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**And**

**Ministry of Agriculture and Livestock Development (MoALD)**

**Department of Water Resources and Irrigation/ Department of Agriculture  
NP Modernization of Rani Jamara Kulariya Irrigation Project - Phase 3**

**Environmental and Social Gap Analysis Report**

**February 2025**

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# 1 Executive Summary

## 1.1 Purpose

The gap analysis between World Bank Environmental and Social Framework (ESF) and Environmental Impact Assessment (EIA) of RJKIP-Phase III<sup>1</sup> is conducted to identify the shortcomings in the national EIA of RJKIP-Phase III and to propose necessary measures and due diligences for fulfilling the Environmental and Social Standards (ESS) requirements. Additionally, this gap analysis helps in identifying areas requiring further assessment to address data gaps, institutional arrangements, and stakeholder engagement, ensuring compliance with relevant World Bank ESS requirements.

## 1.2 Key Findings

A gap analysis between the World Bank's Environmental and Social Standards (ESS) and the Environmental Impact Assessment (EIA) of a borrower is essential to understand the differences in assessment and identify any relevant gaps that the borrower's project needs to address. This analysis helps identify any inconsistencies or areas where the borrower's EIA may fall short of the ESS, allowing for corrective measures to be taken to mitigate potential risks and impacts. Therefore, **this gap analysis pertains of the Component 1: Irrigation Improvement and Development (US\$100 million) of the project** is conducted to identify the short comings in the national EIA of RJKIP-Phase III and to propose the required measures and due diligences for fulfilling the ESS requirements. Additionally, this gap analysis identifies areas requiring further assessment to address data gaps, institutional arrangements, and stakeholder engagement, ensuring compliance with relevant World Bank ESS requirements

The national EIA covers most of the requirements of ESS. However, there are areas that need strengthening and elaboration to fully meet the Environmental and Social Standards (ESS). These areas include identifying project-affected families and the potential impacts on their livelihoods and displacement, which will be covered through a detailed social impact assessment and a Resettlement Action Plan (RAP) preparation. Additionally, the impacts on vulnerable communities and the Tharu Community, an Indigenous Community of Terai, have not been adequately assessed in the national EIA and need to be addressed in the detailed social impact assessment. The Social Impact Assessment (SIA) will also include a Gender and Social Inclusion (GESI) Plan, and a stand-alone Indigenous Peoples Plan (IPP) will also be prepared.. Other social risks not covered include labor and working conditions, labor influx and associated risks such as GBV (SEA/SH), cultural heritage, and stakeholder consultation throughout the project cycle with a differentiated approach for various groups and a dedicated grievance structure. The national EIA has identified the project area as “Modified Habitat” but lacks details of the Basanta Corridor and Basanta Conservation

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<sup>1</sup>. The Environmental Impact Assessment (EIA) for Component 1 – Pathraiya Extension Project was conducted and approved by the Ministry of Forest and Environment (MoFE) on July 16, 2023, in accordance with the Environmental Protection Act (2019) and the Environmental Protection Regulation (2020)

Forest inside the command area. It also lacks discussion on the impact of runoffs on downstream habitats. The gap analysis has recommended an assessment of impacts on Basanta Conservation Forest and the preparation of a Biodiversity Management Plan, if relevant. The key findings of this gap analysis are summarized in the table below. The RJKIP will allocate the necessary funds to conduct the recommended studies in this gap assessment and implement their findings.

Issues	Addressed in national EIA	What needs to be done	Remarks
Anticipation of potential environmental and social impacts	Partially Addressed	An updated Social Impact Assessment (SIA) and A Rapid Cumulative Impact Assessment of all RJKIP 3 interventions	Social Impact Assessment is being prepared and a Rapid Cumulative Impact assessment will be done in the first year of project implementation.
Mitigation hierarchy	Addressed		Mitigation hierarchy has been followed to <b>avoid, minimize and mitigate</b> the anticipated potential environmental and social impacts. Offsetting will not be required for this project
Alternative analysis	Partially addressed	<p>The EIA study, completed in July 2023, assessed the environmental effects of a project based on its design at that time. The study focused on the originally proposed main canals (PEC1 and PEC2).</p> <p>A key change in the new alignment of PEC1 was to minimize environmental and social impacts, particularly reducing forest clearance and loss of structures. As a result, forest clearance was lowered by 0.8 ha. Additionally, the adjustment significantly reduced loss of structures</p>	The evaluation of selected options considers both beneficial and adverse impacts. However, the analysis of new (modified alignment) that reduces 0.8 ha of forest clearance and 148 structures after realigning the main canal is not included in this national EIA

		from 163 to just 15 scattered structures. This will be updated in in the addendum to national EIA once national procedure is followed.	
Stakeholder engagement, information disclosure and grievance redress mechanism	Partially Addressed	Require engagement throughout project cycle and dedicated Grievance Mechanism.	SEP is prepared as a part of project appraisal
Institutional arrangements for ESMP implementation and monitoring			Included in this gap analysis
Labor working condition, terms and conditions of employment and wages, workers grievance mechanism, code of conduct, child and forced labor, SEA/SH, incident and emergency response	Partially Addressed	Need to include differentiated measures for the different category of workers envisaged for the project and protection of vulnerable workers. Also requirement for dedicated worker's GRM.	A Labor Management Procedure (LMP) is prepared as a part of project appraisal
Prevention and management of air, noise, and water and soil pollution, waste management	Addressed		Possible use of pesticide will be dealt separately under Component 3 and a standalone Pesticide Management plan will be prepared.
Displacement/relocation of community infrastructure	Addressed		
Traffic and road	Partially addressed	Update of national EMP – included in ESMP	Requirement for preparation of Traffic Management Plan will be included in the C-ESMP will be a part of the bidding document

Emergency response and preparedness	Addressed		
SEA/SH and GBV mitigation action plan	Partially addressed	To be addressed in the SIA and LMP.	LMP includes the Contractor's responsibilities for SEA/SH. SEA/SH and GBV mitigation action plan will be included in the SIA.
Land acquisition and compensation	Partially addressed	Resettlement Action Plan (RAP) to be prepared in early phase of preparation.	The national EIA has only documented the PAHs having legal rights to land and assets and has not documented the potential physical and economic displacement from the private property acquisition
Impacts on vulnerable community	Not addressed	Gender and Social Inclusion (GESI) Plan	An SIA will be done which will also include a GESI plan.
Impacts on biodiversity and other sensitive areas	Partially addressed	Biodiversity assessment and if relevant a Biodiversity Management Plan to be prepared in the early phase of implementation. A biodiversity assessment of the Basanta Corridor area, including changes in the new alignment, run off impact to evaluate the extent of the intervention and develop a comprehensive BMP if relevant. It should also explore options for compensatory plantation and continue supporting river dolphin protection measures	The national EIA classifies the project area as a modified habitat, comprising agricultural land, community forests, and settlement areas, It includes measures for biodiversity management as part of the EMP, such as compensatory plantations for tree loss, crossings, and ramps for wildlife movement, restriction of poaching etc. However, given the intervention in the Basanta corridor, a biodiversity assessment



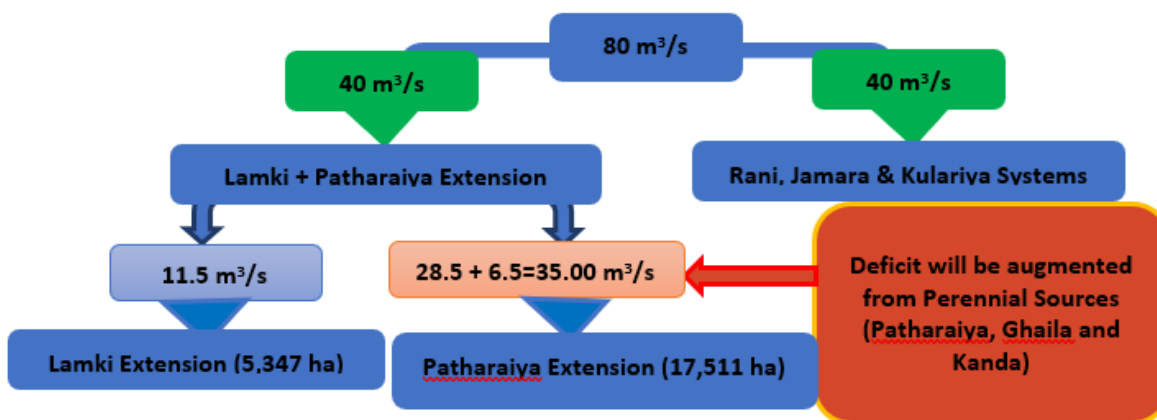
		established under RJKIP Phase.	will be conducted and if relevant BMP will be prepared, as proposed in the scoping study.
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not addressed	Indigenous Peoples Plan (IPP)	A stand alone IPP will also be prepared for the project.
Cultural Heritage	Largely Addressed	Include Chance find procedures and intangible cultural heritage.	The national EIA assessed that the project implementation will not physically displace or impact any archaeological, religious, or cultural heritage sites. However, to mitigate any risks, a "chance find" procedures will be prepared.

## 2 Introduction

### 2.1 Project Background

The Patharaiya Extension Project (PEP) is part of Phase III of the modernization of the Rani Jamara Kulariya Irrigation Project (RJKIP). This project aims to improve irrigation services, boost agricultural productivity, build resilience to climate change, and support rural livelihoods. It is located in the fertile Terai plains at the base of the Chure Range in Kailali District, Sudurpashchim Province, Nepal. The proposed canal lies between the Patharaiya River to the east and the Kandra River to the west, covering the area between 28°26'46" to 28°40'32" North latitude and 80°54'39" to 81°04'34" East longitude. The completion of the water intake at Chisapani and the main canals from Chisapani to Rani Jamara Kulariya (RJK) and Lamki has paved the way for extending the irrigation system westward, along with complementary agricultural investments. Phase III of the project is divided into two parts: the Pathariya-Kandra Extension Canal West (PEC1), which involves a new construction serving as a main canal, and the Pathariya-Kandra Extension Canal South (PEC), which focuses on rehabilitation and extension of existing irrigation systems that have been used for many years.

The Pathariya Extension Canal (PEC) will primarily source a water flow of 28.5 cubic meters per second (cum/sec) from the tail end of the Lamki Extension Canal (LEC) of the RJKIP. To meet the maximum water demand of 35.00 cubic meters per second, an additional 6.5 (cum/sec) is drawn from nearby perennial rivers (Pathariya, Ghaila, and Kanda) through the construction of diversion headworks and head regulators. Additionally, the storage capacity of existing lakes will be enhanced to support irrigation in the command area more effectively.



**Figure 1: Water discharge and command area for PEC**

The project will include extending the feeder canal, developing lower-order canals to ensure optimal irrigation water delivery to farmers' fields, continuing the Water User Association (WUA) support program, and implementing a comprehensive agricultural improvement program. Additionally, it will incorporate climate resilience measures, such as enhancing existing small storage lakes through watershed management. Phase III will align with Nepal's Green Resilience

Inclusive Development (GRID) approach to ensure the sustainability and resilience of irrigation systems and rural livelihoods. The modernization of Rani Jamara Kulariya Irrigation Project (MoRJKIP) Phase- III is expected to come effective in 2025 and to close in 2030.

## **2.1.1 Project Components**

### **2.1.1.1 Component 1: Irrigation Improvement and Development (US\$100 million)**

This component focuses on expanding and enhancing the irrigation network to distribute water from the existing intake at Chisapani. The main canal, with a capacity of 80 m<sup>3</sup>/s, bifurcates into two branches: 40 m<sup>3</sup>/s extending to the RJK area and 40 m<sup>3</sup>/s to Lamki and Pathariya. The Government of Nepal (GoN) has completed the Lamki feeder canal and is developing its distribution networks. This component will extend the feeder canal westward from Lamki to Pathariya while constructing necessary distribution networks and channels to irrigate a net command area of 17,511 ha across five municipalities (*Palikas*). Patharaiya currently includes a mix of existing irrigation systems (8,000 ha) and rain fed areas (7,500 ha). The existing systems are managed by Water User Committees (WUCs), but operations and maintenance (O&M) have been inadequate. After connecting these areas to the RJK system, significant rehabilitation and modernization will be required. With year-round irrigation, farmers will achieve cropping intensities of up to 226%. This component also includes improvements in rural roads, bridges, and operator housing.

### **2.1.1.2 Component 2: Watershed Management (US\$20 million)**

This component will finance watershed management activities to prevent soil erosion, conserve watershed areas, and mitigate the impacts of floods and droughts on agricultural productivity. Activities will include riverbank protection, landslide and gully control, check dams, and afforestation. Natural lakes and wetlands in the project area, used by communities for irrigation, tourism, and fisheries, will be rehabilitated and augmented, with the development of new ponds where feasible. Given the seasonal variability of water availability, sustainable water storage solutions are critical. These measures, aligned with watershed management and conservation principles, will ensure the long-term sustainability of irrigation systems and agricultural command areas.

### **2.1.1.3 Component 3: Agriculture Support Services (US\$20 million)**

With year-round irrigation introduced during RJKIP Phase II, cropping intensity increased by 130% and crop diversification improved, particularly in the dry season. Phase III aims to further increase cropping intensity to 226% through targeted investments. While rice remains the dominant crop, there is a growing shift toward high-value crops such as wheat, pulses, oilseeds, maize, potatoes, and vegetables.

This component will finance interventions to:

1. Enhance agricultural productivity, efficiency, and resilience.

2. Improve farmers' capacity to adopt modern technologies and practices, particularly for better water resource management.
3. Promote value addition for agricultural products.

**The component includes three subcomponents:**

- **Subcomponent 3.1: Agricultural Modernization (US\$15 million):**  
This will promote high-value agriculture and diversification, adoption of climate-smart technologies, improved crop varieties, and modern technologies for efficient production and water management. Demand-based extension services and linkages with ongoing initiatives will be strengthened. Producer-buyer alliances (PBAs) will be supported to enhance market access and financing, and digital technologies will be introduced in production and post-harvest processes.
- **Subcomponent 3.2: Farmer Capacity Development (US\$3 million):**  
Hands-on training, on-farm demonstrations, and field seminars will be provided, tailored to local needs. This subcomponent will promote soil health and fertility, including low-methane rice cultivation and the use of bio or natural fertilizers. Demonstration sites will be established to showcase improved irrigation and drainage systems.
- **Subcomponent 3.3: Action Research and Knowledge Base (US\$2 million):**  
Innovation grants will be offered to agricultural colleges, research organizations, cooperatives, and farmer organizations for activities such as fish farming, high-value crop trials, soil carbon sequestration studies, testing new grass varieties for feed, and analysis of interventions' cost-benefit. A framework for monitoring greenhouse gas (GHG) emissions will also be developed.

#### **2.1.1.4 Component 4: Institutional Support and Project Management (US\$10 million)**

This component focuses on capacity building and institutional strengthening of Water User Associations (WUAs) and project management support. It includes two subcomponents:

- **Subcomponent 4.1: Institutional Support and Capacity Building of WUAs (US\$3 million):**  
WUAs will receive training on the management, operation, and maintenance (MOM) of the modernized system, equitable water distribution, and water use efficiency. Modern technologies like remote sensing and water accounting will be introduced. Block-level WUAs will manage irrigation systems below the interface infrastructure, while a federated WUA will manage higher-level systems under a joint management model. A MOM plan will be developed, and the capacity of both WUAs and the Irrigation Agency will be enhanced.
- **Subcomponent 4.2: Project Management (US\$7 million):**  
This includes engineering surveys, design, and construction supervision; strengthening management information systems (MIS); and enhancing capacities in environmental,

social, and fiduciary management. It also supports feasibility studies, detailed project reports, and documents for future sectoral investments.

### 2.1.2 Salient Features of the Project

The salient features of the project are presented in Table 1 below.

**Table 1: Salient features of the project**

S. N.	Description	Features
1	Name of Project	<i>Patharaiya Extension Project</i>
2	Location	<i>Between Patharaiya and Kandra River</i>
	(a) Province	<i>Far Western</i>
	(b) District	<i>Kailali</i>
	(c) Municipality/ Rural Municipality	<i>Ghodaghodi &amp; Bhajani Municipality/ Joshipur &amp; Bardgoriya Rural Municipality</i>
3	Water Source	<i>Karnali, Patharaiya and Kanda Rivers</i>
4	Command Area	
	(a) Gross command area	<i>28,170 ha</i>
	(b) Net command area	<i>17, 511 ha</i>
5	Maximum water Demand	<i>35.00 Cumecs</i>
6	Discharge available from RJKIP	<i>29.30 Cumecs</i>
7	Deficit discharge to be augmented from Patharaiya and Kanda river through existing diversion structures	<i>5.70 Cumecs</i>
8	Canal networks	
	(a) Length of main canal	<i>12.95 Km</i>
	(b) Length of secondary canal	<i>62.58 Km</i>
	(c) Length of Sub-secondary canal	<i>100.93 Km</i>
9	<i>Canal Structures</i>	
	(a) Drop Structures	<i>87 Nos.</i>
	(b) Escape	<i>2 Nos.</i>
	(c) Canal Head Regulator	<i>36 Nos.</i>
	(d) Cross Regulator	<i>31 Nos.</i>
	(e) Aqueducts	<i>1 No.</i>
	(f) Syphon	<i>4 Nos.</i>
	(g) LD syphon	<i>13 Nos.</i>

S. N.	Description	Features
	(h) Check Structure/ weir	<i>1No.</i>
	(i) Road culvert	<i>177 Nos.</i>
	(j) Elevated Lining	<i>1,380 m</i>
	(k) Covered Canal	<i>4,100 m</i>
	(l) Lined canal	<i>2,150 m</i>
	(m) Division Box	<i>2 Nos</i>
10	Cropping Intensities	
	(a) Present without project	<i>130%</i>
	(b) Future with project	<i>226%</i>
11	Total Estimated Cost	<i>NPR 4,610,198,000.00</i>
12	Cost Per Hectare	<i>NPR 2,63,274.00</i>

Source: Detailed Engineering Planning & Design of RJKIS Project, Pathariya-Kandara, 2024

## 2.2 Purpose of Gap Analysis

The World Bank Environmental and Social Policy for Investment Project Financing (IPF) provides guidance for projects, ensuring that they comply with the Bank's environmental and social standards. The World Bank's Environmental and Social Standards (ESS) focus on identifying and assessing environmental and social risks and impacts associated with projects, ensuring compliance to achieve environmental and social sustainability.

A gap analysis between the World Bank's Environmental and Social Standards (ESS) and the Environmental Impact Assessment (EIA) of a borrower is essential to understand the differences in assessment and identify relevant gaps that the borrower's project needs to address. This analysis helps identify any inconsistencies or areas where the borrower's EIA may fall short of the ESS, allowing for corrective measures to be taken to mitigate potential risks and impacts. Ultimately, it ensures that the project aligns with the World Bank's goals of sustainable development, social inclusion, and environmental protection. Therefore, this gap analysis between World Bank ESS and EIA of RJKIP-Phase III is conducted to identify the short comings in the national EIA of RJKIP-Phase III and to propose the required measures and due diligences for fulfilling the ESS requirements. **This gap analysis pertains only to Component 1: Irrigation Improvement and Development (US\$100 million) of the project.** Additionally, this gap analysis identifies areas requiring further assessment to address data gaps, institutional arrangements, and stakeholder engagement, ensuring compliance with relevant World Bank ESS requirements.

### **3 National Legislative Framework**

Nepal has formulated and adopted plan, policies, acts and guidelines for development and management of water resources in a holistic and systematic manner aiming at the sustainable use of the resources ensuring conservation and protection of the environment. Some of the national policies and legal frameworks applicable to the project are listed below:

#### **3.1.1 Constitution of Nepal 2072 (2015)**

The Constitution of Nepal, 2015 Article 30 has declared “Every citizen shall have the right to live in a clean and healthy environment”. The victim shall have the right to obtain compensation, in accordance with law, for any injury caused from environmental pollution or degradation. This Article shall not be deemed to prevent the making of necessary legal provisions for a proper balance between the environment and development, in development works of the nation”.

The Constitution of Nepal mandates environmental protection as state policy. It provides that the State shall give priority to the protection of the environment and to prevent further damage due to physical development activities by increasing the awareness of the public about environmental cleanliness. It also provides that the State shall arrange for the special protection of the forest, vegetation and biodiversity, its sustainable use and ensure equitable distribution of the benefit derived from it.

Article 30 of the Constitution provides that Nepali citizens shall have the right to live in a clean and healthy environment, and the right to obtain compensation, in accordance with the law, for any injury caused by environmental pollution or degradation.

Article 18 provides for the equality of women, Dalits, and indigenous people (aadibasi/janajati) and Article 261 requires an Indigenous and Nationalities Commission (INC) of Nepal to be created to look into the matters of aadibasi/janajati people of Nepal. The INC was established in 2018.

Article 24 provides for rights against untouchability and discrimination.

Article 34 provides for the right to fair labor practices.

Article 38 provides for the right to equality of women, protection for women from physical, mental, sexual, and psychological abuse, or other forms of violence or exploitation based on any grounds.

Article 51(g) of the constitution relates to protection, promotion, and the use of natural resources, including:

- Protection, promotion and sustainable use of natural resources
- Conservation, promotion, and sustainable use of forests by mitigating possible risks to the environment from industrial and physical development by raising awareness about environmental protection measures
- Maintenance of forest area for ecological balance

- Advance warning and disaster preparedness measures to mitigate risks from disasters
- Minimization/avoidance of the impact of physical development works on the environment and rare species with due emphasis of conservation
- Development of renewable energy to ensure reliable and affordable source of energy

Article 51 (j) requires consent of indigenous nationalities to be obtained while making any decisions concerning these people. The essence of this provision is to ensure participation of indigenous nationalities in the decisions concerning their community.

### **3.1.2 Policy**

#### **3.1.2.1 National Forest Policy, 2018**

Forest Policy, 2018 is the main policy document, which guides sub-sectoral programs relating to forests, plant resources, wildlife, biodiversity, medicinal plants, and soil and watershed conservation. The Forest Policy has aimed to maintain the environmental balance through conservation and management of forest, wetlands, wildlife and conservation areas along with increasing the forestry products and enhancing the livelihood of community dependent on forest resources. Periodic assessment and updating of information on forest resources of the country is also included in the forest policy. The current forest policy of Nepal also recognizes the need for updating the information of the country's forest resources.

#### **3.1.2.2 National Environmental Policy, 2019**

Nepal Government has endorsed the „National Environment Policy-2019 to control pollution, manage wastes and promote greenery so as to ensure citizens right to live in a fair and healthy environment. The policy was framed to guide the implementation of environment related laws and other thematic laws, realize international commitment and enable collaboration between all concerned government agencies and non-government organizations on environmental management actions. This policy aims to lessen and prevent all types of environment pollutions, manage wastes emanated from all sectors including home, industry and service, expand parks and greenery in urban area and ensure environment justice to the pollution affected population. In order to meet the policy goals and objectives, the policy has specified special measures, including setup of effective systems for checking and reducing pollution of all types, encouragement for the use of environment-friendly technology in industry, hospital and vehicles, regulation of harmful pesticides in production and protection of human health from unauthorized food intake. The ministry has envisaged to devise environment-friendly technology to manage pollutant dust, smoke, water emanating from industries and other business promote the use of solar stove, electric stove, bio-gas, improved stove and chimney for the prevention of pollution at homes and lay emphasis on energy effective housing.

#### **3.1.2.3 Land acquisition, resettlement and rehabilitation policy for infrastructure development projects, 2072 (2015)**

Land acquisition, resettlement and rehabilitation policy for infrastructure development projects, 2015 AD has been drafted with goal to improve social and economic status of project affected families by providing fair and adequate compensation, appropriate resettlement and rehabilitation assistances/allowances while acquiring land for infrastructure development projects and projects of public interests.



During project concept stage, project risk assessment will be carried on preliminary involuntary displacement, institutional capacity and required resource and means to execute the project. The project then will be categorized into following categories: High Risk Project, Medium Risk Project and Low Risk Project. Then the social impact assessment will be carried out in consultation with elected representatives of local bodies, affected persons and families, stakeholders and concerned authorities. Public notice will be published to inform completion of social impact assessment. Then the Land Acquisition and Compensation Plan for low-risk project or Resettlement and Rehabilitation Plan for high and medium risk project will be prepared with qualified and experienced experts and will be approved from DCC and concerned Departments respectively.

In case of economic displacement: detail impact assessment on the livelihood of affected people will be carried out and loss incurred will be compensated in lump sum or annual basis through agreement. Affected structures will be compensated on replacement cost. The valuation will be carried out based on approved norms of concerned government agency. The affected person will be allowed to take salvaged materials free of cost. Land or other assets required for temporary use shall be used based on agreement between land owner and project implementation authority. The liability of restoring such land to its former state after contract period shall have to be clearly mentioned in the agreement

In case project has not used any land for project implementation, however implementation has caused interruption to local communal resources then project will be responsible to restore those facilities to former state prior to project completion.

### **3.1.3 Acts**

#### **3.1.3.1 Environment Protection Act (EPA), 2019**

This is the main Act guiding environmental assessments and the permitting process of development projects in Nepal. Section 2 of the Act discusses different aspects of conducting a brief environmental study (BES), IEE, and EIA. Article 3 of the Act mandates a BES/IEE/EIA study for development projects. Article 4 requires a detailed analysis of alternatives and preparation of alternative measures for minimizing the adverse impacts of the project on the environment. Article 5 requires approval of terms of reference for an IEE, and a scoping document and terms of reference for an national EIA by appropriate regulatory agencies before the preparation of environmental study report. Article 6 requires project developers to follow quality standards specified by the GoN while preparing environmental study reports. Article 7 discusses approval procedures for environmental study reports. Article 8 prohibits the implementation of the project without an approved environmental study report. Article 9 discusses strategic environmental analysis and Article 10 deals with the preparation of an Environment Management Plan prior to implementation of the proposal. Article 11 specifies the conditions under which a supplementary EIA is needed. Article 17 discuss the responsibility of the proponent for the management of hazardous substances.

#### **3.1.3.2 Forest Act, 2018**

The Forest Act, 2076 recognizes the importance of forests in maintaining a healthy environment. One of the major objectives of the enhancement and enforcement of the Forest Act is the promotion of a healthy environment. The Act requires decision-makers to take account of all forest values, including environmental services and bio-diversity. It emphasizes the development and implementation of an approved work plan for different categories of forest, i.e. Community Forests, Leasehold Forests, Private Forests and religious forests. As per Article 42(2), the project

needs to make available the equivalent amount of land to the government for forest development. Such land should be in similar ecological and geographical area and near the impacted national forest as far as possible. If the project is not able to buy land, it could deposit the money needed to buy such land in the Forest Development Fund established, as per Article 45 of the Act. Article 42 (5) requires the project developers to pay the expenses needed to reforest and maintain reforested area for five years.

### **3.1.3.3 National Civil Code and Criminal Code, 2017**

This Act refers to land acquisition/utilization of land, restriction on illegal encroachment of land, non-obstruction in public places like road, river, or any other public places, and protection of governmental and public property. Chapter 5 elaborates provisions relating to government, public, and community properties. Chapter 14 explains provisions relating to wages, labor, and employment. This Act is applicable because the Project will involve land acquisition and will cross public spaces like roads, rivers, and other government property (e.g., national forest land), and will also involve hiring employees.

### **3.1.3.4 Labour Act, 2017**

This Act provides guidance on the classification of job postings and prohibition on child labor. It also provides restriction on minors and women, job security, retrenchment and re-employment, working hours, occupational health and safety, welfare arrangements, special arrangements for construction sites, conduct and penalties, and settlements of labor disputes. This Act is applicable to the Project because the Project will involve advertising and hiring employees and occupational health and safety issues.

### **3.1.3.5 Guthi Corporation Act, 1976 (amended 2010)**

Guthi Corporation Act, 1976 section 42 has provisioned reimbursement of land instead of the amount of compensation of that acquired government land under *Guthi* provided that, in cases where a *Guthi Raitana Numbari* land is acquired, the Government of Nepal shall pay compensation to the Corporation in consideration for the land revenue leviable on that land.

### **3.1.3.6 Land Acquisition Act, 1977**

The Act covers all aspects of land acquisition and compensation to private landowners for land and other assets. Article 3 of the Act empowers the GoN to acquire any land at any place for any public purpose, subject to compensation under this Act. As per Article 4, the GoN may also decide to acquire land for other institutions to implement projects in the interest of the general public. The institution requesting land acquisition is required to pay all costs associated with such acquisition. Article 5 makes provision for appointing an Officer for Preliminary Action. Article 6 outlines procedures for preliminary action relating to acquisition of land, and Article 7 contains provisions for the compensation of losses incurred during preliminary action. Article 9 of the Act relates to the notification of land acquisition. Article 13 deals with the compensation rate. Compensation is to be paid in cash, as per this Act; there is no provision for land-for-land compensation. Article 18 of this Act requires the chief district officer to prepare a list of persons to compensation and issue a notice accordingly for the information of the concerned persons. This Article also makes provision for the lodging of complaints by unsatisfied persons and a grievance redressal mechanism. As per Article 27 of the Act, land could also be acquired through negotiation.

### **3.1.4 Rules**

#### **3.1.4.1 Environment Protection Rules (EPR), 2020**

The EPR establishes the process to be followed during the preparation and approval of scoping determination, the preparation of terms of reference for EIAs, and the preparation of IEE or EIA reports for proposed projects. Section 3 of the EPR make provision for BES, IEE, and EIA, depending on the type of proposal. It is apparent from this provision that any private or government agency that wishes to implement any of the proposals defined in the regulations must prepare either a BES, IEE, or EIA, as the case may be. Rules 3 to 8 of the EPR are directly related to the study and have been duly considered during the preparation of the report. The EPR contains provisions to prepare and submit the Scoping Report (Rule 4), Terms of Reference (Rule 5), and BES/IEE/EIA Report (Rule 7) for approval, and includes the public hearing process (Rule 6). Rule 7(3) mentions the publication of notice in a national level daily newspaper for EIA and in local newspaper for BES/IEE regarding the collection of the concerns of local people and institutions within 7 days. Rule 8(8) deals with the collection of recommendation letters from the municipalities/rural municipalities and concerned government offices. The rule provides the content to be covered while preparing the report, as per schedules 10, 11, and 12, and specifies that the report should be prepared in Nepali language (Rule 7[7]).

#### **3.1.4.2 Forest Rules, 2020**

Rule 91 makes provision for land for land compensation for the forest land leased by the development projects. The rule states that such land shall be provided in a similar topography. Rule 93 defines the provision of deposition of required costs for land in a forest development fund, as per the rates mentioned in Schedule 51. Section 5, Rule 93 highlights the plantation of trees at the rate of 10 samplings for the loss of one tree, and requires that the plantation be managed for 5 years. Section 6 of the rules deals with estimating the production cost of saplings, transportation, and plantation on 1,600/ha, fencing, and the manpower required for 5 years management. Rule 94(3) make provision for monitoring the conditions, set forth by the Department of Forests and Soil Conservation, while providing forest land to development projects. Rule 96(1) highlights that projects shall implement the mitigation measures specified in the EIA report at its own cost. Rule 96(2) mentions that such mitigation measures shall be implemented in coordination with community forest users' groups. Rule 96(3) highlights the need for the construction of wildlife friendly infrastructure. Rule 97(1) makes provision for compensation for the loss of private trees due to a project. Rule 103(1) states that the cost required for cutting and transporting forest products from the felled site to the designed site shall be provided by the project developer/proponent.

#### **3.1.4.3 Labour Rules, 2018**

These Rules stipulate the circumstances in which Nepali and foreign workers may be engaged in work and contain guidance on deploying minors and women at work. They also stipulate that there should be no discrimination in remuneration and provide for compensation in the case of injury, grievous harm resulting in physical disability, and death. These Rules are applicable to the Project because the Project will employ Nepali and foreign workers.

### 3.2 World Bank Environmental and Social Framework (ESF)

The World Bank Environmental and Social Framework sets out the World Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social Standards that are designed to support Borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity. The ESF has set 10 Environmental and Social Standards (ESS) from ESS 1 to ESS 10 whose requirements need to be fulfilled by the borrower to be eligible for the World Bank financing. The Table 2 below constitutes relevance of World Bank ESS with the project.

**Table 2: Overview of the relevancy of RJKIP-phase III with ESS**

<b>World Bank ESS</b>	<b>Requirements</b>	<b>Overview of the Relevance of RJKIP-Phase III to the ESS</b>
<b>ESS 1:</b> Assessment and Management of Environmental and Social Risks and Impacts	ESS 1 obligates the borrower to assess, manage and monitor the project's environmental and social risks and impacts throughout the project life cycle to meet the requirements of the ESSs in a manner and within a timeframe acceptable to the Bank. The Borrower needs to conduct an environmental and social assessment of the proposed project, including stakeholder engagement; undertake stakeholder engagement and disclose appropriate information following ESS10, develop an ESCP, and implement all measures and actions set out in the legal agreement including the ESCP, and conduct monitoring and reporting on the environmental and social performance.	The RJKIP-phase III is the irrigational infrastructure project that have potential to cause environmental and social risks and impacts during project construction and operations stages. An assessment and management of anticipated impacts Environmental and Social Risks and Impacts fulfilling GoN and ESS requirements with set of mitigation measures to avoid/minimize/mitigate the anticipated
<b>ESS 2:</b> Labor and Working Conditions	This ESS requires borrower to ensure health safety of workers at work, fair treatment, non-discrimination and equal opportunity to the project workers, protection of project workers including vulnerable workers such as persons with disabilities, children and migrant workers, contracted workers, community workers and primary supply	The RJKIP-phase III involves engagement of project personnel, consultant, contractor and hired workers. Therefore, this ESS is relevant including hired and organic employees of RJKIP, government

<b>World Bank ESS</b>	<b>Requirements</b>	<b>Overview of the Relevance of RJKIP-Phase III to the ESS</b>
	workers, prevention on use of all forms of forced and child labors, support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law and provision of accessible means to raise workplace concerns.	entities who will be involved in the project, project consultant, project contractors, community workers. The assessment looks at the prevailing country laws on labor and working conditions, and the number of workers and personnel to potentially be working in the project.
<b>ESS 3:</b> Resource Efficiency and Pollution Prevention and Management	This ESS requires the borrower to promote the sustainable use of resources, including energy, water and raw materials and avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities.	This standard will apply as there is possibility on potential air, water, sound and soil pollution during construction and the potential pollution issues of agricultural production and processing which may involve use of pesticides and chemicals during operation phase. Furthermore, the RJKIP, requires forest area and parts of the project will be implemented in lakes reflecting use of natural resource
<b>ESS 4:</b> Community Health and Safety	This ESS4 requires the Borrower to assess the potential risks and impacts of the project on the health and safety of affected communities throughout the project life cycle. It should ensure the avoidance or minimization of community exposure to project-related traffic and road safety risks, diseases, and hazardous materials. Further,	This standard will apply to all project interventions on the ground. The assessment looks at the health and safety risks of residents and communities of project area of RJKIP.

World Bank ESS	Requirements	Overview of the Relevance of RJKIP-Phase III to the ESS
	the Borrower should have effective measures to address emergency events and a dedicated grievance redress mechanism to address the issues and concerns regarding community health and safety in a timely manner.	
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	This ESS requires the Borrower to provide compensation and benefits when land acquisition or restrictions on land use (whether permanent or temporary) cannot be avoided at replacement cost and other necessary assistance to the affected to help them improve or at least restore their standard of living or livelihood. The compensation rates will be determined as per the Land Acquisition Act 1977, and the compensation will be at full replacement cost. The Borrower is required to ensure that meaningful consultation with the affected community representing women, minor groups, and Dalits is conducted to record their preferences in terms of compensation mechanisms through community engagement. Borrower is required to ensure a grievance mechanism is in place as early as possible in project development to address specific concerns about compensation, relocation, or livelihood restoration measures raised by displaced persons and/or others in a timely manner. Borrower should conduct a census as a part of the environmental and social assessment to identify the affected persons who have legal rights to land or assets, who do not have formal legal rights to land or assets but have a claim to land or assets that are recognized	The RJKIP-phase III requires acquisition of private and public land involving involuntary land acquisition or restrictions on land use leading to physical and/or economic displacement of people. Therefore, this ESS is relevant for the project.

World Bank ESS	Requirements	Overview of the Relevance of RJKIP-Phase III to the ESS
	under national law; or who have no recognizable legal rights or claim to the land or assets they occupy, to establish an inventory of land and assets to be affected, to determine eligible for compensation and benefits.	
<b>ESS 6:</b> Biodiversity Conservation and Sustainable Management of Living Natural Resources	This ESS requires borrower to ensure in maintaining core ecological functions of habitats, including forests, and the biodiversity they support and also consider the livelihood of project-affected parties, including Indigenous Peoples, whose access to, or use of, biodiversity or living natural resources may be affected by a project.	The RJKIP-phase III requires acquisition of community and government forest area that could impact on the project intervention area's forest and natural habitat. The assessment will look at potential direct short-term and long-term impacts on forest, natural habitat and wildlife.
<b>ESS 7:</b> Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	This ESS requires borrower to ensure that Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities present in, or with collective attachment to, the project area fully consulted about and have opportunities to participate in project design and determine project implementation arrangements actively. Avoiding adverse impacts on IPs; Ensuring meaningful consultation and participation of IPs in the project design and implementation and other project activities and putting in place a robust grievance redressal mechanism with due regard for the traditional structure and governance of IPs. Circumstances requiring Free, Prior, and Informed consent (FPIC) (displacement and relocation of IPs, extending adverse	The indigenous <i>Tharu community</i> are settled in the project command area along with <i>Dalits</i> an ethnically oppressed group in Nepal setting relevancy of this ESS.

<b>World Bank ESS</b>	<b>Requirements</b>	<b>Overview of the Relevance of RJKIP-Phase III to the ESS</b>
	impacts on lands and natural resources under traditional ownership or customary use, and activities with material consequences on the identity and socio-cultural lives of IPs are not envisaged in this project).	
<b>ESS 8:</b> Cultural Heritage	This ESS requires borrower to ensure protection of cultural heritage from the adverse impacts of project activities and support its preservation and promote meaningful consultation with stakeholders regarding cultural heritage.	The assessment determines potential presence of cultural heritage sites in the project sites and the probability of encountering chance finds during construction of infrastructure and facilities
<b>ESS 10:</b> Stakeholder Engagement and Information Disclosure	This ESS requires borrower to ensure environmental and social sustainability and successful project design and implementation of the project by enhancing project acceptance through effective stakeholder engagement.	Effective and meaningful engagement and participation of the diverse stakeholder groups identified for the project is critical to its successful implementation and to ensure that mechanisms are in place for information sharing and addressing complaints and grievances.

## 4 Summary of Comparative Analysis

Comparative analysis between the Nepal's legal requirements for EIA, EIA of RJKIP-phase III and World Bank ESS is summarized below:

### 4.1 ESS1: Assessment and Management of Environmental and Social Risks and Impacts

- **ESS 1 Requirements**

ESS 1 obligates the borrower to assess, manage and monitor the project's environmental and social risks and impacts throughout the project life cycle to meet the requirements of the ESSs in a manner and within a timeframe acceptable to the Bank. The Borrower needs to:



- (a) Conduct an environmental and social assessment of the proposed project, including stakeholder engagement;
- (b) Undertake stakeholder engagement and disclose appropriate information following ESS10
- (c) Develop an ESCP, and implement all measures and actions set out in the legal agreement including the ESCP; and
- (d) Conduct monitoring and reporting on the environmental and social performance.

• **Gaps between ESS and approved national EIA of RJKIP**

The national EIA of RJKIP is prepared and approved following the provision of EPA, 2019, and EPR, 2020. The project falls in the Schedule 3 category of EPR, 2020, thus requiring EIA as the command area of the project is 28,170 ha exceeding 2,000 ha. The forest area required by the project is 36.9 ha exceeding the limit of 5 ha, and therefore, requiring EIA. The scope of national EIA has anticipated the impacts associated with the RJKIP-Phase III, predominately linked with Component 1, but has not fully considered cumulative impacts with other planned or ongoing project within or proximate to the project intervention area. To overcome this gap, a Rapid Assessment of the Cumulative impacts will be carried out for the RJKIP 3 interventions which is recommended in an ES Scoping Study.

The EIA of the project has anticipated potential environmental and social impacts for project construction and operation phase and followed the mitigation hierarchy of avoidance, mitigation, compensation and correction in the risk assessment as obligated in ESS 1 requirements. For instance, the project has revised its original design to reduce biodiversity impacts in the Ghodaghodi Lake, which is a Ramsar site. National EIA guideline, 1993 is followed for impact evaluation considering location sensitivity, magnitude, timeline and extent of the impacts. It thus has proposed an Environmental Management Plan (EMP) with implementation measures to address identified impacts, responsible body and responsible government line agencies for monitoring and evaluation of project construction and operation phase. Additionally, the national EIA report has proposed environmental and social monitoring with monitoring parameters, method, location, timeline, required cost and responsible agency for construction and operation phase following the obligatory requirements of EPA, 2019 and EPR, 2020. Further, national EIA has adopted self-monitoring as mandated by Rule 45 (1) of EPR, 2020 and has made commitment in submission of self-monitoring report for every 6 months to the concerned government agency. Additionally, the national EIA report has explicitly stated that the concerned government agencies such as federal ministries and departments, provincial ministries and offices and affected municipalities can conduct monitoring and inspection of the project following national legal requirements as provisioned in Section 39 of EPA, 2020. Though, the national EIA has included responsible government institutions and/or line agencies responsible for monitoring, it has not clearly defined the institutional arrangement for day-to-day monitoring of the implementation of Environmental and Social Management Plan (ESMP) and Environmental Monitoring Plan to

comply with the World Bank ESS 1 requirements. To fill this gap, an institutional arrangement to oversee the implementation of ESMP and monitoring and reporting is included in this gap analysis report.

The national EIA has assessed possible social risks associated with the project. However, issues related to SEA/SH, GBV, and impacts on vulnerable populations have not been considered. Furthermore, while the EIA states that project related grievances will be addressed through the establishment of a Grievance Mechanism, it does not propose an institutional arrangement for handling project grievances. There is also no requirement for stakeholder consultation throughout the project cycle with a differentiated approach for various groups. The project will establish a Grievance Redress Mechanism, which is included in the SEP. Additionally, the project is conducting a social assessment to identify any risks not covered in the national EIA, and any additional issues or risks identified will be addressed through this document.

The Alternative Analysis chapter is included in the national EIA report as mandated by EPA (2019) and EPR (2020). The evaluation of selected options considers both beneficial and adverse impacts. However, the analysis lacks a comparative assessment of different alternatives and does not reflect the considerations made in the canal alignment to avoid impacts on Godhaghodi Lake and minimize forest area and structural losses. The EIA study for Component 1 – Pathraiya Extension Project was completed in July 2023, based on the existing design at that time. The EIA primarily evaluates the project's impacts on the environment along the previously proposed main canals (PEC1 and PEC2) and their subsequent canals. However, it does not account for the revised alignment in PEC1 (refer Figure 2) resulting from this modification.

After the approval of the EIA for Component 1, the Borrower considered an alternative project alignment to mitigate the identified impacts on private, agricultural, and forest lands, as well as on 163 houses affecting 63 households, electric poles, and other public infrastructure. This alternative, presented in chapter below is awaiting decision of the Government on the level of assessment to be done.

The national EIA is a legal document and the proposed Environmental Management Plan, Environmental Monitoring Plan, and other safeguards plan included in the national EIA are commitments made from the project that needs to be implemented during the course of project implementation. However, to comply with World Bank ESS 1 requirements, preparation of an ESCP is required from the RJKIP.

- **Required due diligence**

- An addendum to national EIA in form of ESMP will be prepared to address the additional issues or risks not covered in the national EIA and this gap analysis report. These Risks will be further assessed through: Environmental Due Diligence Document for the New Alignment; Biodiversity Assessment with Biodiversity Management Plan (BMP); Water Balance Analysis.

- After the completion of the social assessment, an addendum to national EIA with ESMP and other safeguard plans aligning with ESS 1 will be prepared. The addendum will include the findings of the RAP, GESI Plan, IPP and BMP and will be finalized prior to the bidding process. This will be agreed and included in the ESCP.
- A Rapid Assessment of the Cumulative impacts will be carried out for the RJKIP 3 interventions and is recommended in a separate Scoping Study.
- ESCP, following the requirements of ESS 1, will be prepared before project appraisal. Furthermore, ESCP will summarize all actions stemming from gap analysis and updated ESMP for the implementation in early project implementation.
- SEP engaging broader stakeholders at project, municipality, provincial, and federal levels is prepared for project appraisal.
- Work-specific measures (OHS, traffic management, etc.) that were not satisfactorily designed in the EIA have been included in the updated ESMP.

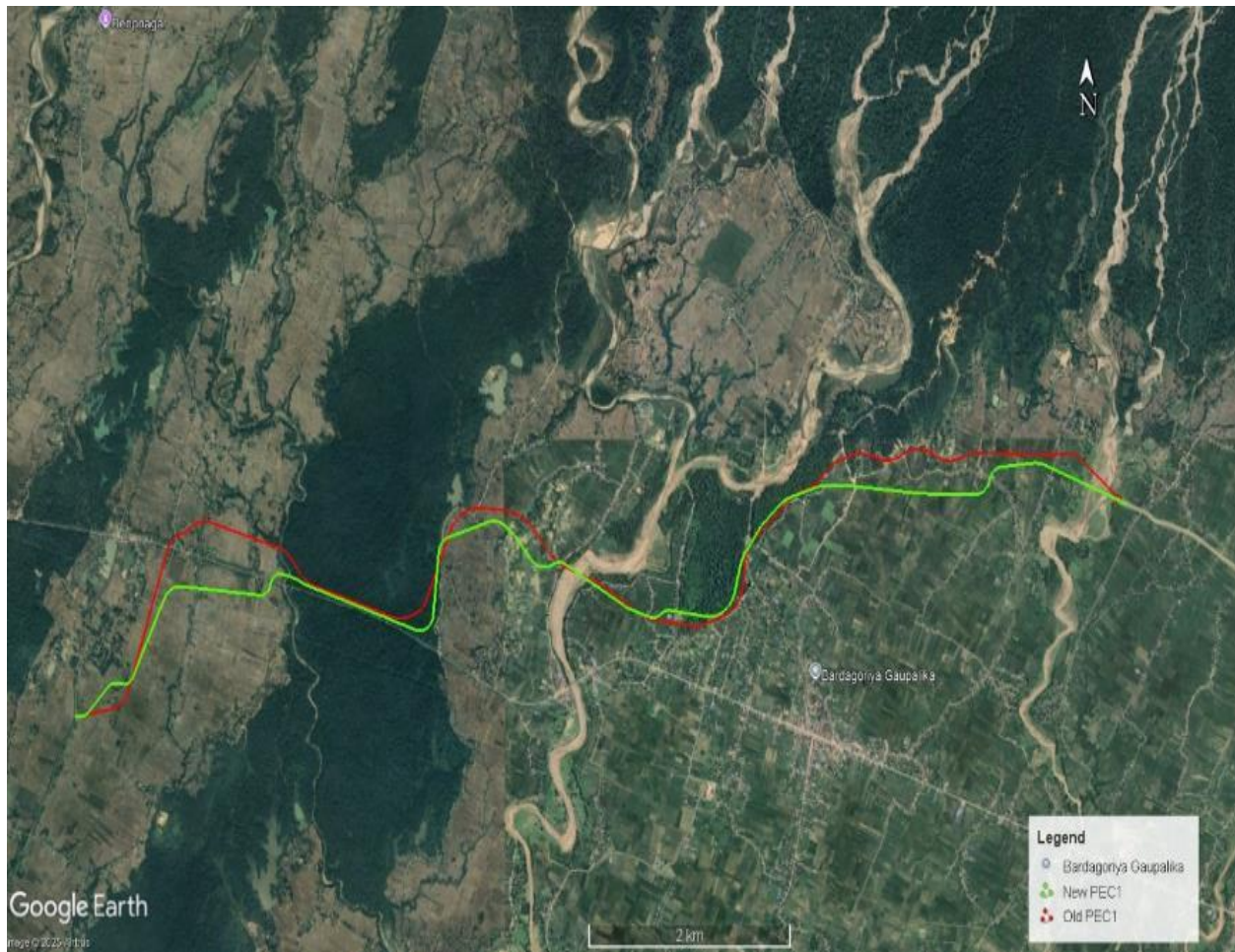
#### **4.1.1 New proposed alignment alternative**

In the new alignment proposed by the Borrower (*refer Figure 2*), efforts were made to further minimize the impact on forests and habitats by positioning the main canal alongside the Right of Way (RoW) of the existing East-West Highway. This adjustment has reduced forest clearance, particularly in the Bardagoria Religious Forest (0.6 ha) and the Pragati Community Forest (0.2 ha), totaling 0.8 ha. Additionally, the new alignment has significantly lowered the number of required physical relocations from 163 houses to just 15 scattered household structures across four locations while also avoiding potential impacts on religious sites in Bardagoria.

It also moved the alignment on relevant segments from inhabited areas to agricultural fields. Of the 15 affected households, 3 Indigenous Peoples (IP) households will be impacted, with only 1 requiring relocation. The modified alignment primarily impacts agricultural fields of 242 households, mostly involving partial land acquisition without significant need for relocation. Most of the households have individual registered/titled land holdings, including IPs. Vulnerable groups, including Dalits, formerly bonded laborers, and landless farmers, may hold non-titled use rights to public land and are likely to lose all their land if significant portions are affected. Efforts will be made to identify in-situ alternative lands to avoid relocation. The impacted fields are anticipated to be individually owned under current law rather than collective ownership under customary law. IPs will not be relocated from the existing command area and are engaged in similar agricultural practices as the general community. The modified canal alignment presents a viable alternative that significantly reduces the social and environmental impacts compared to the original alignment. By minimizing the need for relocation and aligning the project with existing infrastructure, the alternative ensures better preservation of social networks and livelihoods while mitigating environmental impacts on forest lands and religious sites.

The Project is currently consulting with the Ministry of Forest and Environment (MoFE) to update the approved EIA in accordance with national requirements for the revised alignment.





**Figure 2: Google map showing the old proposed PEC1 and realigned PEC1**

## **4.2 ESS2: Labor and Working Conditions**

- **ESS 2 Requirements**

This ESS requires borrower to ensure health safety of workers at work, fair treatment, non-discrimination and equal opportunity to the project workers, protection of project workers including vulnerable workers such as persons with disabilities, children and migrant workers, contracted workers, community workers and primary supply workers, prevention on use of all forms of forced and child labors, support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law and provision of accessible means to raise workplace concerns.

- **Gaps between ESS 2 and approved national EIA of RJKIP**

EIA addresses labor issues only partially. It has included measures for safe working conditions, use of PPE, plan for disease outbreak etc. However, terms and conditions of employment and wages, workers grievance mechanism, code of conduct, child and forced labor, SEA/SH, incident

and emergency response etc are not fully addressed. To address this gap, a stand-alone Labor Management Procedure (LMP) is prepared as part of the appraisal to bridge this gap. Furthermore, specific requirements for OHS system expected from contractor will be specified in bidding documents. Additionally, issues regarding addressing of incidents and emergency response will be addressed and included in ESCP.

### **4.3 ESS 3: Resource Efficiency and Pollution Prevention and Management**

- **ESS 3 Requirements**

This ESS requires borrower to promote the sustainable use of resources, including energy, water and raw materials and avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities.

- **Gaps between ESS 3 and approved national EIA of RJKIP**

The national EIA mainly addresses the resource efficiency requirements. It includes the issues of raw material, construction power use and provided the location for quarry sites, crusher plants, construction material, spoil disposal, workers camps etc. However, the use of water, the process of identification, consultation, and obtaining consent from private landowners and other stakeholders, such as the District Coordination Committee (DCC) and Community Forest User Groups (CFUG), is missing. The updated EMSP in *annex C* provides general guidance on these and requires that these measures are addressed in detail by contractor in the C-ESMP including the efficient use of water. The quarry site will be legally permissible to quarry i.e. required environmental assessment (EIA/IEE) need to be approved by the concerned agency. If an alternative site is chosen, the Contractor needs to prepare quarry site management plan, carry out the required environmental assessment and get approval for implementation from concern authority after joint survey. This will be reflected in the bidding document under Contractor's responsibility. A Stakeholder Engagement Plan (SEP) is prepared for the appraisal that includes the details of the engagement with the concerned stakeholders along with grievance redress mechanism.

The EIA addresses the prevention and management of air, noise, and water and soil pollution. It includes measures for restoration of construction sites (crusher plant, storage sites, quarry areas, spoil disposal sites etc) after project completion, management of waste, water sprinkling, control of noise etc. Project does not envisage the use of hazardous waste at this stage. Possible use of pesticide will be dealt separately under Component 3 and a standalone Pesticide Management plan will be prepared.

The RJK 3 Project area is bordered by the Pathariya River (east), Kandra River (west), and Mohana River (south). Unused diverted water from the Pathariya irrigation scheme flows into the Pathariya River, which converges with the Pathariya and Mohana Rivers. The irrigation return flow from RJK and Pathariya Extension is redirected to the Karnali River via the Mohana River.

Due to established rights, no hydrological modeling was developed. The national EIA lacks detailed water balance discussion. A basic discussion on water balance is presented in *annex D*, and more detailed water balance will be developed to improve water use efficiency and reduce downstream impacts. The project includes managing pesticide use and chemical management to prevent pollution and runoff pressures.

- **Required due diligence**

- Water Balance analysis and addressing any impacts through Component 3 ESMP and if needed, BMP.
- Integrated Pest Management Plan
- Updated ESMP in this gap assessment will be further spelled out in the C-ESMP including the efficient use of water.

#### **4.4 ESS 4: Community Health and Safety**

- **ESS 4 Requirements**

This ESS4 requires the Borrower to assess the potential risks and impacts of the project on the health and safety of affected communities throughout the project life cycle. It should ensure the avoidance or minimization of community exposure to project-related traffic and road safety risks, diseases, and hazardous materials. Further, the Borrower should have effective measures to address emergency events and a dedicated grievance redress mechanism to address the issues and concerns regarding community health and safety in a timely manner.

- **Gaps between ESS 4 and approved national EIA of RJKIP**

The EIA has envisaged no physical displacement/relocation required for community infrastructure such as school, health post/medical facility, water supply pipelines etc. apart from 92 electric poles. Shifting of electric poles will be part of bidding document under contractor responsibility.

Impacts on traffic flow due to construction activities is included with mitigation measures. However, traffic management plan with implementation mechanism is not included and therefore traffic management plan requirement is now included in ESMP and its requirement for preparation and inclusion in C-ESMP will be a part of the bidding document.

Dependency of local community to the ecosystem services of the project area is not included. Baseline information regarding the local community dependency on ecosystem services will be documented through social assessment to predict the impacts from the project implementation with measures to avoid and/or minimize the impacts.

Disaster risk and emergency preparedness management plan is present. Execution mechanism with institutional arrangement is presented in section 5.4.

Issues of SEA/SH and GBV not included and therefore requiring survivor centric SEA/SH and GBV mitigation action plan which will be included in the LMP.

A grievance redress mechanism is not proposed in the EIA report to address issues and concerns on community health and safety in a timely manner. A Stakeholder Management Plan (SEP) is prepared for the appraisal that includes the details of the engagement with the concerned stakeholders along with grievance redress mechanism.

The EIA acknowledges that during the operation of the canal, there is a high risk of accidents for the people living in the settlements located in the proposed watershed area. This could result in significant harm to the residents of that area. Therefore, the EIA identifies the settlement areas that need to be designed as a covered canal. The updated EIA (addendum) will need to examine how this applies to the new alignment. Additionally, public consultation on the gap assessment identified requests for more protection during operation. Hence, the project will consider additional safety measures in consultation with the communities. This has been emphasized in ESMP.

- **Required due diligence**

- LMP.
- Updated ESMP in this gap assessment.
- SEP.
- GBV action Plan

#### **4.5 ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement**

- **ESS 5 Requirements**

This ESS requires the Borrower to provide compensation and benefits when land acquisition or restrictions on land use (whether permanent or temporary) cannot be avoided at replacement cost and other necessary assistance to the affected to help them improve or at least restore their standard of living or livelihood. The compensation rates will be determined as per the Land Acquisition Act 1977 and the compensation will be provided at full replacement cost. The Borrower is required to ensure that meaningful consultation with the affected community representing women, minor groups, and Dalits is conducted to record their preferences in terms of compensation mechanisms through community engagement. Borrower is required to ensure a grievance mechanism is in place as early as possible in project development to address specific concerns about compensation, relocation, or livelihood restoration measures raised by displaced persons and/or others in a timely manner. Borrower should conduct a census as a part of the environmental and social assessment to identify the affected persons who have legal rights to land or assets, who do not have formal



legal rights to land or assets but have a claim to land or assets that are recognized under national law; or who have no recognizable legal rights or claim to the land or assets they occupy, to establish an inventory of land and assets to be affected, to determine eligible for compensation and benefits.

- **Gaps between ESS 5 and approved national EIA of RJKIP**

The EIA has envisaged 63 Project Affected Households (PAHs) from acquiring a total of 270.27 ha of private land required for the project. Further, the EIA has identified 163 structures that need to be acquired by the project. The EIA has proposed compensatory measures for the acquired land and houses following the Land Acquisition Act of 1977 and has allocated a lumpsum amount of NPR. 324,324,000 for land and NPR 10,710,000 for houses. The EIA has suggested preparing a Resettlement Action Plan (RAP) for the resettlement and rehabilitation of the project-affected households following a detailed cadastral survey of the project impact zone.

The EIA has only documented the PAHs having legal rights to land and assets and has not documented the potential physical and economic displacement from the private property acquisition. The allocated amount proposed for compensation is a lumpsum amount without any technical calculation. Furthermore, the EIA has suggested the preparation of a Resettlement Action Plan (RAP) for the resettlement and rehabilitation of the project-affected households following a detailed cadastral survey of the project impact zone. Besides, it is lacking a Livelihood Restoration Plan (LRP). A grievance redress mechanism is not proposed in the EIA report to address specific concerns on compensation, relocation, or livelihood restoration measures raised by displaced persons and/or others in a timely manner.

- **Required due diligence**

- A supplementary Social Impact Assessment (SIA) will be carried out to ascertain potential social impacts of the project and this SIA.
- A Resettlement Action Plan (RAP) will be prepared by carrying out a census survey detailing the baseline socio-economic status. The RAP will also guide the resettlement of title and non-title holders PAFs, including support for livelihood restoration measures through a livelihood restoration plan.
- A Gender and Social Inclusion (GESI) Plan that includes mitigation measures and livelihood support programs for vulnerable communities will be prepared as part of the SIA.

## **4.6 ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources**

- **ESS 6 Requirements**

ESS6 recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. This includes maintaining core ecological functions through the management of habitats, including forests, and the biodiversity

they support as well as the livelihood of project-affected parties, including Indigenous People's access to, or use of, biodiversity or living natural resources that may be affected by a project.

- **Gaps between ESS 6 and approved national EIA of RJKIP**

EIA has classified the project area as a modified habitat, comprising agricultural land, community forests, and settlement areas. It has estimated clearing of 3900 trees from 36.9 ha forest of 14 community forests. It has anticipated wildlife movement, as a portion of the command area falls within the Basanta Corridor and Basanta Conservation Forest<sup>2</sup>, which serve as occasional pathways for wildlife (*Refer Annex E for details*). To support this movement, the EIA includes two animal crossings in the main Canal. Additionally, nine ramps are proposed in the secondary canals to further facilitate wildlife passage. Although EIA recognizes the value of forested area, it lacks specific details regarding the Basanta Corridor area. The project proposes constructing approximately 50 cm × 50 cm canals within the Basanta Conservation Forest to transport around 200 liters of water during the dry season, aiming to supplement the water levels of Lauk Bauka Lake. As the project intervention details in the modified alignment and forest area are still being finalized, a biodiversity assessment of the impacts to Basanta Corridor area will be conducted to evaluate the extent of the intervention and develop a comprehensive Biodiversity Management Plan (BMP), if relevant.

The EIA primarily evaluates the project's effects on the biological environment along the originally proposed main canals (PEC1 and PEC2) and their subsequent canals. However, it does not account for the new proposed alignment in PEC1 or any resulting changes in the subsequent canals.

There are minor modifications to the canal route through forested areas, including Bardagoriya Religious Forest, Bardagoriya CF, and Pragati CF. Despite these adjustments, the overall level of disturbance remains similar to the original alignment. Notably, the Bardagoriya Religious Forest has been excluded from the new alignment due to its religious and cultural significance, reducing the number of trees to be felled compared to previous estimates. As a result, approximately 0.6 hectares of forest area have been preserved. Additionally, the new alignment minimizes disturbance in the Pragati CF by 0.2 hectares. In total, the revised alignment avoids impacting 0.8 hectares of forest area. The advantages of the new alignment's impact on biodiversity will be evaluated in the Biodiversity Assessment.

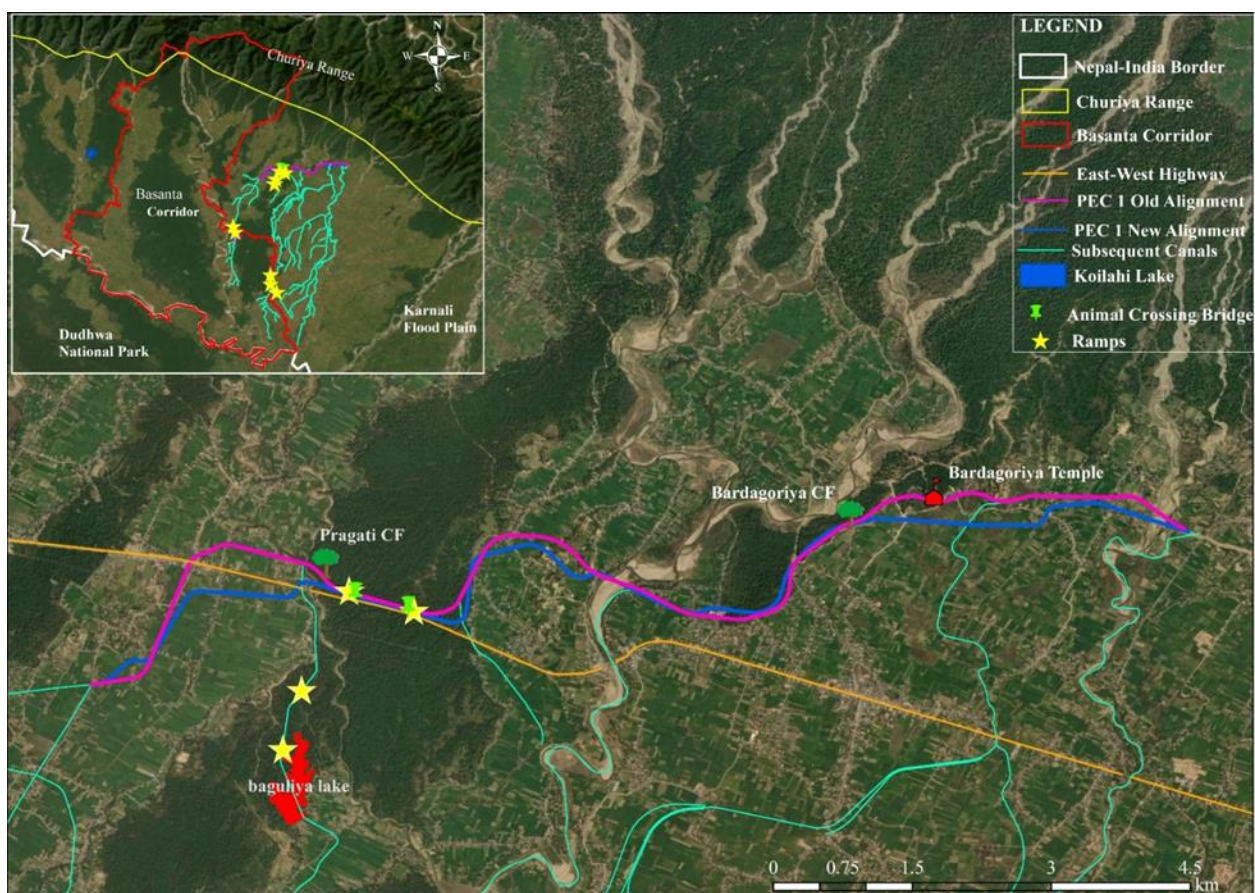
The project will carry out compensatory plantation for the tree loss with native species. Even though the EIA does not specifically addresses the issues of invasive and alien species, the project will follow Plant protection Act (2007) and its regulation to address this. In addition, the key aspects on dealing with invasion species has been included in the updated ESMP. Biodiversity

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<sup>2</sup> The Basanta Corridor is part of the Basanta Conservation Forest as per Forest Regulation 2022. It allows diversification of forest management to include habitat improvement, species conservation, and forest restoration initiatives with the approval of District Forest Office

Assessment will look into option to maximize positive impact by suggesting site and planning compensatory plantations.

The national EIA does not discuss the details of runoff impacts, as the water planned for irrigation is already being diverted to the Pathariya, and only its efficiency use will be improved. Nonetheless, considering the movement of river dolphins in the Mohana river system, particularly at the Karnali-Mohana Confluence and the Pathariya-Mohana Confluence during the monsoon season when the flow in the Mohana river is high, approximately 15 km downstream of the RJKIP Phase 3 area, the biodiversity assessment will align with the dolphin protection measures identified and implemented under RJKIP Phase 2. This will involve identifying additional measures and continuing efforts to preserve the river dolphin population.



**Figure 3: Map of the project area along with its components in Basanta corridor**

- **Required due diligence**

- A biodiversity assessment of the Basanta Corridor area including the changes in the new alignment will be conducted to evaluate the extent of the intervention and develop a comprehensive Biodiversity Management Plan (BMP), if relevant.

- The Biodiversity Assessment will also explore options for compensatory plantation and continue supporting the river dolphin protection measures established under RJKIP Phase 2.

#### **4.7 ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities**

- **ESS 7 Requirements**

This ESS requires borrowers to ensure that Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities present in, or with collective attachment to, the project area are fully consulted and have opportunities to participate in project design and actively determine project implementation arrangements. Avoiding adverse impacts on IPs; ensuring meaningful consultation and participation of IPs in the project design and implementation and other project activities and putting in place a robust grievance redressal mechanism with due regard for the traditional structure and governance of IPs. Circumstances requiring Free, Prior, and Informed consent (FPIC) (displacement and relocation of IPs, extending adverse impacts on lands and natural resources under traditional ownership or customary use, and activities with material consequences on the identity and socio-cultural lives of IPs are not envisaged in this project).

- **Gaps between ESS 7 and approved national EIA of RJKIP Phase III**

The EIA report has identified the presence of the *Tharu community*, an indigenous community of Nepal, in the project impact area and has anticipated impacts on the community. EIA has proposed mitigation measures in the Environmental Management Plan (EMP) concerning impacts to the IPs.

The EIA report does not include any supporting documents reflecting meaningful consultation performed with IPs, and the historically underserved local community during the EIA study. Furthermore, mitigation measures proposed in the EIA are of a generalized type. Therefore, the EIA does not specify if there will be a differential impact on the IP community and the specific measures that need to be taken. Notwithstanding, there is no differentiated adverse impact or exclusion of IP groups. Instead, marginalization exists for farmers with small landholdings, Occupational Castes (Dalits), and female-headed households.

- **Recommendation**

- The relevant aspects of the ESS7 will be adapted to the project's circumstances and relate to the need for complete and meaningful consultation with IPs and ensuring their participation in project implementation.
- A supplementary Social Impact Assessment (SIA) will inform possible differentiated adverse impacts on the IPs' livelihood, income, and social system if any.
- Consideration is to prepare Indigenous Peoples Plan (IPP) informed by the ongoing social assessment

- The Stakeholder Engagement Plan outlines a strategy for culturally sensitive consultation with affected IPs and their representatives

## 4.8 ESS 8: Cultural Heritage

### • ESS 8 Requirements

The requirements of ESS 8 include:

- Stakeholder consultation and identification of cultural heritage (confidentiality; stakeholders' access)
- Legally protected cultural heritage areas.
- Provisions for specific types of cultural heritage (archaeological sites and material; built heritage; natural features with cultural significance; movable cultural heritage); and commercial use of cultural heritage
- **Gaps between ESS 8 and approved national EIA of RJKIP**
  - According to the EIA, the project implementation will not physically displace or impact any archaeological, religious, or cultural heritage sites. However, to mitigate any risks, a "chance find" procedure is now included in the updated ESMP and consideration for intangible cultural heritage.
  - New proposed alignment reduces forest clearance, particularly in the Bardagoria Religious Forest (0.6 ha) and is also avoiding potential impacts on religious sites in Bardagoria.

## 4.9 ESS 10: Stakeholder Engagement and Information Disclosure

### • ESS 10 Requirements

The ESS 10 outlines the responsibilities under these key areas:

- **Engagement during Project Preparation:** This includes identifying and analyzing stakeholders, creating a Stakeholder Engagement Plan, disclosing information, and ensuring meaningful consultation.
- **Differentiated consultation approaches for vulnerable groups.**
- **Engagement throughout the Project Life Cycle:** This focuses on maintaining continuous engagement with stakeholders throughout the entire project period.
- **Grievance Mechanism:** This involves establishing a system to address and resolve complaints or concerns raised by stakeholders
- **Gaps between ESS 10 and approved national EIA of RJKIP**

Project-affected families and affected and concerned stakeholders are identified and engaged through household surveys, group consultation, informal interviews and public hearing during national EIA study. Further, national EIA was disclosed with a summary in Nepali language through public hearing and published in MoFE website as mandated. Though, affected and concerned stakeholders were engaged in EIA study stage, it has not provided clear mechanism for

engagement of concerned and interested parties. Further, grievance mechanism is stated but its functional mechanism is not included in the national EIA. Therefore, to engage stakeholders throughout the project cycle and to address project related grievances, A stakeholder engagement plan (SEP) with grievance redressed mechanism (GRM) is prepared with a precise implementation mechanism and required budget as a part of project appraisal.

## **5 Environmental and Social Management Plan (ESMP)**

### **5.1 Introduction**

The Environmental and Social Management Plan (ESMP) serves as a comprehensive framework for mitigation and monitoring of the potential environmental and social impacts associated with the Component 1 of Rani Jamara Kulariya Irrigation Project (RJKIP). Its primary purpose is to ensure that project activities are carried out in an environmentally responsible and socially inclusive manner, in compliance with national regulations and international best practices, including the World Bank's Environmental and Social Standards (ESS). The ESMP outlines mitigation measures, monitoring strategies, and responsibilities for stakeholders throughout the project lifecycle, from planning and construction to operation and maintenance. The ESMP presented below includes all measures proposed through the national Environmental Impact Assessment (EIA) and has been updated with relevant activity-related measures to comply with ESS identified through this gap assessment. Additionally, the ESMP will be further updated once specific gaps have been addressed through the required analysis.

A combined ESMP with addition of possible impacts identified in this gap analysis including the impacts from EIA is included in Annex C.

### **5.2 Identified Impacts and Mitigation Measures**

This section includes the impacts identified in the national EIA report and the additional impacts identified through gap analysis in compliance with the World Bank ESS.

#### **5.2.1 List of Impacts Identified in national EIA report**

The national EIA report has identified impacts from the implementation of RJKIP for construction and operation phases. Following are the impacts that has been identified in the national EIA report:

##### **5.2.1.1 Beneficial Impacts**

###### **A) Construction Phase**

###### **i) Socio-economic and cultural environment**

- Employment opportunity to the local people
- Increment in economic activities
- Enhancement in technical skill

- Women empowerment

## **B) Operation Phase**

### **i) Socio-economic and cultural environment**

- Increment in agricultural productivity,
- Contribution in crop diversification
- Increment in food security
- Employment opportunity to the local people
- Increment in economic activities
- Opportunity for aquaculture in command area
- Benefits from livelihood programs

### **ii) Physical environment**

- Provision of Service Roads
- Availability of irrigation water for the command area

## **5.2.1.2 Adverse Impacts**

### **i) Physical environment**

- Change in land use
- Loss of soil productivity
- Establishment and operation of Crusher plants
- Establishment and operation of Worker's camp
- Air pollution
- Water pollution
- Sound pollution
- Soil pollution
- Waste management
- Ground water level
- Impact on downstream water usage

### **ii) Biological environment**

- Impact on forest area
- Habitat loss and fragmentation
- Impact on life cycle of aquatic animals and herpetofauna
- Difficulty in movement of wildlife and livestock
- Accidents of wildlife and livestock
- Increase in illegal felling and collection of forest products
- Wildlife Poaching/Hunting

- Forest Fire

### iii) Socio-economic and cultural environment

- Traffic congestion and management
- Loss of agricultural and other land
- Reduction in agricultural productivity due to loss of standing crops and fruits
- Impacts from use of private and community infrastructures
- Issues of occupation health and safety of labors
- Impacts on community health and safety
- Pressure on existing infrastructures, facilities such as drinking water, health post, education, health and sanitation facilities, food supply chain etc.
- Impacts on the Indigenous Peoples
- Discrimination between Male and Female
- Conflict between local community and outside labors
- Safety of nearby settlement
- Human casualties
- Damage to agricultural products

#### 5.2.2 Additional Impacts and Mitigation Measures

The identified additional impacts through gap analysis with mitigation measures, implementation responsibility and monitoring agency is included in the ESMP in Annex C of this report. Table 3 below provides key additional impacts with mitigation measures and due diligence required for the compliance of ESS requirements.

**Table 3: Additional identified impacts with mitigation measures**

SN	Identified Impacts	Mitigation Measures/Additional mitigation	Required due diligence
A	Physical Environment		
	Impacts due to establishment and operation of Quarry sites and Crusher plants	Contractor will require the environmental clearance for extraction of riverbed materials and establishment of crusher plant or source material from the approved sites or the legally registered suppliers.	
	Impacts related to the use of water for construction	Contractor will prepare assessment of the water use and identify sources and permits required	
B	Biological Environment		



1.	<p>a) New alignment has less impact in forest area (reduction of impact on 0.8 ha forest area), Part of project area identified to lie in Basanta corridor.</p> <p>b) The EIA does not discuss sufficiently the run off impact.</p>	<p>a) Compensatory plantation will be carried out in the ratio of 1:10 for the trees removed. Need to work in close coordination with DFO and biodiversity expert</p> <p>b) The water balance study will be done and impacts of run off studies with measures specifically targeting the river dolphins' habitats downstream,</p>	<p>New alignment will either require updated EIA (addendum) or updated ESMP as per national legislation. The number of trees need to be assessed along with other parameters such as biomass and carbon stock. Preparation of Biodiversity a assessment of the Basanta Corridor area, including changes in the new alignment, run off impact to evaluate the extent of the intervention and develop a comprehensive BMP if relevant. It should also explore options for compensatory plantation and continue supporting river dolphin protection measures established under RJKIP Phase 2.</p>
2.	Impacts due to invasive alien species and aquatic flora.	<p>Monoculture will be avoided for the compensatory plantation</p> <p>Measures mandated in Plan Protection Act, 2007 will be followed for compensatory plantation to avoid introduction and spread of alien and invasive species</p>	
C	Socio-economic and cultural environment		Detailed in the RAP and cultural aspects in the SIA.
1.	Loss of agricultural and other land		A detailed social assessment following cadastral mapping of the project area is needed for the identification of

			PAFs and for preparation of resettlement action plan (RAP) and Gender and Social Inclusion (GESI) Plan
2.	Issues of Occupational Health and Safety of Labors	A LMP comprising the working conditions, labor camp procedures, and management, the relationship between the workers, and the prohibition of child labor and forced labor in compliance with World Bank ESS 2 is prepared.	General OHS guidelines are included now in the updated ESMP. Inclusion of OHS provision and requirements in the bidding documents will be specified in the ESCP
3.	Impacts on vulnerable community	A Gender and Social Inclusion (GESI) Plan needs to be prepared following SIA for the restoration and rehabilitation of the livelihood of the identified vulnerable community.	A detailed social impact assessment will be conducted for the identification of vulnerable people for the preparation of Gender and Social Inclusion (GESI) Plan
4.	Impacts on Indigenous People	An Indigenous Peoples Plan (IPP) needs to be prepared following SIA for avoiding/mitigating/minimizing differentiated impacts on livelihood of the identified Tharu community.	The social impact assessment will help to identify any possible differentiated adverse impacts on the Tharu Community and to prepare an Indigenous Peoples Plan (IPP).
5.	Restriction on the use of ecosystem services	Prior notification on the construction dates and timing will be disseminated through social media so as to avoid interferences from construction works with forest resource harvesting from community forest. Construction works will be conducted in coordination with CFUGs,	
6.	Transmission of sexually transmitted diseases (STDs)	Awareness raising and sensitization programs on STDs in coordination with municipality and local NGOs	
7.	Issues of sexual exploitation and abuse and sexual	Conduction of awareness raising and sensitization programs on SEA/SH and GBV in coordination with municipality;	A survivor centric SEA/SH and GBV mitigation action plan

	harassment (SEA/SH)	GRM will include mechanism for referring SEA/SH-related grievances; Formulating and adopting Code of conduct including sections on the safety of women and girls (CoC should be included in all contracts and training on CoC should be provided to all workers)	will be prepared and implemented
8.	Grievance Redress Mechanism	Addressing of received grievances with option to follow judicial mechanism for the complainant; A grievance redressal mechanism (GRM) will be developed to address project-related grievances.	

### 5.3 Monitoring and Reporting

The national EIA report has proposed baseline, impact and compliance monitoring following the obligatory requirements of EPA, 2019 and EPR, 2020. The national EIA has proposed Environmental Monitoring Plan with monitoring parameters, method, location, timeline, required cost and responsible agency for construction and operation phase for physical, biological and socio-economic and cultural environment issues requiring monitoring. Further, national EIA has adopted self-monitoring as mandated by Rule 45 (1) of EPR, 2020 and has made commitment in submission of self-monitoring report for every 6 months to the concerned government agency. Additionally, the national EIA report has explicitly stated that the concerned government agencies such as federal ministries and departments, provincial ministries and offices and affected municipalities can conduct monitoring and inspection of the project following national legal requirements as provisioned in Section 39 of EPA, 2020. Though, the national EIA has included responsible government institutions and/or line agencies responsible for monitoring, it has not clearly defined the institutional arrangement required for day-to-day monitoring of the implementation of Environmental and Social Management Plan (ESMP) and Environmental Monitoring Plan to comply with the World Bank ESS 1 requirements. Furthermore, clear arrangements for day-to-day record keeping and reporting of the proposed activities in the ESMP is not defined in the national EIA report.

To ensure compliance with environmental, social, health, and safety management standards, and to adhere to ESS 1 "Project Monitoring and Reporting," institutional arrangement with responsibilities for monitoring and reporting within RJKIP Phase III is proposed in this gap assessment. This gap analysis outlines the institutional arrangement for overseeing the implementation of the ESMP and conducting day-to-day monitoring, as detailed in the roles and responsibilities section 5.4 below.

### 5.4 Institutional Arrangements

**Design and construction phase:**

**RKJIP-Project Implementation Office (PIO)** - The RKJIP-PIO will be the primary agency responsible for planning, implementing, and monitoring the project's environmental activities as outlined in the national EIA/EMP and all Environmental and Social documents prepared for the WB requirements. For agricultural activities, Agricultural Component Implementation Unit (ACIU) will be responsible for planning, implementing, and monitoring the project's environmental activities in coordination with RJKIP-PIO. The RKJIP-PIO will implement environmental protection measures either directly or through the involvement of the Contractor, supervised by the PMSC-ESMU.

The RKJIP-PIO will maintain the **Social, Environmental, and Institutional Development Unit (SEIDU)**. SEIDU will be staffed with full-time qualified personnel, including a Senior Sociologist, a Junior Sociologist, and individual consultants such as a Gender/GBV expert, full time Environmental expert, an Occupational Health and Safety expert, and a Biodiversity expert. These professionals will be equipped to manage the environmental, social, health, and safety (E&S) risks and impacts of the Project.

**Project Management and Supervision Consultant (PMSC)** - The RKJIP-PIO will hire a Project Management and Supervision Consultant (PMSC) to ensure the proper implementation of mitigation measures and monitoring as per the ESMP. Supervision Consultant will have a full time hired environmental specialist.

**Environmental and Social Management Unit (ESMU)** - Within the PMSC, a dedicated Environmental and Social Management Unit (ESMU) is proposed. The ESMU will include:

- Environmental Specialist (full-time)
- Social Safeguard Specialist
- Community Liaison Officer
- Three (3) Environmental Technicians
- Six (6) Social Mobilizers
- Engineering Team

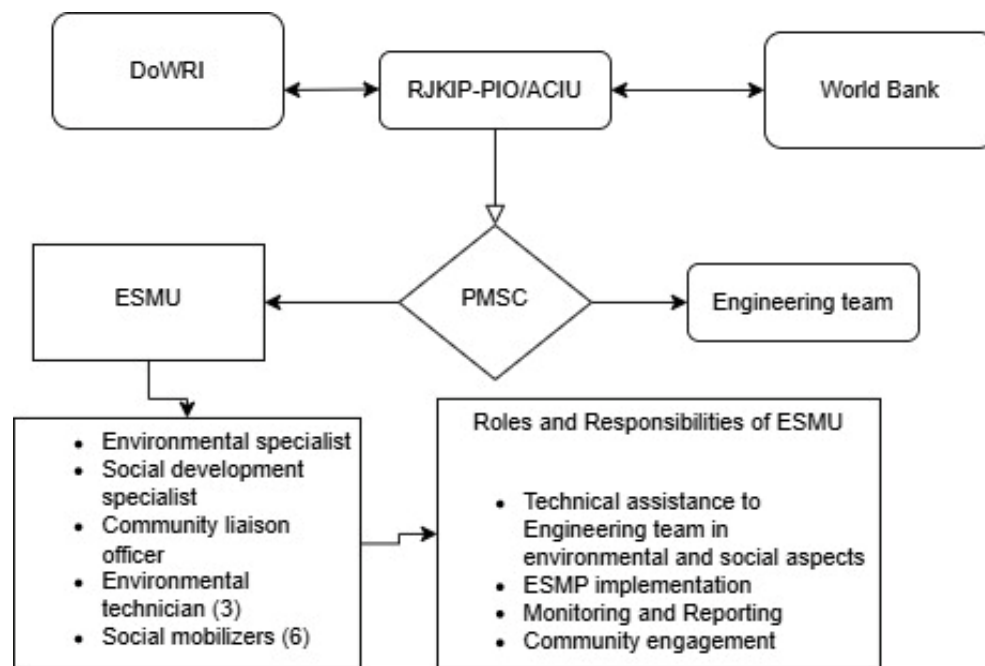
**The PMSC-ESMU will:**

- Coordinate and consult with DCC, RM, Ward of RM, DFO, project-affected families, and other concerned stakeholders as necessary.
- Maintain records of felled trees, land area acquired, expenses of land acquisition, resettlement, rehabilitation, and other environmental enhancement programs implemented.
- Be responsible for day-to-day record-keeping of ESMP activities.
- Prepare required environmental and social monitoring reports as per the GoN and World Bank requirements.
- Ensure all bidding documents have proper technical specifications and that requirements of ESMP are included in tender documents.

## Operation Phase

Operation Manager - During the operation phase, the Operation Manager will:

- Keep records of mitigation and monitoring activities at the site office.
- Prepare an annual compiled report of the project operation.
- Pass the report to concerned stakeholders for comments and suggestions.
- Implement any recommendations and suggestions from the concerned stakeholders.



**Figure 4: Organization chart and staffing for ESMP implementation and monitoring and reporting**

## 5.5 Roles and Responsibilities

Effective implementation of the Environmental and Social Management Plan (ESMP) for the Rani Jamara Kulariya Irrigation Project (RJKIP) III phase is critical to ensuring environmentally sustainable and socially responsible development. The coordinated efforts of key stakeholders, including the Project Implementation Office (PIO), Project Management and Supervision Consultant (PMSU), contractor, government agencies, local communities, and the World Bank, play a vital role in achieving compliance with environmental and social safeguards. Through robust monitoring, stakeholder engagement, and adherence to mitigation measures, the project can minimize adverse impacts and foster positive outcomes for the environment and communities. Continuous improvement, based on monitoring data and stakeholder feedback, will further enhance project performance. The successful execution of the ESMP will not only ensure

regulatory compliance but also contribute to sustainable development goals, safeguarding resources and livelihoods for future generations.

A defined roles and responsibilities of identified stakeholders for the ESMP implementation and monitoring is not included in the national EIA report separately to comply with World Bank ESS. Therefore, following Table 4 illustrating the main roles and responsibilities of concerned, interested and affected parties is included in this Gap Analysis report to fill the identified gaps. Furthermore, stakeholders/parties with clear role and responsibilities for various phases of project development needs to be included in the addendum to EIA.

**Table 4: Roles and Responsibilities of the Stakeholders**

<b>Organizations</b>	<b>Responsibilities</b>	<b>Schedule</b>
World Bank	<ul style="list-style-type: none"> <li>-Provide technical and financial support for ESMP implementation.</li> <li>-Conduct supervision missions to monitor compliance with ESS.</li> <li>-Review and approve reports submitted by the RJKIP-PIO.</li> <li>-Ensure the project is prepared and implemented in line with the WB policies</li> </ul>	Project Period
Ministry of Energy, Water Resources and Irrigation	-Review of the project design, construction and operation activities against approved national EIA and ESMP measures and national environmental requirements	At least once a year during construction
	-Auditing of project general performance during operation phases	Every two years in the operation stage.
Ministry of Forests and Environment	-Approving national EIA and EMP measures, following national environmental requirements	Prior to construction
	-Provide permits for tree clearance from national and community forest	Prior to, and during construction
Divisional Forest Office (DFO)	<ul style="list-style-type: none"> <li>-Assessment of required tree felling from national and community forest following Forest Regulation, 2022 requirements</li> <li>-Provide recommendation letter to national EIA document</li> </ul>	Prior to construction

<b>Organizations</b>	<b>Responsibilities</b>	<b>Schedule</b>
DoWRI/RJKIP- PIO for the construction, operation and maintenance of the project	-Ensure that the ESIA and ESMP measures are incorporated in the final project design in compliance with World Bank ESS.  - Include the ESMP in the bidding document with technical specifications to implement the mitigation measures under Contractor's responsibility effectively  - Ensure funds are available and ToRs prepared and implemented for all the studies stemming from Gap Assessment and ES Scoping Report	Prior to contract award.
	-Assist contractors in acquire necessary permits and approval for project construction and operation.	Before construction.
	-Ensure that the project construction activities are in accordance with the ESMP and other GON legislative requirements and World Bank ESS requirements.	During construction.
	-Implementation of repair and maintenance of project components including environmental safeguards	During operation.
	-Monitoring and record keeping regarding environmental measures and impacts	During operation
	-Ensure stakeholder engagement and participation and involvement in all phase of project implementation	Project period
	-Prepare and submit periodic reports to relevant authorities and the World Bank	Project period
Project Management and Supervision Consultant- Environment and Social Management Unit (PMSC-EMSU)	-Oversee environmental mitigation measures as per ESIA and ESMP are incorporated into the final design.  -Update the ESMP as required during detailed design or upon preparation of documents stemming from Gap Assessment.  - Ensure all required analysis stemming from Gap Assessment and ES Scoping Report are analysed and prepared in good quality and on time	During final design
	-Supervision and impact and compliance monitoring of the construction contractor's activities and	As per ESMP

<b>Organizations</b>	<b>Responsibilities</b>	<b>Schedule</b>
	environmental mitigation measures as per ESMP and provisions of inspection reports.	
	Conduct environmental monitoring and prepare periodic monitoring reports for submission to World Bank and MOFE	As per ESCP for World Bank and EPR, 2020 requirements
	-Assist RJKIP-PIO in the implementation and supervision of environmental compensation and enhancement programs and their monitoring and auditing.	As per ESMP
	-Ensure all the plans prepared as required and as mentioned in Project's E&S documents	Prior to construction
	-Ensure public (Locals) participation and involvement in project construction	Construction period (Contractor)
	-Ensure that the Contractor implement the ESMP measures under its responsibility Ensure construction contractors follow worker's safety rules and regulations	Construction period
Contractor	-Prepare a detailed Contractors ESMP (C-ESMP) before construction and get it approved from PMSU. -Implement mitigation measures as specified in the C-ESMP updated by the PMSU as necessary during detailed design.	As per ESMP during construction
	-Monitoring and record keeping of environmental mitigation measures as well as reporting to the Client through PMSC-ESMU as described in the ESMP	As per ESMP during construction
	-Implementation of the corrective actions as recommended by the supervising consultants	As per ESMP during construction
	-Ensure public participation and involvement in project construction	Construction stage
Independent Environment	- Review safeguards documents including ESIA and ESMP and request changes if and when required	Project Period



<b>Organizations</b>	<b>Responsibilities</b>	<b>Schedule</b>
Monitoring Consultant	- Oversee and periodically monitor Contractor's implementation of the ESMP and review control procedures carried out by PMSU and PIO.	Project Period
	-Review environmental impacts of project interventions and monitor progress with regards to environmental targets and indicators	Project Period
	Review reports and report to EA through the PMSU to the Project Director on ESMP efficiency. contractors' performance and announce corrections needed	Project Period
Affected Municipalities, DCC of Kailali, NGOs and CBOs and other stakeholders	Monitor that the environmental mitigation measures and enhancement measures are implemented in all stages of the project as per ESMP	Project Period
Local Communities and Beneficiaries	Participate in stakeholder engagement and provide feedback on project impacts.  Report grievances through established mechanisms.  Collaborate in monitoring environmental and social safeguards.	Project Period
District Administrative Office, Kailali and Local Police Stations	Lead and Coordinate rescue, rehabilitation and resettlement of affected population by the flooding	Project Operation/Emergency Cases

## 5.6 Budget and Resources

The national EIA includes the cost for implementing the project's ESMP. Measures to avoid and minimize the impacts identified in this gap analysis are proposed in the combined ESMP (attached in Annex C), along with the required costs. The revised total cost for ESMP implementation is NPR 482,084,000.00, which includes the cost of additional measures for the identified issues. A summary of the allocated budget for environmental and social activities is presented in Table 5 below. Furthermore, the RJKIP will allocate the necessary funds for conducting the

recommended studies in this gap assessment and ES Scoping Study and implementing their findings.

**Table 5: Summary of Cost Allocated for Environmental Enhancement and Mitigation in ESMP**

<b>Environmental and social activities</b>	<b>Implementation Location</b>	<b>Implementation Phase</b>	<b>Responsibility</b>	<b>Estimated Cost (NPR)</b>	<b>Monitoring and Evaluation</b>	<b>Remarks</b>
Beneficial Impacts						
Construction phase						
Capacity building for technical skills of locals	Project Area	Construction phase	RJKIP-PIO	500,000	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost included in national EIA
Skill development training to women's	Project Area	Construction phase	RJKIP-PIO	1,500,000	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost is included in the updated ESMP
Regular maintenance of irrigation canals and facilities	Project command area	Operation phase	RJKIP-PIO	Will be included in project operation cost	Municipality/Rural Municipality/Wards/RJKIP-PIO	Required cost will be allocated in yearly budget of RJKIP-PIO
Institutional development activities enhancement and livelihood-based training to Water Users' Association	Project Area	Operation phase	RJKIP-PIO	Will be included in project operation cost	Municipality/Rural Municipality/Wards/RJKIP-PIO	Required cost will be allocated in yearly budget of RJKIP-PIO

Adverse Impacts						
Construction phase						
Physical Environment						
Top soil management	Project construction sites and ancillary facilities operation sites	Construction phase	Contractor	Included in total project cost	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost and requirements will be included in bidding document
Drainage management	Project crusher plant operation area and riverbed material extraction area	Construction phase	Contractor	Included in total project cost	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost and requirements will be included in bidding document
Construction of sedimentation pond to collect waste water discharge from aggregates washing	Crusher plant operation area	Construction phase	Contractor	Included in total project cost	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost and requirements will be included in bidding document
Covering of construction materials haulages, regular water sprinkling in	Project access roads	Construction phase	Contractor	NPR 100,000.00 (for monitoring of air quality) NPR 200,000.00 (for	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost included for air quality monitoring in EIA. Additional cost and

construction sites, construction vehicles and machineries regular maintenance to avoid and reduce air and noise pollution				monitoring of noise level)		requirements will be included in bidding document
Labor camp management including Soak pits or septic tanks set up in the camp area to manage wastewater, solid waste management, waste segregation bins installation	Labor camp	Construction phase	Contractor	Included in total project cost	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost and requirements will be included in bidding document
Barricading of construction sites and fencing of project ancillary	Construction sites and project ancillary facilities area	Construction phase	Contractor	Included in total project cost	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost and requirements will be included in

facilities such as labor camp, spoil management sites, crusher plant operation area						bidding document
Waste management and disposal in the designated area to avoid water and soil pollution	Project construction sites, labor camps and waste management area	Construction phase	Contractor	NPR 300,000.00	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost for waste segregation and management included in national EIA. Additional cost and requirements will be included in bidding document
Biological Environment						
Compensation to project acquired forest land	Forest area	Construction phase	RJKIP/DWRI	NPR 12, 9,150,000.00	RJKIP / Forest Officer/DFO/DoFSC/MoFE	Compensation for required forest land for the deposition in Forest Development Fund is

						included in national EIA. Additional required cost will be provided following the Forest Act, 2019 and Forest Regulations, 2024 and other legal requirements by the RJKIP and will be included in total project cost
Compensatory plantation of 39,000 tree seedling with replacement including fencing of the plantation area and 5 years care taking	Compensatory plantation sites	Construction phase	RJKIP / Construction Contractor	A total of NPR 3,120,000.00 is allocated for the establishment of a nursery to plant 39,000 trees @ NPR 80 per tree, and NPR	RJKIP / affected CFUGs/DFO/DoFSC/MoFE	Cost included in national EIA and allocated cost for plantation and fencing will be included in bidding

				200,000.00 is allocated for fencing. NPR 7,800,000.00 /- (Cost estimate of 5 years of maintenance, at a rate of NPR 200 per seedling with replacement)		documents. Cost for 5 years care taking with seedling replacement will be implemented by RJKIP in coordination with DFO.
Construction of animal crossings and ramps for wildlife movement	Forest area Animal crossing (8+970, 9+470) Ramps (1+430, 2+100, 7+440, 8+450, 8+900, 9+550, 21+450, 22+490, 23+940)	Construction phase	RJKIP / Construction Contractor	Included in total project cost	RJKIP / affected CFUGs/DFO/DoFSC/MoFE	Cost and requirements will be included in bidding documents
Temporary barriers installation in the construction sites to avoid wildlife	Forest area	Construction phase	Contractor	Included in total project cost	RJKIP / affected CFUGs/DFO	Cost and requirements will be included in bidding documents



accidents in the forest area						
Installation of 28 CC cameras (2 in each CF) in the forest area along the canal alignment	Forest area	Construction phase	RJKIP	NPR 280,000.00  Will be included in total project cost	RJKIP / affected CFUGs/DFO	Cost will be included in the project cost
Orientation to labors on biodiversity conservation and management, forest fire, forest resource use	Forest area	Construction phase	Contractor	NPR 50,000.00	RJKIP / affected CFUGs/DFO	Cost for orientation to labors is included in the national EIA. Additional cost and requirements will be included in the bidding documents
Socio-economic and cultural environment						
Acquisition of 268.7 hectares of arable land and 1.57 hectares of	Project area	Construction phase	RJKIP/DWRI	NPR 324,324,000.00 (The amount allocated is only for title-holder land ownership)	M / RM/ RJKIP/ DAO, Kailali	Compensation amount included in the national EIA following

residential land and private structures				NPR 10,710,000.00 (allocated for compensation of 163 house)		land acquisition act, 1977. Additional compensation cost required following RAP will be included in the project cost
Traffic management	0+270-Sandepani (sub secondary canal), 0+440-Tukki bazar (sub secondary canal), 1+040-Muda (secondary canal), 3+300-Boniya (sub secondary canal), 11+160-Sandepani (main canal)	Construction phase	Contractor	Included in total project cost	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost and requirements will be included in bidding document

Labor insurance and PPEs for construction labors	Construction area	Construction phase	Contractor	Included in total project cost	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost and requirements will be included in bidding document
Community and school based awareness programs on STDs, GBV, SEA/SH	Project area	Construction phase	RJKIP	NPR 2,500,000.00	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost will be included in total project cost
Awareness programs on STDs, GBV, SEA/SH to labors	Construction area	Construction phase	Contractor	Will be included in total project cost	Municipality/Rural Municipality/Wards/RJKIP-PIO	Cost and requirements will be included in bidding document
Stakeholder engagement and grievance redress mechanism	Project area	Construction phase	RJKIP	Included in stakeholder engagement plan	Municipality/Rural Municipality/Wards/RJKIP-PIO	- Cost will be included in total project cost
Information dissemination activities such as notice publications,	Project area	Construction phase	RJKIP	Included in stakeholder engagement plan	Municipality/Rural Municipality/Wards/RJKIP-PIO	- Cost will be included in total project cost

pamphlets, poster printing and display						
<b>Operation Phase</b>						
Plantation at reclamation sites to avoid air and water pollution	Project ancillary areas and spoil management sites	Operation Phase	RJKIP	NPR 50,000.00	RJKIP	-
Maintenance of animal crossings and ramps	Animal crossings and ramps constructed locations	Operation Phase	RJKIP	13,000,000.00	DFO/CFUGs/RJKIP	Cost included in the national EIA
<b>Cost Included in EIA</b>				<b>477,804,000.00</b>		
<b>Additional cost from gap analysis</b>				<b>4,280,000.00</b>		
<b>Total cost in NPR</b>				<b>482,084,000.00</b>		
<b>Total cost in US\$ (@1US\$= NPR 138)</b>				<b>34,933,632.00</b>		

## Annex A: Detailed GAP Assessment Table

<b>Questions to be asked:</b> <b>1) Is it relevant?</b> <b>2) Is it addressed? – Properly? Outside of EIA?</b> <b>3) What needs to be done to address it? Measures to Bridge the Gap</b>		
	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
A	Does the EIA report comply with the Environment and Social Standard (ESS) of the Environment and Social Framework (ESF) namely	Mainly yes
1	<b>ESS 1: Assessment and Management of Environmental and Social Risks and Impacts</b>	
1.1	<u>Criteria for assessing risks and impacts</u> <ul style="list-style-type: none"> <li>Relevant and partially addressed</li> </ul>	<ul style="list-style-type: none"> <li>The impacts have been listed under the construction and operation phases.</li> <li>Impact evaluation on the basis as per National EIA guidelines 1993 (Direct/indirect. magnitude, extend and duration)</li> <li>A separate cumulative impact assessment is not required according to national guidelines. For this project, the assessment of planned or ongoing projects within the project implementation area has not been conducted or documented. A Rapid Assessment of the Cumulative impacts will be carried out for the RJKIP 3 interventions and has been separately discussed in ES Scoping Study.</li> <li>ESCP will be prepared</li> </ul>
1.2	<u>Use of the mitigation hierarchy</u> Relevant and addressed	<ul style="list-style-type: none"> <li>Mitigation hierarchy has been followed to <b>avoid, minimize and mitigate</b> the anticipated potential environmental and social impacts. Offsetting will not be required for this project.</li> <li>The Ghodaghodi Lake, which is a Ramsar site that was part of the original design has been avoided to reduce biodiversity impacts.</li> <li>Similarly, 0.8 ha of forest clearance and more than 160 structures has been avoided by realigning the main canal in the final alignment. This will be updated in the addendum to national EIA.</li> </ul>

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	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
1.3	<u>Alternative analysis</u> Relevant and partially addressed	<ul style="list-style-type: none"><li>• The Alternative Analysis chapter is included in the national EIA report as mandated by EPA (2019) and EPR (2020). The evaluation of selected options considers both beneficial and adverse impacts. However, the analysis lacks a comparative assessment of different alternatives and does not reflect the considerations made in the canal alignment to avoid impacts on Godhaghodi Lake and minimize forest area and structural losses as this one has been proposed after the approval of national EIA. The alternative will be further assessed once the GoN delivers decision on required national due diligence.</li></ul>
1.4	<u>Social risks adequately covered (communicable diseases)</u> Relevant and partially addressed	<ul style="list-style-type: none"><li>• National EIA has assessed possible social risks associated with the project. However, issues related to SEA/SH, GBV, and impacts on vulnerable populations have not been considered. Furthermore, while the national EIA states that project related concerns will be addressed through the establishment of a Grievance Mechanism, it does not propose an institutional arrangement for handling project grievances. The project will establish a Grievance Redress Mechanism, which will be included in the SEP. Additionally, the project is conducting a social assessment to identify any risks not covered in the national EIA, and any additional issues or risks identified will be addressed through this document.</li></ul>
2	<b>ESS 2: Labor and Working Conditions</b> Relevant and partially addressed	
2.1	<u>Clarity in type and number of workers</u> Relevant and addressed	<ul style="list-style-type: none"><li>• Mentions 25 skilled, 100 unskilled and 10 semi-skilled workers needed daily</li></ul>
2.2	<u>Clear and understandable terms and conditions of:</u> a. Employment	<ul style="list-style-type: none"><li>• National EIA addresses labor issues only partially. It has included measures for safe working conditions, use of PPE, plan for disease outbreak etc. However, terms and conditions of</li></ul>

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	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
	<p>b. Non-discrimination, equal opportunity and protection of vulnerable workers</p> <p>c. Working Conditions and code of conducts</p> <p>d. Prohibition of child/ forced labor and Sexual Exploitation and Abuse and Sexual Harassment</p> <p>e. Worker's grievance mechanism</p> <p>f. Occupation health and safety requirements</p> <p>g. Incidents and emergency response</p> <p>Relevant and partially addressed</p>	<p>employment and wages, workers grievance mechanism, code of conduct, child and forced labor, SEA/SH, incident and emergency response etc are not fully addressed.</p> <ul style="list-style-type: none"><li>• A stand-alone Labor Management Procedure (LMP) is prepared as part of the appraisal to bridge this gap.</li><li>• Issues regarding addressing of incidents and emergency response will be addressed and included in ESCP.</li></ul>
3	<b>ESS 3: Resource Efficiency and Pollution Prevention and Management. Type</b>	
3.1	<p><u>Resource efficiency: Energy use, Water use (water balance), Raw material use</u></p> <p>Relevant and partially addressed</p>	<ul style="list-style-type: none"><li>• The national EIA partially addresses the resource efficiency requirements. It includes the issues of raw material, construction power use and provided the location for quarry sites, crusher plants, construction material, spoil disposal, workers camps etc. However, the use of water, the process of identification, consultation, and obtaining consent from private landowners and other stakeholders, such as the District Coordination Committee (DCC) and Community Forest User Groups (CFUG), is missing.</li><li>• The details will be further spelled out in the C-ESMP including the efficient use of water. The quarry site will be legally permissible to quarry i.e. required environmental assessment (EIA/IEE) need to be approved by the concerned agency. If</li></ul>

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	Required critical information and remark	Content and Gaps
		<p>an alternative site is chosen, the Contractor needs to prepare quarry site management plan, carry out the required environmental assessment and get approval for implementation from concern authority after joint survey. This will be reflected in the bidding under Contractor's responsibility.</p> <ul style="list-style-type: none"><li>• A Stakeholder Management Plan (SEP) is prepared for the appraisal that includes the details of the engagement with the concerned stakeholders.</li><li>• Water balance study is not included in national EIA and will be further developed. Basic water balance is presented in Gap assessment (<i>refer annex D</i>).</li></ul>
3.2	<p><u>Pollution prevention and management: air pollution, hazardous and non-hazardous wastes; chemicals and hazardous materials; pesticides</u></p> <p>Relevant and addressed</p>	<ul style="list-style-type: none"><li>• The national EIA addresses the prevention and management of air, noise, and water and soil pollution. It includes measures for restoration of construction sites (crusher plant, storage sites, quarry areas, spoil disposal sites etc) after project completion, management of waste, water sprinkling, control of noise etc.</li><li>• Project does not envisage the use of hazardous waste at this stage. Possible use of pesticide will be dealt separately under Component 3 and a standalone Pesticide Management plan will be prepared.</li></ul>
4	<b>ESS 4: Community Health and Safety</b>	
4.1	<p><u>Safety of infrastructure, services,</u></p> <p><u>Not relevant</u></p>	<p>The national EIA has envisaged no any physical displacement/relocation required for community infrastructure such as school, health post/medical facility, water supply pipelines etc. apart from 92</p>



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	Required critical information and remark	Content and Gaps
		electric poles. Shifting of electric poles will be part of bidding document under contractor responsibility.
4.2	<u>Traffic and road</u> <u>Relevant and partially addressed</u>	Impacts on traffic flow due to construction activities is included with mitigation measures. However, traffic management plan with implementation mechanism is not included and therefore traffic management plan requirement will be included in updated ESMP and its requirement for preparation and inclusion in C-ESMP will be a part of the bidding document
4.3	<u>Ecosystem services.</u> <u>Relevant and not addressed</u>	Dependency of local community to the ecosystem services of the project area is not included. Baseline information regarding the local community dependency on ecosystem services will be documented through social assessment to predict the impacts from the project implementation with measures to avoid and/or minimize the impacts
4.4	<u>Emergency response and preparedness</u>  <u>Relevant and addressed</u>	Disaster risk and emergency preparedness management plan is present. Execution mechanism with institutional arrangement is provided in <i>section 5.4.</i>
4.5	<u>Security of personnel</u>	• Not relevant
4.6	<u>Safety of dams</u> <u>Not Relevant</u>	• The national EIA is prepared for Pathariya extension, for component 1 which does not include dams, the ES Scoping study looks into dam safety as lakes / reservoirs are covered in Component 2.
4.7	<u>Labor influx risks including SEA/SH</u>  <u>Relevant and partially addressed</u>	<ul style="list-style-type: none"><li>• Issues of conflicts, pressure on existing infrastructures has been envisaged and mitigation measures has been proposed for the associated impacts due to labor influx.</li><li>• Issues of SEA/SH and GBV not included and therefore requiring survivor centric SEA/SH and GBV mitigation action plan which will be</li></ul>

<b>Questions to be asked:</b> 1) Is it relevant? 2) Is it addressed? – Properly? Outside of EIA? 3) What needs to be done to address it? Measures to Bridge the Gap		
	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
		included in the LMP and addendum to national EIA.
5	<b>ESS 5: Land Acquisition, Restrictions on Land</b>	
5.1	<u>Assets and livelihoods (Land, houses, crops, trees, businesses and access) to be impacted</u>  <u>Relevant and partially addressed</u>	<p>The national EIA has only documented the PAHs having legal rights to land and assets and has not documented the potential physical and economic displacement from the private property acquisition. The allocated amount proposed for compensation is a lumpsum amount without any technical calculation and additionally the national EIA does not reflect that compensation was determined in consultation with the PAFs. Furthermore, the national EIA has suggested the preparation of a Resettlement Action Plan (RAP) for the resettlement and rehabilitation of the project-affected households following a detailed cadastral survey of the project impact zone. Besides, it is lacking a Livelihood Restoration Plan (LRP). A grievance redress mechanism is not proposed in the national EIA report to address specific concerns on compensation, relocation, or livelihood restoration measures raised by displaced persons and/or others in a timely manner.</p> <p>An updated Social Impact Assessment (SIA) and potential impacts on their livelihood will be prepared.</p> <p>A Resettlement Action Plan (RAP) to guide resettlement of title and non-title holder PAFs will be prepared.</p>
5.2	<u>Vulnerable and marginalized groups to be impacted</u>  <u>Relevant and not addressed</u>	<p>A Gender and Social Inclusion (GESI) Plan will be prepared that includes mitigation measures and livelihood support programs for vulnerable communities following the household survey of impacted households and social assessment.</p>
6	<b>ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</b>	

**Questions to be asked:**

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	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
6.1	<u>Identification of critical habitats and species</u> <ul style="list-style-type: none"><li>• Relevant and addressed</li></ul>	<p>The Project and the national EIA addresses the management of habitat and biodiversity issues as following:</p> <ul style="list-style-type: none"><li>• The new (modified) alignment will avoid approximately 0.8 ha forest from clearance</li><li>• The national EIA has classified the project area as a modified habitat, comprising agricultural land, community forests, and settlement areas. It has estimated clearing of 3900 trees from 36.9 ha forest of 14 community forests. It has anticipated wildlife movement, as a portion of the command area falls within the Basanta Corridor and Basanta Conservation Forest, which serve as occasional pathways for wildlife. To support this movement, the national EIA includes two animal crossings in the main Canal. Additionally, nine ramps are proposed in the secondary canals to further facilitate wildlife passage.</li><li>• However, the national EIA lacks specific details regarding the Basanta Corridor area. The project proposes constructing approximately 50 cm × 50 cm canals within the Basanta Conservation Forest to transport around 200 liters of water during the dry season, aiming to supplement the water levels of Lauk Bauka Lake. As the project intervention details in the modified alignment and forest area are still being finalized, a biodiversity assessment of the Basanta Corridor area will be conducted to evaluate the extent of the intervention and develop a comprehensive Biodiversity Management Plan (BMP).</li><li>• The Biodiversity Assessment will also explore options for compensatory plantation and continue</li></ul>

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	Required critical information and remark	Content and Gaps
		supporting the river dolphin protection measures established under RJKIP Phase 2.
6.2	<u>Biodiversity Management plan</u> <ul style="list-style-type: none"> <li>Relevant <u>and partially addressed</u></li> </ul>	The national EIA includes measures for biodiversity management as part of the EMP, such as replacement plantations for tree loss, crossings, and ramps for wildlife movement, restriction of poaching etc. However, given the intervention in the Basanta corridor, a biodiversity assessment will be conducted to develop a BMP, as proposed in the ES Scoping study
6.3	Introduction of invasive and alien species	The project will carry out compensatory plantation for the tree loss with native species. Even though the national EIA does not specifically addresses the issues of invasive and alien species, the project will follow Plant protection Act (2007) and its regulation to address this. The key aspects has been included in the updated ESMP now.
6.4	<u>Sustainable management of living natural resources</u>	Not relevant
7	<b>ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved</b> <ul style="list-style-type: none"> <li>Not so relevant</li> </ul>	
7.1	<u>Identification and baseline data collection on the demographic, social, cultural, and political characteristics of Indigenous Peoples</u>	The national EIA report has identified the presence of the Tharu community, an indigenous community of Nepal, in the project impact area and has included baseline demographic, social and cultural characteristics of the community.
7.2	<u>IP risks assessment</u>	<ul style="list-style-type: none"> <li>The national EIA report has not identified and included differentiated risks and impacts to the Tharu Community.</li> <li>The ongoing Social Impact Assessment (SIA) will identify any possible differentiated risks and impacts to the Tharu Community. An Indigenous Peoples Plan (IPP) will be prepared.</li> </ul>

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	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
7.3	<u>Measures for Indigenous Peoples (IP) consultation and Grievance Redress Mechanism</u>	<ul style="list-style-type: none"> <li>• Not relevant</li> </ul>
8	<b>ESS 8 Cultural Heritage</b> <ul style="list-style-type: none"> <li>• Not so relevant</li> </ul>	
8.1	<u>Chance Find Procedures,</u>  <u>Not Relevant</u>	<ul style="list-style-type: none"> <li>• According to the national EIA, the project implementation will not physically displace or impact any archaeological, religious, or cultural heritage sites. However, to mitigate any risks, a "chance find" procedure is included in the updated ESMP now.</li> </ul>
8.2	<u>Legally protected cultural heritage plan</u>	<ul style="list-style-type: none"> <li>• Not relevant</li> </ul>
9	<b>ESS 9: Financial Intermediaries</b>	<ul style="list-style-type: none"> <li>• Not Relevant</li> </ul>
10	<b>ESS 10: Stakeholder Engagement and Information Disclosure.</b>  Relevant and partially addressed	
10.2	<u>Identification of project stakeholders that are affected or able to influence a project and its activities including marginalized groups</u>	<ul style="list-style-type: none"> <li>• Project-affected families and affected and concerned stakeholders are identified and engaged through household surveys, group consultation, informal interviews and public hearing during national EIA study. However, the EIA has not engaged stakeholders that can influence and has not included mechanism for the engagement. Therefore, to engage stakeholders throughout the project cycle A stakeholder engagement plan (SEP) is prepared with a precise implementation mechanism and required budget.</li> </ul>
10.3	<u>Stakeholder consultations conducted and summary of views considered in risk mitigation approach</u>	<ul style="list-style-type: none"> <li>• A public hearing program was organized in the project-affected area to disclose the outcomes of the national EIA study and to collect issues/concerns/opinions from the project-affected</li> </ul>

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	Required critical information and remark	Content and Gaps
		and concerned stakeholders. The issues/concerns/opinions from the project-affected and concerned stakeholders is included in ESMP.
	<u>Information disclosure in understandable, accessible and appropriate manner and format. Grievance Mechanism</u>	<ul style="list-style-type: none"> <li>• The national EIA was disclosed through public hearing and EIA report in Nepali was published in MoFE website as mandated.</li> <li>• Grievance mechanism is stated but its functional mechanism is not included in the national EIA. A grievance redressed mechanism (GRM) is developed in the SEP to address project-related grievances.</li> </ul>
B	Does the report clearly explain the methodology used in the ESIA/ESMP?	A defined methodology followed for the national EIA study is included in Chapter 3 of the report
<b>11. LEGAL AND INSTITUTIONAL FRAMEWORK</b>		
11.1	Have the relevant international treaties, conventions and agreements, national laws and regulations relating to biophysical, social and health issues been listed with reference to where and how these obligations have been met on this project?  Relevant and addressed	<ul style="list-style-type: none"> <li>• Prevailing national laws and regulations along with relevant international treaties, conventions and agreements have been referred. However, given that the project will be financed through WB support the ESIA needs to be updated to meet the World Bank ESF requirements.</li> </ul>
11.2	Have the relevant institutions ( <b>public</b> and private) been listed with their respective roles and responsibilities towards the Project?  Relevant and minor updates required	<ul style="list-style-type: none"> <li>• The national EIA has proposed only government line agencies such as federal ministries, departments, municipality and project proponent with implementation and monitoring responsibilities. However, clear roles and responsibilities of proposed government line agencies is missing. Furthermore, the national EIA has excluded private parties and non-government organization stakes in the project.</li> </ul>

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	Required critical information and remark	Content and Gaps
		<ul style="list-style-type: none"> <li>Institutions (both government and private) with their respective roles and responsibilities in the course of project implementation will be included in the updated ESIA (addendum) report and ESMP.</li> </ul>
11.3	<p>Have the relevant standards and guidelines for compliance been listed including those relating to biophysical, social and health issues?</p> <p>Relevant and minor updates required</p>	<ul style="list-style-type: none"> <li>The national relevant guidelines and standards are listed in the law review section and their compliance in project implementation is committed in the national EIA. However, few of the guidelines that needs updating will be included in the updated ESIA (addendum). Guidelines to be included are listed below:</li> <li>Procedures and Criteria to be Followed while Constructing Development in the Chure Conservation Area, 2077</li> <li>Guidelines on Use of Forest Area for Other Purposes, 2063</li> <li>Guidelines for Construction of Eco-friendly Linear Infrastructure, 2017 (Draft)</li> <li>Guidelines for Relief and Distribution of Damages Caused by Wildlife, 2080</li> <li>Occupational Health and Safety Operating Manual, 2080</li> <li>Strategy and Action Plan 2015-2025 for the Terai Arc Landscape (TAL), Nepal</li> <li>Standards related to stone, gravel, sand excavation, sale and management, 2077 (First Amendment, 2079)</li> </ul>
<b>1. PROJECT DESCRIPTION</b>		
12.1	<p>Have the project objective and all the project components been described</p> <p>Relevant and partially addressed</p>	<p>The national EIA has described the project objective and has included details of project component. However, realignment to minimize forest area and resettlement/acquisition of the households has been considered at this stage. Therefore, ESMP needs to be updated with revised alignment components.</p>

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	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
12.2	<p>Has the EIA <i>described</i> the proposed project and its geographic, environmental, social, and temporal context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, power supply, water supply, housing, and raw material and product storage facilities), as well as the project's primary suppliers.</p> <p>Relevant and addressed</p>	<p>The national EIA has included baseline information on physical, biological and socio-economic and cultural environment of the proposed project intervention area. The associated offsite investment for reinstatement of community infrastructure, traffic management etc. are included in the total project cost. Furthermore, power supply water supply, housing, storage yard cost are included in the total project and will be responsibility of contractor.</p>
12.3	<p>Have the associated facilities been defined and delineated</p> <p>Relevant and addressed</p>	<p>The national EIA has defined and proposed the areas with geographical locations for establishment of project associated facilities such as labor camps, construction material storage yard, crusher plant and also has defined the areas for extraction of river bed materials.</p>
12.4	<p>Land requirements: Has the land ownership status been described? Does the report provide a description of the different interests in land holdings which can be different from land ownership status?</p> <p>Relevant and partially addressed</p>	<p>The land ownership table is included that has differentiated land ownership into national forest land and private land. However, any supporting evidence such as cadastral map to clearly define the ownership is not included. Therefore, land ownership will be identified from detail cadastral mapping of the project intervention area. Further, the land ownership will be differentiated into title holder and non-title holder ownership for identifying vulnerable people.</p>
12.5	<p>Has the project timetable been clearly set out for each project phase: construction, operation, decommissioning and closure?</p>	<p>The national EIA report has only included project timeline for construction phase. However, measures for the operation phase have been identified in the ESMP. The operation phase ESMP will also be revised during the project's midterm to strengthen measures for the operation phase.</p>



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	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
	Relevant and partially addressed	
12.6	<p><i>Have labour</i> requirements and management plans have been presented?</p> <p>Relevant and addressed</p>	<p>The national EIA has included labour requirements for the project. However, specific labor management plan is not included in the national EIA report. Therefore, a stand-alone Labor Management Procedure (LMP) is prepared so that the provisions set out in the LMP comply with ESS 2 requirements in addition to the updating of ESMP. Furthermore, general OHS measures are included now in ESMP and OHS provision and requirements will be included through bidding documents (and this requirement will be specified in ESCP)</p>
<b>2. PROJECT ALTERNATIVES</b> <ul style="list-style-type: none"> <li><b>Relevant and partially addressed</b></li> </ul>		
13.1	<p>Were project alternatives considered in the EIA?</p>	<p>The national EIA report has included alternative analysis in alternative analysis chapter. The alternative analysis includes only of the selected option for the project implementation and is without comparative analysis of possible alternatives.</p> <p>Alternative analysis considering the realignment proposed by the RJKIP to avoid environmental and social impacts such as realignment considered for avoiding Ghodaghodi Lake, a Ramsar site, minimizing land acquisition and involuntary resettlement, minimizing forest area justifying design consideration is presented in this report and will be included in addendum to national EIA.</p>
13.2	<p>If alternatives are described including the no go option, have their main environmental, social and health impacts been compared clearly and objectively with those of the</p>	<p>The alternative analysis chapter has provided evaluation of beneficial and harmful impacts of the selected design and has considered the selected design as the best option in term of environmental and social risk minimization. Further, it has</p>

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	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
	proposed project?	suggested “go” for the implementation of the opted design. Alternative analysis considering the realignment proposed by the RJKIP to avoid environmental and social impacts such as realignment considered for avoiding Ghodaghodi Lake, a Ramsar site, minimizing land acquisition and involuntary resettlement, minimizing forest area is included in this report and will be included in addendum to national EIA.
<b>3. DESCRIPTION OF THE BASELINE ENVIRONMENT AND SOCIAL</b>		
14.1	Have the <i>Environment</i> components likely to be affected by the project been identified and described sufficiently for the prediction of impacts?	Yes
	a. Climate (wind, precipitation, temperature, evaporation, climate change scenarios etc.)  Addressed	The national EIA has included baseline information on precipitation, temperature and projects feasibility study has internalize issue of evapo-transpiration for determining irrigational requirements.
	b. Geology (rock type, structure, geochemistry etc) and geomorphology  Addressed	The national EIA has included baseline information on geology of project area.
	c. Soils (erosion, agricultural and rehabilitation potential)  Addressed	The national EIA has included the baseline information on issues of soil erosion, river bank cutting due to flooding of Pathariya and Kandha Rivers.
	d. Surface hydrology (flood lines, runoff, flows, supply, users, wetlands, dams, lakes, habitat for water-borne vectors, provision of ecosystem services,	The national EIA has included the baseline information on available discharge from Pathariya and Kandha River for the Pathariya Extension Canal (PEC). Further, the national EIA has included information on precipitation. EIA does not discuss

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	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
	susceptibility to climate change)  Partially Addressed	surface and sub surface run offs. This will be further assessed through component 3.
	e. Groundwater (aquifers, yields, permeability, users, gradients etc)  Addressed	The national EIA has included baseline information on existing level of groundwater table of the project area. Furthermore, it has categorized the dependency on surface and ground water of the local community.
	f. Air quality (ambient, indoor and seasonal)  Addressed	The national EIA has included baseline status of ambient air quality of the project area.
	g. Terrestrial and aquatic ecology products and ecosystem services including fauna and flora conservation  Addressed	The national EIA has included information on terrestrial and aquatic ecology.
14.2	Have the <i>social</i> components of the environment likely to be affected by the project been identified and described sufficiently for the prediction of impacts?  Relevant and partially addressed	
	a. Demographic, socio-cultural, economic conditions and trends, political structures and local organizations within which the project operates including social status of women and girls and	Demographic information on socio-cultural, economic conditions and trends is included in the national EIA report. Information on political structures and local organizations within which the project operates including social status of women and girls and vulnerable groups and indigenous people will be addressed in the SIA.

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	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
	vulnerable groups and Indigenous people	
	b. Grievance redress mechanism including SEA/SH prevention	Grievance redress mechanism is proposed for addressing project related grievances. However, implementation mechanism for grievance redress mechanism is not included in the national EIA report and further issues of SEA/SH is not included in the report.
	c. Settlement patterns	The national EIA has included demographic information of the PAFs. A clear settlement pattern of the communities in the project area is not included and will be addressed in the SIA.
	d. Current status and drivers of health (communicable and non-communicable diseases, vector-borne diseases, existing pollution-induced diseases, injuries and accidents)	The national EIA report has not included information on existing communicable and non-communicable diseases, vector-borne diseases, existing pollution-induced diseases, injuries and accidents and health facilities available in project implementation area. This will be addressed in the SIA.
	e. Crime and community safety	Existing condition of crime and community safety is not included in the national EIA report. This is not considered as major concern.
14.3	Have the <i>cultural</i> components of the environment likely to be affected by the project been identified and described sufficiently for the prediction of impacts?  Relevant and addressed	According to the national EIA, the project implementation will not physically displace or impact any archaeological, religious, or cultural heritage sites.
	a. Sites of spiritual and/or religious significance	The national EIA report has envisioned no impact on cultural heritage and has included information on cultural heritage sites present in the project implementation area.
	b. Sites of cultural and historical significance	The national EIA report has envisioned no impact on cultural heritage and has included information on

<b>Questions to be asked:</b> 1) Is it relevant? 2) Is it addressed? – Properly? Outside of EIA? 3) What needs to be done to address it? Measures to Bridge the Gap		
	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
		cultural heritage sites present in the project implementation area.
<b>4. DESCRIPTIONS OF IMPACTS</b>		
	<b><i>Impact Identification</i></b>	
15.1	<p>Have direct and indirect/secondary effects of pre-construction, constructing, operating and, where relevant, after use or decommissioning of the project been clearly explained (including both positive and negative effects)?</p> <p>Relevant and partially addressed</p>	<p>The national EIA report has envisaged direct and indirect impacts from the project including both negative and positive impacts of projects construction and operation phases. The national EIA has envisioned impacts due to forest land and private land acquisition for main canal, secondary and sub-secondary canal and furthermore has envisioned rise in agricultural productivity due to year-around irrigational facility in the project command area. However, the national EIA has mostly described the impacts on the main canal impact prediction of secondary and sub-secondary canal is limited as per risk proportionality. Nonetheless, EIA addresses the key impacts and for example purposes biodiversity measures for the secondary and sub secondary canals.</p>
15.2	<p>Have the types of impacts at different phases of the project, been investigated in so far as they affect the following biological, physical, health and safety and social systems? namely</p> <p>Relevant and partially addressed</p>	<p>The national EIA has envisaged impacts on biological, physical, social and health and safety issues and proposed measures to avoid and minimize the impacts. However, few of the additional issues such as impacts on Basanta Corridor due to canal construction, impacts on non-title-holder land owners, vulnerable community, GBV, SEA/SH needs to included and therefore, these issues will be assessed and addressed in SIA and BMP.</p>
	<p>a. Air quality (indoor and outdoor)</p> <p>Addressed</p>	<p>The national EIA has envisioned impacts in the ambient air quality from air pollution due to construction activities, use of heavy machineries and operation of crusher plants and has proposed measures to avoid and minimize the associated impacts.</p>

**Questions to be asked:**

- 1) Is it relevant?
- 2) Is it addressed? – Properly? Outside of EIA?
- 3) What needs to be done to address it? Measures to Bridge the Gap

	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
	b. Surface Water Resources (flow and quality) - water balance needs to be presented  Partially Addressed	The national EIA has envisioned impacts on surface and ground water quality due to discharge of camp sewerages, dumping of construction wastages in the inland water surfaces and has proposed measures to avoid and minimize the associated impacts. Run off from irrigation has not been well assessed.
	c. Soils  Addressed	The national EIA has envisioned impacts in soil quality due to haphazard storage, handling and dumping of construction materials and wastages and has proposed measures to avoid and minimize the associated impacts.
	d. Noise and vibration  Addressed	The national EIA has envisioned impacts from noise and vibration due to construction activities, use of heavy machineries and operation of crusher plants and has proposed measures to avoid and minimize the associated impacts.
	e. Topography geomorphology and  Addressed	The national EIA has anticipated change in land use due to forest and private land acquisition.
	f. Vegetation  Addressed	The national EIA has envisioned impacts due to loss of forest area due to acquisition and has proposed compensatory plantation in the area adjacent to existing forest area.
	g. Terrestrial Ecology and biodiversity  Partially addressed	Additional issues such as impacts on Basanta Corridor due to canal construction will be assessed for preparation of BMP
	h. Historic and cultural heritage and impact on Indigenous People  Partially addressed	The national EIA report has envisioned no impact on historic and cultural heritage and has included information on cultural heritage sites present in the project implementation area. Further, the EIA has included impacts from conflict with the labors has been envisioned. However, additional impacts to

**Questions to be asked:**

- 1) Is it relevant?
- 2) Is it addressed? – Properly? Outside of EIA?
- 3) What needs to be done to address it? Measures to Bridge the Gap

	Required critical information and remark	Content and Gaps
		their livelihood, displacement etc. has not been included. This is tackled through SIA.
	i. Land tenure and land use  Partially addressed	Land use is included in the national EIA report however land tenure is not documented and therefore need to be included in addendum to national EIA following cadastral survey.
	j. Community Health and Safety including labor influx and SEA/SH  Partially addressed	The national EIA report has included issues of community health and safety and potential issues from labor influx in the project area. However, issues of SEA/SH have not been included in the report. This will be included to addendum to national EIA as per SIA finding.
	h. Social inclusion considerations (PWDs/minority/gender and vulnerable people participation)?  Partially addressed	Impacts on IPs is included in the national EIA report. Impacts on PWDs, vulnerable people etc. has not been identified and included in the EIA report. The SIA will address this.
15.3	Are transboundary impacts considered  • Not Relevant	
15.4	Are cumulative impacts considered?  Not addressed	A separate cumulative impact assessment is not required according to national guidelines. For this project, the assessment of planned or ongoing projects within the project implementation area has not been conducted or documented. A Rapid Assessment of the Cumulative impacts will be will be carried out of the RJKIP 3 interventions and is included in a separate Scoping Study
	<b><i>Magnitude of Impacts</i></b>	

**Questions to be asked:**

- 1) Is it relevant?
- 2) Is it addressed? – Properly? Outside of EIA?
- 3) What needs to be done to address it? Measures to Bridge the Gap

	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
15.5	<p>Are impacts described in terms of the nature and magnitude of the change occurring and the nature (location, number, value, sensitivity) of the affected receptors?</p> <p>Partially addressed</p>	<p>The impacts described in terms of the nature and magnitude of the change occurring and the nature (location, number, value, sensitivity) of the affected receptors following national EIA guidelines, 1993. However, few of the additional issues such as impacts on Basanta Corridor due to canal construction, impacts on non-title-holder land owners, vulnerable community, GBV, SEA/SH needs to included and therefore, these issues will be assessed and addressed SIA and BMP.</p>
15.6	<p>Has the timescale over which the effects will occur been predicted such that it is clear whether impacts are short, medium or long term, temporary or permanent, reversible or irreversible?</p> <p>Addressed</p>	<p>The national EIA has anticipated and predicted impacts and significance of the impacts are predicted upon the type, magnitude, extent and duration and reversibility/irreversibility of the impacts following national EIA guidelines, 1993. Apart from long-term impacts due to reduction in forest and land holding of PAFs due to acquisition 36.9 hectare of forest area and 268.7 hectare of private land, other impacts are mostly short-term and are reversible. Furthermore, the EIA has proposed compensatory plantation adjacent to the existing forest area and compensation to the PAFs as the measures for mitigating impacts.</p>
15.7	<p>Where possible, have predictions of impacts been expressed in quantitative terms? Otherwise, have qualitative descriptions been defined?</p> <p>Addressed</p>	<p>The prediction of impacts has been expressed in quantitative form following national EIA guidelines, 1993</p>
	<p><b>Data and Methods</b></p> <p>Relevant and addressed</p>	



<b>Questions to be asked:</b> <b>1) Is it relevant?</b> <b>2) Is it addressed? – Properly? Outside of EIA?</b> <b>3) What needs to be done to address it? Measures to Bridge the Gap</b>		
	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
15.8	Have the methods to predict the nature, size and scale of impacts been described and are they appropriate to the importance of each projected impact?	Yes. Prediction of has been conducted along with importance of impact in terms of nature, size and scale of impacts following national EIA guidelines, 1993.
	<b><i>Evaluation of Impact Significance</i></b> Relevant and addressed	
15.9	Does the information include a clear indication of which impacts may be significant and which may not?	Significance of the impact has been conducted following national EIA guidelines, 1993
<b>16 ENVIRONMENT AND SOCIAL MANAGEMENT PLAN (ESMP)</b>		
	<b><i>Description of mitigation, monitoring and institutional measures</i></b> • Relevant and addressed	
16.1	Were all anticipated adverse environmental and social impacts identified and summarized in a form of a table consisting of significant environment/issues, its adverse impacts, the mitigating measures, the agencies responsible for the mitigation, the timeline, and the estimate of each of the measures	The national EIA has anticipated environmental and social impacts and are provided in the ESMP table with mitigation measures, implementation timeline, agencies responsible for implementation of mitigation measures and associated cost in the format prescribed in EPA, 2019 and EPR, 2020. However, few of the additional environmental and social issues such as impacts on non-title-holder, vulnerable community, GBV, SEA/SH needs to included. These issues will be addressed in updated ESMP after completion of social and biodiversity assessment.
16.2	Were all monitoring measures identified and summarized in a form of a table with the following sequence: the mitigation measures, parameters to be measured, the method used, the frequency of measurements, the agency	The Environmental Monitoring Plan is included in the national EIA report with monitoring parameters, method for monitoring, frequency, agency responsible for monitoring and associated cost in the format prescribed in EPA, 2019 and EPR, 2020. The Monitoring plan is included in ESMP.

**Questions to be asked:**

- 1) Is it relevant?
- 2) Is it addressed? – Properly? Outside of EIA?
- 3) What needs to be done to address it? Measures to Bridge the Gap

	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
	responsible for the monitoring, and the associated cost for each monitoring measure.	
16.3	Were an institutional arrangement, capacity development and training developed which include which party/agency is responsible for the mitigation and monitoring measures; and the training required to support the implementation and mitigation measures?	Institutional arrangement for monitoring is not proposed in the national EIA report. It is now included in section 5.4.
16.4	Were an implementation schedule and cost estimates prepared showing phasing and coordination with overall project implementation plans; and (b) the capital and recurrent cost estimates and sources of funds for implementing the ESMP? Were these figures also integrated into the total project cost tables?	The total national EIA cost is included in total project cost. This assessment has updated the cost table where possible. An implementation schedule and cost estimates will be included in the addendum to EIA after completion of social assessment and BMP.
<b>17. PUBLIC PARTICIPATION AND STAKE HOLDER ENGAGEMENT</b> Relevant and partially addressed		
17.1	Has there been a genuine attempt in accordance with ESS10, to consult during the ESIA process, with the public, relevant public agencies, project affected people and	The national EIA has conducted public hearing program, group consultation for the engagement of project affected community, public agencies and other interested stakeholder as mandated by EPA, 2019 and EPR, 2020. Furthermore, public notice was published from the RJKIP as well as from MoFE

**Questions to be asked:**

- 1) Is it relevant?
- 2) Is it addressed? – Properly? Outside of EIA?
- 3) What needs to be done to address it? Measures to Bridge the Gap

	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
	households, local NGOs and the media and special interest groups where applicable. Lists the groups approached and the summary of the consultations	requesting written suggestions/concerns from affected stakeholders and interested parties as mandated by EPA, 2019 and EPR, 2020.
17.2	Were the comments/recommendations made during the consultation taken into the consideration in the design and for the implementation of the project?	The national EIA report has addressed the comments/recommendations made during the consultation in ESMP with mitigation measures.
17.3	Has Grievance redress mechanism been provided?	Grievance redress mechanism is proposed in the national EIA. However, details on the structure and functioning mechanism are not included. A Stakeholder Engagement Plan (SEP) is prepared including GRM.
17.4	Has SEA/SH prevention measures and referral pathway been provided?	Issues of SEA/SH has not been envisaged in the national EIA report. Therefore, potential issues of SEA/SH, its referral pathway and redressal mechanism will be included in the addendum to EIA after completion of social assessment.
17.5	Are there details on information disclosure?	Included in the SEP
<b>18. NON-TECHNICAL SUMMARY</b>		
Relevant and addressed		
18.1	Is there a non-technical summary that will easily be understood by a lay-person? And translated in a local language to the extent feasible or required by national laws?	The national EIA report includes executive summary of the report in Nepali language as mandated by EPA, 2019 and EPR, 2020.
18.2	Does the summary contain a brief but concise description of	Yes

**Questions to be asked:**

- 1) Is it relevant?**
- 2) Is it addressed? – Properly? Outside of EIA?**
- 3) What needs to be done to address it? Measures to Bridge the Gap**

	<b>Required critical information and remark</b>	<b>Content and Gaps</b>
	the project and the environment and social context, an account of the main environment and social issues, the ESMP and the consultation process?	
18.3	Does the summary indicate whether the project is or is not environmentally and socially acceptable?	The national EIA report includes summary regarding the acceptance of the project in environmental and social in the conclusion and commitment chapter following national requirements.

## Annex B: Stakeholder consultation records

Date	Stakeholder	Issues of discussion	Key Issues raised/discussed
January 6, 2025	Bardgoriya Rural Municipality- Mr. Karna Bahadur Kunwar-Chairman Ganesh Raj Giri-Vice-Chairman Jagat Bahadur Sahi-Ward Chairman- Ward no. 4, Ramit Pandy-Journalist, Bimala Chaudhary, Laxmi Chaudhary, Dipak Bohora, Nandu Saud, Khagendra Bataula-project beneficiary,	<ul style="list-style-type: none"> <li>• Project concept, components, and objectives</li> <li>• Project sites and planned activities</li> <li>• Project implementation arrangements</li> <li>• Key ESHS risks and issues related to the project</li> </ul>	<ul style="list-style-type: none"> <li>• The alignment of the canal is suggested to realign near the national highway in Bardgoriya Ward no. 3 area to the public land in the north to reduce social impacts from land acquisition and also to minimize the compensation amount</li> <li>• This realignment can maximize the benefits from irrigation facility covering additional area compared to proposed alignment</li> <li>• Project is suggested to realign the irrigation canal along the Kalika Secondary School playground up to Puraina Lake to enhance the benefits</li> </ul>
January 9, 2025	Joshipur Rural Municipality, Chitra Bahadur Chaudhary-Chairman, Prakash Dhungana-Chief Administrative Officer, Dipesh Timilsina-Account Officer, Pramila Baidhya Chaudhary-Agriculture Technician,	<ul style="list-style-type: none"> <li>• Project concept, components, and objectives</li> <li>• Project sites and planned activities</li> <li>• Project implementation arrangements</li> <li>• Key ESHS risks and issues related to the project</li> </ul>	<ul style="list-style-type: none"> <li>• Water outlet needs to be well provisioned in the construction of irrigation canal</li> <li>• Culverts in the irrigation canal should be provided for road crossing in the required sections</li> <li>• Lining in the edge of the irrigation canal should be provided</li> </ul>

	Prakash Bista, Kalpana Chaudhary- Farmer		
January 9, 2025	Piruwa Irrigation Water User Committee, Bardgoriya Municipality-Ward no. 2 Rajendra Bam- Secretary, Junga Bahadur Tharu, Shree Ram Chaudhary, Aman Dhangaura, Ajay Bam, Sanjib Kumar Chaudhary, Nawaraj Joshi-Beneficiaries	<ul style="list-style-type: none"> <li>• Project concept, components, and objectives</li> <li>• Project sites and planned activities</li> <li>• Project implementation arrangements</li> <li>• Key ESHS risks and issues related to the project</li> </ul>	<ul style="list-style-type: none"> <li>• Project should provide additional water for irrigation as the irrigation is insufficient from existing Piruwa Irrigation Canal</li> <li>• Bars along the canals in and near the settlement areas needs to be installed to avoid possible accidents</li> </ul>
January 6, 2025	DFO, Pahalmanpur Surendra Bahadur Kathayat, Forest Officer Dipendra K.C., Forest Officer Anita Bhattarai, Ranger	<ul style="list-style-type: none"> <li>• Project concept, components, and objectives</li> <li>• Project sites and planned activities</li> <li>• Project implementation arrangements</li> <li>• Forest resources and biodiversity</li> <li>• Key ESHS risks and issues related to the project</li> </ul>	<ul style="list-style-type: none"> <li>• Project should coordinate for tree cutting with Division Forest Office</li> <li>• Project needs to provide adequate support for the conservation of protected species and biodiversity of the area</li> <li>• Project should provide wildlife crossing in the forest segregated areas</li> <li>• Project should follow legal provisions of forest regulations, 2024 (second amendments)</li> </ul>
January 8, 2025	Koilahi Taal Community Forest User Group, Kailari, Kailali Dable Bahadur Salami Magar- Chairman	<ul style="list-style-type: none"> <li>• Project concept, components, and objectives</li> <li>• Project sites and planned activities</li> <li>• Project implementation arrangements</li> </ul>	<ul style="list-style-type: none"> <li>• Dispute over the koilahi lake between local government and community forest user group</li> <li>•</li> </ul>

	Sihilal Chaudhary- Joint Secretary Ram Sundar Chaudhary-Member Man Bahadur Chaudhary- Member	<ul style="list-style-type: none"> <li>• Forest resources and biodiversity</li> <li>• Key ESHS risks and issues related to the project</li> </ul>	
January 10, 2025	Pathariya Irrigation System Water User Committee, Joshipur Junga Bahadur Tharu, Chairman Om Raj Binadi-Vice Chairman Rekha Kumari Chaudhary-Treasurer Sabita Chaudhary-Secretary	<ul style="list-style-type: none"> <li>• Project concept, components, and objectives</li> <li>• Project sites and planned activities</li> <li>• Project implementation arrangements</li> <li>• Key ESHS risks and issues related to the project</li> </ul>	<ul style="list-style-type: none"> <li>• Existing canal is narrow and in worn out state and therefore upgrading of the proposed irrigation canal should be constructed to accommodate additional water flow</li> <li>• Chemical fertilizers and pesticides are extensively used</li> <li>• The WUC is unaware of ESHS safeguards</li> </ul>
January 7, 2025	Local Farmers, Bardgoria-2	<ul style="list-style-type: none"> <li>• Project concept, components, and objectives</li> <li>• Project sites and planned activities</li> <li>• Project implementation arrangements</li> <li>• Key ESHS risks and issues related to the project</li> </ul>	<ul style="list-style-type: none"> <li>• Insufficient irrigation as farmer depends on rain, piruwa canal (very limited) and boring</li> <li>• Canal crossing must be constructed on every road crossing and other culturally-socially important place for the easy access</li> </ul>
January 7, 2025	Budgars/Bhalmansa-Gaduwa Dangaura Tharu, Bardagoriya-2	<ul style="list-style-type: none"> <li>• Project concept, components, and objectives</li> <li>• Project sites and planned activities</li> <li>• Project implementation arrangements</li> <li>• Key ESHS risks and issues related to the project</li> </ul>	<ul style="list-style-type: none"> <li>• Badghar is socially responsible in managing socials conflicts</li> <li>• Project should coordinate with Badghars during the project implementation</li> </ul>

January 10, 2025	Probable affected household at Main feeder canal chainage 0+001, 0+750, 2+850, 3+150, 5+090, 6+373, 11+810, 12+024	<ul style="list-style-type: none"> <li>• Project concept, components, and objectives</li> <li>• Project sites and planned activities</li> <li>• Project implementation arrangements</li> <li>• Land use status</li> <li>• Key ESHS risks and issues related to the project</li> </ul>	<ul style="list-style-type: none"> <li>• Since all our land will be taken, the canal must be routed elsewhere.</li> <li>• Handsome compensation for land acquisition must be provided more than that of government valuation, not less than market value</li> <li>• As the proposed canal will be large, it should not pose a drowning risk to children</li> </ul>
January 10, 2025	Media	<ul style="list-style-type: none"> <li>• Project information can be disseminated through official social media platforms of RJKIP PIU, Municipality; FM, national/local television program and other media</li> </ul>	<ul style="list-style-type: none"> <li>• The project has used websites and FM- Jingle to disseminate project information.</li> </ul>



आज मिति २०७३/०८/२२ गते रानीजमद कुलरीया सिन्धु  
आयोजना - तेस्रो - चरणको सामाजिक तथा वातावरणीय  
अवस्था अन्तर्गत आयोजनाको प्रस्तावित क्षेत्रमा पर्ने  
परेडोर्मा गाउँपालिका वडा नं ४ का अध्यक्ष भी जगत  
बहादुर खत्री को अध्यक्षतामा तम सरोकारवालाको उपस्थितिमा  
निम्न वनोजिमका हलफ गरियो;

क्र.सं.	नाम थर	पद/हेगाता	सम्पर्क नं.	हस्ताक्षर
१.	कवीर कुमल	डाक्टर	९८८८४२४६१९	मोहन
२.	गणेश राज गिरी	उपाध्यक्ष	९८८८४२४६२०	गणेश
३.	जगत बहादुर	वडा अध्यक्ष	९८८८४२४६२१	जगत
४.	देवेन्द्र क. राई	साधनालय	९८८८४२४६२२	देवेन्द्र
५.	रवि पाके	पञ्चायत	९८८८४२४६२३	रवि
६.	हर्षिक	मुडा बजार	९८८८४२४६२४	हर्षिक
७.	विमला चौधरी	मुडा बजार	९८८८४२४६२५	विमला
८.	लक्ष्मी चौधरी		९८८८४२४६२६	लक्ष्मी
९.	दिपक बोहरा	नौनिया	९८८८४२४६२७	दिपक
१०.	नन्दु साउदु	नौनिया	९८८८४२४६२८	नन्दु
११.	अनुराग डगडा	विभावोभी	९८८८४२४६२९	अनुराग
१२.	रविन्द्र बहाल	पुरैनाताल	९८८८४२४६३०	रविन्द्र
१३.	चन्द्र बापसाह		९८८८४२४६३१	चन्द्र
१४.	शुभक पाँडे		९८८८४२४६३२	शुभक
१५.	कारण गुल	नौनिया	९८८८४२४६३३	कारण
१६.	धुव राज अधिकारी			धुव
१७.	सुबिन गुप्ता वपरी			सुबिन
१८.	सुवराज बज्रा			सुवराज

हलफ गरियो किम्व

- क) समग्र रानीजमद कुलरीया सिन्धु आयोजनामा पर्ने सामाजिक  
तथा वातावरणीय विषयमा हलफ गरियो
  - ख) परेडोर्मा वडा नं ४ का राजमार्ग नजिकका विकास
- ७२५२५

गरिदा सांस्कृतिक तथा वातावरणीय प्रभाव दोहरे  
पने सबसे तथा मुआवजा समेत दोहरे पने हुंदा  
उत्तर तर्फ वार्ड सार्वजनिक अड्डा व माफत उधर  
सिन्हाई हुने क्षेत्र बढने तथा शता समेत पने हुंदा  
सम्बन्ध अरु सम्म सो क्षेत्र समेटिन उपयुक्त टेलिफोन

(३) सांस्कृतिक सिन्हाईको लक्ष्य काय्मिदा क्रान्ति लेभने दान  
हुने पुराना ताल हुने लान सविमो भने उत्तम  
हुने।

(४) यस नगरपालिका गाउँपालिका मा कार्यरत संघ संस्था सभामा  
को पहिचान गरियो ।

सिन्हा

०७/०५/२५



आज्ञा मिति २०८१/०५/२५ गते दानीअमल कुम्भेयमा सिन्हाई आशेअना तेस्रो चरणको सामाजिक तथा वातावरणीय अध्ययन अन्तर्गत आशेअनाको प्रस्तावित क्षेत्रका पर्ने जोशीपुर गाउँपालिकाको अध्ययन मी चित्र वहादुर चौधरीको अध्यक्षता तथा सरोकारवालाको उपस्थितिमा निम्न वसोअगिठ इजफज गरियो।

क्र.सं.	नाम, थाल	घर/ठेगाना	सम्पर्क नं.	हस्ताक्षर
१.	चित्र वहादुर चौधरी	गाउँपालिका अध्यक्ष	९८४८४९९९९९	चित्र वहादुर चौधरी
२.	प्रकाश दुम्ना	बि.प्र.अ.	९८५०६२९९९९	प्रकाश दुम्ना
३.	दिपक तिमिल्सिना	बि.प्र.अ.	९८६६२९९९९	दिपक तिमिल्सिना
४.	संजय चौधरी	कुपि.अ.	९८४२४६८०००	संजय चौधरी
५.	प्रामिला लामा चौधरी	कापि प्र.अ.	९८४२६२२९९९	प्रामिला लामा चौधरी
६.	प्रकाश विष्ट	कैलेश	९८४९२२९९९	प्रकाश विष्ट
७.	कल्याण चौधरी	कैलेश	९८२१२०९९९	कल्याण चौधरी
८.	सुदिन प्रकाश वाग्ले		९८९०९३९९९	सुदिन प्रकाश वाग्ले
९.	युवराज पन्नाई		९८२११२९९९	युवराज पन्नाई

#### इजफज गरिएका विषय

- सिन्हाई कुलो निर्माण गर्दा पानीको विकासको व्यवस्थापन गरिनुपर्ने।
- आवश्यकता अनुसार बाडक कस हुने स्थानका कल्भर्ट निर्माण गरिनुपर्ने।
- सिन्हाई तहको विनालको बाइनिङ गरिनुपर्ने।
- घर गाउँपालिका कार्यालय संघ संस्था को पहिचान गरियो।

चित्र वहादुर चौधरी

५. वस्ती नोज़ा तह रिमार्क जर्द हुन सक्ने दुर्बल समुदाय जर्द  
तह डिप्लोमा वपुर्द गणना जर्दि जर्दि।

Signature



ડાહા કિલ્લો ૨૦૮૧-૦૬-૨૬ એલેક્ટ્રોનિક્સ દિવસ રાત્રી ડાહા મુલરિયા સિંચાઈ આયોજનારો સામ્રાજીક માતાવરણીય ગ્રહચંદ્રન પ્રત્યક્ષ વર્ણોરિયા ગાંધીવલિડા વતી ૨ વર્ણોરિયા પ્રતિદેશીકે પિચ્છા સિંચાઈ ગાંધીવલિડા સામ્રાજી તથા ડાહા સ્થાતીય સરેકોવાલાડો રૂપરિપ્તિતિ તિષ્ઠ વર્ણોરિયા દત્તફલ ગરિયો।

ક્ર.સં.	નામ	પદોદગત	સંખ્યક્ર.સં.	દસ્તાવેજ
૧.	રાજેન્દ્ર વર્મા	પિચ્છા સિંચાઈ પ્રત્યક્ષ ગાંધીવલિડા	૬૮૦૦૬૨૬ LTO	પ્રતિ
૨.	શંભુ વેદાધર ડા.શા.૭		૬૮૧૨૬૬૭૧૨૧	પ્રતિ
૩.	સા રામ ચંદ		૬૮૧૧૬૬૮૦૬૪	પ્રતિ
૪.	Anjan Danganwala		૭૧૧૫૭૬૭૫૭૦	પ્રતિ
૫.	Ajay Ram		૭૪૨૨૮૩૮૭૪૩	પ્રતિ
૬.	Sanjiv M. Chy	એલેક્ટ્રોનિક્સ ડેપુટી	૬૮૨૨૨૭૭૬૪	પ્રતિ
૭.	મી. ચંદ્રકાન્ત સિંઘ	દેવરીય વાલી	૬૮૨૨૨૭૭૭૦૬	પ્રતિ
૮.	નવરામ મોરે		૬૮૨૨૨૨૨૨૪૮	પ્રતિ
૯.	મલ્લુ વેદાધર વર્મા			પ્રતિ
૧૦.	ગુલામ અલી ધાલ	મલ્લુ વેદાધર		પ્રતિ
૧૧.	બુલરામ વર્મા		૬૮૨૨૨૨૨૨૪૮	પ્રતિ
૧૨.	સુશીલ પ્રકાશ વર્મા		૬૮૨૨૨૨૨૨૪૮	પ્રતિ

દત્તફલ ગરિયો:-

૧. હાલ સંચાલકો રહેકો પિચ્છા સિંચાઈ પ્રત્યક્ષ ગાંધીવલિડા સિંચાઈ પ્રત્યક્ષ ગાંધીવલિડા તથા સિંચાઈ ગાંધીવલિડા ગાંધીવલિડા રહેકો।
૨. સ્થાતીય સ્થાતીય રહેકો સરેકોવાલાડો પોદચાલ ગરિયો।

राजीव अमरा कुलरीया लिचर्ड आयोजना लेने छपने पधरेया विस्तार  
भूमि नदको वातावरणीय तथा सामाजिक दूताई/जांच कार्यको लागि  
आयोजित बैठक/जेठ/दलदलमा उपस्थित मा अनेकविध विषयमा  
दलदल जे पैदाशुका निर्णय भयो। (कोइलाहि ताल, कैलारी-कैलाली)

तपस्वि

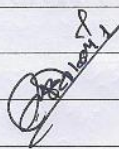
क्र.सं.	नाम थर	ठेगाना	पत्र (सम्पर्कित नं.)	दस्तावेज
१.	कुलका. लामा मगर	कैलारी इकोही	सा.व. १०६५	१०६५
२.	दिदी लाल चौधरी	" " कोइलाहि	सा.व. १०६५	१०६५
३.	बाधुराम चौधरी	" " सा.व.	१०६५	१०६५
४.	पदम नंदपुर लामा	" " जामोती	१०६५	१०६५
५.	जमान सिंह मगर	" " जामोती	१०६५	१०६५
६.	कृष्ण सिंह देउवा	" " -	१०६५	१०६५
७.	मानवी चौधरी	" " सा.व. १०६५	१०६५	१०६५
८.	राम नंदपुर चौधरी (१०६५००२३)	" " सा.व. १०६५	१०६५	१०६५
९.	शंकर साउद	" " सा.व.	१०६५	१०६५
१०.	ता. का. लामा मगर (१०६५००२३)	" " निधानम सा.व. लामा	१०६५	१०६५
११.				
१२.				

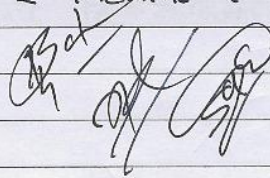
दस्तावेजका विषयहरू :-

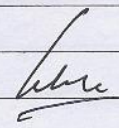
- यस तालको स्वातंत्र्यवत् विवादित रहेको छ।
- पहिले मुख्यतः सिचाईको लाई गरेको तर अहिले सा.व. स्थानीय सरकार बीच अधिकार बाँडफाँडमा छिर्न विभिन्न विवाद आएको
- संरक्षण अर्थात् संरक्षणको कार्य गर्दै छ,
- चुरेलो पनि संरक्षण कार्यक्रम चलाउँदै छ,
- Common जल कपुर (बैरा), मस्ती आदि
- पहिले चितवन, लक्ष्मी, धरौ, पाइन्टो तस अहिले डैन (रेमती) सिंगाडा कालको पान अहिले नपाउँने



- विषादीको प्रयोगले जैविक विविधतामा हान्य आएको छ
- चरा (वकुल्लो, बेसुरा) जस्ता चरा पनि पछिँदै जस्तो छैन
- सर्पमा पनि पछिँदै जस्तो छैन
- तालको पानीलाई पाल्ने पालो ५ गाउँमा लाग्छ प्रयोग गर्ने।
- व्यवसायिक गाछा पाल्नेले विषादीको प्रयोग गर्नेले समस्या आयो
- अझै - बेसास - जेष्ठसम्म गाछा ठामै चलन छ
- पछिँदै गन्दा बढी तालको गहिराई छट्यो।
- गाछा पालनबाट व्यक्ति विशेषले मात्र नफा गरेको तर समुदाय  
लेगन्तिपत नगएको
- गाछा पालन गन्दा सिमसार व्यवस्थापनको कार्य गर्नुपर्ने।
- DFRको विषयमा जिज्ञासा
- गाछा पालनेले पानीको बाँडफाँटमा असर।
- सिमसार युक्त सिमसार र पर्याटनलाई एक साथै लानुपर्ने।







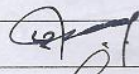
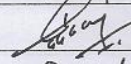
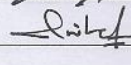
माइबुट

मिनि, 2019-05-20

रानी जमरा कुल्छिया हिचर्ड आपोजना से लो चरणको पधरेपा विलग  
मूल नहरको कालाव/शीथ तथा सामाजिक दोलो/अथ कायिको लो  
आयो जित बैठको/गोरको/दलकुलमा लपलिलमा हुनेमे/रित  
विषयमा दलकुल को देहाएका निर्णय भएको। (DFO-पहलका)

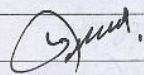
तपलिल

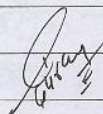
क्र.सं. नामधर खोला पट देहाएत

१. १. सुरेन्द्र नरकायत दि.न.को नरकायिका 
२. दिपेन्द्र के.सी. डि.व.का. वन अधिकृत 
३. अमिता शर्मा डि.व.का. पहलकापट देहाएत 
- ४.
- ५.
- ६.
- ७.
- ८.

दलफलका विषय:-

- सा.व.ले सव कटानको जेलागा समन्वय गर्ने।
- प्रहरी वनमा अंशित प्रजातिहरू खासै नभएको।
- यस अर्थोनाले सर्वसाधारण कुपकाताई लागे हुने।
- प्रहरी वनमा गइका अंशित प्रजातिहरूको संरक्षणमा विषय  
दधान दिईने हु।
- वन विनाशन गर्ने मल डेथलका Wildlife crossing निर्माण गर्नु पर्ने  
→ अर्थोनाले कार्यनवयन कक्षा वन विनाशनीको पालना गर्नुपर्ने।









## Annex C: Updated ESMP

### Environmental management plan for beneficial impacts (Augmentation)

Project Activities	Impact	Enhancement measure for Beneficial Impacts	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower ; Cost (NPR.) and Time	Monitoring and Evaluation Agency
<b>Construction phase</b>								
<b>Socio-economic and Cultural environment</b>								
Employment opportunity to the local people	The project requires 30 skilled, 15 semi-skilled and 150 unskilled labors that will create opportunity	<ul style="list-style-type: none"> <li>Priority of employment opportunity will be provided to the labors</li> </ul>	Project area	Provision of employment to locals depending on their skills	Construction phase	RJKIP/contractor	500,000	M/RM/RJKIP
Increment in economic activities	Project will require various types of construction materials such as sand, cement, gravel, aggregates, rebars which are available in the local market. Further, the influx of construction workers will increase demand of local daily consumable goods that will enhance the	<ul style="list-style-type: none"> <li>Local products will be used</li> <li>Local vendors will be encouraged to meet the demands of workers</li> </ul>	Project area	Priority to use of local products	Construction phase	RJKIP/contractor	-	M/RM/RJKIP

[illegible]

<b>Project Activities</b>	<b>Impact</b>	<b>Enhancement measure for Beneficial Impacts</b>	<b>Location</b>	<b>Procedure</b>	<b>Timing of Action</b>	<b>Executing Agency</b>	<b>Estimated Manpower ; Cost (NPR.) and Time</b>	<b>Monitoring and Evaluation Agency</b>
Provision of Service Roads	The service road constructed for the maintenance of the project can be used by locals as a rural road making transportation easier and bring significant positive changes to economy of the area.	Proper maintenance service road	Project area	Making transportation easier	Operation Phase	RJKIP	-	Municipality /Rural Municipality /Wards/ RJKIP-PIO
Availability of irrigation water for the command area	After the completion of the project, water for irrigation will be available throughout the year, leading to an increase in agricultural production, increasing the intensity of farming will increase from 130% to 226%	Providing water for irrigation throughout the year	Project area	Water for irrigation will be available throughout the year	Operation Phase	RJKIP	-	Municipality /Rural Municipality /Wards/ RJKIP
<b>Socio economic and Cultural environment</b>								
Increment in agriculture	The availability of water in the project command area will	<ul style="list-style-type: none"> <li>Project will ensure regular supply of</li> </ul>	Project area	Water for irrigation will be	Operation Phase	RJKIP	Cost for regular maintenance	Municipality /Rural

<b>Project Activities</b>	<b>Impact</b>	<b>Enhancement measure for Beneficial Impacts</b>	<b>Location</b>	<b>Procedure</b>	<b>Timing of Action</b>	<b>Executing Agency</b>	<b>Estimated Manpower ; Cost (NPR.) and Time</b>	<b>Monitoring and Evaluation Agency</b>
<p>1 productivity,</p> <p>Contribution in crop diversification</p> <p>Increment in food security</p>	<p>certainly increase the agricultural productivity and contributing food security. Furthermore, availability of water through the year will contribute in the diversification of the traditional crops to cash crops</p>	<p>irrigation water in the project command area</p> <ul style="list-style-type: none"> <li>• Timely maintenance of canal</li> <li>• Provision of improved variety of seeds having higher agricultural yield</li> </ul>		available throughout the year			<p>ce of irrigation canals will be allocated in the yearly budget of RJKIP</p>	<p>Municipality /Wards/ RJKIP</p>
<p>Employment opportunity to the local people</p>	<p>Employment is provided to locals based on their skills for project operation and management.</p>	<ul style="list-style-type: none"> <li>• Project will provide employment opportunity to locals based upon their skill and qualification</li> </ul>	Project area	Water for irrigation will be available throughout the year	Operation Phase	RJKIP	-	<p>Municipality /Rural Municipality /Wards/ RJKIP</p>

<b>Project Activities</b>	<b>Impact</b>	<b>Enhancement measure for Beneficial Impacts</b>	<b>Location</b>	<b>Procedure</b>	<b>Timing of Action</b>	<b>Executing Agency</b>	<b>Estimated Manpower ; Cost (NPR.) and Time</b>	<b>Monitoring and Evaluation Agency</b>
Increment in economic activities	With the completion of the project, trade and business activities based on agriculture will increase in this area	<ul style="list-style-type: none"> <li>• Project will ensure regular supply of irrigation water in the project command area</li> <li>• Timely maintenance of canal</li> </ul>	Project area	Water for irrigation will be available throughout the year	Operation Phase	RJKIP	<b>Socio economic and Cultural environment</b>	Municipality /Rural Municipality /Wards/ RJKIP
Opportunity for aquaculture in command area	The operation of the proposed project, along with water management, will provide opportunities for aquaculture farming in the Command Area	<ul style="list-style-type: none"> <li>• Project will ensure regular supply of irrigation water in the project command area</li> <li>• Timely maintenance of canal</li> </ul>	Project area	Water for irrigation will be available throughout the year	Operation Phase	RJKIP	Cost for regular maintenance of irrigation canals will be allocated in the yearly budget of RJKIP	Municipality /Rural Municipality /Wards/ RJKIP
Benefits from livelihood programs	Project will enhance the capacity of the Water Users' Association (WUA)	Project will enhance the capacity of the Water Users'	Project area	Conducting Institutional Development	Operation period	RJKIP	Will be included in yearly	Municipality /Rural Municipality



Project Activities	Impact	Enhancement measure for Beneficial Impacts	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower ; Cost (NPR.) and Time	Monitoring and Evaluation Agency
	through Institutional Development Activities and provide livelihood-based training.	Association (WUA) through Institutional Development Activities and provide livelihood-based training.		nt Activities and provide livelihood-based training.			budget of RJKIP	/Wards/ RJKIP

#### Environmental management plan for Adverse impacts (Mitigation)

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
<b>Construction Phase</b>								
<b>Physical Environment</b>								
Excavation for canal	<ul style="list-style-type: none"> <li>• Loss of productive (fertile) topsoil</li> <li>• Soil erosion</li> <li>• Air pollution</li> </ul>	<ul style="list-style-type: none"> <li>• The topsoil will be collected covered and stored at safe locations (Dudodhara, Bardagoriya, Joshipur) and safely manged at nearby waterlogging low land areas within 7 to 10 days.</li> </ul>	Within project area	It will be managed in collaboration with the WUA	Construction phase	Construction Contractor	-	M / RM /Forest Officer

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
Establishment and operation of mining, crusher operation, quarrying, etc.	Air pollution, Noise pollution, Water pollution, Soil pollution Change of river course, soil erosion	<ul style="list-style-type: none"> <li>• It will be carried out in accordance with the approval of the President Chure-Terai Madhesh Conservation and Development Committee, the Local Government Operation Act, 2074, and the guidelines for the extraction, sale, and management of stones, gravel, and sand, 2077.</li> <li>• The crusher operation area will be located away from settlements and wildlife movement areas.</li> <li>• Collection of riverbed materials will be carried out from the identified sites, following the specified environmental management plan.</li> <li>• Proper drainage will be provided in the excavation area.</li> <li>• Excavation work will be carried out without causing</li> </ul>	Dudodhara, Bardagoriya, Boniya, Thapapur, and Ghodaghodi	The mining activities will be conducted at the designated locations. Crusher operations will take place at the locations mentioned in Table 11. To prevent the emission of smoke and dust from the crusher site, tree planting will be carried out. The discharge of water used in	Construction Phase	Construction Contractor	-	M / RM /DFO



Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
		<p>damage to vegetation, land, or other physical resources.</p> <ul style="list-style-type: none"> <li>•A sedimentation pond will be constructed around the operation area to collect waste water, and tree planting will be carried out.</li> <li>•Contractor will require the environmental clearance for extraction of riverbed materials and establishment of crusher plant or source material from the approved sites or the legally registered suppliers.</li> <li>•If an alternative site is chosen, the Contractor needs to prepare quarry site management plan, carry out the required environmental assessment and get approval for implementation from concern authority after joint survey.</li> </ul>		processing will be managed through a sedimentation pond.				

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
Establishment and operation of construction workers camp, construction material storage, spoil management area	Air pollution, Noise pollution, Water pollution, Change of river course, soil erosion	<ul style="list-style-type: none"> <li>•The sites will be identified during the field survey</li> <li>•The worker camp and construction material storage will be located on barren land, away from water sources, wildlife movement routes, and grazing areas.</li> <li>•The construction materials will be covered, and the stored materials will be kept damp to reduce dust generation.</li> <li>•Fence will be installed at the spoil storage site, and drainage will be arranged at the spoil management sites.</li> <li>•Height of the spoil at the management site will be kept at 5 meters or less.</li> <li>•Once construction is completed, the workers' camp, construction material storage sites, and spoil management areas will be cleaned and restored.</li> </ul>	Dudodhara, Muda Bazar, Boniya, Bardagoria, Joshipur, Thapapur, Bhajani Trishakti, Sandepani	Operations at the sites will proceed only after obtaining prior consent and approval from the relevant stakeholders and after planning.	Construction Phase	Construction Contractor	-	M / RM / W

<b>Project Activities</b>	<b>Impact</b>	<b>Mitigation measure for Adverse impact</b>	<b>Location</b>	<b>Procedure</b>	<b>Timing of Action</b>	<b>Executing Agency</b>	<b>Estimated Manpower; Cost (NPR.) and Time</b>	<b>Monitoring and Evaluation Agency</b>
Transport vehicles and heavy machineries	Air pollution, Noise pollution, Vibration	<ul style="list-style-type: none"> <li>• All vehicles entering the site will carry construction materials covered.</li> <li>• Cleaning of all vehicles after unloading the construction materials.</li> <li>• The use of old vehicles and machinery will be prohibited.</li> <li>• All types of used vehicles will be regularly checked.</li> <li>• Unnecessary noise near the project area, settlements, and forests will be prohibited.</li> </ul>	Project area	Regular monitoring and management	Construction Phase	Construction Contractor		M / RM / RJKIP
Construction activities (Earth works and river training works)	Land use change, Air pollution, Water pollution, Noise pollution, Blockage of natural drainage, Flooding	<ul style="list-style-type: none"> <li>• Forest land compensation</li> <li>• Excavation sites will be fenced and covered.</li> <li>• Water will be sprayed three times a day during construction activities near settlements.</li> <li>• Water use assessment will be done by contractor in the early phase of construction to define source and amount needed for works</li> </ul>	Project area	Regular monitoring and management	Construction Phase	Construction Contractor		M / RM / RJKIP

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
		<ul style="list-style-type: none"> <li>• Construction near water sources will be avoided</li> <li>• Construction work will not be carried out during the rainy season.</li> <li>• Unnecessary noise near the project area, settlements, and forests will be prohibited.</li> <li>• Construction activities will be stopped during the rainy season.</li> <li>• The canal is designed to avoid any obstruction to the natural drainage.</li> <li>• Construction of embankment, river training work at flood sensitive locations and improvements will be made to the drainage system.</li> <li>• As a rain protection measure, embankment with gabion revetments and gabion launchings have already been constructed.</li> </ul>						

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
Storage of Construction material's	Air pollution, Water pollution	<ul style="list-style-type: none"> <li>• Long-term storage will be covered to protect it from water and wind erosion.</li> </ul>	Project area	Regular monitoring and management	Construction Phase	Construction Contractor		M / RM / RJKIP
Waste Disposal	Air pollution, Water pollution, Foul smell	<ul style="list-style-type: none"> <li>• Burning waste will be prohibited</li> <li>• Separate dustbins will be used for collecting biodegradable and non-biodegradable waste around the camp premises and various active construction areas.</li> <li>• Reusable materials will be reused, and other waste will be disposed of in the municipal waste management area.</li> <li>• Soak pits or septic tanks will be set up in the camp area to manage wastewater.</li> <li>• Waste will be covered and stored properly to avoid being washed away.</li> <li>• The spoil generated from excavation will be properly managed by the</li> </ul>	Around the camp premises and also in various active construction areas.	Proper management of the generated waste will be ensured.	Construction Phase	Construction Contractor	1,50,000 /-	M / RM / RJKIP

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
		<p>construction contractor in collaboration with the project.</p> <ul style="list-style-type: none"> <li>Once construction is completed, the workers' camp, will be cleaned and restored.</li> </ul>						
<b>Biological Environment</b>								
36.9 hectares of forest land will be used by the project	<ul style="list-style-type: none"> <li>Loss of forest area</li> </ul>	As compensation for the permanent use of forest land will be provided if available in the project area or an amount will be deposited into the Forest Development Fund as per the approved guidelines.	In the forest area or elsewhere within the project area as per the decision on DFO and CFUG	As per Forest Act, 2019, and the Forest Regulations, 2024 Coordination with affected CFUGs and the DFO will be ensured by the project.	Construction phase	RJKIP	12, 91,50,000	RJKIP / affected CFUGs/DFO/ DoFSC/MoFE
Cutting 3900 tree	<ul style="list-style-type: none"> <li>Tree cut</li> <li>Habitat loss for wild animals</li> </ul>	<ul style="list-style-type: none"> <li>Compensatory plantation will be supervised for five years.</li> <li>Active bird nests will not be damaged. If possible, tree</li> </ul>	Forest area	<ul style="list-style-type: none"> <li>39,000 trees will be planted for compensatory</li> </ul>	Construction Phase	RJKIP / Construction Contractor	A total of NPR 31,20,000 will be allocated for the establishment	RJKIP / affected CFUGs/DFO/ DoFSC/MoFE

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
		<p>felling will be avoided during the bird breeding season (March to August). If felling is necessary during this period, pre-nesting bird inspections will be conducted by experts, who will decide whether to relocate the nests or postpone the felling.</p> <ul style="list-style-type: none"> <li>• Potential habitats for relocation will be identified near the project area, but outside the work zone. The relocation sites will vary depending on the species and will be selected based on their specific habitat requirements.</li> <li>• Monoculture will be avoided in the plantation of trees</li> <li>• Measures mandated in Plan Protection Act, 2007 will be followed plantation activities to avoid</li> </ul>		<p>plantation at a 1:10 ratio.</p> <ul style="list-style-type: none"> <li>• Plantation will be carried out in the rate of 1,600 seedlings per hectare in a similar climatic zone with native species. The project will carry out the plantation in coordination with the affected community forests and the Division Forest Office.</li> </ul>			<p>of a nursery to plant 39,000 trees at NPR 80 per tree, and NPR 2,00,000 will be allocated for fencing. 78, 00,000 /- (Cost estimate of 5 years of maintenance, at a rate of NPR 200 per seedling)</p>	

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
		introduction and spread of alien and invasive species.						
Earthworks and operation of heavy equipment and vehicles	<ul style="list-style-type: none"> <li>• Possibility of accident incidents of the wildlife and livestock</li> <li>• Human wildlife conflict</li> </ul>	<ul style="list-style-type: none"> <li>• Excavation pits will not be left open overnight. If unavoidable, they will be covered or a safe exit will be provided for any animals that may fall in.</li> <li>• All excavated sites will be inspected every morning.</li> <li>• Low fencing will be used at construction sites, and wildlife-essential areas will remain unaffected by workforce activities.</li> <li>• Temporary barriers will be used to prevent wildlife from entering waste disposal areas.</li> </ul>	Forest Area	Construction work will be done in coordination with CFUGs and DFO. Regular monitoring and management	Construction Phase	RJKIP / Construction Contractor	-	RJKIP / Forest Officer
Canal construction, water diversion, spoil and waste disposal	<ul style="list-style-type: none"> <li>• Impact in life system of aquatic and amphibian</li> </ul>	<ul style="list-style-type: none"> <li>• To minimize the impact on amphibian life, spoil materials will be managed at designated locations.</li> <li>• Construction work will not be carried out at night.</li> <li>• Measures mandated in Plan Protection Act, 2007 will be</li> </ul>	Project Area	Construction work will be done in coordination with CFUGs and DFO. Regular monitoring	Construction Phase	RJKIP / Construction Contractor	-	RJKIP



Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
		followed plantation activities to avoid introduction and spread of alien and invasive species.		and management				
Construction activities, operation of workers camp, quarry and crusher plants near forest area	<ul style="list-style-type: none"> <li>•Illegal collection and utilization of the forest products like firewood, timber, NTFPs, Medicinal plants from forest</li> <li>•Damage to protected species</li> <li>•Possibility of poaching of wildlife species such as deer, antelope, rabbit, wild</li> </ul>	<ul style="list-style-type: none"> <li>•During the construction period, LP gas will be provided for cooking for the workers,</li> <li>•and workers will be advised not to collect or use firewood</li> <li>•Provision of Induction cooker at workers camp</li> <li>•Installation of CC cameras in near forest area</li> <li>•Entry of outsiders or locals will be restricted during the tree felling process to prevent illegal firewood collection.</li> <li>•The construction area will be temporarily fenced.</li> <li>•Workers will be prohibited from entering into forest during the construction phase.</li> </ul>	Forest Area	Construction work will be done in coordination with CFUGs and DFO. Regular monitoring and management	Construction Phase	Constructi on Contractor/ RJKIP	Installation of 28 CC cameras (2 in each CF) where canal passes through forest area. 10000×28=2,80 ,000	RJKIP / Forest officer

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
	boar, Red jungle fowl by workers or other individuals. • Human wildlife conflict	• All workers at the construction site will be provided with a toolbox talk on protected species and habitats. • If any species are found during construction, work will be stopped immediately, and expert advice will be sought on how to proceed. • Workers will be warned not to engage in illegal smuggling of protected species. Legal action will be taken if any workers are found to have been smuggled						
Forest Fire	• Workers will be prohibited from smoking in the forest area. Forest fire awareness boards will	• Workers will be prohibited from smoking in the forest area.	Forest Area	Workers will be made aware of the possibility of fire.	Construction Phase	RJKIP / Construction Contractor	50,000 /-	RJKIP

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
	<p>be used. Burning activities will be prohibited.</p> <ul style="list-style-type: none"> <li>Workers will be made aware of the possibility of fire.</li> </ul>							
Cleaning and rehabilitation of quarry, crusher operation sites, worker camps, quarry areas, construction material storage sites, spoil management sites, etc.	Habitat destruction, Air pollution, Water pollution, Soil erosion	<ul style="list-style-type: none"> <li>After the completion of the construction work, mining areas, crusher operation sites, worker camps, quarry areas, construction material storage sites, spoil management sites, etc. will be cleaned and restored.</li> </ul>	Mining areas, crusher operation sites, worker camps, quarry areas, construction material storage sites, spoil management sites	Regular monitoring and management	<ul style="list-style-type: none"> <li>After the completion of the construction work, mining areas, crusher operation sites, worker camps, quarry areas, construction material storage sites, spoil management sites, etc. will be cleaned and restored.</li> </ul>	RJKIP	1,50,000 /-	M / R.M/ RJKIP

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
• Socio-economic Environment								
Difficulty in transportation (traffic congestion). Traffic management	• Traffic congestion and management	<ul style="list-style-type: none"> <li>• Contractor will prepare traffic management plan as part of C-ESMP</li> <li>• Underground canal will be constructed in the east-west highway sections</li> <li>• Alternative diversion road will be constructed aligning the existing road to avoid construction in traffic flow</li> <li>• Construction work will not be conducted in monsoon</li> <li>• Regular water sprinkling and maintenance will be conducted</li> <li>• Prior information will be disseminated to the road users on service disturbance</li> </ul>	0+270-Sandepani (sub secondary canal), 0+440-Tukki bazar (sub secondary canal), 1+040-Muda (secondary canal), 3+300-Boniya (sub secondary canal), 11+160-Sandepani (main canal)	Regular monitoring and management	Construction period	contractor	Included in total project cost	M / R.M/ RJKIP

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
<p>268.7 hectares of arable land and 1.57 hectares of residential land will be used by the project. The use of arable land will affect existing crops. A reduction of 832.9 metric tons in agricultural production is expected.</p> <p>Project directly affects 163 house, 1 Toilet, 4 cowshed, 1</p>	<ul style="list-style-type: none"> <li>Loss of agricultural and other land</li> <li>Reduction in agricultural productivity due to loss of standing crops and fruits</li> <li>Impacts from use of private and community infrastructures</li> </ul>	<ul style="list-style-type: none"> <li>Project will provide compensation following Land Acquisition Act, 2034 to the 268.7 hectares of arable land and 1.57 hectares of residential land</li> <li>For this Compensation Determination Committee will be formed for determining compensation</li> <li>A detail social assessment following cadastral mapping of the project area is needed for the identification of PAFs having</li> <li>A resettlement action plan (RAP) will be prepared following the entitlement criteria of ESS 5 for compensation</li> </ul>	Project Area	<p>Project will prepare resettlement action plan (RAP). Compensation will be determined forming compensation determination committee</p> <p>Meaningful consultation with the affected farmers for their stake in determining compensation</p> <p>Through the meaningful consultation</p>	<p>Construction Period</p> <p>Pre-construction period</p>	RJKIP/contractor (This shall be the responsibility of RJKIP)	<p>32,43,24,000</p> <p>The amount allocated is only for title-holder land ownership and is subjected to be revised in RAP preparation.</p>	M / R.M/ RJKIP/ DAO, Kailali

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
Kitchen, 1 poultry, 92 electric pole, 2 temple, 4 School, and 1 brick kiln				with local impacted people concerned municipalities.				
During construction labor are directly expose to the risk which may cause accident and other health related issues	<ul style="list-style-type: none"> <li>Issues of occupation health and safety of labors</li> </ul>	<ul style="list-style-type: none"> <li>Requirement for OHS will be part of the bidding documents.</li> <li>PPE will be provided to labor, along with the management of adequate water and toilet facilities, First aid and emergency insurance will be provided, and</li> <li>periodic sensitization on Occupational Health and Safety (OHS) will be conducted for labor</li> <li>An OHS plan will be prepared and implemented once contractor is on board but before construction starts</li> </ul>	<p>Project area</p> <p>Project construction area</p>	<p>Regular orientation and sensitization on PPE use will be conducted to the labors. , First aid facility in the labor camps and emergency insurance will be provided to the labors</p> <p>Mandatory use of PSE</p>	Construction period	RJKIP/contractor	Included in the total project cost	RJKIP-PIO/PMSC

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
		<ul style="list-style-type: none"> <li>• Labors code of conduct will be prepared and will be strictly implemented and monitored</li> <li>• A labor management procedure (LMP) comprising the working conditions, labor camp procedures, and management, the relationship between the workers, and the prohibition of child labor and forced labor in compliance with World Bank ESS 2 requirements will be prepared and implemented</li> </ul>		to all the personnel in the working site Strict implementation of OSH plan				
Outsider laborers may be at risk of communicable diseases, which could lead to health risks, including the	• Impacts on community health and safety	<ul style="list-style-type: none"> <li>• Restriction of unauthorized person in construction area</li> <li>• Construction site will be delineated with safety sign</li> <li>• Periodic monitoring and management from client and contractor</li> </ul>	Project area	Regular monitoring and management	Construction period	RJKIP/contractor	-	M/RM/RJKIP-PIO/PMSC

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
potential spread of diseases to the local community. Unsafe water sources and limited sanitation facilities could contribute to the transmission of community diseases. Additionally, pollution caused by construction activities may result in health issues for local residents. Accidental incidents due		<ul style="list-style-type: none"> <li>• Provision of adequate and safe sanitation, health and other required facility in the labor camps</li> <li>• Labor camps and construction sites will be kept clean</li> <li>• Haulages of construction materials will be covered</li> <li>• Vehicles and machineries will be regularly maintained to minimize air and sound pollution and to an extent mechanized machineries emitting low sound will be used in construction</li> <li>• Prior information dissemination of the construction activities to established channels, medias and social sites to the local community</li> </ul>						



Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
to open construction sites and project ancillary facilities								
Influx of labors in the project will require additional supply of drinking water, health and sanitation facility, transportation service, market area adding pressure to the existing infrastructure and services	<ul style="list-style-type: none"> <li>Pressure on existing infrastructures, facilities such as drinking water, health post, education, health and sanitation facilities, food supply chain etc.</li> </ul>	<ul style="list-style-type: none"> <li>Provision of adequate and safe sanitation, health and other required facility within the labor camps</li> </ul>	Project area	Employment opportunities to locals to minimize pressure on existing infrastructures	Construction period	RJKIP/contractor	Included in total project cost	M/RM/RJKIP-PIO/PMSC
About 55.18% of	<ul style="list-style-type: none"> <li>Impacts on the</li> </ul>	<ul style="list-style-type: none"> <li>Priority for employment</li> </ul>	Project area	Regular monitoring	Construction period	RJKIP/contractor	-	M/RM/RJKIP-PIO/PMSC

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
<i>Tharu</i> ethnic group is present in the area. The influx of outside labors could possibly trigger conflicts from inter cast marriage, alcohol abuse, gambling.	Indigenous Peoples	<p>opportunity will be given to <i>Tharu</i> ethnic group</p> <ul style="list-style-type: none"> <li>• Labour will be made isolated from <i>Tharu</i> ethnic group women</li> <li>• Gambling and use of alcohol will be strictly prohibited</li> <li>• GRM mechanism will be established to address the issues of IPs</li> </ul>		and management				
Contractor may discriminate between male labour and female labour in wages and opportunity	<ul style="list-style-type: none"> <li>• Discrimination between Male and Female</li> </ul>	<ul style="list-style-type: none"> <li>• Equal wages will be provided to male and female workers.</li> <li>• Justifiable opportunities will be given to male, female, and marginalized groups based on their capabilities</li> </ul>	Project area	Regular monitoring and management	Construction period	RJKIP/contractor	-	M/RM/RJKIP-PIO/PMSC
The influx of outside labors could possibly trigger	<ul style="list-style-type: none"> <li>• Conflict between local community and</li> </ul>	<ul style="list-style-type: none"> <li>• Priority for employment opportunity will be given to locals</li> </ul>	Project area	Regular monitoring and management and	Construction period	RJKIP/contractor	-	M/RM/RJKIP - PIO/PMSC/L ocal police

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
conflicts from inter cast marriage, alcohol abuse, gambling and interferences in local culture and traditions	outside labors	<ul style="list-style-type: none"> <li>• Labour will be made isolated from local women</li> <li>• Gambling and use of alcohol will be strictly prohibited</li> <li>• Counseling to workers about local cultures, monitoring of workers behaviors and prohibition of local culture disruption activities</li> <li>• GRM mechanism will be established to address the issues</li> <li>• Project will coordinate with local police authority in case of conflicts</li> </ul>		coordination with Municipality and local security				
Acquisition of land will limit the available land for those community/households who has small land holding	<ul style="list-style-type: none"> <li>• Impacts on vulnerable community</li> </ul>	<ul style="list-style-type: none"> <li>• A detailed social impact assessment needs to be conducted for the identification of vulnerable people.</li> <li>• A vulnerable community development plan</li> </ul>						

<b>Project Activities</b>	<b>Impact</b>	<b>Mitigation measure for Adverse impact</b>	<b>Location</b>	<b>Procedure</b>	<b>Timing of Action</b>	<b>Executing Agency</b>	<b>Estimated Manpower; Cost (NPR.) and Time</b>	<b>Monitoring and Evaluation Agency</b>
under their legal right or does not have legally recognizable claim and the land acquisition may trigger physical and economic displacement are the project induced vulnerable people		needs to be prepared following SIA for the restoration and rehabilitation of the livelihood of the identified vulnerable community.						
Project required 36.9 ha of community forest area in which the local community are dependent for fuelwood, fodder,	<ul style="list-style-type: none"> <li>• Restriction on the use of ecosystem services</li> </ul>	<ul style="list-style-type: none"> <li>• The project will ensure that harvesting of forest products from the community forest by the local community will not be interfered</li> </ul>	Community forest area	Construction works will be conducted in coordination with CFUGs	Construction period	RJKIP/contractor	-	M/RM/RJKIP - PIO/PMSC/DFO/CFUGs

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
NTFPs. The reduction in forest area and construction activities can restrict the locals in the collection of fuelwood, fodder, NTFPs.								
The influx of large number of people with different social and cultural backgrounds is prominent during construction phase. Outside workers having regular	<ul style="list-style-type: none"> <li>Transmission of sexually transmitted diseases (STDs)</li> </ul>	<ul style="list-style-type: none"> <li>Awareness creation and sensitization to workers and other persons post-project to reduce or eliminate chances of infections of HIV-AIDS and other sexually transmitted diseases</li> <li>Distribute HIV &amp; AIDS awareness materials in collaboration local health related agencies</li> </ul>	Project area	Conduction awareness raising and sensitization programs on STDs in coordination with municipality and local NGOs	Construction period	RJKIP	-	M/RM/RJKIP - PIO/PMSC/NGOs

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
income and being separated from families and working long hours schedule are in search of recreation in the form of alcoholism, gambling, illegal prostitution etc. The mixing of the outside workforce sexually with the local community individuals due to unsafe sexual intercourse may also increase the								

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
risks of STD and AIDS/HIV in the community.								
sexual exploitation and abuse and sexual harassment and Gender Based Violence may be prevalent due to presence of female labors in the labor camp. Furthermore, the labor can mix with the local community that can trigger	<ul style="list-style-type: none"> <li>Issues of sexual exploitation and abuse and sexual harassment (SEA/SH)</li> </ul>	<ul style="list-style-type: none"> <li>A survivor centric SEA/SH and GBV mitigation action plan will be prepared and implemented</li> <li>SEA/SH awareness raising activities, trainings and stakeholder engagements such as:</li> <li>Community based-awareness program</li> <li>School based awareness program</li> <li>Awareness program for women and against the gender-based violence</li> <li>Providing female labor-centric facilities such as separate female toilets, separate female camps, separate family camps</li> </ul>	Project area	Conduction awareness raising and sensitization programs on SEA/SH and GBV in coordination with municipality and local NGOs	Construction period	RJKIP	2,500,000	M/RM/RJKIP - PIO/PMSC/N GOs

<b>Project Activities</b>	<b>Impact</b>	<b>Mitigation measure for Adverse impact</b>	<b>Location</b>	<b>Procedure</b>	<b>Timing of Action</b>	<b>Executing Agency</b>	<b>Estimated Manpower; Cost (NPR.) and Time</b>	<b>Monitoring and Evaluation Agency</b>
SEA/SH and GBV issues		<p>and mother's rooms on the site.</p> <ul style="list-style-type: none"> <li>• GRM will include mechanism for referring SEA/SH-related grievances</li> <li>• Formulating and adopting Code of conduct including sections on the safety of women and girls (CoC should be included in all contracts and training on CoC should be provided to all workers)</li> <li>•</li> </ul>						
Grievances are prevalent during the project construction period.	<ul style="list-style-type: none"> <li>• Grievance Redress Mechanism</li> </ul>	<ul style="list-style-type: none"> <li>• A grievance redressal mechanism (GRM) will be developed to address project-related grievances.</li> </ul>	Project area	Addressing of received grievances with option to follow judicial mechanism for the complainant	Construction period	RJKIP	Will be included in stakeholder engagement plan	M/RM/RJKIP-PIO/PMSC



Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
Possibility of encountering cultural and religious artifacts	<ul style="list-style-type: none"> <li>Impacts on cultural and religious sites</li> </ul>	<ul style="list-style-type: none"> <li>The project does not directly affect any cultural and/or religious sites.</li> <li>The contractor will follow “chance find procedure” for the cultural and religious sites encountered following Ancient Monument Act, 1956.</li> </ul>	Project area	Following “chance find procedure” for the cultural and religious sites encountered following Ancient Monument Act, 1956	Construction period	RJKIP/Contractor	-	M/RM/RJKIP-PIO/PMSC
<b>Operation Phase</b>								
<b>Physical Environment</b>								
Blockage in canal	<ul style="list-style-type: none"> <li>Overflowing of water related impact</li> </ul>	<ul style="list-style-type: none"> <li>The discharge in the canal is fixed, ensuring that it does not cause any adverse impact.</li> <li>The proposed project will have minimal impact on accidents caused by water and floods.</li> <li>The rivers, streams and depressions are wide and deep enough with a moderate gradient. In some</li> </ul>	Project Area	Regular monitoring and management	Operation Phase	RJKIP	-	M / R.M/ RJKIP

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
		low-laying areas, some flooding may occur during peak rainfall runoff, but is not expected to last longer than a few hours. Further, the excess water from irrigation systems will not create significant problems, even if the escape water coincides with the peak flood.						
	• Air and noise pollution	• To reduce air and noise pollution, plantation will be done around sensitive areas.	Project Area	-	Operation Phase	RJKIP	50, 000 /-	M / R.M/ RJKIP
	• Reduction in water volume downstream	• River monthly flow will be maintained at least 10%	Downstream Area	Regular monitoring and management	Operation Phase	RJKIP	-	RJKIP
Biological Environment								
Operation of the canal	• Obstruction in the movement of livestock and the potential for livestock accidents	• Operation and maintenance of Animal crossing bridges and ramps will be constructed at the locations proposed near forest area to facilitate the	Forest Area	Infrastructure construction in accordance Wildlife-Friendly Infrastructure Construction	Operation Phase	RJKIP	1,30,00,000 /-	RJKIP / Forest Officer

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
		easy movement of wildlife and livestock.		Guidelines, 2078 by coordinating with Division Forest Office				
Operation of service roads	• Possibility of increased hunting and poaching of wildlife species such as deer, antelope, rabbit, wild boar, Red jungle fowl	• Installation of CC cameras in the	Forest Area	In coordination with Division Forest Office	Operation Phase	RJKIP	-	RJKIP / Forest Officer
Operation of service roads	• Illegal harvesting and export of medicinal herbs	• Since the canal will act as a barrier, it will discourage illegal harvesting and export in the community forest	Forest Area	In coordination with Division Forest Office	Operation Phase	RJKIP	-	RJKIP / Forest Officer
• Socio-economic Environment								
Safety of nearby settlement	• There are sufficient natural drainages.	• There are sufficient natural drainages. The canal network is planned in such a way that no natural	Settlement Area	Regular monitoring and management	Operation Phase	RJKIP	—	M / R.M

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
	<p>The canal network is planned in such a way that no natural drainage is being obstructed. So, there will be no flooding.</p> <ul style="list-style-type: none"> <li>• Existing drainage systems are sufficient to evacuate the flood water within a short period of time.</li> <li>• The rivers, streams and depressions are wide and deep enough with a</li> </ul>	drainage is being obstructed. So, there will be no flooding.						

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
	<p>moderate gradient. In some low-laying areas, some flooding may occur during peak rainfall runoff, but is not expected to last longer than a few hours. Further, the excess water from irrigation systems will not create significant problems, even if the escape water coincides with the peak flood.</p>							

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
Human casualties	<ul style="list-style-type: none"> <li>The proposed canal has been designed as a covered canal in the settlement area.</li> </ul>	<ul style="list-style-type: none"> <li>The proposed canal has been designed as a covered canal in the settlement area.</li> <li>Additional consultation will be done during project implementation to identify additional safety measures needed.</li> </ul>	Settlement Area	Regular monitoring and management	Operation Phase	RJKIP	Included in the total cost of project.	M / R.M
Damage to agricultural products	<ul style="list-style-type: none"> <li>As the implementation of the proposed project will yield more revenue than losses, it has been moved forward.</li> <li>The current productivity of 3.1 metric tons per hectare will increase to 6.5 metric</li> </ul>		Project Area	-	Operation Phase	-	-	-

Project Activities	Impact	Mitigation measure for Adverse impact	Location	Procedure	Timing of Action	Executing Agency	Estimated Manpower; Cost (NPR.) and Time	Monitoring and Evaluation Agency
	tons per hectare.							
					Total	4,82084,000		

## **Annex D: PRELIMINARY WATER BALANCE ANALYSIS FOR RJKIP III**

To enhance water management in the Kailali plains, the Government of Nepal (GoN) has constructed a controlled water abstraction intake on the Karnali River. This intake diverts a total of 100 m<sup>3</sup>/sec of water into an 8 km-long main canal, supplying irrigation to the western fields of Kailali district. Of the total 100 m<sup>3</sup>/sec, 20 m<sup>3</sup>/sec is redirected back into the Karnali River to flush the desilting basin, while the remaining 80 m<sup>3</sup>/sec continues through the main canal to irrigate the fields of Kailali.

Before this government intervention, traditional farmer-managed irrigation systems—Rani, Jamara, and Kulariya (RJK)—had been in operation for over 120 years. These systems collectively extracted approximately 95.43 m<sup>3</sup>/sec (Rani 35.43 m<sup>3</sup>/sec, Jamara 31.98 m<sup>3</sup>/sec, and 28.02 m<sup>3</sup>/sec)<sup>3</sup> from the Karnali River to irrigate 14,000 ha command area.

The implementation of the Rani Jamara Kulariya Irrigation Project (RJKIP Phase I and II), funded by the World Bank, included canal lining, proper canal structure construction, and command area development to improve the efficiency of these farmer-managed irrigation systems. Following these improvements, the RJK irrigation systems now require only 40 m<sup>3</sup>/sec to irrigate the same 14,000 ha area, with an additional 40 m<sup>3</sup>/sec released further west to irrigate the remaining fields of Kailali district.

Of the remaining 40 m<sup>3</sup>/sec, the Government of Nepal (GoN), in collaboration with Water Users Associations (WUAs), has decided to allocate 11.5 m<sup>3</sup>/sec to the 5,347 ha Lamki area<sup>4</sup> and another 28.5 m<sup>3</sup>/sec to Pathraiya Extension<sup>5</sup>. The Pathraiya Extension area consists of eight existing farmer-managed irrigation systems that currently rely on small perennial rivers (Patharaiya, Kanda, and Ghaila Khola) and natural lakes (out flow from Lauka Bhauka, Baguliya, Koilahi etc). While these sources provide sufficient water during the monsoon season, additional water from the Pathraiya Extension is crucial for crop growth during winter and spring. RJKIP Phase III aims to enhance cropping intensity to 226 % across 17,511 ha, by ensuring a canal discharge of 35 m<sup>3</sup>/sec (refer Figure 1 for details),

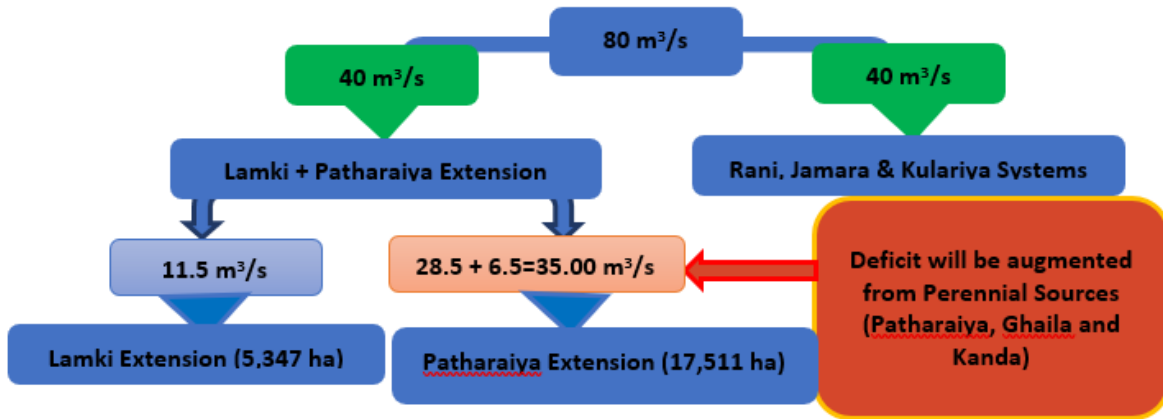
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<sup>3</sup> Project initiation report from Department of Irrigation

<sup>4</sup> The Government of Nepal (GoN) has completed the Lamki feeder canal and is developing its distribution networks

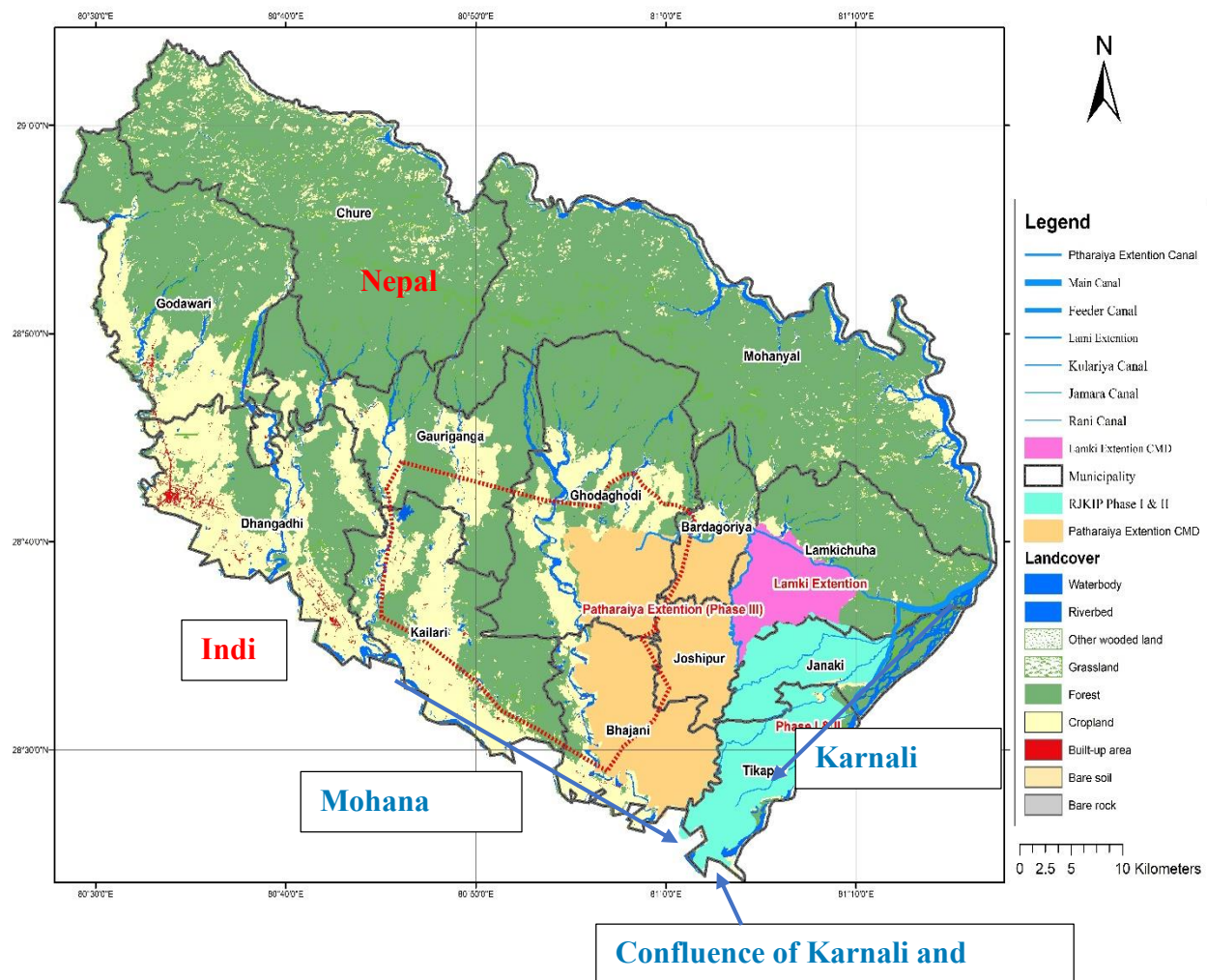
<sup>5</sup> Pathraiya Extension includes a 12.95 Km long main Canal, and secondary and sub-secondary canals





**Figure 5 : Water discharge and command area for Pathraiya Extention**

Therefore, water extraction from the Karnali River is reduced by 16.16 % ( $80 \text{ m}^3/\text{sec}$  instead of  $95.43 \text{ m}^3/\text{sec}$ ) through efficiency improvements in the existing farmer-managed irrigation system. The irrigation return flow, including both surface and subsurface water from RJK and Patharaiya Extension, will be redirected back into the Karnali River via the Mohana River, which flows west to east along the southern boundary of the command area (refer figure 2). RJKIP Phase III focuses on optimizing the use of already diverted water to enhance agricultural productivity and improve local living standards without increasing abstraction from the Karnali River.



**Figure 6 : Water discharge and command area for Pathraiya Extension**

## **Annex E: Basanta corridor and Basanta Forest Conservation Area**

The Basanta Forest Conservation Area, is a vital natural area located in Kailali District, Sudurpashchim Province. It covers a total of 83,438.9 hectares, with 69,001.22 hectares being actual forest, which makes up 25.3% of the district's total forest area. The forest stretches 34 km in length and 25 km in width and is home to a wide variety of plants and animals, including tigers, elephants, and spotted deer. It also contains rare and valuable trees like Bijaysal and Satisal. This forest is an important wildlife corridor, connecting Shuklaphanta National Park and Bardia National Park through the Chure foothills in the north; and adjoining Dudhwa National Park, India in the south Kafle, M. R. (2016).

Basanta corridor is the trans boundary corridor in the Terai Arc Landscape (TAL) covering an area of 654.32 sq.km linking India's Dudhwa National Park with Nepal's Chure region, allowing animals to move between the two areas. To protect its diverse wildlife and resources, the area must be carefully conserved. This transboundary connectivity offers habitat in the form of forests, grasslands, marshes, and riverbanks for animals like tigers, elephants, and other ungulates to disperse. Along with 226 bird species, is a pathway to species of fauna, including the tiger, Asian elephant, sloth bear, and leopard. Along the Mohana River in the south, Gangetic river dolphin populations are also reported, especially during the peak flood monsoon seasons (Thapa and Tuladhar, 2021) Considering its high biodiversity value, the Government of Nepal declared it a "Protection Forest" (now Forest Conservation Area) in 2011, enabling diversification of forest management to include habitat improvement, species conservation, and forest restoration initiatives.