Environmental and Social Management Plan

of

Link Road Improvement in Existing Biratnagar ICP (Contract ID No.: SRCTIP/NITDB/W/NCB-03/2081-82)

(Biratnagar Metropolitan City, Wards 14, 17 and 18, Morang, Koshi Province)

Nepal Intermodal Transport Development Board

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ACRONYMS

BES	Brief Environmental Study
BMC	Biratnagar Metropolitan City
BoQ	Bill of Quantity
CHESMP	Contractor's Health, Environmnetal and Social Management Plan
CSC	Construction Supervision Consultant
DIA	Direct Impact Area
DoI	Department of Industry
DoR	Department of Roads
DPR	Detail Project Report
EHS	Environment, Health and Safety
EPA	Environment Protection Act
EPR	Environment Protection Rule
ESE	Environmental and Social Expert
ESF	Environment and Social Framework
ESMF	Environmental and Social Management Framewotk
ESSR	Environmnetal and Social Screening Report
ESMP	Environmental and Social Management Plan
ESSs	Environmental and Social Standards
GBV	Gender Based Violence
GoN	Government of Nepal
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HH	Household
ICP	Integrated Check Post
IIA	Indirect Impact Area
LMP	Labour Management Procedure
MoICS	Ministry of Industry Commerce and Supplies
MSDS	Material Safety Data Sheets
NAAQS	National Ambient Air Quality Standard
NITDB	Nepal Intermodal Transport Development Board
NPHC	National Population and Housing Census
OHS	Occupational Healtha and Safety
PCO	Project Coordination Office
PPE	Personal Protective Equipment
SEA/SH	Sexual Exploitation and Abuse/Sexual Harrashment
SRCTIP	Strategic Road Connectivity and Trade Improveent Project
STD/STI	Sexually Transmitted Disease/ Sexually Transmitted Infection
WB	World Bank

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1 INTRODUCTION

1.1 Project Background

The World Bank will be supporting the Ministry of Physical Infrastructure and Transport (MOPIT) and the Ministry of Industry, Commerce and Supplies (MoICS) implementing agency in implementing the Strategic Road Connectivity and Trade Improvement Project (SRCTIP). The objective of the project is to improve the efficiency and safety of select transport infrastructure, improve the efficiency of cross-border trade, and strengthen capacity for Strategic Road Network management in Nepal.

The Government of Nepal has established Nepal Intermodal Transport Development Board (NITDB) under the Development Board Act 1956 A.D. under Ministry of Industry, Commerce and Supplies (MoICS) to regulate and manage the cross-border infrastructures such as ICDs, Dry Ports, Container Freight Stations (CFSs), Integrated Check Posts (ICPs), Collection and Distribution Centers. The Biratnagar ICP was built in 2020 and started its full-fledged operation since February 2020. To serve the ICP, there exists a two-lane blacktopped road (4.5 km) from main highway to the ICP gate. The existing double lane road is narrow to address number, frequency and speeds of CFs bound to different locations and approaching freights to ICP from different locations. Improvement and upgrading the existing access road facility are needed to address the foregoing issues for efficient operation of ICP and realize the desired result of ICP commissioning. The improvement of the link road from 2 lanes to 4 lanes (hereafter referred to as "the project") will bring efficiency of ICP operation with safe and quick vehicles movement, solve existing traffice problems and and water logging in road alignment.

1.2 Rational and Scope of the ESMP

The Environmental and Social Management Plan (ESMP) sets out how the environmental and social risks and impacts will be managed for the link road improvement through the different phases of construction i.e., planning and design, construction, operations and decommissioning in response to the road improvement. The ESMP includes several matrices identifying key risks and setting out Environmental and Social (E & S) mitigation measures. It also includes key elements relevant to the delivery of the E&S management measures, such as institutional/ implementation arrangements, plans for capacity building and training and budget. The ESMP follows the World Bank Environmental and Social Framework (ESF) as well as the Brief Environmental Study (BES) mandated by GoN requirement. The issues and risks identified in the matrix are based on current detailed design and environmental and social information of the site. The WBG EHS Guidelines and stakeholder consultation further informed the choice of mitigation measures. The ESMP identifies other specific E&S management tools/instruments, such as the Stakeholder Engagement Plan (SEP), Labor management procedures (LMP), SEA/SH Action Plan, that should be referenced in conjunction.

1.3 Salient Features

The salient features of the proposal are provided in following Table 1-1.

Table 1-1: Salient Features of the Project

General	
Proponent	Ministry of Industry, Commerce and Supplies
Project Name	Strategic Road Connectivity and Trade Improvement Project (SRCTIP)
Type of Proposed Project	Link Road Improvement/upgrading (2 lanes to 4 lanes) in the Existing Biratnagar ICD
Province	Koshi Province
District	Morang
Municipality	Biratnagar Metropolitan City
Project Affected Wards	Wards 14, 17 and 18 of Biratnagar Metropolitan City
Elevation Range	61 m AMSL to 64 AMSL
Built up area	42040 Sq. m.
Land ownership	Government
Length	4.4 km
Type	Asphalt Concrete
No. of Lane	4
Formation width	24m
Median Width	5m
Number of Culverts	6
Types of Culverts	Box culvert
Land requirement	Government
Financial Indicators	
Total proposed Project Cost	NPR 668766957.98
Construction Period	18 months after preparatory work/contract

1.3.1 Location, Type and Scale of Facilities

The project is located in wards 14, 17 and 18 (Road Extension Area) and Ward 18 (ICP) of Biratnagar Metropolitan City (BMC) of Morang District in Koshi Province. Biratnagar is known as the industrial capital of Nepal. Biratnagar ICP is located near to Nepal-India Boarder and is also adjacent to the Indian counterpart Jogbani ICP in the Indian state of Bihar. Besides its industrial and commercial significance, the city has its own historical and cultural significance. Biratnagar is easily accessible via road and air. The road distance to Biratnagar from Kathmandu is about 375 Km and 35 minutes flight time to Biratnagar airport. The starting point of the Link road 14 Km south from Biratnagar airport, 5 Km south from the Biratnagar Bazar and end point is 4.5 Km east to the ICP gate.

The Location of the Project Area is provided below.

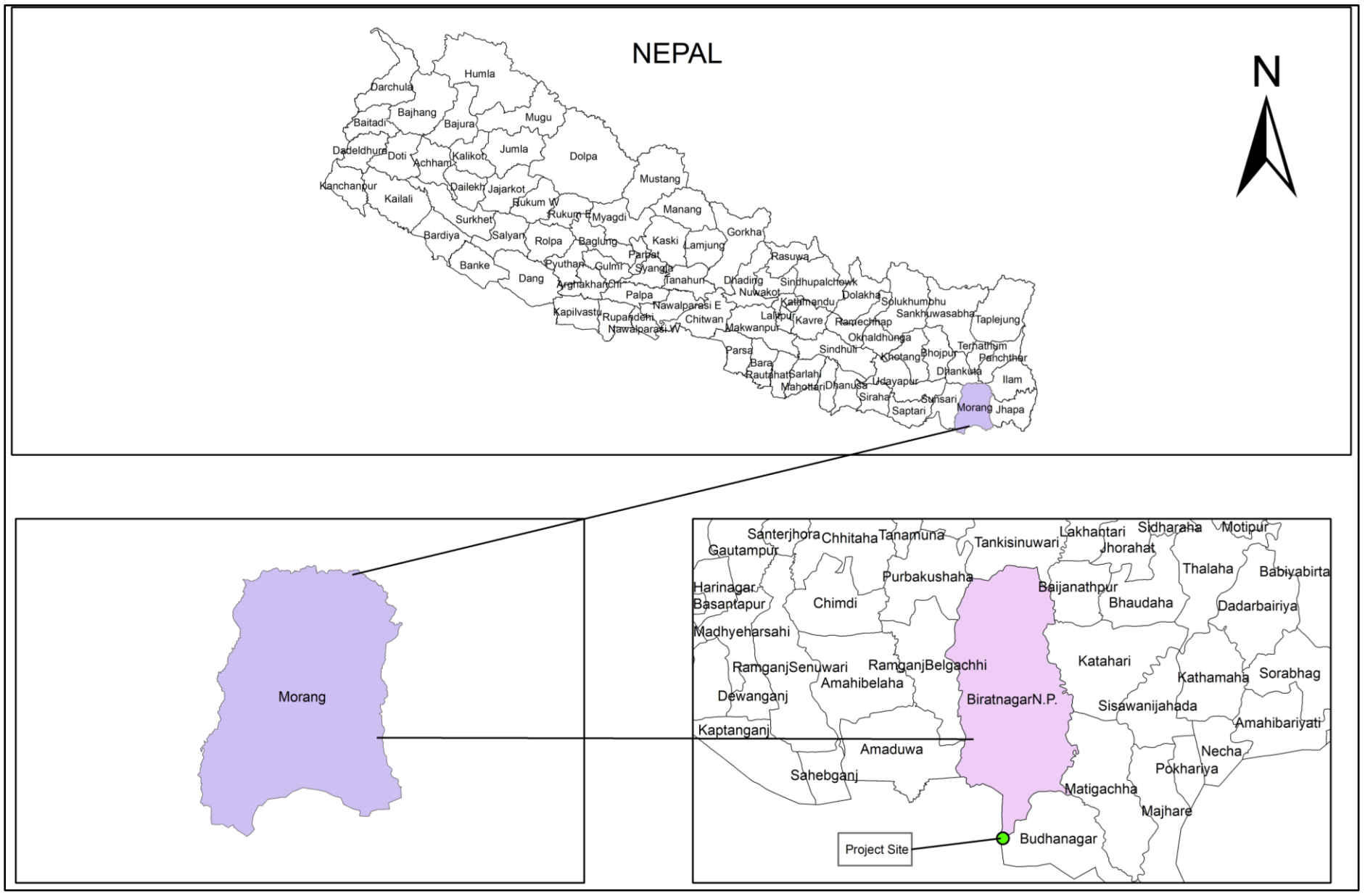

Figure 1.1: Project Location in Nepal (Source: Department of Survey)

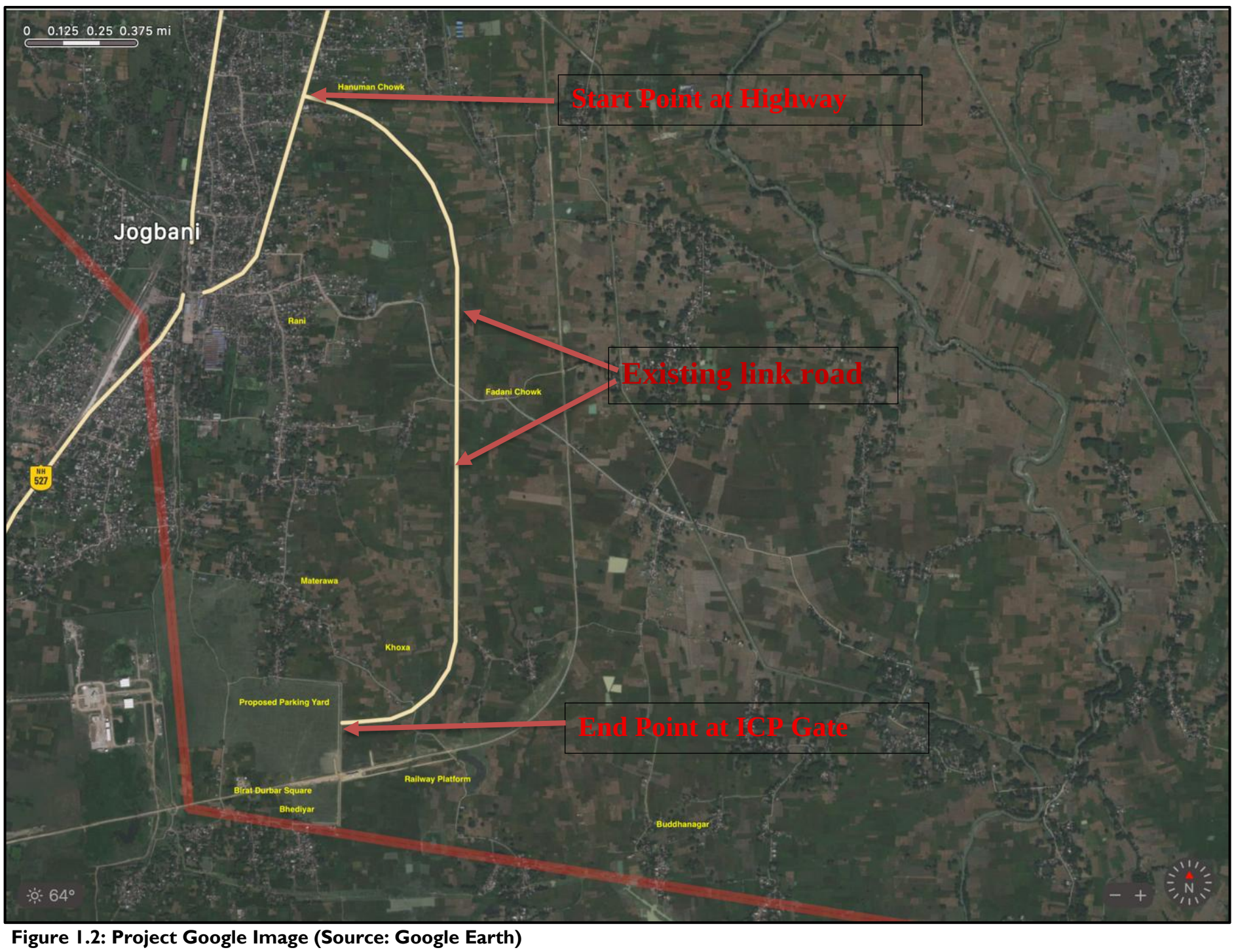

Figure 1.2: Project Google Image (Source: Google Earth)

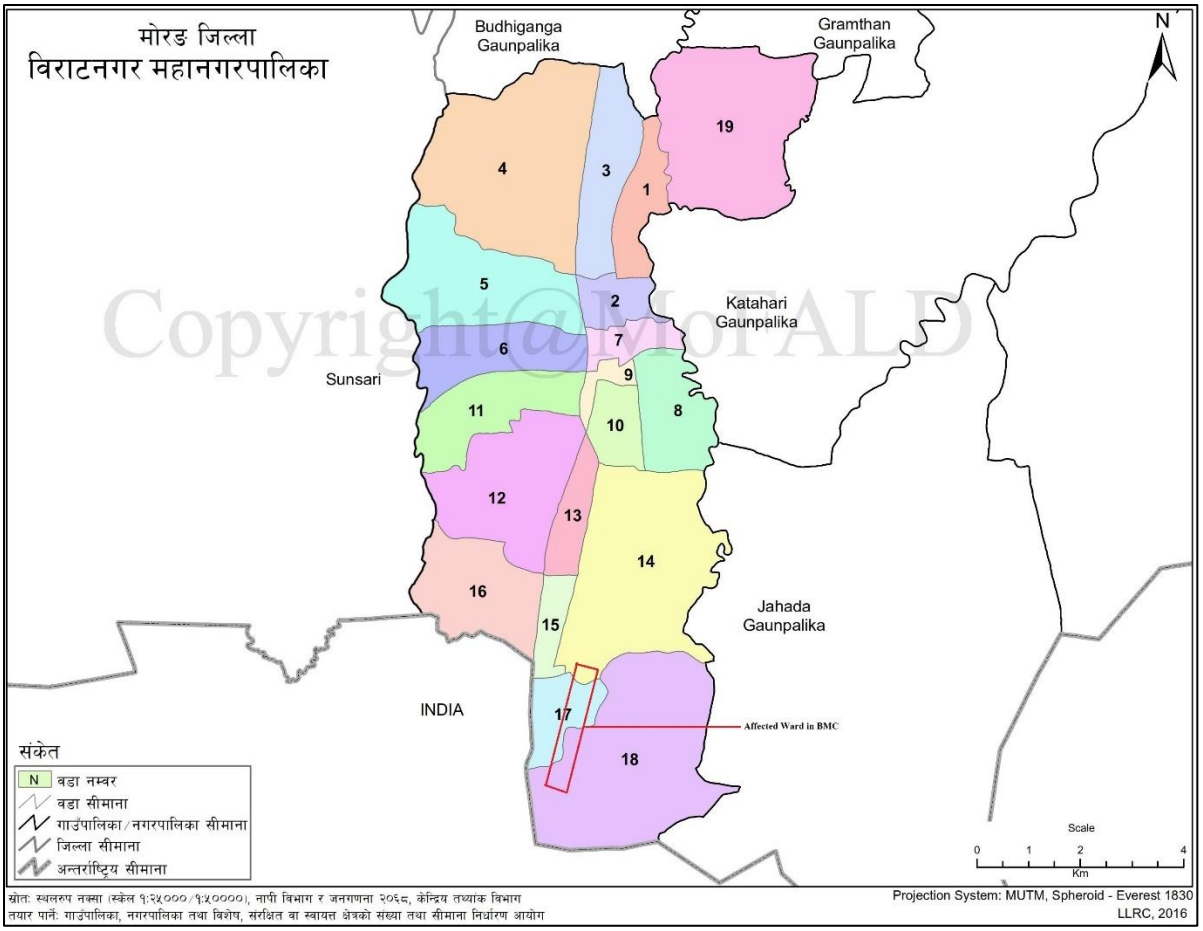

Figure 1.3: Project Location in Municipality Map (Source: MoFAGA

Photo: Start Point of the Existing Road

Photo: End Point of the Existing Road

1.3.2 Design of the project

The existing two lanes road does not have any road furniture and signage leading to compromise safety during road crossings and driving. People walk along the carriage way while vehicles are parked obstructing the pedestrian movement.

The link road improvement will follow the Nepal Road Standard 2077 for the comprehensive safety measures such as road signs, pavement markings, and pedestrian crossings, appropriate geometric designs, such as clear sight distances, safe curve radii, and adequate lane and shoulder widths based on terrain classification. Special provisions such as zebra crossings, traffic light, and traffic calming measures will also be considered. Proper drainage management and safety audits during design, construction, and operation stages will be considered. Biratnagar Metropolitan city will also be coordinated for the road use if needed.

1.3.3 Land Acquisition

The land required for the widening of the ICP link road is owned by GoN. It is observed that some parts of the house at 500 m from the start point of the road (Hanuman Mandir) falls inside the acquired width of road and possible RoW of 30 m. Likewise, a house at the 300 m from the start point is at the proposed construction width. Similarly, two shops at Fadani Chowk (Akthar Chowk) falls at the boundary of the proposed construction width. During the field visit, it is found that the owners of these houses and shop will move to other places once the project will start. The consultation with these owners will be carried out, minutes will be prepared and necessary mitigations will be implemented.

1.3.4 Resource requirement

All the construction materials will be procured locally or domestic purchase. The quarry or borrow material will be sourced from either from approved quarry site within the district or private party/contractors' quarries with environmental clearance. The equipment will be rented and acquired from foreign imports.

The required manpower for the proposed works is estimated about 9187 person days (skilled-about 15 number) and 25302 person-day (Unskilled-42 number). The Contractor is expected to hire most of the labour locally due to the availability of labours in the project area.

1.3.5 Corridor of Impacts

For the scope of this ESMP, the impact areas those classified on the basis of the proximity and magnitude of the impacts as described in the National Environment Impact Assessment Guidelines (GoN, 2050) are:

Direct Impact Area (DIA): The Direct Impact Area refers to the zone where construction activities take place and project facilities are located, and a high level of impact on environmental components is anticipated. 100 m from the centerline of the road has also been considered for the direct impact area.

Indirect Impact Area (IIA): This refers to the immediate vicinity of the project site where environmental components may face indirect impacts from construction activities.

The direct and indirect impact areas are listed in Table below.

Table 1-2: Impact area delineation

Direct Impact Area	Indirect Impact Area
RoW of the road and 100 m either side from the centreline of the road	Wards 14, 17 and 18 of Biratnagar Metropolitan City where the locals were also consulted.

1.4 Environmental and Social Baseline Condition

The environmental and social baseline information used in this ESMP are based the detail Environmental and Social Screening Report (ESSR), design report of Biratnagar ICP and information collected during the preliminary filed visits by the experts of PCO-NITDB and Construction Supervision Consultants (CSC). The information on existing physical, biological and socio-economic and cultural environment were collected from both primary and secondary source. A team with environmental and social safeguard experts of CSC had conducted a visit (21 July, 2023 to 24 July, 2023 and 28 December, 2024 to 6 January, 2025) and carried out field investigation through observation, measurement and consultation to collect the baseline information. The relevant information collected from geo-tech expert, engineers and other team members from the PCO and CSC were also used in the report.

The topographical map (2687:10A Biratnagar) was reviewed for land use and other features of the project area. The geological map of the project area was reviewed to understand the underlying geology of the project area. The meteorological and hydrological data of the study area were analyzed by the design team with reference to the nearest meteorological station at Biratnagar airport. The wildlife and vegetation data of the ICP area was acquired by site visit and verified from publications of Division Forest Office, Morang and other institutions and research papers for reference. Local level socio-economic and cultural information were reviewed from CBS publication, Biratnagar Metropolitan City Profile, 2022.

The ESMP has been updated as per the approved *Brief Environmental Study (BES) for the construction of infrastructures and link road improvement in the existing Biratnagar ICP* which has been approved by the Department of Industry in May, 2025.

1.4.1 Physical Environment

The altitude of the proposed site is about 61–64 m AMSL. Land use along the road includes agriculture, uncultivated land, settlements, and water bodies. The Singhiya River flows 2–3.5 km east of the site, and Kichhak Badh Pokhari, a religiously significant pond, lies 1.5 km southeast. Flooding is common in nearby low-lying areas, particularly wards 14 and 18, due to infrastructure obstruction and poor drainage. PM2.5 exceeds limits on Link Road, but other air, noise, and water quality parameters meet national standards. Traffic includes two-wheelers, freight containers, and private vehicles, with potential disruption to local access and movement during construction.

1.4.2 Biological Environment

At Chainage 1+800 to Chainage 1+900, a single patch of vegetation is located in the area acquired by GoN from where about 50 trees will be required to clear. Similarly, 25 more trees need to be cleared along the alignment. These plants consist of Jamun (*Syzygium cumini*), Khajur *(Phoenix dactylifera)*. Others consist of Pakhar/Pakhad (*Ficus Virens*), Aak (*Sodom apple*), Shirish (*Albizia lebbeck*), Kadam (*Neolamarckia cadamba)*, Mango (*Mangifera indica)*, Neem (*Azadirachta indica*), etc. Fauna such as Rabbit (*Lepus nigricollis)*, Squirrel (*Funambulus pennantii)*, Jackal (*Canis aureus)*, Mongoose (*Herpestes edwardsii)* are found in the project sites. Avifauna such as Bulbul (*Pycnonotus cafer)*, Spotted Dove (*Streptopelia chinensis)*, Sparrow (*Passer*

domesticus), Egret (*Bubulcus ibis)*, Crow (*Corvus splendens)* etc. are also observed. As per the locals, frog (*Limnonectes teraiensis)*, bronze back tree snake (*Dendrelaphis tristis)*, common cat snakes (*Boiga trigonata trigonata),* Common Blind Snake (*Rhamphotyphlops braminus)* and turtles are some of the Herpetofauna found in project area. There are also some fish species such as Hile (*Chana striata*) Katle (*Labeo catla*), Carp (*Cyprinus carpio*) in the nearby water resources.

1.4.3 Socio-economic and Cultural Environment

According to the National Population and Housing Census 2021, wards 14, 17, and 18 have a combined population of 32,786 across 6,562 households, with a nearly equal male-to-female ratio. The population is ethnically diverse, comprising primarily Muslim (21%), Yadav (14%), Dalit (4%), Chhetri (4%), Shah (5%), along with groups like Kewat, Mushahar, and Thakur. Around 80% of households follow Hinduism and 20% Islam, with Maithili being the dominant language (77%), followed by Nepali (13%), and others such as Urdu, Hindi, and Magahi. Settlements like Materawa, Khoksa, Behidyar, Buddhanagar, and Rani lie adjacent to the project area. Labour (12%) and agriculture (10%) are the main sources of livelihood, with 3.5% each engaged in skilled labour, business, and service, and 2% in foreign employment. Stray cattle on roads pose a risk of accidents, worsened by the lack of street lighting. Notable accidents include fatal incidents in January 2025 (motorcycle-truck), October 2024 (truck-cyclist), and another on the ICP road involving multiple injuries.

Historical Birat Durbar Square lies towards the Southeastern corner, outside of the ICP boundary which is the end point of the link road. The distance from the ICP gate to the Birat Durbar is about 600.The area is low-lying with poor surface drainage, making it prone to inundation during the rainy season. Stakeholders have expressed concern about potential disruption to the natural drainage system during link road improvement. Although the existing 4 box and 2 pipe culverts are considered adequate, waterlogging occurs due to their frequent blockage. To address this, six box culverts will replace the old culverts in the road improvement.

1.5 Impacts on Disadvantages and Vulnerable Group

As the construction work is limited within ICP premises, no direct impact to the community is anticipated. Among the 1938 HHs and 7984 Population, the data from female-headed households 144 HHs, marginalized ethnic groups (Dalits, 399 HHs), Mushhar 406 HHs, Muslims/ 73 HHs, 4 HHs Buddhis, elderly (113 Number above 70 years), disabled (75 Number),

Among the 10 listed Indigenous communities of Tarai, Dhanuk (152 HHs), Gangai (145 HHs), Rajbanshi (88 HHs), Meche (10 HHs) and Kisan Tharu (1 HH) are residing in the ward. Indigenous communities such as Dhimal, Satar, Jhangad, Tajpuriya are reported in Metropolitan city. In the whole metropolitan city, there are 466 HHs are landless. However, about 1530 HHs has given the house to others, In the affected ward no landless are reported.

2 PROJECT SPECIFIC ENVIRONMENTAL AND SOCIAL RISKS AND MITIGATION MEASURES

The link road improvement has both the beneficial and adverse environmental and social issues. The employment creation, income generation, better road safety are some of the beneficial impacts during the construction and operation stages. Trees removal, waste generation, dust emission, noise, health and safety, SEA/SH, GBV, social disputes are some of the adverse impacts during preconstruction, construction and post-construction phases.

The impacts are separately mentioned as beneficial and adverse impacts on physical, biological, socio-economic/cultural environments for pre-construction, construction and operation stage. For beneficial impacts, benefit augmentation measures are considered and for adverse impacts, adverse impacts mitigation measures are considered.

2.1 Beneficial Environmental and Social Issues and Mitigation Measures

The upgrading activities of the link road will increase the employment opportunity and the flow of the people will create the trade and business opportunities to the locals. During the operation stage, the road improvement with proper safety measures not only reduces the existing accident frequency but also increases the public convenience while using link roads, mitigates existing water logging problems.

The benefit augmentation measures will enhance the beneficial environmental and social condition of the affected areas. The proponent and contractor will implement the proposed enhancement measures such as employment opportunity and capacity enhancement program as prime responsibilities.

The beneficial impacts and their enhancement measures during construction and operation are given below:

Table 2-1: Beneficial impacts and augmentation Measures during construction and operation

Activities	Associated beneficial Impacts	Benefit augmentation measures	Responsibilities	Time	Budget
Construction Phase					
Site clearance, excavation, Construction work	Employment generation and increase in income. – The unskilled labors are estimated to be 42 person (25,302 person-days) and skilled labours are 15 person (9187 person-days). – Increases the economic activities and enterprise development with multiplier effect contributing local economic growth.	– The project will include a binding clause in the contractor's ESMP to give employment priority to the local people of the project affected areas; – The local people particularly poor; dalits, ethnic, minority and women will be given priority for employment and on-the-job trainings. – Coordinate with ward offices for information dissemination of employment opportunities.;	Contractor Supervision Team, NITDB	During construction period	75,000
Business opportunities for local people to cater the need of workforce, Trade enhancement	Enterprise Development and Business Promotion – The existing shops, local business and restaurant get boosted due to the higher demands from the workers.	– Give priority to use local products. – Local people will be encouraged to establish local enterprises.	Contractor Supervision Team, NITDB	During construction work,	No cost is required
Construction related/labour requiring activities, Employment	Skill Enhancement of labour and of Locals – The construction activities enhance workers' skills in health and safety, EMP implementation, electric and other semiskilled and technical skills	– Give priority to poor; dalits, ethnic, minority and women – Project will give equipment operation related trainings to the newly employed workers depending upon their skills and the nature of the work offered.	Contractor/ Supervision Team	Before and during the construction work	150,000

	– Training to the local community road alignment	– Training for the roadside community on plumbing, electricity, wiring and driving. – Community awareness and capacity enhancement program			
Operation Phase					
Road improvement	Resolve the existing traffic problems and reduce road accident – Road safety concerns were raised during public hearing and the recommendation letter has also suggested the measures.	– Road safety measures such as roadside lights, traffic light, speed limit, zebra crossing, hoarding boards will be considered in design. – Regular maintenance of road – Traffic management	NITDB	Road operation	No cost is required
Culvert rehabilitation and management	Drainage management – During the road improvement, the existing poorly operating culverts are rehabilitated and new culverts are constructed, which will reduce the existing drainage and water logging problems in the roads.	– Regular maintenance – All the six culverts will be box culverts with proper design.	NITDB	Road operation	No cost is required

2.2 Adverse Environmental and Social Impacts

As the two lanes road has been operating and the additional widening are within the acquired RoW of GoN, the additional concerns of private land acquisitions do not require.

The adverse environmental and social safeguard issues in different phase are grouped into following Table.

Table 2-2: Environmental and Social Risks from the proposed Link Road

Preconstruction/Planning Stage	Construction Stage	(Operation & Decommissioning) Stage
– Risk of poor contractor's environmental, social, health and safety performance (ESHS), leading to non-compliance – Failure to adhere to ESMP can result project delays. – Inadequate training causing gaps in the ESMP awareness and implementation – Risk of poor stakeholder engagement, dissatisfaction, or grievances escalating into conflict – Delayed permits from DFO delaying project start or causing legal complications – Inadequate site-specific ESHMP posing non-compliance and operational	– Unsuitable sites selection/ over-extraction leading to environmental degradation – Accidents, diseases, heat stress, exposure to chemicals, and unsafe working conditions – Increased risk of GBV, SEA/SH and STD for workers and community incidents due to labour influx – Community grievances over employment, noise, dust, and access restrictions – Non-compliance of Labour Act of Nepal as well as WB Standard on ESS2 leading to poor working condition – Child labour, forced labour – Clearing vegetation cover causing Habitat loss, risk to protected species, and ecosystem disruption – Air pollution including dust causing health hazards to workers and local residents – Sanitation, disease outbreaks, conflicts, and waste management issues from poor construction camp – Road congestion, increased accident risk, and damage to local roads due to higher number of vehicles	– Delays, leftover spoil/waste, incomplete rehabilitation, community grievances during dismantling – Pollution, blockage of drainage due to operation waste – Risk of accidents, exposure to hazardous materials, inadequate PPE usage – Health and nuisance problems for communities – Increased risk due to operational traffic or decommissioning vehicles – Improper disposal leading to soil, water pollution, and legal non-compliance

2.2.1 Preconstruction/Planning Stage

Preconstruction stage activities include the necessary assessment and permit such as approval of environmental assessment, trees removal, construction material and equipment sourcing and site clearance. Public dissatisfaction and conflict, legal obstruction and impacts related to the site clearance such as air pollution, noise, safety and site security will occur if not considered initially.

Table 2-3: Environmental and Social Risks and Mitigation Measures during Preconstruction Stage

Activities	Associated Risks/Impacts	Adverse Impact Mitigation Measures/ Activities	Responsible Agency	Timeline	Budget
Finalization of Environmental and Social Documents (ESMP, BES)	– Inadequate ESMP/BES will lead to regulatory non-compliance and project delay. – It may fail to address key environmental and social issues.	– The procedural requirements of ESMP/BES will be followed. – All of the necessary approval (ESMP-WB will review and approve, BES-review and approved by the Department of Industry) – Detailed design, drawings and documents and budget will be included.	CSC/NITDB	ESMP (Before the contract, BES before the construction)	Included in design phase of the project
Inclusion of the EMP in Bid Documents	Failure to adhere to ESMP can result project delays and contractor's negligence.	– An approved EMP will be included in bidding documents and contracts.	CSC/NITDB	Before the contract for the construction	Included in design phase of the project
Preparation of Contractor's Environmental, health and Social Management plan and approval	Inadequate site-specific ESHMP posing non-compliance of safeguard and harm to workers, community and the environment	– The contractor will submit a detailed CHESMP as part of their bid requirement with different plans such as spoil, waste, traffic, health & safety, biodiversity etc. – The NITDB will consider availing the approved ESMP and BES to the contractors to guide their C-ESHMP development and ensure budgetary considerations in their bids.	Contractor/CSC/NITDB	Before construction activities	No budget for the CEHSMP preparation, it is under the contractor's responsibilities before the construction works starts

Hiring labour and Establishing labour camp	– Hiring workers without workforce assessment, worker's background, and site selection without stakeholder engagement will bring the conflicts – Child and forced labor	– Community engagement and local employment will be considered during hiring the labour. – The labour camp will be established in dedicated area within ICP or in rented apartments by the contractor in coordination with the NITDB – Age verification documents, recommendation from local authority	Contractor/NITDB	Before construction activities	50,000 Contractor's responsibilities
EMP Implementation Training	– Inadequate training causing gaps in the ESMP awareness/implementation leading to environmental harm, putting workers and the community at risk	– Regular training sessions for all relevant personnel on EMP implementation	Contractor/CSC/NITDB	Before Construction Activities	50,000 (Included in ESMP implementation Cost), Borne by CSC and PCO
Public awareness and Community Involvement	Lack of community awareness on subproject activities may result in potential dissatisfaction complaints.	– The community will be made aware of the details of subproject activities, objectives, detail design and grievance redress mechanism.	Contractor/CSC/NITDB	Before Construction Activities	150,000 The E & S experts of both CSC and PCO will be mobilized.

Source of Construction Material and Necessary Equipment	The legal obstruction for obtaining necessary construction material may delay in implementation.	– There will be the provision of obtaining required construction materials from the legally operating crusher industries/venders. – The quarry sites and amount of quarrying material with required quality will be monitored by the contractors/CSC/NITDB.	Contractor/CSC/NITDB	Before Construction Activities	The E & S experts of both CSC and PCO will be mobilized.
Consent/permit from DFO, Morang for cutting the trees during site clearance.	– Delayed permits from DFO delaying project start or causing legal complications	– The project will inform the DFO about tree removal and request their support. No vegetation will be cleared without prior approval from DFO. – The trees removal will follow the Standard for Removing Government trees, 2071 BS.			
Site Clearance	the risk of health and safety issues	– Health and safety plan will be prepared before the construction works starts and strictly followed during site clearance.	Contractor/CSC/NITDB	Before Construction Activities	The E & S experts of both CSC and PCO will be mobilized.

2.2.2 Construction Stage

Construction stage includes the impacts such as land use change, health and safety, impacts related to labour camp, social disturbances from construction crew, dust emission, noise, air and water pollution, waste generation and stockpiling of construction materials. The road upgrading activities will have significant issues of standing crop loss, obstruction in public mobility and hampers current use of RoW. The complaints from the public and social disputes are also associated during construction.

Adverse impacts during construction and their mitigation measures are provided as:

Table 2-4: Environmental and Social Risks and Mitigation Measures during Construction Stage

Activities	Adverse Impacts	Adverse Mitigation Measures/ Activities	Responsible Agency	Timeline	Budget
Physical Environment					
Quarry Sites and its Operation (if the contractor has its own crusher)	Environmental degradation, noise, dust, over exploitation of resources and dust emission and road safety during transportation	– Obtain required construction materials from the legally operating crusher industries/venders. – The quarry sites and amount of quarrying material will be monitored by the contractors/DSC/NITDB.	Contractor/DSC/, NITDB	Before obtaining the construction material	No budget is required. Supervision cost will be borne by respective agencies
Stockpiling of Construction material	If the construction materials are haphazardly placed at construction sites, or random sites, then this will cause land degradation, pose threats to safety of the community, and hinders public movement and traffic management.	– Designated, well-managed areas for material stockpiling will be established away from sensitive areas with fencing, covering and record-keeping. – The sites will be selected after the consultation with NITDB and their approval to use the land informing locals if private land is needed. – Water spraying over stockpiled materials may also be required. – Regular inspections will be done to ensure that stockpiles are managed properly and do not pose environmental or safety risks.	Contractor	During and after stockpiling	No additional cost is required

Construction of Road embankment with land filing along the existing road alignment.	Additional impact to the poor sewerage system of the area, Inundation of the area due to road embankment	– Care will be taken while working near the water system. – No construction waste will be thrown to the existing drainage system – Drainage will be cleaned regularly	Contractor/DSC/, NITDB	Before and during construction work	Budget is included in road construction
Operation of equipment and movement of vehicles during construction	Air pollution which may impact the human and environment Baseline data shows that the level of $PM_{2.5}$ is already on the higher side in the link road when compared to the standards. Even the slight increase in concentration may be significant.	– All construction vehicles will comply with Act with mandatory Green Sticker. – Water sprinkling along road during construction material transportation – Air pollutant parameters (TSPM, PM10, Sox, NOx, Cox) will be monitored regularly during construction. Conforming NAAQS of Nepal.	Contractor implements Supervision Team, NITDB monitor	Air Quality Monitoring in Quarterly basis throughout the construction period	Air Quality Monitoring 240,000
Construction activities,	Spoil generation/ construction waste	– A spoil disposal plans with safe disposal of spoil and filling during road widening will be developed and implemented. – Spoil generated could be used for the road improvement of the ICP.	Contractor	During construction period	

Labour camp and construction waste	The construction waste from construction sites will disturb the local environment.	– A solid waste collection and storage system will be established in all the construction related camps and construction sites. The collected waste will be segregated depending upon the property of the waste such as degradable, glass, metals, plastics, cloths and leather etc. and will be stored in separate bunded areas. These materials will be disposed as per the recommendations and approval of the supervision consultant's environmental officer. – Garbage containers of adequate size will be placed at critical places in the construction related camps and construction sites. The collected garbage will be collected daily for segregation and storage as outlined above.	Contractor Supervision Team, NITDB	During the transportation of material	400,000
movement of vehicles during construction	Fugitive dust control	– Dust control measures such as water spraying, covering of stockpiles, and minimizing vehicle speeds on unpaved roads will be implemented. – Use of PPEs (Mask, Helmets and Safety Google) by workers	Contractor Supervision Team, NITDB	During the transportation of material	5,00,000
Movement of vehicles and equipment	Noise and Vibration due to operation and movement of vehicles and equipment	– Ensure plant and equipment to keep noise at minimum. – Workers will be provided with appropriate ear muffs/plugs specially at crusher/construction site	Contractor	During construction	180,000 for noise monitoring

		– Prohibition on the blowing of horn in critical stretches close to villages and near the school area along the road. – Noise levels (1 hr Leq dB(A)) levels will be monitored regularly conforming WHO standards.			
Chemical used during construction	Chemical Environment	– Store chemicals in designated areas with proper signage and secondary containment. – Use leak-proof, clearly labeled containers for all chemicals. – Train workers on safe handling, storage, and emergency spill response in accordance of Material Safety Data Sheet (MSDS) – Conduct regular toolbox talks on the hazards associated with specific chemicals. – Install spill containment systems (e.g., bunds, drip trays, or absorbent mats) in high-risk areas. – Provide fire extinguishers for chemical hazards near storage areas. – Report spills to the site supervisor and relevant authorities as required. – Regularly inspect and maintain all storage and spill control equipment.	Contractor Supervision Team, NITDB	During construction	120,000, water quality test

Biological Environment					
Site clearance	About 50 trees at Chainage 1+800 to Chainage 1+900 will be cleared during the the road improvement.	– Trees cut in coordination with DFO – Wood logs management in time – Greenery promotion to be carried out	Contractor, NITDB	Plantation during construction and maintenance	300,000
Removal of grass, shrubs	Impact on dependent wildlife Clearing ground vegetation can lead to the loss of habitats for herpetofauna (both reptiles and amphibians), reducing their biodiversity.	– The trees with birds' nests will not be fell down suddenly. The nest will be relocated first in coordination with DFO if requires. – The animal found during the construction will be handed over to the concerned authority such as DFO and Morang and Koshi Tappu Wildlife Reserves.	Contractor Supervision Team, NITDB	During construction	50,000 for coordination cost is included
Socioeconomic and Cultural Environment					
Road widening	The 3.5 ha of land (currently cultivated by locals/uncultivated owned by the Government) will be converted to road structures.	– the top soil will be collected and will be used for turfing, landscaping and plantation purposes. – The contractor will take the responsibility of the top soil management.	Contractor Supervision Team, NITDB	During construction	No cost required
Construction related activities	Occupational health and safety of workers and community health & safety	– The contractor will develop and implement occupation health and safety management plan, Traffic Management Plan and Emergency Response Plan – These plans will be included in Contractor's EHSMP with the provision	Contractor	During construction	350,000

		of designated OHS staff to oversee OHS related issues at the project site. – Safety instructions will be provided to the contractor and monitored by the PCO/CSC. – Health screening and regular health checkups, health care will be provided. – Health insurance will be provided to the workers. – First aid kits, standby vehicle, and fire extinguishers will be provided in the sites. – To avoid risks due to the movement of vehicles, speed limit will be provisioned. – Soft and hard barricades, and warning signs will be placed in the construction site. – Provide comprehensive health and safety training to workers, including the use of PPE e.g. safety helmets, safety belt, boots, gloves will be provided to the workers. – Provide appropriate facilities such as access for approach and exit, temporary toilets, drinking water provisions, first aid kits etc. – Maintain safe distances between the earthmoving equipment and working labors. Work will be stopped in the heavy raining days and hot wave days			

Labour influx for employment	Disturbance to socio-economic system and cultural values, social disputes	– Recruit local labour to the extent they are available to minimize labour influx. – Strict anti-GBV, SEA/SH plans shall be developed and enforced including community awareness – Community awareness about the risks and prevention of STIs including human trafficking – Workforce to be sensitized on cultural and social norms as well as values of the host – Harassment, intimidation and/or exploitation will be prevented or addressed with clearly displayed IEC prohibition signage and CoC	Contractor Supervision Team, NITDB	Will be prepared by the contractor	Coordination cost and contractor cost will bear the expenses
Worker's camp, Vehicle movement,	Public health and sanitation of the project area Inadequate sanitation and waste management in camps can lead to the spread of diseases.	– A standard Labour camp facilities will be followed if established. The labour management procedure of ESS 2 of ESF will be followed. – Health and hygiene in the camp site (against unsafe working conditions, accidents, transmission of communicable diseases etc.) will be given top priority. – Adequate sanitation, waste management, and clean water facilities along with proper ventilation, lightening and security will be provided in construction camps to ensure the health and well-being of workers.	Contractor Supervision Team, NITDB	Will be prepared by the contractor	NRs. 20,00,000

		– A comprehensive waste management with strategies for recycling, reuse will be developed and implemented. – Coordination with local communities and authorities – If require, establish Labour camp with i) well-ventilated rooms ii) lighting facilities, iii) adequate toilet and bathroom facilities iv) common cooking and dining facilities, v) adequate communication facilities, vi) recreation facilities, vii) first aid facilities, viii) runoff drainage facilities, ix) solid waste collection and storage and transportation facilities, x) water supply facilities, xi) grosser and consumable shops, xii) LPG gas facilities for cooking etc. – Toilets for the workforce to be established at least 50 m away from water sources – Prohibit Open waste disposal – Workers' health will be screened against communicable diseases – Discourage outside workforce to stay outside the camps – Encourage local labor force for project employment			
Children and Women in labour work	Discrimination in hiring practices can lead to social tension and exclusion of local and	– An employment policy will be prepared so that the local people may not be deprived of employment opportunities.	Contractor Supervision Team, NITDB	Will be prepared by the contractor	No additional cost will be required.

during construction	marginalized groups. There will be the possibility of child labour in the construction activities.	– Local people and women above the age of 18 will be given preference for employment. – Under aged child of less than 18 years will not be employed in the project works. (Age verification documents such as National ID, Citizenship, License, Passport etc. recommendation from local authority) – Under aged child of less than 18 years will not be employed in the project works. – The child related policies against child labor will be enforced and the workers meet the legal age requirements. – Forced labor will be prohibited in the project construction works. – The construction workforce will be employed on the basis of equal opportunity to all. No worker will be discriminated in the aspects of wage rates, trainings, or other benefits and services – A documented employment letter will be provided to each of the workers prior to engagement in the construction works stating their rights related to hours of work, wages, overtime, compensation, and benefits as per the national labor law. – Retrenchment of workers without prior notification on the basis of work relationships will be prohibited. The			

		workers will be paid all his dues and benefits prior to the termination.			
Vehicle movement during transportation of material	Road accident	– The traffic management plan will include clear signage, speed limits, flag personnel if needed, and proper coordination to prevent accidents and minimize traffic congestion. – A traffic management plans that include designated routes, timing of deliveries to avoid peak hours and speed limit will be developed and implemented. – Clear signage and signals around the construction site will be installed to guide traffic and reduce accident risks. – Awareness campaigns for local residents will be conducted about the construction schedule and potential traffic disruptions, and encourage safe driving practices around the site. – Nepal Road Standard 2077 will be followed during design and for road safety measures.	Contractor/NITDB	During material transportation	Traffic coordination cost 150,000
Road widening	During the road widening work, irrigation canal, water supply lines, electric poles may be disturbed.	– Irrigation canal will be rehabilitated if damaged. – Electric poles will be shifted in coordination with metropolitan city and Nepal Electricity Authority – Care will be taken shifting the water pipes, rehabilitated if damaged	Contractor/NITDB	During construction	

Road widening	Removal of private shed/shops/structures	– The owners will be provided the time for the site clearance. – Traffic check post will be relocated.	Contractor/NITDB	During material transportation	Coordination
Road widening	Loss of the standing crops	– The owners will be informed about the time of construction of road. – The time will be allocated for the harvesting the crops.	Contractor/NITDB	During material transportation	Coordination
Construction work	Grievance	– A focal person for the Grievance/SEA/SH/GBV will be designated. – Management of Grievance Redress Mechanism	Proponent	During construction	Included in GBV oreientation

2.2.3 Post Construction Stage (Decommissioning and Operation Stage)

Post construction stage includes both decommissioning such as dismantling, demolition, and site restoration and operation of aroad. Both the activities can have significant environmental and social impacts. The impacts those were not considered initially will be considered in the operation stage of the proposed infrastructures.

Table 2-5: Environmental and Social Risks and Mitigation Measures during Operation Stage

Activities	Impacts	Mitigation Measures	Responsibility	Timing	Budget
Physical Environment					
Dismantling and demolition of the temporary structures	Noise, Dust Emission, and Air Pollution Generate significant noise, dust which may reduce air quality leading to health issues of workers and residents	Noise control measures, dust suppression and air quality monitoring will be considered during the post construction activities.	Contractor/NITDB	After construction	Included in civil contract

Biological Environment					
Implementing management plan of construction work	Failure to complete or maintain mitigation measures, such as tree planting, spoil management can lead to environmental and social problems.	– Strict monitoring of the compliance and instruct the contractor for complete the remaining task – Take care of the plantation and trees status.	Contractor/NITDB	After construction	
Socioeconomic and Cultural Environment					
Operation of road	Culvert Maintenance	Maintain the drainage system			
Operation of road	Encroachment of RoW	NITDB in coordination with local authority (to discourage settlements along the road site RoW.	NITDB	Cost will be borne by NITDB	Operation of road
Operation of road	Traffic accidents and associated risks (Community, children, elderly, and general public)	– Raise awareness of traffic rules, pedestrian / cycle lanes – Additional lightening will be added. – Traffic control measures, including speed limits will be enforced strictly. – Further encroachment and squatting within the ROW will be prevented.	NITDB	Cost will be borne by NITDB	Operation of road

3 EMERGENCY, PREPAREDNESS AND RESPONSE

Emergency incidents occurring on site may include spillage, occupational exposure to hazardous materials, equipment failure, accidents, solid waste and fire. These emergency events could seriously affect workers, communities, operators, and the environment.

The Emergency, Preparedness and Response Management Plan for the construction site will be displayed on Safety Notice Boards and other prominent locations around the site. The plan shall be reviewed during EHS committee meetings and all the workers will be trained.

Sufficient first aid facilities will be available for the site as specified ***'First Aid'*** and qualified First Aid personnel will be appointed to meet the requirements of EHS Legislation.

The unfavorable weather conditions refer to any weather event that increases the risk of having an accident. Rain and heat are all example of unfavorable weather conditions and following precautions is planned:

- During heavy rains, accidents, or emergencies of any kind, all work shall be suspended.
- Sawing, cutting, grinding, sanding, chipping, shall be conducted with proper safety measures as applicable.
- The contractor shall ensure shade station and drinking water in the work sites along with safe sight distance in both construction areas and construction camp sites.

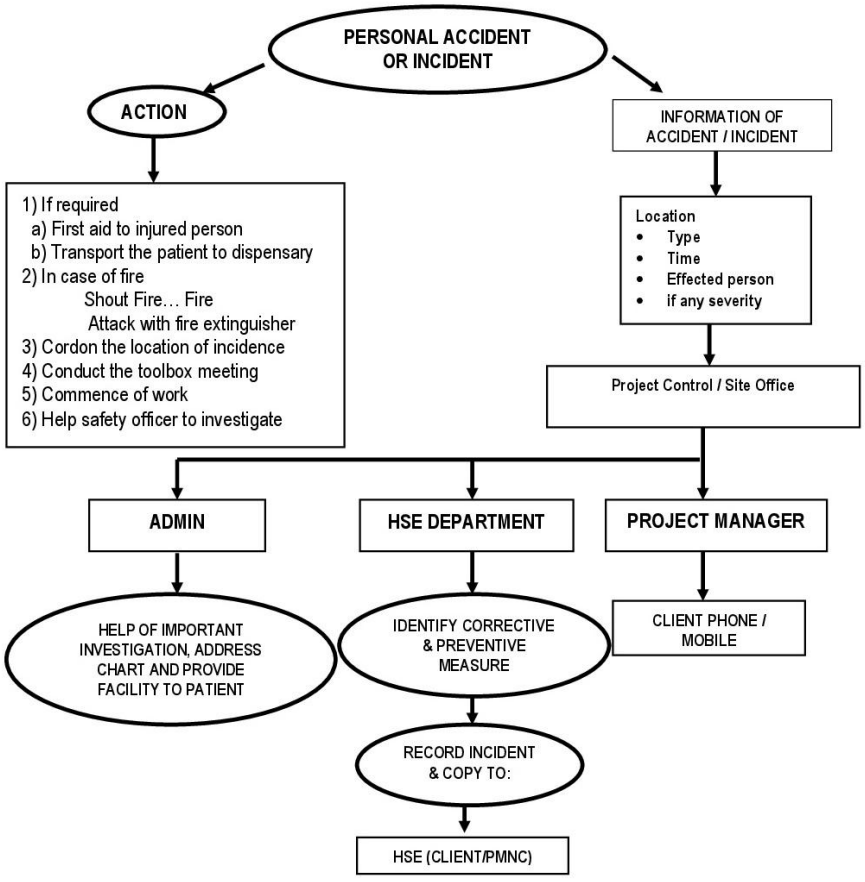

Figure 3.1: Emergency preparedness and health and safety mechanism

In case of serious injury special arrangements shall be made available based upon site conditions. For any severe injury, the Project Manager shall be authorized to take necessary arrangements for lifting / transporting the injured to the correct location.

3.1 Accident and Emergency Management Plan

The Accident and Emergency Management Plan need to be prepared to handle unforeseen events during emergency operations. This emergency management plan highlights some key feature of the emergency preparedness in the event of such unforeseen events (Table 3-1).

Table 3-1: Accident and Emergency Management Plan

SN	Activities	Timing of Actions	Location	Responsibility
1	Prepare and submit an accident and emergency management plan, including response methods, to CSC/NITDB for approval.	Pre-construction (at least a month before starts of work)		Contractor will prepare and CSC/NITDB will approve it
2	Establish and operate a health clinic within the camps, ensuring it is adequately staffed, well-maintained, and equipped to serve the maximum workforce efficiently.	Prior to the commencement of construction and land clearance	Construction site	Contractor
3	Proper implementation of OHS plan,	As designated in the plan	As in the plan	Contractor/Operator
4	Provide stabilization equipment and facilities for the injured before transferring them to a well-equipped hospital.	Construction	Health care facility	Contractor
5	Maintain medical stock for waterborne diseases to manage potential outbreaks in the camp or surrounding areas.	Construction	Construction site health camp	Contractor
6	Monitoring of the above activities	Construction, Operation	As in the plan	Contractor/Operator/client/CSC

3.2 Hazardous Waste Management Plan

During road construction, hazardous materials such as diesel, lubricants, bitumen, paints, solvents, welding gases, and cleaning chemicals will be used, posing risks of spillage, leakage, fire, and health hazards. To manage these risks, the contractor shall establish designated, well-ventilated storage areas with proper labelling and secondary containment to prevent leaks and contamination. All hazardous substances must be handled by trained personnel equipped with appropriate PPE, and Material Safety Data Sheets (MSDS) must be available on-site. Waste materials, including used oils, contaminated containers, and chemical residues, will be collected and disposed of through authorized and licensed handlers. Regular inspections will be conducted to ensure safe storage, handling, and disposal practices. Emergency response measures, such as spill kits, fire extinguishers, and first aid facilities, will be maintained at strategic locations to ensure quick response and compliance with national environmental and occupational health and safety regulations.

4 INSTITUTIONAL ARRANGEMENT AND CAPACITY BUILDING

4.1 Institutional Arrangement

An effective institutional setup is essential for successful ESMP implementation. The Ministry of Industry, Commerce and Supplies (MoICS) has established a Project Coordination Office (PCO) in Kathmandu, supported by a Safeguard Team to ensure compliance with GoN and World Bank safeguards. The Nepal Intermodal Transport Development Board (NITDB) will implement the project on the ground. Construction Supervision Consultants (CSC) will provide technical support, including engineers and environmental and social (E&S) specialists, to assist NITDB and oversee project implementation. The CSC's safeguard team will regularly monitor ESMP implementation and submit reports to the PCO. At the construction level, contractors must follow ESMP measures and assign Environmental, Social, and Health Experts for implementation. CSC's E&S specialists will visit the site to ensure compliance with safeguard requirements. The CSC will also support legal compliance, coordination with stakeholders, and reporting. Overall responsibility for legal compliance, sustainability, and institutional capacity development lies with the PCO. Monitoring and evaluation reports will be submitted internally by CSC and PCO.

Table 4-1: Roles and Responsibilities of the Stakeholders in ESMP Implementation

SN	Stakeholder	Roles and Responsibilities	Time Schedule
1	World Bank	• Approves ESMP and reviews project documents • Reviews safeguard monitoring reports and takes corrective actions	ESMP approval Before bidding. Throughout the project period.
2	PCO - Environmental and social specialists within the PCO	• Reviews ESMP and grants implementation approval • Ensures safeguard measures in bidding documents • Monitors ESMP compliance and reviews reports • Investigates incidents and conducts root cause analysis • Provides training and engages stakeholders	Before contract bidding construction and operation phases
3	NITDB	• Integrates ESMP in design and tender documents • Obtains permits • Monitors and reports on environmental performance • Develops and conducts ESMP-related training	Before construction During construction, and operation phase
4	DSC	• Prepares and supports ESMP implementation • Supervises contractors • Monitors ESMP compliance and prepares reports	Pre-construction phase Construction phase (daily, weekly, monthly)

SN	Stakeholder	Roles and Responsibilities	Time Schedule
		• Conducts training and prepares manuals • Monitoring of the effectiveness of enhancement measures and mitigation measures	
6	Contractor - ESHS specialist of the contractor	• Prepares C-ESMP • Appoints EHS officer • Implements and monitors ESMP measures • Maintains records and submits reports • Conducts toolbox training	Pre-construction phase Daily during construction phase.
7	Affected Stakeholders	• Address local grievances • Provide feedback to NITDB/ICP on community matters	As and when required

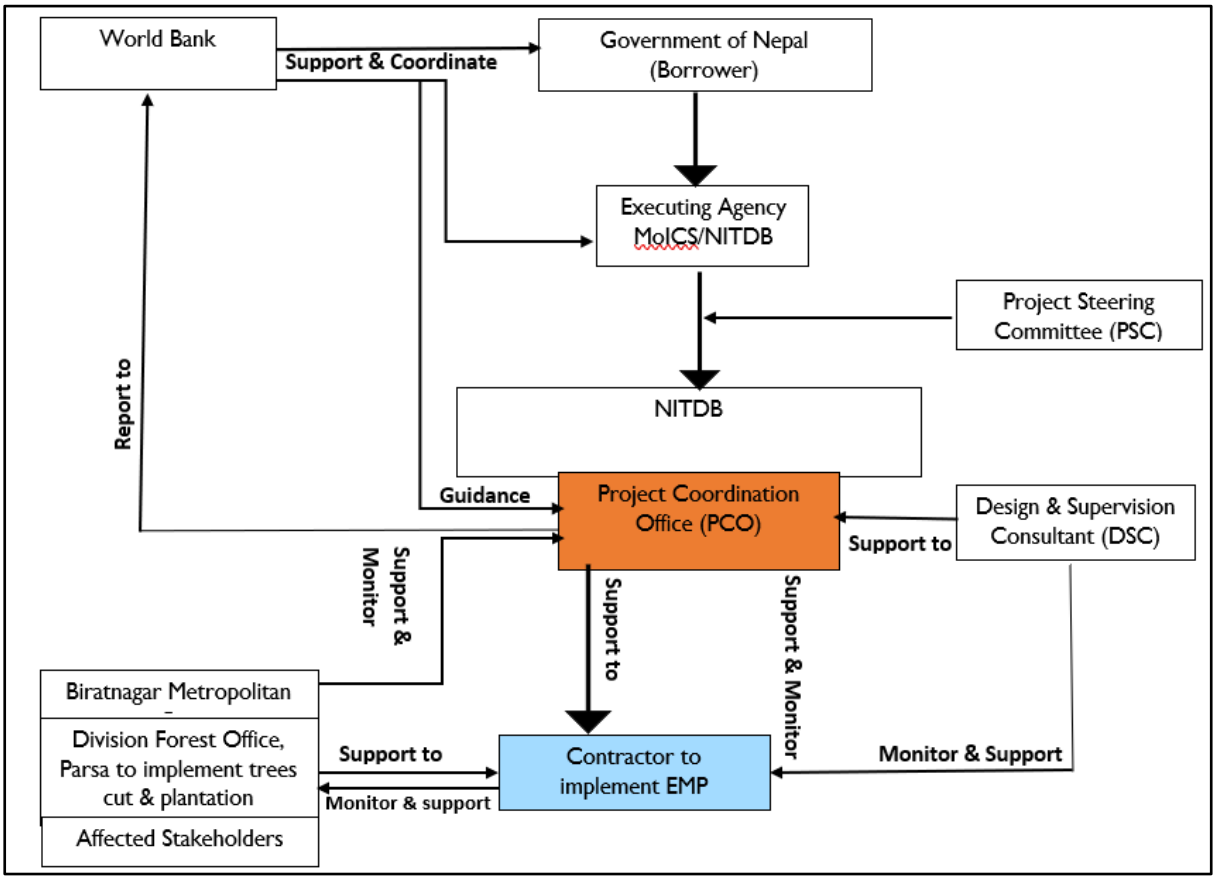

Figure 4.1: ESMP Implementation Mechanism

4.2 Grievance Redressal System

In order to address the incoming grievances (received in person, by phone, text message, email), two level grievance redresses committee will be formed; one at the Subproject level (Link Road improvement-ICP Biratnagar) and next at the Central Level (NITDB-PCO). The subprojects Level GRM consist of a subproject Level Grievance Redress Committee (GRC) which constitutes ward representative. head of NITDB branch Biratnagar, social safeguard expert of CSC and focal person of the contractor. The subproject level GRC will record all

the grievances at project site and analyzed the grievances. The focal person assigned by the client will serve for the primary contact for complaints update prior to forwarding them to the GRC. The subproject level GRC will try settling the incoming grievance at site level within a week. If the grievance fails settle at subproject level GRC then the subproject Level GRM forwards the grievance to central level GRM with recommendation for further action to Central Level Grievances Redress Committee (GRC). The central level GRC constitutes the NITDB director, safeguard focal person, safeguard persons of PCO. The safeguard focal person of the NITDB will update the complaints prior to forwarding them to the GRC. The central level GRC will take a decision and inform the complaining party regarding the decision it has made through appropriate channel within fifteen days. The NITDB-PCO may forward the decision to Ministry Level (MoICS) and Boards of NITDB if the complaining party is still unsatisfied. If the complaining party doesn't satisfy with the decision from ministry level decision, they can go to the court of appeal (As per ESMF of SRCTIP, September 2020).

All concerns are filtered to the relevant departments or grievance committees to address the reported matters about the project. The GRM will receive stakeholder complaints and will address all these complaints within a month. The GRM process is depicted in the chart below.

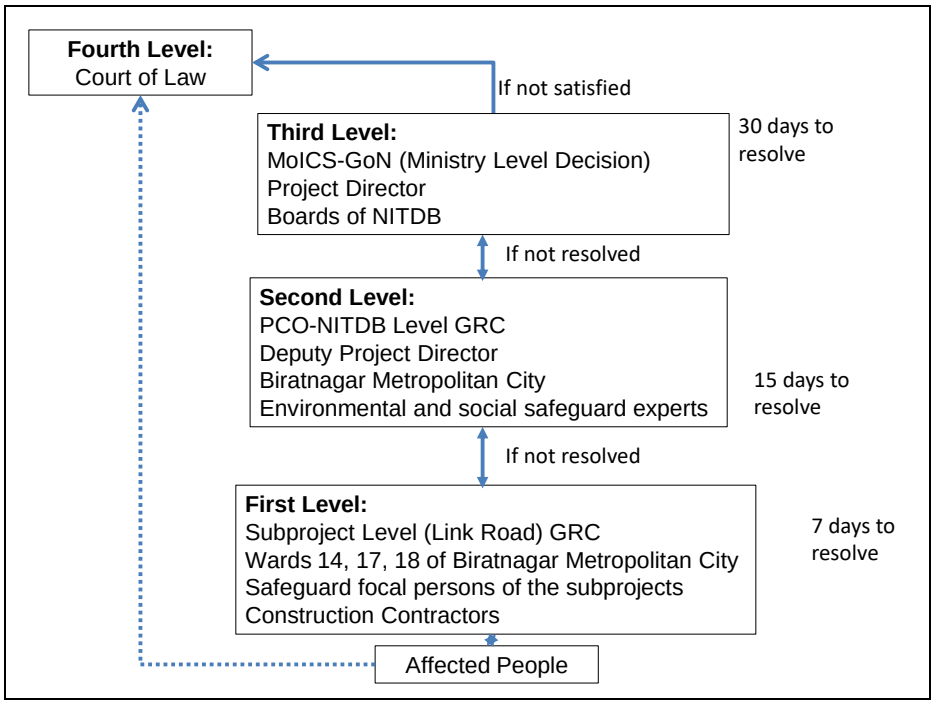

Figure 4.2: Grievance Redress Mechanism

In addition, MoICS (PCO-NITDB) will ensure that the Contractor will setup a separate Grievance Redress Mechanism (GRM) to deal exclusively with those complaints that involve workers employed by the Contractors for construction activities. The environmental and social specialist at PCO will monitor the GRM and implementation of the Contractor's environmental and social risk management commitments.

The complaints data are reported as a part of the regular reporting period. Complaints received during the period must record and maintained in a separate book with the following details:

- Nature and type of complaints,
- Type of communication (written or verbal),
- Date and time of complainant, and
- Name and address of the complainer.

4.3 Stakeholder Consultation and Information Disclosure

A separate Stakeholder Engagement Plan (SEP) will be prepared for the Project, based on the World Bank's Environmental and Social Standard 10 on Stakeholder Engagement.

4.3.1 Stakeholder Consultation

PCO-NITDB will carry out consultations with various stakeholders on the proposed reconstruction activities and take their feedback on design, E&S risks, and mitigation measures. The key stakeholders consulted at various stages during safeguard document preparation and safeguard implementation includes local community, ward representatives, local government and relevant government agencies. Altogether five consultations (with 47 participants) were carried out during the ESMP preparation. In the consultation meetings, the participants were informed about the project, its related activities and the potential positive and negative impacts resulting from project implementation. The feedbacks were to establish GRM, consider dust management, traffic management. If any impacts from the proposed activities occur, the impacts should be mitigated through discussion with concerned stakeholders.

While preparing the draft BES report, a public hearing was also carried out in 6 December, 2024 to inform the stakeholders about the proposal and gather their concerns and suggestions. Drainage improvement to solve water logging in the outside of ICP area, safety measures during construction, water spraying, study of recharge ponds and workers management are the concerned raised during public hearing and consultation meeting.

4.3.2 Information Disclosure

This disclosure enables affected communities and stakeholders to understand potential project impacts and provide feedback. According to the World Bank's Environmental and Social Framework (ESF), disclosure should begin early in the project cycle and continue throughout implementation. It should be done in a language and format suitable to the local context to ensure effective communication and participation.

This ESMP will also be disclosed on the NITDB website and also on the World Bank website. Hardcopies of the ESMP will be made available at the project office and contractor office. Quarterly environmental monitoring reports on the implementation of ESMP will be included into the project overall report and will be shared with the World Bank.

4.4 Contractor's Responsibility for Environmental and Social Compliance

The contractor will prepare and implement a Contractor's Environmental and Social Management Plan (CESMP) based on the project's ESMP. While major risks may need separate plans, issues with low to moderate risks can be included directly in the CESMP instead of making separate documents. The CESMP should cover key areas such as labour camp management, pollution control, waste and spoil management, health and safety, emergency response, site security, traffic management, training, and complaint handling. It should clearly

outline the contractor's responsibilities, including who will do what, when and how activities will be done, how progress will be monitored, and what actions will be taken if requirements are not followed.

4.5 Capacity Building

Capacity building aims to raise awareness and educate the project management team, engineers, supervisors, contractors, and workers on the environmental impacts of the project and their roles in environmental protection. Training will focus on ESMP implementation, corrective actions, monitoring, and reporting.

The contractor, in coordination with NITDB and CSC, will organize training for staff, subcontractors, and key personnel on environmental laws, required approvals, and impact mitigation measures. Special focus will be given to community health, sanitation, occupational health and safety (OHS), labour camp standards, and awareness on SEA/SH and GBV.

4.5.1 For the Implementing Unit (the client, NITDB)

The implementing agency will be oriented on safeguard requirements of GoN and the World Bank, including ESMP monitoring, stakeholder roles, compliance reporting, and the grievance redress mechanism.

4.5.2 For the Contractors

Contractors will be trained on safeguard compliance measures including C-ESMP, OHS plans, labour camp management, training coordination, and grievance redress. Relevant costs are included in the mitigation measures section.

5 MONITORING AND REPORTING

5.1 Monitoring

The main objectives of the environmental monitoring plan are to ensure that the project baseline conditions are adequately documented and the mitigation/enhancement measures are compiled and implemented in time, and with sincerity. Environmental monitoring plans include the activities to be monitored (parameters and indicators), methods, location and responsible agency for monitoring during Pre-construction, Construction and Operation phases. It not only evaluates the effectiveness of the implemented measures to mitigate the impacts but also identifies any unforeseen impacts for further corrective actions to avoid or minimize the impacts before it is too late.

Regular monitoring of ESMP implementation will be conducted by the implementing agency (internal monitoring) as well as by an independent external monitoring and evaluation organization to verify:

- Project activities comply with environmental laws and the impacts do not exceed legal standards;
- Actions and commitments described in the ESMP are implemented fully on time;
- ESMP actions and compensation measures are effective enough to enhance (or at least restore) affected parties and/or environmental components;
- Complaints and grievances lodged by people of project affected area followed up and that where necessary, appropriate corrective actions are implemented; and
- If necessary, changes in ESMP procedure are made to improve delivery of entitlements to people of project affected area.

The primary monitoring responsibility will rest with the NITDB. The client will establish safeguard unit comprising environmental and social safeguard experts to undertake social and environmental monitoring of the project.

5.1.1 Internal

The internal monitoring will be carried out NITDB, PCO, CSC and Contractor on a regular basis to assess progress against the schedule of action defined in the ESMP. Activities to be undertaken by the proponent for ESMP implementation will include;

- Liaison with the ESMP implementation team, construction contractor and project stakeholders to review and report progress against the ESMP;
- Assess the progress on implementation of action and commitment describe in ESMP;
- Verification that agreed measures to restore or enhance affected environmental components are being implemented;
- Assess people of project affected area's satisfaction with environmental and resettlement outcomes through informal village head and household interviews;

- Collect record of grievances, and follow-up to check that appropriate corrective action, if required have been undertaken and that outcome are satisfactory;

5.1.2 External

External monitoring will be conducted during the implementation period to ensure that the project activity comply with the environmental standards and to check the proper implementation of ESMP and grievances are addressed in a prompt manner to resolve the cases. Activities that will be undertaken by the third-party consultants designated by WB/NITDB include:

- Review of internal monitoring procedures and reporting to ascertain whether these are being undertaken in compliance with ESMP;
- Review of internal monitoring record as a basis for identifying any areas of non-compliance, any recurrent problems, or potentially disadvantaged groups or households;
- Review grievances record for evidence of significant non-compliance or recurrent poor performance in resettlement implementation;
- Assess overall compliance with the EMP requirements; and
- Prepare a summary monitoring report for NITDB management, MoFE and financing institute on progress of ESMP implementation, any issue arising and any necessary corrective actions.

5.1.3 Monitoring Plan

To ensure effective implementation of ESMP, PCO, NITDB and Design Supervision Consultants (DSC) will be responsible for undertaking monitoring the project.

Table 6.1 presents methods, schedule, and indicators to be monitored during pre-construction, construction and operation phase.

Table 5-1: Monitoring Plan

Impact/ measures	Monitoring Indicator	Monitoring Location	Monitoring Method	Monitoring Frequency	Monitoring Responsibility	Cost of Monitoring
Pre-construction Stage						
Inclusion of ESMP in tender documents and thereafter into the contractors work plan	Written statement in tender document and construction work plan	In tender document	Review of detailed design, specification, tender documents and construction work plan	Once, before approval of tender document	CSC/NITDB	No cost is required
Contractor ESMP and other plans including OHS and Emergency Preparedness Plan, Stockpile Management, Labour camp standard	Plan and standard	Safeguard document	Review	Once	CSC/NITDB	No cost is required
Prior approval from Division Forest Office	Approval letter	Document	Observation	Once	CSC/NITDB/DFO	No cost is required
Construction phase						
Trees cut, illegal trade of trees, wood logs management	Number of trees cut down, stockpiling of trees logs, coordination with DFO	Site	Observation/Records	During site cleaning	CSC/NITDB/DFO	
Tree/vegetation Loss from site	No of plantation	Site	Observation/records			
Trainings, awareness and orientation to the workers	Training documents, trainee list, documents	Construction sites	Observation and document review	monthly	CSC/ PCO/NITDB	No cost is required
Stockpiling of construction materials	Stockpiling area, barricade in the sites	Stockpiling area	Field visit and site observation	Construction stage	CSC/ PCO/NITDB	
Air Quality	24 hours TSP and PM 10 (to examine impact on ambient air quality in relation to NAAQS standards Dust generation	In and around construction site	As per National Ambient Air Quality Standards, Nepal, 2003	Quarterly	CSC/ PCO/NITDB	160,000 (8 samples- 20,000 per sample) in Civil Work Contract

Impact/ measures	Monitoring Indicator	Monitoring Location	Monitoring Method	Monitoring Frequency	Monitoring Responsibility	Cost of Monitoring
Water Quality	DO, BOD, Turbidity, TDS, TSS, COD, Color, pH, hardness, oil, grease, coliform	Construction site, drinking water	Sample collection and laboratory analysis	Quarterly	CSC/ PCO/NITDB	80,000 (8 samples- 10000 per samples) in Civil Work Contract
Noise quality	Noise level (dBA)	Construction site, nearby settlements	Sound level meter	Monthly	CSC/ PCO/NITDB	120,000 samples (24 samples- 5000 per sample) in Civil Work Contract
Dust emission	Visual inspections, Frequency of water spraying	Construction site, roads	Site observation/ Water spray record	Daily	CSC/ PCO/NITDB	
Health and sanitation	Common disease, Practice of sanitation (solid waste disposal), source of water and its quality	Project surrounding settlements	Field survey and documentation, Photographs	Monthly	CSC/ PCO/NITDB	
Labour Camp	Compliance with Labour Camp Standard	Labour Camp	Observation/Photographs	Weekly	CSC/ PCO/NITDB	Labour camp establishment will be included in contractor responsibility
Occupational Health, Accident, Injury,	Following OHS plan, Use of PPEs, Provision of first Aid Box	Construction sites/labour camp	Observation	Monthly by CSC, daily by contractor	CSC/ PCO/NITDB	Not required

Impact/ measures	Monitoring Indicator	Monitoring Location	Monitoring Method	Monitoring Frequency	Monitoring Responsibility	Cost of Monitoring
Waste generation	Waste management system, number of marked bins, waste around the sites	Construction sites and labor camp	Observation/Photographs/ Record Keeping	Biweekly	CSC/ PCO/NITDB	
Impacts from Stockpiling of Construction Materials	Location of Stockpile Sites, (Nearest distance of residential house/sensitive area) Land use permission	Site	Observation	Daily	CSC/ PCO/NITDB	
Traffic Issues	Vehicle counts/no of vehicles per day Accident record	Road	Site observation Public consultation	Daily	CSC/ PCO/NITDB	
Health and Safety Issues	Number of reported incidents PPE compliance rate Nb of training sessions conducted	Construction Site, labour camp	Site observation Records/Photographs	Daily	CSC/ PCO/NITDB	
Unequal wages to Male and Female	Salary slips/record of receipt	Construction Office/site	Interview/Grievance from employee	Monthly	CSC/ PCO/NITDB	
Child Labour	Age verification documents/Observation	Construction workers	Interview/Verification documents	Monthly	CSC/ PCO/NITDB	
Disadvantaged groups	Employment, economic status, social status, education	Project affected Wards	Social survey and discussion with targeted group	Once a year	DSC/ PCO/NITDB	
GBV (SEA/SH) prevention and response measures	Signed codes of conduct; IEC materials displayed; training and sensitization reports; number of GBV-	Labour camps, construction sites, community areas	Field observation, document review, stakeholder interviews	Monthly and as needed	DSC/ PCO/NITDB	Included in safeguard training and awareness budget

Impact/ measures	Monitoring Indicator	Monitoring Location	Monitoring Method	Monitoring Frequency	Monitoring Responsibility	Cost of Monitoring
	related complaints; presence of referral pathways					
All workers have formal employment contracts with clear terms and conditions	Copies of signed employment contracts	Contractor's office / labour camp	Document review and worker interviews	Monthly	Contractor, monitored by DSC/PCO	Included in supervision cost
Entry of unauthorized person to the sensitive area and to the construction sites	Provision of guard, signage and barricade in the sites	Construction sites	Observation, Visitors' entry register	Daily	Contractor/DSC/NITDB	
Monitoring of impacts and mitigation measures as per ESMP		Construction sites		Monthly	CSC /NITDB	
Conflicts/Grievances	Grievances registered in the site, GRM resolved Feedback from community	Construction sites	Document review and Grievance Record Book	Monthly	CSC /NITDB	
Operation Phase						
Objective of the infrastructures	Observation, Management system	Construction sites	Observation, Visitors' entry register	Daily	NITDB/Operator	
Adopting code of practice for waste management	Environment code of practice in the area	Construction sites	Observation, Visitors' entry register	Daily	NITDB/Operator	
Taking care of planted trees	Trees growth/survival	Construction sites	Observation, Visitors' entry register	Daily	NITDB/Operator	

5.2 Reporting

The safeguard experts of both CSC and PCO monitors the compliance status of ESMP and makes necessary recommendation and compiles them to incorporate in quarterly, semi-annual report as per requirement. The contractor will prepare monthly progress report of the construction work including monthly ESMP's compliance report inclusive of health and safety report and submit to the project. The client in support with CSC is responsible for the preparation of semiannual safeguard monitoring report and the submission to the WB.

6 BUDGET

The Environment, Health, and Safety requirements of the construction contractor shall be clearly spelled out in the contract document and the necessary cost will be included in the BOQ. As all the ESMP costs and activities are included in the BoQ, the budgetary activities lie within the contractor's responsibility. Besides budgetary work, the contractor is responsible for the contractor's commitment plan as in ESMP.

The cost of executing the suggested mitigation measures such as spoil management, stockpiling of the construction material, labour camp establishment shall be included in contractor's environmental and social plans, whereas the tree plantation, tree cut and wood logs management, provision of PPE, awareness on OHS, SEA/SH, GBV and monitoring of air, noise, water come under the BoQ. These estimates cover the basic monitoring activities and the mitigation measures to be complied from the contractor's side. The Total ESMP cost estimated for this project is NRs 76,15,000.00 (Seventy-Six Lakh and Fifteen Thousand Nepalese Rupees only) excluding VAT.

Table 6-1: Cost for ESMP implementation and monitoring

SN	Activities	Total Cost for Road		Remarks
		ESMP	BoQ	
1. Environmental Mitigation Measures (Pre construction phase)				
1.1	Coordination with DFO, Morang and Local Authority	50,000		NITDB responsibility including for ICP
1.2	Establishing labour camp with project information, hoarding board and signage, barricading the construction sites		20,00,000	If needed to construct inside the project area.
1.3	EMP implementation training	100,000		
1.4	Site Security Provision with CCTV	100,000		CCTV in accident prone area in coordination with ICP/Wards
2. Impact Mitigation Measures (Construction)				
2.1	Coordination with ward office for employment and skill enhancement	75,000		includes ward 14, 17, 18 and for Road & ICP
2.2	Specific activities related to mitigations such as GBV (SEA/SH), child trafficking, HIV/AIDs awareness, gender and social empowerment	200,000		Social awareness program to the workers and community
2.3	EHS Awareness raising and Health and Safety training to project staff and contractor workers. Provision of First Aid box with replenish	50,000 50,000		

	Health Screening	300,000		15 times, Dr. consultation
2.4	Skill enhancement trainings to the community	150,000	-	
2,5	Provision of PPE to the workers	50,000		
2,6	Waste management including Construction waste and spoil management	400,000		
2.7	Drainage Management (Also arises during public hearing, taken as CSP)		Culverts in BoQ	This is included in culvert construction
2.8	Traffic Management/shifting of temporary structure of check post	150,000		For coordination during high flow.
2.9	Dust Management by water spraying	500,000		Make it contractor's responsibility.
2.10	Environment Monitoring and Management Unit		-	The cost is already included in the CSC and PCO contract
2.11	Cutting of 50 trees Management of wood logs and, plantation of 500 trees	 250,000	BoQ BoQ	Included in BoQ Plantation 50 trees @ NRs. 500/plant-250,000
2.12	Toilet Construction (water facilities and rest place in coordination in ward 14, 17 and 18 Community Support Program	30,00,000		3 units of toilet in coordination with wards
3. Environmental Monitoring Cost				
3.1	Quarry Sites monitoring and material quality check up			Visit by NITDB/PCO/DSC, no cost is required
3.2	Air Sampling	240,000		12 samples (2 sites in quarterly basis for 1.5 years @ 20,000/Sample
3.3	Noise measurement and management	180,000		36 samples (2 sites in in monthly basis for 1.5 years @ 5,000/Sample)
3.4	Water quality test	120,000		12 samples (2 sites in quarterly basis for 1.5 years @ 10,000/Sample
	Total	59,65,000	20,00,000	Excluding Vat

Note:

- *This cost is segregated from the combined EMP cost included in approved BES.*
- *The cost seems higher as the issues raised in the public hearing are concerned with the road improvement*

Photographs:

Public consultation

Public consultation

Public consultation

Public consultation

Noise Measurement

Public Consultation

Air Quality Measurement

Water quality Sample in Road