest areas within the municipal jurisdiction. Municipal jurisdiction and general view of project towns are shown in Figure 18 to Figure 27.

Figure 18: Tilottama Municipality

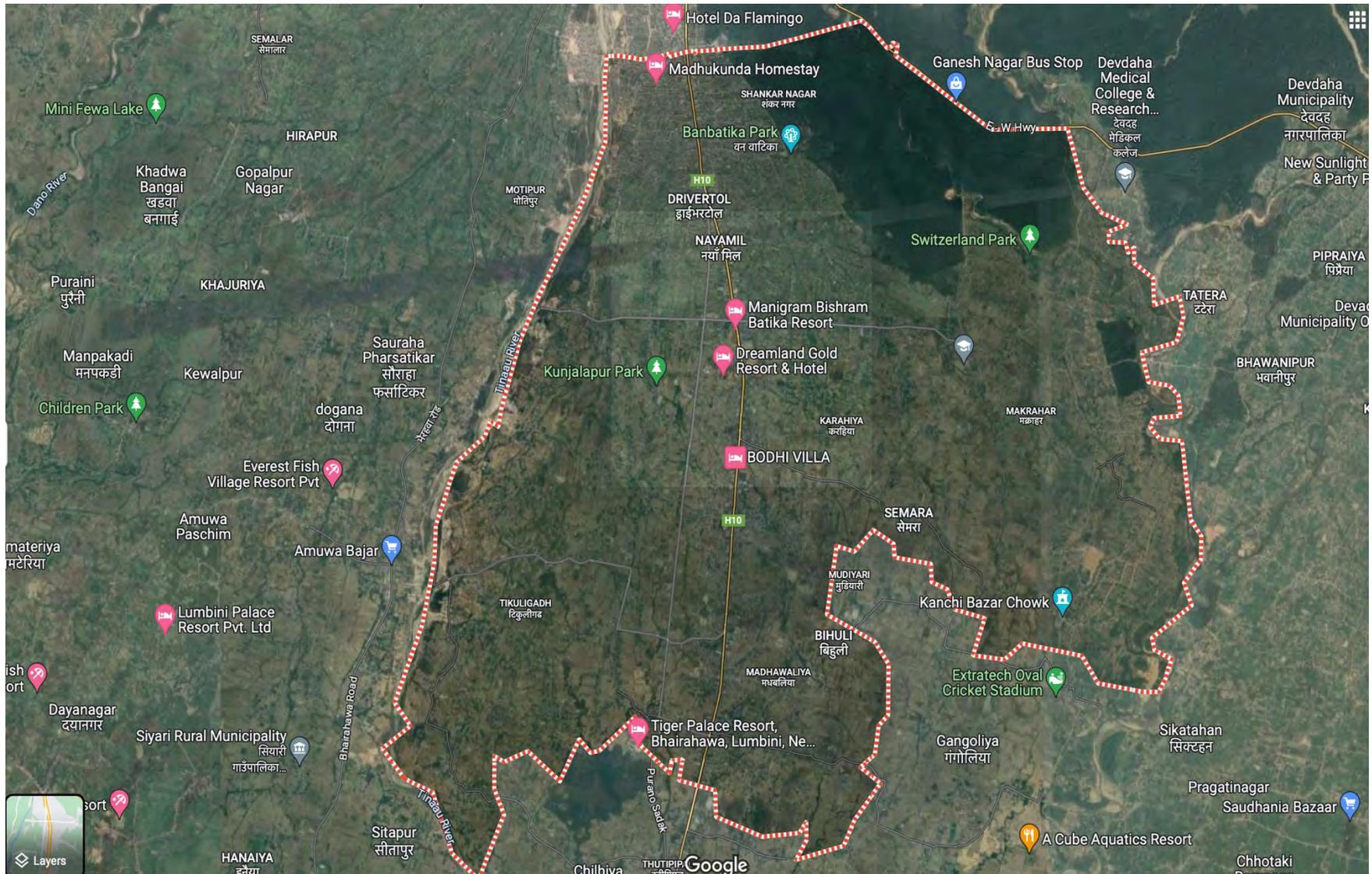


Figure 19: General View of Timottama Town

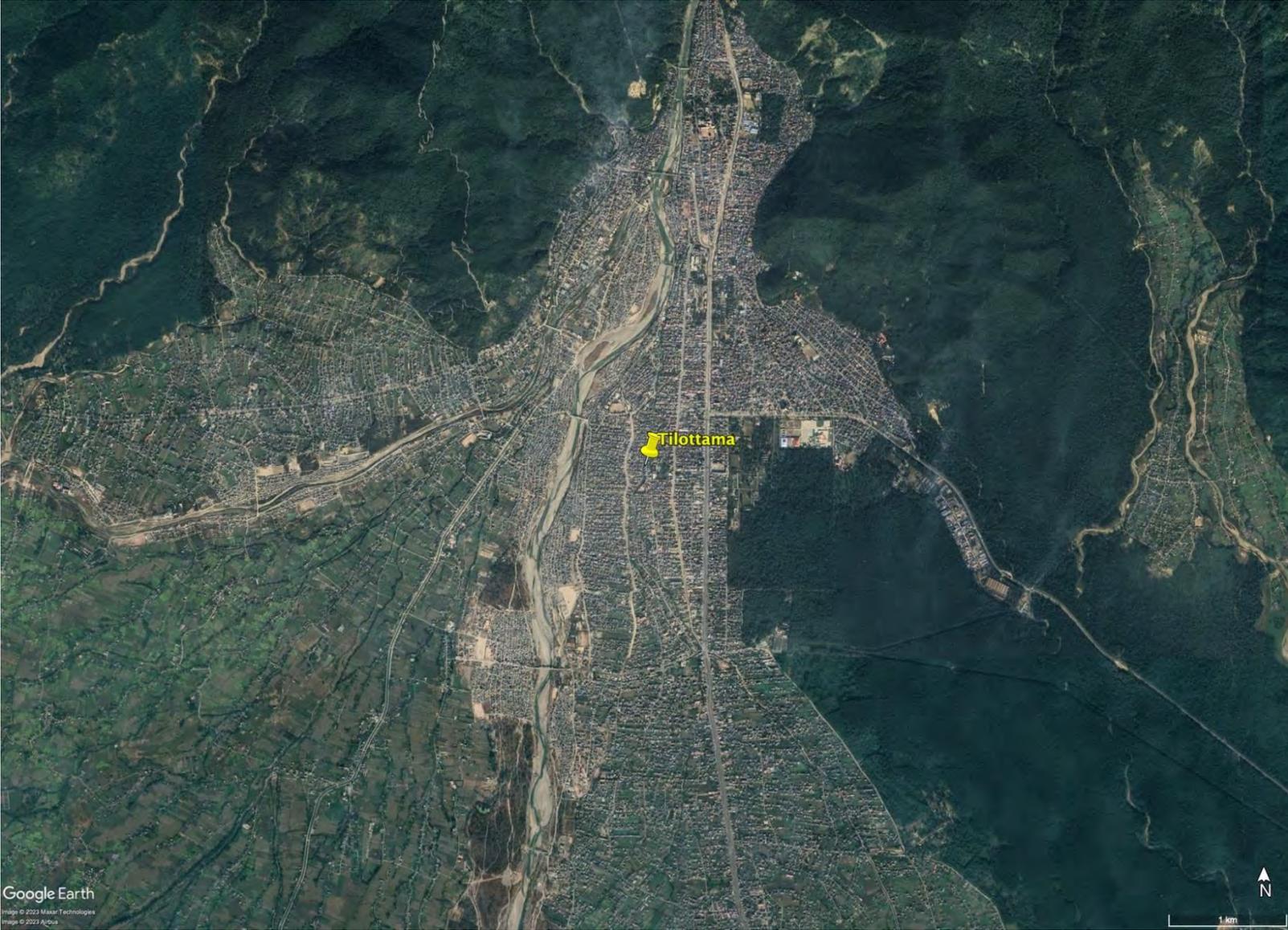


Figure 20: Devdaha Municipality

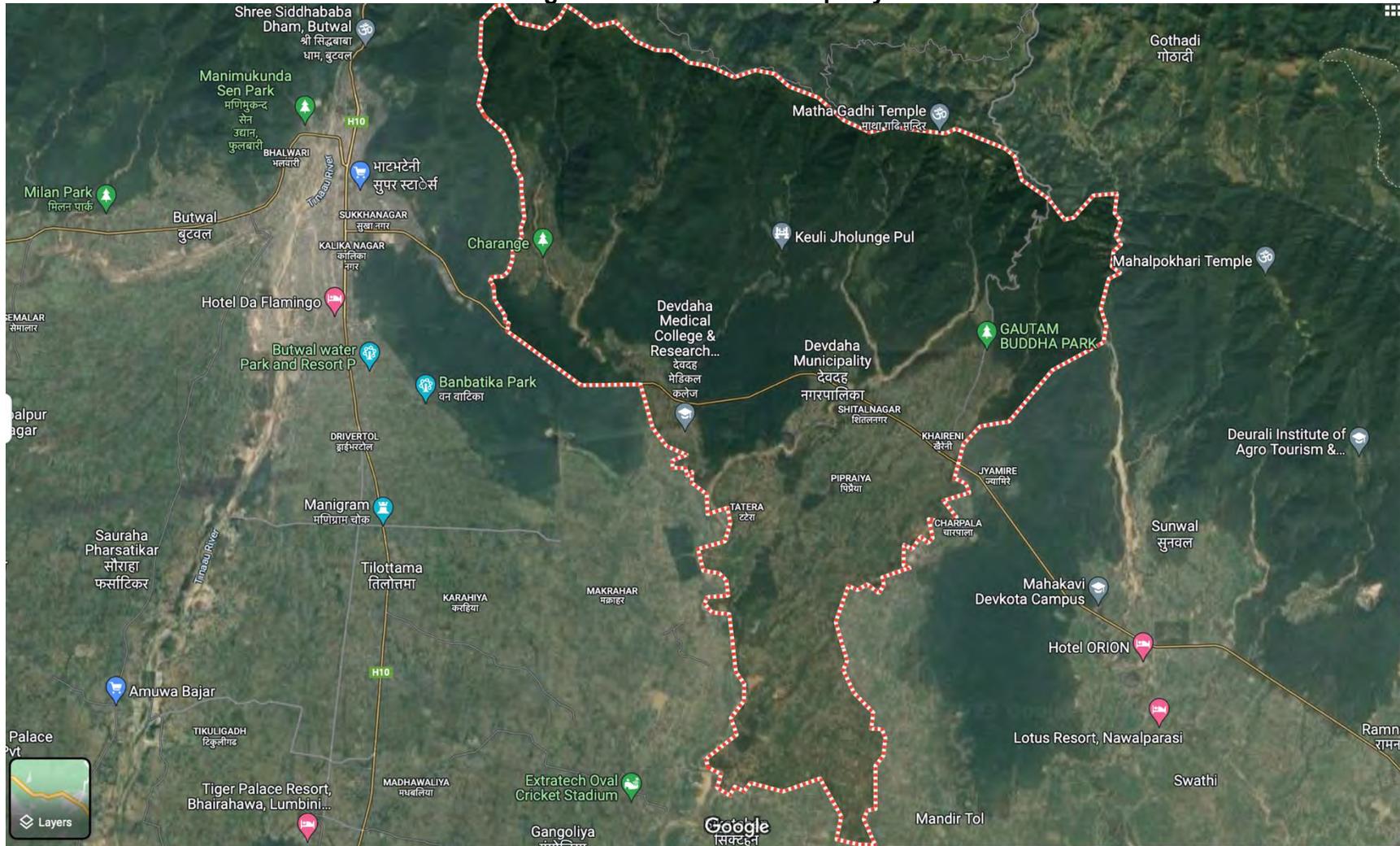


Figure 21: General View of DevdahaTown

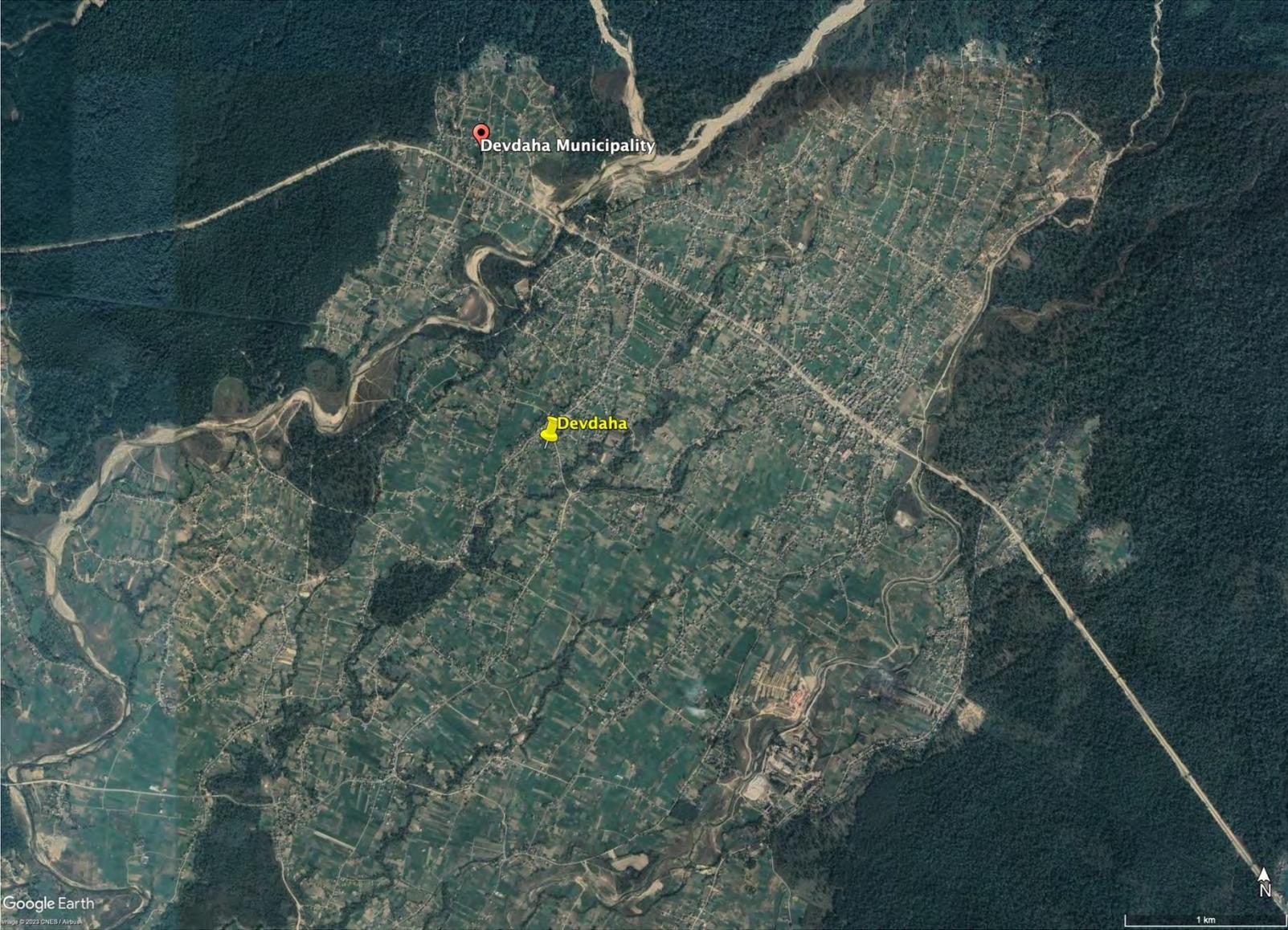


Figure 22: Sainamaina Municipality

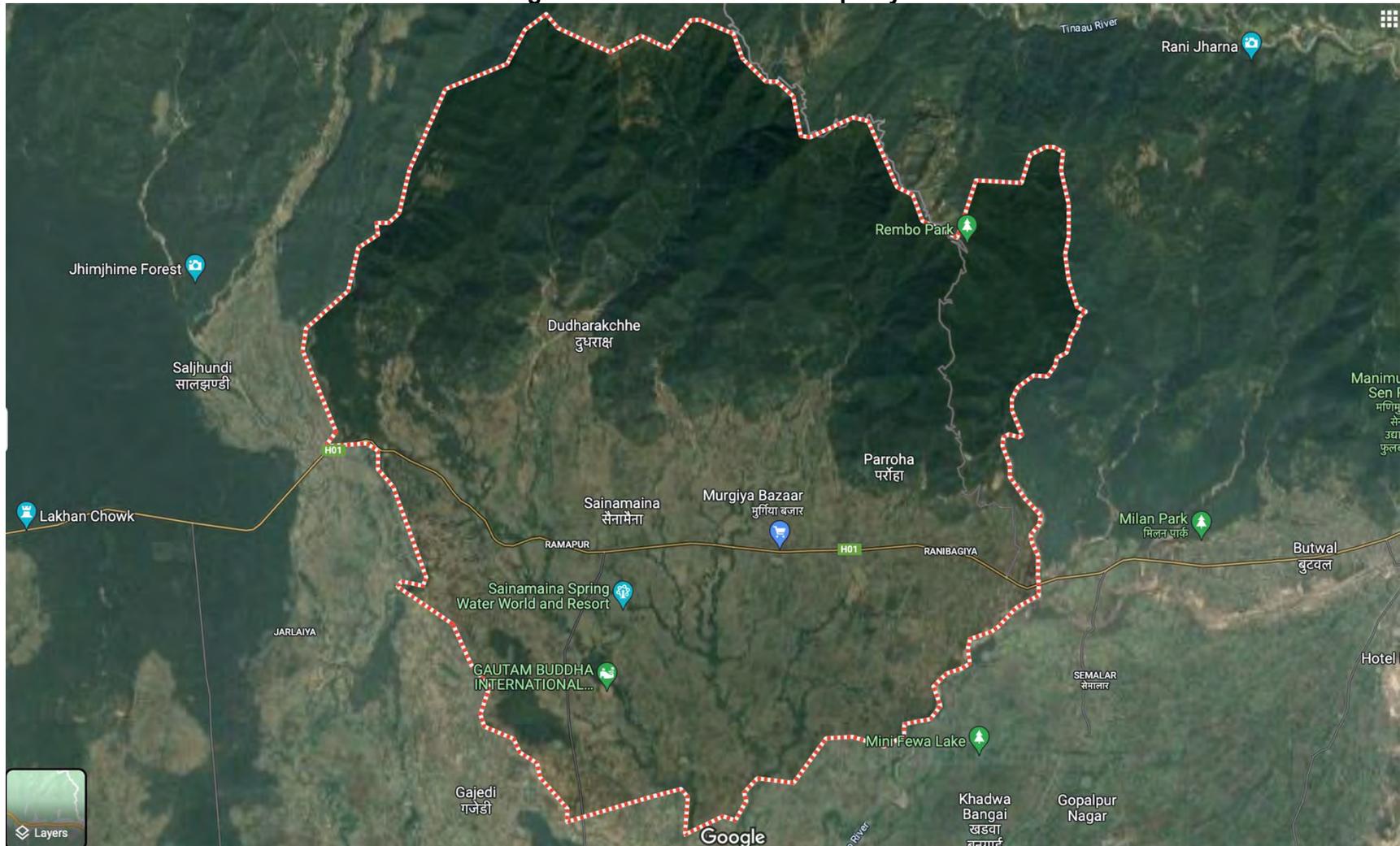


Figure 23: General View of Sainamaina Town

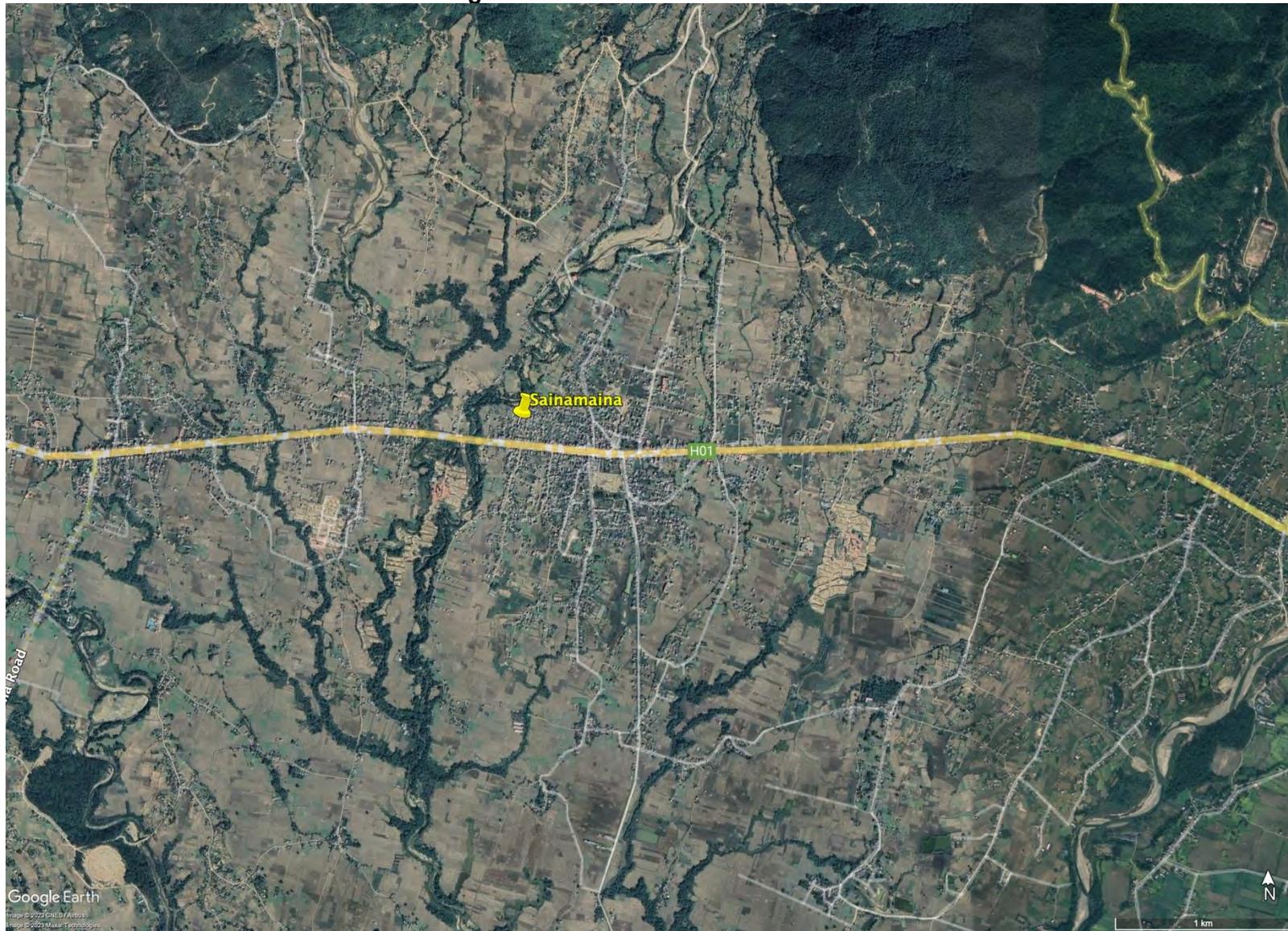


Figure 24: Lumbini Municipality

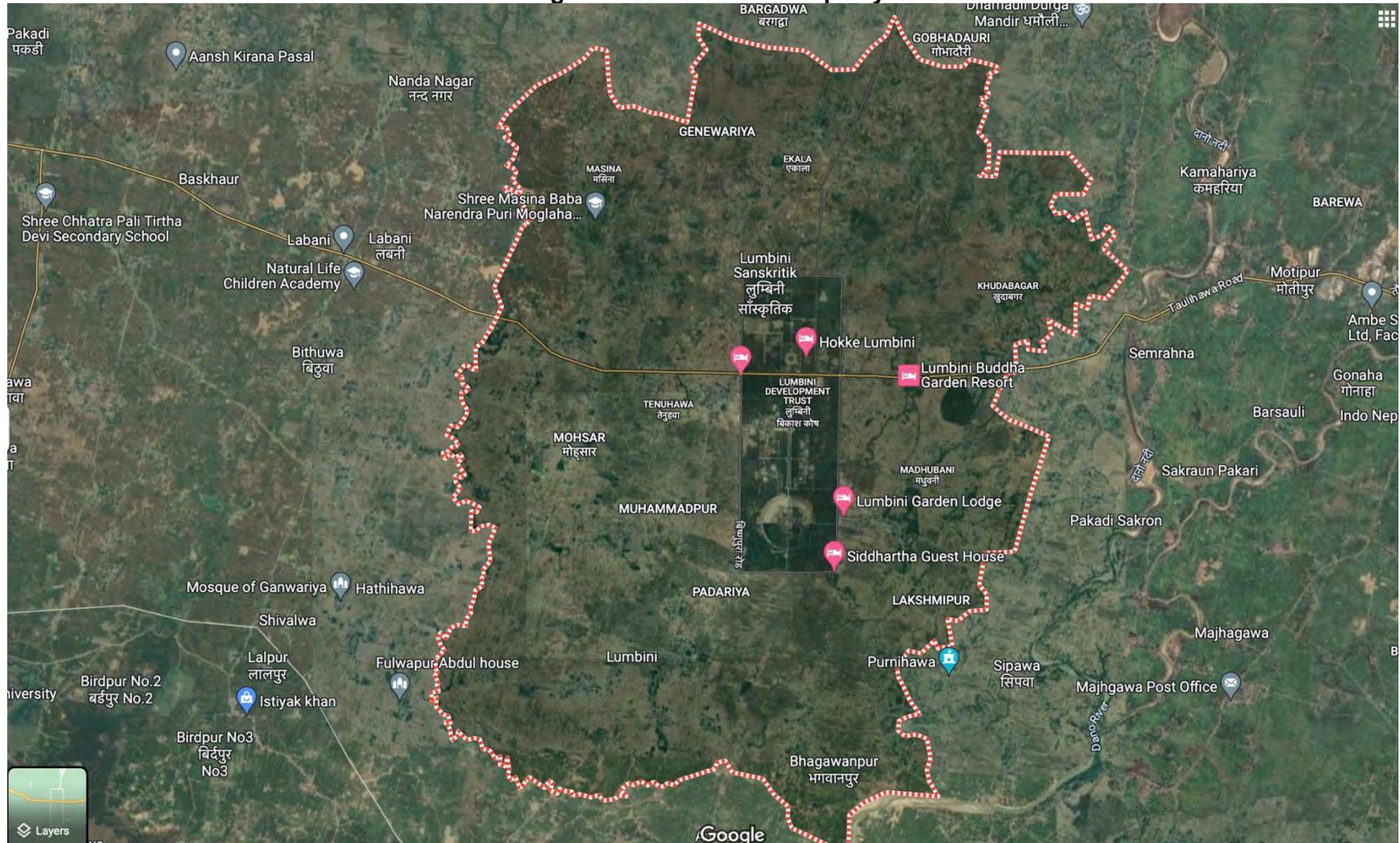


Figure 25: General View of LumbiniTown

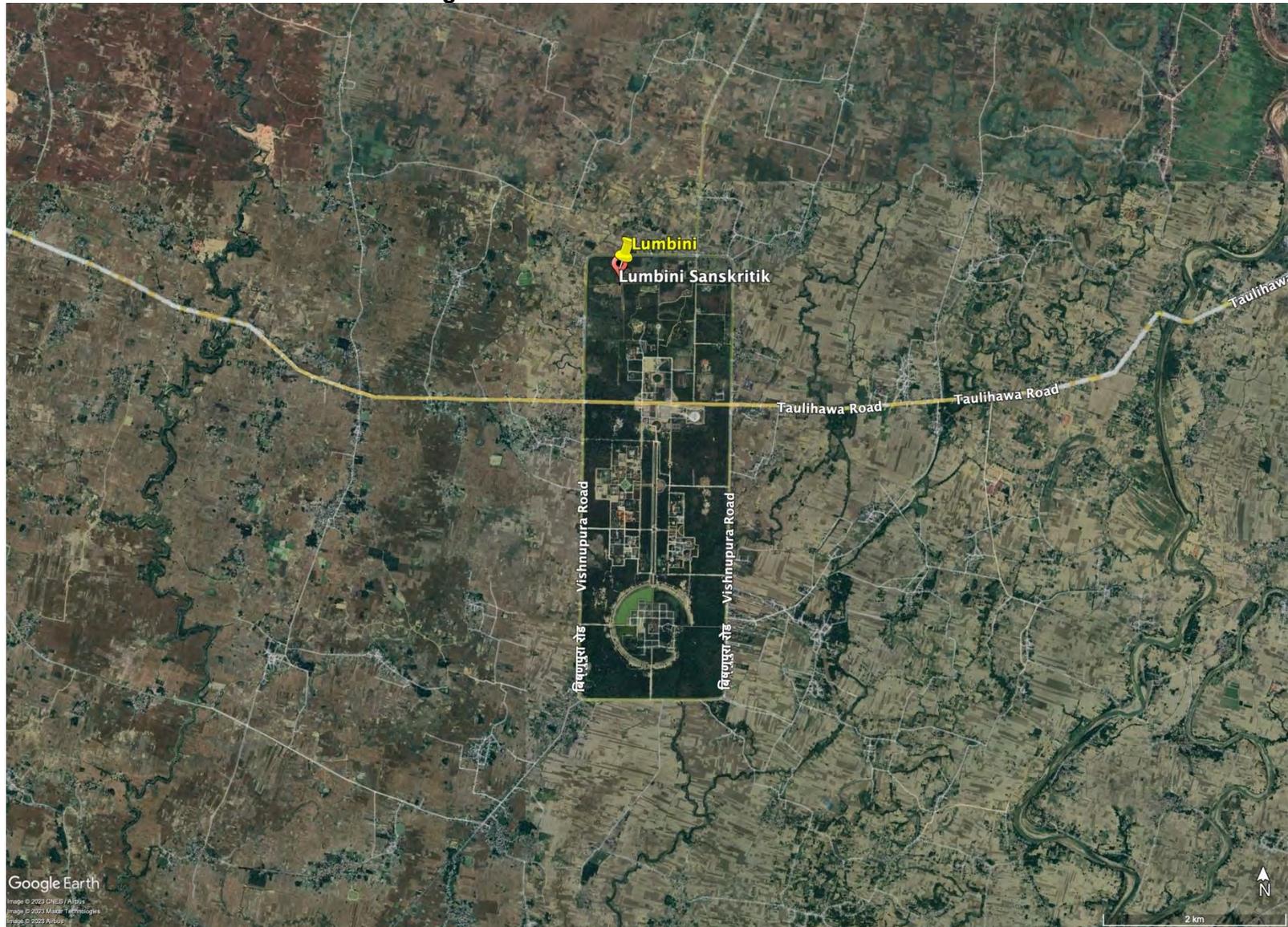


Figure 26: Sidharthnagar Municipality

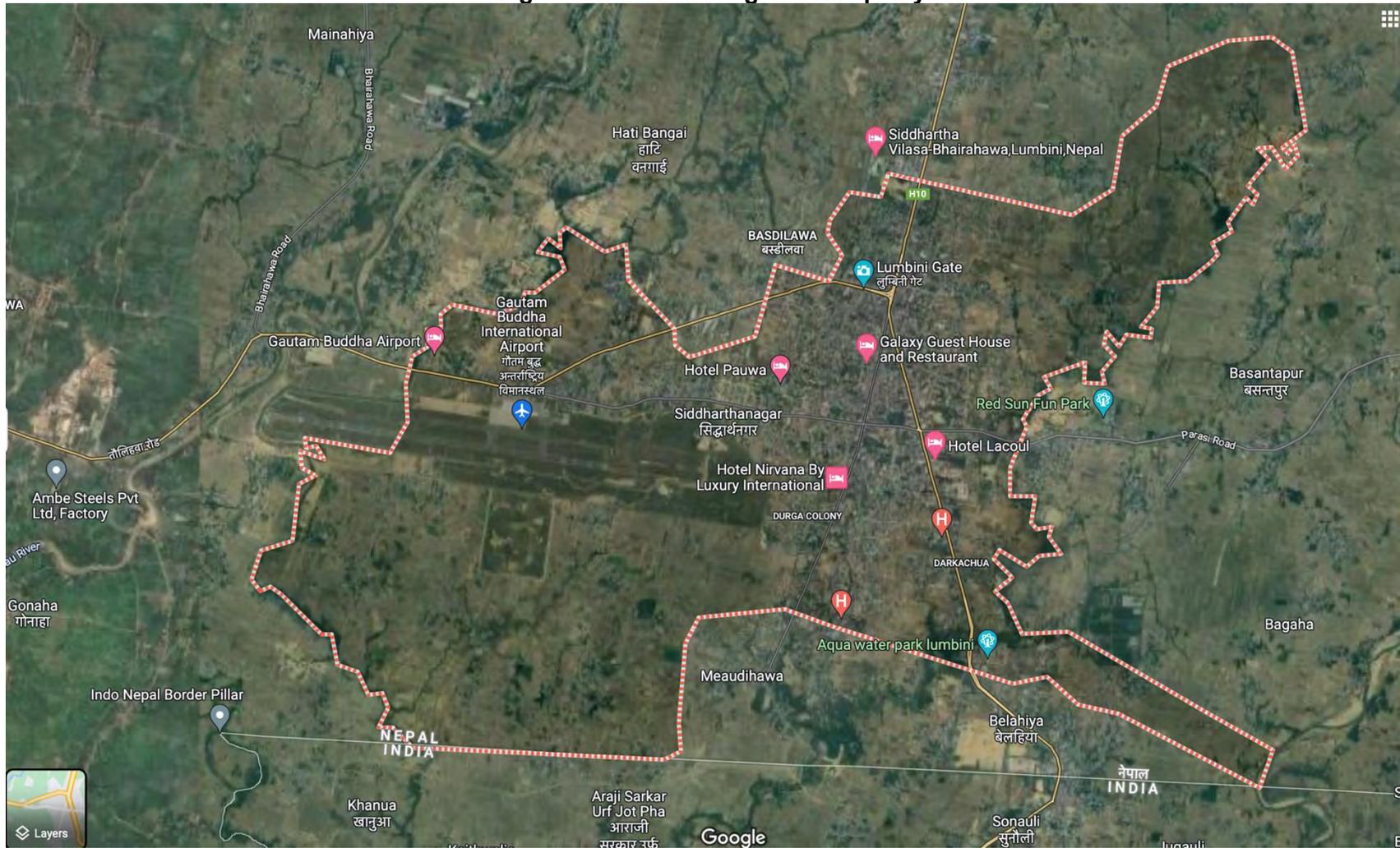
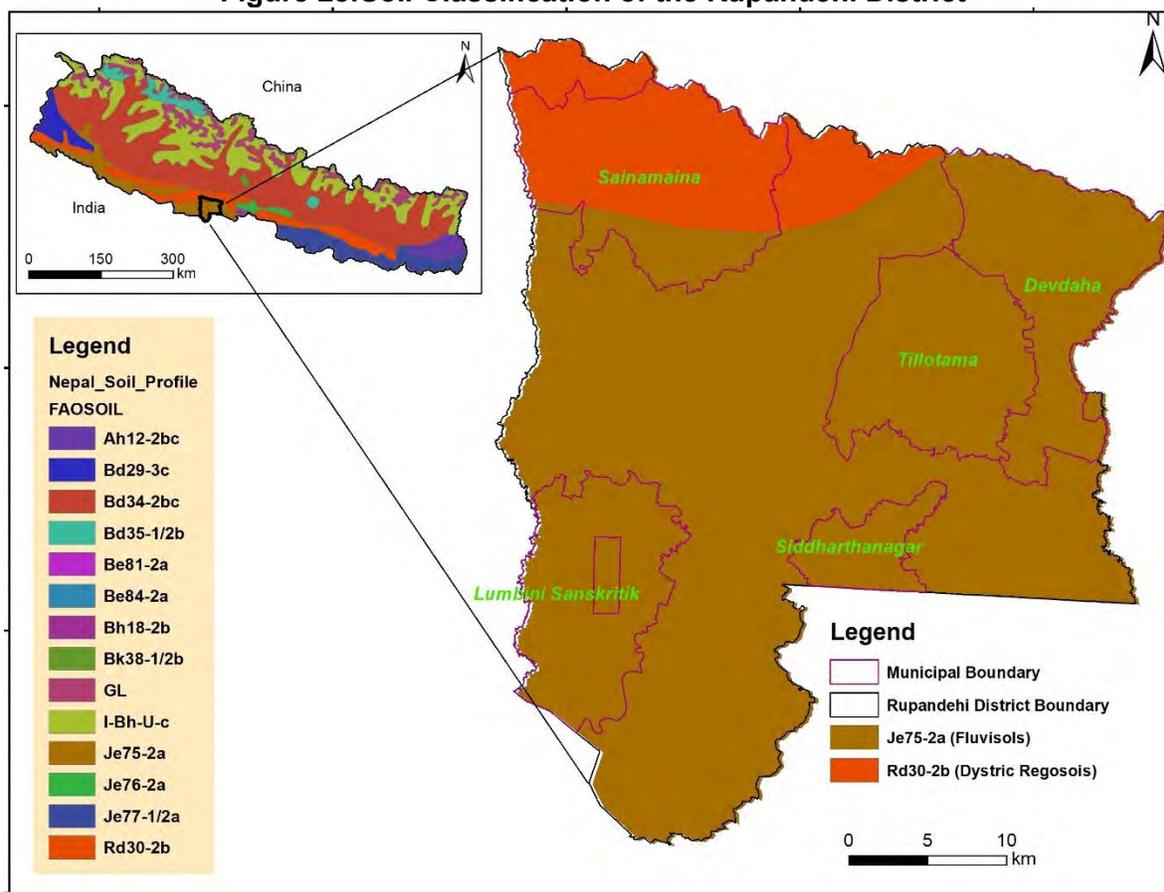


Figure 27: General View of Sidharthnagar Town



95. **Geology and Soils.** The geological formation of the project area is of Quaternary era with the recent alluvium deposit consisting of the boulders, gravels, sands and clays. According to FAO/UNESCO's SOTER (Soil and Terrain) database, calcareous phaeozems and eutric gleysols are the dominant soil type found in Drivertole-Shivapur road section. Similarly, in Patthardanda-Tinau road, eutric gleysols and eutric fluvisols are the dominant soil type. The soil classifications of the project area are described in Table 15 and Figure 29.

Figure 28: Soil Classification of the Rupandehi District



Source: FAO/UNESCO's SOTER (Soil and Terrain) database

Table 15: Description of FAO's Soil Type

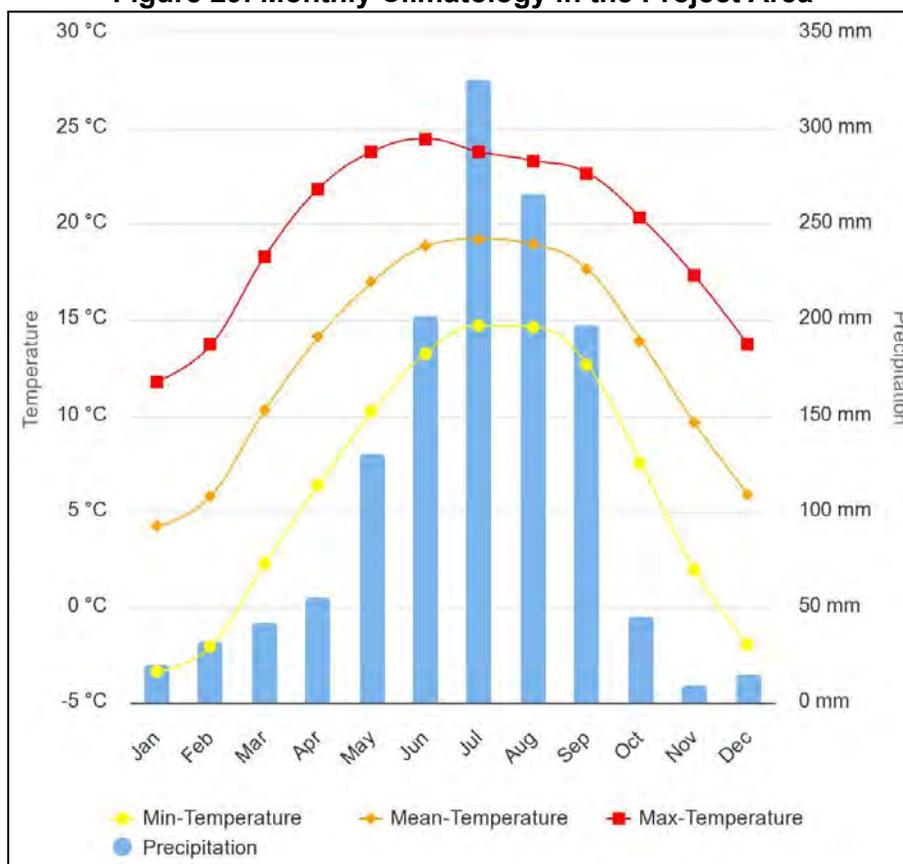
Gleysols	They are formed under waterlogged conditions and is produced by rising groundwater .
Phaeozem	Phaeozoms are marked by a humus -rich surface layer covered in the natural state with abundant grass or deciduous forest vegetation. They have a high content of available calcium ions bound to soil particles.
Fluvisols	Fluvisols are found typically on level topography that is flooded periodically by surface waters or rising groundwater, as in river floodplains .

Source: FAO/UNESCO's SOTER

96. **Weather and Climatic Condition.** The project area has a sub-tropical and tropical climate. The temperature gets hotter starting from the month of March and continues to be hot until the month of August. The maximum temperature reaches up to 42.4°C and minimum temperature up to 8.75°C. In the months of mid-December and mid-January, the project area experiences cold

weather along with the incidence of cold wave. Monsoon winds bring ample rainfall from June to August. The average annual rainfall in the area is 1,160 mm.

Figure 29: Monthly Climatology in the Project Area



Sources: *Climate Change Knowledge Portal, 2023*

97. **Air Quality.** Baseline data on air quality for the subproject area is not available. The subproject location is in a mixed-use area (residential, commercial and institutional). There are no heavy polluting industries in the area. Non-point sources of air pollution in the subproject site include emissions from vehicles, and dust from loose soil. The contractor will be required to establish the baseline air quality before the start of construction.

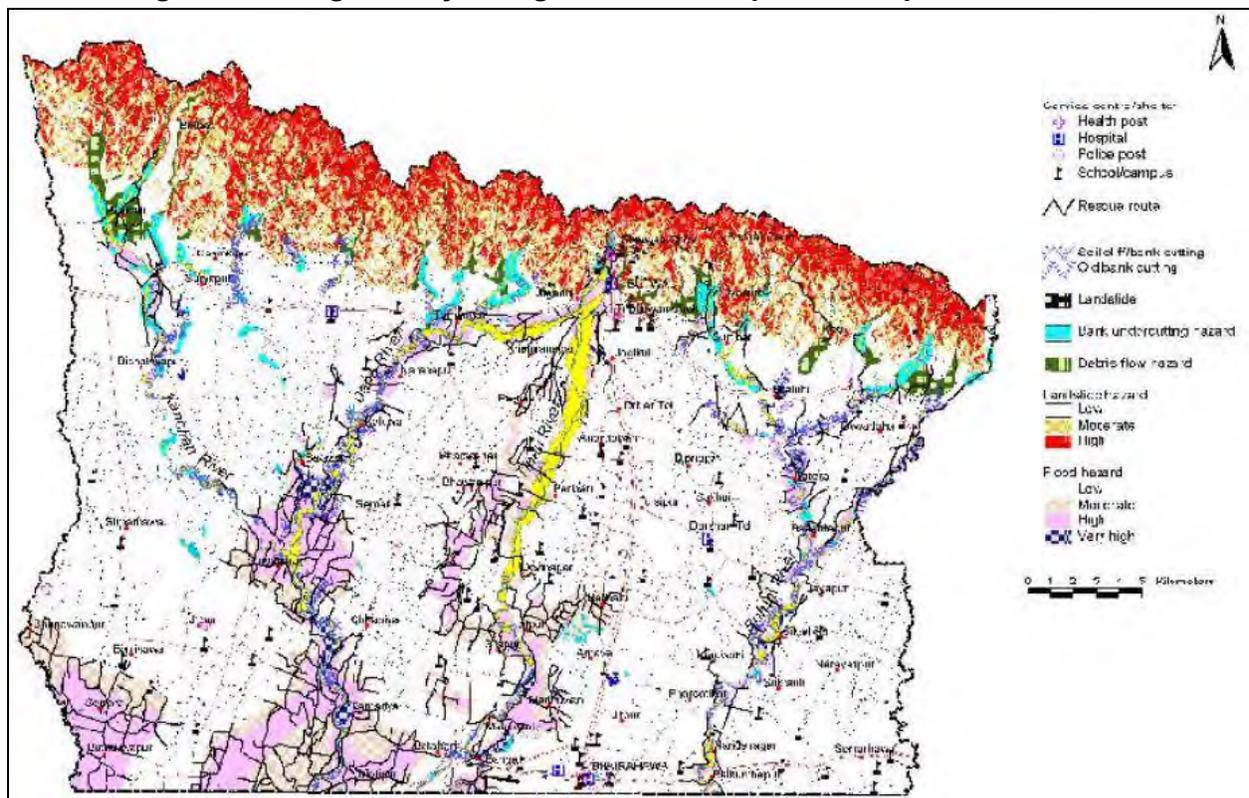
98. **Noise Level.** Baseline data on noise is not available for the subproject area. Some sources of noise pollution in the subproject site may include motor vehicles, construction work, audio entertainment systems, loudspeakers and noisy people. The contractor will be required to establish the baseline noise levels before the start of construction.

99. **Hydrology.** Tinau River is the major watershed area present in the western part of the Tilottama Municipality. Tinau River originates from the range of Chure, Siwalik and Mahabharat hills. It is a perennial river system. 16 and 13 Mauja Irrigation System and 4 Tapaha (main canal) irrigation system is in operation in the Municipality due to the continuous flow of water from Tinau River. In addition to irrigating agricultural land, the Tinau River has contributed positively to the environment. Tinau River is flashy and floods frequently, which has resulted in casualties in Rupandehi district during the monsoon seasons with high rainfall. Areas nearby Tinau river bank and Bhalwari are flood-prone areas during monsoon. However, the project area lies in the highland region from Tinau River, thus road damage due to flooding in the river is unlikely.

100. Tenar River, Danda Khola and Ghagara Khola are others major natural drainages in the project area. The existing water courses serve as canals for providing water to farmlands located at the downstream drains that collect surface run-off from major parts of the city. Over the years, with increasing development of buildings and paved areas, run-off has increased, which has made the drainage situation progressively worse. At present, the sizes of these water courses have been reduced significantly due to encroachment, lack of proper maintenance and dumping of waste in existing drains reducing their capacity to effectively function as drains during the monsoons.

101. There are various ponds and lakes in the project areas, especially in Lumbini Sanskritik municipality. Panbari and Rajabari are two water bodies / wetlands located in Sainamaina. Panbari is close to a project road. This is now in poor condition, and holds only limited water, and used for fishing. The Integrated hydrological hazard map of the Rupandehi District is presented in Figure 30.

Figure 30: Integrated hydrological hazard map of the Rupandehi District



Source: Hydrological hazard mapping of Rupandehi district, *Journal of Nepal Geological Society*.

C. Biological Environment

102. The project site does not lie within any protected areas and ecologically sensitive areas. The nearest protected area, i.e., Chitwan National Park is located about 50 Km aerial distance away from the project area. Three municipalities Sainamaina, Devdaha and Tilottama have the community forest area coverages whereas Lumbini Sanskritik and Siddharthanagar has no major forest coverages areas with few small patches only. The details of the biological environment and the community forests information are mentioned in the following sections.

103. **Community Forests.** Community forestry is a highly popular program in Nepal's forestry sector. Initially, community forest management focused on protection, but it has now shifted towards production-oriented practices with the implementation of scientific forest management plans. Local communities attach great importance to community forest management. The National Forest Plan (1976) was the first policy document to recognize the significance of people's participation in forest management. Community forestry was prioritized as a major program in the Master Plan for the Forestry Sector (1989) and has been widely implemented following the enactment of the Forest Act (1993) and the Forest Regulation (1995), which have amended as the Forest Act (2019) and the Forest Regulation (2022). These act and regulation provide a clear framework for the protection, management, and utilization of all types of national forests, including community forests. These forests play a vital role in maintaining environmental services such as erosion control, watershed protection, wind protection, species habitat, and carbon storage. The Ministry of Forests and Environment, along with its respective departments, provincial ministries, community forestry user groups (CFUGs), and District Forest Office (DFO), are the major executing agencies for forest management in Nepal. The production and harvesting of forest products can have a significant benefit on community development, forest management activities, and pro-poor programs (including indirect benefits such as environmental and ecosystem services).

104. In Sainamaina Municipality the proposed existing Panbari-Saljhandi Road section passes through the two community forest areas Kanchan CF and Jhimjhimiya-Bhulkepani CF (Figure 31). The upgrading works of the proposed road will have no major impacts to the vegetations in Sainamaina. In Devdaha municipality the proposed three roads passes through the four community forests; Milan CF, Buddha Mawali CF, Shristhi CF and Srijana CF (Figure 32). In Tilottama Municipality the Drivertole-Shivapur Road does not passes through the forest areas but the 1 km of road stretches runs nearby the Karahiya CF (Figure 33).

Table 16: Community Forest along and nearby Panbari-Saljhandi Road -Sainamaina

Chainage	Name of CF	Remarks
Ch.0+000 to Ch.0+370	Saljhandi CF	Road does not pass through this CF but nearby.
Ch.0+370 (Singha Darja CF's starting point is Panbari wetland) to Ch.1+750	Singha Darja CF	Road does not pass through this CF .CF adjacent to Panbari wetland.
Ch.1+760 to Ch.4+140	Kanchan CF	Road passes through the CF.
Ch.4+140 to Ch.5+670	Jhimjhimiya-Bhulkepani CF	Road passes through the CF.
Above Ch.5+670	Pahila Khola CF	Road does not pass through this CF but nearby.

Source: Field Study, 2023

Table 17: Community Forest along and nearby the road alignments -Devdaha

Chainage	Name of CF	Remarks
Bhaluhpul- Medical College-Bhatatol-Mukhiya Tol Piparahiya-Singha Road		
Ch.2+170	Milan CF	Road pass through this CF.
Ch.4+000 to Ch.4+110	Buddha Mawali CF	Road passes through the CF.
Ch.5+040	Shristhi CF	Road passes through the CF.
Banchauki-MaydeviPark-Mildanda- Buddha Circuit Road		

Chainage	Name of CF	Remarks
Ch.4+000 to Ch.4+110	Srijana CF	Road passes through the CF.
Ch.1+595 to Ch.2+470	Buddha Mawali CF	Road passes through the CF.
Hatbazaar- Mayadevi Marga- Banaha, Tilottama Road		
Ch.0+000 to Ch.0+660	Buddha Mawali CF	Road passes through the CF.

Source: Field Study, 2023

Figure 31: Community Forest along and nearby the Panbari-Saljhandi Road (Sainamaina)

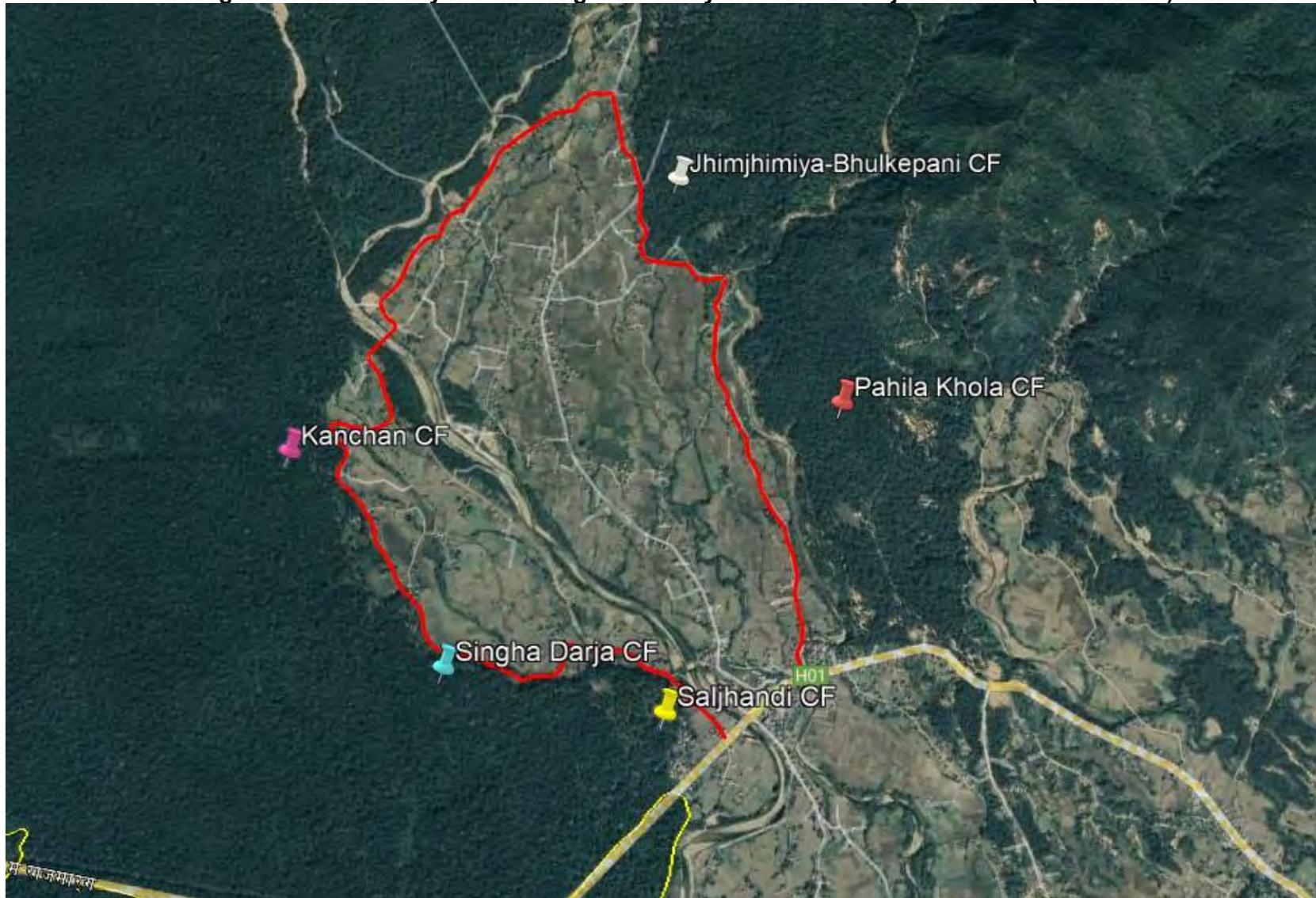


Figure 32: Community Forest along and nearby proposed three road alignments (Devdaha)

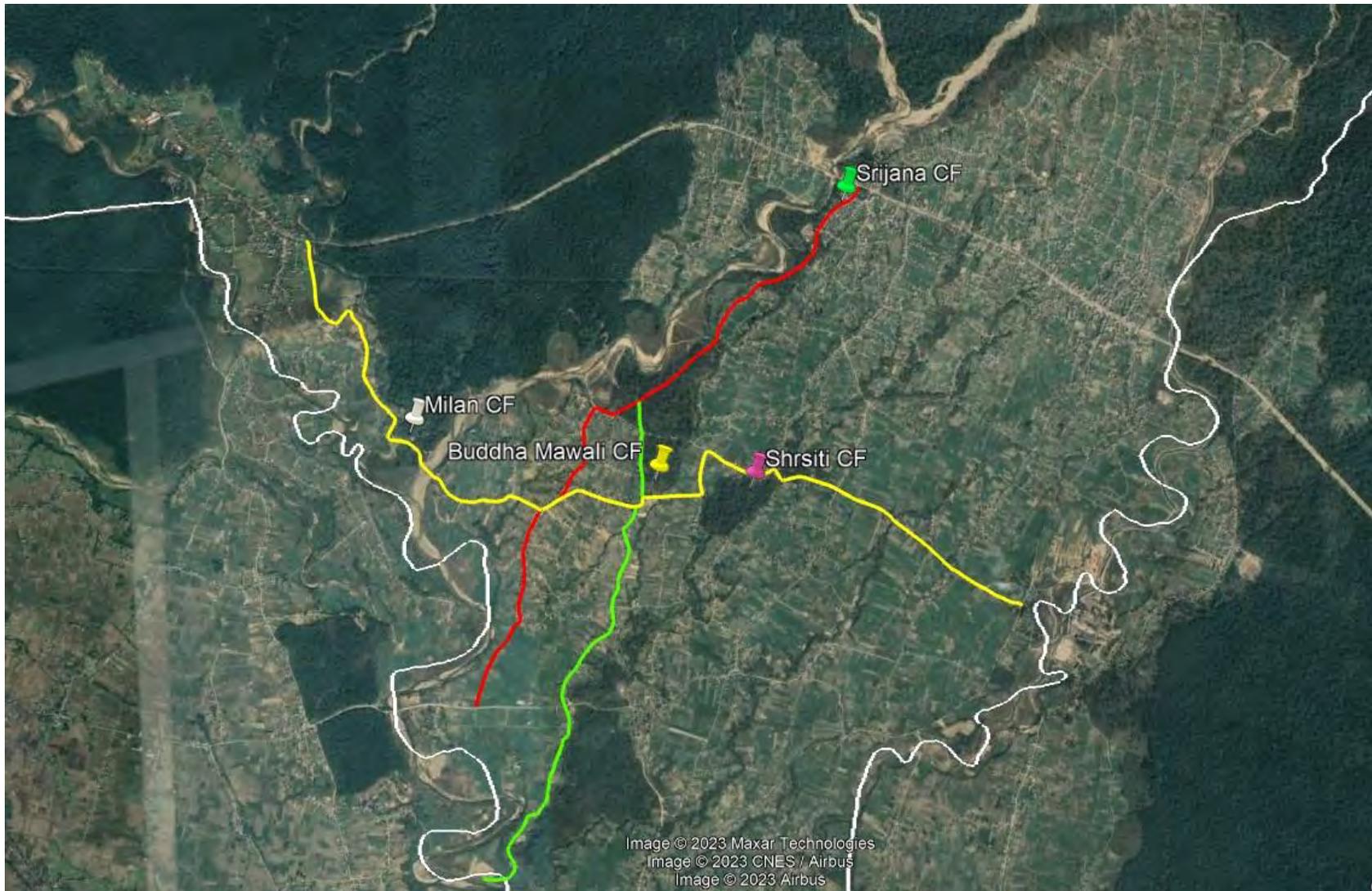
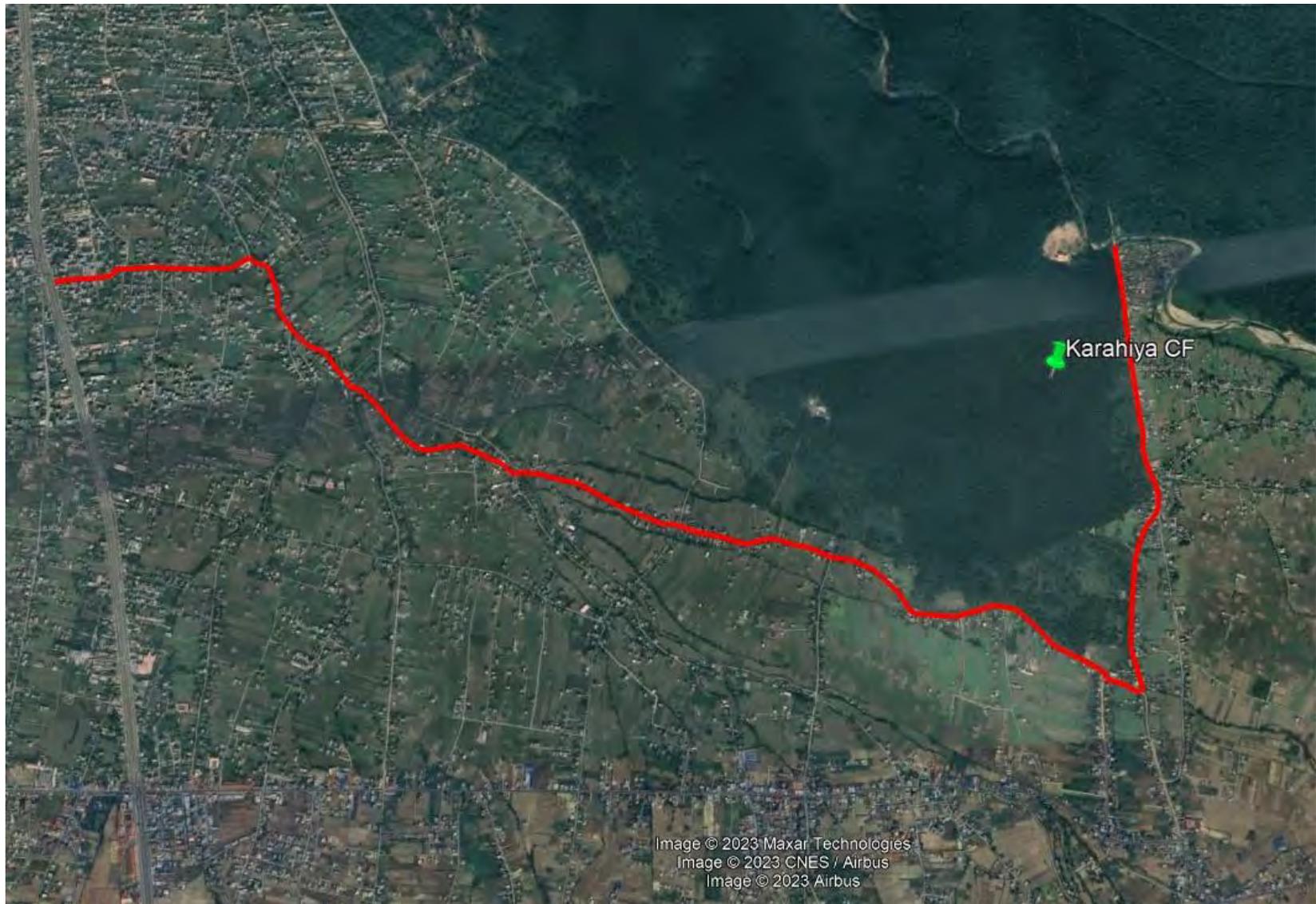


Figure 33: Community Forest nearby the Drivertole-Shivapur Road (Tilottama)



105. **Vegetation.** The major floras recorded along the road alignments and within the community forests are Sal (*Shorea robusta*), Simal (*Bombax ceiba*), Kyamuno (*Eugenia operculata*), Khayer (*Senegalia catechu*), Teak (*Tectona grandis*), Botdhayero (*Lagerstroemia parviflora*), Asna (*Terminalia tomentosa*), Jaamun (*Syzygium cumini*), Harro (*Terminalia chebula*), Barro (*Terminalia balearica*) and Sissoo (*Dalbergia sissoo*).

Table 18: Major Vegetation found in the Project Area

S.N.	Common/Local Name	Scientific Name	GoN	IUCN
1.	Sal	<i>Shorea robusta</i>	P	LC
2.	Simal	<i>Bombax ceiba</i>	P	LC
3.	Kyamuno	<i>Eugenia operculata</i>	-	LC
4.	Khayer	<i>Senegalia catechu</i>	-	LC
5.	Teak	<i>Tectona grandis</i>	-	DD
6.	Botdhayero	<i>Lagerstroemia parviflora</i>	-	LC
7.	Sisau	<i>Dalbergia sissoo</i>	-	LC
8.	Asna	<i>Terminalia tomentosa</i>	-	LC
9.	Jaamun	<i>Syzygium cumini</i>	-	LC
10.	Harro	<i>Terminalia chebula</i>	-	LC
11.	Barro	<i>Terminalia balearica</i>	-	LC
12.	Sissoo	<i>Dalbergia sissoo</i>	-	LC

Source: Field Study, 2023

Note: LC: Least Concern, DD: Data Deficient, and P: Protected

106. **Mammals.** In the community forest areas, the major mammals to be in existence are mentioned in **Table 19**. The information was collected from the local people and the community forest representatives during consultation.

Table 19: List of Mammals found in the Project Area

S.N.	Local Name/English Name	Scientific Name	GoN	IUCN
1.	Ratuwa (Barking Deer)	<i>Muntiacus muntjak</i>	-	LC
2.	Syal (Golden Jackel)	<i>Canis aureus</i>	-	LC
3.	Rato Badar (Rhesus Macaque)	<i>Macaca mulatta</i>	-	LC
4.	Spotted Deer (Chittal)	<i>Axis axis</i>	-	LC
5.	Kharayo (Indian Hare)	<i>Lepus nigricollis</i>	-	LC
6.	Bandel (Wild Boar)	<i>Sus scrofa</i>	-	LC
7.	Dumsi (Indian Crested Porcupine)	<i>Hystrix indica</i>	-	LC

Source: Field Study, 2023

107. **Aves.** In the project areas the following species of birds were recorded from project site, and its peripheral area.

Table 20: List of Birds found in the Project Area

S.N.	Local Name	Scientific Name	GoN	IUCN
1.	Bakulla (Cattle Egret)	<i>Bubulcus ibis</i>	-	LC
2.	Ghar Bangera (House sparrow)	<i>Passer domesticus</i>	-	LC
3.	Parewa (House Pigeon)	<i>Columba livia</i>	-	LC
4.	Dhukur (Spotted dove)	<i>Streptopelia chinensis</i>	-	LC
5.	Dangre Ruppi (Common Myna)	<i>Acridotheres tristis</i>	-	LC
6.	Ghar Kaag	<i>Corvus splendens</i>	-	LC
7.	Bulbul (Red-vented Bulbul)	<i>Pycnonotus cafer</i>	-	LC
8.	Koili (Asian koel)	<i>Eudynamis scolopaceus</i>	-	LC
9.	Jureli (Nightangle)	<i>Hypsipetes leucocephalus</i>	-	LC

S.N.	Local Name	Scientific Name	GoN	IUCN
10.	Sugaa (Rose-ringed Parakeet)	<i>Alexandrinus krameri</i>	-	LC
11.	Sarus Crane (Native Bird)	<i>Grus antigone</i>	V	V

Source: Field Visit, 2023

108. **Herpetofauna.** There are six species of herpetofauna listed during the field visit in the project site and the detail of those with their protected status is shown in the following table.

Table 21: List of Herpetofauna found in the Project Area

S.N.	Local Name	Scientific Name	GoN	IUCN
1.	Bhyaguta (Asian Common toad)	<i>Duttaphrynus melanostictus</i>	-	LC
2.	Cheparo (Common Garden Lizard)	<i>Calotes versicolor</i>	-	LC
3.	Ajingar (Asiatic Rock Python)	<i>Python molurus molurus</i>	P	V
4.	Sun Gohoro (Golden Monitor Lizard)	<i>Varanus flavescens</i>	P	EN
5.	Krait (Common krait)	<i>Bungarus caeruleus</i>	-	LC
6.	Dhaman (Oriental rat-snake)	<i>Ptyas mucosa</i>	-	LC

Source: Field Study, 2023

109. **Fishes.** Tinahu River, Danda Khola and Ghagara Khola are the major natural drainages nearby project areas. The species of fish found in nearby water bodies of the project area is given in the following table.

Table 22: List of Fishes found in the Project Area

S.N.	Local Name/English Name	Scientific Name	GoN	IUCN
1.	Rohu (Major Carp)	<i>Labeo rohita</i>	-	LC
2.	Rewa (Reba Carp)	<i>Cirrhinus reba</i>	-	LC
3.	Budhuna (Gotyla)	<i>Garra gotyla</i>	-	LC
4.	Titai (River Stone Carp)	<i>Psilorhynchus sucatio</i>	-	LC
5.	Nepti (Danio)	<i>Danio dangila</i>	-	LC

Source: Field Study, 2023

110. **Total Tree to be cut down and saved.** From the field study it is estimated that there 170 trees of different species to be cut down whereas 56 trees can be saved during the construction of proposed subproject. The detail of species to be cut and saved as per the subproject is shown in following table.

Table 23: List of trees to be cut down and saved in the Road Subprojects

Chainage		No. of Trees		Tree Species
From	To	Cut	Saved	
Drivertole-Shivapur Road, Tilottama				
0+000	1+000	9	3	Mango (<i>Mangifera indica</i>), Peepal (<i>Ficus religiosa</i>), Neem (<i>Azadirachta indica</i>), Shwami (<i>Prosopis cineraria</i>), Sarifa (<i>Annona squamosal</i>), Bakaino (<i>Melia azedarach</i>), Kalki Phul (<i>Callistemon citrinus</i>)
1+001	2+000	17	1	Neem (<i>Azadirachta indica</i>), Shwami (<i>Prosopis cineraria</i>), Sarifa (<i>Annona squamosal</i>), Bakaino (<i>Melia azedarach</i>), Kalki Phul (<i>Callistemon citrinus</i>), Dabdabe (<i>Garuga pinnata</i>), Kalki Phul (<i>Callistemon citrinus</i>), Amala (<i>Phyllanthus emblica</i>), Ashoka (<i>Saraca asoca</i>)

Chainage		No. of Trees		Tree Species
From	To	Cut	Saved	
2+001	3+000	10	0	Neem (<i>Azadirachta indica</i>), Bakaino (<i>Melia azedarach</i>), Mango (<i>Mangifera indica</i>), Kadam (<i>Neolamarckia cadamba</i>), Katahar (<i>Artocarpus heterophyllus</i>)
3+001	4+000	0	0	
4+001	5+000	3	3	Bar (<i>Ficus benghalensis</i>), Peepal (<i>Ficus religiosa</i>), Shwami (<i>Prosopis cineraria</i>), Jamun (<i>Syzygium cumini</i>)
Patthardanda-Tinau, Tilottama				
0+000	0+880	7	0	Ashoka (<i>Saraca asoca</i>), Cherry (<i>Muntingia calabura</i>), Neem (<i>Azadirachta indica</i>)
Bhaluhapul-Medical College, Devdaha				
0+000	0+190	6	0	Neem (<i>Azadirachta indica</i>), Bhellar (<i>Trewia nudiflora</i>), Mango (<i>Mangifera indica</i>),
0+217	1+050	14	0	Bhellar (<i>Trewia nudiflora</i>), Sisso (<i>Dalbergia sisso</i>), Bakaino (<i>Melia azedarach</i>), Neem (<i>Azadirachta indica</i>), Mango (<i>Mangifera indica</i>)
2+465	2+490	2	0	Unknown
4+100	4+110	2	0	Sal (<i>Shorea robusta</i>), Peepal (<i>Ficus religiosa</i>)
5+330	5+430	4	0	Sal (<i>Shorea robusta</i>)
5+705	5+710	1	1	Amaro (<i>Spondias pinnata</i>)
6+170	7+170	7	0	Karma (<i>Adina cordifolia</i>), Peepal (<i>Ficus religiosa</i>), Kadam(<i>Neolamarckia cadamba</i>), Tilkar (<i>Coccinia grandis</i>),
Banchauki-MayaDeviPark Road, Devdaha				
0+000	1+090	2	0	Shami (<i>Prosopis cineraria</i>), Mango (<i>Mangifera indica</i>)
1+600	2+440	3	15	Asna (<i>Terminalia elliptica</i>), Sal (<i>Shorea robusta</i>)
2+530	3+940	15	0	Sal (<i>Shorea robusta</i>), Asna (<i>Terminalia elliptica</i>), Dumri (<i>Ficus racemosa</i>), Mango (<i>Mangifera indica</i>), Neem (<i>Azadirachta indica</i>), Bakaino (<i>Melia azedarach</i>)
Ward 8 Haat bazar- MayaDevi Marga Road, Devdaha				
0+000	0+600	4	4	Sal (<i>Shorea robusta</i>), Asna (<i>Terminalia elliptica</i>)
1+160	3+480	11	0	Peepal (<i>Ficus religiosa</i>), Bar (<i>Ficus benghalensis</i>), Bakaino (<i>Melia azedarach</i>), Bhellar (<i>Trewia nudiflora</i>)
Panbari to Saljhandi Ring Road, Saina Maina				
0+000	1+330	1	0	Ephiphytes on Asna (<i>Terminalia elliptica</i>)
2+520	2+890	1	2	Sal (<i>Shorea robusta</i>), Asna (<i>Terminalia elliptica</i>)
5+560	8+862	2	13	Sal (<i>Shorea robusta</i>), Bar (<i>Ficus benghalensis</i>), Peepal (<i>Ficus religiosa</i>), Mango (<i>Mangifera indica</i>),
Duimuhan chowk to Thali Ring Road, Saina Maina				
0+000	0+180	6	0	Bakaino (<i>Melia azedarach</i>), Neem (<i>Azadirachta indica</i>), Sissoo (<i>Dalbergia sissoo</i>), Jamun (<i>Syzygium cumini</i>), Dabdabe (<i>Garunga pinnata</i>)
0+180	1+820	0	1	Peepal (<i>Ficus religiosa</i>)
Bus Terminal Access Road, Lumbini Sanskritik				
0+000	3+960	32	6	Mango (<i>Mangifera indica</i>), Neem (<i>Azadirachta indica</i>), Bakaino (<i>Melia azedarach</i>), Amaro (<i>Spondias pinnata</i>), Kadam (<i>Neolamarckia cadamba</i>), Saijan (<i>Moringa oleifera</i>), Peepal (<i>Ficus religiosa</i>), Bhellar (<i>Trewia nudiflora</i>), Sisso (<i>Dalbergia sisso</i>), Babur (<i>Acacia nilotica</i>), Guava (<i>Psidium guajava</i>), Jamun (<i>Syzygium cumini</i>), Simal (<i>Bombax ceiba</i>), Imli (<i>Tamarindus indica</i>),

Chainage		No. of Trees		Tree Species
From	To	Cut	Saved	
Urban Roads, Siddharthanagar				
27 Road Sections		11	7	Simal (<i>Bombax ceiba</i>), Mango (<i>Mangifera indica</i>), Sisso (<i>Dalbergia sisso</i>)
Total		170	56	

Source: Field Study, 2023

111. **Integrated Biodiversity Assessment Tool (IBAT).** As per IBAT screening, there is one key biodiversity area (KBA) within 1 km of project area, and within 50 km, there is one protected area and eight KBAs, details of which are provided in the table below. Farmland within Lumbini area is a KBA.

Table 24: Key Biodiversity Areas

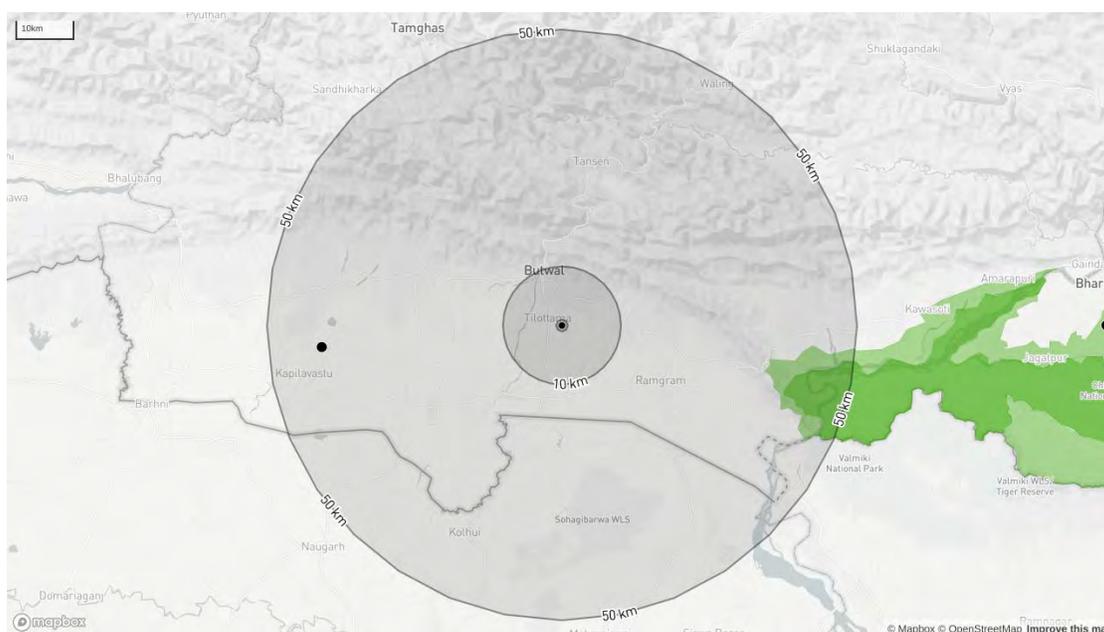
Area name	Distance	IBA
Dang Deukhuri foothill forests and west Rapti wetlands	50 km	Yes
Chitwan National Park	50 km	Yes
Farmland in Lumbini area	1 km	Yes
Gainda Tal	50 km	No
Jagdishpur Reservoir	50 km	Yes
Nawalparasi forests	50 km	Yes
Rampur Valley	50 km	Yes
Shivapur Forest	50 km	No
Sohagibarwa Wildlife Sanctuary	50 km	Yes
Valmaiki Tiger Reserve and Saraiyaman Lake	50 km	Yes

Source: IBAT PS6 & ESS6 Report, 2023

Table 25: Details of Protected Areas

Area name	Distance	IUCN	Status	Designation
Chitwan	50 km	II	Designated	National Park
Chitwan - Buffer Zone	50 km	VI	Designated	National Park-Buffer Zone
Chitwan National Park	50 km	Not Applicable	Inscribed	World Heritage Site (natural or mixed)
Jagadishpur Reservoir	50 km	Not Reported	Designated	Ramsar Site, wetland of International Importance

Source: IBAT PS6 & ESS6 Report, 2023

Figure 34: Chitwan National Park within the 50-km radius of the Subproject site

112. **Species with potential to occur.** The following Species are potential to occur in the project area.

Table 26: Species with Potential to Occur

Area Taxonomic group	Total assessed species	Total (CR, EN & VU)	C R	E N	V U	N T	L C	D D
REPTILIA	80	16	4	7	5	6	58	0
AVES	608	29	9	6	4	7	55	0
MAMMALIA	113	23	1	9	3	0	75	5
ACTINOPTERYGII	76	4	0	1	3	6	61	5
GASTROPODA	54	1	0	0	1	0	44	9
AMPHIBIA	28	0	0	0	0	0	27	1
INSECTA	107	0	0	0	0	0	10	4
MALACOSTRACA	17	0	0	0	0	0	15	2

Area Taxonomic group	Total assessed species	Total (CR, EN & VU)	C R	E N	V U	N T	L C	D D
BIVALVIA	41	0	0	0	0	0	36	5
POLYPODIOPSIDA	4	0	0	0	0	0	4	0
MAGNOLIOPSIDA	56	1	1	0	0	0	53	2
LILIOPSIDA	60	4	0	1	3	0	54	2
AGARICOMYCETES	2	1	0	0	1	0	1	0
ARACHNIDA	3	0	0	0	0	0	3	0
LECANOROMYCETES	1	0	0	0	0	0	1	0

Source: IBAT PS6 & ESS6 Report, 2023

113. **Lumbini Crane Sanctuary and surrounding Farmlands IBA.** The farmlands around Lumbini cover a large rural area where agriculture is the main land use (68%) followed by forests which covers 21.6% of the area. The forest, scrubs, wetlands and grasslands surrounding Lumbini are especially important refuge for wildlife. This area has been best known population of the globally threatened Sarus Crane (*Grus Antigone*, IUCN red list – vulnerable, VU) in Nepal and is the only known site in the country where the species breed regularly. An area covering 256 acres (about 100 hectare, Figure 36) within the Lumbini Master Plan area (Figure 38) is declared as a Sarus Crane and bird sanctuary. Lumbini Crane Sanctuary and surrounding farmlands has been declared as an Important Bird and Biodiversity Area (IBA) by Birdlife International, Presently, Lumbini Crane Sanctuary serves as an important habitat for resident and migratory birds. In a survey conducted in 2012, globally threatened birds were recorded at the Lumbini IBA which include White-rumped Vulture, Indian Spotted Eagle and Lesser Adjutant that breed and are all seen regularly. The mixed farmland, crops and livestock), forests, grassland, rivers and wetlands found in Lumbini IBA support a rich and diverse assemblage of birds including globally threatened birds. These birds are very dependent on these habitats and therefore vulnerable to any changes or loss. All the project components are located within the urban and developing areas, and none are located close to Lumbini Crane Sanctuary.

Figure 35: Lumbini Crane Sanctuary with in Lumbini Master Plan Area



D. Socio-economic and Cultural Environment

114. **Land Use.** The proposed roads project area consists of settlements and agricultural lands. The roads pass through different land use like commercial, residential, agriculture and open /barren land. Marshes and barren land are also present along the road alignment and some areas experience water logging conditions.

115. There are some private trees along the road alignment at some places. Pathardanda-Tinau Road consists of different land use like commercial, residential, agriculture and open /barren land. The proposed cold storage area is located in the farmlands area presently not cultivated. Similarly, most of the area of the Devdaha road sections, Sainamaina Ring Road 1 and 2 mostly consists of cultivated land. Additionally, the project area also consists of scattered settlements, barren land and community forest.

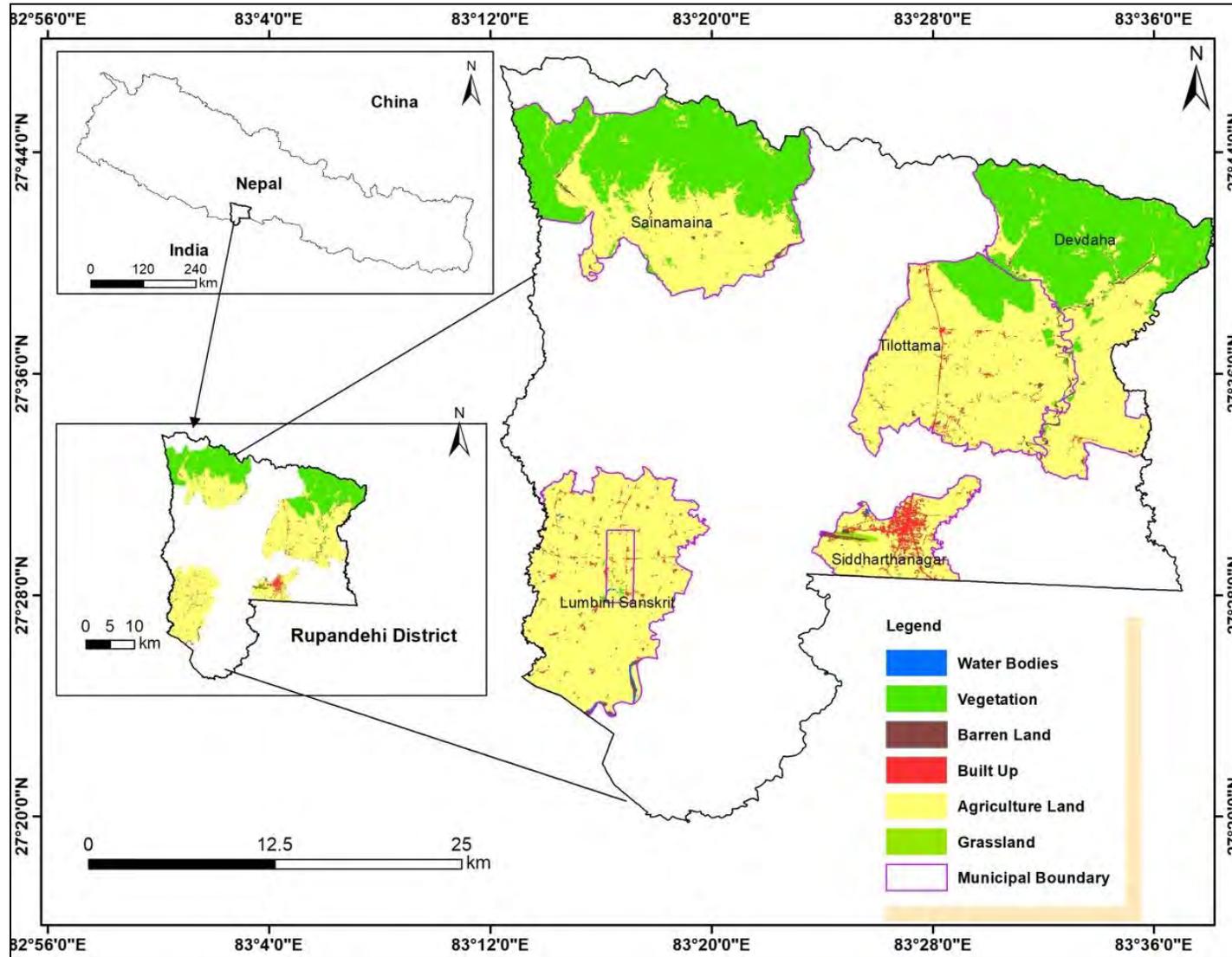
116. The current land use has been broadly categorized as built-up area, agricultural area, vegetation cover, grassland, barren land and water bodies. Out of total area cover by 5 project municipalities, 64.73% of the land is cultivable one whereas 31.47% of land is cover by vegetation, 2.20% of land is built up, 0.97% is barren, 0.44% is grassland and 0.20% is cover by water bodies including river, lakes and marsh land. The detail of land use and land cover is shown in following figure and the Table 27 and Figure 36.

Table 27: Present Land Use in Project Area

Land Use Type	Area (sq. km)	Percentage
Water Bodies	1.14	0.20
Vegetation	182.64	31.47
Barren Land	5.61	0.97
Built Up Area	12.79	2.20
Agricultural Land	375.71	64.73
Grassland	2.55	0.44

Sources: Esri Landcover (2022) and Topographic Map, Department of Survey Nepal

Figure 36: Present Land Use of the 5 Municipalities



Sources: Esri Landcover (2022) and Topographic Map, Department of Survey Nepal

117. The general demographic information of the affected local level profile is presented below under different sub-headings.

118. **Demography.** As per the National Population and Housing Census 2021, Rupandehi District has a population of 1,121,957. Of the total population, 550,478 are male, and 571,479 are female. The population of project affected Municipality is 462,148 where 222,413 are male and 239,735 are female. The average population density of the project affected local level is 908.4 persons per square km. There are 388,317 Hindu, 43,012 Muslim, 23,513 Buddhists, 3,907 Christians and 3,399 with other religions in the project affected local bodies. The population density of the project municipalities is 908.4 where Sidharthanagar has the highest population density i.e., 100.17 persons square kilometres.

119. **Caste and Ethnicity.** Rupandehi district has a multi-ethnic composition of different casts with Brahmin hills, Magar, Tharu, Kshetri, Musalman, and Yadav as the dominant ethnic groups. As per the National Population and Housing Census, 2021 of Nepal, the distribution of this ethnic composition is led by Brahmin hills (16.84%), followed by Magar (10.86%), Tharu (8.24%), Kshetri (7.85%), Musalman (7.69%), Yadav (6.73%) and remaining 8.53% in other groups. In project affected Municipality, it's also the Brahmin hills (21%), followed by Magar (13.15%), Musalman (9.86%), Kshetri (8.25%), Tharu (8.04%), Yadav (4.49%), Gurung (2.53%), Bishwokarma (3.95%), Gurung (2.53%), Chamar/Harijan/Ram (2.36%) and remaining 12.78% in other groups.

Table 28: Population Distribution in the Project Affected Municipality (Caste/ Ethnicity)

S.N.	Caste/Ethnicity	Municipality					Overall
		Devdaha	Sainamaina	Tilottama	Siddharthanaagar	Lumbini Sanskritik	
1	Kshetri	7.94	12.28	11.99	8.33	0.68	8.25
2	Brahman - Hill	22.05	34.08	34.79	13.69	0.40	21.00
3	Magar	24.06	17.56	17.00	7.02	0.11	13.15
4	Tharu	8.71	14.71	13.57	1.98	1.22	8.04
5	Newa:(Newar)	1.85	1.51	2.04	3.16	0.09	1.73
6	Bishwokarma	7.18	7.51	2.71	2.21	0.15	3.95
7	Pariyar	2.61	2.97	1.78	0.5	0.07	1.59
8	Thakuri	0.85	1.34	1.06	1.24	0.10	0.92
9	Mijar	1.64	1.80	1.10	0.34	0.02	0.98
10	Yadav	1.52	0.37	1.51	5.73	13.33	4.49
11	Gurung	4.56	0.62	3.36	4.04	0.06	2.53
12	Musalman	1.63	0.20	0.59	13.18	33.71	9.86
13	Teli	0.28	0	0.37	3.22	2.78	1.33
14	Chamar/Harijan/Ram	1.64	0.18	0.54	3.23	6.22	2.36
15	Kurmi	0.43	0.06	0.16	2.05	3.45	1.23
16	Mallaha	1.52	0.97	0.30	2.55	2.71	1.61
17	Brahman - Tarai	0.62	0.41	0.74	3.79	2.93	1.70
18	Lodh	0.22	0.12	0	0	8.12	1.69
19	Others	10.68	3.30	6.38	23.74	23.85	13.59

Source: National Population and Housing Census, 2021

120. **Literacy rate and educational institutions.** The average literacy of the project municipalities is at 83.86% with male literacy rate at 89.42%, and female literacy rate at 76.48%. Noted educational institutions include the Lumbini Technical Institute (1989), Tilottama Campus (2095), Butwal Public School (2008), St. Joseph College (1978), Devdaha Adarsha Multiple College (2008), Devdaha Buddha English Boarding (2001), Green Plant English Boarding Secondary School (1990), Sagarmatha College (2007), Sungava Public School (2012), Pashupati Secondary School (1961), Samata Shikha Niketan (2010), Sanskrit Vidyashram Bhairahawa, Brishaspati College (1999), Lumbini Buddhist University (2004), Lumbini Cultural Academy and Khudabhagar Secondary School (1956).

121. **Main sources of income.** The main occupations of the people in project Municipality include Skilled Agriculture, Forestry and Fishery Workers (35.48%), Elementary Workers (29.87%), Managers (8.28%), Craft and related trades workers (6.81), service and sales workers (6.53%), Plant and machine operators and assemblers (4.35%) Professionals (4.25%), technical and associate professional (2.45%), Office assistance (1.07%) and armed forces (0.21%) (Nepal Housing and Population Census, 2021).

122. **Access to electricity.** All the wards of the project affected municipalities have electrification network. Where, 98.86% of the households used electricity for lighting purposed and 13.45% of the household used electricity for the cooking purposes.

123. **Sources of drinking water.** Sources of water in the project affected municipalities include Tap/piped water (within premises) (48.76%), Tap/piped water (outside premises) (14.57%), Tube well/handpump (34.71%), spout water (1.03%) and other (0.93%).

124. **Sanitation.** About 67.20% of the household in the project municipalities use flush toilets with septic tank to dispose wastewater. Similarly, 27.20% of the households used Pit toilet, 3.11% household used flush toilet (Public sewerage), 0.44% of the household used public toilet whereas 2.05% household still without toilet facilities. Siddharthanagar and Tilottama Municipality also consist of a wastewater network that collects and treats sewage from households, businesses, and industries in the area. Households use on-site sanitation facilities like septic tanks, and discharge septic tank outflow and sullage into existing drains and open plots/areas in the Rupandehi. Except during rains, drains mostly carry wastewater from town area.

125. **Solid Waste Management.** Door to door collection system is practiced in project municipalities. There are tractors for the collection of waste with helpers and driver in each vehicle. Segregation at source is not in practice. Waste is collected daily in the urban areas (main road areas) while in the rest of the settlements; waste is collected once in a week. However, in rural areas the generated organic waste is managed within the household, they are either used for animal fed or composted in a pit. Hospital wastes are managed by the hospital themselves while the rest of the waste from supermarkets, health posts, commercial areas, hotels are collected by the municipalities. The waste collected by the municipalities is disposed at the dumping site, such as; for Sidharthanagar Municipality, it is disposed in Paklihawa. The solid waste disposed are not managed or treated in the site but once a year, it is compacted followed by layer of soil. The dumping site is the temporary dumping site.

126. **Health centers.** The project affected district consists of several hospitals, including Lumbini Zonal Hospital, Siddhartha Children and Women's Hospital, Butwal Hospital, and Siddhartha Ayurveda Hospital. In addition to these hospitals, there is a Nursing Home called Lumbini Nursing Home, along with 21 policlinics, creating a network of healthcare facilities. Collectively, these establishments provide a total of 460 beds for patients. Currently, the sewage disposal system in the area relies on on-site sanitation, employing septic tanks and soak pits.

However, this system has limitations. At the ward sub-health post, the prevalent illnesses reported are gastroenteritis and diarrhea, which can be attributed to factors such as inadequate water quality, the absence of proper surface drainage systems, and insufficient management of solid waste.

127. Physical Cultural Resources. The WUC Project incorporates the five major towns of the Rupandehi district. Rupandehi is named after Rupadevi, King Suddhodana's queen. The birthplace of Buddha, Lumbini, is located in the Rupandehi district. Rupandehi district also has Devdaha, the birthplace of Mayadevi (the Buddha's mother). In project towns there are other monuments where the people from different other district and country come to visit and worshipping the monuments. The list of monuments found in the Rupandehi district are listed in Table 29 and Figure 37. None of the components are located in the protected areas.

Table 29: List of Monuments around the Project Area within Rupandehi District

S · N ·	Name	Location and Coordinates	Monument Recognition / Project Components Distance	Image
1	Lumbini	Lumbini Sanskritik Municipality; Latitude- 27.46964, Longitude- 83.27584	UNESCO Heritage Site / Project components are not located in the site. A road proposed for improvement ends at the boundary, while proposed municipal building and bus termina are located 600 m and 900 m away from Lumbini master plan area boundary respectively. The Lumbini WHS is about 350 m inside the boundary of master plan area	
2	Kanyamai Temple	Devdaha Municipality; Latitude- 27.64264, Longitude- 83.57862	National Archaeological Importance / one project component in Devdaha (Banchauki Mayadevi - Mildanda Buddha Circuit Road) is 900m distance from the temple location.	
3	Bhawanipur	Devdaha Municipality; Latitude- 27.62396, Longitude- 83.56631	National Archaeological Importance/ one project component in Devdaha (Bhaluhpul Medical College-Bhatatol -Mukhiya Tol- Piparahiya Singha- Municipality Road) is 930m distance from the temple location.	

S · N ·	Name	Location and Coordinates	Monument Recognition / Project Components Distance	Image
4	Bhavani Temple premise	Sainamaina Municipality Latitude- 27.69820, Longitude- 83.33885	Religious with Cultural Importance/ one project component in Saina Maina (Ring Road 2) is 6 km distance from the temple location.	
5	Bhimsen Temple	Butwal Sub- metropolitan City Latitude- 27.705551, Longitude- 83.459131	Religious with Cultural Importance/ one project component of Tilottama (Driver Toll – Shivapur) Road) is 6.5 km distance from the temple location.	
6	Narayan Mandir	Maya Devi Rural Municipality Latitude- 27.52313, Longitude- 83.44502	Religious with Cultural Importance/ one project component in Siddharthnagar (Sugar Mill Link Road) is 980m distance from the temple location.	
7	Bairimai	Devdaha Municipality Latitude- 27.64141, Longitude- 83.57593	National Archaeological Importance / one project component in Devdaha (Banchauki Mayadevi - Mildanda Buddha Circuit Road) is 850 m distance from the temple location.	

S · N ·	Name	Location and Coordinates	Monument Recognition / Project Components Distance	Image
8	Jitgadi Fort - National Heritage	Butwal Sub-metropolitan City Latitude- 27.70337, Longitude- 83.45937	National Heritage / one project component in Tilottama (Driver Toll – Shivapur Road) is 6.3 km distance from the temple location.	

Source: [https://en.wikipedia.org/wiki/Department_of_Archaeology_\(Nepal\)](https://en.wikipedia.org/wiki/Department_of_Archaeology_(Nepal))

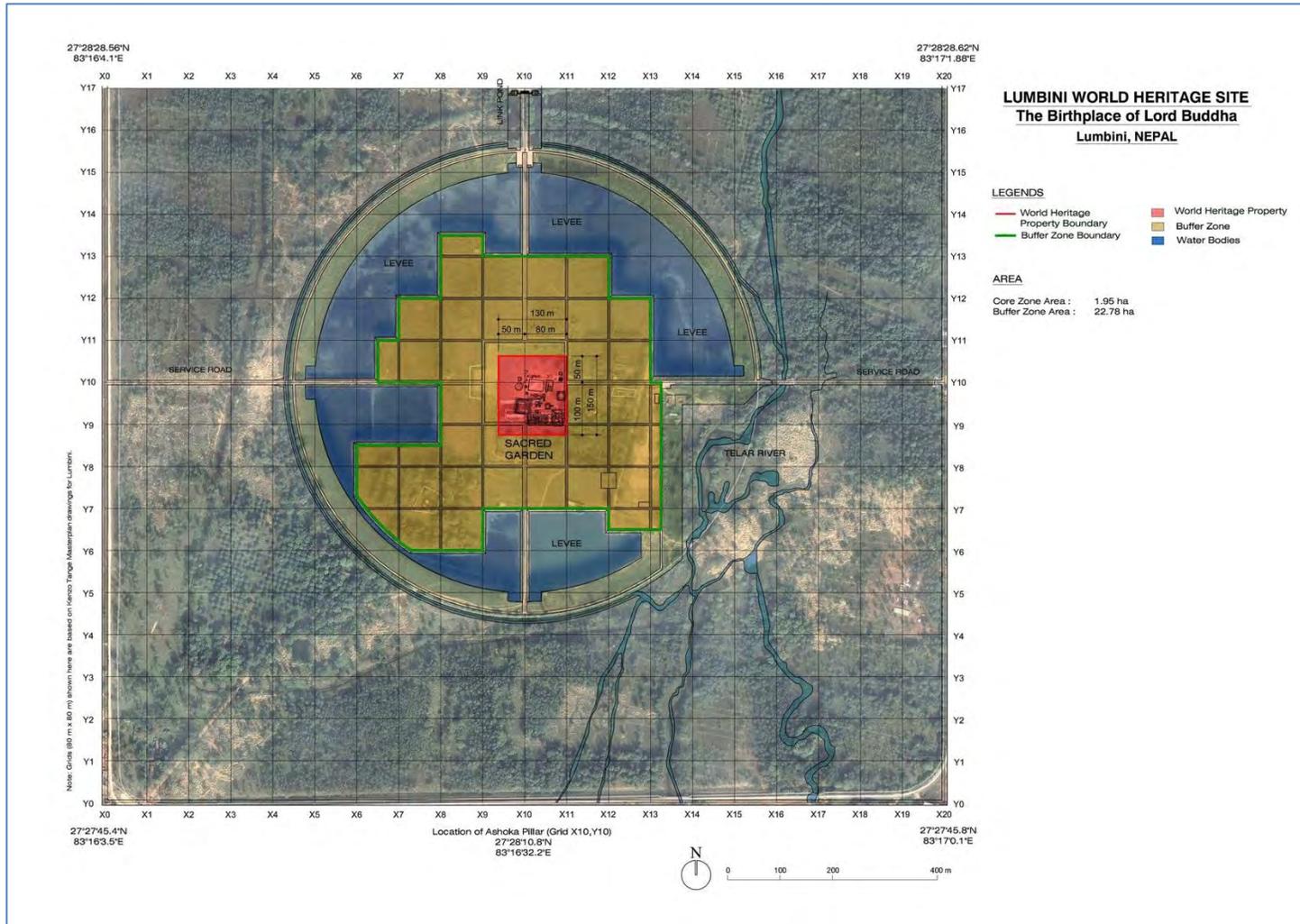
128. Lumbini which is considered to be one of the most important UNESCO World Heritage sites in Asia, is the birthplace of the Buddha lies within the Lumbini Province. Devdaha, which is nearby the project area, was the capital of the ancient Koliya kingdom, is situated in the Devdaha Municipality of Rupandehi. It is positioned approximately 35 km northeast of Lumbini, the birthplace of Gautama Buddha. Devdaha holds significant historical and religious significance as a revered Buddha shrine. The name of Lord Gautama Buddha's mother, Mawli, is derived from Devdaha, which served as the capital of the Koliya state. The site is now being developed as a Buddhist pilgrimage center, where the archaeological remains associated with the birth of the Lord Buddha form a central feature.

129. **Lumbini World Heritage Site.** Siddhartha Gautama, the Lord Buddha, was born in 623 B.C. in the famous gardens of Lumbini, which soon became a place of pilgrimage. Among the pilgrims was the Indian emperor Ashoka, who erected one of his commemorative pillars there. The site is now being developed as a Buddhist pilgrimage centre, where the archaeological remains associated with the birth of the Lord Buddha form a central feature. This is a World Heritage Site since 1997 (Figure 30). Situated in Rupandehi district of Western Nepal, it represents an outstanding universal value in terms of religious importance, culture, spirituality and archaeology⁹.

130. **Lumbini Master Plan.** Buddhist literature describes Lumbini, the birthplace of the Buddha as a Pradimoksha vana, a place blessed with blooming Sal trees and bees of five colors humming among the masses of beautiful flowers. Under the aegis of United Nations, a Master Plan was conceptualized by famed architect Kenzo Tange and approved in 1978. This master Plan covers an area of 5×5 miles with the central square mile being the Sacred Garden within which now lies the UNESCO World Heritage Site. Of the Master Plan, the 1×3 mile area includes the following three zones: (i) the sacred garden zone, (ii) the monastic zone, and (iii) the new Lumbini village zone (Figure 31). The sacred garden zone includes the World Heritage property, Maya Devi temple, the Asokan Pillar, various stupas, chaityas and old remains of the garden and its trees. The monastic zone includes monasteries and stupas. The Lumbini village zone is allocated for physical facilities like hotels, pilgrims' inns, and other facilities and amenities, a museum, an international Buddhist research center, etc. (www.servelumbini.org)

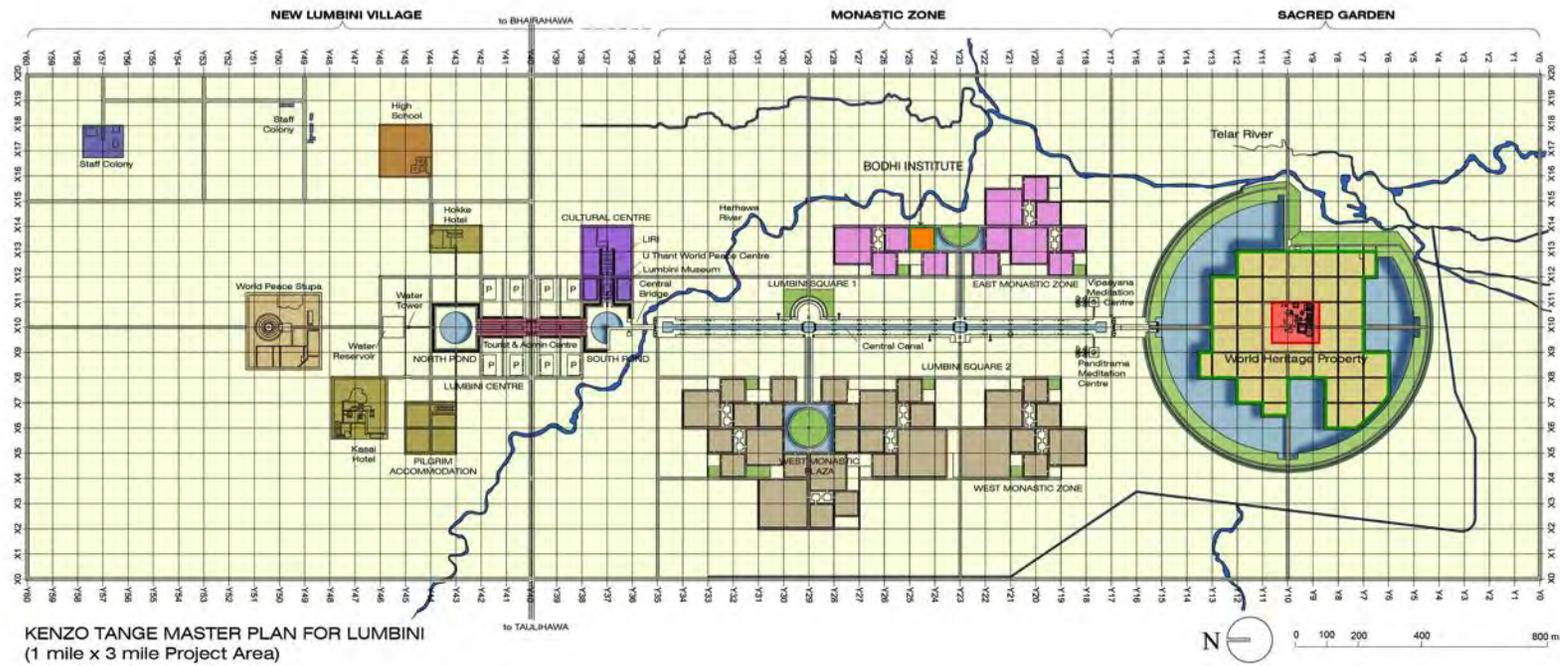
⁹ <https://www.unesco.org/en/articles/lumbini-living-world-heritage-site>

Figure 37: Lumbini World Heritage Site



Source: <https://whc.unesco.org/en/list/666/indicators/>

Figure 38: Lumbini Master Plan



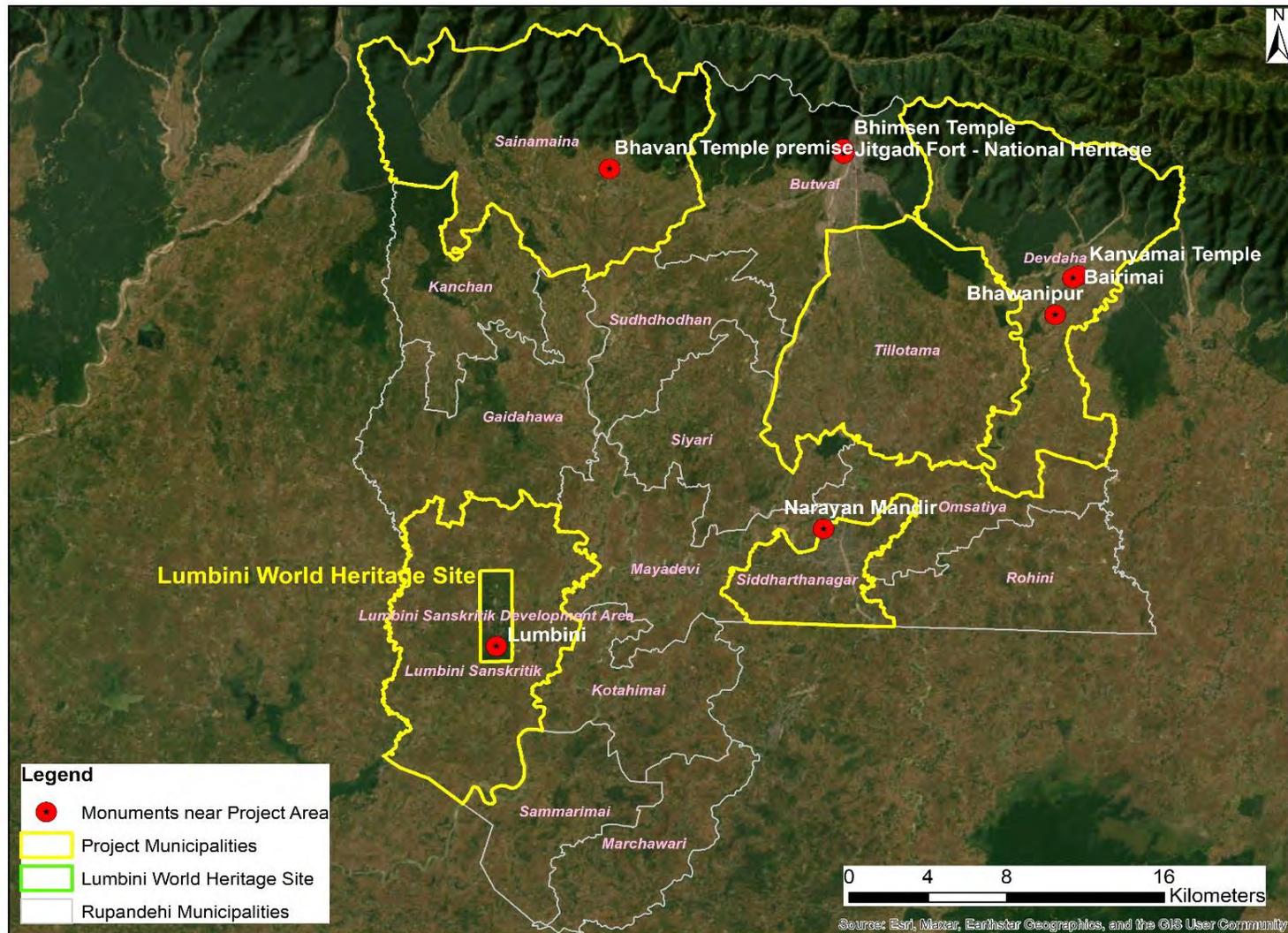
Source: <http://servelumbini.org/the-masterplan/>

131. The project components of the Lumbini Sanskritik mainly the proposed roads, bus terminal and municipal building (Figure 40). The nearest project component is the Mahilwar Chowk-Bus Terminal Road that ends at Vishnupura road which border the Lumbini Master Plan area. The distance of the proposed Municipal building is 600m and Bus terminal is 900m distance from the Lumbni master plan area. Lumbini World Heritage Site is about 350 m inside the boundary of Lumbini master plan area.

E. Site Environmental Features

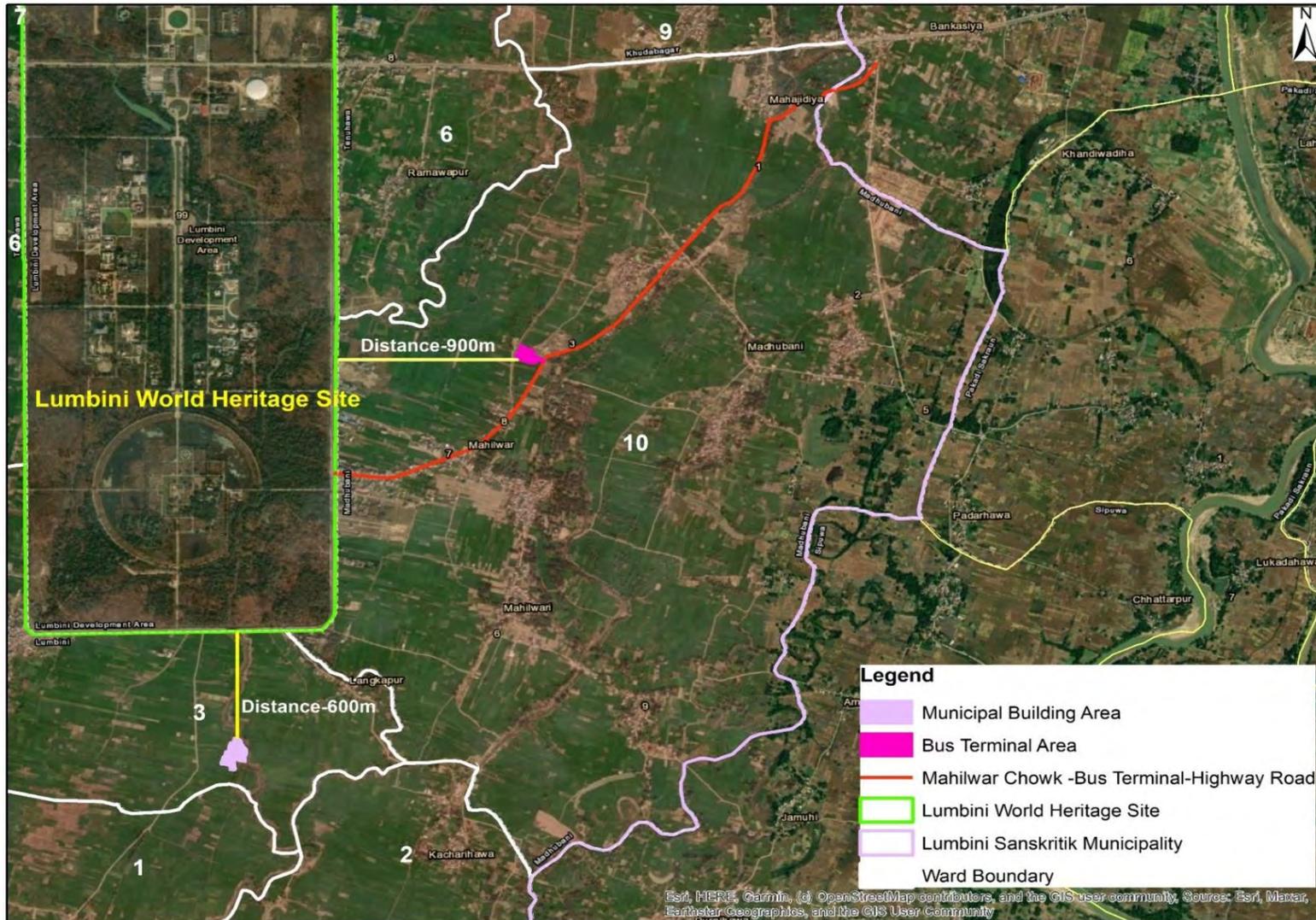
132. The Site Environmental Features of each of the project components implemented in the each of the five municipalities are provided in Tables 30 to 34 following the Figures 39 and 40.

Figure 39: Monuments around the Project Area within Rupandehi District



Source: Google Earth and [https://en.wikipedia.org/wiki/Department_of_Archaeology_\(Nepal\)](https://en.wikipedia.org/wiki/Department_of_Archaeology_(Nepal))

Figure 40: Subproject components nearby the Lumbini World Heritage Site



Source: Google Earth and Department of Survey-Nepal, 2023

Table 30: Site Environmental Features of the Road Projects Proposed in Devdaha Municipality

Subproject, Location and Environment Features	Site Photographs	
Devdaha		
<p>1. Bhaluhapul Medical College-Bhatatol-Mukhiya Tol- Piparahiya Singha-Municipality Road (7.47 Km): The Bhaluhapul Medical College – Bhatatol - Mukhiya Tol - Piparahiya Singha - Municipality Road is significant transportation route located in Devdaha Municipality. This road is the easy access to reach the medical college and an alternative route to reach Devdaha Municipality office. The road serves as a vital link connecting East- West Highway and serves communities within the region. The main motive of proposing this road is to make a connecting road to Devdaha Medical College. The road widening activities will impact with loss of few trees like Sal (<i>Shorea robusta</i>), Mango (<i>Mangifera indica</i>), and Kadam (<i>Neolamarckia cadamba</i>). Thus, Compensatory afforestation should be implemented, in such cases.</p>	 <p><i>Existing Road Section at Ch.1+000</i></p>	 <p><i>Another section of the Existing Road at Ch.4+050</i></p>
	 <p><i>Sal trees along the road sections at Ch.5+380</i></p>	 <p><i>Road section along the agriculture field at Ch.6+800</i></p>

Subproject, Location and Environment Features	Site Photographs	
Devdaha		
<p>2. Banchauki Mayadevi - Mildanda Buddha Circuit Road (4.96 Km): The Road is one of the important roads, which connects the Buddha Circuit route in Devdaha Municipality of Nepal. The road directly connects to the East- west highway and passes through Buddha Circuit serves as a vital link connecting several important areas and communities within the religion. The road starts from Sheetalnagar adjoining East-West Highway and ends at Devdaha marga, which directly connects to the Buddha Circuit. The RoW of this road is 12m. The proposed road passes through Ward no 3, Ward no 7 & Ward no 8. The existing road stretched passes through Srijana Community Forest and forest area under Lumbini Buddhist University. Most of the road stretches passes through the settlement and agriculture land area. The road widening activities will impact with loss of few trees like Sal (<i>Shorea robusta</i>), Asna (<i>Terminalia elliptica</i>), Dumri (<i>Ficus racemosa</i>), Mango (<i>Mangifera indica</i>), Neem (<i>Azadirachta indica</i>) and Bakaino (<i>Melia azedarach</i>). Thus, Compensatory afforestation should be implemented, in such cases.</p>	 <p>A Section of the exsiting road at Ch. 0+200</p>	 <p>Road section near Mayadevi Park at Ch. 1+700</p>
	 <p>Sal tree at Ch.2+350 to be cut down</p>	 <p>Road section along the agriculture field at Ch.4+800</p>

Subproject, Location and Environment Features	Site Photographs	
<p>Devdaha</p> <p>3. Ward 8-Haatbazar-Mayadevi-Banaha-Tilottama 12-Judapani Road (3.75 Km): The Ward 8-Haatbazar-Mayadevi-Banaha-Tilottama 12-Judapani Road is the route located in Devdaha area of Nepal. The road starts from Maya Devi Park under Lumbini Buddhist University area and ends at Rohini River, which is the boundary of Devdaha Municipality and Tilottama Municipality. The starting point is also the proposed Infrastructure Development construction site of Lumbini Buddhist University. The road serves as a vital link connecting Haatbazar (Local Market) of that area and connecting access road of Devdaha and Tilottama Municipality. The RoW of this road is 12m. The proposed road passes through Ward no 3 and Ward no 8. The existing road is passing through the forest area under the jurisdiction of the Lumbini Buddhist University (Previously Buddha Mawali CF). Few trees like Sal (<i>Shorea robusta</i>), Asna (<i>Terminalia elliptica</i>) and Peepal (<i>Ficus religiosa</i>) will be cut-down and the compensatory afforestation will be performed in the community forest areas.</p>	 <p><i>Startof Road Section at Mayadevi Park Ch.0+000</i></p>	 <p><i>Asna tree on right side will be saved at Ch. 0+370</i></p>
	 <p><i>Another section of the Existing Road at Ch.1+150</i></p>	 <p><i>Peepal tree on right side at Ch.3+380 will be cut</i></p>

Table 31: Site Environmental Features of the Road Projects Proposed in Lumbini Sanskrithik Municipality

Subproject, Location and Environment Features	Site Photographs	
<p>Lumbini Sanskrithik</p> <p>1. Mahilawar Chowk to New Bus Terminal: The road starts Mahilawar Chowk (near the existing Old Municipal Building) and ends at the proposed New Bus Terminal. The road is 1,560 m length. The existing road width varies from 7.5m with blacktopped road at urban sections. Upto the New Bus Terminal the road passes through urban sections. The proposed carriage way is 7.5m with the ROW maintained at 11m in the urban sections and designed to meet the local conditions at the other sections. Initially, at the Mahilawar Chowk point, the road sections are in commercial areas while later the sections go across residential areas. The road sections are in medium-dense traffic areas. There are certain trees that would be impacted and if the road alignments / sections cannot be altered to protect the trees, the same needs to be cut and compensatory afforestation should be implemented, in such cases.</p>	 <p><i>Existing Road Section View from the Mahilawar Chowk where Commercial establishments and existing Municipality Office is located</i></p>	 <p><i>Another Road section where trees and utilities may be impacted</i></p>
	 <p><i>Another section of the Existing Road along the residential areas</i></p>	 <p><i>Another section of the road (near the bus terminal) that pass through rural setting</i></p>

Subproject, Location and Environment Features	Site Photographs	
<p>Lumbini Sanskrithik</p> <p>2. New Bus Terminal to Highway: The road starts from the New Bus Terminal and terminates at Mahajidiya Chowk. The total length of the road is 2.46kms. The road passes through sparsely populated areas. Presently, majority of the surrounding areas are agricultural in nature. However, the areas are increasingly getting urbanized and is indicated by the residential plots being marked on the agricultural fields. The existing road section is graveled and certain sections near the urban areas are blacktopped. The current clear road width is 9 m. The proposed carriage way is 7.5m and the ROW maintained at 11.5m. There are a few trees including Sissoo and Mango Trees that may be impacted. Also, there is a sacred Peepal tree that would need to be protected.</p>	 <p><i>A section of the road near the Bus Terminal</i></p>	 <p><i>A Sissoo Tree at the edge of the ROW that may be impacted</i></p>
	 <p><i>Another Section the Existing Road</i></p>	 <p><i>Another road section passing through agricultural fields, a Mango tree within the TOW and an educational institution at the far end</i></p>

Subproject, Location and Environment Features	Site Photographs	
<p>Lumbini Sanskrithik</p>	 <p><i>A sacred Peepal Tree beside the ROW that would need to be protected</i></p>	 <p><i>A view of the existing road section from the End-Point</i></p>
<p>3. Access Road from Highway to New Municipal Building: Only the Formation of the existing road has been built. The existing road shall be upgraded into a carriage way of 7.5m and the ROW maintained at 11.5m. There are a few utilities (electric poles) crossing the road that would need to be shifted. Agricultural fields are located along the road.</p>	 <p><i>One view of the existing condition of the Access Road from the Highway to the proposed New Municipal Building</i></p>	 <p><i>Another close up view of the Access Road from the Highway to the proposed New Municipal Building</i></p>

Subproject, Location and Environment Features	Site Photographs	
<p>Lumbini Sanskritik</p> <p>4. New Bus Terminal - The Bus Terminal is located in Ward-10, Madhubani of the Lumbini Sanskritik Municipality. Geographically the proposed location is situated at 27°40'45.1164" North and longitudes 83°30'25.272". It lies at a distance of 2.5 km from Jhulanipur, the nearest place on the Siddhartha Highway. The site size of the proposed Bus Terminal is 11,775m². The site is selected based on the availability of government land. Surrounding area being developed as residential area, converted from the existing agricultural use. The access road is on the higher elevation compared to the site and surrounding area. A drainage channel is passing through the site in the southern site. This has no defined banks, and as per the local information, it flows only during rains. It also acts as bypass channel during heavy canal flow (during heavy rains) to discharge into River Koiliwaha in the downstream. A proper drainage system is needed for the facility and surroundings.</p>	 <p><i>Board indicating the site to have been selected for the Bus Terminal and the Access Road from the Mahilawar Chowk</i></p>	 <p><i>A view of the Bus Terminal Site</i></p>
	 <p><i>Closeup view of the drainage channel located at the periphery of the site and the residential plots being marked on the agricultural field indicating increasing urbanization</i></p>	 <p><i>A closeup view of the barrage gates that open into the natural drainage channel located at the periphery of the site</i></p>

Subproject, Location and Environment Features	Site Photographs	
<p>Lumbini Sanskrithik</p> <p>The drainage channel needs to be well defined with proper banks, and adequate capacity provided to smoothly convey water from upstream to downstream without leading to water logging or flooding. This will be ensured in the design. Existing culvert position will not be changed so that flow downstream is uninterrupted.</p>	 <p>Drain and low lying area partly in the site</p>	 <p><i>Existing culvert</i></p>
	 <p>Irrigation canal on the western side of the site</p>	

Subproject, Location and Environment Features	Site Photographs	
<p>Lumbini Sanskritik</p> <p>5. New Municipality Office Building - The Lumbini Sanskritik Municipality has proposed the construction of the Municipal building in ward no. 3 and is 600m distance at southern side from the Lumbini World Heritage Site. The proposed building area is 14,762 sq.m. This site is located near river Telar that flows on the eastern side of the proposed site. There are few trees on the site.</p>	 <p><i>The site for the Proposed New Municipality Office Building with a lone tree at the site that may be impacted</i></p>	 <p><i>Another view of the site for the proposed New Municipality Office Building with a river at the periphery of the site (near the tree in the photo above)</i></p>

Table 32: Site Environmental Features of the Road Projects Proposed in Saina Maina Municipality

Subproject, Location and Environment Features	Site Photographs	
<p>Saina Maina</p> <p>1. Saina Maina Ring Road 1 – Panbari to Saljhandi Section: The road starts from Panbari lake near Kanchan River bridge and ends at Pahili Khola bridge, Saljhandi near Bankatti of ward number 10 in Saina Maina Municipality. The road is 9,473 m in length. Both the starting and end point of the road meets the East – West Highway (NH -01). The existing road width varies from 10 m to 12 m with blacktopped road at urban sections and 5 – 7 m width for graveled road of the alignment section. The proposed carriage way is 7.5m with the ROW maintained at 11m in the urban sections and designed to meet the local conditions at the other sections. The road passes through the Panbari Lake that irrigates 300 Bighas of Land which is source of livelihood for 500 households. Half of the road sections passes through the Saljhandi Community Forests where majority of the trees are Sal. The rest pass through urban areas and agricultural lands. The road sections are in low-dense traffic areas. There are certain trees that would be impacted and if the road alignments / sections cannot be altered to protect the trees, the same needs to be cut and compensatory afforestation should be implemented, in such cases.</p>	 <p><i>Existing Road Section</i></p>	 <p><i>A View of the Panbari lake</i></p>
	 <p><i>Another section of the Existing Road</i></p>	 <p><i>Another section of the road passing through the Saljhandi Community Forests where tree islands have to be used to save the trees</i></p>

Subproject, Location and Environment Features	Site Photographs	
Saina Maina		
	 <p><i>Banyan Tree at the edge of the ROW along the road section</i></p>	 <p><i>Another section of road within the Community Forests where road alignments need to be altered to ensure safety of users as well as conserve the trees</i></p>

Subproject, Location and Environment Features	Site Photographs	
<p>Saina Maina</p> <p>2. Saina Maina Ring Road 2 – Duimuhan Chowk to Thali Section: The road starts from Duimuhan Chowk and ends at Thali of ward number 11 of Saina Maina Municipality. The total length of the road is 5,261 m. The existing road from Ch: 0+000 to Ch: 0+540, is graveled and the remaining all is blacktopped except under construction bridge section at Ch: 2+980. A new bridge is being constructed at Ch: 0+420 over Kanchan River and with 7.5 m width and footpath 1.5 m on either side. The current clear road width is 30 feet (9 meters) only with 7 m carriage way and 2 m shoulder width. The proposed carriage way is 7.5m and the ROW maintained at 11.5m. There are a few utilities (electric poles) along the road that would need to be shifted. There are a few local streams that cross the road for which there are existing culverts, as well.</p>	 <p><i>A section of the road with culverts and utilities</i></p>	 <p><i>Another road section passing through agricultural fields</i></p>
	 <p><i>Another section of the the existing Road passing through areas that have a rural setting</i></p>	 <p><i>Another section of the Road with a Transmission Tower that cannot be shifted.</i></p>

Table 33: Site Environmental Features of the Road Projects Proposed in Tilottama Municipality

Subproject, Location and Environment Features	Site Photographs	
<p>Tilottama</p> <p>1. Driver Tole - Shivapur Road: The road starts from Driver Tole and ends to Sukhaura Khola Bridge on another end which ultimately joins to East-West Highway. The total road length is 6.81 km. Majority of the road sections is coming up in residential areas interspersed with agricultural fields as well. The road alignment is blacktopped with few graveled roads section. The existing road width varies from 6-10m and the proposed RoW is 11.5m. There is existing canal at road sides of the alignment, dismantling of canal is not proposed. Presence of Neem, Asana and Mango Tree Species at certain locations and few are to be cut down. The majority of the roads are in medium-dense traffic areas. Hence, appropriate arrangements should be provided during the construction period to ensure that the existing traffic movement is not impacted to a large extent.</p>	 <p><i>Existing Road Section</i></p>	 <p><i>Irrigation Canal along the Road Section</i></p>
	 <p><i>Mango Tree at the edge of the Road</i></p>	 <p><i>Another section of the road with canal on the right amid residences</i></p>

Subproject, Location and Environment Features	Site Photographs	
<p>Tilottama</p> <p>2. Pathardanda-Tinau Road: This road starts from Pathardanda of Ward no. 15 and ends to Tinau River Bridge of ward no. 14 of Tilottama Municipality connecting Siddhartha Highway to Siyari Rural municipality. The majority of road alignment sections is blacktopped. The road alignment passes through Ward no. 15, 13 and 14 of the Municipality. The existing road width varies is 8 m - 12 m. Presence of Neem, Asana and Mango Tree Species at certain locations and few are to be cut down. The road is in medium-dense traffic areas.</p>	 <p>A Section of the existing road</p>	 <p>Neem tree to be cut down at Ch.0+860</p>
	 <p>Existing Material Sourcing Centre that can impact Baseline Air Quality near the Tinau River Bridge</p>	 <p>Existing Religious Structure within the ROW that may be impacted</p>

Subproject, Location and Environment Features	Site Photographs	
<p>Tilottama</p> <p>3. Cold Storage: The cold storage is located in Ward-17, Gangoliya of the Tilottama municipality. Geographically the the proposed location is situated at 27°34'15.41"N, 83°30'39.23"E. It lies at a distance of 4.6k m from Kotihawa, the nearest place on the Siddhartha Highway. The project site is proposed on government land surrounded by the farmland. Slightly low lying / water logging during heavy rains. The proposed capacity of cold storage is 3000 MT and warehouse is 5000 MT. The cold storage site has an area of 35,576 m² of land. Two Simal trees and Mango tree nearby the access road, which will not be disturbed or removed. Site is barren land surrounding by agricultural lands. There are no trees within the site, and the nearest habitation is 1.5kms from the site. Site is accessible by an existing road, that connects to Siddharth Highway about 6km away. Access road improvement is not proposed in the subproject. The cold storage facility will have a 6m cold storage plant, a 6m peripheral road, a 15m road in the front, areas for unloading and loading of trucks, water and sanitation facilities and solid waste collection facilities. The cold storage area will also house a wetland at the low-lying portion of the site.</p>	 <p><i>A View of the selected site for Cold Storage Facility</i></p>	 <p><i>Another view of the selected site for the Cold Storage Facility</i></p>
	 <p><i>The low-lying portion of the site where a water body / pond is proposed</i></p>	 <p><i>Simal tree and Mango tree nearby the cold storage facility (but outside the site)</i></p>

Table 34: Site Environmental Features of the Road Projects Proposed in Siddharthanagar Municipality

Subproject, Location and Environment Features	Site Photographs	
<p>Siddharthanagar</p> <p>1. Simapath-Ranigaun-Sakuni_road (0.82 km) - The Simapath-Ranigaun-Sakuni Road is regarded as a significant transportation route starts from Sakuni path and ends at Simapath. The entire road section lies in ward no 1. The ROW of this road is 8m. The existing road is gravel Road up to CH 0+700 whereas from CH 0+700 to end, the road is black topped. There is not any existing drain up to Ch 0+700, however a new drain is being constructed at the end section of this road. The drainage flow direction is from Sakuni path to the end. Few pole size tree of sisso needs to be cut down nearby the road section.</p>	 <p><i>Existing Road Section at Ch.0+800</i></p>	 <p><i>Pole size trees to be cutdown at Ch.0+550</i></p>
<p>2. Sakunipath to Danda khola Road (0.725 km) - The proposed road starts from Sakuni path and ends at Danda khola with minimal settlement and road is also proposed to link Danda Corridor. The ROW of this road is 8m. The existing road is a graveled without drain facilities. The majority of the proposed road area sides is cultivation area and no impact to the vegetations. The drainage flow direction is from Sakuni Path to end.</p>	 <p><i>Existing Road Section at Ch. 0+150</i></p>	 <p><i>End section of Road at Ch. 0+725</i></p>

Subproject, Location and Environment Features	Site Photographs	
<p>Siddharthanagar</p> <p>3. Bimaanghat to North (0.902 km) - The Road starts from Bimaanghat and ends at Lumbini road (Feeder Road). This road is located at ward No. 4. The ROW of this road is 18m. There is an existing canal crossing at the road section. There is no existing drain. There is a settlement area, but the road is clear. The road serves as a lifeline for the local population, enabling them to access essential facilities such as healthcare, education and employment opportunities. No impact</p>	 <p><i>Start of Road Section</i></p>	 <p><i>Canal crossing the roadsection at Ch.850</i></p>
<p>4. Rahim Path 1(0.171 km) - The Road starts in between from Amar path. The ROW of this road is 7m and lies in ward no 6. The Existing condition of road is poor having no drainage system. The road passes through the dense settlement area.</p>		

Subproject, Location and Environment Features	Site Photographs	
<p>Siddharthanagar</p> <p>5. Rahim Path2 (0.168 km) - The Road starts in between from Amar path and lies in ward no 6. The ROW of this road is 7m. The Existing condition of road is poor. There is collector drain of 1.5m width at right side design by RUDP and small brick masonry drain at left side of the road.</p>		
<p>6. Bhimkaali Path (0.519 km) - The Road starts from Bhimkaali Path adjoining Siddhartha Highway and passes through the dense settlement area. The existing condition of the road is poor, although there is drain at right side. The drainage water flows from start to end and the road. The scarifying of premix carpet is required. The existing road width varies from 7 - 8.5m.</p>		

Subproject, Location and Environment Features	Site Photographs	
<p>Siddharthanagar</p> <p>7. East of Gallamandi to Durga Colony (New Colony Road) (0.580 km) - This road is a short but important transportation route connecting the east of Gallamandi to the Durga colony road. The road lies within ward 13 boundary having densely populated area. The ROW of this road is 7m. In this section there are two roads parallel at IUDP canal line and one road is dead end. The Existing condition of road is poor, and it is earthen road. There is no existing drainage system. There is heavy Settlement area.</p>		
<p>8. Udhog puri road (Buddha Colony) (0.710 Km): Udhog Puri Road is a prominent thoroughfare in Siddharthanagar, known for its commercial activities and the presence of various industries and businesses. The road is lined with shops, offices, and factories, contributing to the economic development of the area. The existing road is graveled without drainage system. Junction improvement is required in this road section.</p>		

Subproject, Location and Environment Features	Site Photographs	
Siddharthanagar		
<p>9. Radhakrishna, Annapurna path all linked roads (1 KM) - Radhakrishna and Annapurna Path are connected roads located in Siddharthanagar Municipality ward no. 1. They form part of a network of roads in the area, linking various neighborhoods and establishments. The combined length of the linked roads is 1 km. The road starts from Siddhartha Highway near by Nepal-India boarder (boarder 300m distance) and ends at RUDP road. The ROW of this road is 7m. The existing road is an earthen road.</p>		
<p>10. Benipur East South Boarder Road (0.892 km) - Benipur East South Boarder Road is 0.892 kilometers in length and serves as an important route in the area. The road lies in ward 1 of Siddharthanagar municipality and half of the road section pass through Rohini Rural Municipality. The road starts from Benipur and ends at Nepal India Border. The ROW of this road is 8m. The road passes through cultivation area. The existing condition of road is poor, and it is earthen road. There is no drainage system. There is very low settlement area.</p>		

Subproject, Location and Environment Features	Site Photographs	
<p>Siddharthanagar</p> <p>11. Ward no 2- Ward no 4-connecting road (0.892 km) - The Road starts from Meodihawa and ends at airport corridor road. The road lies in ward 2. The ROW of this road is 12m. This road proposed for airport corridor link up road. The road is completely Gravel Road. From chainage 0+000 to 0+175, there is brick masonry drain of sized 1.5x0.75m at both sides. The Existing Road width is 9.7m. The road passes through cultivation area with minimal settlement.</p>		
<p>12. Darkhasuwa West Siddhartha Yatayat (0.892 km) - The road starts from Siddharth highway and ends at Laxmi path. The road lies in ward 3. The ROW of this road is 7m and 8m as per provided plan. There are four parallel road sections proposed I this road stretch.</p>		

Subproject, Location and Environment Features	Site Photographs	
Siddharthanagar		
<p>13. Siddhartha Colony/Manmohan Path (1.2 km) - The colony road passes through different parallel roads in this section like Manmohan Path, Pragati Path, Shiva Path, Siddhartha Path and Mayadevi Path. The road lies in ward 3. The ROW of this road is 7m. The Existing condition of road is poor and it is earthen road. There is no existing drainage system. There is Average Settlement area. Shifting of one Transformer is required. Dismantling of six building boundary walls is required. No impact on vegetation</p>	 A photograph showing a dirt road in a residential area. The road is unpaved and appears to be made of earth and gravel. On either side of the road, there are buildings, some of which are under construction. Utility poles with power lines are visible along the road. The sky is clear and blue.	 A photograph showing a dirt road next to a modern building. The building has a green wall and a balcony. The road is unpaved and appears to be made of earth and gravel. Utility poles with power lines are visible along the road. The sky is clear and blue.

Subproject, Location and Environment Features	Site Photographs	
<p>Siddharthanagar</p> <p>14. Sugarmill Link Road (3.432 km)- The Row of the road is 10.5 meters with the middle horizontal section having the same width as the remaining portions. This road is at ward 4. The drainage water outflow needs to be planned at each junction point along the Bimanghat to North Road. The current road width is 8 - 10 meters. Due to being situated in a low-lying area, there is an existing issue with drainage on the road. The road's condition is poor. There is no drainage system in place, and there are areas where settlement occurs on average.</p>		 <p><i>Simal tree will be saved</i></p>

Subproject, Location and Environment Features	Site Photographs	
<p>Siddharthanagar</p> <p>15. Maya Devi Colony (1.033 km) - The Road lies in ward 4 with 7m and extends from Lumbini Road to Mayadevi Colony. The existing earthen road width is slightly wider at 7.1 meters without drain facilities. There are no existing drains along the road. Additionally, electric poles need to be shifted on both sides of the road at a distance of 30 meters. Furthermore, the relocation of one transformer is necessary. It is important to note that the area where these activities will take place is commercially developed.</p>		
<p>16. Durga Colony all linked road to Nirwana Hotel (1.399 km) - The road begins at RUDP Road and ends at Durga Mandir. The Road lies in ward 13. The Row of the road is 7 meters. Currently, the road is in poor condition and the existing road is earthen. There are few drain sections present along the road. There are three parallel roads in the vicinity. The settlement area in this region is moderate, indicating a moderate level of development and population density.</p>		

Subproject, Location and Environment Features	Site Photographs	
<p>Siddharthanagar</p> <p>17. Kishorpur to Airport Road (0.426km) - The road begins at RUDP road at Alpha and Omega Chowk and ends at Airport Corridor Road. The Road lies in ward 2 and 6. The road has a right of way (ROW) of 9 meters. Currently, it is an earthen road and is in poor condition. There is an existing drain on the left side of the road at the beginning of the road.</p>		
<p>18. Trisuli –Path, Deurali-path, Saptarishi- path (0.634 km): This road comprises of three different urban roads: The Road lies in ward 7 and 13. The Row of road is 7m. The Existing Road is a blacktopped road with drain on both side of road. Drain cover should be provided also; it needs scarifying. The settlement area is very high.</p>		

Subproject, Location and Environment Features	Site Photographs	
<p>Siddharthanagar</p> <p>19. Uchami Path to South (Way to Dhurva Adhikari) 0.607 km - The road begins at Uchami Path and ends at the southern part of the road. The Road lies in ward 8. It has a right of way (ROW) width of 7 meters. Currently, the road is in poor condition and earthen. The settlement in this area is very low, indicating a sparse population. As part of the project, one boundary needs to shift. Furthermore, there is an existing canal perpendicular to the road, measuring 4.8 meters in width. The area surrounding the road has a significant cultivation area, suggesting that agriculture plays a prominent role in this region.</p>		
<p>20. Abhay Durga Path (0.333 km)- The road begins at Modern Public School, located on the left side of the road, and ends at a link road called Sachin Path. The road lies in Ward no 8. Along this road, there are three link roads, with the other two being perpendicular to the main road. The right of way (ROW) for the road is 6 meters. To improve the road, it is necessary to lower the road and drain levels. Additionally, the settlement area along this road is high, indicating a densely populated and developed region.</p>		

Subproject, Location and Environment Features	Site Photographs	
Siddharthanagar		
<p>21. Dumdumuwa Road to Gonahiya Road - 1.167 km The road starts from Prabat Path, which is an existing RUDP road, and extends to Dumdumuwa. The Road lies in ward 9. This road alignment is a completely new route designed to connect with another RUDP road. The right of way (ROW) for the road varies, with sections having a width of 7 meters and others having a width of 8 meters, as per the provided plan. The purpose of this road is to establish a transportation link between Prabat Path and Dumdumuwa benefiting the local residents and visitors in the area.</p>		
<p>22. Doghari Gaau East Chowk to Sahari Bikash Sadak 1.373 km - The road starts from Doghari Gaau and extends to Bhujauli-Sishwa Road. The Road lies in ward 10 & 11. The right of way (ROW) for the road is 10 meters. Doghari Gaau East Chowk and Sahari Bikash Sadak are both locations within Siddharthanagar. Doghari Gaau East Chowk is likely an intersection or junction within the Doghari Gaau area, while Sahari Bikash Sadak refers to a road associated with urban development. The road currently has a blacktopped (pre-mix) surface, indicating a higher quality road compared to an earthen or gravel road. There are no existing drains along the road. The traffic volume on the road is not heavy.</p>		

Subproject, Location and Environment Features	Site Photographs	
Siddharthanagar		
<p>23. Suvarna path 0.28km - The road starts from Siddhartha Highway and ends at Rudra path. The Road lies in ward 12. The Row of road is 6m. AT the start of the chainage there is a Sai Global Academy on the left side of the road. The existing road is black topped road. There is an existing side drain on both side of the road. Scarifying of existing premix roads should be done. There is High settlement in this section.</p>		
<p>24. Others Road - 0.632km The Row of roads is 6m. The Roads lies in ward 12. The road starts between the Buddha H2O Mineral Plant and Kashi Novel Academy of chainage 0+226. Whereas another road has a change of 0+298. There is existing drain on only one side of Road. The road is clear. There is medium settlement in those area.</p>		

Subproject, Location and Environment Features	Site Photographs	
Siddharthanagar		
<p>25. Lacoul Road - The Road starts from Siddhartha Highway and ends at OYO Lacoul hotel. The Road lies in ward 13. The Row of road is 6m. The existing road is earthen type road. The width of existing road is 5.6m including drain. The settlement in these is area is low as there are only few houses in these roads</p>		

V. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

133. Environmental impact assessment is the systematic identification and evaluation of the potential impacts (effects) of proposed projects, plans, programs, or legislative actions relative to the physical, chemical, biological, cultural, and socioeconomic components of the total environment. ADB SPS (2009) requires the assessment of environmental impacts during the different stages of the project, including Project Planning and Design, Pre-Construction, Construction and Operation Phases and the formulation of corresponding mitigation measures to avoid, minimize or offset environmental impacts. All the project components taken up under Output 1 viz., Improvement to Roads and Drains at all the five municipalities within the WUC, Construction of Cold Storage Facility at Tilottama Municipality, Construction of New Bus Terminal and New Municipality Office Building at Lumbini Sanskrithik Municipality are evaluated for its environmental impacts and accordingly mitigation measures have been developed.

A. Planning and Design Phase

134. **Design of the Proposed Components:** Technical design of all the components (roads, drains, footpath, cold storage, municipal building and bus terminal) will follow the relevant national planning and design guidelines. Road designs will comply with the applicable standards to meet the needs of the road users, keeping in view the road function, type and volume of traffic, potential traffic hazards and safety, capital cost, maintenance costs, vehicle operating costs, environment impacts, aesthetics as well as convenience of the road users. The principal geometric features for fulfilment of these objectives are road classification, the horizontal alignment, vertical alignment and the road cross-section. Roads will be designed with traffic control and safety measures commensurate with the traffic. These include road markings ensuring consistency, clarity, and sufficiency; facilities for pedestrians to cross are ensured by road markings; traffic signs (mandatory/regulatory signs, cautionary/warning signs and information signs); road delineators; lighting, etc.,

135. **Impacts to local hydrology.** Water logging during rainy season is a common feature in the project area. This has been corroborated during discussions with the local community. The waterlogging of the roads is often attributed to poor drainage system resulting from failure to consider the local hydrology in the planning and design phase of the project. The site of the proposed New Municipality Office Building in Lumbini is allocated on the bank of River Telar. Although consultation with local people indicated no flooding of site, proper measures are needed to protect the site from heavy floods. Further, the site of the proposed Cold Storage Facility at Tilottama Municipality has a large depression that currently retains water during the rainy season. At all the three sites, designing a good drainage system would be imperative to prevent flooding of the site during rainfall events. To address these impacts, the detailed design will consider the following:

- (i) Conduct detailed assessment of the micro hydrology and topography of the project sites;
- (ii) Design the roads according to the slope and elevation relative to the water bodies that may exist in the area; ensure that necessary cross drainage structures are provided to avoid water logging or flooding
- (iii) Provide the appropriate design of drains for road stretches that do not have existing drainage or where persistent flooding has been recorded;
- (iv) Plan and design the facilities at the New Municipality Building at Lumbini Sanskrithik and Cold Storage Facility at Tilottama in a way that would prevent flooding during rainfall events.

- (v) Ensure proper site protection measures at Municipal building to safeguard against heavy floods in Telar river and to avoid flooding / water logging
- (vi) Accommodate existing drainage lines within the layout design to ensure uninterrupted flow; provide peripheral drains to carry the runoff from upstream areas where required to avoid flooding / water logging.

136. **Impact on local drainage at Bus terminal site.** While access road is on the higher elevation, the proposed site and surroundings are on lower elevation (about 2-3 m). A drainage channel is passing through the site in the southern side. This has no defined banks, and as per the local information, it flows only during rains. It also acts as bypass channel during heavy canal flow (during heavy rains) to discharge into River Koiliwaha in the downstream. The existing road formed as a ridge in the vase flat landscape restricting the free movement of runoff. The runoff flow is facilitated via an existing culvert on the access road. Any disturbance to the culvert will lead to water logging and flooding. The surrounding area is converted from the existing agricultural use to residential uses, and formation of residential layouts can be seen around the proposed site. Site is mainly selected based on the availability of government land. Given its location, site and surroundings are prone to water logging/flooding during heavy rains and proper measures will be needed. Proposed increase in ground level of the site to avoid flooding of bus terminal facility may also disturb the surrounding drainage system, which requires detailed review and planning to address the issue. Any disruption of natural flow in the drain may affect the area, and therefore it needs to be ensured that it is properly restored with minor geometrical changes. Following measures are suggested:

- (i) Conduct detailed assessment of the micro hydrology and topography of the bus terminal site and surrounding area during the detailed design
- (ii) Design proper drainage system for the bus terminal site and surroundings low land that drains into existing channel drain to ensure that there is no flooding or water logging during rains.
- (iii) avoid changing the alignment of drainage channel as far as possible by channelizing and accommodating within the site
- (iv) In unavoidable cases, ensure the realignment is minor and do not affect the flow through existing culvert
- (v) Obtain prior permission from Canal authority / Irrigation Department for realignment and channelizing the drain within the site
- (vi) Ensure that drainage system is designed with adequate capacity duly account to the climate change risks; liaison with Canal authority / irrigation department and design the drainage channel appropriately.
- (vii) Design peripheral/lateral drains and cross drainage works (such as additional culverts) as required to ensure that elevated bus terminal area do not block the free flow from surrounding areas into existing culvert
- (viii) No facilities such fuel, oil, lubricant stores, or maintenance facilities, garage should be located close to the drain.

137. **Damage /Disturbance to physical cultural resources.** The five subproject municipalities (Devdaha, Lumbini Sanskritik, Sainamaina, Siddharthanagar, and Tilottama) are part of the Greater Lumbini Buddhist Circuit in the western Terai region of Nepal. Lumbini, the birthplace of Lord Buddha, situated in Lumbini Sankritik municipality is a UNESCO World Heritage Site (since 1997). None of the subproject components are located in the world heritage site. The WHS is protected with a boundary fencing of larger Lumbini Master Plan area. WHS site is about 350 m inside the boundary wall. A road (know as Vishnupura road) runs on all four sides outside the boundary fencing of the master plan area. Proposed municipal building site, and bus terminal

site are located at about 600 m, and 900 m (areal distance) respectively from the out outer boundary of the master plan area. The existing road proposed improvement (Maliwar Chowk – Bus terminal – Highway) is the closest, as the Maliwar Chowk is located at the boundary of the WHS. This road joins the Vishnupur Road, forming boundary, from where the WHS is about 350 m inside. Therefore, no impacts envisaged. Damage to common properties, and physical cultural resources such as temples and the sacred Peepal Trees (*Ficus religiosa*) located along the Panbari to Saljandhi Ring Road in Sainamaina and near New Bus Terminal Building site in Lumbini Sanskrithik will be avoided. There are other monuments and places of religious cultural importance, however, none of the components located in or close to those sites. No impacts envisaged. There are places like temples, schools, hospitals, etc., along the road. Except one small temple within the right of way, none of the temples or PCRs are located in the subproject sites. Construction phase disturbances like safety risk, access, noise and dust will need to be managed properly. The following mitigation measures shall be implemented during the detailed design to ensure no impacts:

- (i) Consult with Lubmini WHS and museum authorities and tourist agencies prior to scheduling of works
- (ii) Ensure that all works are confined to existing roads right-of-way (ROWs).
- (iii) For small local temples of recent origin located within the ROW, as far as possible ensure no relocation by appropriate design; if relocation is needed conduct further meaningful consultation with stakeholders and take mitigation measures accordingly including reconstruction in nearby land
- (iv) ensure implementation of construction phase EMP to avoid disturbance / damage to common properly resources and PCRs.

138. **Chance finds.** As stated earlier, subproject area is part of Greater Lubmini Buddhist Circuit and Lumbini and Devdaha are significant cultural centers of international repute. Given its historical and cultural significance, chances of finding items of archaeological importance in the subproject area, particularly in the town of Lumbini and Devdaha cannot be ruled out. Accordingly, the Contractor, as a precautionary approach, will be required to implement the following measures in the event of a chance finds:

- (i) Strictly follow the protocol by coordinating immediately with PIU and Nepal Department of Archaeology for any suspicion of chance finds during excavation works;
- (ii) Create awareness among the workers, supervisors and engineers about the chance finds during excavation work;
- (iii) Stop work immediately to allow further investigation if any finds are suspected; and
- (iv) Inform the Nepal Department of Archaeology (NDA) if a find is suspected and take any action they require to ensure its removal or protection in situ
- (v) Follow the written instructions of NDA for continuation of works.

139. **Impact on Forests, Terrestrial Flora and Fauna:** Some roads proposed for improvement in Saina Maina and Devdaha are traversing community forests. In the Rupandehi District (where the five project municipalities are located), 15,820 ha. of national forest has been handed over to 97 community forest user groups benefitting 64,410 households. Similarly, 2084 ha. of national forest has been managed as two collaborative forests, and 24.8 ha. of national forest has been handed over as three religious forests in the district. In a case study conducted on five community forests of Sainamaina Municipality (previously, Saljhandi Village Development Committee) and two community forests of Devdaha Municipality of Rupandehi district, it was found that the forests in Saljhandi and Bhaluhi (Devdaha) area are one of the most productive forest areas in the district.

Forest products especially timber and fuel wood are available during regeneration felling operation of each community forest. Road improvement is unlikely to increase the traffic significantly, therefore road improvement may not have any notable impacts on forests. These are mostly existing earthen roads connecting habitations, and proposed for improvement. Traffic on the roads is very minimal and limited mostly to pedestrians, bicycles and two-wheelers. Roads are also used occasionally for transport (mainly agricultural produce). The works will however require cutting of few trees, which are located within the roadway. During the works presence and movement of workers, and machinery may damage / disturb the vegetation and wildlife. None of the components are located in the farmlands in Lumbini, habitat for protected Sarus cranes. Municipal building site is close to farmlands, although the surrounding area is being already converted into residential uses, no active farmlands noted during the visits. Following measures shall be implemented:

- (i) Develop a protocol for workers and staff for working in forest areas and in sites close to Lumbini farmlands, and for workers engaged in site clearance and tree cutting; this should clearly list do's and don't and procedures and reporting mechanism
- (ii) Do not remove trees or clear vegetation outside the actual area of construction; all works, construction material storage/ancillary works shall be confined to the demarcated areas of the road, no movement of workers, vehicles, equipment allowed outside this area
- (iii) Ensure proper barricading, and measures to prevent entry of wildlife into work area
- (iv) No labour camps or construction facilities, storage areas, shall be established in or within 250 m of forest area; no debris/waste disposed within forest or within 1 km of forests
- (v) Limit the work to daylight hours only; no works after sunset
- (vi) No workers /personnel shall be confined to the construction area, and shall not enter forest area; it is the contractor responsibility to take necessary precautions & prevent workers removing/damaging trees/vegetation, hunting / harming animals; PMDSC and PIU should strictly monitor and ensure
- (vii) Create awareness among workers on environment, human-wildlife conflicts, safety; workers should be made aware of the wildlife and birds (especially protected species such as Sarus cranes and vultures) present in the local areas; photographs of such species shall be provided in the sites, and construction workers shall be instructed to move away from the areas when such species are spotted and do not disturb them in anyway, and immediately report to the supervising engineer and PMC experts to record such events
- (viii) No noisy works shall be conducted, especially during night time.

140. **Impact to Local Vegetation and Trees:** Proposed project roads are mainly urban roads, there are trees along the roads in some sections. Road widening may impact some trees. The road alignment from Bhaluhipul Medical College-Bhatatol-Mukhiya Tol- Piparahiya Singha-Municipality Road in Devdaha passes through the Shristi Community Forest and a number of trees, Sal (*Shorea robusta*) in particular, may be impacted. Similarly, in Siddharthnagar, a Sissoo (*Dalbergia sissoo*) tree will be impacted. Sissoo tree houses nests of birds such as crows and hence it is important to avoid cutting of these tree species. Further, the Simal (*Bombax cieba*) tree is a protected species and cutting of the simal tree (like the one located along the Bus Terminal access road in Lumbini and one near cold storage site in Tilottama) will be prevented under the project. Additionally, efforts will be made to minimize tree cutting to a large extent. Municipal building site in Lumbini is mostly barren, and there is one tree on the site. This will be preserved as much as possible by incorporating into the layout design as large vacant land is available, and the requirement for municipal building is only 9% of total area. Following mitigation

measures are implemented during preliminary design and will be further be followed during detailed design:

- (i) Conduct investigation along the proposed road alignment with final design to confirm the number and type of tree species that will be impacted;
- (ii) Identify the trees that plays a beneficial role in the local environment i.e., those trees that house bird nests or whose foliage is used by animals etc.
- (iii) Conduct meaningful consultation with stakeholders to determine the trees that would need to be protected;
- (iv) consider alternative and innovative road alignments to avoid tree cutting and where tree cutting is unavoidable, appropriate compensatory afforestation measures should be implemented
- (v) Avoid cutting of tree in municipal building site by adapting site-sensitive layout building
- (vi) Do not cut protected trees such as Simal (*Bombax cieba*); retain the tree / alter the alignment/layout of road/drain locally to preserve the trees;
- (vii) obtain any necessary approval from appropriate agencies such as Forest Department, to implement the Tree Conservation measures for the sub-project.
- (viii) Conduct survey of trees for bird nests prior to cutting; if any active nests, ensure that trees are not disturbed until young birds fly away from the nests; do not cut trees during the breeding season.

141. Impact of Cold Storage Facility: Cold Storage Facility proposed at Tilottama Municipality is being established with an objective to store perishable agricultural products and off-season products in bulk and distribute them in the region. The products that are expected to be stored include potatoes, chillies, spices, seeds, corns, fruits etc that are regularly grown in the region. While the cold storage facilities are required to ensure food security, the cold storage facility can negatively impact the environment during both construction and operational stages. Certain operational stage impacts, such as impacts from use of energy and refrigerants have to be addressed at the design stage. Hence, during the detailed design, the following mitigation measures should be utilized:

- (i) Layout plan and design shall ensure that there is no harm or disturbance to Simal tree next adjacent to the proposed cold storage site.
- (ii) Adapt design that will ensure minimum energy use
- (iii) Adapt zero ozone depleting potential (zero-ODP), low global warming potential (low-GWP) and energy efficient technologies for cold storage.
- (iv) Ensure that design and operation minimize energy use
- (v) Ensure proper safety systems, include fire safety, electrical safety, chemical safety (e.g., coolant chemical)
- (vi) Facility design and operation shall confirm to national standards and/or internationally recognized standards
- (vii) Facility should be built and operated with necessary licenses including food safety, fire safety etc.,
- (viii) Develop all necessary amenities and facilities to support safe and efficient operation – power supply, water supply, sanitation, waste management, on-site treatment like septic tanks and soak pits.
- (ix) Ensure design of septic tank and compost facilities prevents infiltration/seepage of contaminants into groundwater.
- (x) Ensure to designate an area of emergency vehicle / truck maintenance, refuelling, repairs etc and ensure this area is provided with impervious surface, and oil/fuel spill collection system.

142. **Municipal Building and Bus Terminal at Lumbini:** Proposed site for bus terminal is located away from habitation and is already connected with an access road. To avoid any negative impacts, following measures need to be incorporated into detailed design:

- (i) Avoid / minimize tree cutting by integrating the existing trees in the layout plans as far as possible; plan trees and create green areas within the facility to the extent possible
- (ii) Adapt energy efficient design;
- (iii) Follow local building bylaws in planning and design, ensure all necessary clearances and approvals
- (iv) Develop facility with all necessary amenities like drinking water, sanitation, segregated solid waste management, etc.,
- (v) Ensure that areas designed for vehicle / bus emergency maintenance (garage), refuelling, repairs etc are provided with impervious surface, and oil/fuel spill collection system; train staff, mechanics, drivers etc., in safe operations
- (vi) Ensure that wastewater outlets of washrooms and toilets are connected to a on-site treatment system such as septic tank and soak pit for treatment and safe disposal; ensure that septic tank is designed water tight to avoid seepage into groundwater; ensure that location of septic tank is at least 50 m away from nearest well
- (vii) Ensure that collected solid waste is disposed properly.

B. Pre-Construction Phase Impact and Mitigation Measures

143. **Consents, Permits and Clearances.** The sub-project would require Environmental Clearance from the Line Agency viz., Ministry of Urban Development, Government of Nepal. Environmental clearance for the entire Project shall be obtained by the PCU from the MoUD. Failure to obtain necessary consents, permits, and other appropriate regulatory clearances can result in design revisions and work stoppage. All the necessary consents, permits, and clearances shall be obtained before the start of civil works.

144. **Integration of EMP in bidding documents and contracts.** Lack of awareness by contractors on ADB SPS requirements may result in insufficient budget and non-implementation of EMP. To ensure that EMP will be provided with sufficient budget and implemented:

- (i) The PCU will incorporate the costs of implementing OHS and the EMP as well as specific provisions requiring contractors to comply with all other conditions required by ADB into the bidding and contract document.
- (ii) Once the Contractor is selected, the PIU with support from PMCDC will inform contractors on their responsibilities in EMP implementation, in compliance with ADB and government requirements, self-monitoring and reporting procedures.

145. **EMP Implementation Training.** If the contractors and construction supervision engineers are not aware about the requirements of this EMP, the project may not proceed and comply with ADB and GoN environmental policies. The PCU, PIU and contractors will be required to undergo training on EMP implementation. The capacity building program will be participatory to the extent possible to make it more effective, with learning by doing, role playing, group exercises, on-the-job training, etc. Pre- and post-training assessment will be conducted to measure the effectiveness of the program.

146. **Updating of IEE.** The PCU shall update the IEE in case of change in design/based on the final detailed design and submit the same for review and clearance of ADB.

147. **Community awareness on project activities and impacts.** Lack of community awareness on project activities may result in potential community health and safety concerns and complaints. Before the start of project construction, a meaningful consultation with the affected communities will be conducted. This meaningful consultation will aim to engage community stakeholders, listen to their views, and arrive at a common understanding on the ways to implement the project. To aid in the consultation process, it is important that the community should be made aware of the details of project activities. Important information to be disseminated to the people are, among others, the following:

- (i) Overview and objectives of the proposed project;
- (ii) Preliminary and/or final detailed design of proposed project components;
- (iii) Potential environmental and social impacts (positive and negative) of the project, and the proposed mitigation measures for the perceived negative impacts; and
- (iv) Grievance redress mechanism and contact details of the project.

148. **Construction materials.** Significant quantities of construction material will be required for the project, especially for the proposed raising of ground level of bus terminal site in Lumbini and cold storage site in Tilottama. Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution. To mitigate the potential environmental impacts, locations of quarry site/s and borrow pit/s (for loose material other than stones) would be assessed by PIU. Priority would be sites already permitted by Department of Mines and Geology (DOMG) of Nepal. If new sites are necessary, these would be located away from population centres, drinking water intakes and streams, cultivable lands, and natural drainage systems; and in structurally stable areas. It will be the construction contractor's responsibility to verify the suitability of all material sources and to obtain the approvals of DOMG and from the local revenue administration. If additional quarries will be required after construction is started, then the construction contractor shall use the mentioned criteria to select new quarry sites, with written approval of PCU/PIU. Contractor will identify sources of water for construction purposes and obtain necessary permissions as required, and approval of PIU before the use. Details of material sources and water sources will be provided in SEMP. The construction contractor will be required to:

- (i) Reuse the excavated soils and road material as much as possible in the construction and raising ground, and minimize the need for new material. Lumbini and Tilottama municipalities /PIUs to coordinated with other construction works/projects in the respective areas to source the excess soil
- (ii) If new material is needed, use only the existing material sources and borrow areas permitted by government(DOMG)
- (iii) Avoid creation of new borrow areas as much as possible, in unavoidable cases, obtain all permissions and clearances, including conduct of environmental assessment studies and obtaining environmental clearances
- (iv) Ensure that borrow areas are not located in environmentally sensitive areas; conduct baseline assessment prior to selecting a site
- (v) Prepare borrow area management plan and implement
- (vi) Verify suitability of all material sources and obtain approval of PIU;
- (vii) Ensure that the loading and unloading of the materials and the transportation of the materials from source to construction site does not cause impact on health and safety of the workers and the community; and

- (viii) Submit to PIU on a monthly basis documentation of sources of materials. . If contractor is purchasing ready mix concrete, asphalt/macadam and aggregates from third party, contractor will ensure that all the parties/ suppliers necessary clearances and permission as per the Nepal law and will provide the documentary evidence to PIU/consultants.

C. Construction Phase Impact and Mitigation Measures

149. The construction phase involves site preparation, transportation of materials, equipment and labor to the site and carrying out the required construction activities while adhering to the Environmental Management Plan (EMP)

150. **Construction Planning.** It has been observed that inadequate planning could lead to non-implementation of EMP during the construction phase and result in significant environmental impacts leading to non-compliance with ADB's environmental safeguard requirements. To ensure that EMP will be implemented during the construction phase, the contractor should, prior to start of construction activities undertake the following:

- (i) Appoint an Environmental Health and Safety (EHS) supervisor;
- (ii) Develop a Site-Specific Environmental Management Plan (SEMP) and get it approved from the Client;
- (iii) Conduct training on the rationale for and implementation of the SEMP and EMP to enhance general understanding and clarify responsibilities regarding implementation, including monitoring and reporting, must also be provided to all relevant staff of contractors;
- (iv) While the locations of all project components have been finalized, the locations for labour campsites, batching plant site etc. that would be required by the Contractor temporarily during the construction period, have not been finalized. The Contractor should select the locations for the campsites, batching plant sites etc. in consultation with local municipalities and get it approved from the PCU and PIU. The Contractor should provide all infrastructure and services necessary to ensure that the labourers' needs are addressed throughout their stay at the campsites. Also, the Contractor should deploy construction equipment, plant and machinery in good condition, provided with necessary pollution control apparatus, and operate as per standards and meet all environmental standards specified by the GoN for such operations; Contractor shall ensure necessary fitness, pollution under control certificates, and are operated by qualified / licensed drivers/operators.
- (v) The Contractor will be required to submit to PCU, for review and approval, a SEMP including (a) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes, (b) specific mitigation measures following the approved EMP; (c) monitoring program as per EMP; and (d) budget for SEMP implementation. No works can commence prior to approval of SEMP. The SEMP will include the following, among others:
 - (a) Construction Compound Management Plan;
 - (b) Construction Health and Safety Plan (including COVID-19 H&S guidance);
 - (c) Emergency Incident Response Plan.

151. **Disruption of Existing Utilities.** Along majority of the road lengths where the road improvements are being taken up in the WUC, utilities such as electric poles, water lines etc. are present. Construction activities may disrupt the existing utilities installed. To avoid/minimize or manage the disruption of existing utilities, the following measures will be implemented:

- (i) conduct investigation at site to determine all the existing utilities that are likely to be disturbed during construction phase;
- (ii) all underground utilities should be marked prior to any construction works to be taken up at the locations; and
- (iii) coordinate with agencies responsible for the maintenance of the utilities and formulate a plan to minimize disruption of services during construction phase. The plan must be formulated in coordination with PCU and stakeholders at the site. Where required, the responsible agency shall be requested by PIU to carry out the necessary works at the time required and at cost of the subproject. For essential supplies like water supply, any disruption more than 24 hours, shall be minimized by providing alternative water supply, e.g via mobile tankers.

152. **Tree Conservation:** A tree survey was conducted along the road alignment and other locations which has revealed the presence of 226 trees belonging to Ambha (*Psidium guajava*), Amaro (*Spondias pinnata*), Amla (*Phyllanthus emblica*), Asna (*Terminalia elliptica*), Ashoka (*Saraca asoca*), Bakaino (*Meria azedarach*), Bar (*Ficus benghalensis*), Bhellar (*Trewia nudiflora*), Cherry (*Muntingia calabura*), Dhabdhabe (*Garuga pinnata*), Dumri (*Ficus racemose*), Guava (*Psidium guajava*), Imli (*Tamarindus indica*), Jamun (*Syzygium cumini*), Kabhro (*Ficus lacor*), Kadam (*Neolamarckia cadamba*), Karma (*Adina cordifolia*), Kalki Phul (*Callistemon citrimus*), Katahar (*Artocarpus heterophyllus*), Mango (*Mangifera indica*), Neem (*Azadirachta indica*), Peepal (*Ficus religiosa*), Saijan (*Moringa oleifera*), Sal (*Shorea robusta*), Sarifa (*Annona squamosa*), Shami (*Prosopis cineraria*), Sissoo (*Darburgia sissoo*), Simal (*Bombax cieba*) and Tilkar (*Coccinia grandis*).

153. Amongst these, 56 trees are saved with various measures incorporated in the design. Sissoo (*Darburgia sissoo*) trees house bird nests and hence all efforts would be made to save the sissoo trees. There are 11 trees, of which 8 are present in the Siddharthnagar sub-project areas. Another tree species, the Simal (*Bombax cieba*) tree species, are considered protected species. The Simal trees are 6 in number and are present in Lumbini and Siddharthnagar towns. The Simal trees will not be cut for the project. Also, Neem (*Azadirachta indica*) and Peepal (*Ficus religiosa*) trees are considered sacred and changes in road design will be incorporated to conserve the trees.

154. Despite these efforts, the project impacts 170 trees which would need to be cut. Accordingly, compensatory afforestation in the ratio of 1:10 (i.e., 10 trees to be planted for one tree cut) would be incorporated as a mitigation measure in the respective municipalities where the trees need to be cut. In Sainamaina, Devdaha and Tilottama, a portion of the road alignments pass through community forest areas. Along the road alignments passing through the community forests, innovative design solutions shall be incorporated to conserve the trees and in extreme cases when trees need to be cut, compensatory afforestation shall be carried out. The details of the tree survey including the species that are present and those that need to be cut, saved etc. have been provided in **Appendix 1**.

155. The tree count will be further reviewed during the detailed design phase. The following actions are proposed to mitigate the impact of tree removal and promote tree conservation:

- (i) The first priority is to avoid cutting of trees through changes in design and road alignments. This is in particular important when the tree species is protected or considered sacred by the community and / or houses nests for birds;
- (ii) Do not cut protected trees such as Simal (*Bombax cieba*); retain the tree / alter the alignment/layout of road/drain locally to preserve the trees;

- (iii) after the finalization of the designs and layout of the project components, the trees within proposed construction areas will be marked;
- (iv) trees within area required for construction will be felled after prior approval;
- (v) replacement of the tree shall be undertaken by the project i.e., PIU at the replacement ratio of ten trees for every tree that is cut (i.e., 1:10 ratio as per Forest Regulations¹⁰,2022) Indigenous/native species will be preferred in tree planting;
- (vi) only trees that will require removal within the proposed construction areas of the sites will be cut;
- (vii) For trees that will not be cut, take all precautions to protect them from any damage from construction activities
- (viii) Conduct survey of trees for bird nests prior to cutting; if any active nests, ensure that trees are not disturbed until young birds fly away from the nests; do not cut trees during the breeding season
- (ix) prevent workers from removing / damaging any other flora and fauna found in the project vicinity; and
- (x) prohibit employees and workers from poaching animals and cutting of trees for firewood in the vicinity of the construction sites.

156. **Excavation Works.** Excavations are inevitable considering that the WUC Sub-project involves improving the drainage network along the road alignments as well as at the Cold Storage Facility at Tilottama and New Bus Terminal and Municipality Building locations at Lumbini Sanskrithik. Excavations may affect local drainage patterns if surface and groundwater collect in voids as they are being dug. Further, it may cause safety issues for the local community using the road alignments for their daily commute. To mitigate, the contractor will ensure the following:

- (i) All excavations shall be done to the minimum dimension as required for safety and working facility;
- (ii) Excavations should be carried out after identifying the location of all utilities that exist along the project area;
- (iii) The excavation shall be executed in such manner, that the contractor does not damage or interfere with existing services or structures. If damage or interference is so caused, the contractor shall make arrangements with the supply and/or building owner to execute the repairs at the contractor's own cost;
- (iv) Explore working in off-peak hours or night on busy road sections with prior permission and with proper lighting and safety measures; however, no noisy works shall be conducted in the night
- (v) Road drains and channels shall be kept free from obstructions at all times;
- (vi) Excavated areas should be sufficiently demarcated so as not to affect the health and safety of workers and the people using the road alignment for their daily activities.

157. **Excavated Earth Management:** Excavations are inevitable considering that the WUC Sub-project involves improving the drainage network along the road alignments as well as at the Cold Storage Facility at Tilottama and New Bus Terminal and Municipality Building locations at Lumbini Sanskrithik. Excavation during construction will generate loose soil which can be carried through surface run-off during a rainfall. During construction phase, the Contractor shall implement the measures at all times to control soil erosion that shall include, but not be limited to the following:

¹⁰ Forest Regulations 2022-Rule 93 (5), loss of 1 tree should be compensated by planting 10 trees and Rule 93 (5), the amount must include bi-annual production or purchase of trees, trees transportation, afforestation of 1600 trees per hectare, fencing and boundary for the protection of trees and require number of people for look after.

- (i) The Contractor shall plan the works in a way that minimizes surface excavation works during the rainy season, where practicable.
- (ii) Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms shall be developed by the Contractor.
- (iii) The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.
- (iv) Channels, earth bunds, netting, tarpaulin and or sandbag barriers shall be used on site to manage surface water runoff and minimize erosion.
- (v) The overall slope of the works areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows.
- (vi) Monitor water quality that could exist close to the working areas to ensure compliance.

158. **Impact on Air Quality.** Air quality is impacted at the construction sites because of vehicle movements, operations of construction equipment, generator sets etc., and generation of dust. Dust and gaseous emissions will be generated by the construction machinery. Construction work also involves breaking up, digging, transporting, and dumping large quantities of dry material. The particulate matter from these can cause health impacts, i.e., respiratory problems, irritation in eyes and reduction in visibility. During the construction period, the Contractor shall implement the following mitigation measures:

- (i) Take every precaution to reduce the levels of dust at construction sites;
- (ii) Fit all heavy equipment and machinery with air pollution control devices that are operating correctly;
- (iii) Construction vehicles must travel at speeds that minimizes dust generation;
- (iv) Reduce dust by spraying water on stockpiled soil, excavated materials, and spoils;
- (v) Cover with tarpaulin vehicles transporting soil and sand;
- (vi) Cover stockpiled construction materials with tarpaulin or plastic sheets;
- (vii) Water spraying to access roads, camp sites and work sites to reduce dust emissions;
- (viii) Machines and vehicles must be regularly examined and maintained to comply with requirements of technical specifications;
- (ix) All vehicles, equipment, and machinery used for construction will be regularly maintained to ensure that pollution emission levels comply with the relevant standards;
- (x) Repair and maintain access roads, as necessary.
- (xi) Monitor air quality according to the environmental monitoring plan.
- (xii) prohibit burning firewood in work and labor camps (promote liquified petroleum gas for cooking purposes and electric heater for heating purposes);
- (xiii) use vehicles that have government-issued permits and registrations; and
- (xiv) prohibit open burning of solid waste.

159. **Noise.** Noise-emitting construction activities include earthworks, road cutting, concrete mixing, concrete formation works, movement and operation of construction vehicles and equipment, and loading and unloading of coarse aggregates, among others. All the road alignment locations in the five municipalities are located in primarily residential areas and hence the local communities are susceptible to construction noise. Sensitive receptors such as hospitals and schools are also located on some of the road alignments. Additionally, the onsite workers are also exposed to noise levels that may be higher than the permitted levels due to their proximity to the noise sources. The significance of noise impact will be higher at the immediate vicinity of

the subproject site where sensitive receptors is situated. Mitigation measures to reduce the noise impacts off-site at the nearest sensitive receptors include the following:

- (i) Arrive at the construction schedule upon discussions with the nearby stakeholders, especially when works are carried out near sensitive receptors such as hospitals, schools, places of worship etc.;
- (ii) Install noise barriers between the source and receptor, where necessary;
- (iii) Enclose and locate generators away from sensitive receptors;
- (iv) Operate construction machines / conduct noise operations sequentially rather than all together;
- (v) spread out the schedule of material, spoil and waste transport;
- (vi) minimize drop heights when loading and unloading coarse aggregates;
- (vii) avoid use of horns unless absolutely necessary;
- (viii) Select electrically powered plant that is quieter than diesel or petrol-driven plant, if interchangeable;
- (ix) Use modern vehicles and machinery with standard adaptations to reduce noise and exhaust emissions, and ensure they are maintained to manufacturers' specifications;
- (x) Noise-generating equipment must be fitted with silencers;
- (xi) Optimize the use of noisy construction equipment and turn off any equipment if not in use;
- (xii) Regular maintenance of all equipment and vehicles;
- (xiii) Stop all construction activities during at night;
- (xiv) Implement a complaint handling system;
- (xv) Workers should be provided with Ear muffs / protective hearing equipment in noise critical areas;
- (xvi) Place visually clear instructions in areas where noise levels are significant;
- (xvii) Measure noise levels periodically as per the Environmental Monitoring Plan;

160. **Drainage Management.** Construction material getting into surface run off or uncontrolled disposal may cause drainage congestion. The impact of these on hydrology is expected to be more pronounced during post monsoon period with rapid movement of rainwater through existing drainage structures, which if blocked by construction waste and debris may cause flooding or waterlogging in neighboring areas. The following mitigation measures should be adopted by the Contractor:

- (i) The contractor shall adopt a site clearance procedure; dispose debris / waste soil only in designated and pre-approved locations by the PIU
- (ii) Wastes and construction debris will not be disposed in a manner that these would end up in drainage canals.
- (iii) The on-site storage of excessive quantities of unwanted spoil and aggregate materials should be avoided. Where storage is necessary, the Contractor shall ensure heaps and stockpiles are located at sites that they do not permit direct runoff into watercourses and are on land sloping at less than 1.5%.
- (iv) All heaps shall be of a size and stability that will ensure the risk of mass movement during period of heavy rainfall is minimized.

161. **Impact on Surface Water Quality:** During project implementation, the Contractor shall be setting campsites, material storage areas and vehicle washing areas. Silt-laden run-off from stockpiled materials, solid wastes and domestic wastewater from the construction camp, and leaks from chemical storage areas and machineries may contaminate or result in water pollution

if disposed or discharged to nearby receiving bodies of water. Solvents and vehicle maintenance fluid (oil, coolant) and diesel fuel may contaminate surface and groundwater if these are spilled on ground, disposed of directly into the ground or washed into the streams. Human waste from construction workers may also contaminate surface water and groundwater if there are no adequate sanitary facilities. To mitigate these impacts, the contractor will be required to:

- (i) Provision of temporary sedimentation canal and/or silt traps along construction areas, particularly alignments that are adjacent to receiving bodies of water or canals;
- (ii) The measures to address soil erosion at the proposed facilities will consist of measures as per design, or as directed by the PMCDC to control soil erosion, sedimentation, and water pollution. All temporary sedimentation, pollution control works, and maintenance thereof will be deemed incidental to the earthwork or other items of work;
- (iii) All temporary discharge points shall be located, designed and constructed in a manner that will minimize erosion in the receiving channels;
- (iv) Ensure proper compaction of refilled soil and there shall not be any loose soil particles on the top; the material shall be refilled in layers and compacted properly layer by layer;
- (v) Use surplus soil for beneficial purposes such as in any other construction activities, or to raise the level of low-lying areas;
- (vi) Avoid scheduling of excavation work during the monsoon season;
- (vii) Confine construction area including the material storage (sand and aggregate) so that runoff will not enter the site;
- (viii) Ensure that drains are not blocked with excavated soil or other materials;
- (ix) Stockyards at least 50 meters (m) away from watercourses;
- (x) Fuel and other petroleum products stored at storage areas away from water drainage and protected by impermeable lining and bunded 110%;
- (xi) Effective maintenance of machinery and vehicles to avoid leakages;
- (xii) For effluents from workplace, camps, and offices, provide treatment arrangements such as retention ponds and septic tanks which should be incorporated in the facility designs; provide proper systems for collection, treatment and safe disposal of wastewater from construction camps and facilities; no pit latrines shall be allowed; toilets. And wastewater outlets shall be connected to city sewerage systems (if available) or septic tanks and soak pit systems developed within the site. Septic tanks should be sealed from bottom and sides to prevent seepage.
- (xiii) Solid waste management, as detailed in the approved Site Environmental Management Plan, should be implemented throughout the construction period;
- (xiv) Monitor water quality according to the environmental monitoring plan.

162. Impact on Groundwater. During the construction period, there is an increased demand for groundwater arising from water required for various civil works and for personal consumption by the workers. The Contractor will be required to source the groundwater from approved sources so as to avoid impact on availability of the water to the local community, in particular, when the local community are dependent on the same aquifer. Additionally, material storage areas, equipment and vehicle maintenance areas, solid waste disposal and the like, if not managed effectively, can result in the contamination of the groundwater. Mitigation measures will include:

- (i) Use the groundwater resources judiciously and with the prior approval of competent authority;

- (ii) All tube wells, test holes, monitoring wells that are no longer in use or needed shall be properly decommissioned;
- (iii) Storage of lubricants and fuel at least 50 m from water bodies and in double-hulled tanks;
- (iv) Effective maintenance of machinery and vehicles to avoid leakages;
- (v) Effective management of solid waste and construction debris as per an approved SEMP;
- (vi) Provide uncontaminated water for dust suppression;

163. **Construction Wastes Management.** Solid wastes will include construction wastes (solid wastes: piece of rods, woods, bricks, stones, containers, electric wire, pipes etc. liquid waste: paint, bitumen, oil etc.) and general wastes (solid wastes: papers, plastic containers, residues of food, fruits etc. and liquid waste: from kitchen and bathroom etc.). These wastes will be generated due to construction camps, construction activities and materials used for construction. Inadequate management of construction wastes will result in negative impact on the soil, surface water, groundwater, aesthetic beauty of area and workers' health and safety. To mitigate the impacts, the contractor will implement the following to manage wastes:

- (i) Prepare Construction Waste Management Plan as part of the SEMP;
- (ii) Identify and seek approval for the areas where construction waste could be disposed;
- (iii) The contractors should take every opportunity to reduce the amounts of waste generated and collect recyclable material for processing by local operators.
- (iv) Contractor shall implement waste segregation on site.
- (v) Receptacles for solid waste should be provided for the use of workers, and their contents should be disposed properly.
- (vi) Clean construction waste such as excess soil or rubble should be used in landscaping on site or given to landowners and developers seeking fill material.
- (vii) Waste auditing. The contractor will record the quantity in tons and types of waste and materials leaving site during the construction phase;
- (viii) Waste fuels/oils may be generated from equipment used on-site during construction and may be classified as hazardous waste. Such wastes will be stored in a secure, banded area on-site prior to collection by relevant parties.

164. **Impacts on aquatic ecology.** Some of the subproject alignments are near or adjacent to irrigation canals (Tilottama) and also near Tinau River (Siddharthnagar) and ponds. The construction of the subproject may affect these water bodies due to siltation and chemical spills, and improper waste disposal, and therefore may impact the quality of the water and any thriving aquatic species. To mitigate this impact, contractor will be required to:

- (i) Provide temporary protection at sections near the river/ponds to avoid sliding of soils;
- (ii) Store spoils away from the side of the river/pond;
- (iii) Implement proper storage/disposal of materials, chemicals and waste
- (iv) Implement mitigation measures for excavation, soil erosion and sediment mobilization, surface water pollution, and construction waste generation;
- (v) Conduct sampling and analysis of the surface water near to the construction sites as part of the Environmental Monitoring Plan.

165. **Impact on Traffic and Access.** Improvements to the road alignments in the five municipalities would impact the regular traffic movements during the construction period. This

can create traffic congestion and disturbance to pedestrians and motorists in the vicinity of the affected area if not properly managed. Majority of the construction activities in all the five municipalities in the WUC are in residential areas where the local community need to have access to their properties. However, public access along these road alignments may be disrupted during construction activities. Mitigation measures to ensure safe access shall be implemented by the contractor. A generic Traffic Management Plan can be presented in the SEMP which can be updated in consultation with the local stakeholders to incorporate the site-specific needs at each site. The Contractor should carryout the following activities as part of the mitigation measures:

- (i) Plan roads and drain works minimizing traffic disturbance/blockades; work planning is crucial to minimize the inconvenience to public due to road works; provide diversions / alternative roads where required
- (ii) Schedule road works close to the Lumbini heritage area in consultation with WHS, museum authorities, tourist agencies and traffic police; works that may affect the tourist places shall not be conducted during the tourist season
- (iii) A Site-Specific Traffic Management Plan should be drawn up in consultation with the local community on construction operations and work schedules.;
- (iv) Coordinate with traffic police for temporary road diversions and for provision of traffic aids;
- (v) Notify public and provide sign boards informing nature and duration of construction works and contact numbers for concerns/complaints;
- (vi) Maintain sufficient access to houses and shopkeepers (commercial establishments) during works; provide proper and safe pedestrian access.
- (vii) Awareness should be built amongst the community on the implementation of the Site-Specific Traffic Management Plan;
- (viii) Emergency response plan must be prepared for any traffic accident during construction and should be included in the SEMP.
- (ix) As necessary, increase workforce for speedy completion;
- (x) Schedule material deliveries on low pedestrian traffic hours;
- (xi) Restore damaged properties and utilities;
- (xii) Erect and maintain barricades if required;
- (xiii) Pedestrian access will be maintained with the use of walking boards. Wheelchair and disabled access shall be maintained.
- (xiv) Surfaced roads shall be subject to road cleaning and unsurfaced roads to dust suppression, the methodology and frequency of which shall be included in the SEMP.

166. Impacts on socio-cultural resources, tourism and chance finds. The project area, especially Lumbini, attracts large number of tourists during April – May when Buddha Jayanti is celebrated on a grand scale. Works may distrurb the tourism activity, however, it is unlikely to be significant as works are mostly located outside the tourism areas. There are local religious places, like temples and mosques, access to which may be disrupted. Lumbini and Devdaha are significant cultural centers of international repute. And, Lumbini hosts the UNESCO Heritage Area that marks the birthplace of Lord Buddha. Hence, there are chances of finding items of archeological importance in the towns of Lumbini and Devdaha. Accordingly, the Contractor, as a precautionary approach, will be required to implement the following measures in the event of a chance finds.

- (i) Prior to commencement of construction, consult with concerned religious authorities of these temples, nearby people and devotees and explain the work method and duration of proposed works, take their suggestions and comments in scheduling and conducting the works

- (ii) Schedule road works close to the Lumbini heritage area in consultation with museum authorities and traffic police; works that may affect the tourist places shall not be conducted during the tourist season
- (iii) No construction camps (workers accommodation, material / waste / soil storage) should be established within 1 km of the monuments in Lumbini
- (iv) Put in place proper dust and noise control measures
- (v) Adjacent to religious/social/historical buildings, undertake excavation and construction work in such a way that no structural damage is caused to the structures
- (vi) Schedule and plan works considering the tourist season and tourist areas
- (vii) Observe the local rituals and important dates of festivals, weekly/monthly/annual religious occasions in the religious places and do not make any disturbance/hindrances/obstacles during such time to the religious places
- (viii) Provide proper signage, barricades etc. to protect public and devotees from dangers of construction works.
- (ix) Ensure proper traffic management planning to minimize the disruption to the normal traffic flow in the area and ensure the safety of the people.
- (x) Clear the work site of unnecessary material, equipment, and debris / surplus soil; do not stock material / soil at the sites
- (xi) Conduct continuous consultations with the local people during the works
- (xii) Strictly follow the protocol by coordinating immediately with PIU and Nepal Department of Archaeology for any suspicion of chance finds during excavation works;
- (xiii) Create awareness among the workers, supervisors and engineers about the chance finds during excavation work;
- (xiv) Stop work immediately to allow further investigation if any finds are suspected; and
- (xv) Inform the Department of Archaeology (DOA) if a find is suspected and take any action they require to ensure its removal or protection in situ
- (xvi) Follow the written instructions of DOA for continuation of works.

167. **Impacts on socio-economic activities.** All the project components in the five municipalities are located in residential areas with significant economic activities taking place on a daily basis. The impacts that will result from construction works including excavation, stockpiling, construction equipment and vehicle operation and accidental damage to utilities are significant, but temporary. The potential impacts include disturbance to economic activities, particularly to the businesses operating along the alignments of construction works. Contractor will be required to:

- (i) Develop the construction schedule in discussions with the community so that movement of construction vehicles can be avoided during school travel timings, festival times and /or any other local events that would require local communities to travel;
- (ii) Implement the traffic management plan in collaboration with local authorities;
- (iii) Where traffic congestion will likely occur, place traffic flagmen during working hours;
- (iv) Avoid full road closures by applying the construction method on section-wise and/or chainage-wise approach during excavation, concreting and/or curing periods;
- (v) If full road closure is not possible, especially on very narrow roads, ensure that alternate routes are identified and that affected residents and establishments are informed prior to conducting the construction activities;
- (vi) Provide convenient access to pedestrians when works occur in front of residential, commercial or institutional establishments. Examples are planks with handrails that should be provided to cross excavated areas.

- (vii) At all points of time, ensure that the local communities have at a minimum, access to their households;
- (viii) Manage stockpile;
- (ix) Manage pumped water from excavations either to drains or drums for later use;
- (x) Relocate the affected power supply poles, and
- (xi) Advise the concerned authority during accidental damage to utilities.

168. **Occupational health and safety risks.** Safety risks and health issues arise from storage, handling and transport of hazardous construction material. Construction workers are also at risk of accidents due to moving vehicles, and other construction related activities. Workers are also exposed to high level of pollution from dust, exhaust of vehicles and machinery and noise exposed to pathogens contained in wastewater and untreated sewage and septic tank effluents flowing through the roadside drains. Further, if workers do not keep to regulated working hours, the risk of accident events will be higher due to fatigue. Insufficient supply and improper use of personal protective equipment (PPE) and lack of safety procedures may cause injuries or fatal accidents. Spread of COVID-19 is also a risk to manage among workers. There is also a risk of transmitting COVID-19 to the residents. The contractor will be required to implement the following measures:

- (i) Contractor to prepare health and safety plan prior to commencement of works, and part of SEMP
- (ii) All relevant provisions of the National Health Care Waste Management Standards and Operating Procedure¹¹-2020 and relevant WHO guidelines will be adhered to, concerning the provision of adequate measures to avoid contracting and/or spreading diseases during construction phase;
- (iii) Follow international best practices on occupational health and safety such as those in Section 4.2 of World Bank EHS Guidelines on Construction and Decommissioning Activities; and EHS Guidelines on Waste Management Facilities¹². These practices include recommended measures to prevent, minimize and control pathogens from inflicting workers through training and use of appropriate PPEs, clothing and equipment when working along the drainage system, and immunization and health monitoring (e.g., hepatitis B and tetanus).
- (iv) Existing drains may present hazardous working conditions in some places due to lack of oxygen and flammable nature of methane emissions which will be detrimental to the health and safety of workers. Put in place standard operating procedures with appropriate equipment, and workers are provided with necessary training and personnel protection equipment to safeguard health and safety
- (v) Follow established occupational health and safety protocol on emerging infectious diseases such as the corona virus disease (COVID19). See **Appendix 2** for a sample guidance note in responding to COVID19;
- (vi) A readily available first aid unit, including an adequate supply of sterilized dressing material and appliances, will be provided as per the factory rules. Suitable transport will be provided to facilitate the transfer of injured or ill persons to the nearest hospital;
- (vii) Other first aid medical equipment and nursing staff will be made available or arranged on-call;

¹¹ National Health Care Waste Management Standards and Operating Procedures-2020-Documents developed based on the "Health Care Waste Management Guideline 2014", "The Public Health Service Act, 2018, Public Health Service Regulation 2020 and National Health Policy, 2019.

¹² IFC World Bank Group. 2007. Environmental, Health and Safety (EHS) Guidelines – General EHS Guidelines: Environmental – Noise Management.

- (viii) The contractor will, at his own expense, conform to all disease prevention instructions as may be given by PCU/PIU;
- (ix) Provide regular health check-ups, sanitation and hygiene, health care, and control of epidemic diseases to the workforce;
- (x) The contractor shall provide all labor and materials and construct/install and maintain site safety, hard barricading, flexible green net, signboards, temporary day/light traffic diversions throughout the construction activities according to the specifications and provide personal protective equipment (PPE) to all the laborers working at the construction site;
- (xi) Launch awareness programs concerning human trafficking and the possibility of spread of sexually transmitted diseases (STDs) and HIV/AIDS using brochures, posters, and signboards;
- (xii) Make available first aid kits, ambulance facilities, and fire extinguishers in camp sites, if any;
- (xiii) Compensation for the loss of life (a zero tolerance to loss of life policy should be developed and implemented) or for any type of injuries; and
- (xiv) Provide adequate insurance to the workers that is current throughout the construction period;
- (xv) Conduct Health and safety training periodically and Daily Tool Box Training for all site personnel.

169. **Community health and safety risks.** Communities will be moderately exposed to threats due to impacts on air and water quality, ambient noise level; mobility of people, goods, and services; accesses to properties, economic activities, and social services; service disruptions, etc. Construction workers may potentially bring communicable diseases in the community, including COVID-19. To mitigate these impacts, the contractor will be required to implement the following measures:

- (i) Code of conduct for workers includes restricting workers in designated areas, no open defecation, no littering, no firewood collection, no fire except designated places, no trespassing, no residence at construction sites, and no obligation to potentially dangerous work;
- (ii) Follow International best practices on community health and safety such as those in Section 4.3 of World Bank Environmental Health and Safety (EHS) Guidelines on Construction and Decommissioning Activities¹³.
- (iii) Follow established community health and safety protocol on emerging infectious diseases such as COVID19.
- (iv) Implement measure to prevent proliferation of vectors of diseases at work site;
- (v) Maintain a complaint logbook in worker's camp and take action promptly of complaints. Follow the established GRM of the overall project (URLIP);
- (vi) Schedule transportation activities by avoiding peak traffic periods;
- (vii) Clean wheels and undercarriage of haul trucks prior to leaving construction site;
- (viii) Educate drivers: enforce vehicle speed limit in settlements and avoid use of horn;
- (ix) Earmark parking place for construction equipment and vehicles when idling; no parking shall be allowed on the roads, that may disturb the traffic movement;
- (x) Provide prior information to local people, particularly the Temples, Madrasa and mosques nearby about work schedules;

¹³ IFC World Bank Group. 2007. Environmental, Health and Safety (EHS) Guidelines – General EHS Guidelines: Environmental – Noise Management.

- (xi) Avoid heavy noisy works near sensitive areas; if needed, noise barriers be installed in between the construction site and any community halls or places of worship to reduce the noise level;
- (xii) Provide adequate space and lighting, temporary fences, reflectorized barriers and signages at the work site; and
- (xiii) Ensure contractor has staff trained on emergency response.

170. **Post-construction clean-up and reinstatement.** Construction debris, spoils, and excess construction materials may pose hazards to properties, community and environment if left unattended after construction. The contractor will reinstate all working areas and access routes as work proceeds during construction. All plant, equipment, materials, temporary infrastructure and vehicles will be removed at the earliest opportunity and the surface of the ground restored as near as practicable to its original condition. The following generic measures should be taken:

- (i) Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required;
- (ii) All excavated roads shall be reinstated to original condition;
- (iii) All disrupted utilities restored;
- (iv) All affected structures rehabilitated/compensated;
- (v) The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up;
- (vi) All hardened surfaces within the construction camp area shall be ripped;
- (vii) All imported materials removed, and the area shall be top soiled and regressed using guidelines set out in the re-vegetation specification that forms part of this document;
- (viii) The contractor must arrange the cancellation of all temporary services;
- (ix) Request PIU to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work.

D. Operational Phase Impacts and Mitigation Measures

171. **Impact from O&M of Roads and Drains.** In the operations and maintenance (O&M) phase, the roads will operate with routine maintenance, which should not affect the environment. Routine repairs will be very small in scale, to be conducted manually by small teams of men with simple equipment (shovels, wheelbarrows, etc.) and works will be very short in duration thus will not cause significant physical impacts. Traffic may be interrupted temporarily but this work will be very small in scale, infrequent, and short in duration, so there will be no economic or other implications. The infrastructures will need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the work will be infrequent, affecting small areas only.

172. To maintain the safety of workers and road-users, such work should be coordinated with the local traffic department so that adequate warning signs and traffic diversions can be set up when necessary. Debris need to be collected and disposed at a designated site. Community participation will be encouraged in ensuring drainage canals are clog-free through information and behavior change campaigns and incentives, if possible.

173. **Air pollution and noise.** Improved roads may result in elevated noise level and air emissions from increased vehicular traffic over time. However, the extent of air pollution will depend upon i) the rate of vehicular emission and ii) the prevailing meteorological conditions. Air

quality is likely to improve in the initial years after commissioning because of saving of fuel in the vehicular traffic riding on smooth and improved roads with much less interruption.

174. **Community safety.** Improved roads may give way to faster vehicle speeds which could endanger people and households along the road alignments. Damage in roads may also cause accidents to motorists. To mitigate these impacts, the PIU will be required to:

- (i) Conduct regular inspection of the roads to check for damages, and undertake rehabilitation measures for any damages found;
- (ii) Inspect and maintain the integrity of road barriers, especially at critical curves or locations that are prone to vehicular accidents;
- (iii) Inspect and maintain speed limiters such as humps installed on road sections near residential areas, schools, and religious establishments.
- (iv) Inspect and maintain all road signages, including appropriate warning signages at silent zones, and ensure that these are reflectorized and visible even during night time; and
- (v) Ensure pedestrian crossings are maintained.

175. **Impact from O&M of Cold Storage Facility at Tilottama.** In the operations and maintenance (O&M) phase, the operations of the Cold Storage Facility can impact the environment. The air quality near the facility is impacted by the continuous movement of trucks to and from the facility. The impacts would be from the truck emissions as well as dust that is generated during the truck movements. Also, the operations of the DG sets at the facility will impact the air quality and the noise levels, as well. Moreover, the discarded agricultural produce that may not find its way into the facility, will be discarded at the site which can be an eyesore at first and later the decomposition of these wastes can impact the air quality, as well. Additionally, the operation of the sanitation infrastructure at the facility should be efficient in order to avoid any impact on the surface and groundwater quality in the area. Repair and maintenance of trucks (if any) at the Cold Storage Facility can lead to discharge of oil and other hazardous materials that can impact the surface and groundwater quality.

176. Impact on air quality can be mitigated by ensuring that all trucks that enter the facility are issued Pollution Under Control (PUC) certificate by the relevant agency. Additionally, the roads and the pavement within the facility should be sprayed with water periodically to prevent generation of dust. Impact on noise can be mitigated by appropriate sound-dissipating equipment near the DG sets and also by ensuring that the truck engines are switched off during loading / unloading of the trucks.

177. Impact on Surface and Groundwater quality can be mitigated by managing the solid wastes, discarded agricultural wastes and any maintenance related wastes in an environmentally-friendly manner. Accordingly, these wastes should be treated at the composting facility proposed within the cold storage facility, and produce will be used as manure. Additionally, the sanitation facilities within the cold storage facility including the Septic Tanks should be operated efficiently as per standard practices and the fecal sludge should be disposed at a pre-identified and approved disposal facility.

178. To maintain the safety of workers and the local community arising from the movement of trucks and cold-storage facility operations, standard operating procedures should be developed and implemented at all levels. Adequate awareness and training should be provided to all facility users, visitors and workers to ensure the safety of workers and the local community. The

mitigation measures for all the impacts arising from the operations of the Cold Storage Facility are the following:

- (i) Prepare standard operating procedures, and ensure that SOPs are followed during operation
- (ii) Train workers and staff in safe and efficient operation, and SOPs
- (iii) Develop and emergency response plan; train workers and staff in emergency procedures, breakdowns
- (iv) Train workers in occupational health and safety, food safety and contamination
- (v) Ensure that all safety equipment, personnel protection equipment is provided and are used properly and are in working conditions
- (vi) Ensure proper maintenance of facilities and amenities like drinking water, sanitation, compost plants
- (vii) Ensure that qualified/trained supervision is available all times
- (viii) Provide necessary first aid, and ensure on-call service with local hospitals; and
- (ix) Ensure road safety, and ensure provisions and maintenance of road safety infrastructure, caution and information boards.

179. **Impact from O&M of New Bus Terminal at Lumbini Sanskrithik:** In the operations and maintenance (O&M) phase, the operations of the New Bus Terminal at the Lumbini Sanskrithik can impact the environment. The air quality near the facility is impacted by the continuous movement of buses to and from the facility. The impacts would be from the bus emissions as well as dust that is generated during the bus movements. Also, the operations of the DG sets at the facility will impact the air quality and the noise levels, as well. Moreover, the solid waste discarded at the site by the bus terminal users which can be an eyesore at first and later the decomposition of these wastes can impact the air quality, as well. Waste may also enter drains / stream leading to blockages. Additionally, the operation of the sanitation infrastructure at the facility should be efficient in order to avoid any impact on the surface and groundwater quality in the area. Bus maintenance operations (if any) at the New Bus Terminal can lead to discharge of oil and other hazardous materials that can impact the surface and groundwater quality. Ensure that these works are conducted only in designated places with impervious floods and spill collection systems.

180. Impact on air quality can be mitigated by ensuring that all buses that enter the Bus Terminal are issued Pollution Under Control (PUC) certificate by the relevant agency. Additionally, the roads and the pavement within the Bus Terminal should be sprayed with water periodically to prevent generation of dust. Impact on noise can be mitigated by appropriate sound-dissipating equipment near the DG sets and also by ensuring that the bus engines are switched off during idle time.

181. Impact on Surface and Groundwater quality can be mitigated by managing the solid wastes, and any maintenance related wastes in an environmentally-friendly manner. Accordingly, these wastes should be disposed at a pre-identified and approved landfill facility. Additionally, the sanitation facilities within the cold storage facility including the Septic Tanks should be operated efficiently as per standard practices and the fecal sludge should be disposed at a pre-identified and approved disposal facility.

182. To maintain the safety of workers and the local community arising from the movement of buses and bus-terminal facility operations, standard operating procedures should be developed and implemented at all levels. Adequate awareness and training should be provided to all bus

terminal facility users, visitors and workers to ensure the safety of workers and the local community.

183. To ensure that the environmental impact from the operational phase is at a minimum, the design accommodates adequate parking space for the buses that ply to and from the facility. Also, adequate parking for the visitors to the facility is also provided. Further, design ensures that adequate water and sanitation services and solid waste management services is provided for the users of the facility.

184. **Impact from O&M of New Municipality Office Building at Lumbini Sanskrithik:** In the operations and maintenance (O&M) phase, the operations of the New Municipality Building at the Lumbini Sanskrithik can impact the environment. The air quality near the facility is impacted by the continuous movement of vehicles to and from the facility. The impacts would be from the vehicle emissions as well as dust that is generated during the vehicle movements. Also, the operations of the DG sets at the facility will impact the air quality and the noise levels, as well. Moreover, the solid waste discarded at the site by the users which can be an eyesore at first and later the decomposition of these wastes can impact the air quality, as well. Waste may also enter drains / stream leading to blockages. Additionally, the operation of the sanitation infrastructure at the facility should be efficient in order to avoid any impact on the surface and groundwater quality in the area.

185. To ensure that the environmental impact from the operational phase is at a minimum, the design accommodates adequate parking space for the users and visitors to the facility is also provided. Further, design ensures that adequate water and sanitation services and solid waste management services is provided for the users of the facility.

E. Cumulative Impacts and Mitigation Measures

186. There are no notable other construction or project activities in the area that would result in cumulative environmental impacts. Direct impacts during construction phase, including, among others, increase in noise levels, fugitive dust, and common air emissions near the construction areas, are temporary in nature and will not result in cumulative adverse impacts to people and environment with the implementation of mitigation measures discussed in this IEE report.

F. Unanticipated Impacts during Construction and Operation

187. In the event of unanticipated environmental impacts not considered as significant during implementation and not considered in the IEE and EMP, the PCU shall prepare a corresponding time-bound and budgeted corrective action plan acceptable to ADB and ensure that these are implemented by the contractor/s and reported accordingly in environmental monitoring reports to ADB. If unanticipated environmental impacts deemed as significant become apparent during project implementation, the PCU will: (i) inform and seek ADB's advice, wherever necessary; (ii) assess the significance of such unanticipated impacts; (iii) evaluate the options available to address them; and (iv) update the IEE including EMP.

VI. ENVIRONMENTAL MANGEMENT PLAN

188. This Environmental Management Plan (EMP) has been prepared in accordance with the ADB's Safeguard Policy Statement 2009. This EMP identifies the minimum requirements with regard to the appropriate mitigation, monitoring, inspection and reporting mechanisms that need to be implemented throughout design, construction and operation periods of the project, to avoid, minimize or mitigate the potential environmental impacts identified in the chapter on Anticipated Environmental Impacts and Mitigation Measures of this IEE. This chapter also discusses the institutional arrangement, roles, and responsibilities for the effective implementation of the EMP.

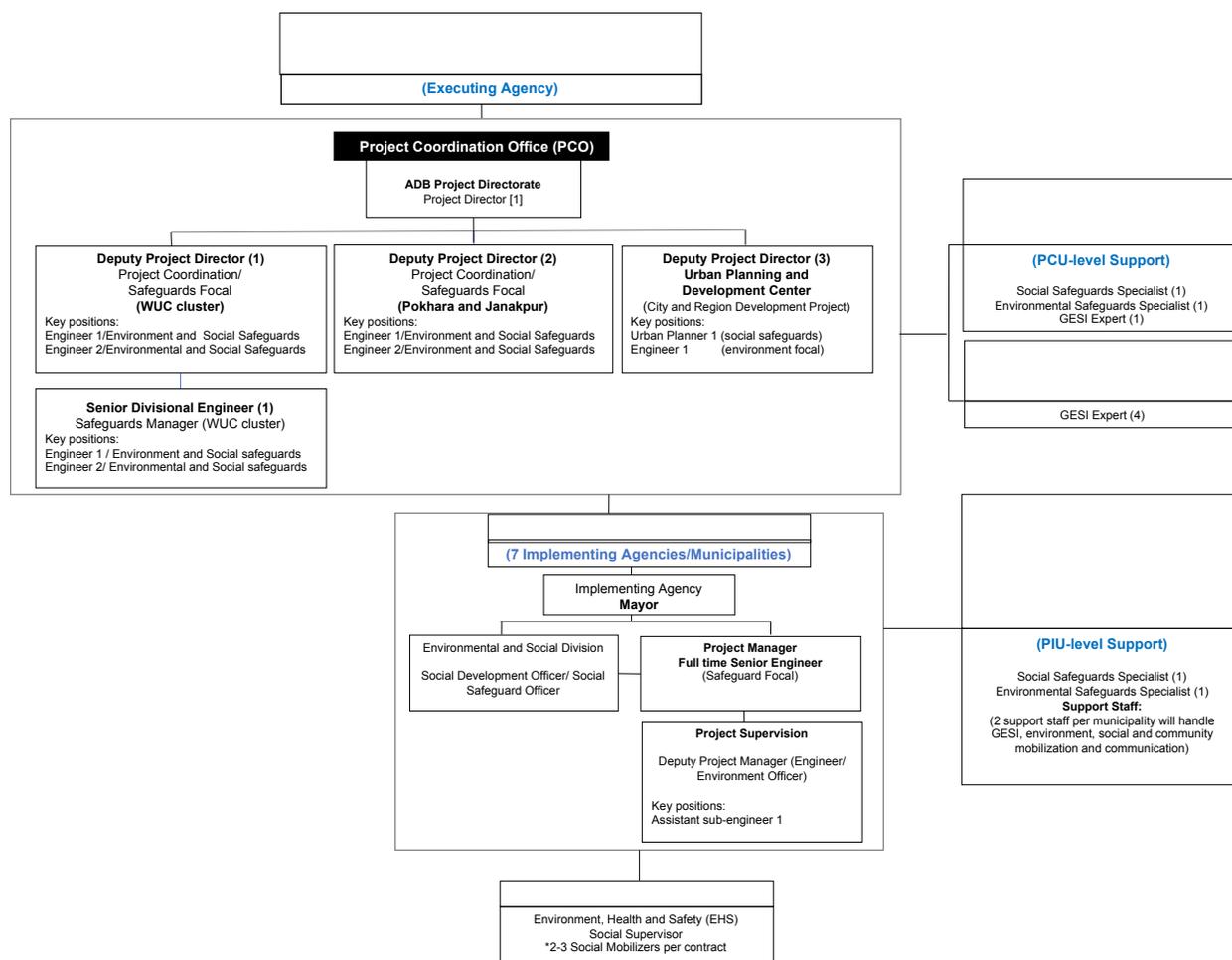
A. Institutional Arrangement

189. The Ministry of Urban Development through the Department of Urban Development and Building Construction will be the executing agency of the project, which will be supported by the Project Management and Capacity Development Consultant (PMCDC), and Institutional Strengthening and Community Participation Consultant (ISCPC). The PCO will be responsible for the overall management of the project. The municipalities will be the key implementing units of the project. The PIU with the support of the Supervision and Design Consultant (SDC) will be responsible for social safeguards compliance, monitoring, and reporting to ADB.

Safeguards Implementation Arrangement

190. **Project Coordination Office (PCO).** The PCO will be headed by a Project Director, who will be responsible for the overall project management. The Project Director shall be supported by three Deputy Project Directors (DPDs) – DPD WUC cluster, DPD Pokhara and Janakpur cluster, and DPD for Urban Planning and Development. The PCO will have an environment safeguards officers of engineer rank, who will be responsible for environmental safeguards compliance, planning, and implementation as per the agreed environmental assessment and review framework, IEEs and EMPs prepared consistent with the ADB's SPS and GON rules and regulations. Implementation arrangements for safeguards in implementation in URLIP presented in Figure 3.

Figure 41: Implementation Arrangement for Safeguard Implementation



191. **Project Coordination Office (PCO).** Roles and responsibilities of PCO (environmental safeguards) are:

- (i) Ensure subprojects comply with the national and local statutory and legal environmental requirements, ADB SPS 2009, EARF and environmental safeguards provisions of the ADB loan covenants;
- (ii) Ensure subprojects conform to exclusion criteria and subproject selection guidelines as stipulated in this EARF;
- (iii) Review and approve the environmental categorization of future subprojects;
- (iv) Engage additional experts (heritage and biodiversity experts) if project conditions warrant such expertise to prepare safeguard documents
- (v) Review and approve subproject IEE reports, including EMPs, and ensure that subproject IEEs and EMPs are updated based on final detailed designs and submit to ADB for review, clearance, and disclosure prior to bid invitation;
- (vi) Ensure that robust chance-find protocol is put in place and implemented properly;
- (vii) Ensure that updated/final IEEs based on final detailed design are provided to the construction contractor prior to start of construction;

- (viii) Ensure that the IEEs including EMPs are updated in case of changes in detailed design that may occur during implementation phase, and submitted to ADB for review, clearance and disclosure;
- (ix) Ensure that IEEs with EMPs are included in bidding documents and civil works contracts;
- (x) Ensure that the requirement for contractors to prepare their respective Health and Safety (H&S) Plans including COVID-19 H&S Plans is included in bidding documents and civil works contracts;
- (xi) Review and approve site-specific EMP (SEMP) of selected contractor;
- (xii) Provide oversight on environmental management aspects of the project, and ensure EMP and SEMP is implemented by contractors;
- (xiii) Establish a system to monitor environmental safeguards of the Project including monitoring the indicators set out in the monitoring plan of the IEE;
- (xiv) Facilitate timely and ensure overall compliance with all national and local government rules and regulations regarding site and environmental permits/clearances/approvals as well as any other environmental requirements as relevant;
- (xv) Review, monitor and evaluate effectiveness with which the EMP, SEMP, and Health and Safety Plan are implemented, and recommend necessary corrective actions to be taken;
- (xvi) With support from PMCDC, consolidate quarterly monitoring reports from the PIUs and submit semi-annual environmental monitoring reports (SEMRs) to ADB;
- (xvii) Ensure availability of budget for safeguards activities;
- (xviii) Ensure adequate awareness campaigns, information disclosure among affected communities and timely disclosure of final IEEs/EMPs and SEMRs, including corrective action plans, if any, in project website and in a form accessible to the public;
- (xix) Address any grievances brought through the grievance redress mechanism (GRM) described in this IEE report in a timely manner;
- (xx) Undertake regular review of safeguards-related loan covenants, and the compliance during project implementation; and
- (xxi) Organize periodic capacity building and training programs on safeguards for stakeholders, PIUs and contractors.

192. **Project Coordination Unit (PCU).** The municipalities will act as the implementing agencies of the project, under the guidance and overall management of the PCO. The roles and responsibilities of the PIU (Environmental Safeguards) are as follows:

- (i) Ensure subprojects comply with the national and local statutory and legal environmental requirements, ADB SPS 2009, EARF and environmental safeguards provisions of the ADB loan covenants;
- (ii) Ensure subprojects location and design confirms with exclusion criteria and subproject selection guidelines as stipulated in this EARF; closely work with design teams to ensure compliance
- (iii) Review subproject IEE reports, including EMPs, and ensure that subproject IEEs and EMPs are updated based on final detailed designs and submit to ADB for review, clearance, and disclosure prior to bid invitation;
- (iv) Ensure compliance with government and ADB requirements on environmental safeguards;
- (v) With support from SDC, review and approve SEMP prepared by contractor;

- (vi) Conduct regular site visits, including spot checks, to ensure the proper implementation of EMP;
- (vii) Review monthly reports from contractor;
- (viii) Prepare Quarterly Reports on all aspects concerning environmental assessment, management, and monitoring obtain approval from PIU and submit approved reports to the PCU;
- (ix) Address any grievances brought about through the GRM as described in the IEE report in a timely manner; and
- (x) Support all other environmental safeguards-related activities and tasks of the PCU as may be needed.

193. **Project Management and Capacity Development Consultants (PMCDC).** PMCDC will provide capacity building support on safeguards, and safeguards compliance in line with ADB procedures. PMCDC will appoint an environmental safeguards specialist to carry out all environmental safeguards related tasks and provide support to PCO safeguards team to oversee the implementation of the safeguards framework/safeguards planning documents. The environmental safeguards specialist will guide the safeguards officers at the PCO and shall coordinate with the SDC's Environmental Safeguards Specialist (PIU-support) for carrying out all social safeguards related tasks. The Environmental Safeguards Specialist (PMCDC) will be responsible for carrying out following tasks:

- (i) Support PCU and PIUs in selecting the output 2 components in compliance with subproject selection criteria; ensure that no components falling under exclusion criteria are considered for implementation under the project
- (ii) Screen and categorize output 2 subprojects based on this EARF;
- (iii) Guide PIUs / prepare the initial environmental examination (IEE) reports including environmental management plans (EMPs) based on design of the subprojects and in accordance with ADB SPS and national laws, regulations, policies and guidelines;
- (iv) Advise PCO in engaging additional experts (heritage and biodiversity) where required if the project conditions warrant
- (v) Support PCU/PIU in obtaining clearances and permissions per GON regulations
- (vi) Update/Finalize the IEE report including EMP based on final detailed design of the subproject and in accordance with ADB SPS and national laws, regulations, policies and guidelines;
- (vii) Conduct due diligence of associated facilities and/or audit of existing facilities, if any, during the detailed design phase, as defined in ADB SPS;
- (viii) Conduct of meaningful consultations and ensure issues/concerns/suggestions raised are incorporated in the design and updated/final IEE report;
- (ix) Ensure relevant provisions from the updated/final IEE report and EMP are incorporated in the bid and contract documents;
- (x) Establish grievance redressal mechanism and ensure members of the grievance committee have the necessary capacity to resolve project-related issues/concerns;
- (xi) Together with the social safeguard experts, conduct safeguards capacity building to ensure PCU and PIU have the capacity to implement, monitor, and report on implementation of EMP, resettlement plans and indigenous peoples plans (if any); and
- (xii) Monitor implementation of EMP at all work sites, including all potential safeguard issues identified in the safeguard documentation mentioned above;
- (xiii) Monitor any unanticipated environmental risks or impacts that arise during construction, implementation or operation of the subproject that were not

considered in the IEE report and EMP. Prepare corrective action plans and ensure that these are implemented by the contractor and reported accordingly in environmental monitoring reports to ADB; and

- (xiv) Undertake all other tasks to ensure the subproject complies with ADB SPS and national environmental laws, rules, and regulations.

194. **Supervision and Design Consultant (SDC).** Two SDCs will be established – (i) the WUC cluster, covering Devdaha, Siddharthnagar, Tilottama, Sainamaina and Lumbini; and (ii) Janakpur. SDCs will be responsible to support the PIU in the implementation and monitoring of safeguards compliance. They will also be responsible to prepare Output 2 designs, prepare safeguards documents in line with the EARF for Output 2 components. The SDCs will be supported by two support staff per municipality who will handle gender, environment and social safeguards, community mobilization, and communication.

195. **Design Supervision Consultant (DSC).** The DSC will support Pokhara municipality in the design and supervision of infrastructure and greens solutions, implementing heritage and cultural improvement plans, and design of tourism infrastructure components. The DSC environmental safeguards specialist will be involved in detailed design and safeguards documents preparation of output 2 components.

196. The key environmental safeguards tasks of SDC and DSC include:

- (i) Work closely with technical teams, and assist PIUs in selecting the output 2 components in compliance with subproject selection criteria; ensure that no components falling under exclusion criteria are considered for implementation under the project
- (ii) Prepare categorization checklists and assist in categorization of the project output 2 components in respective municipality
- (iii) Update/Finalize the initial environmental examination (IEE) report including environmental management plans (EMP) based on final detailed design of the subproject and in accordance with ADB SPS and national laws, regulations, policies and guidelines;
- (iv) Conduct due diligence of associated facilities and/or audit of existing facilities, if any, during the detailed design phase, as defined in ADB SPS;
- (v) take proactive action to anticipate and avoid delays in implementation;
- (vi) under the guidance of PMCDC, develop system of indicators to monitor implementation of resettlement activities and ensure corrective actions are undertaken, if and as required;
- (vii) obtain environmental safeguard related information with the help of field support staff and consolidate them; prepare periodic environmental safeguard monitoring reports;
- (viii) compile all monitoring inputs at PIU level for quarterly progress reports, for onward transmission to PCU and PMCDC;
- (ix) assist PIUs in conducting public consultation and disclosure activities related to social safeguards; and
- (x) actively participate, assist in resolving all grievance redress activities; and support ISPC in all training and capacity building activities.

197. **Civil Works Contract and Contractor.** The IEE with EMP will form part of bidding and contract documents and verified by PMU. The Contractor will be required to designate an Environment, Health and Safety (EHS) Officer (or equivalent) with relevant qualifications and

adequate experience to ensure implementation of EMP during construction period. Contractor is to carry out all environmental mitigation and monitoring measures outlined in their contract and the IEE. The Contractor will be required to submit to PIU, for review and approval, a SEMP including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; (iii) monitoring program per EMP; and (iv) budget for SEMP and EMP implementation. No works can commence until SEMP is approved by PIU.

198. Specifically, the Contractor will have the following responsibilities, among others that will be included in the bid and contract documents.

- (i) Ensure that the infrastructure development works are carried out in an environmentally friendly manner, minimizing environmental impacts while ensuring the health and safety of all its workers and the minimizing disturbance to the surrounding environment and communities;
- (ii) Consideration of ADB SPS, national regulations and the EMP during bid preparation and cost estimation;
- (iii) Appoint a full time EHS Officer with relevant qualifications and adequate experience to carryout responsibilities for complying with the ADB SPS requirements, national regulations and the EMP. The officer/staff must have a clear term of reference and responsibilities to ensure proper management of environmental issues;
- (iv) Ensure regular reporting to the PIU on work progress and alert management on any potential issues or delays;
- (v) Strictly follow COVID 19 protocols and other COVID-19 related instructions issued by the GoN at all construction sites and campsites and provide periodic reports to PIU on its compliance;
- (vi) Obtain the necessary permits and clearances, if any is required for the contractor, to implement the subproject;
- (vii) Ensure that all worker recruitment and OHS requirements are complied with;
- (viii) Take necessary corrective action to rectify any non-conformance, including actions related to grievances;
- (ix) Institute an emergency plan for natural calamities/disasters and accidents at the site; and
- (x) Follow chance finds procedures to discovery of any physical cultural artifact.

199. A copy of the EMP/approved SEMP will be kept on-site during the construction period at all times. Non-compliance with, or any deviation from, the conditions set out in the EMP/SEMP constitutes a failure in compliance and will require corrective actions.

200. PCU will ensure that bidding and contract documents include specific provisions requiring contractors to comply with: (i) all applicable labor laws and core labor standards on (a) prohibition of child labor as defined in national legislation for construction and maintenance activities; (b) equal pay for equal work of equal value regardless of gender, ethnicity, or caste; and (c) elimination of forced labor; and with (ii) the requirement to disseminate information on sexually transmitted diseases, including HIV/AIDS, to employees and local communities surrounding the proposed project sites

B. Environmental Management Plan (EMP)

201. The EMP is necessary on the grounds that it will manage the environment by offsetting the negative impacts with possible mitigation measures and enhancing the positive impacts within the allocated fund from the project. Thus, the main objectives of the EMP for the construction of the access road project are:

- (i) Define the responsibilities of the project proponents in accordance with all project phases viz., (design, pre-construction, construction and operation);
- (ii) Facilitate the implementation of the mitigation measures by providing the technical details of each project impact, and proposing an implementation schedule of the proposed mitigation measures;
- (iii) Define a monitoring mechanism and identify monitoring parameters to ensure that all proposed mitigation measures are completely and effectively implemented;
- (iv) Identify training requirements at various levels and provide a plan for the implementation of training sessions;
- (v) Identify the resources required to implement the EMP and outline corresponding financing arrangements; and providing a cost estimate for all proposed EMP actions.

202. The Environmental Management Plan (EMP) Matrix for Construction Phase and applicable to all project components is presented in Table 35, Table 36 and 37, provides the EMP Matrix for Operational Phase to cover (i) Road and Drains in all municipalities and (ii) Construction of Cold Storage Facility at Tilottama and Bus Terminal at Lumbini Sanskrithik, respectively.

Table 35: Environmental Management Plan Matrix (Construction Phase) – Applicable for all Project Components

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
1. Design phase				
Design of project components	Improper design leading to safety, environmental pollution and health concerns during operation phase	<ul style="list-style-type: none"> • Ensure that technical design of all the components (roads, drains, footpath, cold storage, municipal building and bus terminal will follow the relevant national planning and design guidelines. • Ensure that road designs comply with the applicable standards to meet the needs of the road users, keeping in view the road function, type and volume of traffic, potential traffic hazards and safety, environment impacts, aesthetics as well as convenience of the road users.. • Ensure that roads are designed with traffic control and safety measures commensurate with the traffic. These include road markings ensuring consistency, clarity, and sufficiency; facilities for pedestrians to cross are ensured by road markings; traffic signs (mandatory/regulatory signs, cautionary/warning signs and inforamatory signs); road delineators; lighting, etc., 	PIU, DSC	PCU, PMCDC
Impacts to Local hydrology	Local waterlogging problems and obstruction of natural water flows in the vicinity	<ul style="list-style-type: none"> • Detailed assessment of the micro-hydrology and topography of the project site; • Design the roads according to the slope and elevation relative to the water bodies that may exist in the area; ensure that necessary cross drainage structures are provided to avoid water logging or flooding • Provide the appropriate design of drains for road stretches that do not have existing drainage or where persistent flooding has been recorded; • Plan and design the facilities at the New Municipality Building at Lumbini and Cold Storage Facility at Tilottama in a way that would prevent flooding during rainfall events • Ensure proper site protection measures at Municipal building to safeguard against heavy floods in Telar river and to avoid flooding / water logging • Accommodate existing drainage lines within the layout design to ensure uninterrupted flow; provide peripheral 	PIU, DSC	PCU, PMCDC

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<p>drains to carry the runoff from upstream areas where required to avoid flooding / water logging;</p> <ul style="list-style-type: none"> No facilities such fuel, oil, lubricant stores, or maintenance facilities, garage should be located close to the drain 		
Impacts to Local hydrology – proposed bus terminal building	Low-lying site along a drainage channel – risk of flooding and water logging	<ul style="list-style-type: none"> Conduct detailed assessment of the micro hydrology and topography of the bus terminal site and surrounding area during the detailed design Design proper drainage system for the bus terminal site and surroundings low land that drains into existing channel drain to ensure that there is no flooding or water logging during rains. avoid changing the alignment of drainage channel as far as possible by channelizing and accommodating within the site In unavoidable cases, ensure the realignment is minor and do not affect the flow through existing culvert Obtain prior permission from Canal authority / Irrigation Department for realignment and channelizing the drain within the site Ensure that drainage system is designed with adequate capacity duly account to the climate change risks; liaison with Canal authority / irrigation department and design the drainage channel appropriately. Design peripheral/lateral drains and cross drainage works (such as additional culverts) as required to ensure that elevated bus terminal area do not block the free flow from surrounding areas into existing culvert <p>No facilities such fuel, oil, lubricant stores, or maintenance facilities, garage should be located close to the drain</p>	PIU, DSC	PCU, PMCDC

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
Damage / Disturbance of private and common properties and physical cultural resources.	Disturbance of private and common properties (such as ramps, drainage, boundary walls, houses, soak well, lamp post), and physical cultural resources such as graveyards and places of worship will be avoided.	<ul style="list-style-type: none"> Consult with Lubmini WHS and museum authorities and tourist agencies prior to scheduling of works Ensure that all works are confined to existing roads right-of-way (ROWs). For small local temples of recent origin located within the ROW, as far as possible ensure no relocation by appropriate design; if relocation is needed conduct further meaningful consultation with stakeholders and take mitigation measures accordingly including reconstruction in nearby land. ensure implementation of construction phase EMP to avoid disturbance / damage to common properly resources and PCRs. 	PIU, DSC	PCU, PMCDC
Chance Finds	Damage to archeological items / PCRs	<ul style="list-style-type: none"> Strictly follow the protocol by coordinating immediately with PIU and Nepal Department of Archaeology for any suspicion of chance finds during excavation works; Create awareness among workers, supervisors and engineers about the chance finds during excavation work; Stop work immediately to allow further investigation if any finds are suspected; and Inform the Nepal Department of Archaeology if a find is suspected and take any action they require to ensure its removal or protection in-situ; Follow the written instructions of Nepal Department of Archaeology for continuation of works. 	PIU, DSC	PCU, PMCDC
Impact on Forests, Terrestrial Flora and Fauna	Impact to local biological environment including forests, terrestrial flora and fauna will be avoided.	<ul style="list-style-type: none"> Develop a protocol for workers and staff for working in forest areas and in sites close to Lumbini farmlands, and for workers engaged in site clearance and tree cutting; this should clearly list do's and don't and procedures and reporting mechanism Do not remove trees or clear vegetation outside the actual area of construction; all works, construction material storage/ancillary works shall be confined to the demarcated areas of the road, no movement of workers, vehicles, equipment allowed outside this area 	PIU, DSC	PCU, PMCDC

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<ul style="list-style-type: none"> • Ensure proper barricading, and measures to prevent entry of wildlife into work area • No labour camps or construction facilities, storage areas, shall be established in or within 250 m of forest area; no debris/waste disposed within forest or within 1 km of forests • Limit the work to daylight hours only; no works after sunset • No workers /personnel shall be confined to the construction area, and shall not enter forest area; it is the contractor responsibility to take necessary precautions & prevent workers removing/damaging trees/vegetation, hunting / harming animals; PMDSC and PIU should strictly monitor and ensure • Create awareness among workers on environment, human-wildlife conflicts, safety; workers should be made aware of the wildlife and birds (especially protected species such as Sarus cranes and vultures) present in the local areas; photographs of such species shall be provided in the sites, and construction workers shall be instructed to move away from the areas when such species are spotted and do not disturb them in anyway, and immediately report to the supervising engineer and PMC experts to record such events • No noisy works shall be conducted, especially during night time. 		
Impact to Local Vegetation and Trees	Impact to local biological environment including trees, birds and other animals will be avoided.	<ul style="list-style-type: none"> • Conduct investigation along the proposed road alignment to determine the number and the kind of tree species that would be impacted; • Identify the trees that plays a beneficial role to the local environment i.e., those trees that house bird nests or whole foliage is used by animals or protected tree species etc. • Conduct meaningful consultations with stakeholders to determine the trees that would need to be protected; • Consider alternative and innovative road alignments (that fully complies with design standards) to avoid tree cutting and where tree cutting is unavoidable, appropriate 	PIU, DSC	PCU, PMCDC

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<p>compensatory afforestation measures should be implemented;</p> <ul style="list-style-type: none"> Do not cut protected trees such as Simal (<i>Bombax cieba</i>), retain the tree, alter the road alignment /layout of road / drain locally to preserve the trees; and Obtain any necessary approval from appropriate agencies such as Forest Department to implement the Tree Conservation measures for the sub-project. Conduct survey of trees for bird nests prior to cutting, if any active nests, ensure that trees are not disturbed until young birds fly away from the nests, do not cut trees during the breeding season. 		
Impact of Cold Storage Facility	operational stage impacts such as resource use (energy, refrigerant etc.) that have an impact on environment should be addressed in the design stage.	<ul style="list-style-type: none"> Layout plan and design shall ensure that there is no harm or disturbance to Simal tree next adjacent to the proposed cold storage site. Adapt design that will ensure minimum energy use Adapt zero ozone depleting potential (zero-ODP), low global warming potential (low-GWP) and energy efficient technologies for cold storage. Ensure that design and operation minimize energy use Ensure proper safety systems, include fire safety, electrical safety, chemical safety (eg., coolant chemical) Facility design and operation shall confirm to national standards and/or internationally recognized standards Facility should be built and operated with necessary licenses including food safety, fire safety etc., Develop all necessary amenities and facilities to support safe and efficient operation – power supply, water supply, sanitation, waste management, on-site treatment like septic tanks and soak pits.Ensure design of septic tank and compost facilities prevents infiltration/seepage of contaminants into groundwater. Ensure to designate an area of emergency vehicle / truck maintenance, refueling, repairs etc., and ensure this area is provided with impervious surface, and oil/fuel spill collection system 	PIU, DSC	PCU, PMCDC

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
Impact of Cold Storage Facility	Operational stage impacts such as resource use, pollution, generation of wastes, etc., that have an impact on environment should be addressed in the design stage.	<ul style="list-style-type: none"> • Avoid / minimize tree cutting by integrating the existing trees in the layout plans as far as possible; plan trees and create green areas within the facility to the extent possible • Adapt energy efficient design; • Follow local building bylaws in planning and design, ensure all necessary clearances and approvals • Develop facility with all necessary amenities like drinking water, sanitation, segregated solid waste management, etc., • Ensure that areas designed for vehicle / bus emergency maintenance (garage), refuelling, repairs etc are provided with impervious surface, and oil/fuel spill collection system; train staff, mechanics, drivers etc., in safe operations • Ensure that wastewater outlets of washrooms and toilets are connected to a on-site treatment system such as septic tank and soak pit for treatment and safe disposal; ensure that septic tank is designed water tight to avoid seepage into groundwater; ensure that location of septic tank is at least 50 m away from nearest well • Ensure that collected solid waste is disposed properly 	PIU, DSC	PCU, PMCDC
2. Pre-Construction Phase				
Consents, permits and clearances	Failure to obtain necessary consents, permits, and clearances can result in design revisions and/or stoppage of the Works.	<ul style="list-style-type: none"> • All necessary local clearances and no objection certificates will be obtained prior to award of contract. • Environmental clearance will be obtained prior to award of contract. 	PCU, PMCDC	PIU, EA, ADB
Integration of EMP in bidding documents and contracts	Lack of awareness by contractors on ADB SPS requirements may result in insufficient budget and non-	<ul style="list-style-type: none"> • The PCU will incorporate the costs of implementing OHS and the EMP as well as specific provisions requiring contractors to comply with all other conditions required by ADB into the bidding and contract document. • Once the Contractor is selected, the PCU/PIU with support from PMCDC will inform contractors of their responsibilities in EMP implementation, in compliance 	PCU, PMCDC	EA, ADB

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
	implementation of EMP	with ADB and government requirements, self-monitoring and reporting procedures.		
EMP Implementation Training	If the contractors and construction supervision engineers are not aware about the requirements of this EMP, the project may not proceed and comply with ADB and GoN environmental policies.	<ul style="list-style-type: none"> The PCU, PIU and contractors will be required to undergo training on EMP implementation. 	PCU, PMCDC	PIU, EA, ADB
Updating of IEE	IEE and EMP out of date due to changing conditions or design	<ul style="list-style-type: none"> The PCU shall update the IEE in case of change in design/based on the final detailed design and submit the same for review and clearance of ADB. 	PCU, PMCDC	EA, ADB
Community Awareness on Project Activities and Impacts	Lack of community awareness on project activities may result in potential community health and safety concerns and complaints.	<ul style="list-style-type: none"> Before the start of project construction, a meaningful consultation with the affected communities will be conducted. This meaningful consultation will aim to engage community stakeholders, listen to their views, and try to come to a common understanding about the need for an improved drainage system and the sacrifices that need to be made to achieve it. To aid in the consultation process, it is important that the community should be made aware of the details of project activities. Important information to be disseminated to the people are, among others, the following: <ul style="list-style-type: none"> Overview and objectives of the proposed project; Preliminary and/or final detailed design of proposed project components; Potential environmental and social impacts (positive and negative) of the project, and the proposed mitigation measures for the perceived negative impacts; and Grievance redress mechanism and contact details of the project. 	PIU, Contractor	PCU, PMCDC

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
Construction schedule	Impact on tourism activities	<ul style="list-style-type: none"> Schedule road works close to the Lumbini heritage area in consultation with museum authorities and traffic police; works that may affect the tourist places shall not be conducted during the tourist season 	PIU, Contractor	PCU, PMCDC
Construction materials	Impacts due to mining and borrow areas	<ul style="list-style-type: none"> Reuse the excavated soils and road material as much as possible in the construction and raising ground, and minimize the need for new material. Lumbini and Tilottama municipalities /PIUs to coordinated with other construction works/projects in the respective areas to source the excess soil If new material is needed, use only the existing material sources and borrow areas permitted by government(DOMG) Avoid creation of new borrow areas as much as possible, in unavoidable cases, obtain all permissions and clearances, including conduct of environmental assessment studies and obtaining environmental clearances Ensure that borrow areas are not located in environmentally sensitive areas; conduct baseline assessment prior to selecting a site Prepare borrow area management plan and implement Verify suitability of all material sources and obtain approval of PIU; Ensure that the loading and unloading of the materials and the transportation of the materials from source to construction site does not cause impact on health and safety of the workers and the community; and Submit to PIU on a monthly basis documentation of sources of materials. . If contractor is purchasing ready mix concrete, asphalt/macadam and aggregates from third party, contractor will ensure that all the parties/ suppliers necessary clearances and permission as per the Nepal law and will provide the documentary evidence to PIU/consultants. 	PIU, Contractor	PCU, PMCDC
3. Construction phase				

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
Construction Planning	Inadequate planning could lead to non-implementation of EMP during the construction phase and result in significant environmental impacts leading to non-compliance with ADB's environmental safeguard requirements.	<ul style="list-style-type: none"> • Appoint an Environmental Health and Safety (EHS) Supervisor; • Develop a Site-Specific Environmental Management Plan (SEMP) and get it approved from the Client; • Conduct training on the rationale for and implementation of the SEMP and EMP to enhance general understanding and clarify responsibilities regarding implementation, including monitoring and reporting, must also be provided to relevant staff of contractors; • While the locations of all project components have been finalized, the locations of labour campsites, batching plant site etc. have not been finalized. The Contractor should select the locations in consultation with local municipalities and get the approval of PCU and PIU. All necessary infrastructure should be provided at the facility for effectively operating the infrastructure during the construction period; • The Contractor will be required to submit to PCU, for review and approval, a SEMP including (a) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes, (b) specific mitigation measures following the approved EMP; (c) monitoring program as per EMP; and (d) budget for SEMP implementation. No works can commence prior to approval of SEMP. The SEMP will include the following: (i) Construction Compound Management Plan; (ii) Construction Health and Safety Plan (including COVID-19 H&S guidance); and (iii) Emergency Incident Response Plan. 	Contractor	DSC, PIU, PMCDC, PCU
Disruption of Existing Utilities	Disruption of infrastructure and services	<ul style="list-style-type: none"> • conduct investigation at site to determine all the existing utilities that will likely be disturbed during construction phase; • all underground utilities should be marked prior to any construction works to be taken up at the locations; and • coordinate with agencies responsible for the maintenance of the utilities and formulate a plan to 	Contractor	PCU, PMCDC

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		minimize disruption of services during construction phase. The plan must be formulated in coordination with PCU and stakeholders at the site. Where required, the responsible agency shall be requested by PIU to carry out the necessary works at the time required and at cost of the subproject.		
Excavation Works	Excavations may affect local drainage patterns if surface and groundwater collect in voids as they are being dug.	<ul style="list-style-type: none"> All excavations shall be done to the minimum dimension as required for safety and working facility. Excavations should be carried out after identifying the location of all utilities that exist along the project area; The excavation shall be executed in such manner, that the contractor does not damage or interfere with existing services or structures. If damage or interference is so caused, the contractor shall make arrangements with the supply and/or building owner to execute the repairs at the contractor's own cost. Explore working on off-peak hours or night on busy road sections with prior permission and proper lighting and safety measures, however, no noisy works shall be conducted during night; Road drains and channels shall be kept free from obstructions at all times. Excavated areas should be sufficiently demarcated so as not to affect the health and safety of workers and the people using the road alignment for their daily activities. 	Contractor	DSC, PIU, PMCDC, PCU
Tree Conservation	There are 226 trees belonging to various species along road alignment which may be affected by the road construction/ improvement. Out of these 170 trees may be impacted by the project activities.	<ul style="list-style-type: none"> The first priority is to avoid cutting of trees through changes in design and road alignments. This is in particular important when the tree species is protected or considered sacred by the community and / or houses nests for birds; Don not cut protected trees such as Simal (<i>Bombax cieba</i>) retain the tree / alter the alignment / layout of road / drain locally to preserve the trees; after the finalization of the designs and layout of the project components, the trees within proposed construction areas will be marked; 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<ul style="list-style-type: none"> • trees within area required for construction will be felled after prior approval; • replacement of the tree shall be undertaken by project office PIU at the replacement ratio of ten trees for every tree that is cut (i.e., 1:10 ratio) Indigenous/native species will be preferred in tree planting; • only trees that will require removal within the proposed construction areas of the sites will be cut; and • For trees that will not be cut, take all precautions to protect them from any damage from construction activities. • Conduct survey of trees for bird nests prior to cutting, if any active nests, ensure that trees are not disturbed until young birds fly away from the nests, do not cut trees during the breeding season; • Prevent workers from removing / damaging any other flora and fauna found in the project vicinity; and • Prohibit employees and workers from poaching animals and cutting of trees for firewood in the vicinity of the construction site. 		
Excavated Earth Management	Excavation during construction will generate loose soil which can be carried through surface runoff during a rainfall.	<ul style="list-style-type: none"> • The Contractor shall plan his works to minimize surface excavation works during the rainy season where practicable. • Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms shall be developed by the Contractor. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • Channels, earth bunds, netting, tarpaulin and or sandbag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the works areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows. 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<ul style="list-style-type: none"> Monitor groundwater quality that could exist close to the working areas to ensure compliance. 		
Impact on Surface Water Quality	Silt-laden run-off from stockpiled materials, solid wastes and domestic wastewater from the construction camp, and leaks from chemical storage areas and machineries may contaminate or result in water pollution if disposed or discharged to nearby receiving bodies of water.	<ul style="list-style-type: none"> Provision of temporary sedimentation canal and/or silt traps along construction areas, particularly alignments that are adjacent to receiving bodies of water or canals The measures to address soil erosion at the proposed facilities will consist of measures as per design, or as directed by the PMCDC to control soil erosion, sedimentation, and water pollution. All temporary sedimentation, pollution control works, and maintenance thereof will be deemed incidental to the earthwork or other items of work. All temporary discharge points shall be located, designed and constructed in a manner that will minimize erosion in the receiving channels. Ensure proper compaction of refilled soil and there shall not be any loose soil particles on the top; the material shall be refilled in layers and compacted properly layer by layer. Use surplus soil for beneficial purposes such as in any other construction activities, or to raise the level of low-lying areas. Avoid scheduling of excavation work during the monsoon season. Confine construction area including the material storage (sand and aggregate) so that runoff will not enter the site. Ensure that drains are not blocked with excavated soil Stockyards at least 50 meters (m) away from watercourses. Fuel and other petroleum products stored at storage areas away from water drainage and protected by impermeable lining and bunded 110%. Effective maintenance of machinery and vehicles to avoid leakages; For effluents from workplace, camps, and offices, provide treatment arrangements such as retention ponds and 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<p>septic tanks which should be incorporated in the facility designs. A sewage management plan has to be prepared by the contractor and agreed with the PMCDC.</p> <ul style="list-style-type: none"> • Solid Waste Management, as detailed in the SEMP, should be implemented throughout the construction period; • Monitor water quality according to the environmental monitoring plan. 		
Impact on Groundwater	Increased groundwater demand for construction and consumption use can deplete the Groundwater Table; Unscientific Solid Waste and Construction Waste Disposal can lead to contamination of ground water,	<ul style="list-style-type: none"> • Use groundwater resources judiciously and as per the approved Groundwater Management Plan defined in the SEMP; • All tube wells, test holes, monitoring wells that are no longer in use or needed shall be properly decommissioned; • Storage of lubricants and fuel at least 50m from water bodies and in double-hulled tanks; • Effective maintenance of machinery and vehicles to avoid leakages; • Effective management of solid waste and construction debris as per an approved SEMP; • Provide uncontaminated water for dust suppression; • Monitor Groundwater Quality according to the Environmental Monitoring Plan. 	Contractor	DSC, PIU, PMCDC, PCU
Drainage Management	Construction material getting into surface run off or uncontrolled disposal may cause drainage congestion, flooding or waterlogging in neighboring areas.	<ul style="list-style-type: none"> • The contractor shall adopt a site clearance procedure that separates topsoil and stores it under appropriate conditions for reuse as instructed by the Engineer. • Wastes and construction debris will not be disposed in a manner that these would end up in drainage canals. • The on-site storage of excessive quantities of unwanted spoil and aggregate materials should be avoided. Where storage is necessary, the Contractor shall ensure heaps and stockpiles are located at sites that they do not permit direct runoff into watercourses and are on land sloping at less than 1.5%. 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<ul style="list-style-type: none"> All heaps shall be of a size and stability that will ensure the risk of mass movement during period of heavy rainfall is minimized. 		
Impact on Air Quality	Construction activities including transport and storage of raw materials will likely create dust and emissions that could deteriorate ambient air quality in the area.	<ul style="list-style-type: none"> Take every precaution to reduce the levels of dust at construction sites, and not exceeding the pre-project ambient air quality standards. Fit all heavy equipment and machinery with air pollution control devices that are operating correctly. Construction vehicles must travel at speeds that minimizes dust generation; Reduce dust by spraying water stockpiled soil, excavated materials, and spoils. Cover with tarpaulin vehicles transporting soil and sand. Cover stockpiled construction materials with tarpaulin or plastic sheets. Water spraying to access roads, camp sites and work sites to reduce dust emissions. Machines and vehicles must be regularly examined and maintained to comply with requirements of technical specifications. All vehicles, equipment, and machinery used for construction will be regularly maintained to ensure that pollution emission levels comply with the relevant standards; Repair and maintain access roads, as necessary. prohibit burning firewood in work and labor camps (promote liquified petroleum gas for cooking purposes and electric heater for heating purposes; use vehicles that have government-issued permits and registrations; and prohibit open burning of solid waste. Monitor air quality according to the environmental monitoring plan. 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
Impact on Noise	Noise generation may disturb nearby sensitive receptors	<ul style="list-style-type: none"> • Arrive at the construction schedule upon discussion with nearby stakeholders, especially when works are carried out near sensitive receptors such as hospitals, schools, places of worship etc. • Install noise barriers between the source and receptor, as necessary; • Enclose and locate generators away from sensitive receptors; • Start machines and vehicles sequentially rather than all together; • spread out the schedule of material, spoil and waste transport; • minimize drop heights when loading and unloading coarse aggregates; • avoid use of horns unless absolutely necessary; • Select electrically powered plant that is quieter than diesel or petrol-driven plant, if interchangeable; • Use modern vehicles and machinery with standard adaptations to reduce noise and exhaust emissions, and ensure they are maintained to manufacturers' specifications; • Noise-generating equipment must be fitted with silencers. • Optimize the use of noisy construction equipment and turn off any equipment if not in use; • Regular maintenance of all equipment and vehicles; • Stop all construction activities during night; • Implement a complaint handling system; • Workers should be provided with earmuffs/protective hearing equipment in noise critical areas • Place visually clear instructions in areas where noise emissions are significant. • Measure noise level according to the environmental monitoring plan. 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
Construction Waste Management	Inadequate management of construction wastes will result in negative impact on the soil, aesthetic beauty of area and workers' health and safety.	<ul style="list-style-type: none"> • Develop and seek approval for the Construction Waste management Plan as part of the SEMP; • Identify and seek approval for the areas where the construction waste could be disposed; • The contractors should take every opportunity to reduce the amounts of waste generated and collect recyclable material for processing by local operators. • Contractor shall implement waste segregation on site. • Receptacles for solid waste should be provided for the use of workers, and their contents should be disposed properly; . • Construction waste should also be disposed of in legal local landfills • Clean construction waste such as excess soil or rubble should be used in landscaping on site or given to landowners and developers seeking fill material. • Waste auditing. The contractor will record the quantity in tons and types of waste and materials leaving site during the construction phase; • Waste fuels/oils may be generated from equipment used on-site during construction and may be classified as hazardous waste. Such wastes will be stored in a secure, banded area on-site prior to collection by relevant parties; 	Contractor	DSC, PIU, PMCDC, PCU
Impact on Aquatic Ecology	Siltation, chemical spills, improper waste disposal may affect the water quality of nearby canals, ponds/river, and any thriving aquatic species.	<ul style="list-style-type: none"> • Provide temporary protection at sections near the river/ponds to avoid sliding of soils; • Store spoils away from the side of the river/pond; • Implement proper storage/disposal of materials, chemicals and waste • Implement mitigation measures for excavation, soil erosion and sediment mobilization, surface water pollution, and construction waste generation; and • Conduct sampling and analysis of surface water near to the construction sites as part of the Environmental Monitoring Plan. 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
Impact to Traffic and Access	Road rehabilitation works will render some portions of the road unusable at periods of time resulting in traffic congestion and inconveniences to pedestrians and motorists in the vicinity of the affected area.	<ul style="list-style-type: none"> • Plan roads and drain works minimizing traffic disturbance/blockades; work planning is crucial to minimize the inconvenience to public due to road works; provide diversions / alternative roads where required • Schedule road works close to the Lumbini heritage area in consultation with WHS, museum authorities, tourist agencies and traffic police; works that may affect the tourist places shall not be conducted during the tourist season • A Site-Specific Traffic Management Plan should be drawn up in consultation with the local community on construction operations and work schedules.; • Coordinate with traffic police for temporary road diversions and for provision of traffic aids; • Notify public and provide sign boards informing nature and duration of construction works and contact numbers for concerns/complaints; • Maintain sufficient access to houses and shopkeepers (commercial establishments) during works; provide proper and safe pedestrian access. • Awareness should be built amongst the community on the implementation of the Site-Specific Traffic Management Plan; • Emergency response plan must be prepared for any traffic accident during construction and should be included in the SEMP. • As necessary, increase workforce for speedy completion; • Schedule material deliveries on low pedestrian traffic hours; • Restore damaged properties and utilities; • Erect and maintain barricades if required; • Pedestrian access will be maintained with the use of walking boards. Wheelchair and disabled access shall be maintained. 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<ul style="list-style-type: none"> Surfaced roads shall be subject to road cleaning and unsurfaced roads to dust suppression, the methodology and frequency of which shall be included in the SEMP. 		
Impact on Socio-Cultural Resources, Tourism and Chance Finds	There are no notified PCR in the sub-project area. However, Lumbini and Devdaha are significant cultural centres of international repute. And, Lumbini is a designated UNESCO Heritage Site. Hence, chances of finding items of archeological importance are high in these two towns.	<ul style="list-style-type: none"> Prior to commencement of construction, consult with concerned religious authorities of these temples, nearby people and devotees and explain the work method and duration of proposed works, take their suggestions and comments in scheduling and conducting the works No construction camps (workers accommodation, material / waste / soil storage) should be established within 1 km of the monuments in Lumbini Put in place proper dust and noise control measures Adjacent to religious/social/historical buildings, undertake excavation and construction work in such a way that no structural damage is caused to the structures Schedule and plan works considering the tourist season and tourist areas Observe the local rituals and important dates of festivals, weekly/monthly/annual religious occasions in the religious places and do not make any disturbance/hindrance/obstacles during such time to the religious places Provide proper signage, barricades etc. to protect public and devotees from dangers of construction works. Ensure proper traffic management planning to minimize the disruption to the normal traffic flow in the area and ensure the safety of the people. Clear the work site of unnecessary material, equipment, and debris / surplus soil; do not stock material / soil at the sites Conduct continuous consultations with the local people during the works Strictly follow the protocol by coordinating immediately with PIU and Nepal Department of Archaeology for any suspicion of chance finds during excavation works; 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<ul style="list-style-type: none"> • Create awareness among the workers, supervisors and engineers about the chance finds during excavation work; • Stop work immediately to allow further investigation if any finds are suspected; and • Inform the Nepal Department of Archaeology (NDA) if a find is suspected and take any action they require to ensure its removal or protection in situ • Follow the written instructions of DOA for continuation of works . 		
Impact on socio-economic activities	Disturbance to economic activities may result from excavation works, stockpiling, the operation of construction vehicles and equipment, and accidental damage to utilities	<ul style="list-style-type: none"> • Develop the construction schedule in discussions with the community so that movement of construction vehicles can be avoided during school timings, festival times and / or any other local events that would require local communities to travel; • Implement Traffic Management Plan in collaboration with local authorities; • Where traffic congestion will likely occur, place traffic flagmen during working hours; • Avoid full road closures by applying the construction method on section-wise and/or chainage-wise approach during excavation, concreting and/or curing periods; • If full road closure is not possible, especially on very narrow roads, ensure that alternate routes are identified and that affected residents and establishments are informed prior to conducting the construction activities; • Provide convenient access to pedestrians when works occur in front of residential, commercial or institutional establishments. Examples are planks with handrails that should be provided to cross excavated areas. • Provide appropriate compensation to qualified affected people or businesses per approved resettlement plan for the subproject; • Manage stockpile; • Manage pumped water from excavations either to drains or drums for later use; • Relocate the affected power supply poles, and 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<ul style="list-style-type: none"> Advise the concerned authority during accidental damage to utilities. 		
Occupational Health and Safety	Construction activities could create health and safety risks to construction workers	<ul style="list-style-type: none"> All relevant provisions of the National Health Care Waste Management Standards and Operating Procedure-2020 and relevant WHO guidelines will be adhered to, concerning the provision of adequate measures to avoid contracting and/or spreading diseases during construction phase; Follow international best practices on occupational health and safety such as those in Section 4.2 of World Bank EHS Guidelines on Construction and Decommissioning Activities; and EHS Guidelines on Waste Management Facilities. These practices include recommended measures to prevent, minimize and control pathogens from inflicting workers through training and use of appropriate PPEs, clothing and equipment when working along the drainage system, and immunization and health monitoring (e.g. hepatitis B and tetanus). Existing drains may present hazardous working conditions in some places due to lack of oxygen and flammable nature of methane emissions which will be detrimental to the health and safety of workers. Put in place standard operating procedures with appropriate equipment, and workers are provided with necessary training and personnel protection equipment to safeguard health and safety Follow established occupational health and safety protocol on emerging infectious diseases such as the corona virus disease (COVID19). A readily available first aid unit, including an adequate supply of sterilized dressing material and appliances, will be provided as per the factory rules. Suitable transport will be provided to facilitate the transfer of injured or ill persons to the nearest hospital; 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<ul style="list-style-type: none"> • Other first aid medical equipment and nursing staff will be made available or arranged on-call; • The contractor will, at his own expense, conform to all disease prevention instructions as may be given by PCU/PIU; • Provide regular health check-ups, sanitation and hygiene, health care, and control of epidemic diseases to the workforce; • The contractor shall provide at cost all labor and materials and construct/install and maintain site safety, hard barricading, flexible green net, signboards, temporary day/light traffic diversions throughout the construction activities according to the specifications and provide personal protective equipment (PPE) to all the laborers working at the construction site; • Launch awareness programs concerning human trafficking and the possibility of spread of sexually transmitted diseases (STDs) and HIV/AIDS using brochures, posters, and signboards; • Make available first aid kits, ambulance facilities, and fire extinguishers in camp sites, if any; • Compensation for the loss of life (a zero tolerance to loss of life policy should be developed and implemented) or for any type of injuries; and • Provide adequate insurance to the workers that is current throughout the construction period; • Conduct Health and Safety Training periodically and Daily Tool Box Training for all site personnel. 		
Community Health and Safety	Construction activities could create health and safety risks to community people.	<ul style="list-style-type: none"> • Code of conduct for workers should be developed and implemented throughout the construction period; • Follow International best practices on community health and safety such as those in Section 4.3 of World Bank Environmental Health and Safety (EHS) Guidelines on Construction and Decommissioning Activities; • Follow established community health and safety protocol on emerging infectious diseases such as COVID19. 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<ul style="list-style-type: none"> • Implement measure to prevent proliferation of vectors of diseases at work site; • Maintain a complaint logbook in worker's camp and take action promptly of complaints. Follow the established GRM of the overall project (URLIP); • Schedule transportation activities by avoiding peak traffic periods; • Clean wheels and undercarriage of haul trucks prior to leaving construction site; • Educate drivers: limit speed not more than 30 km/h in settlements and avoid use of horn; • Earmark parking place for construction equipment and vehicles when idling; no parking shall be allowed on the roads, that may disturb the traffic movement; • Provide prior information to local community, temples and other places of worship about work schedules; • Noise barriers must be installed in between the construction site and any community locations to reduce the noise level; • Provide adequate space and lighting, temporary fences, reflectorized barriers and signages at the work site; and • Ensure contractor has staff trained on emergency response. 		
Post-construction clean-up and reinstatement	Construction debris, spoils, and excess construction materials may pose hazards to properties, community and environment if left unattended after construction.	<ul style="list-style-type: none"> • The contractor will reinstate all working areas and access routes as work proceeds during construction. All plant, equipment, materials, temporary infrastructure and vehicles will be removed at the earliest opportunity and the surface of the ground restored as near as practicable to its original condition. The following generic measures should be taken: • Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; • All excavated roads shall be reinstated to original condition; • All disrupted utilities restored; 	Contractor	DSC, PIU, PMCDC, PCU

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
		<ul style="list-style-type: none"> • All affected structures rehabilitated/compensated; • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up; • All hardened surfaces within the construction camp area shall be ripped; • All imported materials removed, and the area shall be top soiled and regressed using guidelines set out in the re-vegetation specification that forms part of this document; • The contractor must arrange the cancellation of all temporary services; • Request PIU to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work. 		

Table 36: Environmental Management Plan – Operational Phase – Roads and Drains Component

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring / Supervision
Routine Maintenance	Traffic may be interrupted temporarily but this work will be very small in scale, periodic, and short in duration, so there will be no economic or other implications. Also, the environmental impacts will be much less than those during the construction period.	<ul style="list-style-type: none"> • To maintain the safety of workers and road-users, such work should be coordinated with the local police department so that adequate warning signs and traffic diversions can be set up when necessary • Debris need to be collected and disposed at a designated site such as the landfill. • Continue to encourage community participation in ensuring drainage canals are clog-free through information and behavior change campaigns and incentives, if possible. 	Respective Municipality	PCU, DUDBC

Community Safety	Improved roads may give way to faster vehicle speeds which could endanger people and households along the road alignments. Damage in roads may also cause accidents to motorists.	<ul style="list-style-type: none"> • Conduct regular inspection of the roads to check for damages, and undertake rehabilitation measures for any damages found; • Inspect and maintain the integrity of road barriers, especially at critical curves or locations that are prone to vehicular accidents; • Inspect and maintain speed limiters such as humps installed on road sections near residential areas, schools, and religious establishments; • Inspect and maintain all road signages, including appropriate warning signages at silent zones, and ensure that these are reflectorized and visible even during night time; and • Ensure pedestrian crossings are maintained. 	Respective Municipality	PCU, DUDBC
------------------	---	---	-------------------------	------------

Table 37: Environmental Management Plan – Operational Phase – Cold Storage Facility (Tilottama)

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring / Supervision
Routine Operations	Operations of the facility will impact the environment and health and safety of workers and local community.	<ul style="list-style-type: none"> • The O&M of the facilities should be performed as per Standard Operating Procedures approved by the Asset Owner and the line Department in the Government; • Prepare standard operating procedures, and ensure that SOPs are followed during operation • Train workers and staff in safe and efficient operation, and SOPs • Develop and emergency response plan; train workers and staff in emergency procedures, breakdowns • Train workers in occupational health and safety, food safety and contamination • Ensure that all safety equipment, personnel protection equipment is provided and are used properly and are in working conditions • Ensure proper maintenance of facilities and amenities like drinking water, sanitation, compost plants • Ensure that qualified/trained supervision is available all times 	Respective Asset Owner	PCU, DUDBC

Parameter	Environmental Impacts	Mitigation Measures	Institutional Responsibility	
			Implementation	Monitoring / Supervision
		<ul style="list-style-type: none"> • Provide necessary first aid, and ensure on-call service with local hospitals; and • Ensure road safety, and ensure provisions and maintenance of road safety infrastructure, caution and information boards. 		
Impact on Air Quality	Air quality will be impacted by the operation of trucks / buses as the case may be because of exhaust, dust generation etc. Noise levels will also be impacted because of the operation of DG sets and vehicles at these facilities.	<ul style="list-style-type: none"> • All vehicles should obtain Pollution Under Control certificate from the relevant line agency; • Roads within the facility should be sprayed with water to prevent dust generation; • DG sets should be housed in areas with appropriate sound-dissipating equipment nearby • 	Respective Asset Owner	PCU, DUDBC
Impact on Surface and Ground Water Quality	Inadequate Management of Sanitation Infrastructure and Solid Waste (including agricultural waste at Cold Storage Facility) will impact the surface and groundwater quality.	<ul style="list-style-type: none"> • Waste Management should be carried as per an Approval Waste Management Plan; • Sanitation Infrastructure should be maintained as per the Standard Operating Procedures; • Wastes (including fecal sludge) should be disposed and designated areas and operated as per Standard Operating Procedures; • Monitor the Surface and Groundwater at the facilities as well as at the Disposal locations and take mitigation measures if the surface / groundwater is found to be contaminated. 	Respective Asset Owner	PCU, DUDBC

C. Environmental Monitoring Program

203. Monitoring of mitigation measures during construction is the responsibility of the PIU and PCU, supported by the PMCDC Environmental Specialist. However, monitoring of mitigation measures during operation phase is the responsibility of the Asset Owner. Table 38 and 39 shows the proposed Environmental Monitoring Program for this subproject, which specifies the various monitoring activities, indicating location, frequency of monitoring and responsibility.

Table 38: Environmental Monitoring Program

Activities or Items to Monitor	Location	Responsible for Activities	Monitoring Method	Monitoring Frequency	Monitoring Responsibility
PRE-CONSTRUCTION					
Secure Environmental Clearance Certificate (ECC) from MoUD	PCU office	PCU, PMCDC	Copy of approved ECC	Before construction activities	PCU, PMCDC
IEEs and EMPs are included in bid and contract documents	PCU office	PCU, PMCDC	Copies of bid and contract documents	Before approval tender document	PCU, PMCDC
Site-specific EMP (SEMP) submitted by Contractor for approval by PIU	PIU office	Contractor, PIU	Copy of approved SEMP	Before construction activities commence	PCU, PMCDC
Spoil management plan (SMP) submitted by Contractor for approval by PIU	PIU office	Contractor, PIU	Copy of approved SMP	Before construction activities commence	PCU, PMCDC
Traffic management plan (TMP) submitted by Contractor for approval by PIU	PIU office	Contractor	Copy of approved TMP	Before construction activities commence	PCU, PMCDC
Secure all other necessary permits and licenses from relevant government agencies		Contractor	Copies of permits and licenses	Before construction activities commence	PCU, PMCDC
Conduct of baseline ambient air quality and noise level monitoring	Subproject site	Contractor	Site visits and observations, Contractor records, Results of Air Quality Sampling and Noise Level measurements.	Before construction activities commence	PCU, PIU, PMCDC
Conduct of baseline surface water and ground water quality monitoring	Subproject site	Contractor	Site visits and observations, Contractor records, Results of laboratory analyses	Before construction activities commence	PCU, PIU, PMCDC

Activities or Items to Monitor	Location	Responsible for Activities	Monitoring Method	Monitoring Frequency	Monitoring Responsibility
CONSTRUCTION					
Implementation of SEMP; including implementation of community and occupational health and safety measures.	Subproject site	Contractor	Site visits, Contractor records,	Weekly or as needed	PCU, PIU, PMCDC
Implementation of SMP	Subproject site	Contractor	Site visits, Contractor records,	Weekly or as needed	PIU, PMCDC
Implementation of TMP	Subproject site	Contractor	Site visits, Contractor records,	Weekly or as needed	PIU, PMCDC
Tree Removal and Replacement	Subproject site and planting site	Contractor	Site visits, Contractor records,	Monthly, or as needed	PCU, PIU, PMCDC
Conduct of ambient air quality and noise level monitoring	Subproject site	Contractor	Site visits and observations, Contractor records, Results of laboratory analyses, Results of noise level measurements	Quarterly or as needed	PCU, PIU, PMCDC
Conduct of surface water quality monitoring	Subproject site	Contractor	Site visits and observations, Contractor records, Results of laboratory analyses	At least semi-annual or as needed	PCU, PIU, PMCDC
Develop and apply archaeological protocol to protect chance finds	Subproject site	Contractor, PCU, PIU, PMCDC	Contractor records	Once until protocol is approved	PCU, PIU, PMCDC
Provide EHS training for all personnel	Subproject site	Contractor	Contractor records; Interviews to workers	Monthly	PIU, PMCDC
Keep accident reports and records	Subproject site	Contractor	Contractor records; Interviews to workers and community people	Monthly	PIU, PMCDC
Employ workforce from communities near sites	Subproject site	Contractor	Contractor records	Monthly	PIU, PMCDC

Activities or Items to Monitor	Location	Responsible for Activities	Monitoring Method	Monitoring Frequency	Monitoring Responsibility
Implementation of EHS measures at construction camps	Construction camp site	Contractor	Site visits; Interviews to workers at camp	Monthly	PIU, PMCDC

Table 39: Environmental Monitoring Plan (Sampling & Analysis)

Monitoring field	Monitoring location	Monitoring parameters	Frequency	Responsibility	Cost & Source of Funds
Ambient air quality	5 locations – selected for each sampling program depending on the active construction sites at the time of the sampling program	PM10, PM2.5, NO2, SO2, CO	Once before start of construction and quarterly (yearly 4-times) during construction	Contractor	Cost for implementation of monitoring measures responsibility of contractor
Ambient noise	5 locations – selected for each sampling program depending on the active construction sites at the time of the sampling program.	Day time and night time noise levels	Once before start of construction and quarterly (yearly 4-times) during construction	Contractor	Cost for implementation of monitoring measures responsibility of contractor
Surface water quality	5 locations - selected for each sampling program depending on the active construction site at the time of the sampling program	pH, Oil & grease, Cl, F, NO3, TC, FC, Hardness, Turbidity BOD, COD, DO, Total Alkalinity	Once before start of construction and quarterly (yearly 4-times) during construction	Contractor	Cost for implementation of monitoring measures responsibility of contractor

D. Capacity Development Training

204. The PMCDC Environment Specialist will be responsible for training the PCU, PIU and contractors. Training modules will need to cover safeguards awareness and management in accordance with both ADB and government requirements as specified below.

- (i) sensitization on ADB's safeguard policy on environment;
- (ii) introduction to environment and environmental considerations in urban infrastructures;
- (iii) review of IEEs and integration into the project detailed design;
- (iv) improved coordination within nodal departments; and
- (v) monitoring and reporting system. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites.

205. **Methodology.** Capacity building activities will be achieved through combination of practical methodologies available such as lecture and workshop training by experts, on-the-job training and mentoring, and continuing team meetings and exercises. The PMCDC Environment Specialist will spearhead the designing of specific programs appropriate for the target participants or stakeholders, including the execution of these programs during the different implementation phases of the URLIP, which includes the subproject. Pre-training and post-training assessment will be an integral part of the overall program to measure its effectiveness, and identify any other needed interventions to improve effectiveness, if necessary.

206. As fundamental component for the capacity building program, basic lectures and seminar training sessions will be provided by the PMCDC Environment Specialist to strengthen the awareness of project stakeholders on the requirements of ADB SPS and government environmental laws, rules and regulations. Modules will be prepared and customized based on the skills set and needs of the different stakeholders. The entire training will cover basic principles of environmental assessment and management mitigation plans and programs, implementation techniques, monitoring methods and tools. A proposed lecture and seminar training program along with the frequency of sessions is presented in the following table.

Table 40: Sample Lecture and Seminar Training Program for Environmental Management

Items	Pre-construction	Construction	
Training Title	Orientation workshop	Orientation program/ workshop for contractors and supervisory staff	Experiences and best practices sharing
Purpose	To make the participants aware of the environmental safeguard requirements of ADB and Government of Nepal and how the project will meet these requirements	To build the capacity of the staff for effective implementation of the designed EMPs aimed at meeting the environmental safeguard compliance of ADB and Government of Nepal	Improving implementation of EMP

Items	Pre-construction	Construction	
Contents	Module 1: Orientation ADB Safeguards Policy Statement Government of Nepal Environmental Laws and Regulations Module 2: Environmental Assessment Process ADB environmental process, identification of impacts and mitigation measures, formulation of an environmental management plan (EMP), implementation, and monitoring requirements Review of environmental assessment report to comply with ADB requirements Incorporation of EMP into the project design and contracts	Roles and responsibilities of officials/contractors/consultants towards protection of the environment Environmental issues during construction Implementation of EMP Monitoring of EMP implementation Reporting requirements	Experiences on EMP implementation – issues and challenges
Duration	1day	1day	Best practices followed
Participants	PCU and PIU staff (technical and environmental) involved in the project implementation	PCU, PIU, Contractors	PCU, PIU, Contractors

E. Environmental Management and Monitoring Plan Implementation Cost (Indicative)

207. Most of environmental mitigation and enhancement measures are integrated into the design and cost are included as part of the civil works contract. Some items need to be incorporated in the Bill of Quantities (BOQ) of this subproject including the environmental monitoring costs. The environmental costs presented in table below are tentative provisions based on experience of undertaking similar works under different DUDBC projects. For the details of environmental costs under civil works contract, individual contract package bid document may be consulted. Contractors will bear the direct costs of all mitigation measures during construction, which will be included in the tender and contract documents; this includes features built into facility designs to prevent environmental impacts from arising. The PIU will bear the costs related to mitigation measures during operation. Costs related to environmental supervision during construction will be borne by the PIU, the PCU (for the activities of the environmental consultants) and by the contractors (for monitoring work carried out by the EHS Officer/s). During the operation phase, monitoring costs will be borne by the Tiltotama Municipality and/or the PIU.

Table 41: Indicative Environmental Management Plan Budget for Bill of Quantities (BOQ)

S. No.	Description of Items	Unit	Quantity (for all five WUC towns)	Unit of Rate	Item Total (NPR)
i.	Environmental Monitoring Cost a) Air Quality, b) Noise level, and c) Water Quality (5 Towns)	Lumpsum	5	NPR 4,94,000	NPR 24,70,000
ii.	Insurance Cover for the following: (a) Workmen Compensation and (b) Damages to Third-Party	Lumpsum			Part of works contracts
iii.	Tree Replacement (Providing, Planting containerised tree and shrub seedlings, including pitting, transplanting, composting and placing tree guards, curing and maintenance) <i>Compensatory plantation as per Forest Regulations 2022-Rule 93 (5), loss of 1 tree should be compensated by planting 10 trees</i>	Nos.(as per actual loss of trees)	1700	NPR 3,000	NPR 51,00,000
iv.	<p>Environmental Mitigation and Enhancement Measures at Construction Sites (3 sites) and Campsites (1 site) as per below:</p> <p>-Providing and maintaining adequate potable water supply facilities at camp site and work sites</p> <p>-Personal protective Equipment (PPE)</p> <p>-Traffic management during construction (barricade with green nets, visible warning and danger signs in construction sites)</p> <p>-Dust suppression measures by spraying water (excluding watering for compaction) (3 times a day at 3 construction sites for 1.5 years excluding monsoon and planning period)</p> <p>-Debris disposal and waste management on camp sites</p>	Lumpsum			NPR 90,00,000

S. No.	Description of Items	Unit	Quantity (for all five WUC towns)	Unit of Rate	Item Total (NPR)
	-Restoration of ancillary sites including stockpile sites, borrow areas, workforce camp (assuming 6 locations) -Maintain First aid box and fire extinguisher (campsite, construction site and storage site) -Separate male and female toilet facilities -Implementation of additional occupational health and safety measures related to prevention of COVID-19 Any other measures as per EMP				
	Indicative Cost (Total Amount)				NPR 16,570,000

VII. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

A. Consultation and Participation

208. Meaningful consultation is an essential part of the environmental assessment process which enables the incorporation of all relevant views of affected people and other stakeholders into decision making, such as project design, mitigation measures, and the sharing of development benefits and opportunities, and implementation issues. The process also helps avoid potential conflicts with stakeholders for smooth project implementation. The findings from the public consultations are documented and considered in the development of the EMP, especially in identifying the significant impacts of the proposed Project and developing the corresponding mitigation measures. The key stakeholders consulted were:

- (i) Project beneficiaries;
- (ii) Elected representatives, community leaders and representatives of community-based organizations;
- (iii) Local government and relevant government agency representatives, including local authorities responsible for land acquisition, protection and conservation of forests and environment, archaeological sites, religious sites, and other relevant government departments;
- (iv) Residents, shopkeepers, businesspeople, and farmers who live and work near the subproject.

B. Public Consultation Conducted

209. Consultations were conducted with key stakeholders and community members in line with ADB's requirements pertaining to environmental and social considerations. These consultations helped in identifying the felt needs, concerns and apprehensions of the communities related to the project and their priorities and likely environmental and social safeguards issues and mitigation measures. The summary of consultation date, place and number of participants is given in the following table.

Table 42: Summary of Public consultations conducted for the subprojects in Western Urban Towns

S.N	Municipality /Sub-Projects	Date and No. of Meetings	Number of Participant			Key discussion points/issues raised
			Male	Female	Total	
1	Tilottama Municipality-3 Subprojects	Dec 2022-June 2023 (8 Meetings)	332	48	380	<ul style="list-style-type: none"> - Shared overall scope of the project to municipal authorities. - All the participants were highly positive toward the ADB funded WUC and expressed their willingness to provide the required land area within the declared ROW for all the proposed roads.
2	Siddrathnagar Municipality-27 Road Sections	April-June 2023 (12 Meetings)	757	216	973	
3	Devdaha Municipality-3 Road Subprojects	April-June 2023 (6 Meetings)	55	23	78	

S.N	Municipality /Sub-Projects	Date and No. of Meetings	Number of Participant			Key discussion points/issues raised
			Male	Female	Total	
4	Sainamaina Municipality-2 Road Subprojects	Dec 2022-June 2023 (10 Meetings)	241	47	288	- The mass meeting culminated that there will not be any impact upon livelihood upgrading of the proposed road sections.
5	Lumbini Sanskritik Municipality – 3 Road stretches and Bus Terminal	April-June 2023 (5 Meetings)	51	8	59	- All the project affected wards agreed to conduct mass meeting at tole/settlement level and provide minutes of meeting together with the list of likely projects affected persons.

210. During the consultations, the project, its benefits, social and environmental impacts were presented to the community. The participants were encouraged to be open and make known their concerns and claims. The meeting minutes of the consultations held at WUC towns are presented in **Appendix 3**. The presentation highlighted the project background, objectives, expected upcoming activities, social economic information, and environmental information. The meetings were conducted to:

- (i) Create awareness of the project;
- (ii) Obtain stakeholders responses, feedback and concerns on the project;
- (iii) Obtain environmental information on the community

211. After the presentations, the community was given opportunity to give their views, comments, and queries. The following lists the topics, issues and concerns discussed during the consultations:

- (i) Awareness of the local community about the Project;
- (ii) Community benefits realized as a result of the road schemes;
- (iii) Opinion of the local people about its need;
- (iv) Community support and participation;
- (v) Prospects of jobs and income generating activities;
- (vi) Road connectivity and access;
- (vii) Construction impacts such as dust and noise;
- (viii) Resettlement and social issues and mitigation measures;
- (ix) Roles and responsibilities of different stakeholders for realizing desired outcome; and
- (x) Construction and maintenance of the roads

Figure 42: Public Consultation in the Western Urban Towns



Ward-level joint consultation meeting with the key stakeholders of Tilottama



Discussion with PAPs, Drivertol-Shivapur Road Chainage 0+200



ADB mission and WUC consultant teams meeting at Devdaha Municipality Key Personals



Consultation with the people at Lumbini Sanskritik



Meetings - Lumbini Sanskritik members, ADB mission and WUC team



ADB mission team at the cold storage location with WUC team

C. Future Consultations during Detailed Design Stage

212. Stakeholder consultations will continue during the project implementation. PCU, PIU, DSC and PMCDC will ensure that consultations will be conducted as meaningful per definition of ADB SPS 2009. The summary of IEE will be locally disclosed in an accessible place and in a form and language(s) understandable to affected people and other stakeholders before consultations to give stakeholders a chance to read it and consult experts.

D. Information Disclosure

213. Information shall be disclosed through public consultation and making available relevant documents in public locations. The following documents will be submitted by the PCU to ADB for review and disclosure on its website. ADB will disclose upon receipt of acceptable reports and endorsement from the PCU¹⁴:

- (i) IEE report (including subproject EMP);
- (ii) Updated IEE (including EMP); and
- (iii) Semi-annual environmental monitoring reports, and corrective action plans prepared during project implementation, if any.

214. The EA/IA will send a written endorsement to ADB for disclosing these documents on the ADB website. The PIUs will provide relevant safeguard information in a timely manner, in an accessible place and in a form and language understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used. For the benefit of the community, the summary of the IEE will be translated in Nepali and made available at: (i) office of PCU; and (ii) offices of the contractors. Hard copies of the IEE report will also be available at the PCU and accessible to citizens as a means of disclosing the document and at the same time creating wider public awareness. On demand, the person seeking information can obtain a hard copy of the complete IEE document at the cost of photocopy from the office of the Project Office, on a written request and payment for the same. Electronic version of the IEE will be placed in the official website of DUDBC after approval of the documents by Government and clearance from ADB. Disclosure will follow ADB's Access to Information Policy, 2018.

¹⁴ Per ADB SPS, 2009, prior to disclosure on ADB website, ADB reviews the "borrower's/client's social and environmental assessment and plans to ensure that safeguard measures are in place to avoid, wherever possible, and minimize, mitigate, and compensate for adverse social and environmental impacts in compliance with ADB's safeguard policy principles and Safeguard Requirements 1-4." Upon its receipt of acceptable safeguard documents and endorsement by PCU, ADB discloses the same on ADB website.

VIII. GRIEVANCE REDRESS MECHANISM

215. A project-specific grievance redress mechanism (GRM) will be established to receive, evaluate, and facilitate resolution of affected persons' concerns, complaints, and grievances related to social, environmental, and other concerns on the project. The project adopts a three-tier GR and will ensure greater accountability of the project authorities towards affected persons. Grievances may be routed through letters, emails, text messages, verbal narration, grievance box and registers. The GRM is not intended to bypass the government's own legal process, but to provide a time-bound and transparent mechanism to resolve such concerns that is readily accessible to all segments of the affected persons and community. The aggrieved party shall be free to approach the national legal system at any given time. All costs involved in resolving the complaints (meetings, consultations, communications, and reporting/information dissemination) will be borne by the project.

216. PIU will ensure local community meetings are held to notify users and affected persons and other stakeholders about grievance redress mechanism of the project. Awareness of grievance redress procedures will be created through the public awareness campaign, with the help of print and electronic media and radio. The key functions of the GRC are to (i) provide support for affected persons or any aggrieved party to lodge their complaints; (ii) record the complaints; (iii) facilitate grievance resolution in consultation with affected persons and concerned authorities; (iv) report to the aggrieved parties about the decision/solution; and (v) forward the unresolved cases to higher levels.

217. Grievance redress committees (GRCs) will be formed at three levels viz. ward/field level, PIU level and PCO level as under:

218. **First Level GRC (Field/Ward-Level):** The contractors, PIU safeguards personnel can immediately resolve issues on-site in consultation with each other with the support of the designated municipal ward chairperson and will be required to do so within seven days of receipt of a complaint/grievance. In addition, contractors will place complaint boxes at prominent places viz. public places, contractor camp site etc. where local community members can put their complaints/grievances and contractor's personnel should be in charge to collect and process the complaints/grievances as necessary. The PIU safeguards personnel, SDC safeguards consultants and contractor can immediately resolve the complaint on site. If the grievance remains unresolved within the stipulated time, the matter will be referred to the next GRC level. The field/ward-level GRC will comprise of the following:

- (i) Ward Chairperson (Committee Chairperson)
- (ii) PIU Engineer
- (iii) Ward Member representing vulnerable community (one women and one *janjanati* representative, if required)
- (iv) Contractor's Representative
- (v) SDC Safeguards Specialist
- (vi) Ward Chairperson's secretary will act as complaint receiving office and provide secretarial services to GRC.

219. The ward-level GRC shall have at least one women member. For project-related grievances, representatives of affected persons, and community-based organizations will be invited as observers during GRC meetings. In case of impact on indigenous peoples, the grievance team must have representation of the affected indigenous peoples, and or CSOs/NGOs working with the indigenous peoples' groups.

220. **Second Level GRC (Municipality/PIU-Level):** Any unresolved issues at ward level will be referred to the second level GRC chaired by Mayor/Deputy Mayor. The complainant will be notified by the ward-level GRC that the grievance is forwarded to the municipality (PIU) level. All evidence submitted while lodging the complaint by the affected will also be forwarded. After proper examination and verification of the grievances, the committee will facilitate affected persons, and concerned parties to agree on a time-bound action plan to resolve the grievance if found to be valid. The GRC at this level will have to respond to its decision within 14 days of receipt of complaint from first level. The second level GRC will comprise the following:

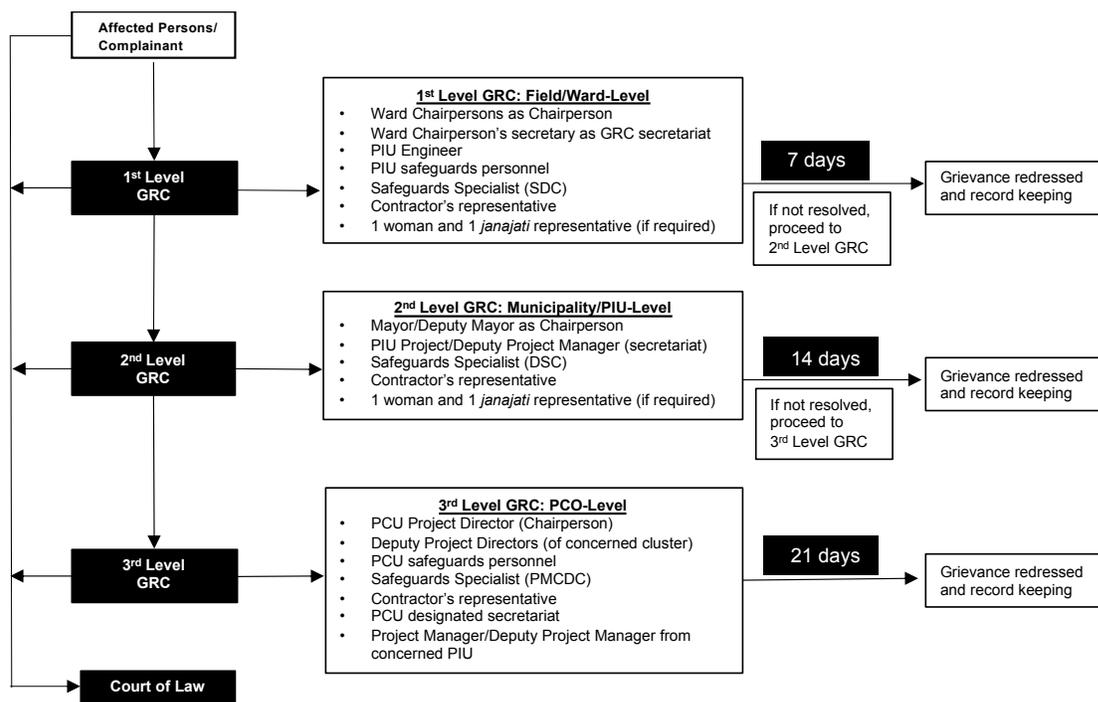
- (i) Mayor/Deputy Mayor (Committee Chairperson)
- (ii) PIU safeguard personnel
- (iii) SDC social/environment specialist
- (iv) Contractor's representative
- (v) Ward member representing vulnerable community (one women and one *janjanati* representative, if required)
- (vi) Project manager of the PIU will act as a secretariat.

221. **Third Level GRC (PCO-Level):** If the grievance remains unresolved within the stipulated time, the matter will be referred to the PCO level. The PIU safeguards team will refer any unresolved or major issues to the PCO-level GRC. The PCO-level will comprise the following:

- (i) Project Director (Committee Chairperson)
- (ii) Deputy Project Directors
- (iii) PCO Safeguards Personnel
- (iv) Safeguards Specialist
- (v) Contractor's Representative
- (vi) Project Manager/Deputy Project Manager from concerned PIU/municipality
- (vii) PCO-designated personnel who will act as secretariat.

222. The grievance redress process is represented in Figure 2.

Figure 43: Grievance Redress Procedures – URLIP



223. **Record-keeping.** The PIU/PCO/ PMCDC will keep records of grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were affected and final outcome. All complaints should be signed with complete information on name, contact address, phone number if any so that the person can be contacted when required. A sample template is provided in Appendix 4. An acknowledgement to the effect that the complaint has been received by the coordinator's office should be promptly sent to the complainants. All complaints received should be first registered, categorized and prioritized. They should be analysed and assessed the concerns raised by the affected parties and have discussion and consultation with them. Records of all such proceedings should be maintained, for future reference, and the attendance of all participants with their signature, in particular the complaints and affected groups should be recorded. The number of grievances recorded and resolved, and the outcomes will be displayed/disclosed in the PCO, PIU offices, and on the web, as well as reported in monitoring reports submitted to ADB on a semi-annual basis.

224. **Periodic review and documentation of lessons learned.** The PCO project officers (Social and Environment) will periodically review the functioning of the GRM in each municipality and record information on the effectiveness of the mechanism, especially on the project's ability to prevent and address grievances.

225. **Costs.** All costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) will be borne by the PCO and concerned PIU.

226. **Accountability Mechanism.** Despite the project GRM, an aggrieved person shall have access to the country's legal system at any stage and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM. In

the event that the established GRM is not in a position to resolve the issue, the affected person also can use the ADB Accountability Mechanism (AM) through directly contacting (in writing) the Complaint Receiving Officer (CRO) at ADB headquarters or the ADB Nepal Resident Mission (NRM).¹⁵ Before submitting a complaint to the Accountability Mechanism, it is necessary that an affected person makes a good faith effort to solve the problem by working with the concerned ADB operations department and/or NRM. Only after doing that, and if they are still dissatisfied, will the Accountability Mechanism consider the complaint eligible for review. The ADB Accountability Mechanism information will be included in the project-relevant information to be distributed to the affected communities, as part of the project GRM.

¹⁵ ADB. Accountability Mechanism. <https://www.adb.org/who-we-are/accountability-mechanism/main>

IX. MONITORING AND REPORTING

227. PCU will monitor the overall progress of EMP implementation of the entire URLIP through the different subproject jurisdictions, including the roads subproject in Tilottama Municipality. The PCU, and PIU will undertake their respective roles in site inspections and document review to verify compliance with the EMP and SEMP, and progress toward the final outcome. The contractor will conduct day to day implementation of the SEMP.

228. The contractor will submit monthly reports to the PIU. The monthly reports will include compilation of copies of monitoring sheets accomplished and duly signed by the contractor's EHS Supervisor on a daily basis. A sample daily monitoring sheet shall be provided in the SEMP.

229. The PIU will submit quarterly environmental monitoring reports to PCU, which will include summary of monthly monitoring activities of contractor and results of any independent monitoring or inspection activities of the PIU. In the conduct of these independent inspection activities, PIU will be supported by PMCDC in this regard. A sample inspection checklist is in **Appendix 5**. This checklist is indicative which can be further enhanced depending on the actual situations at subproject construction site.

230. PCU shall consolidate quarterly reports from the PIUs including PIU in Tilottama Municipality, and results of its independent monitoring or inspection activities. PCU shall accomplish semi-annual environmental monitoring report (SEMRs) starting from the effectivity date up to the end of construction phase, which shall be submitted to ADB for review and disclosure on ADB website. The template for the SEMR is attached as **Appendix 6**. The PCU shall prepare and submit annual environmental monitoring report during the operation phase until ADB issues a project completion report. Submission of these reports to ADB will be within thirty (30) days from the end date of reporting period.

X. CONCLUSION AND RECOMMENDATION

231. The process described in this document has assessed the environmental impacts of all elements of the roads, drainage and other infrastructure subproject proposed in the towns of Siddharthnagar, Tilottama, Devdaha, Sainamaina and Lumbini Sanskrithik under the ADB funded Urban Resilience and Livability Improvement Program (URLIP). The infrastructure improvements include improvement of 72.27 kms of roads and drains across the five municipalities, construction of Cold Storage Facility at Tilottama Municipality, and construction of a New Bus Terminal and New Municipality Building at Lumbini Sanskrithik.

232. All potential impacts were identified in relation to planning / design, pre-construction, construction, and operation phases. Potential environmental impacts were assessed based on secondary data, stakeholder consultations, and field visits. The WUC Sub-Project components are located in built-up/mixed use area (residential, commercial, agricultural) and there is no sensitive ecological area (protected area or critical habitats) within at least 10-km radius of the subproject location. Few roads are passing through community forest lands, however, no notable impacts envisaged as the proposal involve improvement of existing roads, and no new roads are proposed. Lumbini Crane sanctuary located within the Lumbini heritage master plan area and surrounding farmlands are habitat for threatened species of Sarus cranes (IUCN VU category) and is an important bird area. None of the components however are located close to the sanctuary or farmlands. Sites are in urban areas in Lumbini, and the sites of bus terminal and municipal building although has agricultural lands around, these are being converted into residential layouts. No impacts therefore envisaged. Various measures included to avoid any damage or disturbance to flora fauna while working in community forests or works close to agricultural lands in Lumbini. Lumbini world heritage site is situated in the project area, however, none of the components are located in this site. No impacts envisaged due to road works located outside the boundary of Lumbini world heritage site. Chance finds procedures are put in place and will be implemented during the construction.

233. Project area is mostly flat, water logging during the rainy season is a common feature in the project areas which is often attributed to poor drainage system. Road improvements in the proposed subproject are combined with drainage improvement, and necessary lateral drains and cross drainage structures already included in the feasibility / preliminary designs. During the detailed design, local hydrology will be further assessed and accordingly the designs of the drainage system should be finalized to mitigate water logging and the flooding on project roads. Due to low-lying site with access road on higher elevation, detailed drainage assessment will be conducted during the detailed design of Bus Terminal Building in Lumbini, and a proper drainage system will be put in place to avoid flooding / water logging of the facility and the surrounding area. The existing drainage channel that runs through the site will be suitably accommodated as lined open channel of adequate capacity, along with necessary provision of lateral drains and cross drainage works. Prior permission from Irrigation Department/Canal agency will be obtained. It will be ensured that no land part of drainage channel /water body is utilized for construction of bus terminal, and all necessary measures will be taken to avoid flooding / water logging of facility and surroundings. There are 256 trees along the roads per preliminary project design, of which 170 are required to be cut. Tree cutting is minimized through proper alignment and design. There are 6 trees of Simal (*Bombax cieba*) species in or close to project alignments / sites, which are of protected tree category in Nepal. These trees will not be removed and adapted within the road and drain alignment / designs.

234. Most of the predicted impacts during construction. Road and drain will be conducted on the public roads in urban areas, some of which are congested with people, activities and traffic,

and therefore likely to significant impacts during construction. Construction-related impacts include noise, dust, construction waste generation, disturbance to residents, businesses, traffic by the construction work, construction material sourcing, hauling of material and equipment, and occupational and community health and safety risks including the spread of COVID-19, among others. These are localized and temporary and can be readily mitigated through the measures indicated in the EMP. Other construction activities will be confined to the selected sites, and the interference with the general public and community around is minimal.

235. During the project operation phase, roads and drains are not expected to have any significant impacts. Regular maintenance will be ensured to avoid operational related impacts. Drains will be regularly cleaned, and awareness programs will be conducted to prevent disposal of solid and liquid waste into the road side drains. The proposed cold storage facility will attract significant vehicular traffic, and necessary access roads, and parking facilities are already considered in the design. Also, necessary facilities such as water supply, sanitation including septic tanks with soak pits, compost plants to dispose bio-degradable waste at the cold storage etc., included in the design. Operations need to be carried out using standard engineering practices and in compliance with the applicable standards to avoid any adverse impacts.

236. An Environmental Management Plan (EMP) that defines the mitigation measures to be implemented across all project phases, the institutions responsible for its implementation and monitoring has been developed. One of the key mitigation measures include the compensatory afforestation that should be implemented to account for 170 trees that would need to be cut during the construction phase. Additionally, an Environmental Monitoring Program has been incorporated as part of the EMP to measure the impact of the project on the environmental media viz., air, noise, water, groundwater during the construction period.

237. The EMP will assist the PMU, PIU, Consultant and contractors in mitigating the environmental impacts, and guide them in the environmentally sound execution of the proposed project. The EMP will also ensure efficient lines of communication between PIU/ULB, PMU, consultants and contractor. A copy of the EMP shall be kept on-site during the construction period at all times. The EMP shall be made binding on all contractors operating on the site, and will be included in the contractual clauses. Non-compliance with, or any deviation from, the conditions set out in this document shall constitute a failure in compliance.

238. Public consultation was conducted as part of the environmental assessment process. The stakeholders expressed support for the proposed subproject site. Results of the consultation were documented and considered in the formulation of the project and environmental management plan. Public consultation will continue throughout the project implementation. The IEE will be made available at public locations and will be disclosed to a wider audience via the PCU and ADB websites.

239. The project's Grievance Redress Mechanism (GRM) will provide the citizens with a platform for redress of their grievances, and describes the channels, time frame, and mechanisms for resolving complaints about environmental performance.

240. PCU and PIU, with support from DSC and PMCDC, will be responsible for monitoring the project implementation and compliance with the EMP. Also, the periodic reporting requirements would enable meeting the disclosure needs as per ADB SPS 2009, as well.

241. The WUC Sub-Project in the WUC corridor will result in key environmental benefits such as, but not limited to, reduction in flooding areas, improved road and pedestrian safety to users resulting from improved road infrastructure and drainage facilities. This will also improve storage

facilities for agricultural produce, commuters and citizens will be provided with better bus terminal, and municipality office. The subproject is unlikely to cause any significant adverse impacts to environment and community. And, potential negative environmental impacts associated with construction and operation are being mitigated through proper engineering practice, incorporation of recommended mitigation measures in the EMP and implementing the same effectively.

242. Therefore, as per ADB SPS, 2009, this subproject is classified as environmental category B and does not require further environmental impact assessment. This IEE has been prepared based on preliminary designs of roads and drains, and feasibility study /conceptual designs of bus terminal, municipal building and cold storage facilities. The PCU, with support from PMCDC, shall update this draft IEE based on final detailed design and submit to ADB for review, clearance and disclosure. To conform to government guidelines, subproject components require environmental clearance from the Ministry of Urban Development. This will be obtained prior to invitation of bids.

243. **Recommendations.** The following are recommendations applicable to the subproject to ensure no significant impacts:

- (i) Update the IEE with detailed design prior to bidding and submit to ADB for review, clearance and disclosure
- (ii) For components will be designed by the contractor under design built contract modality, those components in IEE may be updated after the contract award but prior to commencement of works
- (iii) Ensure that updated/revised reflect the detailed designs and/or, change in scope, alignment, or location;
- (iv) Ensure that detailed designs duly integrates the design measures suggested in this IEE based on preliminary or conceptual designs
- (v) Obtain all statutory clearances timely
- (vi) No Simal (*Bombax cieba*) or Sissoo (*Dalbergia sissoo*) trees should be cut, pruned or harmed
- (vii) Conduct bird survey before cutting of any trees; trees with active bird nests shall not be cut until the young birds fly away.
- (viii) Conduct detail drainage assessment of bus terminal site and surroundings, and design robust surface drainage system for safe disposal of runoff from the bus terminal and surrounding area; design shall ensure that there is no water logging / flooding
- (ix) Ensure that cold storage, bus terminal and municipal buildings are design and built with proper facilities and amenities including water supply, sanitation, access roads, parking, solid waste management etc.,
- (x) Conduct safeguards induction to the contractor upon award of contract; create awareness among the workers, working especially in forest areas, and Lumbini area about the chance of encountering wildlife, and the protocol to be followed to avoid any disturbance / damage to flora or fauna
- (xi) Strictly supervise EMP implementation;
- (xii) Ensure contractor appointed qualified EHS supervisor prior to start of works;
- (xiii) Documentation and reporting on a regular basis as indicated in the IEE;
- (xiv) Continuous consultations with stakeholders;
- (xv) Timely disclosure of information and establishment of grievance redressal mechanism (GRM);
- (xvi) Involvement of contractors, including subcontractors, in first level GRM; and

- (xvii) Commitment from PMU, PIUs, project consultants, and contractors to protect the environment and the people from any impact during project implementation.

Appendix 1: Details of Tree Survey

Bhaluhpul-Medical College, Devdaha										
S. No.	Chain age	Number of trees to be cut down		Land Ownership / Name of the Forest	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right							
0+080 to 0+190: Bush and road side pole size trees in majority left of the road										
1	0+100		1	Roadside	Neem	<i>Azadirachta indica</i>	45	14.32	Cut	
2	0+150		1	Roadside	Neem	<i>Azadirachta indica</i>	49	15.60	Cut	
3	0+152		1	Roadside	Bhellar	<i>Trewia nudiflora</i>	40	12.73	Cut	
4	0+160		1	Roadside	Mango	<i>Mangifera indica</i>	62	19.74	Cut	
5	0+170		1	Roadside	Mango	<i>Mangifera indica</i>	55	17.51	Cut	
6	0+190		1	Roadside	Bhellar	<i>Trewia nudiflora</i>	90	28.65	Cut	
0+220 to 0+350: Bush and road side pole size trees in majority (left of the road)										
7	0+217		1	–	Bhellar	<i>Trewia nudiflora</i>	62	19.74	Cut	
8	0+260		1	–	Bhellar	<i>Trewia nudiflora</i>	79	25.15	Cut	
9	0+300		1	–	Mango	<i>Mangifera indica</i>	30	9.55	Cut	
10	0+325		2	–	Bhellar	<i>Trewia nudiflora</i>	40	12.73	Cut	
11	0+342	1		–	Sisoo	<i>Dalbergia sissoo</i>	Pole size	<10 cm	Cut	
12	0+850	1		–	Bakaino	<i>Melia azedarach</i>	60	19.10	Cut	
13	0+890	1		–	Neem	<i>Azadirachta indica</i>	65	20.69	Cut	
14	0+960	1		–	Neem	<i>Azadirachta indica</i>	76	24.19	Cut	
15	0+940	2		–	Bakaino	<i>Melia azedarach</i>	52	16.55	Cut	
16	0+990	1		–	Bakaino	<i>Melia azedarach</i>	54	17.19	Cut	
17	1+050	1		–	Neem	<i>Azadirachta indica</i>	60	19.10	Cut	
		1		–	Mango	<i>Mangifera indica</i>	70	22.28	Cut	
Bush in 1+130 to 1+150 (Left)										
1+880 to 1+930 Bhaluhi Khola Bridge										
Milan CF boundary and gate at 2+170 (Right)-Not affected										
2+220 to 2+300 Ghodaha Nadi Bridge										
18	2+465	1		Roadside	Unknown	–	103	32.79	Cut	
19	2+490		1	Roadside	Unknown	–	90	28.65	Cut	

Bhaluhipul-Medical College, Devdaha										
S. No.	Chain age	Number of trees to be cut down		Land Ownership /	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right	Name of the Forest						
4+010 Land of Lumbini Buddhist University on left (previously Buddha Mawali CF)										
21	4+100	1		University	Sal	<i>Shorea robusta</i>	255	81.17	Cut	Only CW required from 4+010 to 4+110
22	4+110	1		University	Peepal	<i>Ficus religiosa</i>	404	128.60	Cut (in CW)	
5+240 to 5+285 Bangali Khola Bridge										
23	5+330		1	Shristi CF	Sal	<i>Shorea robusta</i>	235	74.80	Cut	Only CW required from 5+330 to 5+440 to prevent loss of more trees
24	5+350		1	Shristi CF	Sal	<i>Shorea robusta</i>	220	70.03	Cut	
25	5+420	1		Shristi CF	Sal	<i>Shorea robusta</i>	216	68.75	Cut	
26	5+430		1	Shristi CF	Sal	<i>Shorea robusta</i>	450	143.24	Cut	
5+520 End of Shristi CF										
27	5+705	1		–	Amaro	<i>Spondias pinnata</i>	98	31.19	Save	
28	5+710	1		–	Amaro	<i>Spondias pinnata</i>	115	36.61	Cut	
6+060 Bushing										
29	6+170	1		–	Karma	<i>Adina cordifolia</i>	160	50.93	Cut	
30	6+690	1		Religious tree (worshipped)	Peepal	<i>Ficus religiosa</i>	294	93.58	Cut (in CW)	No space available, House to the right
31	6+700		1	Private	Mango	<i>Mangifera indica</i>	72	22.92	Cut	
32	7+090		1	–	Kadam	<i>Neolamarkia cadamba</i>	100	31.83	Cut	
33	7+140		1	–	Kadam	<i>Neolamarkia cadamba</i>	76	24.19	Cut	
			1	–	Tilkar	<i>Coccinia grandis</i>	64	20.37	Cut	
34	7+170		1	–	Kadam	<i>Neolamarkia cadamba</i>	87	27.69	Cut	
	Total	17	20							

Banchauki-MayaDeviPark Road, Devdaha										
S. No	Chainage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right	Name of the Forest						
0+000 to 1+025 Srijana CF: No trees of the CF affected										
1	1+060	1		Roadside	Shami tree	<i>Prosopis cineraria</i>	186	59.21	Cut	
2	1+090		1	Private	Mango Tree	<i>Mangifera indica</i>	66	21.01	Cut	
1+595 to 2+470: Land of Lumbini Buddhist University (Previously Buddha Mawali CF)										
3	1+600		1	Lumbini Buddhist University	Asna	<i>Terminalia elliptica</i>	226	71.94	Cut	Space available on right side throughout the university's land section
4	1+960	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	253	80.53	Can be saved	Shift CL to right
5	2+060	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	227	72.26	Can be saved	Shift CL to right
6	2+070	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	300	95.49	Can be saved	Shift CL to right
7	2+090	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	280	89.13	Can be saved	Shift CL to right
8	2+130		1	Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	248	78.94	Cut	As CL shifted to right
9	2+150	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	390	124.14	Can be saved	Shift CL to right
10	2+180	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	316	100.59	Can be saved	Shift CL to right
11	2+200	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	198	63.03	Can be saved	Shift CL to right
12	2+240	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	259	82.44	Can be saved	Shift CL to right

Banchauki-MayaDeviPark Road, Devdaha										
S. No	Chainage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right	Name of the Forest						
13	2+250		1	Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	300	95.49	Can be saved	Shift CL to right
14	2+260		1	Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	290	92.31	Cut	As CL shifted to right
15	2+270	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	237	75.44	Can be saved	Shift CL to right
16	2+350	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	170	54.11	Can be saved	Shift CL to right
17	2+360	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	166	52.84	Can be saved	Shift CL to right
18	2+370	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	205	65.25	Can be saved	Shift CL to right
19	2+420	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	198	63.03	Can be saved	Shift CL to right
20	2+440	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	268	85.31	Can be saved	Shift CL to right
2+470 End of University Land and start of settlement										
21	2+530		1		Sal	<i>Shorea robusta</i>	260	82.76	Cut	Lies in FW
22	2+560		1		Epiphyte Bar grown on Asna	<i>Terminalia elliptica</i> (Dead)	300	95.49	Cut	Lies in FW
23	2+650	1			Dumri	<i>Ficus racemosa</i>	100	31.83	Cut	Lies in FW
24	2+660	1			Sal	<i>Shorea robusta</i>	100	31.83	Cut	Lies in FW
25	2+680	1			Sal	<i>Shorea robusta</i>	100	31.83	Cut	Lies in FW
26	3+770	1			Mango Tree	<i>Mangifera indica</i>	80	25.46	Cut	Lies in FW
27	3+780	1			Mango Tree	<i>Mangifera indica</i>	66	21.01	Cut	Lies in FW
28	3+790	1			Mango Tree	<i>Mangifera indica</i>	120	38.20	Cut	Lies in FW

Banchauki-MayaDeviPark Road, Devdaha										
S. No	Chainage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right	Name of the Forest						
29	3+800	1			Nearm	<i>Azadirachta indica</i>	76	24.19	Cut	Lies in FW
30	3+820	1			Bakaino	<i>Melia azedarach</i>	60	19.10	Cut	Lies in FW
31	3+840	1			Mango Tree	<i>Mangifera indica</i>	160	50.93	Cut	Lies in FW
32	3+850	1			Mango Tree	<i>Mangifera indica</i>	90	28.65	Cut	Lies in FW
33	3+900	1			Bakaino	<i>Melia azedarach</i>	110	35.01	Cut	Lies in FW
34	3+910	1			Bakaino	<i>Melia azedarach</i>	90	28.65	Cut	Lies in FW
35	3+940	1			Nearm	<i>Azadirachta indica</i>	110	35.01	Cut	Lies in FW
	Total	28	7							

Ward 8 Haat bazar- MayaDevi Marga Road, Devdaha										
S. No	Chainage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right	Name of the Forest						
0+000 to 0+660: Land of Lumbini Buddhist University (Previously Buddha Mawali CF); Both side upto 0+200 and at left side from 0+210 to 0+660										
1	0+140	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	470	149.61	Cut	in CW
2	0+340	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	320	101.86	Cut	in CW
3	0+370		1	Lumbini Buddhist University	Asna	<i>Terminalia elliptica</i>	245	77.99	To be Saved	Not in CW
4	0+400		1	Lumbini Buddhist University	Asna	<i>Terminalia elliptica</i>	227	72.26	To be Saved	Not in CW
5	0+520	1		Lumbini Buddhist University	Sal	<i>Shorea robusta</i>	200	63.66	Can be saved	If footpath, won't survive
6	0+530	1		Lumbini Buddhist University	Asna	<i>Terminalia elliptica</i>	224	71.30	Can be saved	If footpath, won't survive
7	0+550		1	Lumbini Buddhist University	Asna	<i>Terminalia elliptica</i>	270	85.94	Cut	In CW
8	0+600	1		Lumbini Buddhist University	Asna	<i>Terminalia elliptica</i>	270	85.94	Cut	In CW
0+660 End of Lumbini Buddhist University Land										
9	1+160	1		–	Peepal	<i>Ficus religiosa</i>	222	70.66	Cut	In CW
10	1+170	1		–	Bar	<i>Ficus benghalensis</i>	96	30.56	Cut	Not in CW
11	1+180	1		–	Shami	<i>Prosopis cineraria</i>	72	22.92	Cut	Not in CW
12	2+180		1	–	Bakaino	<i>Melia azedarach</i>	104	33.10	Cut	In CW
13	2+190		1	Roadside	Peepal	<i>Ficus religiosa</i>	102	32.47	Cut	In CW
14	2+340		1	Roadside	Bhellar	<i>Trewia nudiflora</i>	218	69.39	Cut	Not in CW
15	2+520	1		Roadside	Bakaino	<i>Melia azedarach</i>	80	25.46	Cut	Not in CW

Ward 8 Haat bazar- MayaDevi Marga Road, Devdaha										
S. No	Chainage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right	Name of the Forest						
16	2+980	1		Roadside	Other tree (used as fodder)	-	57	18.14	Cut	
17	3+380		1	Roadside	Peepal	<i>Ficus religiosa</i>	130	41.38	Cut	
18	3+460		1	Roadside	Bakaino	<i>Meliazedarach</i>	120	38.20	Cut	
19	3+480		1	Roadside	Bakaino	<i>Meliazedarach</i>	130	41.38	Cut	
3+500 end point										
	Total	10	9							

Drivertole-Shivapur Road, Tilottama										
S. No	Chainage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right	Name of the Forest						
1	0+260		1	Private	Mango	<i>Mangifera indica</i>	163	51.88	Cut	
2	0+320		1		Mango	<i>Mangifera indica</i>	146	46.47	Cut	
3	0+340		1		Mango	<i>Mangifera indica</i>	82	26.10	Save	
4	0+346		1		Mango	<i>Mangifera indica</i>	60	19.10	Save	
5	0+500		1		Bakaino	<i>Meliazedarach</i>	68	21.65	Cut	
6	0+540		1		Sarifa	<i>Annona squamosa</i>	<30	<10	Cut	
7	0+600	1			Neem	<i>Azadirachta indica</i>	<30	<10	Save	
8	0+900	1			Shami	<i>Prosopis cineraria</i>	<30	<10	Cut	
9	0+903	1			Kalki Phul	<i>Callistemon citrinus</i>	<30	<10	Cut	

Drivertole-Shivapur Road, Tilottama										
S. No	Chainage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right	Name of the Forest						
10	0+920	1			Kalki Phul	<i>Callistemon citrinus</i>	<30	<10	Cut	
11	0+960	1			Kalki Phul	<i>Callistemon citrinus</i>	<20	<10	Cut	
12	1+000	1			Peepal	<i>Ficus religiosa</i>	<10	<5	Cut	
13	1+020	1			Dabdabe	<i>Garuga pinnata</i>	138	43.93	Cut	
14	1+024	1			Dabdabe	<i>Garuga pinnata</i>	66	21.01	Cut	
15	1+039	1			Dabdabe	<i>Garuga pinnata</i>	90	28.65	Cut	
16	1+040	1			Dabdabe	<i>Garuga pinnata</i>	120	38.20	Cut	
17	1+057	1			Kabhro	<i>Ficus lacor</i>	248	78.94	Cut	
18	1+120	1			Kalki Phul	<i>Callistemon citrinus</i>	<10	<5	Cut	
19	1+123	1			Kalki Phul	<i>Callistemon citrinus</i>	<10	<5	Cut	
20	1+145	1			Bakaino	<i>Melia azedarach</i>	110	35.01	Cut	
21	1+158	1			Amba, Sarifa, Amala	<i>Psidium guajava</i> , <i>Annona squamosa</i> , <i>Phyllanthus emblica</i>	<30	<10	Cut	
22	1+210	1			Kalki Phul	<i>Callistemon citrinus</i>	<10	<5	Cut	
23	1+250	1			Neem	<i>Azadirachta indica</i>	<10	<5	Cut	
24	1+255	1			Neem	<i>Azadirachta indica</i>	<10	<5	Cut	
25	1+260	1			Neem	<i>Azadirachta indica</i>	69	21.96	Cut	
26	1+483	1			Ashoka	<i>Saraca asoca</i>	117	37.24	Save	Lies in footpath end
1+560 to 1+620: Total 10 pole size Ashoka trees in right side= Can be saved										
27	1+660		1		Imli	<i>Tamarindus indica</i>	94	29.92	Cut	
28	1+810	1			Katahar	<i>Artocarpus heterophyllus</i>	150	47.75	Cut	

Drivertole-Shivapur Road, Tilottama										
S. No	Chainage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right	Name of the Forest						
29	1+840		1		Bakaino	<i>Melia azedarach</i>	96	30.56	Cut	
30	1+190		1		Neem	<i>Azadirachta indica</i>	120	38.20	Cut	
31	2+120		1		Neem	<i>Azadirachta indica</i>	94	29.92	Cut	
32	2+158	1			Bakaino	<i>Melia azedarach</i>	63	20.05	Cut	
33	2+160	1			Mango	<i>Mangifera indica</i>	117	37.24	Cut	
34	2+300		1		Kadam	<i>Neolamarckia cadamba</i>	48	15.28	Cut	
35	2+310	1			Katahar	<i>Artocarpus heterophyllus</i>	80	25.46	Cut	
36	2+320	1			Bakaino	<i>Melia azedarach</i>	60	19.10	Cut	
37	2+680		1		Katahar	<i>Artocarpus heterophyllus</i>	142	45.20	Cut	
38	2+750		1		Mango	<i>Mangifera indica</i>	90	28.65	Cut	
39	2+980		1		Katahar	<i>Artocarpus heterophyllus</i>	54	17.19	Cut	
40	2+986		1		Katahar	<i>Artocarpus heterophyllus</i>	40	12.73	Cut	
41	4+440	1			Peepal	<i>Ficus religiosa</i>	310	98.68	Cut	
42	4+460	3			Bar, Peepal, Shami	<i>Ficus benghalensis, Ficus religiosa, Prosopis cineraria</i>			To be saved	Not in CW, in footpath (Should be saved during construction)
43	4+520	1			Peepal	<i>Ficus religiosa</i>	330	105.04	Cut	
44	4+660	1			Jamun	<i>Syzygium cumini</i>	180	57.30	Cut	
	Total	31	15							

Patthardanda-Tinau, Tilottama										
S. No.	Chain age	Number of trees to be cut down		Land Ownership /	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right	Name of the Forest						
1	0+220	1		Roadside	Ashoka	<i>Saraca asoca</i>	50	15.92	Cut	
2	0+223	1		Roadside	Ashoka	<i>Saraca asoca</i>	50	15.92	Cut	
3	0+299	1		Roadside	Ashoka	<i>Saraca asoca</i>	60	19.10	Cut	
4	0+230	1		Roadside	Ashoka	<i>Saraca asoca</i>	46	14.64	Cut	
5	0+470	1		Roadside	One type of Cherry	<i>Muntingia calabura</i>	67	21.33	Cut	
6	0+860		1	Roadside	Neem	<i>Azadirachta indica</i>	60	19.10	Cut	
7	0+880	1		Roadside	Neem	<i>Azadirachta indica</i>	80	25.46	Cut	
	Total	6	1							

Panbari to Saljhandi Ring road, Sainamaina										
S. No	Chainage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right	Name of the Forest						
1	1+330		1	-	Epiphyte peepal on Asna	<i>Terminalia elliptica</i>	>280	>89	Cut	
1+760 to 3+840: Kanchan CF on the left										
2	2+520		1	Kanchan CF	Sal	<i>Shorea robusta</i>	350	111.41	Cut	within CW
3	2+880	1		Kanchan CF	Sal	<i>Shorea robusta</i>	300	95.49	Save	Can be saved
4	2+890	1		Kanchan CF	Asna	<i>Terminalia elliptica</i>	260	82.76	Save	
3+875 to 3+915 Under Construction Bridge										
5	5+560	1		Jhimjhime & Bhulkepani CF	Sal	<i>Shorea robusta</i>	350	111.41	Save	
6	6+560	1		Jhimjhime & Bhulkepani CF	Sal	<i>Shorea robusta</i>	310	98.68	Save	
7	6+760		1	Jhimjhime & Bhulkepani CF	Sal	<i>Shorea robusta</i>	310	98.68	Save	
8	6+770	1		Jhimjhime & Bhulkepani CF	Sal	<i>Shorea robusta</i>	250	79.58	Cut	In CW
9	6+780		1	Jhimjhime & Bhulkepani CF	Sal	<i>Shorea robusta</i>	280	89.13	Save	
10	6+820	1		Jhimjhime & Bhulkepani CF	Sal	<i>Shorea robusta</i>	270	85.94	Save	
11	6+905		1	Jhimjhime & Bhulkepani CF	Sal	<i>Shorea robusta</i>	275	87.54	Save	
		2		-	Bar, Peepal	<i>Ficus benghalensis</i> , <i>Ficus religiosa</i>	N/A		Save	
12	7+200		1	Jhimjhime & Bhulkepani CF	Sal	<i>Shorea robusta</i>	280	89.13	Save	
13	8+010		2	-	Bar Peepal Chaupari	<i>Ficus benghalensis</i> , <i>Ficus religiosa</i>	N/A		Save	Out of CW
14	8+030		1	Private	Mango	<i>Mangifera indica</i>	N/A		Cut	

Panbari to Saljhandi Ring road, Sainamaina										
S. No	Chainage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right	Name of the Forest						
15	8+860	1		Roadside	Sal	<i>Shorea robusta</i>	260	82.76	Save	
16	8+862	1		Roadside	Sal	<i>Shorea robusta</i>	270	85.94	Save	Out of CW
	Total	10	9							

Dui Muhan chowk to Talhi Ring Road , Sainamaina										
S. No.	Chain age	Number of trees to be cut down		Land Ownership /	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right							
1	0+020		1		Bakaino	<i>Melia azedarach</i>	100	31.83	Cut	Not in CW
2	0+120		1		Neem	<i>Azadirachta indica</i>	97	30.88	Cut	In CW
3	0+110	1			Bakaino	<i>Melia azedarach</i>	90	28.65	Cut	In CW
4	0+130	1			Sissoo	<i>Dalbergia sissoo</i>	80	25.46	Cut	In CW
5	0+160	1			Jamun	<i>Syzygium cumini</i>	101	32.15	Cut	Not in CW
6	0+180	1			Dabdabe	<i>Garuga pinnata</i>	103	32.79	Cut	Not in CW
0+380 to to 0+460: Kanchan Bridge										
7	1+820		1		Peepal				Save	Not in CW
2+970 to 3+010 Pahili Khola Bridge										
	Total	4	3							

Bus Terminal Access Road, Lumbini Sanskritik										
S. No.	Chain age	Number of trees to be cut down		Land Ownership /	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right							
1		1		Roadside/ Private	Mango	<i>Mangifera indica</i>	150	47.75	Cut	
2		1		Roadside/ Private	Mango	<i>Mangifera indica</i>	127	40.43	Cut	
3			1	Roadside/ Private	Mango	<i>Mangifera indica</i>	88	28.01	Cut	
4			1	Roadside/ Private	Amaro	<i>Spondias pinnata</i>	120	38.20	Cut	
5		1		Roadside/ Private	Neem	<i>Azadirachta indica</i>	127	40.43	Cut	
6		1		Roadside/ Private	Kadam	<i>Neolamarckia cadamba</i>	80	25.46	Cut	
7		1		Roadside/ Private	Neem	<i>Azadirachta indica</i>	82	26.10	Cut	
8		1		Roadside/ Private	Neem	<i>Azadirachta indica</i>	85	27.06	Cut	
9			1	Roadside/ Private	Saijan	<i>Moringa oleifera</i>	90	28.65	Cut	

Bus Terminal Access Road, Lumbini Sanskritik										
S. No	Chai nage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right							
10		1		Roadside/ Private	Peepal	<i>Ficus religiosa</i>	300	95.49	To be saved	Religious significance
11		1		Roadside/ Private	Neem	<i>Azadirachta indica</i>	20	6.37	Cut	
12			1	Roadside/ Private	Bhellar	<i>Trewia nudiflora</i>	67	21.33	Cut	
13		1		Roadside/ Private	Bhellar	<i>Trewia nudiflora</i>	65	20.69	Cut	
14			1	Roadside/ Private	Babur	<i>Acacia nilotica</i>	144	45.84	Cut	
15			1	Roadside/ Private	Babur	<i>Acacia nilotica</i>	90	28.65	Cut	
16		1		Roadside/ Private	Mango	<i>Mangifera indica</i>	165	52.52	Cut	
17		1		Roadside/ Private	Mango	<i>Mangifera indica</i>	135	42.97	Cut	
18		1		Roadside/ Private	Mango	<i>Mangifera indica</i>	109	34.70	Cut	
19		1		Roadside/ Private	Guava	<i>Psidium guajava</i>	120	38.20	Cut	
20			1	Roadside/ Private	Neem	<i>Azadirachta indica</i>	138	43.93	Cut	
21			1	Roadside/ Private	Neem	<i>Azadirachta indica</i>	94	29.92	Cut	
22		1		Roadside/ Private	Jamun	<i>Syzygium cumini</i>	92	29.28	Cut	
23		1		Roadside/ Private	Simal	<i>Bombax ceiba</i>	254	80.85	Save	Protected tree
24		1		Roadside/ Private	Sissoo	<i>Dalbergia sissoo</i>	75	23.87	Cut	
25			1	Roadside/ Private	Simal	<i>Bombax ceiba</i>	105	33.42	Save	Protected tree
26			1	Roadside/ Private	Simal	<i>Bombax ceiba</i>	120	38.20	Save	Protected tree
27			1	Roadside/ Private	Simal	<i>Bombax ceiba</i>	100	31.83	Save	Protected tree
28		1		Roadside/ Private	Imli	<i>Tamarindus indica</i>	173	55.07	Cut	
29			1	Roadside/ Private	Mango	<i>Mangifera indica</i>	270	85.94	Cut	
30		1		Roadside/ Private	Mango	<i>Mangifera indica</i>	152	48.38	Cut	
31		1		Roadside/ Private	Sissoo	<i>Dalbergia sissoo</i>	450	143.24	Cut	

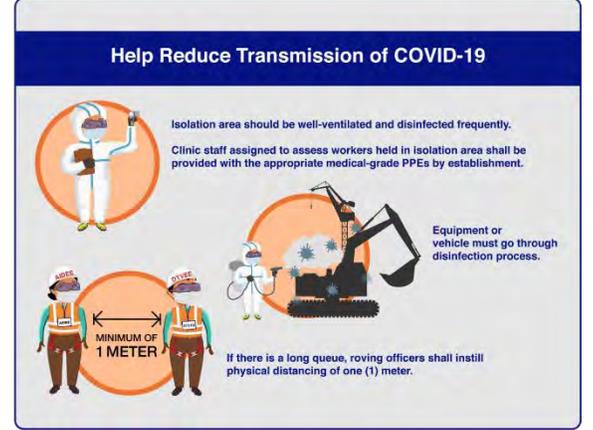
Bus Terminal Access Road, Lumbini Sanskritik										
S. No	Chainage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right							
32			1	Roadside/Private	Peepal Chaupari	<i>Ficus religiosa</i>	540	171.89	To be Saved	Religious significance
	Total	19	13							

Urban Roads, Siddharthanagar Municipality										
S. No	Chainage	Number of trees to be cut down		Land Ownership/	Name of Tree	Scientific Name	Average circumference (cm)	Dbh (cm)	Cut/Save	Remarks
		Left	Right							
Sugar Mill_All Link Roads										
1				Roadside	Simal	<i>Bombax ceiba</i>	1.2	0.38	Save	Protected tree
2				Roadside	Simal	<i>Bombax ceiba</i>	1.25	0.40	Save	Protected tree
Darkhaswa										
3		8		Roadside	Sissoo	<i>Dalbergia sissoo</i>	Pole size	<10	Cut	lies in CW
Benipur_east										
4		3		Roadside	Mango	<i>Mangifera indica</i>	80-85		Cut	lies in CW

Appendix 2: COVID 19 Guideline

A. PREPARATION BEFORE WORK

- Worksite and camp will be secured with gated fence
- Photo Identity Card will be issued to all workers with unique identification number
- Preparation will be made for daily medical screening (thermal check and symptoms assessment) of all workers and report to H&SO
- COVID Marshal will measure temperature by wearing facemask and gloves for their gang of workers before leaving camp
- Worker with high fever and frequent cough will not be allowed to work. The worker will be asked to stay in quarantine (for residential worker) or sent back home (non-residential worker).



COVID-19 लक्षणहरू		
सबैभन्दासामान्यलक्षणहरू:	सामान्यतयाकमैदेखिनेलक्षणहरू:	गम्भीरलक्षणहरू:
<ul style="list-style-type: none"> - ज्वरोआउने - सुक्खाखोकीलाग्ने - थकाइलाग्ने 	<ul style="list-style-type: none"> - पीडाहुनेवादुख्ने - घाँटीदुख्ने - पखालालाग्ने - आँखापोल्ने - टाउकोदुख्ने - स्वादवागन्धथाहानहुने - छालामादागहुनेवाहातवाखुट्टाकाऔँलाकोरडउड्ने 	<ul style="list-style-type: none"> - सासफेर्नगाहोहुनेवापटकपटकसासफेर्नुपर्ने - छातीदुख्नेवाछातीमादबाबपर्ने - बोल्नवाहिँडडुलगर्नसक्ने -
<p>तपाईंमागम्भीरलक्षणहरूदेखिएमातुरुन्तैचिकित्साजाँचगराउनुहोस्। जहिलेपनिआफ्नोडाक्टरवास्वास्थ्यसुविधाप्रदायककहाँजानुअधिकलगनुहोस्</p>		

- COVID Test (PCR Test) will be conducted for the staff and workers who have the symptom related to covid-19 (if required)
- Register record will be maintained

- Quarantine and isolation tents will be established at sufficient distance in the camp from regular shelters
- Specific and separate worksite will be assigned to the new group of workers away from regular workers for a minimum of 14 days to minimize risk
- Work will be arranged in shifts to avoid crowding of workers. Teams will be divided based on (i) workers residing in the same camp (ii) workers residing outside the camp (iii) new group of workers etc.
- Consumption of liquor and chewable like Khaini, Surti, Paan etc. (those generating urge for frequent spitting) will be strictly restricted inside office and work areas



B. PROCEDURE AT ENTRY

- Guards will be oriented by the H&SO on (i) checking temperature, (ii) observing health symptoms, (iii) record personal details and travel history, and (iv) taking emergency procedure, if required
- Unauthorized person and visitors will not be allowed to enter
- All new group of workers will be allowed to enter the site only after showing COVID Test certificate from authorized government hospital issued within the last 7 days, which will be checked by the Assistant Health Worker at the Medical Center
- Guards will wear prescribed PPEs at all the times and regularly disinfect their hand
- Visitor having COVID symptoms will be sent back, and immediately call HW from Medical Center for staff and worker showing symptoms
- Personnel should maintain a distance of 1 meter at all times following the floor-marking wherever queue is required
- Guard will direct vehicles supplying materials to the delivery zone



Guard will inform the visitors on fulltime use of mask and hand washing/sanitizing



C. MINIMIZE WORKER AND COMMUNITY CONTACT

The Contractor will be fully responsible to ensure taking all preventive measures and safety precautions for COVID-19 risks such as following:

- Project Manager will work closely with the Site In-charge and Resident Engineer for planning special measures and expedite work implementation at high risk areas and areas requiring work in close proximity with the communities
- Physical barricades will be made mandatory to separate and minimize contact between workers and local people
- Arrangements will be made to minimize movement of workers from barricaded work areas and camps and visiting settlement areas
- Work sites will be separated into working zones to keep the groups of workers physically separated. Not more than 20 workers will be allowed to work in one group. A group

- leader will be identified as COVID Marshal and given orientation to keep close watch of workers and trigger emergency protocol in emergency case
- Emphasis will be given to establish sufficient size of labor camp to keep all workers inside the camp to minimize contact with community.

D. TRAVEL TO WORK SITE

The workers will observe precaution and the contractor will arrange following measures for arranging transport for workers to the worksite:

- Travel between sites and labor camps will be arranged through official vehicle
- All workers will wear facemask when travelling in a shared vehicle, including the driver who will wear mask and glove
- Driver will sanitize had regularly and before & after every trip
- Only 40% capacity of vehicle will be used and a seat will be kept empty in between passengers
- Windows will be opened for natural ventilation
- Workers will stay facing away from each other while in the vehicle
- Vehicle will be cleaned and disinfected thoroughly after every shift- with emphasis on handles, steering wheel, gear etc.
- All workers prior to entering the vehicle and exiting will sanitize their hands
- Prior to entering the vehicles all nonresidential staff and workers must self-certify that they do not have any COVID-19 symptoms

Appendix 3: Minutes of Consultations at Western Urban Corridor Towns

Devdaha Municipality Roads

आज मिति २०७९/११/०४ गते देवदह नगरपालिकामा एशियाली विकास बैंक (ADB) को सहयोगमा नगरपालिकाको चक्रपथ निर्माण कार्यको लागि यस नगरपालिका र WUC कन्सल्टयन्ट बीच छलफल कार्यक्रम र देवदह नगरपालिकाकी नगर उपप्रमुख श्री विद्या लक्ष्मी गुरुङ ज्यू को अध्यक्षतामा तपमिल नमोजिमको उपस्थितिमा सम्पन्न भयो।

उपस्थिती:

क्र.स.	नाम थर	पद	दस्ताखत
१.	श्री विद्या लक्ष्मी गुरुङ	उप प्रमुख	
२.	श्री टिकाराम शर्मा	उप-सचिव	
३.	श्री गणेश डुम्रे	नगर प्रवक्ता/ वडा अध्यक्ष वडा नं. ५	
४.	श्री दिपक प्रसाद नेपाल	वडा अध्यक्ष, वडा नं. १	
५.	श्री दल बहादुर राकसकोटी	वडा अध्यक्ष, वडा नं. २	
६.	श्री यज्ञ प्रसाद अर्याल	वडा अध्यक्ष, वडा नं. ३	
७.	श्री दमन नाथ रेग्मी	वडा अध्यक्ष, वडा नं. ४	
८.	श्री खेम बहादुर थापा मगर	वडा अध्यक्ष, वडा नं. ६	
९.	श्री कृष्ण प्रसाद अधिकारी	वडा अध्यक्ष, वडा नं. ७	
१०.	श्री हरि प्रसाद पाण्डेय	वडा अध्यक्ष, वडा नं. ८	
११.	श्री मोहन बहादुर जि.सी.	वडा अध्यक्ष, वडा नं. ९	
१२.	श्री यक बहादुर सुनार	वडा अध्यक्ष, वडा नं. १०	
१३.	श्री दुधनाथ यादव	वडा अध्यक्ष, वडा नं. ११	
१४.	श्री डेग बहादुर सुनार	वडा अध्यक्ष, वडा नं. १२	
१५.	श्री चन्द्र बहादुर भाट	अधिकृत आठौं	
१६.	वर्षा तिवारी	प्रगती सा.प.को सचिव	
१७.	रुका सापकोटा	अध्यक्ष: जनप्रतिष्ठ सं.का	
१८.	सरोज कु. थापा	अध्यक्ष: पाल्पाली सं.का	
१९.	विदुषा काल	अध्यक्ष: स.प.का	
२०.	अरत रेग्मी	अध्यक्ष: हा.क.का	
२१.	ठा. प्रसाद लोपाने	वा.ड. सदस्य	
२२.	प्रसाद गुरुङ	वा.ड. सदस्य	
२३.	शोविन्द पासी	वा.ड. ११ कार्यवाहक सदस्य	

25.	पुष्प गाहा भागा	सरहल कालीक वन ड.स. सदस्य	
26.	वीष नारायण शंकर	इन्जिनियर	
27.	सुरेश चौधरी	असि इन्जिनियर	
28.	राजेश कुमार शर्मा	अभिमान	
29.	गिता शर्मा	कार्यालयिक सदस्य	
30.	रमेश नारायण शर्मा	जाइवत सहायक सहायक	
31.	अशोक शर्मा	वातावरण विज्ञान तथा वातावरण विशेषज्ञ	
32.	आशुमिता पेंडसे	वातावरण consultant	
33.	रिक्ता शर्मा	वातावरण विज्ञान	
34.	राजकुमार शर्मा	इन्जिनियर (सार्वांगी)	

प्रस्तावक

- 1) स्वच्छता (नि-ड्रुल) जगा उपलब्ध कराउने,
- 2) शौचिक संरचना, रुखहरूको लगत राख्ने,
- 3) सामाजिक तथा वातावरणीय असुर सुबन्धमा,
- 4) मलवी पुल देखि नगरपालिका जोड्ने बाटो सुबन्धमा,

निर्णय नं 1
 यस उपलब्ध नगरपालिका अन्तर्गत शहियाली बजार क्षेत्र (म.स.स) ले निर्माण गरिने यसपथ नगराले अन्य बाटो निर्माण गर्ने क्षेत्र विपन्न पर्ने जग्गा निशुल्क उपलब्ध गराउने प्रस्ताव आमा श्रेया शर्मा मिति 2068 फाल्गुन 13 गते भित्र सम्पन्न गर्ने निर्णय गरियो।

निर्णय नं 2.

उक्त न्यत्रिपथ नगराले अन्य बाटो निर्माण गर्ने क्षेत्र विपन्न पर्ने शौचिक संरचना एवम् रुखहरूको रूमी तथा (असुर पर्ने) गरी उपलब्ध गराउने प्रस्ताव मिति 2068 फाल्गुन 13 गते भित्र सम्पन्न गर्ने निर्णय गरियो।

निर्णय नं 3.

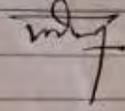
उक्त आशुमिताको कार्यालयले पनि सन्ने सामाजिक तथा

वातावरणिय उपसरहको पहिचान गरि सुची मिति २०७३ फाल्गुन
१३ मित्र उपलब्ध गराउने निर्णय गरियो ।

निर्णय नं: ४

महुली देवि सनाप पामि पुल देवि सनाप मेडिकल कलेज अन्तर्गत सम्-
को बाटो निर्माण गर्न दुबै सभे, रेनवांगींगु पवा लगाई सुक
की बरह उल्ल गराई कुवाको कुवा हुनबाट जोडाई निर्माण
कार्य गर्न पर्ने काले निर्णय गरियो ।





Pragati CF along Banchauki-Mayadevi Park-Mildanda-Buddha Circuit Road

समूह

आज मिति २०७९ साल फाल्गुण २० गतेको दिन यस निर्जना सामुदायिक वन उपभोक्ता समूहको देवदह-७ वा कार्यालय अध्यक्ष श्री शालिकराम तिवारीको अध्यक्षतामा बैठक बसी RUDP(WUC) आयोजना अन्तर्गत वनचौकी मायादेवी पार्क मिलाइए। हुँदै बुद्ध सर्किट जोड्ने वारा आयोजना सम्बन्धमा निम्न प्रस्तावमाथि छलफल गरी निर्णय गरियो।

शेखर बडाधम श्री कृष्ण प्रसाद उपाधिकारी

उपस्थिति

१.	श्री शालिकराम तिवारी - का.वा अध्यक्ष	९८४७११४०७०	
२.	" रिष्का जोषाने - सचिव	९८४७०२०८९८	अध्यक्ष
३.	" समनथ पौडेल - स.सचिव	९८४७१४९४९२	
४.	" जेविक प्रसाद तिवारी - कोषाध्यक्ष	९८४७०४८८२४	गा.वि.उ.म.
५.	" जानाराम अर्माँल - सदस्य	९८४७०३२९४९	सचिव
६.	" सुमीत्रा अर्माँल - "		
७.	" मुनीलाल थापा - "		का.म.
८.	" भीम कुमारी ठकाल - "		
९.	" पवित्री लामिछाने - "		
१०.	" विष्णु कला भुसाल - "		श.म.
११.	" शोभा श्रेष्ठ - "		ह.मा.
१२.	" हेमा कुमाल - "		

प्रस्तावहरू

१. प्राविष्ठता सम्बन्धमा
२. विविध

निर्णयहरू

प्रस्ताव १ माथि छलफल गरी RUDP(WUC) आयोजना अन्तर्गत वनचौकी मायादेवी पार्क मिलाइए। हुँदै बुद्ध सर्किट जोड्ने वारा (४० फुट) आयोजना कार्यालय गार्डि एवम् पश्चिम राजमार्ग वनचौकी देखि दक्षिण तर्फ देवदह मा.वि.सम्म रूकातर्फ (पश्चिम साइड) र देवदह मा.वि.सम्म अगाडी रूकातर्फ (पूर्व साइड) र देवदह मा.वि.देखि दक्षिण वनचौकीको आवासी क्षेत्र सम्म हुने तर्फ सृजना सामुदायिक वन क्षेत्र रहेकोमा सो क्षेत्रमा आयोजना कार्यालय गार्डि सामुदायिक वन समूह/समितिको

अध्यक्ष

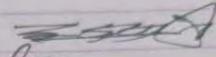
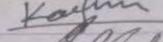
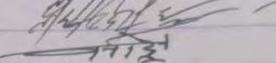
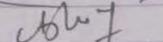
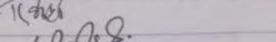
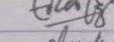
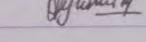
कुने पनि बाधा अवरोध नजारी आभोजन। रजिस्ट्रार
 एवं कार्या-व्यवस्था सहयोग गर्ने प्रतिवद्धता सर्व-
 सम्मत निर्णय गरियो।
 प्रस्ताव २ सम्बन्धमा फलफल गर्दा उक्त आभोजन। कार्या-
 न्पन हुवा करान हुन गयवा हरव काठ दाउरा सामुदायिक
 वन समूहको हुनुपर्ने सम्बन्धमा समेत निर्णय गरियो।
 र वन पैसावार समूहले विनिधमानुसार विक्रीवितरण गर्ने
 निःसर्वसम्मत निर्णय गरियो।

२१/१२/२०१७
 उपनिर्वाह
 सावित्री
 बीम
 २०१७

Lumbini Sanskritik Municipality

आज मिति २०७३/११/०३ गतेको दिन लुम्बिनी सांस्कृतिक नगरपालिका वडा नं १० का नगर प्रमुख श्री राजकुमार मुसलमान ज्यूको अध्यक्षतामा एसियाली विकास बैंकको West Urban Corridor (WUC) अर्न्तर्गतको लुम्बिनी सांस्कृतिक न.पा.मा प्रस्तावित आयोजनाहरू बारे निम्न बमोजिम उपस्थिती तथा निर्णय गरियो ।

उपस्थिति :

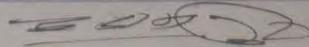
१. श्री राजकुमार मुसलमान	लुम्बिनी सांस्कृतिक नगर प्रमुख	
२. श्री कल्पना ठरिजन	उप नगर प्रमुख	
३. श्री तुलसी राम लामिदाने	समान्वय अधिकृत	
४. श्री विनोद कठार	वडा अध्यक्ष - वडा १०	
५. श्री आशिष यादव	ई-	
६. श्री हेम निधि शर्मा	ERMC बिदेसक	
७. श्री विकेश चित्रकार	वातावरण विज्ञ	
८. श्री चन्द्र बा. पुरखुडा	सामाजिक विज्ञ	
९. आद्युष्मिता पोखरेल	वातावरण consultant	

प्रस्ताव :

१. बसपार्कको जग्गा सम्बन्धमा ।
२. प्रस्तावित पाँच पोखरीको पहुँच मार्गको जग्गाको विषयमा ।
३. नापी नक्सा उपलब्ध गराउने सम्बन्धमा ।
४. वडा स्तरीय आम श्रैला सम्बन्धमा ।

निर्णय :

१. नगरपालिकाले आजको मितिबाट १ ठप्ता भित्र नापी विश्वारसँग समन्वय गरि प्रस्तावित बस पार्कको जग्गा साथै वरिपरिको कुलोहस्ते क्षेत्रफल स्कान गरि WUC आयोजनालाई उपलब्ध गराउने निर्णय गरियो ।
२. उक्त प्रस्तावमा दलफल गर्दा एक ठप्ता भित्र न.पा.बाट पहुँच मार्गको जग्गाको विषयमा धर्किन गरि WUC आयोजनालाई उपलब्ध गर्ने निर्णय गरियो ।
३. प्रस्तावित पाँच पोखरी र त्यसका पहुँच मार्ग, बस पार्क र त्यसको पहुँच मार्ग, जलोष्ण पार्कको नापी नक्सा र प्रत्येक आयोजनाको क्षेत्रफल





प्रस्तावहरूः
१. आयोजनाको उद्देश्यको चार किल्ला यकिन गर्ने
२. आयोजनाको कार्यन्वयन

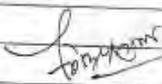
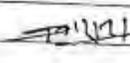
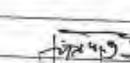
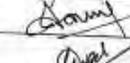
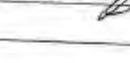
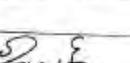
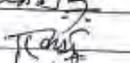
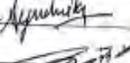
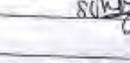
निर्णयहरूः
१. उक्त प्रस्तावमा दुलफुल गर्दा यस ग्लोबल पार्कको चार किल्ला यकिन गरि
नापी नमसा सहित आयोजना क्षेत्रको क्षेत्रफल यस NUC आयोजनालाई
स्कूल भन्दा भित्र नगरपालिका, वडा नं १२ बाट उपलब्ध गराउने निर्णय गरियो।
२. उक्त प्रस्तावमा दुलफुल गर्दा आयोजनाको कार्यन्वयनले कसैलाई व्यतिरिक्त
असर नपर्ने र सबै स्थानीयसहमत भएको साथै आयोजना कार्यन्वयन
गर्दा स्थानीय सबैले सहयोग गर्ने निर्णय गरियो।



Sainamiana Municipality- Sub-projects

सैन्यामिया नगरपालिकामा सैन्यामिया विकास बैंक (ASB) को आर्थिक अनुदानमा संघालय हुन लागेका ५ वटा योजनाहरूको मूलांकन सम्बन्धित परामर्शदाताको सेवा गैरको सैन्यामिया डिजाइन अवधारणा (Conceptual design) मासुखाना उपखाना बसोनिस्थो उपखानामा बसोनिस्थो बाइकपार्क सैन्यामिया नगरपालिका नगर फुटबल क्षेत्र फुटबल पल्लव शर्मा क्लब को अखण्डसमा वीरव वली उपखाना बसोनिस्थो निर्माण गर्दियो।

उपखानाहरू -

	श्री फुगेन्द्र प्रसाद शर्मा - नगर प्रमुख
	श्री राम शर्मा - नगर उपप्रमुख
	श्री प्रकाश प्रसाद शर्मा -
	श्री प्रकाश प्रसाद शर्मा - पूर्व नगर प्रमुख
	श्री प्रकाश प्रसाद शर्मा - पुरानो बसोनिस्थो निर्माण
	श्री प्रकाश प्रसाद शर्मा - अखण्ड - वडा नं. ५
	श्री प्रकाश प्रसाद शर्मा - " वडा नं. ११
	श्री प्रकाश प्रसाद शर्मा - " " १०
	श्री प्रकाश प्रसाद शर्मा - " " ८
	श्री प्रकाश प्रसाद शर्मा - पूर्वोत्तर विकास समिति
	श्री प्रकाश प्रसाद शर्मा - शान्ति निगर
	श्री प्रकाश प्रसाद शर्मा - कार्यपालिका अध्यक्ष
	श्री प्रकाश प्रसाद शर्मा - मन इन्जिनियर
	श्री प्रकाश प्रसाद शर्मा - वातावरण विज्ञ
	श्री प्रकाश प्रसाद शर्मा - वातावरण विज्ञ
	श्री प्रकाश प्रसाद शर्मा - फोटोग्राफिक्स
	श्री प्रकाश प्रसाद शर्मा - आर्किटेक्ट
	श्री प्रकाश प्रसाद शर्मा - सिविल इन्जिनियर
	Shree Lim - Landscape Architecture
	B. Lek Goulan - 1-1-10-1

छात्राभिनि २००९।२।१९ गतेचा दिना यत्र संसदीय नगरपालिका
 का नं-११-११ संसदीय प्रवेशी बाजपाणी महासंघातील वन उपगोळा -
 प्रमुख बाध्याची लाल बसणु येत लुके बाध्यानाम वरु
 ची विविध विषया इनामल गरी संसदीयने निर्धार गारियो।

संघीय

- १) अध्यक्ष:- श्री लाल बसणु येत ~~BAH~~
- २) उपाध्यक्ष:- श्री बाबा शाही मल्ल ~~BAH~~
- ३) सचिव:- श्री शोभावर अत्रे ~~BAH~~
- ४) सह-सचिव:- श्री बृहस्पति शर्मा ~~BAH~~
- ५) कोषाध्यक्ष:- श्री पवित्रा यन लुके ~~BAH~~
- ६) अध्यक्ष:- श्री मोहन बि-डे ~~BAH~~
- ७) अध्यक्ष:- श्री प्रतिभा धर्मिणी ~~BAH~~
- ८) अध्यक्ष:- श्री शिवनाथ कुंवर शर्मा ~~BAH~~
- ९) अध्यक्ष:- श्री गहन प्रदाय्यनाल ~~BAH~~
- १०) अध्यक्ष:- श्री अशुतना अत्रे ~~BAH~~
- ११) अध्यक्ष:- श्री अतिनाथ ~~BAH~~
- १२) अध्यक्ष:- श्री बिल्लुबाहादुर मल्ल ~~BAH~~
- १३) अध्यक्ष:- श्री सुकप्रति लोह ~~BAH~~
- प्रस्तावक:- १) चक्रपथ संसदीय
- २) विविध संसदीय

निर्णयक:
 निर्णय नं-११-११ चक्रपथ संसदीय इनामल गरी संसदीय नगरपालिका
 को संचालक प्रक डेड डेड मोहन, जनेमा, मोहन बाजपाणी खल याम जोडीत
 चक्रपथ योजना अत्रे गरी यत्र प्रमुखे केहेवन डेड डेड वापय
 पॅट्रुल मुक्य तथा बायजलुनाडे डेड डेड विविधो अत्रे -पने -
 तदिनाने बाध्याक अत्रे उपाध्यक्ष गारुने माने संसदीय-संसदीयने
 निर्णय गारियो।

~~BAH~~ ~~BAH~~ ~~BAH~~ ~~BAH~~ ~~BAH~~
 BAH BAH BAH BAH BAH
 BAH BAH BAH BAH BAH

सहयोग गर्दा फरक पत्र लोडो लिएकोले माथो पुस्तोकोले
शब्दहरूको पालन गर्दै धन ऐत निधमावलीको सुविधामा
रही सहयोग गर्ने सर्व सम्मान विधीय गरियो ।

को/ हा कमार राव
y/c (M)

Recommendation Letter from Jhimjhimiya-Bhulkepani CFUG situated along the proposed Panbari-Saljhandi Ring Road, ward 10, Sainamaina Municipality

इति नं ५१

भिर्मभिर्मियां भुल्केपानी सामुदायिक वन उपभोक्ता समूह

सैनामैना-१०, भिर्मभिर्मियां, रुपन्देही

पत्र संख्या २०६९/०८०
कतानी नं ५३

मिति २०६९/१२/१४

श्रीमान नगर प्रमुख ज्यू,
सैनामैना न.पा. नगरपालीकाको कार्यालय,
बडनगर, रुपन्देही

विषय : जानकारी सम्बन्धमा ।

उपरोक्त सम्बन्धमा सैनामैना न.पा. वडा नं.-१०, अन्तर्गत याविक भिर्मभिर्मियां सा.व. र भुल्केपानी सा.व. एकिकरण भै वनेको यस भिर्मभिर्मियां भुल्केपानी सा.व. क्षेत्रमा सहरी विकास मन्त्रालय सहरी विकास तथा भवन निर्माण विभागको आयोजना अन्तर्गत प्रस्तावित चक्रपथ सडक आयोजना कुर्यान्वयन हुने नगर पालीकाबाट अर्बगत भयो र उक्त प्रस्तावित आयोजनाले यस सा.व. वन क्षेत्रमा नकारात्मक असर नपने देखिएकोले उक्त आयोजना सञ्चालन गर्न सहमति रहेको व्यहोरा जानकारी साथ अनुरोध गरिन्छ ।

अध्यक्ष

Recommendation Letter from Singha Darja CFUG situated along the proposed Panbari-Saljhandi Ring Road, ward 10, Sainamaina Municipality

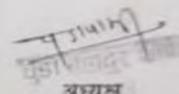

श्री सिंहदर्जा सा.ब.उ.स
सैनामैना-१०, बालमण्डी, रुपन्देही
स्था-२०१८

मिति: २०७९/१२/६ अति

पत्र संख्या: ०७९/०८०
चलानी नं : -२९

श्रीमान् नगर प्रमुख ज्यू
सैनामैना नगरपालिका बुद्धनगर, रुपन्देही
विषय: सहमती दिइएको सम्बन्धमा ।

उपरोक्त सम्बन्धमा यस सैनामैना नगरपालिका वार्ड नं. १० सिंहदर्जा सामुदायिक वन अन्तर्गत निर्माणाधीन सैनामैना चक्रपथ आयोजना बाटो निर्माण गर्दा यस सिंहदर्जा सा.ब.उ.स को सिमानामा कुनै पनि हानी नोक्सानी नहुने भएको हुदाँ चक्रपथ निर्माणको लागि सहमती दिने भनि कार्यसमितिको बैठक नं. १३ को निर्णय अनुसार सहमती दिइएको व्यहोरा अनुरोध ।


अध्यक्ष
चुडा बहादुर बापा

बोधार्थ: सैनामैना नगरपालिका वार्ड नं. १० को कार्यालय

Recommendation Letter from Kanchan CFUG situated along the proposed Panbari-Saljhandi Ring Road, ward 10, Sainamaina Municipality

दर्ता नं. ७३

श्री कञ्चन सामुदायिक वन उपभोक्ता समुह
सैनामैना-१०, रुपन्देही
स्थापना २०६५

पत्र संख्या :- ०७९/०८०
चलानी नं. :- ५०

मिति :- २०७९/१२/१४

श्रीमान नगर प्रमुख ज्यू
सैनामैना नगरपालिका कार्यालय
बुद्धनगर, रुपन्देही

विषय :- सहमति दिइएको सम्बन्धमा ।

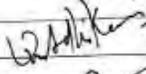
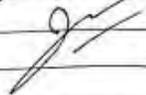
उपरोक्त विषयमा यस सैनामैना १० पानवारीमा सैनामैना नगरपालिका द्वारा निर्माणाधीन चक्रपथ वर्षौदेखिको चलि आएको बाटोमा पर्ने र केही दुरी सा.व.को सिमाना सँग पनि जोडिएको हुदा उक्त चक्रपथ निर्माण गर्दा यस कञ्चन सामुदायिक वनलाई कुनै क्षति नपर्ने गरी निर्माण गर्नको लागि सहमति दिने भनी यस कञ्चन सा.व.उ.समुहको मिति २०७९/१२/०७ गतेको बैठकमा निर्णय भएको हुदा यो सहमति पत्रको व्यहोरा अनुरोध छ ।

लिलामणी पाण्डे
अध्यक्ष
कञ्चन सामुदायिक वन उपभोक्ता समुह
सैनामैना-१०, पानवारी, रुपन्देही

Siddharthanagar Municipality

आज मिति २०७२/१०/०५ तारेका दिन यस सिद्धार्थनगर-नगरपालिकामा नगर प्रमुख श्री डा.केशवक अहमद खान ज्यूको अध्यक्षतामा WUC site visit schedule for Feasibility study work रचनागत अभ्यासका लागि WUC consultant का प्रतिनिधि सँगको छलफल तथा अन्तरक्रिया कार्यक्रम देहाय ढाडोबिगको उपस्थितिमा सम्पन्न भयो।

उपास्थिती :

-  श्री डा.केशवक अहमद खान - नगर प्रमुख, सि. न. पा.
-  श्री उषा अधिकारी - नगर उपप्रमुख " "
-  श्री नवराज पौड्याल - प्रमुख प्रशासकीय अधिकृत " "
- श्री Dong Joo Lee, Team Leader, WUC Consultant
Urban Planner, DOHWA Eng.
-  श्री अन्नबल पोखरेल, वडा अध्यक्ष, वडा नं. १, सि. न. पा.
-  श्री नारायण प्रसाद, उपाध्यक्ष, वडा अध्यक्ष, वडा नं. २, " "
- श्री सोम बहादुर मुखर्जी, वडा अध्यक्ष, वडा नं. १२ " "
-  श्री ओमेश कुमार गैरे, लेखा अधिकृत " "
-  श्री साकार श्रेष्ठ, Project Manager, RUDP, PIO, " "
-  श्री अनेन्द्र प्रसाद श्रेष्ठ, वैदेशिक सल्लाहकार " "
-  श्री देव प्रसाद शर्मा - अधिकृत स्तर सार्वजनिक " "
-  श्री विष्णु प्रसाद पन्थी - इन्जिनियर " "
- श्री अविश दयाल - स.ई. " "
-  श्री नारायण शर्मा - स.ई. " "

~~श्री~~ श्री Lim Siuoo, Landscape Architect, WUC Consultant

श्री Anam Singh Bhat, Project Manager

श्री Soniya Bhandari, Civil Engineer

श्री Kupa Shukla, Architect

श्री रिकेश चित्रकार, वातावरणविज्ञ

श्री Ayushmita Pokhrel, Environment Expert

श्री Ashok Shakti, SWM Expert

श्री विवेक जाँतम, Architect

~~श्री~~ श्री Rakesh, श्री क्राधिकेश अग्रवाल, जग्गा एनए, Danda Corridor

श्री रीनक अग्रवाल " " " Rakesh

~~श्री~~ श्री वाक्याह अर्ष, स्वकीय सचिव, जगर प्रमुख, सि. न. पा.

श्री रिपोट काकी - रि. न. पा. ग. २

श्री आशा गुरुकु, Stack Holder, सि. न. पा. ३

~~श्री~~ श्री लक्ष्मी कोइराला - स्वकीय सचिव, उप प्रमुख, सि. न. पा.

Tilottama Municipality

आज मिति २०७९/१०/१०३ गतेको दिन यस तिलोत्तमा नगरपालिका
 अन्तर्गत झाउमरटोल देहले शिवपुर चामको बडक स्तरीयताको
 विषयमा यस कडाका कडा अध्यक्षको श्री कृष्ण प्रसाद चौडेल
 जुनको अध्यक्षतामा तयभिले कमोजिमको उपस्थितिमा वैधानिक
 कमोजिमको विषयमा छलफल गरियो।

उपस्थित:-

१. श्री कृष्ण प्रसाद चौडेल वडा अध्यक्ष
२. श्री कुमलकाजी गौलिम वडा अध्यक्ष
३. श्री खुसु कटुन खास धापा
४. श्री कुमल शर्मा
५. श्री शान्ता लक्ष्मण महर्डा
६. श्री कृष्ण बहादुर अधिकारी
७. श्री रविनाथ पाण्डे
८. गिरी राज पन्थ
९. हिरा काल
१०. अणेश श्रेष्ठ
११. जयलक्ष्मी खडेल
१२. सुभाष पाण्डे
१३. पुष्पक शर्मा
१४. देवराज शर्मा
१५. लोकाज मुर्डा
१६. उषाराज पाण्डे
१७. मन्मथ पाण्डे
१८. हरिलाल कडल
१९. इन्द्र बाहादुर धापा
२०. सुभाष पाण्डे
२१. विकेश शर्मा
२२. शिवु पाण्डे

समाप्ति

निर्णय नं. १.

तिळोता नगरपालिका अन्तर्गत ड्राइवरोडले टोले शिवपुर
सामको एक स्तरोन्नतीको लागि यस वडामा पर्ने सडकमा रहेको
असुरोकारपालाईसंगै कार्य निर्माण प्रकृत्यामा कुनै कडा प्रयत्न
गरिएको कार्य आफ्नो जग्गा परेमा पनि उक्त जग्गा पाए
निर्माणमा उपस्थित दान गर्ने सहयोगको लागि विभिन्न रित्त
विकास संस्थासंग आज्ञा मिति केहि एक हप्ता त्रि राशि
फलफल गरी प्रकृत्या अगली पढाउनको लागि सहयोग गर्ने
निर्णय गरियो।

निर्णय नं. २.

सडक स्तरोन्नतीको लागि केहि काम फरहियावासीको
वन अर्को क्षेत्र पर्ने गरेको एक पननई कार्य निर्माण प्रकृत्यामा
पन क्षेत्रको कुनै कुरा काट्नु नपर्ने तथा वनको कुनैपनि
आपरेक्ष नरहेको भन्ने पर आवश्यक पर्ने गरेको हुने
वन संगै आवश्यक फलफल सरेका लागि जानकारी
गवाउने निर्णय गरियो।

निर्णय नं. ३.

सडक स्तरोन्नतीको लागि सडकमा पर्ने विभिन्न
सिंवाई बुली, बली (दलित तथा अमजाली) पर्ने गरेको हुने
उक्त विषयलाई पनि संशोधन गर्ने गरी एक स्तरोन्नती
गर्नुको लागि आवश्यक सहयोग गर्ने निर्णय
गरियो।

Handwritten signatures and stamps, including the name 'शिवपुर' (Shivapur) and 'तिलोता' (Tilottama).

Recommendation Letter from Karahiya CF situated along the proposed Drivertole-
Shivapur Road, Tilottama Municipality

दर्ता नं.: ८/०५३/५४

फोन नं.: ०७१-४१९१४२



करहिया सामुदायिक वन उपभोक्ता समुह १-८

तिलोत्तमा-११, दिपनगर, रुपन्देही

स्था.: २०५२

पत्र संख्या : ०७९/०८०

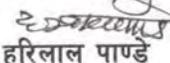
मिति.....२०७९/११/१५

चलानी नं :- २५

श्री मान् प्रमुख ज्यू,
तिलोत्तमा नगर पालिका कार्यालय,

विषय:-
अनुमति दिइएको बारे ।

महोदय,
उपर्युक्त सम्बन्धमा त्यस तिलोत्तमा नगर पालिका कार्यालयको पहलमा ड्राइवरटोल देखि शिवपुर सम्मको बाटो निर्माण सुदृढीकरण गर्नको लागि यस करहिया सामुदायिक वनको वन क्षेत्रमा कुनै किसिमको हानिनोक्सानी नहुने किसिमले बाटो विस्तार गर्नको लागि यस समुह बाट अनुमति दिइएको यसै पत्रसाथ अनुरोध गरिन्छ ।


हरिलाल पाण्डे

अध्यक्ष

करहिया सा. व. उ. समुह ७ - ९

Cold Storage Area

आज मिति २०७९ साल १० महिना ५ गते बिर्तामोडका दिन, तिलोत्तमा न.पा. वडा नं १७, का न.पा. उपप्रमुख श्री जोश्वर देवी चौधरी ज्यूको अध्यक्षतामा बैठक बसी यस WPC आयोजना अन्तर्गत निम्न प्रस्ताव माथि फलफल जारी निर्णय गरियो।

उपरिधती

१. जोश्वर देवी चौधरी	न.पा. उपप्रमुख
२. दान बहादुर चौधरी	वडा अध्यक्ष-वडा नं १७
३. प्रदिप वन	वरिष्ठ इ.
४. सन्त बहादुर बस्नेत	वडा सदस्य
५. राम नरेश लोनिया	वडा सदस्य
६. शोभा कुमारी राना	वडा सदस्य
७. समीला फिखकर्मा	वडा सदस्य
८. जगदिश चौधरी	अंगोलिया टोल विकास अध्यक्ष
९. तुलनाल पाल	समाजसेवी
१०. धनश्याम चौधरी	बरोलीया मा.वि. प्र.
११. शिव प्रसाद थास	समाजसेवी
१२. रामनन्द पाल	समाजसेवी
१३. इन्द्र प्रसाद गैरे	समाजसेवी
१४. राम बहादुर चौधरी	स्थानीय वासिन्दा
१५. रघु नाथ थास	स्थानीय वासिन्दा
१६. बंज नाथ थास	स्थानीय वासिन्दा
१७. स्वपेश चौधरी	स्थानीय वासिन्दा
१८. दया राम चौधरी	स्थानीय वासिन्दा

प्रस्ताव: तिलोत्तमा न.पा. १७ मा प्रस्तावित Cold Storage सम्बन्धमा

निर्णय: ऊक्त प्रस्ताव माथि फलफल जारी प्रस्तावको कार्यन्वयनको कसैको व्यक्तिगत उद्देश्यमा असर नपर्ने, कसैको आयआर्जनमा असर नपर्ने साथै कुनै पुर्नवासको समस्या नभएको, यस आयोजनाको कार्यन्वयन जारी स्थानीयमा आयआर्जनको असर समेत सहजता हुने हुँदा यथाशीघ्र कार्यन्वयन जारी सबै स्थानीय सहमत भएको निर्णय गरियो।

शिव प्र.
समाजसेवी

शिव प्र.
समाजसेवी

Minutes of meeting of consultation conducted at municipality office

TILOTTAMA

Meeting Date: 18th January, 2023**Mayor:** Ram Krishna Khand**Deputy Mayor:** Jageshor Devi Chaudhary**Chief Administrative Officer:** Narayan Aryal**Chief Engineer/Project Manager:** Pradip Ban, Planning Section

The meeting started after a formal introduction from Municipality Team and WUC Team. The WUC team showed the presentation on the design concept of Cold Storage. Then the following comments and feedback were passed from the Municipality team.

1. Cold Storage

- Municipality liked the initial design of the cold storage made by the WUC team; they just wanted a few additions.
- Municipality wanted a **Weighbridge** at the entrance of the cold storage for weighing the loaded vehicle. The WUC team agreed to incorporate it into the designs.
- Municipality wanted to revise the space allocated for office blocks, and staff quarters. They want those facilities to be incorporated into a multistorey building to reduce the building footprint inside the cold storage. So that it would provide the possibility for future expansion. The WUC team agreed to reflect on it.
- Municipality was concerned about the flood issue in the subproject area. The WUC team informed they considered the possibility of flooding and have provided a needed solution.
- The WUC team informed the municipality that this subproject would go for Design-Build (DB) contract. So, they requested the municipality to list the requirements for the Cold storage in formal written form to the WUC team. After that WUC team would go further with the design process.
- WUC team proposed a 15m access road from the present existing road at the northeast corner but the municipality fixed the ROW of the access road as 13m so the WUC team finalized the discussion by keeping 15m wide road at the eastern side which is inside the boundary of subproject and the remaining portion of the road with 13 m span.
- The municipality was concerned about the management of sanitary waste generated from the cold storage complex. The WUC team justified that there would be a central sanitary waste disposal septic tank and soak pit.

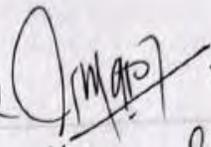


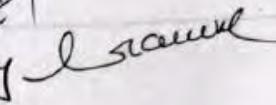
Date: 2023-1-18

The meeting of the WUC team with the Municipality team of Tilottama held at 4:00 PM, on Wednesday, January 18th, 2023 in the Municipality office premise under the chairmanship of Mr. Ram Krishna Khand, the Mayor of Tilottama Municipality to discuss about the Cold storage design and the Land issues for the Subproject. The following members were present:

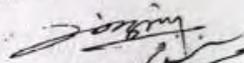
Members present:

Signature:

Mayor Ram Krishna Khand 

Deputy Mayor Jageshwar devi Chandhary 

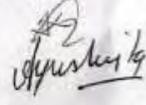
Chief executive officer Mrs Narmyan Aryal 

Ward chairman Mr. Ramesh Dumbre 

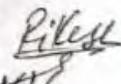
Ward chairman Mr. Ganesh Pathak 

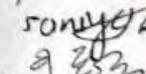
Section Officer Mrs Sita ghimire bhandari 

Engineer Mr. Pradeep Ban 

Architect Kripa Shakya
Environment Specialist Ayushmita Pokhrel 

Landscape Architecture Siwoo Lim 

Rikesh Chitrakar, Environment Expert. 

Soniya Bhandari, Engineer 

David Joo Lee, TEAM LEADER 

Bibek Gautam, Architect 

Appendix 4: Sample Grievance Registration Form

(To be available in Nepali and English)

The _____ Project welcomes complaints, suggestions, queries, and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback.

Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing *(CONFIDENTIAL)* above your name. Thank you.

Date	Place of registration	Project Town			
		Project:			
Contact information/personal details					
Name		Gender	* Male * Female	Age	
Home address					
Place					
Phone no.					
E-mail					
Complaint/suggestion/comment/question Please provide the details (who, what, where, and how) of your grievance below:					
If included as attachment/note/letter, please tick here:					
How do you want us to reach you for feedback or update on your comment/grievance?					

FOR OFFICIAL USE ONLY

Registered by: (Name of official registering grievance)	
Mode of communication: Note/letter E-mail Verbal/telephonic	
Reviewed by: (Names/positions of officials reviewing grievance)	
Action taken:	
Whether action taken disclosed:	Yes No
Means of disclosure:	

Appendix 5: Sample Environmental Site Inspection Report

Project Name
 Contract Number

NAME: _____ DATE: _____
 TITLE: _____ DMA: _____
 LOCATION: _____ GROUP: _____

WEATHER:

Project Activity Stage	Survey	
	Design	
	Implementation	
	Pre-Commissioning	
	Guarantee Period	

MONITORING ITEMS	COMPLIANCE
Compliance marked as Yes / No / Not applicable (NA) / Partially Implemented (PI)	
EHS supervisor appointed by contractor and available on site	
Construction site management plan (spoils, safety, schedule, equipment etc.,) prepared	
Traffic management plan prepared	
Dust is under control	
Excavated soil properly placed within minimum space	
Construction area is confined; no traffic/pedestrian entry observed	
Surplus soil/debris/waste is disposed without delay	
Construction material (sand/gravel/aggregate) brought to site as & when required only	
Tarpaulins used to cover sand & other loose material when transported by vehicles	
After unloading , wheels & undercarriage of vehicles cleaned prior to leaving the site	
No chance finds encountered during excavation	
Work is planned in consultation with traffic police	
Work is not being conducted during heavy traffic	
Work at a stretch is completed within a day (excavation, pipe laying & backfilling)	
Pipe trenches are not kept open unduly	
Road is not completely closed; work is conducted on edge; at least one line is kept open	
Road is closed; alternative route provided & public informed, information board provided	
Pedestrian access to houses is not blocked due to pipe laying	
Spaces left in between trenches for access	
Wooden planks/metal sheets provided across trench for pedestrian	
No public/unauthorized entry observed in work site	

MONITORING ITEMS	COMPLIANCE
Children safety measures (barricades, security) in place at works in residential areas	
Prior public information provided about the work, schedule and disturbances	
Caution/warning board provided on site	
Guards with red flag provided during work at busy roads	
Workers using appropriate PPE (boots, gloves, helmets, ear muffs etc)	
Workers conducting or near heavy noise work is provided with ear muffs	
Contractor is following standard & safe construction practices	
Deep excavation is conducted with land slip/protection measures	
First aid facilities are available on site and workers informed	
Drinking water provided at the site	
Toilet facility provided at the site	
Separate toilet facility is provided for women workers	
Workers camps are maintained cleanly	
Adequate toilet & bath facilities provided	
Contractor employed local workers as far as possible	
Workers camp set up with the permission of PIU	
Adequate housing provided	
Sufficient water provided for drinking/washing/bath	
No noisy work is conducted in the nights	
Local people informed of noisy work	
No blasting activity conducted	
Pneumatic drills or other equipment creating vibration is not used near old/risky buildings	

Signature

Sign off

Name
Position

Name
Position