

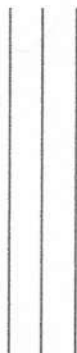
Terms of Reference (ToR)

For

Brief Environmental Studies (BES)

Of

Administrative building of Hilihang Rural Municipality

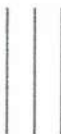


Submitted To:

Office of Rural Municipal Executive

Hilihang Rural Municipality

Province No.1



Submitted By:

Name of Consultant: Dream Engineers Pvt. Ltd.

Address: Phidim Municipality Ward No. - I

Aug - 2021


Bikram Limbu
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ABBREVIATIONS

AMSI	average mean sea level
BS	Bikram Sambat
CFUG	Community Forest Users Group
DBH	Diameter at Breast Height
DCC	District Coordination Committee
EIA	Environmental Impact Assessment
EPA	Environment Protection Act
EPR	Environment Protection Rule
FGD	Focus Group Discussion
GoN	Government of Nepal
HH	Household
BES	Initial Environmental Examination
ILO	International Labor Organization
Km	Kilometer
Km ²	Square Kilometer
KVA	Kilovolt Ampere
MoITFE	Ministry of Industry, Tourism, Forest and Environment
NEA	Nepal Electricity Authority
NGO	Non-Governmental Organization
NRM	National Resource Management
M	Meter
M	
M ²	Square meter
MN	Municipality
RM	Rural Municipality
ToR	Terms of Reference
VDC	Village Development Committee

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CHAPTER I: NAME AND ADDRESS OF AGENCIES

1.1 The Proponent

The name and address of proponent conducting the “**Brief Environmental Studies (BES)**” study for Construction and Operation of Administrative building of Hilihang Rural Municipality (RM) is as follows:

Name of proposal: **Construction of Administrative building of Hilihang RM**
Proponent Name: Hilihang Rural Municipality
Address: Panchami, Panchthar
Contact Person: Bikram Limbu
Contact no: 9852684477
Email: info@hilihangmun.gov.np

1.2 Name and Address of Consultant for Conducting BES

(Name of Consultancy) is the consultancy with qualified human resources in required fields. The firm is registered company as per governmental rules of Nepal. The proponent entrusted the company and assigned for conducting BES study for proposed project. Thus, the consultant conducted study and prepared this report. The contact address of consultant is as follows:

Name:
Address:
Team Leader:
Contact:
Email:




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1.3 Necessary Experts for Conducting BES Study

The team of experts will be made preparation of BES study as per the approved ToR. The proposed BES study team is as:

Table I: List of Experts for BES Study

Title of experts	Name of the specialists	Education
Environmental Expert Team Leader	MSc. Environment
Physical Development Expert	MSc.Artech/Civil/Mechanical/Geotech/Hydrology
Socio-economic Expert	MA Sociology/Economic
Agriculturist,Forest/Biodiversity	MSc
Civil engineer	B.E Civil

1.4 Objectives of ToR

The main objective of the Terms of Reference (ToR) are listed below:

- The main objectives of the ToR are to ensure follow of the BES reporting guidelines during report preparation.
- Review of Nepal Government rules, regulations, acts, and policies and their provisions regarding the construction of the rural municipal building.
- Ensure to follow all the processes, procedures, methodology, and tools to prepare a quality report as per the guideline.

1.5 Objectives of BES

The objectives of the BES are listed as below:

- To identify, predict and evaluate the potential impacts on the environment that may arise as a result of proposed works on the physical, chemical, biological, socio-economic, and cultural

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environment of the proposal area.

- To receive public feedback for safeguarding the natural environment with the least potential impact on its natural settings and also to adequately assess and document community requirements relating to socio-economic and cultural aspects in the project areas.
- To provide practical and site-specific environmental mitigation and enhancement measures
- To prepare environmental monitoring plan for the proposal.
- Recommend whether the BES is sufficient for the implementation of the proposed activities.
- To advise the decision makers to take necessary environment friendly actions to minimize the adverse environment impacts during the implementation of the proposed activities.




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CHAPTER II: GENERAL INTRODUCTION OF THE PROPOSAL

2.1 Background

In Nepal, where the whole landmass is covered with natural and cultural beauty and people with no high income, tourism plays a crucial role in terms of creating a job opportunity and providing them with an opportunity to earn for their livelihood. Tourism in Nepal is extremely important in context of economic stability of the country as well. Tourism is the backbone of Nepal. Depending upon where tourists visit or go, different form of tourism can be found throughout Nepal. People who love to seek thrill and adventure can go for the extreme tourism activities and people who are into wildlife can visit the national parks of Nepal or go hiking into the woods. That is why it is important for Nepal to preserve the natural and cultural beauty that they have in order to attract as many as tourists it can. For this purpose, the government of Nepal and the tourism industry of Nepal should focus on opening new tourism activities and renewing the tourism policy to regulate the activities in efficient and systematic manner.

The Administrative building was formerly built with The local level administrative building infrastructure development program operation procedure 2077 and Department of Urban Development and Building Construction has been prepared according to norms. From where all the villages and settlements can be easily reached.

The main objective of this project is to prepare architectural design, structural design, electrical and water supply design, detail cost estimate, analysis and specification of Administrative building of Hilihang Rural Municipality, Panchthar. The proposed building will be safe, reliable, cost effective, energy saving (aiming zero energy loss), well ventilated with adequate light, environment friendly, seismic resistant, differently-able people friendly, well equipped with parking, plumbing, drainage, and communication facilities.

Hilihang RM has proposed for BES preparation and to follow the report. It is a compulsion that the proponent will address the physical, biological, and social issues and implies the mitigation measures during the construction and operation phase of the office building. The proposed Administrative building will comprise Administrative building, Entrance Gate and Guard House.




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2.2 General Introduction

Eastern Region of Nepal is one of the richest regions with numerous probable tourist destinations. Bhedetar, Budhasubba, Dhankuta Bazaar, Illam Tea Estate, Pathivara, Halesi Dhaam have always been popular for tourist destination here. Recent endeavors towards identification of various other tourist sites have shed more lights in the campaign of making Eastern Region even more popular and beautiful. Panchthar, with lots of beautiful places along with many of religious values certainly carries enormous prospects within itself to lead the campaign.

In this campaign, as there is no administrative building in this rural municipality till now, the office is being operated in Ward No. 4 office. In order to facilitate the work of the office, the construction process of the administrative building is planned to move forward this fiscal year. This project is the result of a single effort.




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2.3 Project Location

The project area is located at Hilihang Rural Municipality, Panchthar district, Province-01. The RM covers about 123.01 square kilometer. The RM is one of the 8 Local Level Administration of Panchthar District. It borders with Kabeli in North, Phalelung Rural Municipality and Yangwarak Rural Municipality in East, Tamor River in West and Phidim Municipality in South. The Hilihang RM is formed after merging 4 earlier VDCs. The total population of the RM is 22954. The site is in the vicinity of newly opened road which is yet to be blacktopped.

Ward No. 4 out of 7 wards of Hilihang village municipality. There is a ward office. The Hilihang Darwar area of historical and archeological importance is located in this ward. Hilihang village is also named after the historical Hilihang Yonghang king. Hilihang village municipality ward no. No. 3 to the east of 4. Ward, Mridunga waterfall known as a tourist spot, Ward no. 1. Yangwarak village in the north and the river Tamor in the south. The main features of this region are agriculture and animal husbandry. In this area, especially in the form of cash crops, there are tomatoes, pickles, ginger and chillies. Especially from here, a lot of tomatoes are produced and exported commercially. There is even potential for tomato pocket in this area. Not only that, cattle breeding has also flourished in this ward.

Aggregate, sand can be obtained from Tamor, Kabeli river which is approximately 12 km to reach. Is The stone can be obtained from a nearby site. Cement and other construction materials including rods can be obtained from Phidim Bazaar about 45 km from the site. (Earthen Road)




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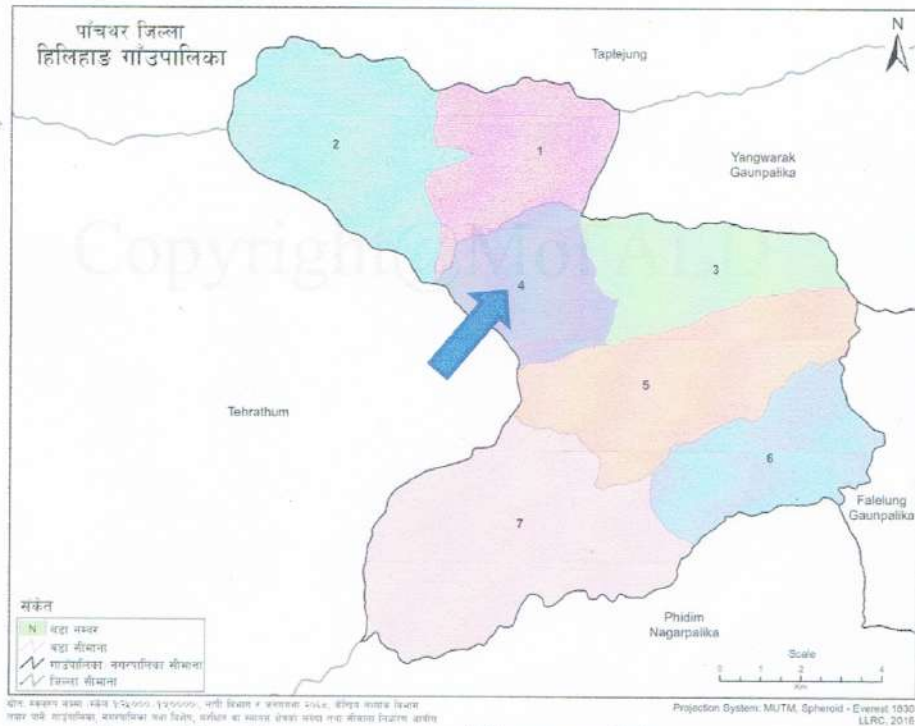


Figure 1: Location resource map of the proposed site

2.4 Objectives of the Proposal

The main objectives of the project are presented below:

The main objective of this project is to prepare architectural design, structural design, electrical and water supply design, detail cost estimate, analysis and specification of Palace Administrative building of Hilihang Rural Municipality, Panchthar.



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2.5 Relevancy of the Proposal

As per the provisions of Province No.1 Environment Protection Act (EPA) 2076 B.S and Environment Protection Regulation (EPR) 2077 B.S. Administrative building of Hilihang RM requires to conduct BES.

अनुसूची -१

(दफा ३ को उपदफा (४) सँग सम्बन्धित)

हिहिहाङ गाउँपाहिकाको अधिकार क्षेत्रका संभाव्य प्रस्ताविरुको वातावरणीय अध्ययनको सीमा (थ्रेसोल्ड)

आवास, भवन, बस्ती तथा शहरी विकास

वातावरणीय अध्ययनका विधि अनुसार अध्ययन गर्नु पर्ने आयोजना तथा कार्यक्रमको मापदण्ड

संक्षिप्त वातावरणीय अध्ययन ३००० देखि ५००० वर्गमिटर क्षेत्रफलसम्मको Built up Area वा Floor area भएको आवासीय, व्यावसायिक, वा आवासीय र दुवै प्रकृति भएको भवन निर्माण गर्ने । Thus administrative building of Hilihang RM requires to conduct BES.

2.6 Nature and Type of the Project

There are different types of building based on occupancy and based on storey and height. As per Nepal National Building Code 2015, **Group B: Assembly** Assembly building shall include any building or part of building, which is designed for gathering of 50 or more people. These shall include, theatres, cinema halls, auditorium, party palaces, exhibition halls, museums, gymnasiums, covered hall, conference and meeting halls (above 50 capacity) and other buildings or spaces within buildings where more than 50 persons are expected to assemble. Assembly buildings shall be subdivided into 2 groups Sub Group B1: Assembly buildings and spaces with capacity up to 500 people Sub Group B2: Assembly buildings and spaces with capacity above 500 people.

Besides this, 1.2.2 based on storey and height **Group S1: General Buildings Criteria - 1 to 5 Stories or below 16m** General buildings include those whose height are within reach of fire




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fighters ladders and hose streams. The height of the building is comfortable to travel without the use of lifts. This is by far the most common type of built form overall.

2.7 Salient Features of the Project

The salient features of the project are presented in **Table 2**.

Table II: Salient Features of the Project

Salient Features		Description
Name of the Project		Construction of Administrative building of Hilihang Rural Municipality
Address		Ward-4, Hilihang RM, Panchthar, Province-1
Geographical Location		27-14-36.54 N and 87-45-47.47 E; amsl 1555m
Geographical feature	Climate	Sub-Tropical Climate
	Geological Formation	Lesser Himalayan Zone
	Dominant Soil	Seti Formation
	Drainage	Poor
Distance from forest		within Administrative building protected area
Distance from densely populated area		200m to 500m
Distance from river		3 Km. Tamor River
Land Use		Private Forest of Administrative building
Land Ownership		Hilihang Rural Municipality
Building	Total Area Of Administrative building	3600.00 m ²

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Structure Details	Ground Floor	600 m ² Office Room-
	1 st Floor	600 m ² Office Room-
	2 nd Floor	600 m ² Office Room-
	3 rd Floor	600 m ²
	4 th Floor	31 m ²
Total Built Up Area		3600.00 m ²
No. of Toilets		11
Investment of Fixed Capital		NPR 9,76,52,606.23 (Contribution from GoN and RM)
Electricity		National Grid of NEA
Power system Backup		100 KVA Diesel Generator



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**CHAPTER III: DATA/INFORMATION REQUIRED FOR BES STUDY AND METHOD
FOR COLLECTION**

3.1 Data Required

Detail data and information on physical, biological, socio-economic, cultural, and environmental setting will be collected for establishing baseline conditions for BES study purpose. In general, these data and information include existing baseline information, nature of impacts due to project activities and location specific mitigation measures as suggested by the affected people.

3.2 Data Collection Method

The Province no.1 EPR 2077 and environmental guidelines will guide the methodology of the BES study. In general, data on physical, biological, and socio-economic and cultural environments of project affected area will be collected through secondary methods. During the field visit, primary data will be collected and data, information gathered from secondary sources will be validated. More specifically, data collection methods and tools (i.e. checklists, questionnaires, guidelines) that will be used by each domain of environment are briefly presented hereunder.

3.2.1 Desk Study

During the desk study, in addition to the review of environmental statutory legal provisions, BES manuals and guidelines, and project related documents will be reviewed in greater detail to come up with the project study requirements both at the desk level and field level. Information relating to project, particularly, the location of key project structures and facilities will be studied in 1:50,000 topographic maps to understand the bio-physical environment of the project. Similarly,

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Google images will be used to assess the project specific features. Published and unpublished literatures of the project area pertaining to biological, social, chemical, physical and cultural environments in the form of maps and reports etc. will also be collected from various sources and be reviewed to get information on the coverage of the studies and data gaps that need to be fulfilled during the field studies to accomplish the BES requirements.

With above secondary information at hand, discussions and consultation meetings will be carried out with the project design engineers for further verification of the proponent's understanding of the project location aspects, project construction & operation modalities, concentration of activities in the different periods of project construction & operation, etc. Design merits and demerits of the various alternative options of project development & operation will also be discussed for the selection of best alternatives on the environmental grounds.

The above understanding of the project and the project area's environmental status will pave the way for the development of checklists in different environmental sectors where information seems inadequate for further study of the project. Discussions will be held among the team of experts on the field methodologies to obtain the database required for the impact evaluation of the project. These exercises will help in the development of a sound foundation for the preparation of field study schedules and methodology to be used during field studies to come up with required data that will help to prepare BES report of the project.

3.2.2 Field Study

The field investigation will be carried out by a multidisciplinary team, comprising of a NRM expert, environment expert, engineer, and sociologist. The field survey will be assisted by the project engineers of the proponent. Field visit will be carried in order to collect the baseline




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information on physical, chemical, biological and socio-economic and cultural conditions of both direct impact zone as well as indirect impact zone of the study area.

The information on different environmental components will be collected by using the following methods.

3.2.2.1 Physical Environment

In order to collect the information on physical environment regarding various aspects of the physical environment of direct as well as indirect impact zones, checklist will be used during field survey. Geomorphic and topographic features will be observed and documented. Physical features comprising land use, soil, erosion and sedimentation will be observed, mapped and documented. Drainage pattern of the study area will be observed and documented. Even the geological ground of the study area will be mapped and documented.

Indirect assessment of air quality, sound level at project site will be carried to collect information on air quality and sound level of the project. Activities related to solid waste generation and also the provisions for the management with help of checklists in the field.

3.2.2.2 Biological Environment

In order to assimilate the information on effect of project on biological environment particularly flora and fauna, a walkover survey along with the interview with the key informants will be carried during field survey. During this walkover and interview, checklist as well as questionnaires will be used which are included in the annexes.

Floral Assessment




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The project area is located within forest ecosystem. Forest types, topography along with the study of tree/ shrub/ herb species of the project will be identified with help of scientific sampling methodology.

Faunal Assessment

Both direct as well as indirect methods will be used for the study of wildlife diversity, habitat and ecology of the study site. Along with direct observation, indirect method of study of animals and birds will be carried on the study area. Identification of pugmarks/ footprints, droppings/ pellets, ground digging and uprooting, tree scratching and marking, remains (skin, fur, feathers, bones, horns/ antlers and carcasses), nests, holes and burrows etc. will also be carried out to find out the faunal diversity of the study area. Additional information on animal movements will be obtained from discussions with stakeholders that will include local farmers, user groups etc.

3.2.2.3 Socio-economic and Cultural Environment

The following methods will be used to collect information on socio-economic and cultural HHs data including health, education, literacy, occupation, cultural sites etc. of the area. In order to analyze the obtained data, excel will be used.

- **Focus Group Discussion (FGD):** The FGD will be conducted in the study area. Local people, politicians, social workers, teachers, businessman, housewives, etc. will be included in the discussion.
- **Household Survey:** Structured questionnaires will be used to evaluate the socio-economic and cultural status of the households located to the project construction sites.

The cultural sites, religious sites, archeological / historical sites and other related aspects present in the study area will be studied and recorded with the help of the checklist during the field visit.

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Direct observation method will be used for the study of cultural and religious environment's studies and in order to verification of information related to the same topic; focal group discussions will be done.

3.3 Issues Analysis

After the collection of required information on environmental status of the study area, each environmental parameter will be examined against the project activities in the different stages of the project development using various methods and tools as per requirement. As per the National EIA guidelines, the possible issues will be categorized as direct and indirect. Issues will be further evaluated in terms of their extent as site specific, local or regional. On the basis of the duration of issues, issues will be categorized as short-term, medium-term and long-term. The magnitude of the issues will be analyzed as high, medium and low based on the conditions of the environmental parameter at present and estimated or projected damage with the project.

Predicted and identified impacts will be categorized as per the impact ranking methodology given by National EIA Guidelines (1993).

Table III: Impact Assessment Methodology

Type/Domain	Physical, Biological, Socio-economic and Cultural
Nature	Direct or Indirect
Magnitude or severity	High, Moderate, Low
Extent	Site-specific, local or Regional
Duration	Short-term, Mid-term or Long-term

After impact assessment, only significant impacts will be considered for further study. Method as provided in National EIA Guidelines (1993) will be used for assessing impacts.



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Table IV: Criteria for Impact Evaluation

Magnitude	Score	Extent	Score	Duration	Score
High/Major	60	Regional	60	Long-term	20
Moderate	20	Local	20	Mid-term	10
Minor	10	Site specific	10	Short-term	5

Table V: Significance of Impact

Total Score	Significance
More than 75	Very Significant
45-75	Significant
Less than 45	Insignificant

(Source: National EIA Guidelines, 1993)

Then the impact matrix will be made to analyze the severity and significance of those identified issues. Following will be the format of impact matrix.

Table VI: Impact Assessment Matrix

Impacts	Nature of impacts				Total score	Significance
	Nature	Extent	Duration	Magnitude		
Beneficial impacts						
Potential adverse impacts						

3.4 Stakeholder Consultation

During field visit, public and stakeholders' consultation meetings/workshops will be organized systematically by earlier notification /information to the stakeholders, beneficiaries and affected communities. To ensure maximum participation of local people, the key personnel and

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organizations will be mobilized for notification and information dissemination. The key stakeholders including community leaders, social works, school teachers, municipality representatives, and other organizations/ institutions/ NGOs, CFUGs, etc. will be notified earlier to participate in the stakeholders' consultation meetings/ workshops for large and diverse participation.

The purpose of organizing this type of meeting is:

- To interact with the concerned public and stakeholders
- For development of ownership towards the project
- To know their view on likely environmental issues and suggestions and advices need to be considered in the BES study.

During the consultation meetings views, concerns, opinions, ideas, and suggestions raised by affected public and stakeholders will be recorded duly. The views, concerns, opinions, ideas, and suggestions of the affected public and stakeholders will be treated as the main basis and sources of information for preparation of BES report.

Different places, dates, outcomes and number of participants in public consultation and interaction meetings will be presented as:

Table VII: Recording Schedule of Meetings/ Consultation

Place of meeting	Date	Outcomes of meetings (in brief)	No of participants



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3.5 Indicative Method and Technique for Issues Assessment

3.5.1 Environmental Aspects to be considered for Assessment

Both beneficial and adverse issues likely to trigger by the project will be considered during BES study. Issues will be categorized as physical, biological and socio-economic and cultural issues.

3.5.2 Issues Prediction Method

Issues prediction method will be used as per the nature of issues. Issues will be predicted on the basis of following methods:

- **Extrapolative method:** predictions on the basis of past and present data
- **Expert's experience and judgment:** past experience and knowledge of the experts

3.6 Other Requirements

Other requirements such as recommendation letters from concerned wards of municipality and user groups will be collected as per need of the study.




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CHAPTER IV: RELEVANT POLICIES AND PLANS, ACTS AND RULES, MANUALS AND GUIDELINES FOR THE BES STUDY

All relevant policies, plans, acts, rules, manuals/ guidelines etc. are listed below which will be further studied during BES study.

Table VIII: Relevant Rules, Policies and Standards

Constitution
➤ Constitution of Nepal
Relevant Acts
➤ Province 1 Environment Protection Act, 2076 BS
➤ Land Use Act, 2076 BS
➤ Land Reform Act, 2021
➤ Land Acquisition Act, 2034 BS
➤ Labor Act, 2074 BS
➤ Soil and Watershed Conservation Act, 2039 BS
➤ Forest Act, Province 1, 2077 BS
➤ Forest Act, 2076 BS
➤ Local Government Operation Act, 2074 BS
➤ Child Labor (Prohibition and Regulation) Act, 2056 BS
➤ Solid Waste Management Act, 2068 BS
➤ Building Act 2055 BS
➤ Control of International Trade of Endangered Wild Fauna and Flora Act, 2017

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Policies and Plans
➤ Approach Paper for 15th Plan (2076/77 -2080/81 BS)
➤ National Environment Policy 2076 B.S.
➤ National Biodiversity Strategy and Action Plan, 2071 BS
➤ Nepal Environment Policy and Action Plan, 2050 BS
➤ National Forest Policy, 2075 BS
➤ Land Use Policy, 2072 BS
➤ National Climate Change Policy, 2076 BS
➤ 1 st Periodic plan of province 1 2076/77-2080/81
Guidelines, Rules and Regulations
➤ Province 1 Environment protection Regulation, 2077 BS
➤ Environment Protection Rule, 2077 BS
➤ Forest Rule, 2051 BS
➤ Solid Waste (Management and Resources Mobilization) rules, 2070 BS
➤ Labor Rules, 2075 BS
➤ Building Rules 2066 BS
➤ Guideline to acquire forest land for other purpose 2063 BS
International Conventions and Treaties
➤ ILO Convention Article, 169 (Indigenous and Tribal Peoples Convention, 2046 BS)
➤ Convention on Biological Diversity, 1992
➤ UN Declaration on Rights of Indigenous Peoples, 2064 B.S.



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Standards/Codes
➤ Nepal National Building Code, 2077 BS
➤ National Ambient Air Quality Standard, 2069 B.S.
➤ National Drinking Water Quality Standard, 2062 B.S.
➤ Waste Water/Effluent Standard, 2060 B.S.
➤ Sound Quality National Standard, 2069 B.S.
➤ Standard on Emission for Diesel Generators, 2069 B.S.




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CHAPTER V: TIME, BUDGET AND REQUIRED EXPERTS FOR THE BES STUDY

5.1 Time Frame

The draft BES will be prepared within the time frame of 10 weeks and will be submitted to Hilihang RM, after the approval of the ToR. Tentative time frame for preparation of BES study report is as:

Table IX: Time Frame for BES Preparation

S. N.	Activities	Weeks									
		1	2	3	4	5	6	7	8	9	10
1	Review of literature and BES reports, preparation of checklist data collection										
2	Baseline data collection										
3	Report writing of ToR										
4	Process of Approval of ToR										
5	15 days public notice										
6	Field visit, and Preparation of BES report										
7	Report submission to RM										
8	Approval from RM										

5.2 Estimated Budget

Minimum budget will be allocated and made available for the BES study by the proponent.



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CHAPTER VI: ENVIRONMENTAL ISSUES DUE TO IMPLEMENTATION OF THE PROPOSAL

The environmental impact is considered any kind of change in the environmental condition due to the operational activities. The main objective of impact identification is to specify particular areas that are likely to be affected in the process of establishment and operation. The impact would be adverse or beneficial. The process of impact identification starts with screening/scalping on the basis of available data pertaining to the proper site. The methodology adopted for issues identification and prediction will be Checklists and Matrix method. The identified and predicted issues on physical, biological, socio-economic and cultural aspects of the environment will be evaluated by using standard methods and will be documented in BES report. The issues will be classified in terms of extent (site specific, local and regional), magnitude (low, medium and high) and duration (short term, medium term and long term). The likely issues will be assessed covering both adverse and beneficial issues. Any other adverse and beneficial issues and issues that are not identified or anticipated at this stage, if later discovered during BES study shall be duly incorporated in the report.

Based on the identification and prediction of the impacts, the suitable enhancement measures to maximize the project benefits will be explored. The issues are given below:

Construction Phase

Beneficial Issues

- Employment opportunities for local communities
- Business Promotion




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- Boost the local economy
- Enhancement of local facilities
- Economic enhancement of local people
- Conservation of Archeological Heritage

Potential Adverse Issues

Physical Environment

- Air pollution
- Use of energy, water and natural resources
- Changes in land use
- Soil Erosion
- Noise Pollution
- Construction waste and construction workers waste disposal
- Degradation of surface water quality
- Solid Waste Generation and Disposal
- Energy consumption and efficiency
- Spoil disposal

Biological Environment

- Impact on terrestrial habitat and biodiversity
- Cutting down the trees of the forest

Socio-Economic and Cultural Environment

- Increase in market development




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- Issues related to health and safety of construction workers
- Pressure on public utilities
- Disturbance on aesthetic environment
- Impact on neighboring infrastructures

Operation Phase

Beneficial Issues

- Employment Opportunities
- Roadside vending
- Increase in economic activities
- Increase on land and property value

Adverse Potential Issues on Operation Phase

Physical Environment

- Surface water pollution
- Noise pollution
- Wastewater generation, surface runoff and drainage
- Air pollution
- Solid waste generation
- Water demand and ground water depletion
- Water Logging

Biological Environment

- Impact on habitat for fauna, invertebrate and flora, impact on biodiversity
- Loss of tree species of forest




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Socio-economic and Cultural Environment

- Effect on public amenity services
- Change in population density and settlement
- Occupational health and safety
- Possible effects on neighboring infrastructures

CHAPTER VII: ALTERNATIVES FOR IMPLEMENTATION OF THE PROJECT

The major issues which need consideration will be discussed on BES report. General consideration before construction and implementation of the project will be as follows

7.1 Design

The design will be prepared on the basis of topography, geology and soil characteristics of the area. All the design will be prepared on the basis of building codes of Local as well as National government.

7.2 Project area

The Details of the project area will be discussed on Detailed BES.

7.3 Others

Technology and operation methods

The project requires simple technology. No advance technology will required for this project.

Time table

All the construction work will be done only during day time. During operational phase the building construction works will be operated as per the Government Rule.




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Construction Materials

The construction materials for the building are bricks, cement, marble, riverbed materials, glass, paints, and wood etc. The materials will be purchased from local market or from international market. Based on the availability and market value the demand of construction materials can be fulfilled.

CHAPTER VII: ENVIRONMENTAL MITIGATION MEASURES

The BES study will propose site-specific benefit augmentation and cost effective and pragmatic mitigation measures for all perceived adverse issues of the identified environmental issues for construction and operation phase to minimize the adverse environmental issues and maximize the beneficial issues of the project implementation. The benefit augmentation and mitigation measures will be selected based upon appropriateness and cost analysis and these will be suggested for the operation phase of the project. Mitigation measures will be proposed for the issues on physical, chemical, biological, socio-economic and cultural environment.

A mitigation and enhancement matrix will be prepared for construction and operation phase showing the environmental issues, impacts, mitigation measures to address the impacts, agency responsible for implementation, implementation schedule and mitigation cost in tabular form.

Table X: Format for Mitigation Measures Matrix

S.N.	Physical Environment Issues	Impacts	Mitigation Measures	Mitigation Cost (NRs.)	Responsible Agencies
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S.N.	Physical Environment Issues	Impacts	Mitigation Measures	Mitigation Cost (NRs.)	Responsible Agencies
1. Construction Phase					
2. Operation Phase					




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CHAPTER IX: ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

The Environmental Management Plan (EMP) shall be prepared in detail. The plan shall include all identified/predicted impacts, mitigation and enhancement measures specific to each identified impact or benefit, organization responsible for the implementation of the measures and monitoring activities, schedule, cost and mode of co-ordination with the line agencies, and local people. The plan shall also include the monitoring procedure/ protocol, especially the mechanism for compliance monitoring by spelling out the responsibilities of each concerned stakeholder.

EMP will include detail information on Landuse Management plan, Solid Waste Management plan, Grievance redress management plan, Natural Resource Management Plan etc. during the BES study.

A Monitoring Plan will also be developed identifying the key indicators and parameters to be monitored including methods, schedule, responsible organization, budget, and support services to carry out the monitoring during construction as well as in operation and maintenance stages. In addition, the monitoring plan will also specify what action will be taken and by whom, in the event that the proposed mitigation measures fail, either partially or totally, to achieve the level of environmental protection expected. Environmental monitoring plan will include baseline monitoring, compliance monitoring, and impact monitoring to:

- check implementation of mitigation measures
- act as an early warning system
- be a continuous measurement process

The following will be format of a monitoring plan in BES report.




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Table XI: Format for Monitoring Plan

Parameter	Location	Method	Indicator	Schedule	Responsible for Monitoring		Remarks
					Responsible implementation agency	Responsible monitoring agency	




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CHAPTER X: MISCELLANEOUS

References, annexes, maps, photos, tables, charts and questionnaire as relevant and applicable shall be included in the report. Similarly, the report will also include public notice, list of person contacted, recommendation letters from the local government authorities, schools and any other available community organizations. The proponent will comply with all requirements as mentioned in the EPR, 2077 before submitting the BES report for necessary approval. The BES report will be prepared considering the Schedule 12 of EPR, 2077 and the following format will be adopted for the report preparation.

1. Name and address of Proponent
2. Summary of the Project
3. Project Description
4. Environmental Impacts
5. Alternative analysis
6. Environmental Enhancement and mitigation measures
7. Environmental Monitoring plan
8. Conclusion




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Central Bureau of Statistics (2011). National Population and Housing Census 2011, National Report. Kathmandu: CBS

National Environmental Impact Assessment Guidelines 1993. National Conservation Strategy Implementation Project, 1994. Environmental Impact Assessment Guidelines 1993 Kathmandu.

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