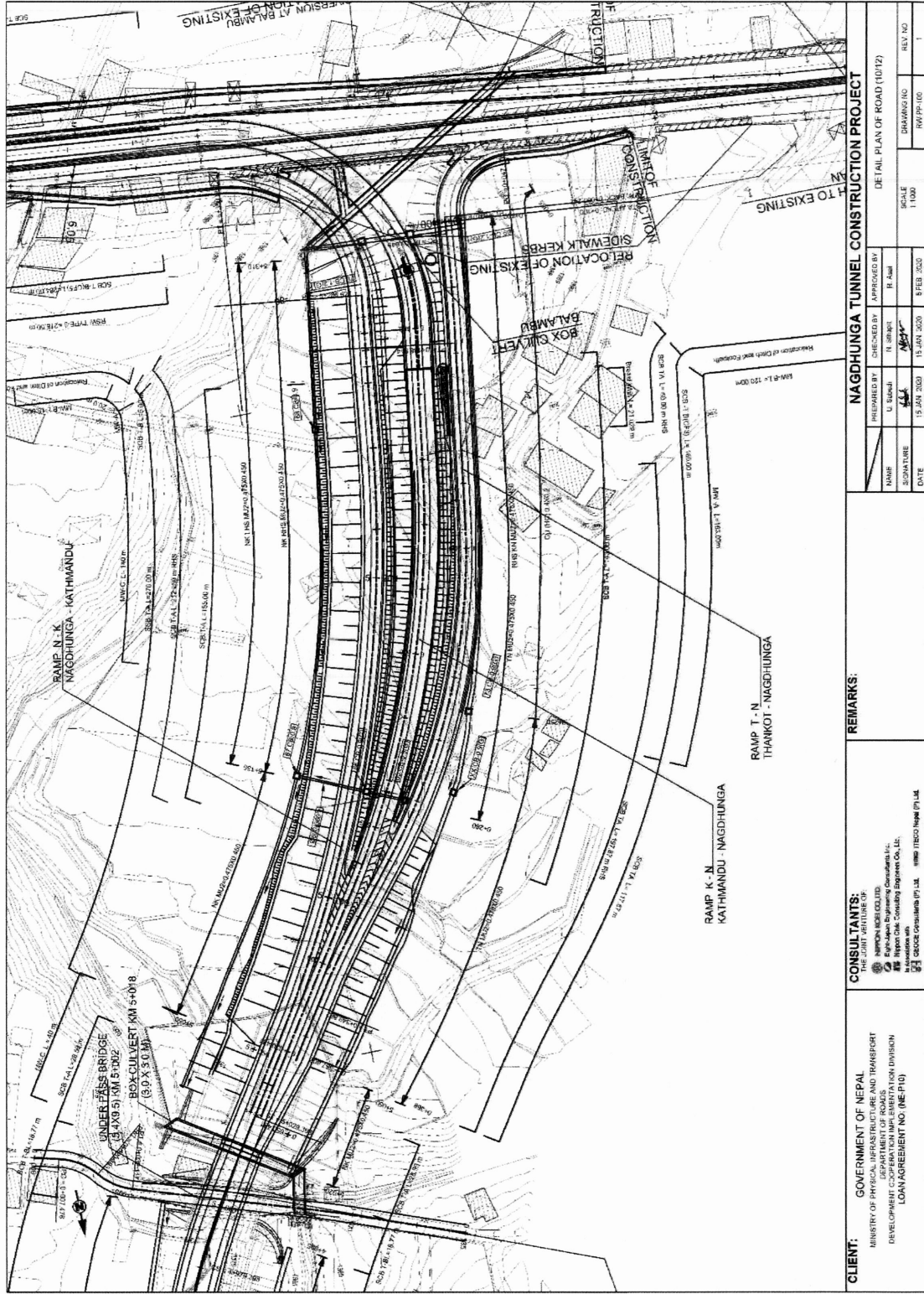
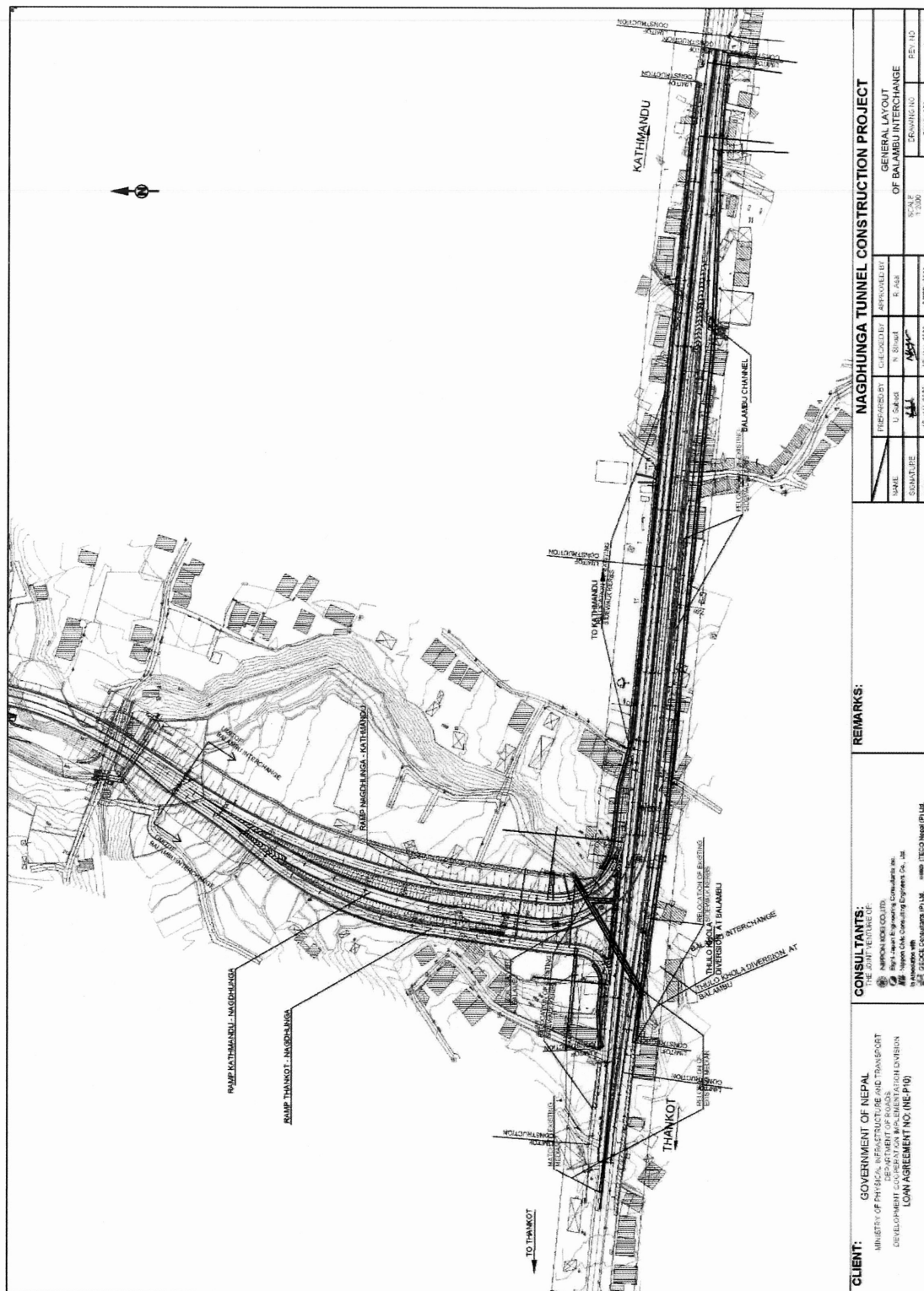
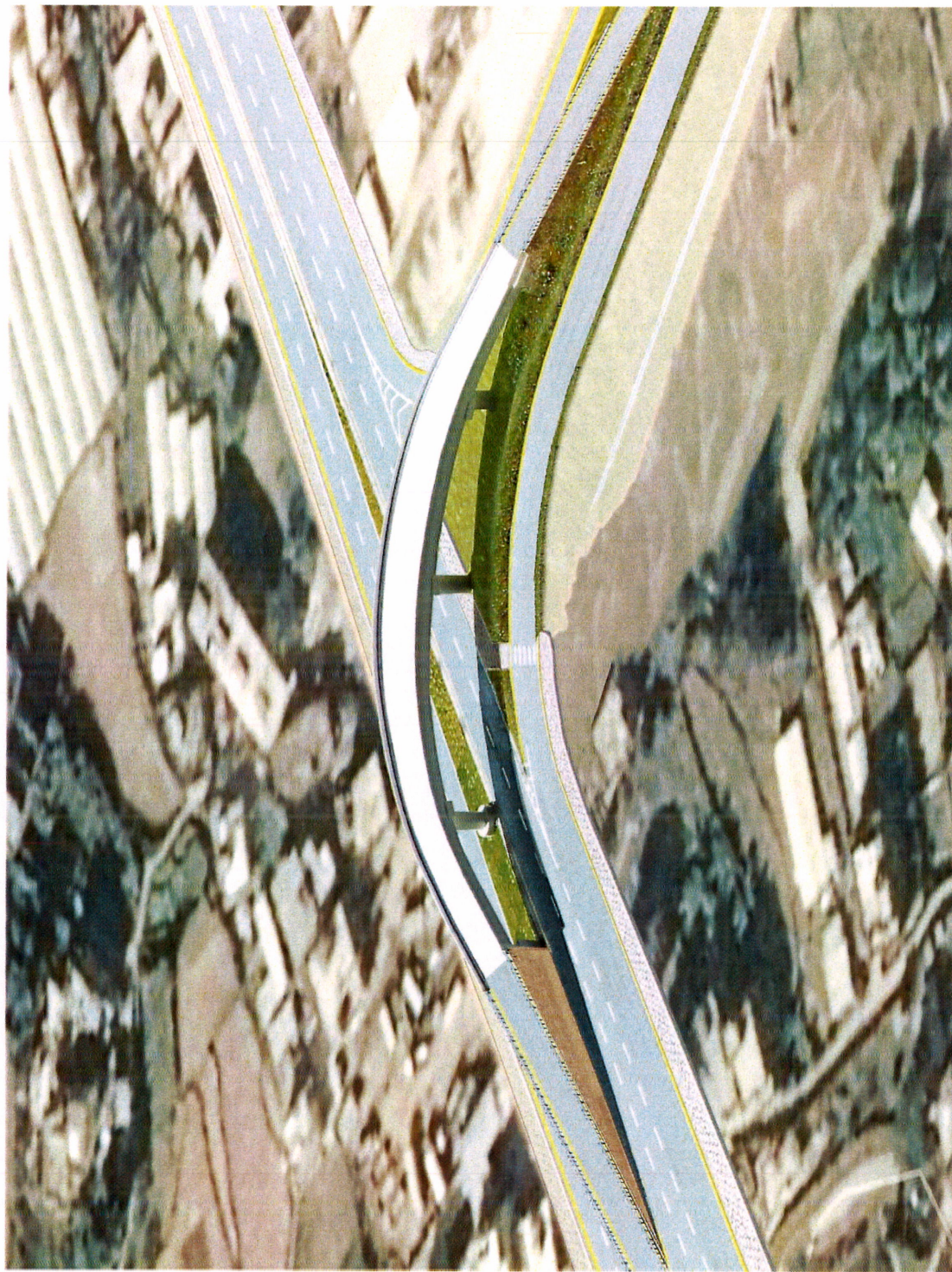


Annex 1: Maps related to projects









Annex 2: Copy of Approved Term and Reference



Government of Nepal
Ministry of Physical Infrastructures and Transport (MoPIT)
Singhadurbar, Kathmandu
Nepal

**Terms of Reference (TOR) for Initial Environmental
Examination (IEE) of Kisipidi Flyover Component
Kathmandu, Bagmati Province**

Submitted through
Geo-Environment and Social Unit (GESU)
Department of Roads
Babarmahal, Kathmandu
Nepal

<u>Proponent</u>	<u>Prepared by</u>
Department of Roads (DoR) Nagdhunga Tunnel Construction Project (NTCP) Babarmahal, Kathmandu, Nepal P.O. Box No. 44657 Phone/ Fax 977-1-4310193 Email: nagdhungatcp@gmail.com	Joint Venture of NIPPON KOEI CO., LTD., EIGHT-JAPAN ENGINEERING CONSULTANTS INC. and NIPPON CIVIC CONSULTING ENGINEERS CO., LTD. In Association with GEOCE Consultants (P) Ltd. and ITECO Nepal (P) Ltd

December, 2024



Table of Contents

List of Tables.....	iv
List of Figures	iv
Acronyms and Abbreviations.....	v
1 NAME AND ADDRESS OF THE PROPONENT AND INSTITUTION RESPONSIBLE FOR CONDUCTING IEE.....	6
1.1 PROPONENT	6
1.2 NAME OF CONSULTANT PREPARING TOR	6
2. PROPOSALS	7
2.1 GENERAL INTRODUCTION	7
2.2 RELEVANCY OF THE PROJECT	8
2.3 OBJECTIVES OF THE PROJECT	8
2.4 RATIONALITY OF IEE.....	8
2.5 OBJECTIVES OF IEE	8
2.6 OBJECTIVES OF TOR	9
2.7 PROJECT DESCRIPTION	9
2.7.1 OVERVIEW	9
2.7.2 SALIENT FEATURES.....	12
2.7.3 PROJECT AREA DELINEATION	13
2.8 EXISTING ENVIRONMENT OF PROJECT AREA	14
2.8.1 PHYSICAL ENVIRONMENT.....	14
2.8.2 BIOLOGICAL ENVIRONMENT	15
2.8.3 SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT.....	16
2.8.4 CHEMICAL ENVIRONMENT.....	17
3.1 DATA REQUIREMENT FOR THE STUDY	18
3.1.1 PHYSICAL ENVIRONMENT.....	18
3.1.2 BIOLOGICAL ENVIRONMENT	18
3.1.3 SOCIO-ECONOMIC ENVIRONMENT.....	18
3.1.4 CULTURAL ENVIRONMENT	19
3.1.5 CHEMICAL ENVIRONMENT	19
3.2 PROCEDURE FOR DATA COLLECTION	19
3.2.1 LITERATURE REVIEW.....	19
3.2.3 FIELD STUDY	19
3.2.4 PUBLIC HEARING AND PUBLIC NOTICE.....	21
3.3 DATA ANALYSIS	22
3.3.1 IMPACT IDENTIFICATION AND PREDICTION	22



3.4	REPORT PREPARATION AND PRESENTATION	22
4.	REVIEW OF RELEVANT CONSTITUTION, PLANS, POLICIES, ACTS, RULES, REGULATIONS, GUIDELINES AND ENVIRONMENTAL STANDARDS.....	23
4.1	REVIEW OF CONSTITUTION	23
4.2	PLANS AND POLICIES	23
4.3	ACTS AND REGULATIONS	23
4.4	GUIDELINES	24
4.5	ENVIRONMENTAL STANDARDS	24
4.6	INTERNATIONAL TREATY	24
5.	REQUIRED TIME, STUDY TEAM AND BUDGET FOR IEE	25
5.1	TIME SCHEDULE	25
5.2	NECESSARY EXPERTS	25
5.3	ESTIMATED BUDGET	27
6.	SPECIFIC IMPACTS OF THE IMPLEMENTATION OF THE PROPOSAL ON THE ENVIRONMENT.....	28
6.1	BENEFICIAL IMPACT.....	28
6.2	Adverse Impact.....	28
6.2.1	Physical Environment	28
6.2.2	CHEMICAL ENVIRONMENT.....	28
6.2.3	BIOLOGICAL ENVIRONMENT.....	29
6.2.4	SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT.....	29
7.	ALTERNATIVES OF THE PROPOSAL	30
7.1	DESIGN	30
7.2	PROJECT SITE.....	30
7.3	PROCESS, TIME SCHEDULE	30
7.4	RAW MATERIAL TO BE USED	30
7.5	OTHERS	30
8.	MATTERS CONCERNING THE PREVENTION OF THE IMPACT OF THE IMPLEMENTATION OF THE PROPOSAL ON THE ENVIRONMENT.....	31
9.	MATTERS TO BE MONITORED WHILE IMPLEMENTING OF THE PROPOSAL	33
10	OTHERS NECESSARY MATTERS	33
10.1	IEE REPORT FORMAT	33
10.2	OTHER DELIVERABLES	33
	References.....	34
	ANNEXES	i
	ANNEX I Household Survey Questionnaire	ii



ANNEX II Structure Loss Inventory Form.....	ix
ANNEX III Trade Loss Inventory Form.....	x
ANNEX IV Public Structure Inventory for Pole	xi
ANNEX V Format of Public Notice	xii
ANNEX VI No Objection Letter from JICA	xiii
ANNEX VII Letter from DCID for IEE Study of Kisipidi Flyover Construction Project	xiv
ANNEX VIII Field Visit Pictures	xv

List of Tables

Table 1: Salient features of the project	12
Table 2: Project area delineation of the project.....	14
Table 3: Time Frame for IEE of Kisipidi Flyover	25
Table 4: Study Team for IEE of Kisipidi Flyover.....	26
Table 5: Layout of Impact Analysis	29
Table 6: Layout of Table for Augmentation Measures of Beneficial Impacts	32
Table 7: Layout of Table for Mitigation Measures of Adverse Impacts.....	32
Table 8: Layout of Table for Summary of Estimated Budget for Augmentation Measures of Beneficial Impacts and Mitigation Measures of Adverse Impacts	32

List of Figures

Figure 1: Proposed Kisipidi Flyover at Intersection of NTCP	7
Figure 2: Location map of (1) Nepal showing affected Kathmandu District (2) Kathmandu district showing affected Chandragiri Municipality (3) Khisipidi Flyover design in topo map	10
Figure 3: Proposed Kisipidi (Balambhu) Flyover at Intersection of NTCP.....	11



Acronyms and Abbreviations

CBS	Central Bureau of Statistics
CDC	Compensation Determining Committee
DCID	Development Cooperation Implement Division
DOR	Department of Roads
EIA	Environment Impact Assessment
EMAP	Environment Management Action Plan
EMoP	Environment Monitoring Plan
EPA	Environment Protection Act
EPR	Environment Protection Rules
GESU	Geo-Environment and Social Unit
IEE	Initial Environment Examination
JICA	Japan International Cooperation Agency
MoPIT	Ministry of Physical Infrastructure and Transport
NTCP	Nagdhunga Tunnel Construction Project
ROW	Right of Way
TRP	Tribhuvan Raj Path
TOR	Terms of Reference
DIZ	Direct Impact Zone
IIZ	Indirect Impact Zone
ZOI	Zone of Influence



1 NAME AND ADDRESS OF THE PROPONENT AND INSTITUTION RESPONSIBLE FOR CONDUCTING IEE

1.1 PROPONENT

Nagdhunga Tunnel Construction Project (NTCP) under Development Cooperation Implementation Division (DCID) of Department of Roads (DoR) is the implementing agency for the Nagdhunga Tunnel Construction. The proposed flyover is being a part of Nagdhunga Construction, the proponent for this IEE study is NTCP. The report is submitted through Geo-environment and social Unit (GESU) of Planning and Monitoring Branch, Planning Monitoring and Evaluation Unit of Department of Roads (DoR). Name and Address of the proponent is as follows:

Ministry of Physical Infrastructure
Department of Roads (DOR)
Nagdhunga Tunnel Construction Project (NTCP)
Babar Mahal, Kathmandu Nepal.
Phone: 977-1-5261024
Email: nagdhungactp@gmail.com

1.2 NAME OF CONSULTANT PREPARING TOR

The joint venture of Nippon Koei Co Ltd, Japan, Eight Japan Engineering Consultants Inc, Japan and Nippon Civic Consulting Engineers Co. Ltd Japan in association with GEOCE Consultants (P) Ltd, Kathmandu and ITECO Nepal, Kathmandu is the nominated Engineer for the Construction of Nagdhunga Tunnel Construction. The Engineer is also responsible for preparing IEE study as per the EPR of Nepal. As the project is being funded by the JICA. The IEE Study will also has to comply with JICA environmental safeguard guideline.

Address of the Consultant:

Joint Venture of

NIPPON KOEI CO., LTD.,



NIPPON KOEI CO., LTD. Japan



EIGHT-JAPAN ENGINEERING CONSULTANTS INC, Japan



NIPPON CIVIC CONSULTING ENGINEERS CO., LTD., Japan

In Association with



GEOCE Consultants (P) Ltd., Kathmandu, Nepal



ITECO Nepal (P) Ltd, Kathmandu, Nepal

Phone: 01 4310193

Email: jv-nk.ejec.ncc@nkntcp.com.np



2. PROPOSALS

2.1 GENERAL INTRODUCTION

The Terms of Reference (TOR) has been prepared to conduct the initial Environment Examination (IEE) of the proposed Khisipidi Flyover Components in accordance with Schedule -2(Pertaining to Rule 3) of the Environment Protection Rules 2077 (EPR 2077)

Nagdhunga Tunnel Construction Project (NTCP) is planned to improve road alignment of existing Tribhuvan Raj Path (TRP) to reduce travel time and improve safety of traffic. The proposed NTCP starts at Ch 8+300 of TRP at Kisipidi, Balambu. The proposed NTCP comprised of 2.630 km of dedicated tunnel access road at the east (including 613 m Flyover), 2.688 km of tunnel and 0.565 km dedicated access road at the west. The Environmental Impact Assessment (EIA) report of the NTCP was approved by then Ministry of Science, Technology and Environment (MoSTE) on June 2014. The detailed design of Kisipidi Flyover was completed and approved on February 9, 2020. The construction of the project commenced from November 13, 2019. In order to ease the traffic movement between the tunnel access road and existing TRP, a Flyover is introduced at Kisipidi, Balambu. The Kisipidi Flyover (Figure. 1) is one-way which aims to give the pathway for vehicles coming from Kathmandu to move toward the tunnel entrance portal.



Source: Feasibility Study of Nagdhunga Tunnel Flyover Section

Figure 1: Proposed Kisipidi Flyover at Intersection of NTCP

In order to accommodate the Flyover, the existing TRP road will have to be realigned. There will be a ramp at the side of flyover for vehicles coming from Nagdhunga to move towards the tunnel approach road. There will be another ramp at another side for vehicles coming from the tunnel approach road toward Kathmandu. The total length of the Flyover is 613 m. The bridge

of Kisipidi Flyover will be of 7.50 m width and 128 m length. The project lies in Chandragiri Municipality ward no. 5 of Kathmandu district in Bagmati Province.

2.2 RELEVANCY OF THE PROJECT

An IEE of the proposed Kisipidi Flyover is necessary in order to assess the environment consequences of the proposed flyover construction and operation activities and to suggest appropriate practice and site specific mitigation and enhancement measures. The main objective of the NTCP is to ease the traffic movement in TRP which is main highway leading in/out of Kathmandu. The proposed intersection at Kisipidi between the NTCP road and TRP was a level crossing. Since the number of vehicles passing will be high at most of the time, there will be traffic congestion during the divergence of vehicles at the level crossing. Along with that, there will be high risk of road safety. To ensure the road safety and flow of vehicles without any disturbance moving to and from Kathmandu to the tunnel, Kisipidi flyover is proposed at the intersection.

2.3 OBJECTIVES OF THE PROJECT

The objective of this proposal is to comply with the Environmental Protection Rules (EPR) of Nepal 2077. The main objective of Kisipidi Flyover is to serve as the access for vehicles coming from Kathmandu side towards the tunnel approach road.

2.4 RATIONALITY OF IEE

The Initial Environmental Examination (IEE) is mandatory obligatory due to EPR 2077, schedule 2 (Gha) road sectors (6) pertaining to rule 3 which states the requirement of IEE for the construction of flyover for the operation of 4 wheel vehicles.

The project is not located in any of the protected areas such as national parks, conservation areas, wildlife sanctuaries, buffer zones, wetlands, historically and archaeologically important sites, or any other environmentally sensitive and/or fragile areas. Hence, IEE level of the study would be sufficient to comply with EPR 2077.

This TOR is prepared as per the format specified in Schedule 7 pertaining to Rule 5.1.b of EPR, 2077 and Template for IEE of Roads and Bridges given by GESU, DOR.

This TOR is prepared in English following the rule stated in Rule 7 of sub rule 8 of EPR, 2077 which allows the documents to be prepared in English language for the project funded by foreign investment.

2.5 OBJECTIVES OF IEE

The main objective of IEE of Kisipidi Flyover Construction Project is to safeguard the different aspects of environment along the construction and operation of the project. The objectives of IEE of this proposal are listed below:

- i. To collect baseline information on physical environment, biological environment, socio-economic and cultural environment and chemical environment of the project area.
- ii. To assess, analyse and evaluate the project beneficial and adverse environment impacts.
- iii. To collect and implement necessary enhancement measures for beneficial impacts and mitigation measures for adverse impacts.
- iv. To prepare and implement Environmental Management Action Plan (EMAP) and Environmental Monitoring Plan (EMoP).
- v. Provide an opportunity of public involvements in the planning stage of the projects.
- vi. Define the institution frameworks required for the execution of monitoring and management programs.



- vii. To be certain if IEE is enough or not for the project implementation.

2.6 OBJECTIVES OF TOR

The main objective of the ToR is to guide on preparation of the subsequent Initial Environment Examination (IEE) study and to provide a comprehensive and coherent IEE report as per the Environment Protection Act, 2076 (EPA 2076) and Environment Protection Rules, 2077 (EPR 2077).

The specific objectives of the Tor are:

- i. Delineation of scope of work for IEE, The potential environment issues that need further evaluation in terms of impact significance, mitigation actions, monitoring plan and overall environmental management during project development and operation.
- ii. Identify the major issues that may arises as a result of proposed work on bio-physical, socio-economic and cultural environment of the project area.
- iii. Systematizing the IEE working procedures in compliance with the EPA 2076, EPR 2077 and other sectorial policies and legislations.
- iv. Accomplishing the IEE study in the stipulated timeframe with professional skills.

2.7 PROJECT DESCRIPTION

2.7.1 OVERVIEW

The Kisipidi Flyover will be constructed in Bagmati Province, Kathmandu district at Chandragiri Municipality ward no. 5. The Flyover is a component of NTCP to connect the TRP towards the eastern approach road of the Nagdhunga Tunnel. The Flyover will be constructed in existing TRP at Kisipidi intersection. The Flyover is expected to reduce the traffic of the movement of vehicles plying the TRP and ensure safety of vehicles while passing to the tunnel approach road. The location map of Kisipidi Flyover is given in Figure 2. The proposed flyover is presented in Figure 3.



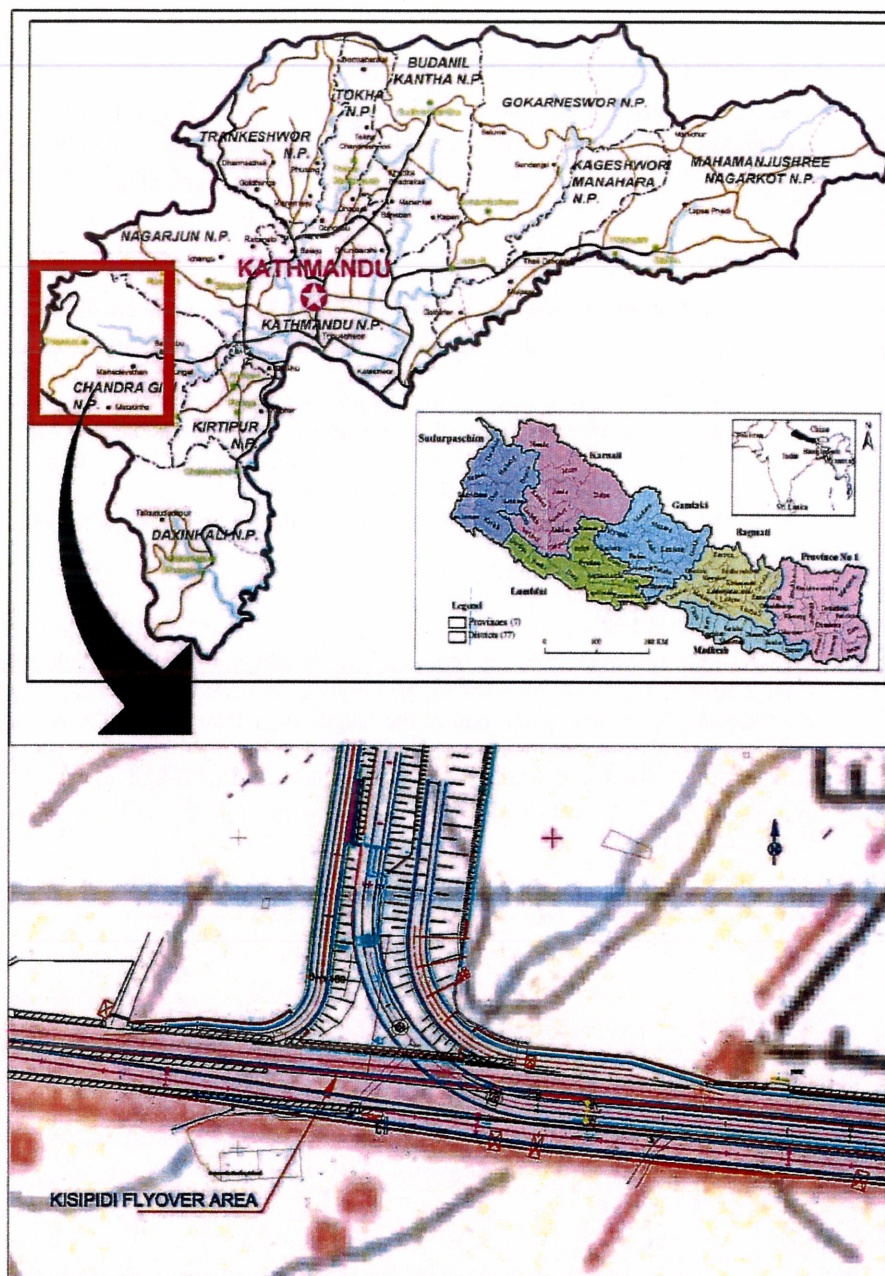
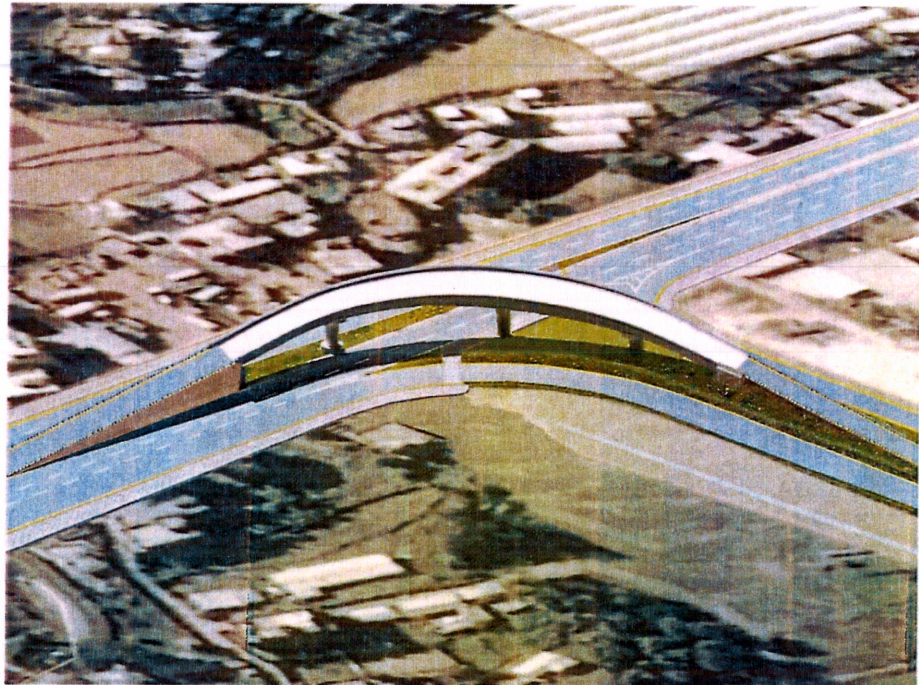


Figure 2: Location map of (1) Nepal showing affected Kathmandu District (2) Kathmandu district showing affected Chandragiri Municipality (3) Kisipti Flyover design in topo map



Source: Feasibility Study of nagdhunga tunnel Flyover Section

Figure 3: Proposed Kisipidi (Balambhu) Flyover at Intersection of NTCP



2.7.2 SALIENT FEATURES

The salient features of the project are given in Table 1.

Table 1: Salient features of the project

NAME OF THE PROJECT	NAGDHUNGA TUNNEL CONSTRUCTION PROJECT (IEE OF KHISIPIDI FLYOVER COMPONENTS)
1.Geographical Location	
Province	Bagmati
District	Kathmandu
Start Point Coordinate	Easting (X) – 622494.391 m Northing (Y) – 3063885.265 m
End Point Coordinate	Easting (X) – 622143.594 m Northing (Y) – 3063997.307 m
Influenced Municipality	Chandragiri Municipality
Major Settlement	Kispidi
Geological Feature	Kalimati Formation
Climatic Condition	
Type of Soil	Silty clay, Clayey layer, fine to medium grained sand
2.Road Characteristics	
Type of Road	National Highway Class II
Highway Code	H02
Present Surface of the Road	<i>Black Top(Asphalt Concrete) at THW Section</i>
Design Speed	60 km/h
Right of Way (ROW)	50 m
3.Flyover Details	
Length of Flyover	128 m
Type of Flyover	<i>Shinsho Pile and Steel Girder and Ramps</i>
Formation Width	9 m (at Flyover section)
Carriageway Width	7.5 m
Shoulder Width	None, Concrete Kerb 0.75 m
Maximum Gradient	5 %
Camber	2.5 %
4.Ramp Details	
i) Kathmandu-Nagdhunga Tunnel	502 m
ii.Nagdhunga-Kathmandu	364 m
iii.Thankot-Nagdhunga Tunnel	368 m
iv.Kathmandu Thankot (Existing THW)	682 m
5.Drainage System	

i.Masonry Drain	872 m
ii.Concrete Cover Drain	898 m
6.Earthwork	
Soil Excavation	1,968 cum (including Ramp)
Soil Filling	46,900 cum (including Ramp)
7.Major Construction Materials For Ramp and Flyover	
Structural Steel	358 ton
Concrete Works	1,134 cum
Reinforcement Steel	260 ton
Base Course	4,154 cum
Sub-base Course	6,150 cum
Wearing Course($t=50$ mm)	960 sqm (except Ramp)
8.Cost of the Project	
i. NRs.	83,900,186.45
ii.US\$	1,746,817.75
iii.JYEN	109,796,363

Source: Design Report of Kisipidi Flyover, 2076

2.7.3 PROJECT AREA DELINEATION

Project site as well as environmental impacts that could be caused due to project construction and implementation on physical, socio-economic and biological aspects is defined as impacts components. Adverse and beneficial impacts are expressed on the basis of proximity of activity and magnitude of impacts. Based on the environmental impacts of the project, the project-affected areas are classified in Table-2.

- Direct Impact Zone (DIZ):

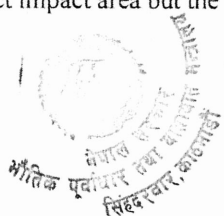
This project impact area includes all the areas where activities related to flyover construction will take place. This area shall be studied in detail regarding the impacts on physical, biological as well as socio-economic cultural and chemical environment. The area within the 50m (25m on either side from the center line of TRP) includes structures to be demolished, drain/ shoulder, slope, ramp for flyover which are required for construction and project temporary facilities are included in DIZ. .

- Indirect Impact Zone (IIZ):

If occurs when the effect of project activity on one components produces repercussions on other components. The direct zone does not include any indirect or secondary impacts on environment. So it includes, ward of the municipalities/RMs and 250 meter either side of flyover and 500 meter before the start of ramp to flyover in which the project is implemented.

- Zone of Influence (ZOI):

The area affected directly or indirectly by the various construction and operational activities of the proposed flyover project is the zone of influence. It not only includes the area under indirect impact area but the ward, rural municipality where the project activity takes place.



It would affect the socio-economic status of the people of the project area and the surrounding environmental conditions along the flyover area. This is referred as the combination of impacts of the whole projects of affected municipality.

The project is a short span flyover but the existing road needs to be extended at both side for regular flow of vehicles which requires land acquisition and demolition of existing structures. The impact zone of the project delineation is presented in Table 2.

Table 2: Project area delineation of the project

S.N.	Category	Area Delineation
1.	Direct Impact Zone (DIZ)	Construction area (TRP at Ch. 8+300) 50 m either side of the construction area (includes structures to be demolished) Total of 4,853.39 square meter land will be affected. Public land (27 parcels) and Private land (114 parcels of 85 households) Assets of 92 households 56 structures *Detail in final IEE report
2.	Indirect Impact Zone (IIZ)	250 m either side of the flyover 500 m before the start of ramp to flyover
3.	Zone of Influence (ZoI)	Chandragiri Municipality

2.8 EXISTING ENVIRONMENT OF PROJECT AREA

2.8.1 PHYSICAL ENVIRONMENT

(i) Topography

Chandragiri municipality lies in the southwest of Kathmandu valley. The land use pattern in the project area is mostly for settlement. The climate of the project area is subtropical. The maximum temperature is 43°C in summer and minimum temperature is 5.6 °C in winter; about 80% of the rainfall occurs from June to September. In the dry season, the Northwest wind brings dry and cold wind bearing little moisture and accounts for the remaining 20% of the annual rainfall. The rain fall pattern can be varied from place to place due to diverse and multifaceted geographical settings (average annual precipitation 2812 mm).

(ii) Geological Description

The project area consists of Kalimati formation. From the drilling report provided by the Contractor, Hazma Ando Cooperation (HAC), up to 30 m and 101.5 m in total at five boreholes reveals that the horizon consists of the five layer sediments. The first layer between 0 m to 4.50 m below ground level consists of brown to black micaceous silty, clay, and occasionally dominated by organic clayey layer. The second layer consists of firm to stiff grey silty clay with fine sand and occasional grains of muddy fine sand at the depth of 4.5 m to 6 m. The third layer consists of variously colored (Grey to yellowish brown) silty clay with appreciable amount of silty layer along with the thin lamina of the dark grey organic clay observed frequently to a depth of 6m to 9m. Fourth layer, 9 m to 21 m, consists of grayish colored fine grained silty sand with thick clayey to silty layer at the depths of 17 m to 19 m and 20 m to 21 m. The fifth layer, to the depth of 30 m consists of firm and moist grey to black mixtures of silty clay. Thin lamina of dark grey organic clay is also observed in between the layer.

No any heritage site or any environmentally sensitive area is present in DIZ and IIZ area.

2.8.3 SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

(i) Population, Sex Ratio, Household Size, Ethnicity, Literacy and Migration

According to the population census of Nepal by Central Bureau of Statistics (2011), the population of ward no. 5 of Chandragiri Municipality is 4838 with household size of 4.2 and population density 41.3 persons per hectare. The total population of male and female is 2427 and 2411 respectively with sex ratio (in 1000 female) 100.66. The household size is 4.2. The Newar comprises 29.21 % of total population i.e. highest percentage in Chandragiri Municipality followed by Chhetri (23.39 %), Brahmin (15.49 %), Tamang (10.99 %) and so on. The total literacy rate of Chandragiri is 80.38 as per census of 2011. The vital registration data of the municipality dated 2075 shows 84.03 % of in-migration and 15.97 % of out – migration.

(ii) House land and production, Income and Income source, Occupation, household facilities

Among 20,532 households of Chandragiri Municipality, 10,452 are involved in business followed by 7,198 in service, 1243 in agriculture, 760 in foreign employment, 645 in wages, 81 in poultry, 73 in livestock, 67 in industry and 13 in fishery.

(iii) Physical Scenario

The municipality has one national highway and three feeder roads. The TRP of total length 14.16 km passes through this municipality. The CBS (2011) data showed 67.2% of total households have piped connection for drinking water. There is no proper sewerage network in Chandragiri Municipality. The rivulets present in the project area have been degraded by direct dumping of sewages into the rivulet. The electricity line in this municipality has been connected with the national grid. 97.3 % of the total households use electricity as source of light as per CBS, 2011.

Source: ERM, 2076

(iv) Economic Scenario

Chandragiri Cable Car has become the main and popular asset of the municipality. The preliminary result given by National Economic Census in 2018 showed 7005 establishment in the municipality (ERM, 2076). The major tourism spot in ward no. 5 of Chandragiri Municipality is Kisipidi Gaun.

Source: ERM, 2076

(v) Cultural Scenario

The census of 2011 shows 79 % of total population of Chandragiri Municipality follow Hindu religion followed by 10.5 % of Buddhist religion. The major festivals celebrated in this municipality are Dashain, Tihar, Ram Nawami, Shivaratri, Chaite Dashain, Kushe Aunsi, Krishna Janmastami etc. while Maha Puja, Sity Nakh, Loshar, Yomari Purne, Sama Chakewa, etc are considered especially in other race. The ERM (2076) report showed 35 Hindu temples, 2 Churches, 3 Bihars and 1 Stupa in this municipality.



Source: ERM, 2076

In the project area people are actively involved in the social services. Drinking water supply is being managed by the water users group of the beneficiaries. Senior citizens are organized and women groups are active and youths are organized under the youth clubs. The major cultural practices of Newar, Brahmin, Chhetry, , ethnic groups of backward class and other occupational ethnic groups include Nwaran (giving the name to the child for the first time), Pasni (feeding grains to a child for the first time), Bratabhanda (shaving the hair of male child for the first time), Gufa Rakhne (keeping female child in a dark room for 12 days at the time of puberty), marriage, rituals during the death of a family member (cremation of dead body) and Sharadha (offering of food to the dead member of the family).

The people of the area celebrate Dashain (biggest festival of all Nepalese worshipping goddess Durga Bhawani), Tihar (festival of worshipping Laxmi, the goddess of wealth), Shreepanchami (the festival of worshipping Saraswati, the goddess of knowledge), Ram Nawami (the festival of worshipping god Ram), Teej (festival of worshipping god Shiva by women). People celebrate these festivals with joy.

Gurjudhara, a stone sprout with historical value is located just before the start of the flyover. Though it is not located within the project area, attention would be required during construction period that the sprout is not disturbed. A cultural path of the local people crosses the proposed flyover access road. The initial design of the flyover ramp was affecting the cultural path, and path was proposed to relocate. But on the suggestion of the local community, the ramp of the flyover moved forward so that the cultural path is not disturbed.

2.8.4 CHEMICAL ENVIRONMENT

The proposed flyover will be one of the sub component of the Nagdhunga Tunnel Construction Project. The required chemical and fuel for the construction will be provided from the storage facilities of the main contractor located at Basundol. The approach road to and from the flyover will have asphalt concrete pavement which will be provided from the asphalt plant. Heating of bitumen at the site will not be required.



3. PROCEDURE TO BE ADOPTED WHILE PREPARING REPORT

The IEE approach, methodology and procedure adopted to prepare a comprehensive IEE report will generally follow the provision of the EPA, 2076 & EPR 2077. The national Environment Impacts Guidelines 1993, Environment management Guidelines of the DoR 1997, Policy on Environmental Assessment of Road and Bridge Sector and A Policy document of DoR, 2000 will also be referred in this study. Following approach and methodology will be adopted during IEE report preparation.

3.1 DATA REQUIREMENT FOR THE STUDY

The IEE report will require the baseline quantitative data, to the extent possible, on physical and chemical, biological, socio-economic and cultural environment as follows. Necessary data and information will be collected for DIZ, IIZ and surrounding area depending upon the nature of data required and foreseeable environmental impacts. The following information is required for the IEE of the project:

3.1.1 PHYSICAL ENVIRONMENT

The baseline information will be presented including:

- The study of different physical aspects of the project area such as topography, geology and soil, existing drain facilities and land use is required.
- The baseline information of air, water and noise quality will be helpful to suggest the mitigation measures and prepare EMAP.
- The climatic condition of the project area needs to be studied to predict the impact of the project and factors of carbon emission.
- The public utilities present in the project area and IIZ area will be required along with services available in the area. Since, the extension of road width will be done under the project, the electric poles data is necessary.
- The preliminary survey found that there is underground wire of Nepal Telecommunications Authority (NTA). Therefore, the place where such wire is present in the project implementation area will have to be studied so that the wire can be relocated without affecting any service to the people.
- The survey and mapping of different religious place is also required.
- The information on hydrology of the project area will be required based on the Balkhu River that flows through the ward no. 5 of Chandragiri municipality.

3.1.2 BIOLOGICAL ENVIRONMENT

The tree present within the ROW will be counted. No any major forest area is present nearby (DIZ and IIZ) the project area.

3.1.3 SOCIO-ECONOMIC ENVIRONMENT

Required data on socio-economic and cultural environment in the project area and its vicinity will be as follows:

- Demography including population, ethnicity etc. in the project area;
- Settlement pattern in the project area;
- Land and property ownership and their possible acquisition and compensation;
- Total land required by the project components, type of land use (temporary/permanent)
- Existence of educational institutions and their proximity;
- Household income and expenditure of the Project Affected Families (PAFs);



- Health and sanitation facilities;
- Infrastructures such as drinking water supply, irrigation, electricity and roads;
- Availability of labor force in the project area and its vicinity;
- Status of women and disadvantage groups of people;
- Status of marginalized/vulnerable community;
- Ongoing development activities in the project area and its vicinity;

3.1.4 CULTURAL ENVIRONMENT

- Historic and cultural monuments in the project area and its vicinity;
- Major Temples, Church, Bihar, Mosque
- Religious fields, Chautaries, Gumbas, Cemeteries,
- Existing cultural practices;
- Listing of communities that have been using natural resources in the project area;
- Archeological Sites;
- Indigenous people of the area and protection and promotion of their culture;

3.1.5 CHEMICAL ENVIRONMENT

The use of various chemicals including fuels, lubricants, oils, acids, cement etc. during construction works may adversely affects the local environment through leakage, fumes etc. Thus this aspects will be addressed by documenting existing sensitive areas where such chemical related activities can have adverse impacts.

3.2 PROCEDURE FOR DATA COLLECTION

3.2.1 LITERATURE REVIEW

The intensive desk study of available Chandragiri municipality profile will be done to know the environmental aspects of the project area. The detailed design report of the Kisipidi Flyover will be studied. The different tests have been done at the Balambu intersection during the detailed designing. The reports will be reviewed to obtain the required information. Nepal Environment Impact Assessment Guidelines (1993) will be followed for impact analysis. The review of Environment and Social Management Framework (2070), EPA (2076) and EPR (2077) will be done in every step of the IEE and the given rules will be followed. Similarly, available topographic maps published by Survey Department of Government of Nepal in 1996 will be studied to find out the different physical aspects such as topography, slope stability and land use. The different software programs such as Computer-aided design (CAD) and Geographic Information System (GIS) will be applied to prepare the maps and assessment of different possible impacts.

3.2.2 CHECKLIST/ FORMAT/ QUESTIONNAIRE PREPARATION

The household survey questionnaire (ANNEX I) has been prepared to record the baseline data for the social status of the project area. Similarly different formats are developed to record the structure loss inventory format (ANNEX II), trade loss inventory form (ANNEX III) and public structure inventory pole (ANNEX IV).

3.2.3 FIELD STUDY

3.2.3.1 Survey DIZ and IIZ

The IEE team will conduct a thorough field observation and regular site visit. The significant environment features of the DIZ will be collected by making necessary measurement, inspection and observation and by holding discussion with local people. Household



questionnaire survey will be held in the settlement area to generate the socio-economic characteristics of the area.

The information collected will cover the socio-economic and cultural, physical and biological aspects of the environment, the baseline data will include, but will not be limited to the following:

a) Data Collection on Physical Environment

Baseline information on physical environment will be collected from field investigation from predefined checklist. Topographic features will be documented, physical features comprising land use, soil will be observed and recorded. physiographic and topographic data including land stability, unstable and erosion prone area and flood pattern, hydrology (flood prone area, water shed area, water sources, stream-river, existing drain) and climatic conditions, soil, geology and utilization patterns, including other natural features of the DIZ, IIZ and ZOI will be collected.

Also detail of public amenities like electric poles, cross drainage, water supply pipe line will be collected.

The baseline information on noise quality will be measured using Sound Level Meter. Water sampling will be done in the rivers and water bodies if present to collect physio chemical parameter for water quality. Analysis will be done at laboratory recognized by GoN. For air quality PM 2.5 and PM 10 will be measured using high volume sampler.

Physical environment survey will be carried out by delineating the impact area which will be affected by the proposal activities during construction and operation of the flyover and supporting components.

Field survey will be carried out for the topography, geomorphology, geology, soil, water, air, noise, land stability, drainage characteristics, rainfall, meteorological condition etc. Public utilities in the project area will be recorded along the construction width.

Site specific information on the above sector will be collected by;

- Direct observations
- Consultation with the local communities
- Checklists
- Arc GIS
- Walk through Survey
- Identification of physically critical areas particularly flood prone etc.

b) Biological Environment

The tree counting survey within the ROW will be done and the information on flora and fauna present in the forests within ZOI of the project area will be done. Type of vegetation and frost will be identified based in species composition, field observation and consultation with the stakeholder.

c) Data collection on Chemical Environment

Use of concrete their storage, fuel, lubricant oil acids use of their chemicals for construction will be taken into consideration.

The collected baseline data and information will be verified by checking reference as far as possible.



d) Data collection on Socio-Economic and Cultural Environment

Information on human, social economic and cultural aspects in the ZOI such as health and sanitation, population and demographic pattern, caste/ethnics composition, livelihoods, social and cultural values will be gathered from municipality and district profile.

The survey of utilities (such as electric poles) present inside the DIZ of the project will be carried out by field survey counting all the electric poles present in DIZ and recording CH. wise. This will help to relocate the utilities during the construction phase of the project. The household survey of every household within the ROW of the project will be checked and revised if necessary. The structure survey will be revised again comparing with the preliminary field data.

3.2.2.2 Focus Group Discussion (FGD)

During the field survey for different environmental aspects, the FGD will be carried at the major settlement of Balambu (Kishipidi) with the local residents who have been living there for many years if deemed necessary to find out the information on public utilities, structures of religious importance and settlement pattern.

The Key-Informant Interview (KII) will be carried out with the representatives of local government bodies and local stakeholders, ward chairperson, principals of schools, public health officers etc. Conclusion of the discussion will hopefully bring results which would impact longevity of the project.

3.2.2.3 Walk Through Survey

The walk through survey along the existing road will be done for GPS tracking to prepare the maps and find out if any difference than the design period is present.

3.2.4 PUBLIC HEARING AND PUBLIC NOTICE**3.2.4.1 Public Hearing**

According to EPR 2077, rule 6 (1), (2), (3), (4) and (5), a public hearing is deemed necessary to carry out the public hearing in project affected areas for the collection of grievances and suggestions and also to communicate the project to the Project Affected People (PAF). A notice will be published on national daily newspaper inviting the project affected people and local stakeholders to be present on the meeting to communicate the possible environmental impacts of the project. The notice will include the name of the proposal with some details on proponent and consultant along with the date, time and location of the meeting. The meeting will be conducted in the presence of local government representative.

3.2.4.2 Public Notice

A 7 days public notice (ANNEX V) as specified in the given format in Schedule 9 of EPR, 2077 will be published in the national daily newspaper to invite the written suggestions along with possible environmental impacts to the project area due to implementation of the project. The published notice will be pasted in notice board of local concerned stakeholders such as schools, Non-Governmental Organizations (NGOs) and government bodies. The letter of declaration regarding the pasting of newsletter will be prepared and included in the IEE report. The received opinions and suggestions from the concerned stakeholders will be documented and necessary investigation will be carried out. If no any suggestion is received the IEE report will be prepared as per the expert's study and judgment. The letter of recommendation from concerned local government bodies will be collected and included in the final IEE report.



3.3 DATA ANALYSIS

The data such as air, water and noise quality collected from baseline field visit will be analyzed using simple statistics such as mean, maximum and minimum value and represented in graphs. The logarithmic average of noise level will be calculated in an hourly basis to find the equivalent sound level (L_{eq}). The other physical environment information will be accessed from secondary sources such as climatic data from Department of Hydrology and Meteorology (DHM), topographical maps from Department of Survey, satellite images, etc. The biological and socioeconomic data will be presented in tables.

3.3.1 IMPACT IDENTIFICATION AND PREDICTION

Impacts will be identified by employing the methods such as expert judgment, checklist, and map overlays. Matrix method will be used to identify the possible beneficial and adverse impacts due to implementation of the proposed project. For easy understanding, direct impacts will be identified through maps overlays.

The main base for the identification of impacts will be the baseline information, which will be carefully collected and presented in terms of physical, biological, socio-economic and cultural environments of the project area. Impact Evaluation is carried out according to The National Environmental Impact Assessment Guideline, 1993 where each identified impact will be predicted in magnitude, extent and duration. Magnitude of the impact is predicted in terms of high, medium and low. Extent of the impact is classified in terms of regional, local and site specific and the duration of the impact is predicted in terms of long term, medium term and short term. Each of these predictions will be assigned a score for the evaluation. Finally, significance of each identified impact will be classified.

The development projects will have both positive and negative impact on the environment. The benefit impacts could further enhanced by considering certain activities. These steps are generally taken during design which will enhance the mitigation measures in terms of specific mitigation design, cost estimation of the mitigation measure, and specific implementation criteria.

3.4 REPORT PREPARATION AND PRESENTATION

The Draft report will be prepared as per the approved TOR in the given format under Schedule 11 of EPR, 2077 and the template prepared by GESU which has been approved by the ministry and will be submitted to MoPIT through GESU. The Draft Report will be presented in the MoPIT. The final IEE will be prepared incorporating the comments.



4. REVIEW OF RELEVANT CONSTITUTION, PLANS, POLICIES, ACTS, RULES, REGULATIONS, GUIDELINES AND ENVIRONMENTAL STANDARDS

The Government of Nepal (GoN) and several relevant ministries have formulated various laws to ensure the proper implementation of the project and minimize the environmental cost. The different laws and guidelines will be reviewed during the preparation of IEE report. The Constitution of Nepal will be reviewed extensively regarding the laws that relate to the project in any way.

4.1 REVIEW OF CONSTITUTION

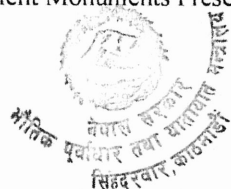
- Constitution of Nepal

4.2 PLANS AND POLICIES

- The Fifteenth Plan, 2076/77 – 2080/81
- National Forest Policy, 2075
- National Environment Policy, 2076
- National Climate Change Policy, 2076
- Policy Document of DoR on Environmental Assessment in the Strategic Road Network, 2059
- National Transport Policy, 2058
- Land Acquisition, Resettlement and Rehabilitation Policy for Infrastructure Development Projects, 2071
- National Wetland policy 2059

4.3 ACTS AND REGULATIONS

- Environment Protection Act, 2076
- Environment Protection Regulation, 2077
- Forest Act, 2076
- Forest Rules, 2051
- Local Government Operation Act, 2074
- Local Government Operation Regulation, 2075
- The Land Act, 2021
- Land Acquisition Act, 2034
- Labor Act, 2074
- Labor Rules, 2075
- Child Labor (Prohibition and Regulation) Act, 2056
- Child Labor (Prohibition and Regulation) Rules, 2062
- Solid Waste Management Act, 2068
- Solid Waste Management Rules, 2070
- Water Resources Act 2049
- Water Resources Regulation 2050
- Public Roads Act, 2031
- Public Roads Regulation, 2033
- Plant Protection Act, 2064
- Plant Protection Regulation, 2046
- Ancient Monument Preservation Act 2013
- Ancient Monuments Preservation Rules 2046



- National Trust For Nature conservation Act 2039
- National Trust For Nature Conservation Regulation 2041
- Soil and Water Conservation Act, 2039
- Soil and Water Conservation Regulation, 2042
- Act to regulate and control international trade in endangered wildlife and flora, 2074
- International Trade Control Regulations on Endangered Wildlife and Flora Regulations, 2075
- Act on the Rights of Persons with Disabilities, 2074

4.4 GUIDELINES

- National Environment Impact Assessment Guidelines, 2050
- EIA Guideline for Forestry Sector 2051
- EIA Guideline for Agricultural Sector 2051
- Environmental Impact Assessment Guideline for Road Sector, 2057
- Community forest Guideline, 2058
- Community Forest Inventory Guidelines 2062
- Collection and Sales of Forest Product Guidelines, 2057
- Removal of Trees Guideline, 2071
- Public Road Management and Land Acquisition Guideline, 2059
- Environmental and Social Management Framework, 2070 (DOR)
- Roadside Geo-Technical Problems 2066 (DOR)
- Roadside Bioengineering Site Handbook, 2076
- Use of forest land for National Pride project 2076
- Accessibility Physical Structure and Communication Directives for People with Disabilities, 2013
- Gender Equality and Social Inclusion operational Guidelines 2017
- Occupational Health and Safety Guideline for Road Infrastructure Development and Management 2080.

4.5 ENVIRONMENTAL STANDARDS

- National Ambient Air Quality Standard, 2012
- National Drinking Water Quality Standard, 2062
- Nepal Vehicle Mass Emission Standard, 2069
- National Diesel and Generator Emission Standard, 2069 BS (2012 AD)
- National Standard for Noise Level, 2069
- National Road Standard, 2070
- National Bridge Standard, 2067

4.6 INTERNATIONAL TREATY

- Convention on Biological Diversity 1992 AD
- Convention on International Trade in Endangered Species of Wild Fauna and Flora. CITES, 1973 AD



5. REQUIRED TIME, STUDY TEAM AND BUDGET FOR IEE

5.1 TIME SCHEDULE

Timely completion of the IEE report will likely facilitate the implementation of the proposal with the incorporation of the IEE findings and recommendations. With this in view, the Proponent will mobilize the multi-disciplinary study team of relevant specialists in preparing the IEE report immediately after the approval of Terms of Reference (TOR) by the MoPIT. The time schedule is presented in Table 3.

Table 3: Time Frame for IEE of Kisipidi Flyover

SI	Activities	Weeks																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Terms of Reference																	
	Preparation TOR																	
	Review of Scoping Document and TOR																	
	Approval of TOR																	
2	IEE Study																	
	Baseline data collection																	
	Physical Environment																	
	Mapping and inventory of the project area																	
	Biological Environment																	
	Vegetation survey																	
	Socio-economic environment/Resettlement Plan																	
	Household inventory																	
	Loss assessment survey																	
	Cadastral Survey																	
	Public hearing																	
	Preparation of resettlement plan																	
	Review of the existing policies/Acts/Rules																	
	Guidelines/ Convention																	
	Data compilation and Analysis																	
	Impact identification																	
	Alternative Analysis																	
	Benefit Augmentation and Mitigation Measures																	
	Preparation of Environmental Management Plan																	
	Preparation of Environment Monitoring Plans																	
	Collection of recommendations																	
	Preparation of IEE Report																	
	Review of IEE Report																	
	Finalization of IEE Report and Approval																	

5.2 NECESSARY EXPERTS

The Proponent will mobilize a multi-disciplinary team of subject specialists with good orientation on environmental aspects to prepare IEE report. At least, the following specialists given in Table 4 shall be mobilized to complete this IEE study.

Table 4: Study Team for IEE of Kisipidi Flyover

SN	Name of Team Member	Position	Educational Qualification	Work Experience
1.	Subarna B Joshi	Environmental Specialist / Team Leader	ME Environmental BE Civil	39 years
2	Asim Ghimire	Civil Engineer	• MSc Program in Engineering Management, Purbanchal university 2019 • BE civil engineering, Tribhuvan University 2001	23 years
2.	Dr Rabindra Kumar Shrestha	Biologist/ Forestry	• Ph. D. in Indigenous Agro-forestry Practices and Soil Conservation, University of Agriculture Sciences, Vienna, Austria, 1994 - 1997. • M. Sc. In Environmental Forestry, University College of North Wales, Bangor, U. K. , 1986 - 1988. • P. G. Diploma in Forestry (AIFC), Indian Forest College, Forest Research Institute, Dehradun, India, 1974 - 1976	42 years
3.	Padam Raj Sharma	Sociologist / Resettlement Expert	• M.A. in Sociology, Tribhuvan University, Nepal, 2000 • Bachelor of Arts (B.A.), Tribhuvan University, Nepal, 1995	15 years
4	Vishnu Dongol	Geologist	• PHD Exploration Geology and Geochemistry, Baku State University 1985-1988 • Masters of Geology, Economic Exploration and Mining Geology, Baku state University, 1974-1980 • I.S.C Trichandra College, 1972-1974	35 years
5.	Madhab Ghimire	Policy Specialist	• LLM, Master of European Regulation Network Industries (MERNI), University of Bonn, Bonn, Germany, 2009 • Bachelor's Degree in Law(Company Law,	20 years



SN	Name of Team Member	Position	Educational Qualification	Work Experience
			Contract Law, International Law, Environmental Law), Tribhuvan University, Kathmandu, Nepal, 1998	

The Consultant will also mobilize necessary assistants and other support staff to collect the field level data, verify secondary information, and data analysis.

5.3 ESTIMATED BUDGET

The estimated budget for IEE study will be NRs. 900,000.00 excluding VAT



6. SPECIFIC IMPACTS OF THE IMPLEMENTATION OF THE PROPOSAL ON THE ENVIRONMENT

6.1 BENEFICIAL IMPACT

- Generation of employment
- Opportunities of new income generating activities
- Enhancement in technical skills and know-how
- Improved access to services
- Gender specific benefits
- Increase in land values
- Road safety

6.2 Adverse Impact

6.2.1 Physical Environment

Pre-construction Phase

- Prior consent and approval will be taken with local stakeholder for establishment of crusher operation site, worker accommodation, excavation area, storage area, construction materials collection area, relocation area, etc
- Relocation of public utilities such as electric poles, telephone line, drinking water pipe etc.
- Management and responsibilities of public assets/infrastructure.

Construction Phase

- Change in land use
- Loss of land
- landslide and soil erosion
- Generation of solid waste and management
- Groundwater flow modification
- Contamination of soil
- Water pollution
- Air pollution (carbon emission) and Noise pollution
- Vibration due to heavy equipment
- Occupational Safety and Health

Operation and Maintenance Phase

- Air pollution (carbon emission)
- Water pollution
- Noise pollution
- Impact to public land and private assets

6.2.2 CHEMICAL ENVIRONMENT

Construction Phase

- Hazard caused by chemical materials/fuel, chemical
- Risk related to heating and use of bitumen



6.2.3 BIOLOGICAL ENVIRONMENT

Construction Phase

- Loss of vegetation

6.2.4 SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

Pre-construction Phase

- Land and property acquisition (private)
- Acquisition of public/community land
- Local community are very positive to the project and are ready to provide land with satisfactory compensation.

Construction Phase

- Loss of land (private, public and community)
- Loss of private and community structures
- Impact on religious asset
- Impact of human health
- Occupational safety and health issues
- Damage of community infrastructures
- Disturbance of community structures and livelihood
- Conflict in or with nearby host communities (between local and outsiders)
- Gender related impact (discrimination in opportunity and wage)
- Road safety (Accidents)

Operation and Maintenance Phase

- Right of way encroachment
- Impact on traditional norms and values
- Displacement of business
- Road safety (accidents)

The impact analysis of listed impacts will be done following the National EIA Guidelines (1993) and presented in the given layout of table for impact analysis (Table 5).

Table 5: Layout of Impact Analysis

SN	Environmental Impacts	Nature	Magnitude	Extent	Duration	Total Score	Significance
Physical Environment							
Biological Environment							
Socio-Economic and Cultural Environment							

7. ALTERNATIVES OF THE PROPOSAL

During the preparation of IEE report, the alternatives of the proposal will be discussed and analyzed. The alternative of project not being carried out also will be analyzed. The benefits and loss of project not being carried out will be compared with the project being carried out and best alternative will be chosen by the expert judgment after the environmental study. Moreover, the alternatives will be analyzed in following dimensions:

7.1 DESIGN

Alternative designs such as alignment improvement, formation width, etc. will be studied and suitable design as per need will be selected.

7.2 PROJECT SITE

The different environmental aspects will be studied so as to find out if the project site is suitable or not. The alternatives of project site will be studied as per the need of the project and design.

7.3 PROCESS, TIME SCHEDULE

The process and time schedule given in the Detailed Designed Report will be studied and analyzed and better options if available will be suggested.

7.4 RAW MATERIAL TO BE USED

The environmental considerations will be put forward for the raw materials to be used. The better options and technologies that do not harm the environment will be studied and suggested.

7.5 OTHERS

The detailed study of the proposal will be done by the experts and necessary alternatives will be discussed after brainstorming through regular discussion.



8. MATTERS CONCERNING THE PREVENTION OF THE IMPACT OF THE IMPLEMENTATION OF THE PROPOSAL ON THE ENVIRONMENT

The proposal has both positive and negative impacts on the different components of environment as specified in Chapter 6. The augmentation of beneficial impacts and mitigation of adverse impacts is necessary for the smooth and sustainable running of the project. The expertise involved in the study team will analyze the impacts by pragmatic approach and suggest the necessary augmentation measures for beneficial impacts and mitigation measures for adverse impacts. The negative impacts will be divided into three categories namely (i) impact that could be avoided by taking certain corrective measures (ii) impact that could be minimize applying the basic civil engineering and/or making minor change in the design which is also known as corrective/ rehabilitative measures (iii) impact that could not be mitigated for example loss of land, property, assets and vegetation etc. for which compensation measures will be proposed. In addition to these measures responsible agencies for the implementation of mitigation measures will be identified and cost of mitigation measures will be estimated. The mitigation measures will be suggested as per the site considerations, economic feasibility with proven effectiveness. The IEE report will comprise the mitigation measures for all the phases' i.e. pre-construction phase, construction phase and post-construction (operation and maintenance) phase.

There will be three types of mitigation measures. They are explained below:

a) Preventive Measures

The preventive measures will be suggested for the adverse impacts that are likely to be occurred due to the implementation of proposal. These will be necessary in all stages of the project.

b) Corrective Measures

Some of the impacts listed in Chapter 6 are less likely to occur but could arise during the project cycle. Since such impacts have already been analyzed the corrective measures will be suggested for such impacts if occurred.

c) Compensatory Measures

The compensatory measure will be suggested for the impacts which cannot be prevented and corrected such as land loss. The compensatory measures will be the least desired mitigation measure. The proposal will not be forwarded depending upon the compensatory measures only.

The IEE report will incorporate the cost of the mitigation measures and responsible agency for the implementation of those mitigation measures. The layout of the table to be included in IEE report is shown in Table 6, Table 7 and Table 8.



Table 6: Layout of Table for Augmentation Measures of Beneficial Impacts

SN	Activities	Impacts	Augmentation Measures	Location	Estimated Budget	Responsible Agency		Remarks
						Executing	Supervision	
Pre-Construction Phase (Physical, Biological, Socio-Economic and Cultural Environment)								
Construction Phase (Physical, Biological, Socio-Economic and Cultural Environment)								
Operation Phase (Physical, Biological, Socio-Economic and Cultural Environment)								

Table 7: Layout of Table for Mitigation Measures of Adverse Impacts

S N	Activitie s	Impact s	Mitigatio n Measures	Locatio n	Estimate d Budget	Responsible Agency		Remark s
						Executin g	Supervisio n	
Pre-Construction Phase (Physical, Biological, Socio-Economic and Cultural Environment)								
Construction Phase (Physical, Biological, Socio-Economic and Cultural Environment)								
Operation Phase (Physical, Biological, Socio-Economic and Cultural Environment)								

Table 8: Layout of Table for Summary of Estimated Budget for Augmentation Measures of Beneficial Impacts and Mitigation Measures of Adverse Impacts

SN	Different Activities Requiring Cost	Estimated Budget (NRs.)	Remarks

9. MATTERS TO BE MONITORED WHILE IMPLEMENTING OF THE PROPOSAL

An environmental monitoring plan will be prepared and incorporated in the IEE report to fulfill following objectives:

- To not create more impacts than specified in laws.
- To monitor the compliance of mitigation measures specified in IEE report.
- To aware the possible environmental impacts in time.
- To verify how close the predicted impacts are close to the actual impacts observed during the running of project.

To fulfill these objectives the three types of monitoring will be planned and incorporated in the IEE report.

a) Baseline Monitoring

A baseline monitoring will be planned to analyze the change in components of environment compared with the baseline condition before the start of the project. This will help to find out the change in environment before and after the project.

b) Compliance Monitoring

The compliance monitoring will be done to check if the enhancement measures and mitigation measures are being applied by the responsible agency. This is necessary to ensure the environmental protection measures. The compliance monitoring will also be done to check the incorporation of environmental protection measures in the detail design, contract document and tender documents.

c) Impact Monitoring

The monitoring plan for the assessment of the impacts on the environment due to the implementation of the project will be prepared during the IEE study. This will help to limit the impacts of the project in the environment.

The monitoring plan will incorporate verifiable indicators, monitoring agency along with the cost for the monitoring.

10 OTHERS NECESSARY MATTERS

10.1 IEE REPORT FORMAT

The IEE report will be prepared as per schedule 11 of EPR 2077 (relating to Rule 3). The chapter will also be planned in accordance to the contents of the schedule.

10.2 OTHER DELIVERABLES

The report will include Maps, graph, photographs tables and charts and questionnaires used during the study. The IEE Report will be finalized by strictly following the TOR and outputs received from the extensive field survey, in addition with the input and suggestion received from the public notice/ consultation with locals, concerned Municipality, CFUG, school, health post etc. will also be integrated in the final report.

Annex 16: Comment Matrix from GESU, DCID and MoPIT

Comments from GESU		Status of the comments	
S.no	Comments	Addresses	Page number
1	Approved TOR should be placed in final report Annex	It is presented in Annex 2	
2	Place approved design copy of atleast cover page of approved design copy in annex.	It is presented in Annex 15	
3	Elaborate and explain social data more	They have been explained in Section 5.3	5-3.
4	In alternative analysis make clear and explain reasoning of why sinsho pile used as best alternative. (sub structure)	It is explained in section 8.3.1.2	8-2.
5	Write in detail about muck disposal site, from where muck is generated and stored.. write what is beings practiced in the projects.	It is written, in section 3.9.2	3-6.
6	Safety measures and gender equality provision for the project...	Gender related benefit and impacts is presented in section 7.1.1 (v) and 7.2.2 (ii))	7-1 and 7-4
		Safety of the project is explained in section 3.9.6 (iv)	3-8.
7	Organization chart is missing please include in the report	It is included as Figure 10.1	10-5.
8	Grievence recprd of the flyover section to be included in annex.	It is included as Annex 12	
9	EHS report sample if possible place in annex..	A monthly Environmental Monitoring Report and Monthly Health and Safety Report is presented in Annex 13 and Annex 14	
10	land acquisition progress should be included in report... and related issues	Status of land acquisition is presented in 7.2.1.3 (i)	7-2.
11	Monitoring budget section of the report should be revised...	Monitoring budget is explained in section 10.5	10-5.
12	In the biological impacts section please include that greemnary will be maintained by bioengineering and plantation... and more detail to include	It is included in table 9.2	9-4.
13	Air pollution control practices should be updated.. like will spray water if not controlled will do CTBC and a dedicated tanker will be kept as there is too much traffic volume	Only water spraying at regular interval did not controlled the dust pollution. Cement treated base coarse was applied on the surface of the temporary roads	9-4.
14	Attach the Brief CV of the Experts and Declaration	They are attached in annex 11	
15	Make titles and tables symmetrical, e.g. All 'content' words Capital and all 'Function words' small or so!	its done	

16	Read and Reread, update and recorrect yourself to avoid possible mistakes! Come up with fine tuned one!	its done	
Comments from DCID			
17	Follow the guidelines of EPR-2020 throughout whole document	They are followed	
18	Include the Nepali synopsis report to fulfill the requirement of EPR-2020.	it is included	
19	Revise the Nepali executive summary with proper proof read	it is revised	
20	Prepare the chapter legal requirement in the tabular format with significance of laws, policies, guidelines to this proposed project.	The relevent policies, act, regulation and guidelines have reviewd	
21	Mention the location and construction material required for the construction. In one section it has been written as the <u>muck disposal from tunnel will be sufficient as a construction material</u> - please correct this statement.	section 3.9.2 is in muck disposal. The tunnel muck would be adequate as the construction materials.	3-6.
22	The flyover related specific should be impact need to the categorized	Identified impacts in the TOR are related to the flyover	
23	Impacts between ex. summary and chapter needs to be compatible and matched with baseline data and Ex. Summary between Nepali and English should match	It is matched	
24	This IEE should say RAP needs to be prepared or not and separate loss of private and public structures	IEE assessed the impact	
25	Include one para about absentee households	Included	
26	Add the details of public hearing and recommendation from the respective municipalities/wards and relevant agencies clearly in the annex and also mention the issue raised by the public and which has been included or not with specific reason.	The detail of recommendation of the municipality and wards are answered in Public hearing Proceeding	
27	Critically analysis of potential impacts and its relevant mitigation measures	They are analized	
28	Need re-phrase the section 5.4.9.1 & 2 and move into section 5.4.8.3	They are rephrased	
29	Check the formatting and grammar throughout the report.	it is checked	

Comments From MoPIT

S.no	Comments	Status of the comments Addresses	Page number
1	Well Structure Report with contents		
2	Separate Nepali Report as per EPR 2077 rule (7), sub rule (9)	Brief Report in Nepali is included.	
3	Methodology should be more scientific and standard base.	The methodology that has been used for the data collection and report preparation is described.	
4	Avoid typological errors, incorrect phrases, auto translation & write clearly	The report has been checked for typos and spelling errors.	
5	Section 2.6 required land areas should be clearly defined, compensation required, private, government with classification of components wise requirement.	The area reported area in section 2.6 is the requirement of private land for the construction of the flyover only. Other required area are included in Nagadhunga Tunnel Construction Project.	
6	Comments and Suggestions that are collected during public hearing consultation and mentioned in recommendation letter should be addressed making comments address mechanism.	Table 2.3 provides the written comments and suggestions provided during the public hearing meeting, Chandragiri Municipality, and affected wards namely ward no 5 and ward no 12. Their comment and suggestion status is also included in Table 2.3	
7	Section 3.5: Construction material appropriate source should be mentioned with impact too.	Source of the construction materials are specified in section 3.5	
8	The project is already in construction, the project should bind with EPR 2076 & EPR 2077 legal/status measures before approving / Submitting final documents.	The report is prepared in as per the EPA 2076 and EPR 2077	
9	Ensure the identified issues in TOR are addressed in IEE report or not.	All identified issues in TOR have been addressed.	

Comments From MoPIT

S.no	Comments	Status of the comments Addresses	Page number
10	Section 5.1. Baseline should be specific one Eg- 5.1.1 land use is it of project affected areas or project component area data ?	The area required for the other components are included in the Nagadhunga Tunnel Construction Project (NTCP). The Land use described in section 5.1.1 is the land required for the flyover construction only.	
11	Section 5.2: biological environment, there is no wildlife in the project area and its vicinity- vicinity means how many km from project area.	At the distance of 1 km radius	
12	Section 5.3 better to use updated data of NSO in replace of CBS 2011	Data are replaced from National Statistics Office. Data of Table 5.2, 5.3 5.4 and 5.5 are revised,	
13	Final Copy of IEE must have original declaration with proponent declaration & with original sign.	All declarations are with the original signatures and with proponents declaration also	
14	Project description: better add detail regarding axillary facilities such as spoil disposal, stockpiling , camps areas, and include site selection criteria too.	Disposal of the construction spoils is described in section 3.9.4, stockpiling section 3.9.3, camp area in section 3.9.1. The facilities of Nagadhunga Tunnel Construction Project will be used for the Flyover component also.	
15	Chapter 5: Better to cross verify the impacted potential sites such as cultural heritage & so on. Also cross- verify no flora fauna at site.	The cultural impact of the proposed road crossing at Balambhu (Kisipidi) has been thoroughly assessed. The project initially proposed a flyover to address the level road crossing between the Kathmandu–Nagdhunga Road and the tunnel access road. However, the original alignment of the flyover interfered with a traditional cultural path used by the local community for religious and ceremonial purposes. In response to this concern, the design was revised by shifting the starting point of the flyover approximately 250 meters upstream. This modification was made specifically to preserve pedestrian access for cultural activities and provide a U-turn facility to maintain traffic flow.	

Comments From MoPIT

S.no	Comments	Status of the comments Addresses	Page number
		Despite this accommodation, residents of Ward No. 5 have expressed strong demands for a 20-foot-wide vehicular intersection at the same location, complete with traffic lights. While this proposal aims to enhance local vehicular access, it undermines the fundamental objective of constructing the flyover—namely, to eliminate traffic congestion caused by the level crossing. Introducing a traffic light at this critical junction would replicate the very conditions the flyover is intended to avoid. During red-light phases, traffic on the heavily used Kathmandu–Thakot road would be forced to halt, causing significant vehicle idling. This would not only contribute to renewed traffic congestion but also lead to increased vehicular emissions, exacerbating environmental pollution in the area. Cross verification flora and fauna: As the project area is located within the urban setting with high traffic volume movement within limited space, there was no trees or pole within the project affected area and there was no reporting of wild fauna in the within the project area.	
16	Better to interpret better practice if JICA compliance safeguards.	Yes JICA safeguard compliance also required to carry out the IEE study	
17	Chapter 8: better to justify the choice of technology used in terms of impacts, cost and safety eg shinso pile.	Table 8.2 present the advantages of Shinso pile compare to other available technology.	
18	Chapter 8 : Better to provide comparative matrix showing costs,	Though the cost estimate of each alternatives are not made, the description of the advantages of Shinso pile over the caisson	

Comments From MoPIT

S.no	Comments	Status of the comments Addresses	Page number
	landuse, environment and social impacts for each alternatives.	foundation and well foundation presented in Table 8-2 makes Shinso foundation a better choice.	
19	Table 10-2: Responsible agency is consultants only? better to add other responsible stakeholder agency related with it.	As there is full time environmental and social team of consultant at the site during construction, monitoring responsibility is given to the consultant team.	
20	Chapter 10: Better to include quantitative indicators for monitoring plans such as air noise dust etc.	Quantitative monitoring are proposed. Please refer Table 10.1, 10.2 and 10.3	
21	Add more maps with overlay alignment, land aquisition overlays and utility conflicts diagram.	They are added as Annex 17.	3-6.
22	EMP table must be as per the EPR 2077 template. (Better Be...)	Benefit augmentation/mitigation measures column was added for the better understanding of the EMP.	
23	Better to add GRM with specific ties.	There is no heading of GRM in the GESU IEE Reporting template. The Resettlement Action Plan of the Project has Grievance Redress Mechanism as follows: GRIEVANCE REDRESS MECHANISMS Grievance redress mechanism will be established so that project affected people can appeal any disagreeable decisions, practices, and activities arising from compensation for land and assets to the responsible authority. Project affected people have formal option to appeal CDO and Ministry of Home Affairs in case of grievance under regulations specified in Land Acquisition Act 2034 (1997). There is the potentiality for two types of grievances: grievances related to land acquisition and Resettlement requirements and grievances related to compensation or entitlement. The PAPs will have access to both locally constructed grievances redress	

Comments From MoPIT

S.no	Comments	Status of the comments Addresses	Page number
		committees specified under ESMF i.e. Local Consultative Forum (LCF) and formal courts of appeal system. Under the latter system every PAP can appeal to the court if they feel that they are not compensated appropriately. They may appeal to appellate court within 35 days of the public notice given to them. Proposed mechanism for grievance resolution is given below: <u>Stage 1:</u> Complaints of PAPs on any aspect of compensation, relocation, or unaddressed losses shall in first instance be settled verbally or in written form in field based project office. The complaint can be discussed in an informal meeting with the PAP by the concerned personnel to settle the issues at the local level. The community consultation, involvement of social/ resettlement experts will be helpful in this regard. It will be the responsibility of Project In-charge to resolve the issue within 15 days from the date of the complaint received. <u>Stage 2:</u> If no understanding or amicable solution reached or no response from the project office, the PAP can appeal to the CDC. While lodging the complaint, the PAP must produce documents to support his/her claim. The CDC will provide the decision within 15 days of registering the appeal. <u>Stage 3:</u> If the PAP is not satisfied with the decision of CDC or in absence of any response of its representatives, within 35 days of the complaint, the PAP, in his/her last resort, may submit its case to the court.	

Comments From MoPIT

S.no	Comments	Status of the comments Addresses	Page number
24	Ensure the participation of representative from the proponent in public hearing.	Yes there was participation from the Project. Sl no 36 and 37 in the minutes of meeting of Public hearing are representative from the Proponent.	
25	Issues connected to Balambhu satellite station should be incorporated in the report.	The local authority ward no 5 of Chandragiri municipality intention was to name the Flyover by the local name, Kisipidi, rather than Balambhu.	
26	There is statement that " Agreement between DOR and ward no 5 office but the impacted ward is 5 and 12. what about 12?	The people of ward no 5 was leading the agitation due to the air pollution at the construction site. The meeting was held in the office of ward no 5. The written concern of the ward no 12 are incorporated in the Public hearing proceedings.	
27	Addressed the issue raised regarding cultural route in report clearly.	Please refer comment no 15.	
28	Attached both notices as per EPR 2077 rule 7(2) and 7(3) in annex of the report.	Annex 4 of the report consists of 7 days public notice published in the National daily newspaper and the muchulka of the notice in the different institutions.	
29	Co-ordination mechanism between impacted public Infrastructure agency such as water supply, NEA, Sewerage and so on and better to put consent letter from those organization.	The relocation of the impacted infrastructures were carried out by the respective agency at the Project cost with number of written request from the project and with consent of the higher authority of the agency.	

Annex 17: Cadastral Map Overlay

IKA

Thankot

Kathmandu

Tunnel

PT = 5+350.666

-80

0+400

269 982+5

0+100

250

356

357

53

54

59

69

46

61

80

224

240

63

200

62

57

58

350

751

884

883

254

255

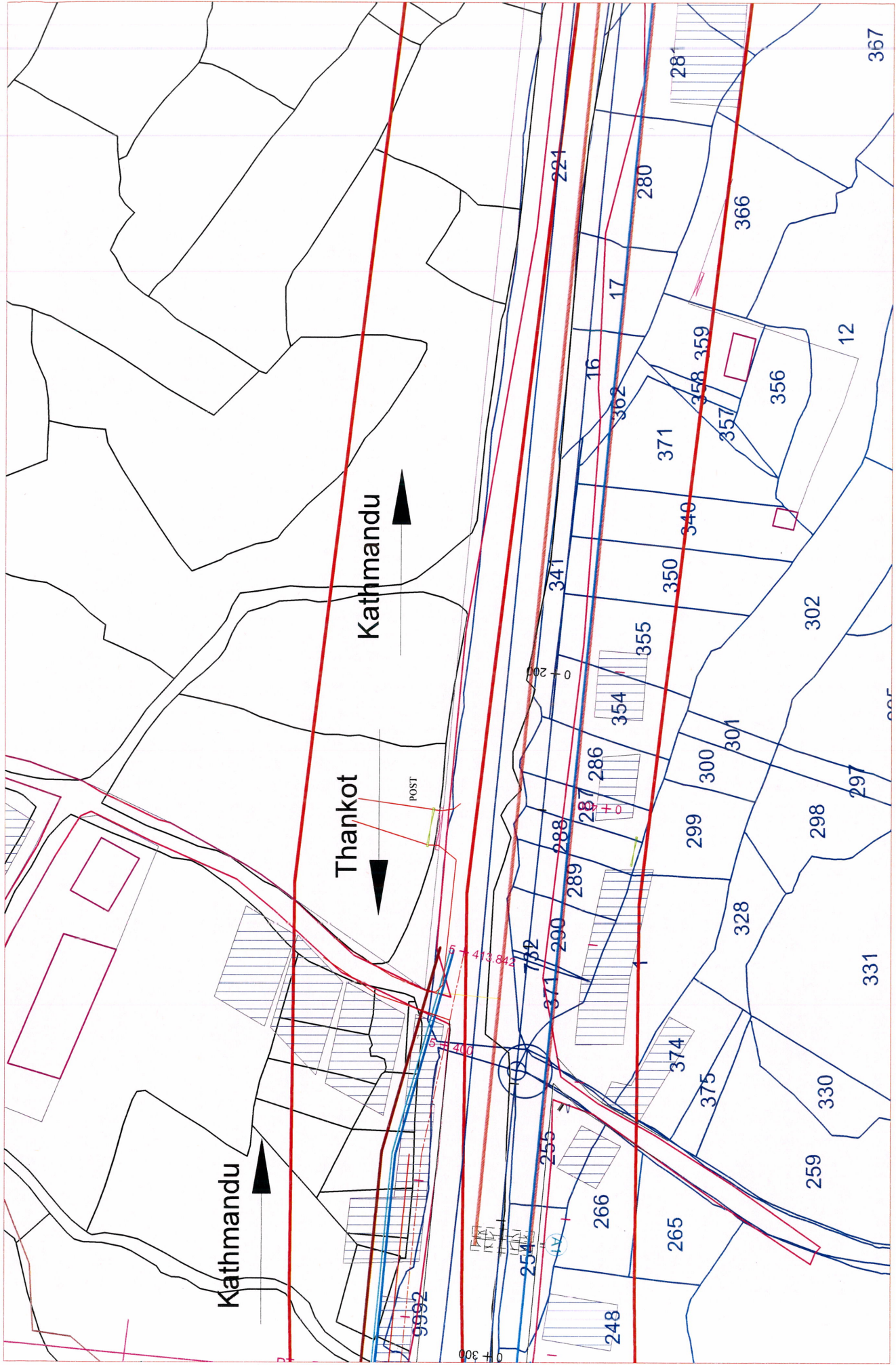
248

266

265

374

Sugarmatha Bodding School





Annex 18: Summary of Report in Nepali

प्रारम्भीक वातावरणीय परीक्षण

संक्षिप्त प्रतिवेदन

१. परिचय

नागदुङ्गा सुरंग निर्माण परियोजना (NTCP) अन्तर्गत किसिपिडी (महादेवस्थान) फ्लाईओभरको प्रारम्भीक वातावरणीय परीक्षण (IEE) ले प्रस्तावित फ्लाईओभरको वातावरणीय, सामाजिक र प्राविधिक पक्षहरू मूल्यांकन गर्ने उद्देश्य राख्छ। काठमाडौंको चन्द्रागिरी नगरपालिका वडा ५ मा अवस्थित यो फ्लाईओभरले त्रिभुवन राजपथ (TRP) मा लामो समयदेखि रहेको यातायात जामको समस्या समाधान गर्दछ। यो IEE नेपालको वातावरण संरक्षण नियमावली २०७७ अनुसार तयार गरिएको छ र परियोजनाको वित्तीय सहयोगकर्ता जापान अन्तर्राष्ट्रिय सहयोग एजेन्सी (JICA) को दिशानिर्देशहरू पनि अनुसरण गर्दछ।

२. परियोजनाको पृष्ठभूमि

भौतिक पूर्वाधार र यातायात मन्त्रालय, सडक विभाग (DoR) द्वारा कार्यान्वयन गरिने NTCP ले २.६ किमी पहुँच सडक, २.७ किमी सुरंग र किसिपिडी फ्लाईओभर निर्माण समावेश गर्दछ। यो पूर्वाधारले काठमाडौं उपत्यकामा प्रवेश र निस्कन यातायातलाई सुचारु बनाउने उद्देश्य राख्छ। प्रस्तावित सुरंगबाट आउने सडकको काठमाडौं थानकोट सडकसंग लेभल क्रसिंगले गर्दा थप ट्राफिक जाम हुने संभावना देखिन्छ। यो समस्या समाधान गर्न फ्लाईओभर परियोजना एक प्राविधिक हस्तक्षेप हो।

३. कानूनी ढाँचा र IEE को आधार

नेपालको EPR २०७७ अनुसार, फ्लाईओभर निर्माणले नियमावलीको अनुसूची २(घ) अन्तर्गत IEE आवश्यक पर्दछ। फ्लाईओभर कुनै वातावरण संरक्षित वा संवेदनशील क्षेत्रमा पर्दैन, त्यसैले यसले वातावरणीय प्रभाव मूल्यांकन (EIA) आवश्यक पर्दैन। IEE नेपाली वातावरण कानून र JICA को वातावरणीय सुरक्षा नीतिहरू अनुसार तयार गरिएको छ, जसले परियोजनाको अन्तर्राष्ट्रिय आयामलाई प्रतिबिम्बित गर्दछ।

४. परियोजनाको विवरण

फ्लाईओभरले ६१३ मिटर समावेश गर्दछ, जसमा १२८ मिटर लामो ४ स्ल्यानको स्टील पुल समावेश छ। यसमा शिन्शो पाइल फाउन्डेसन (Sinsho Pile Foundation) प्रयोग गरिनेछ, जुन साँघुरो शहरी क्षेत्रमा सिमित क्षेत्र र सघन निर्माण विधिको कारण प्राथमिकता पाउँछ। फ्लाईओभरले ७.५ मिटर क्यारिज-वे र कंक्रीट कर्ब (Concrete Kerb) समावेश गर्दछ। फ्लाईओभरमा चढन र ओर्लनको लागि दुबै तर्फ यम्पहरू प्रस्ताव गरिएको छ, परियोजनाले संरचना समायोजन गर्न त्रिभुवन राजपथको केही भाग पुनः संरक्षण गर्नु पर्दछ।

५. निर्माण विवरण

यस फ्लाईओभरको जग शिन्शो पाइल विधिबाट बनाइनेछ। यसको सुपर स्ट्रक्चर अन्तर्गत प्रि-फ्याब्रिकेटेड निरन्तर स्टील गर्डरहरू (Prefabricated Continuous Steel Girders) हुन्छन्। यी गर्डरहरूको निर्माण चितवन, नेपालमा नै जापानी सुपरिवेक्षणमा बनाइनेछ। यसको निर्माणको लागि बालुवा ९४५ घन मिटर, रोडा १८६१ घनमिटर, ढुङ्गा ६१ घन मिटर लाग्ने अनुमान गरिएको छ। जुन सुरंग खन्दा निस्केको मकबाट (Muck Materials) आयोजना स्थलमा नै उत्पादन गरिनेछ। अन्य निर्माण सामग्रीहरू जस्तै सिमेन्ट (८६७ टन) रिबार

(२९९ टन) बिटुमिन (५ टन) लाग्ने अनुमान गरिएको छ। याम्पहरू Reinforced Soil Wall (RSW) प्रविधि र सौन्दर्यात्मक कंक्रीट प्यानलहरूको प्रयोग गरेर निर्माण गरिनेछ। निर्माण सन् २०१९ को अन्त्यमा सुरु भएको थियो र गर्डर राखिने कार्य अगष्ट २०२५ मा निर्धारित छ।

६. संसाधन र उपयोगिता व्यवस्थापन

निर्माणका लागि आवश्यक सामग्रीहरू खास गरी खस्रो र मसिनो गिट्टी (aggregates) नजिकैको क्रशिंग प्लान्टमा सुरंग खन्ने प्रक्रियाबाट निकालिएको माटोबाट प्राप्त गरिनेछ। इन्धन खपत लगभग ८३०,००० लिटर हुने अनुमान छ। कामदारहरूको आवश्यकता करिब ६,८०० व्यक्ति-दिन पुग्नेछ। निर्माण सामग्रीहरू भण्डारण गर्नका लागि अप्रोच रोड नजिकै क्षेत्रहरू छनोट गरिएको छ। बिजुली खम्बा, टेलिकम लाइन, र जल निकासी प्रणालीहरू सेवा प्रदायकहरूसँग समन्वय गरी पुनः स्थापना गरिनेछ।

७. आधारभूत वातावरणीय अवस्था

यो क्षेत्र प्रमुख रूपमा शहरीकृत छ, जहाँ त्रिभुवन राज पथ (TRP) ले प्रतिदिन १०,००० भन्दा बढी वाहनहरूको संचालन सेवा गर्दछ। यो क्षेत्र मुख्यतया मिहीन बलौटे माटो (silty clay) र नदीजन्य जमाव (fluvial deposits) को सम्मिश्रणले बनेको छ। जल निकासी प्रणाली १०० वर्षको बाढी घटनाका लागि डिजाइन गरिएको छ। वायु र ध्वनि गुणस्तर दुई स्थानहरूमा मोनिटर गरिएको छ, जसले शहरी क्षेत्रका लागि स्वीकार्य स्तर देखाएको छ। परियोजना साइटमा कुनै पनि रुख वा जंगल छैन, जसले गर्दा वनको कटान आवश्यक पर्दैन। आयोजना स्थलको करिब १ किमीको घेरामा कुनै जंगल छैन। तसर्थ आयोजना वरिपरी घर पालुवा जनावर बाहेक अरु वन जन्तु भएको जानकारी छैन।

८. प्रभावित घरधुरीहरूको सामाजिक-आर्थिक वातावरण

कुल ८२ घरधुरीमा रहेका ४७३ जना मानिसहरू प्रत्यक्ष प्रभावित हुनेछन्। ११४ वटा संख्यामा बिभाजित कुल ०.४८५ हेक्टर जमिन अधिग्रहण गर्न आवश्यक छ। प्रभावित संरचनाहरूमा आवासीय र व्यावसायिक भवनहरू समावेश छन्। यहाँको जनसंख्या बहुजातीय छ, जसमा नेवार जाती बढी छन्। धेरै घरधुरीहरूले व्यापार, भाडा, वा सेवा मार्फत आम्दानी गर्छन्। प्रभावित घरधुरीको औसत वार्षिक आय १२,३७,६५२ रुपैयाँ (प्रतिव्यक्ति २,१४,३९६ रुपैयाँ) छ। उनीहरूको मुख्य आय स्रोत: व्यापार/व्यवसाय (३५.७४%), भाडा (३०.१७%), सेवा (१६.३६%), र विदेशी रोजगार (११.२९%)। कृषिमा निर्भरता न्यून छ।

९. सार्वजनिक सल्लाह र सहभागिता

प्रस्तावित आयोजनाको निमित्त सार्वजनिक सुनुवाई फेब्रुअरी ११, २०२५ मा आयोजना गरिएको थियो, जसमा ४५ जना हितधारकहरू सहभागी भएका थिए। सुझावहरूका आधारमा सांस्कृतिक बाटोहरू संरक्षण गर्न मामूली पुनः संरेखण (Dealign) गरिएको छ। यस क्रममा ७-दिने सार्वजनिक सूचना पनि प्रकाशित गरिएको थियो। स्थानीय सरकारहरूबाट प्राप्त सुझावहरू अन्तिम IEE मा समावेश गरिएको छ। सांस्कृतिक र धार्मिक पक्षसँग सम्बन्धित चिन्ताहरू संवेदनशीलता पूर्वक सम्बोधन गरिएको छ।

१०. प्रभाव मूल्यांकन विधि

प्रभावहरू म्याट्रिक्स र चेकलिस्ट विधिहरू प्रयोग गरी मूल्यांकन गरिएको छ। श्रेणीहरूमा वायु, पानी, ध्वनि, जैविक, र सामाजिक-आर्थिक प्रभावहरू समावेश छन्। विशेषज्ञका विचार र GIS उपकरणहरू स्थानीय विश्लेषणका लागि प्रयोग गरिएको छ। महत्व निर्धारण गर्दा प्रभावको तीव्रता, विस्तार, र अवधि आधार बनाइएको छ। त्यसपछि न्यूनीकरण सम्बन्धी रणनीतिहरू तयार गरिएको छ।

११. जमिन अधिग्रहण र मुआवजा

लगभग ०.४८५ हेक्टर निजी जमिन अधिग्रहण गर्न आवश्यक छ, जसले ११४ वटा जग्गा र ८२ घरधुरीहरूलाई प्रभाव पार्नेछ। मुआवजा सर्वोच्च अदालतको निर्णय अनुसार सडक सिमाना १६ मिटर कायम गरी सो भन्दा माथीको आवश्यक जग्गाको मुआब्जा दिइनेछ। मुआवजा निर्धारण समिति (CDC) गठन गरिएको छ, जसले बजार मूल्यांकन गरी निष्पक्ष, पारदर्शी, र समावेशी मुआवजा प्रक्रिया सुनिश्चित गर्नेछ। र सोही समितिले तोके बमोजिम सम्बन्धित जग्गा एवं संरचनाहरूको मुआवजा दिइने छ।

१२. निर्माण सुरक्षा उपाय

निर्माणले गहिरो खन्ने र भारी उपकरण प्रयोग गर्दछ, जसले कामदार र सार्वजनिक सुरक्षालाई जोखिममा पार्न सक्छ। सुरक्षा उपायहरूमा सबै कामदारहरूका लागि व्यक्तिगत सुरक्षा उपकरण (PPE), यातायात डाइभर्सन योजना, साइट ब्यारिकेडिंग, उपकरण मर्मत सम्भार, र आपतकालीन प्रतिक्रिया तालिम समावेश छन्। श्रम ऐन, २०७४ अनुसार सुरक्षा र स्वास्थ्य समितिको पर्यवेक्षणमा काम हुनेछ।

१३. ठोस र तरल फोहरको व्यवस्थापन

निर्माण र क्याम्प गतिविधिहरूले ठोस र तरल दुबै प्रकारको फोहर उत्पन्न गर्दछ। ठोस क्याम्पबाट निस्कने ठोस फोहर चन्द्रागिरी नगरपालिकाले संकलन गर्नेछ। क्याम्पबाट निस्कने तरल फोहर सेप्टिक ट्यांक र सोक पिट मार्फत उपचार गरिनेछ। कुनै पनि अनुपचारित फोहर स्थानीय नाली वा नदीहरूमा निस्कने छैन। पुनः प्रयोग गर्न सकिने वस्तुहरू छुट्याइनेछन्।

१४. कानूनी र संस्थागत ढाँचा

यो परियोजना वातावरण संरक्षण ऐन २०७६, जमिन अधिग्रहण ऐन २०३४, र स्थानीय सरकार संचालन ऐन २०७४ लगायत विभिन्न राष्ट्रिय कानूनहरूसँग अनुरूप छ। यसले JICA को वातावरणीय दिशानिर्देशहरू पनि पालना गर्दछ। DoR, स्थानीय सरकार, र ठेकेदारहरूको जिम्मेवारी परिभाषित गरिएको छ, र GESU र MoPIT ले अनुपालन निरीक्षण गर्नेछन्।

१५. सार्वजनिक उपयोगिता र पुनः स्थापना

परियोजनाले ४० वटा बिजुली खम्बा, ८ वटा टेलिफोन खम्बा, र इन्टरनेट/टेलिकम केबलहरू पुनः स्थापना गर्न आवश्यक पर्दछ। सेवा बिच्छेद नहोस् भन्नका लागि सम्बन्धित प्राधिकरणहरूसँग समन्वय गरिएको छ।

१६. वातावरण व्यवस्थापन योजना (EMP)

EMP ले पहिचान गरिएका वातावरणीय र सामाजिक प्रभावहरू सम्बोधन गर्न न्यूनीकरण उपायहरू उल्लेख गर्दछ। मुख्य घटकहरूमा नियमित पानी छर्का र ध्वनि अवरोधहरू मार्फत वायु र ध्वनि प्रदूषण नियन्त्रण, यातायात व्यवस्थापन योजना, र निर्माणको क्रममा निस्किएका सामग्रीहरू (मलबा) व्यवस्थापन समावेश छन्। EMP ले ठेकेदार, पर्यवेक्षण सल्लाहकार, र DoR को भूमिका र जिम्मेवारी पनि परिभाषित गर्दछ।

१७. वातावरण मोनिटरिंग योजना (EMoP)

EMoP ले न्यूनीकरण उपायहरूको प्रभावकारिता ट्र्याक गर्न व्यवस्थित दृष्टिकोण प्रदान गर्दछ। यसमा वायु, पानी, र ध्वनि गुणस्तरको नियमित मूल्यांकन, माटो कटाव र मलबा/फोहर व्यवस्थापनका लागि दृश्य निरीक्षण, र पुनर्वास प्रभावको सामाजिक-आर्थिक मोनिटरिंग समावेश छ। संकेतक, आवृत्ति, र जिम्मेवार पक्षहरू स्पष्ट रूपमा परिभाषित गरिएका छन्, जसले जवाफदेही र अनुपालन सुनिश्चित गर्दछ।

१८. निष्कर्ष र सिफारिसहरू

IEE को अध्ययनको निष्कर्ष अनुसार किसिपिडी फ्लाईभर प्राविधिक र वातावरणीय रूपमा सम्भव छ। प्रस्तावित न्यूनीकरण र मोनिटरिंग उपायहरूसँग, प्रतिकूल प्रभावहरू व्यवस्थापन योग्य छन्। यो परियोजनाले दीर्घकालीन सामाजिक-आर्थिक लाभहरू ल्याउने अपेक्षा छ, जसमा यातायात जडान र सडक सुरक्षा सुधार समावेश छन्। यो अध्ययनले यो पनि सिफारिस गरिएको छ कि निर्माण IEE र EMP दिशानिर्देशहरू कडाईले पालना गरोस् र नियमित रिपोर्टिङ गरिँदै जाओस्।