GOVERNMENT OF NEPAL
MINISTRY OF ENERGY, WATER RESOURCES AND IRRIGATION
DEPARTMENT OF WATER RESOURCES AND IRRIGATION (DWRI)
RANI JAMARA KULARIYA IRRIGATION PROJECT (RJKIP) PHASE II

Site Specific Environment Management Plan

Dolphin Area (Pathraiya, Kanda and Mohana Rivers)
Bhajani Municipaity 7 and Tikapur Municipality 8
Type of work: Command Area Protection

Date

9/4/2020

Rani Jamara Kulariya Irrigation Project (RJKIP)
Tikapur, Kailali

Abbreviations

CAP	Command Area Protection
BoQ	Bill of Quantities
CoI	Corridor of Impact
DO	Dissolved Oxygen
DWRI	Department of Water Resources and Irrigation
EIA	Environmental Impact Assessment
EPA	Environment Protection Act
EPR	Environment Protection Regulation
FGD	Focus Group Discussion
GPS	Global Positioning System
GoN	Government of Nepal
HH	Household
IUCN	International Union for Conservation of Nature
IEE	Initial Environmental Examination
KII	Key Informant Interview
KM	Kilo Meter
M	Meter
N/E	North /East
OSH	Occupational Safety and Health
PPE	Personal Protective Equipment
RJKIP	Rani Jamara Kulariya Irrigation Project
RJKIS	Rani Jamara Kulariya Irrigation System
SSEMP	Site Specific Environment Management Plan
STD	Sexually Transmitted Disease
TSS	Total Suspended Solids
VAT	Value Added Tax
WB	The World Bank
WUA	Water Users Association

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1. Introduction:

Government of Nepal (GoN) has been modernizing the irrigation systems following the changing contexts in terms of technologies, climate change impacts, and requirements of the beneficiaries. Rani Jamara Kulariya Irrigation System (RJKIS), having approximately 14,300 ha command area, is one of the largest farmer-managed irrigation systems being modernized by GoN, Department of Water Resources and Irrigation (DoWRI). Given that there was sufficient water in the source-Karnali river, the system historically suffered from frequent washout of temporary diversion works and shifting of river course at its intake. Therefore, DoWRI, through RJKIP emanated strengthening the system since FY 2009/10. Similarly, an agreement was signed between GoN and the World Bank (WB) on October 18, 2011, for the development of Phase I which ended in September 2018. Successful completion of Phase 1 led to the structuring of Phase 2 of the project ahead of the planned time frame and another Phase II loan agreement between GoN and WB took place on May 2018 to modernize the system for economic growth and poverty reduction through a gendered and inclusive comprehensive agricultural program that focused on increasing production, productivity, diversification and strengthening post-harvest support. The Phase II agreement remains effective until December 31, 2023.

The proposed subproject lies under Command Area Protection (CAP). The CAP activity embraces structural design of revetment, toe and launching structures on sides of the river specified by project technical unit. The proposed areas for CAP works are highly flood affected sites from Pathraiya, Kanda and Mohana rivers. Lots of fertile farmlands have been damaged by the seasonal floods for many years as shown in Figure-1.

Figure 1: Bank erosions at Bhajani, next to Dhungana Tole

The proposed CAP structures under this sub project are aligned between Baidi-Naya Basti of Pathraiay river bank to Kalakunda of Mohana riverbank, in around 3 km length; 2 km along Pathraiya river and 1 km along Mohana river. This Project site occupies confluences of Pathraiya, Kanda, Gairi Nala and Mohana river as shown in figure 2 below

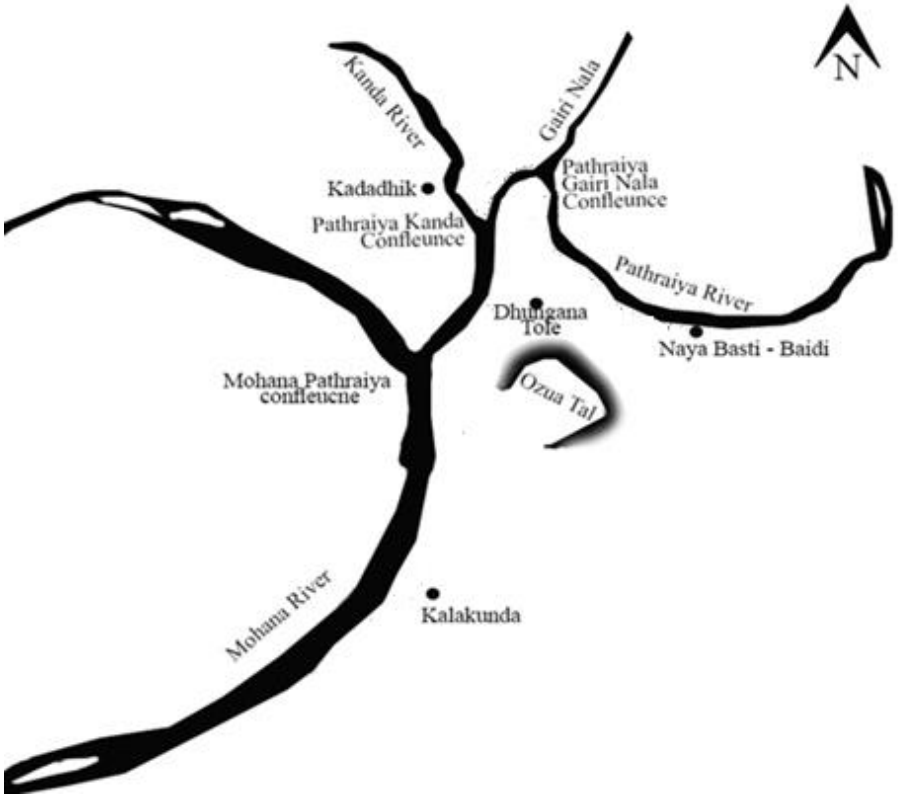


Figure 2: Alignments of CAP area showing Mohana, Pathraiya, Kada and Gairi Nala

The Pahtraiya river drains to Mohana river and Mohana drains to Karnali river. Karnali inhabits Ganges River dolphin (*Platanista gangetica*). These River Dolphins migrate to Mohana river system during the monsoon season when the flow is high in Mohana, Kanda and Pathraiya rivers.

The construction of embankments will cause some change in the local landscape and natural settings along river banks/sides so there are environmental concerns. The project needs to fulfil the necessary national and the WB safeguard requirements. Environment Protection Act (EPA) 2019, Environment Protection Regulation (EPR) – 2020 list out the major requirements of Government of Nepal (GoN). Safeguard Policies OP 4.01 Environmental Assessment, OP 4.04 Natural Habitats, OP 4.09 Pest Management and OP 4.36 Forests are the World Bank's environmental requirements.

This Site-Specific Environment Management Plan (SS-EMP) identifies site-specific issues and impacts in and around the River Training Works (Command Area Protection – CAP) along Mohana River and its tributaries. The SS-EMP is additional to the RJKIP-2 safeguard

documents prepared during project preparation (Volume 1: Executive Summary, Volume 2: Environmental Assessment, Volume 3: Bio-diversity Impact Assessment, Volume 4: Integrated Pest Management, etc). It is intended to ensure that the commitments made by the RJKIP to minimize project-related environmental impacts are upheld throughout the sites. The Contractors responsibilities during construction will be detailed in the "Environmental Specifications for Contractors" which will be included in bidding documents and contracts and enforced by the Project. These specifications will be prepared before the start of the bidding process.

Table 1: Salient features of the Project

Name of the Sub-project	River training work (Command Area Protection)
Location	Start Point: N28° 27' 18.5" E81° 01' 29.3" End Point: N28° 26' 42.0" E81° 01' 11.5"
Affected Municipalities	Janaki Rural Municipality, Bhajani Municipality, Tikapur Municipality
Climate	Tropical
Physiographic and Geology	Terai, Indo-Gangetic Plain with Pleistocene alluvial deposits
Land use	Agriculture, fallow land, grassland
Total River Length from start to end	358 m (Right Bank) Bhajani-8 Kanda Dhik 2500 m (Left Bank) Dhungana Tole, Tikapur-7
Proposed Subproject Length	2858 m (Including embankment making)
Starting Point	Chainage 0+000 Dhungana Tole of Tikapur Municipality-7
End Point	Chainage 3+450 Kalakunda of Tikapur Municipality
Corridor of Impact (CoI)	Kalakunda, Pathraiya Mohana confluence
Total Width	20 to 24 m
Top Width	4 m
Existing Surface	Earthen and Gabion on the riverside in old embankments
Proposed Surface	Earthen, concrete, gabion
Type of Work	River training (revetment, toe and launching structures)
Total Sub Project Cost	99973286 Rupees including VAT and Contingency cost

2. Objective:

The general objective is to prepare the Site-Specific Environment Management Plan to mitigate and manage the site- specific environmental issues and impacts of proposed CAP works. The specific objectives are:

a) To customize, detail and tailor the relevant /applicable recommendations/ requirements spelled out in in project's environmental safeguard documents (Volume 1: Executive Summary, Volume 2: Environmental Assessment, Volume 3: Bio-diversity Impact Assessment, Volume 4: Integrated Pest Management, etc.)
b) To conserve natural environmental setting at the river for sustainable ecosystem services after civil construction.
c) To protect habitat for aquatic fauna including the endangered river dolphin around project sites of Mohana, Pathraiya and Kanda rivers.
d) To maintain vegetation resources and conserve biodiversity during the implementation of CAP works.
e) To support mitigation and management of site-specific environmental issues and impacts

3. Methodology

For the site-specific EMP, the team conducted environmental observation around the proposed site through a structured checklist to determine the potential area of concern/impact along the Mohana-Pathraiya-Kanda River corridor. RJKIP-2 environmental reports including Executive Summary (Volume1), Environmental Assessment (Volume 2), Biodiversity Impact Assessment (Volume 3), Integrated Pest Management (Volume 4), etc were reviewed. Systematic interviews with the individual House Hold (HH) members, public meetings, Focused Group Discussion (FGD), and Key Informant Interview (KII) were the major tools that were applied during the assessment. Similarly, discussions with stakeholders and project team, review of Project documents, available online resources and other sources was carried out. The team also organized site observation/transect walk along the Mohana-Pathraiya- Kanda River corridor.

Issues and challenges of Dolphin conservation were analyzed by reviewing "Dolphin Conservation and Eco-friendly Promotional Strategy report" prepared by the Dolphin Expert (Prof. Dr Tej Kumar Shrestha). In addition, discussion with Dolphin Conservation Information Center based at Dhungana Tole are carried out for setting environmental mitigation measures.

4. Project Information:

4.1 Background

The proposed CAP works include surface stripping, excavation, soil filling, transportation, concrete structure, gabion structures, earthwork, temporary routs, collection sites, disposal sites, labour camp and civil structures (revetment, toe and launching) etc. The SSEMP consists of the set of mitigation measures, responsible institutional base to implement and reduce adverse environmental impacts at the acceptable limit as a result of project activities during planning, implementing and operation phase. Table-2 below shows the GPS coordinates and the location of the proposed CAP works and the proposed sites are illustrated in google image in Figure-3.

Table 2: GPS coordinate of the project area

Place	River	Length of Chainage	Coordinates
Naya Basti- Baidi	Pathraiya River	358 m	N28° 27' 18.5" E81° 01' 29.3"
Gairi Nala	Pathraiya River	789 m	N28° 27' 36.8" E81° 01' 05.3"
DhunganaTole	Pathraiya River	861 m	N28° 27' 28.3" E81° 01' 09.5"
Kalakunda	Mohana River	885 m	N28° 26' 42.0" E81° 01' 11.5"

Figure 3: Google image of proposed construction sites

The local economy in the Project area is based on agriculture and the land is degrading due to erosion and bank cutting as shown in Figure- 4. Therefore, the modification of embankments are proposed under this package to protect the adjoining agricultural lands. Most of the proposed alignment already has eroded embankments and the Project, apart from building new structures in some places, will only raise the height of the existing embankments under this package.

Figure 4: River bank erosion near Kalakunda area (Mohana River)

For construction, considerable amount of construction material will be needed. The amount of different aggregate is 13298 cubic meter details of which is shown in table 3 below.

Table 3: Quantity of raw materials required for proposed CAP works

SN	**Quarry materials required**	**Volume m3**	Remarks
1	Back filling	0	Not applied
2	Gravel /Stones filling	6862.40	
3	Gabion works/Boulder filling	6435.60	
	Total	**13298**	

Source: BoQ of CAP at Dhungana Tol, RFB No.: NP-DOI-MRJKIP-99931-CW-RFB

The quarry site for gravel and stones is Sattighat and Daulatpurghat of Karnali River as shown in Figure 5 and 6. These sites are legally permitted for extraction and are already in use. The volume of material available at the site is surplus for proposed CAP works, taking 1-meter depth and 50 meters away from the right bank.

Figure 5: Sattighat quarry site at Karnali River

Figure 6: Daulatpurghat quarry site at Karnali river

Figure 7: Google image of Quarry sites

The land required for temporary camp and storage of construction materials is proposed in Dhungana Tole (Figure 8). In addition, fallow land and open ground along the downstream stretch of Mohana River is also available for storage.

Figure 8: Proposed land for temporary camp location and storage yard

4.2 Existing Environmental Condition

The proposed CAP sites are situated in rural areas near Indo-Nepal Border, along Mohana, and Pathraiya rivers. The rural setting is occupied with the majority of Brahman, Kshetri, followed by Janajatis (Magar and Tharu) and some Dalit community. The proposed embankment is along Pathraiya River and Mohana river that inhibits River Dolphins and Mugger Crocodiles especially during the high flow season. The part of Pathraiya is included in the package with Mohana because of presence of migration of Dolphins from Mohana to Pathraiya and similar biological importance. There is presence of more than 20 species of fishes (Annex 5) in this river section.

Other important faunas found in this section are Indian Grey Mongooses (*Herpestes edwardsii*), Turtle (*Nilssonia gangeticus*), Otter (*Lutra lutra*), rodents, snakes etc. In addition, there is also the presence of water birds (Kingfisher, Swan, Wild duck, Cranes etc.). Ghongi (*Bellamya bengalensis*), a mollusk used as a source of protein for Tharu community is also found in this stretch.

The Pathraiya river along proposed CAP site collects Gairi Nala, Kanda river and finally joins into Mohana river as shown in Figure-1. The high flow in Mohana, Pathraiya, Kanda and Gairi Nala during monsoon (June-July-August-September) provide seasonal habitat for endangered Gangetic Dolphins that are present in the Karnali River. Dolphin are migratory in nature; they move upstream from Karnali River during the rainy season and downstream in the dry season. They prefer confluence sites of large and small rivers feeder streams where water is relatively clear and density of fish is high. At present, the Dolphin population is declining in Karnali due to shrinkage of habitat, overfishing, dewatering effect and higher use of insecticides & pesticides during agriculture practices (Dolphin Conservation and Eco-friendly Promotional Strategy report, 2019).

The movement of Dolphins can be observed upto Pathraiya-Gairi Nala Confluence in the Pathraiya river (Figure 2 and 3), which is also a famous location for Dolphin observation and is the uppermost location of its movement in Pathraiya river. Crocodiles are found in these stretches throughout the year; they use to hide/hibernate under unfavorable environmental conditions or during human disturbances.

Dolphin is classified as Endangered on the IUCN Red List of Threatened Species, registered as Critically Endangered in Nepal. Mugger Crocodile is listed as Vulnerable on the IUCH Red List and protected species in Nepal.

Dolphin Conservation and Information Center, a local club, is working to protect Dolphin habitat in this area. This club organizes awareness programs and coordinates for the protection and habitat conservation along Mohana and Pathraiya rivers. The main activities include: to

aware community, promote tourism, organize Dolphin Observation Mela, manage resources for conservation and tourism development etc. In addition, the club also help in Dolphin research activities and promotion of tourism. Near Kalakunda, a Dolphin tower (Annex-8, Pic-5) is under construction to attract the Dolphin lovers and tourists to observe the Dolphins during their migratory seasons. Conservation initiatives have been initiated at the local level with the support of this club and future continuation of such programs is noticed.

Tikapur Municipality has drafted an "Aquatic Animal and Biodiversity Conservation Act 2076" recently. This act focuses on conservation of aquatic animals and biodiversity within Tikapur Municipality through community-based conservation initiatives, sustainable use of resources, protection of the aquatic resource-based culture of local community and control in fishing and pooching of aquatic animals. There is a provision of penalty that support conservation of protected species and habitats. This act will support Dolphin protection/ conservation in the long term.

For the proposed CAP works, Sattighat and Daulatpurghat are the proposed quarry sites. These sites lie along the bank of Karnali river adjacent to Satti-Karnali Community Forest and Bhagraiya Forest respectively. There is a gravelled route to both the site that passes through forest and there is no need for construction of new road. These quarry sites are government approved and the required environmental study for this has been cleared by the respective local authorities. The approved volume of materials available (as per IEE) is 7636 cubic meter for Sattighat and 20230.64 cubic meters for Daulatpurghat. The amount is sufficient to meet the material requirement of this package. The quarrying activities are outside the forest boundary and will not impact the forest flora and fauna. The Project will follow the requirements set in EA (refer 5.1 iv for details) while carrying out the quarrying activities.

5. Environmental Issues/Impacts and mitigations

5.1 Physical Impacts

i. Dust and noise pollution

Issues/ impacts and site: During the construction and modification of proposed embankments, dust due to vehicular emission and movement of heavy vehicles will be generated. Dust pollution is expected high on earthen /gravel roads between Dhungana Tole to Kalakunda. It will affect the construction workers, roadside settlements, and agriculture crops. Similarly, the movement and operation of heavy equipment like roller, tipper, excavator etc. will also cause noise and vibration.

Mitigation: The construction vehicles speed, particularly, in the dusty roads will be limited to less than 10km to minimize the risks of fugitive emissions. The active construction sites will be sprinkled with water to ensure that there is no fugitive emission. The Contractor will be responsible to sprinkle water every three hours on a working day near settlements (between Dhungana Tole to Kalakunda). However, the number will be increased or decreased depending

on the site situation and amount of emission. Temporary route, if needed, to the construction site will be through escaping settlements and sensitive areas as far possible. Excavated soil and aggregates will be protected against wind borne fugitive emissions. Project will ban all sorts of open burning of solid waste to prevent air pollution. The trucks carrying soil and aggregates will be covered by adequate cover.
Construction vehicles and equipment's will be maintained to minimize the body noise of the equipment's and vehicles. Honking of horns will be prohibited.

Construction works near the settlements (between Dhungana Tole and Kalakunda area) will be limited to the day time zone from 7.30 AM to 18.30 PM.

The Contractor will be made mandatory to follow National Ambient Air Quality Standards (2003), Nepal Vehicle Mass Emission Standard (2012), National Ambient Sound Quality Standard (2012) etc.

ii. Water logging and disruption of surface drainage

Issues/ impacts and site: For existing sites, the length of chainage varies from 358 meters to 885 meters. Riverside slopes of agriculture land collect all the drainages to the river. After completion of these structures, disturbance in drain collection will cause waterlogging at Dungana Tole and Kalakunda during monsoon season. Also, the burrow pits constructed during construction will cause waterlogging.

Mitigation: Structural mitigation with cross drainage structure will be applied to manage the problem. Cross drainage at low-lying area of Dungana Tole and Kalakunda will be designed. Water drain at both the end of the embankment will be addressed to avoid soil erosion. All the pits will be filled, labelled and compacted after construction.

iii. Disruption of existing erosion control measures

Issues/ impacts and site: Fodder species have been planted at the banks of the existing embankment to control erosion and support livelihoods of the local residents. In addition, the existing embankments have grass cover that controls surface erosion. The proposed modification activities will disturb the existing biological erosion control practices along the old embankments.

Mitigation: Plantation will be conducted along the sides of the embankment after construction to avoid erosion, mudflow and to maintain greenery. Surface turfing will be done on the earthen embankment to avoid surface erosion. Turfing will be applied in estimated 27061 m^2 total area, of which 8356 m^2 area lies along with agriculture land.

iv. Impact due to quarrying of construction materials

Issues/ impacts and site: For the construction of proposed embankment, a **13298** cubic meter of sand, gravel and stones will be needed. The quarry site for these materials will cause erosion and geological instability if not accessed properly.

Mitigation: The site will be legally permissible (allowed by Local Government) to quarry i.e. EIA/IEE need to be approved by the concerned agency. The proposed quarry sites are Sattighat and Daulatpurghat of Karnali River (Figure 5 and 6). If an alternative site is considered, 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. The legality of the quarry site will be checked/monitored during construction.
In addition, the Contractor will not be allowed to collect sand, gravel and boulders within 50m distance of the right embankment of the Karnali River. Not more than a depth of 1m of excavation will be allowed while mining. The Project Authority and the Environmental Consultant will regularly monitor this.

The forest users' group of Satti-Karnali community forest and Bhagraiya forest will be made aware for not allowing excess mining in their corresponding reaches of Karnali River. Plantation program will be implemented in forest adjoining to quarry site in coordination with respective management groups, Division Forest Office and WUA.

v. Pollution from Construction and Sanitary waste

Issues/ impacts and site: For the proposed works, only small volume of spoil will be generated during construction. The major construction waste will be unused concrete slurry, mucks, plastic and metal containers, jute bags, plastic bags and wrappers, metal weirs, metal pieces, worn out tiers, worn out vehicle parts, oil and grease, etc. Haphazard disposal of generated waste will cause pollution in surrounding community (Dhungana Tole and Kalakunda area) near to the working sites.

Similarly, the sanitary waste generated will be waste like food wastes, plastics, papers, wrappers, inert wastes, worn out plastic containers, broken glasses etc that will need management. These wastes generated will cause pollution around the construction camp near Dhungana Tole, if not managed properly.

Mitigation: Spoils generated from the excavation will be used in-situ for backfilling on the same structure. The reusable construction waste will be segregated and managed in coordination with concerned local agencies. For the remaining construction and sanitary waste, management approach of filling, compaction and labelling will be applied at a considerable distance (>100m) from the riverbank. These wastes will be restricted to release in the water body, burn or spread around the construction site/campsite. All the temporary pits for dumping these wastes will be back filled and labelled.

5.2 Biological Impacts

i. Disturbance of the habitat of Dolphins and Crocodile

Issues/ impacts and site: The project activities will impact river ecology during construction and operation phases. Excessive noise and vibration from heavy construction machinery will have adverse impacts on Dolphin movements. In addition, excessive use of sand/soil during construction will smother the breeding/ spawning grounds for fish and will decline their population. The decline in food source will hamper Dolphin migration. However, these impacts will be temporary and seasonal only.

During operation phase, the gabion structures might hamper the smooth movement of Dolphin. The animal may get wounded or trapped in gabion wires while playing and fishing. This can reduce the movement of Dolphins in the area. The severity of such impact will be high at Pathraiya-Gairi Nala confluence (near Dhungana Tole) where Dolphins usually play during monsoon (Dolphin Conservation and Eco-friendly Promotional Strategy report, 2019). In addition, the steep slopes of embankments will alter the crocodiles basking and breeding during operation.

Mitigation: Construction activities using heavy equipment producing excessive noise and vibration will not be allowed during movement of Dolphins. Excavation under water and use of sand/soil will be minimized as possible. Fish Fry's and Fingerlings will be released after construction (two times) to maintain the source of food for Dolphins in Mohana River. The fingerlings of selected fish species available in Mohana River and its tributaries will be purchased from the hatcheries and released. Structural modification will be applied to avoid impact on higher movement area of Dolphins and concrete structures instead of gabion will be constructed to avoid possible injuries to Dolphin in these locations. In addition, the gentle slope of the structures will be maintained (at 2:1 ratio slope) to facilitate the smooth movement, basking and breeding of crocodile. Local clubs, volunteers and conservation workers will be promoted for creating awareness in community and initiate biodiversity protection actions at local level.

ii. Poaching of Dolphin, Crocodiles and water birds and illegal fishing

Issues/ impacts and site: Poaching of Dolphin and Crocodile and illegal fishing in the river by the workforce will a major concern during construction phase. In addition, even though the project will not have direct impact on water birds, illegal hunting of water birds will also be an issue during construction. The impact will be site specific and short term.

Mitigation: All types of fishing and poaching will be restricted for workers. Awareness programs will be made by the project to conserve species and habitat along with these sites. Workers will be made aware of these issues before construction. Dolphin Conservation and Information Center will be mobilized to regulate such activities by the community in the long

term. The project will support to implement the Aquatic and Terrestrial Biodiversity Conservation Act by Tikapur Municipality.

iii. Impact on Aquatic fauna due to spillage

Issues/ impacts and site: Spillage of toxins, concrete slurry, oils and lubricants into water bodies during construction can kill the infant and young dolphins and other aquatic faunas. The impact will be site specific and short term.

Mitigation: Spoilage of concrete slurry, toxins and other lubricants will be strictly controlled and prohibited. Monitoring of water parameters like Dissolved Oxygen (DO), temperature, PH, turbidity, Total Suspended Solid (TSS) etc. to maintain the river water quality suitable for aquatic fauna during construction. The parameters will be made comply with Nepal Water Quality Guidelines for the Protection of Aquatic Ecosystem.

iv. Impact on Domestic & Feral Cattles

Issues/ impacts and site: Domestic and feral cattle movement will be hindered by the proposed structures. The Wallowing and watering of animals will be disturbed mostly near Dhungana Tole area.

Mitigation: Animal ramps will be installed at the watering and wallowing site of animals. These structures will allow easy access for animals to the water body. Such structure is proposed at Dungana Tole.

Figure 9: Animal watering site near Kalakunda

v. Impact on wild fauna and water birds

Issues/ impacts and site: There is no direct impacts on wild fauna and water birds due to the Project activities. Project activities will not impact the habitats and movements of wild fauna and water birds. However, illegal poaching of these animals by the labor force during construction is a possibility around construction sites and quarry sites.

Mitigation: Workers will be restricted to hunt wild faunas and water birds around the site. All the staff/workers will be oriented regarding these issues before starting civil works. Strict penalty and termination of Project staff and contractor workers will be provisioned if they were found to engage in any hunting/poaching activities. Satti-Karnali CFUG will be made aware of these issues around quarry site and among forest during collection and transportation of material. Any encounter with wild fauna during work will be reported to RJKIP and forest office.

vi. Impact on Fish

Issues/ impacts and site: There will be no direct impacts on fish due to the Project activities. Project is not creating any barrier for fish movement and migration. However, alternation in river bed due to disturbances during construction can lead to depletion of river bed algae (food for fish), destruction of breeding habitat of fish that may lead to decrease in fish population for a certain period immediately after construction. In addition, the project workers may engage in fishing activities during construction leading to overfishing and decrease in fish population in the river.

Mitigation: Fishing activities by the workers will be strictly restricted. In order to mitigate the impact on fish population immediately after construction, the project will release fish fingerlings twice after construction as described in 5.2 i.

5.3 Socio-Cultural and OHS Impacts

i. Labor Camp Management

Issues/ impacts and site: Possible problems at the campsite will be flood, fire, animal attack and conflict with local community etc. Open sanitation and improper dumping of produced waste (generally food remnants) will add pollution in air and water resources around. The labor force can be exposed to communicable diseases, respiration and eye diseases due to dust.

Mitigation: Proper area will be identified for the labor camp by analyzing the scenario of possible risks in consultation with RJKIP and local residents. Appropriate sanitary toilets with water supply, separate for male and female workers, campsite with adequate lighting, waste disposal, first aid and other necessary materials will be managed by the Contractor. Food remnants and other wastes generated at the labor camp will be managed in dumping pit far from

water sources. Awareness about the communicable disease including (COVID-19), Sexually Transmitted Disease (STD) to workers will be made mandatory to the Contractor.

ii. Occupational safety and health (OSH)

Issues/ impacts and site: The workers will be exposed to various risks and hazards during the work. Potential impacts to health are due to unsafe activities, risk due to accidents during work etc.

Mitigation: Workers will be oriented before starting the work on health and safety and all types of construction-related injuries and first-aids measures. The Contractor will prepare Labor Camp Management Guidelines based on Project's safeguard documents and these guidelines will be followed by the workers and representatives of contractors. Proper use of Personal Protective Equipment (PPE) such as Helmets, Gumboots, Masks, and Goggles etc; will be oriented. The contractor will follow the Labor Camp Guidelines, Occupational Health and Safety Guidelines, Contractors' clause mentioned in the bid document and SSEMP prepared before construction in line with these guidelines. Labor Camp Management Guidelines will be followed by the workers and representatives of the Contractor for effective implementation and would be monitored by RJKIP staffs, consulting team from time to time. Orientation to staff on occupational health and safety will be made mandatory to the contractor.

iii. Community Health and Safety Risk

Issues/ impacts and site: Migrant workers when exposed with local community may cause various health related risks and hazards. Degradation of sanitary condition may lead to epidemic outbreak in labor camp and adjoining community. Similarly, there will be the possibility of spread of Sexually Transmitted Disease (STD) to the community through Project workers.

Mitigation: Workers will be oriented before starting the work on health and safety risks and community will be oriented about potential health risk of construction works. The Project will not cause water shortage to the adjoining community due to construction works and consumption by the labors. Waste from construction site or camp will be managed as described in section i. To minimize the risks of disease to the community, the Project will prepare a Standard Operating Procedure (SOP) for construction. The health checkup of the workers before employment will be made mandatory. An emergency preparedness and response plan will be designed to tackle the outbreak of disease. Awareness about Sexually Transmitted Disease (STD) to the workers and the community will be carried out by the Project.

iv. Gender and child discrimination/exploitation risk

Issues/ impacts and site: During construction, there will be chances of gender discrimination like unequal wages for male and female for the same label of work, abuse and influences for sexual exploitations. Also, there will be chances of child labor at work.

Mitigation: Any form of gender discrimination and exploitations will not be allowed. All the workers will be made aware of the terms and conditions of gender discriminations before work. Workers below age 18 will not be allowed to work as skilled or unskilled level in this Project.

v. Intrusion in local culture and traditions

Issues/ impacts and site: During construction, there will be the entrance of the workforce from outside. They will carry different culture and tradition, which will disturb local cultures around the site. These impacts will be temporary and of short term.

Mitigation: The Contractor will make sure that the workforce fully respects the local culture and traditions around the site. As far possible, the Contractor will promote local residents in employment and priority will be given to vulnerable and poor households.

6. Site Specific Environment Issues and Management Plan

Table 4: Site Specific Environment Management Plan for Dolphin Area (Mohana, Kanda, Pathraiya)

Site/ Chainage	Physical Activity	Significant Environmental Issue	Suggested Mitigation Measures	Time of Action	Responsibility	Remarks
All chainages	Surface stripping, removal of vegetation and sediment	Impact on habitats of aquatic, semi-aquatic, terrestrial, avian fauna and flora	Precaution will be taken for minimum disturbance to the water body, loss of soil and top vegetation.	During construction	Contractor	
			Awareness to workers on the protection of animal and their habitat around the site	Before and during construction	Contractor and RJKIP	Focus on Dolphin Conservation
			Plantation along the embankment and open places	After Construction	RJKIP	
All Sites	Excavation, transportation, compaction	Dust, sound and water pollution	Water sprinkling during working days as required to control dust.	During Construction	Contractor	
			Transport materials with covering hoods of truck	During Construction	Contractor	

Site/ Chainage	Physical Activity	Significant Environmental Issue	Suggested Mitigation Measures	Time of Action	Responsibility	Remarks
			Limit speed up to 10 km/hour in earthen & 20 km/hour on graveled routes	During Construction	Contractor	
			Air quality parameters measured around sites, Measurement of Vehicle emissions	Once a year during construction and once after construction	RJKIP	Comply with National Ambient Air Quality Standards (2003), Nepal Vehicle Mass Emission Standard (2012)
			Measure Sound quality around sites. Restriction in night time excavation, avoid pressure horns in vehicles.	Once during and once after construction	RJKIP	Comply with National Ambient Sound Quality Standard (2012)
			Monitor water parameters DO, pH, turbidity, total suspended solids (TSS)	Once a year during and after construction	RJKIP	Comply with Nepal Water Quality Guidelines for the Protection of Aquatic Ecosystem
All sites	Civil works along river	Decline biodiversity, disturb Dolphin & Crocodile habitat	Excavation underwater is restricted; water will be channelized before excavation in river.	During construction	Contractor	

Site/ Chainage	Physical Activity	Significant Environmental Issue	Suggested Mitigation Measures	Time of Action	Responsibility	Remarks
			Strengthen conservation initiatives at the local level (Dolphin Conservation, crocodile protection, natural habitat restoration, plantation and river cleaning erc)	During and after construction	RJKIP	Develop partnership with conservation workers
		Side slopes hinder basking & movement of crocodile	Design gentle inner slopes of embankment.	During Construction	Contractor	(Proposed slope modification to 2:1)
		Hindrance to dolphin movement	Excavated materials deposited far from water body to avoid siltation	During construction	Contractor	
			Avoid illegal hunting /fishing by community, workers and Contractors' employees.	During construction	Contractor, RJKIP	Mobilize local club for awareness generation
			Restrict heavy machines during Dolphin migration period, Maintain water level in Rivers	During Construction	Contractor	

Site/ Chainage	Physical Activity	Significant Environmental Issue	Suggested Mitigation Measures	Time of Action	Responsibility	Remarks
All sites	Pollution, human interference due to civil works	Decline fish population (food for Dolphin)	Release fish fry/fingerlings in water bodies	After construction	RJKIP /Agriculture office	Twice after construction
			Water quality test and maintain habitable environment	During and after construction	RJKIP	
Dhungana Tole	Gabion structures	Injury and trapping of Dolphins	Modify gabion structures to RCC to avoid dolphin injury	During Construction	RJKIP/ Contractor	
Dhungana Tole	Water Logging and erosion	Burrow pits around construction site	Burrow pits will be far from the settlement area and should be filled-up after work	During construction	Contractor	(Described in 5.1-ii)
All Sites	Deposition and disposal of materials	Disposal of remnants	The temporary storage of construction materials and waste on fallow land will be cleared as an initial form	Before and during construction	Contractor	
			Disposal not allowed on agricultural land, river bed and banks, The site will be labelled and compacted after disposal	During construction	Contractor	

Site/ Chainage	Physical Activity	Significant Environmental Issue	Suggested Mitigation Measures	Time of Action	Responsibility	Remarks
Dhungana Tole	Raised embankment structure	Water management and logging	Cross drainage structures will be installed at the low-lying area of embankment	During construction	RJKIP/ Contractor	
All sites		Erosion along the raised embankments	Turfing applied on both sides to control erosion and siltation	During and after construction	Contractor	
			Awareness on conservation including fodder plant support to community	After and during construction	RJKIP /Agriculture office	Coordination with Forest Office, local club
Dhungana Tole		Disturb cattle watering and wallowing	Modification in structure for easy access for animals. Animal Ramps proposed.	During construction	RJKIP/Contractor	
All Chainage		Disturbance in nesting and basking habit of crocodiles	Modification in structure for moderate inclination in riverside slope around crocodile habitat	Before and During construction	RJKIP /Contractor	2:1 side slope Proposed
Sattighat Quarry Site	Extraction of quarry materials	Erosion and geological instability	Collection within 50m distance of the right embankment of the Karnali River with a depth of 1m only.	During construction	Contractor	
		Loss of diversity	Plantation along river side of Satti-Karnali CF	After construction	CFUG	

Site/ Chainage	Physical Activity	Significant Environmental Issue	Suggested Mitigation Measures	Time of Action	Responsibility	Remarks
			Regular monitoring of sites	During construction	CFUG, RJKIP	
Dhungana Tole	Labor Camp	Occupational Safety and Health	Good quality PPEs will be provided First-aid box and fire extinguishers available at the labor camp Contact information for emergency services (medical, fire, police) posted at work site	Before and during construction	Contractor	PPEs: - Hardhats, Masks, Safety Glasses, Gloves, Harnesses and Safety Boots, etc.
	Labor migration	Intrusion in local culture and traditions	Aware migrated work force about local culture, tradition and make them to respect it	Before construction	Contractor	
			Promote local employment	During construction	Contractor	
	Workforce mobilization	Gender and child discrimination	Aware workforce about discrimination and exploitation	Before construction	RJKIP / Contractor	
			Workers below 18 years are not employed	During construction	Contractor	

Site/ Chainage	Physical Activity	Significant Environmental Issue	Suggested Mitigation Measures	Time of Action	Responsibility	Remarks
	Camp Management	Labor health	Appropriate sanitary toilets with water supply, separate for male and female workers, Campsite with adequate lighting, waste disposal, first aid and other necessary materials Waste dumping pits for food remnants and other organic waste Awareness about the communicable disease including (COVID-19), Sexually Transmitted Disease (STD) to workers	Before and during construction	Contractor	
		Community health and safety risk	Workers and community will be oriented on health and safety risks, construction related risks The Project will not cause water shortage to the adjoining community	Before starting the work	Contractor	

Site/ Chainage	Physical Activity	Significant Environmental Issue	Suggested Mitigation Measures	Time of Action	Responsibility	Remarks
			The health checkup of the workers before employment			
		Community health and safety risk	Emergency preparedness and response plan will be designed to tackle the outbreak of disease. Standard Operating Procedure (SOP) for construction. Awareness about Sexually Transmitted Disease (STD) to the workers and the community.	Before starting the work	RJKIP	

7. Cost estimate of EMP

Table 5: Cost estimate of EMP

SN	Proposed Activities	Unit	Unit Cost	Numbers	Total Cost	Remarks
1	Turfing	m2	23	27060.92	622401.16	
2	Release Fish Fingerlings	-	-	.	500000	Two times during operation
3	Drain outlet structure	-	500000	2	1000000	
4	Animal Ramps	-	500000	1	500000	
5	Plantation program	-	20	3000	60000	
6	Protection of planted species				150000	
7	PPEs, Fire extinguisher and First-aid materials	-	-	-	100000	
8	Labor Camp water supply, sanitation and Management	-	-	-	150000	
9	Water sprinkling in Road to control dust	-	-	-	600000	150 days
10	Watering and protection of planted vegetation	-	-	-	80000	
11	Awareness program Biodiversity conservation related issues	-	50000	4	200000	
12	Water Quality, Sound and Air Quality Measurement		30000	6	180000	Annually and once after construction
13	Partnership development with local clubs on plantation, protection and consecration initiatives etc.	-	-	-	150000	
	Total				**4292401.16**	

Annex-1: Environment Screening Checklist

Environmental Screening Checklist for CAP

A. SUB PROJECT BRIEF INTRODUCTION

1.	Name of the Sub Project and its Chainage / Location (GPS)	
2.	District/ Municipality	
3.	Type of Structure	
4.	Total Length and Width	
5.	HH with Direct Impact	
6.	Foundation type	
7.	Benefited Municipality/Ward/settlements/Population	
8.	Implementation approach and institutions involved (labor-based, user groups, contractor, RJKIP, community, club)	

B. ENVIRONMENTAL SETTING OF THE PROJECT LOCALITY

B1	**Protected Areas (PA)**				
	Are there any Protected Areas (PA) in influence Zone? (Tick)			Yes	No
	If Yes, please provide following information				
	Name of PA	*Distance in relation to Centre point and direction*	*Existing conditions:*		
			Problem, and causes of problem		

B2	**Forest Area**				
	Are there any Forests in influence Zone? (Tick)			Yes	No
	If Yes, please provide following information				
	Name of Forest with	*Distance in relation*	*Existing conditions (including type,*		

	Management type	*to Centre point and direction*	*tentative size, dominant species, flora and fauna):*
			problem, and causes of problem

B3	**Protected Species**					
	Are there any Protected Species in influence Zone? (Tick)				Yes	No
	If Yes, please provide following information					
	Protected Species	*Species Name (Common and Scientific name)*	*Protection Category*			
			GoN	*CITES*	*IUCN*	
	Flora					
	Fauna					
	Problem, and causes of problem					

B4	**Erosion Prone Areas**				
	Are there any Erosion Prone areas in influence Zone? (Tick)			Yes	No
	If Yes, please provide following information				
	Name of Areas	*Distance in relation to Centre point and direction*	*Existing conditions (including type, tentative size, relative stability) problem, and causes of problem*		
			Potential problem from the structure		

B5	**Flood Prone/ River Cutting/ Low lying Areas**				
	Are there any Flood Prone/ River Cutting/ Low lying areas in influence Zone? (Tick)			Yes	No
	If Yes, please provide following information				
	Name of Site/Place	*Distance in relation to Centre point and direction*	*Existing conditions (type, including purpose of use, number of users, area served) problem, and causes of problem*		
			Potential problem from the road		

B6	**Water Sources/ Water Bodies**				
	Are there any Water Sources/ Water bodies (pond, lakes, streams, rivers, springs etc.) in influence Zone? (Tick)			Yes	No
	If Yes, please provide following information				
	Name of Site/Place	*Distance in relation to Centre point and direction*	*Existing conditions (type, including purpose of use, number of users, area served) problem, and causes of problem*		
			Potential problem from the structure		

B7	**Quality of Air, Water Sources, Soil, Noise**			
	Is there any problem with Air, Water, Soil and Noise quality in influence zone? (Tick)		Yes	No
	If Yes, please provide following information			
	Components	*Existing conditions problem, and causes of problem*	*Potential problem from the Structure*	

	Air		
	Water		
	Soil		
	Noise		

B8	**Historical /Religious/Cultural/Archeological Sites**				
	Are there any Historical /Religious/Cultural/**Archeological** Sites (such as temple, mosque, Church, palaces etc.) in influence zone? (Tick)			Yes	No
	If Yes, please provide following information				
	Name of Site/Place/Type	*Distance in relation to Centre point and direction*	*Existing condition Value and Significance*		
			Potential problem from the structure		

B9	**Open Public Place**				
	Are there any Open Public Spaces in influence zone (Tick)			Yes	No
	If Yes, please provide following information				
	Name of Site/Place	*Distance in relation to Centre point and direction*	*Existing conditions(including type, tentative size, use)*		
			Potential problem from the structure		

B10	**Relocation of Community Infrastructures**		
	Are there any Community Infrastructure ((Road, water supply, foot trails, trials bridges, chautara, electricity poles, school, etc.) to be relocate along impact corridor? (Tick)	Yes	No

	If Yes, please provide following information				
	Name of Site/Place	*Distance in relation to Centre point and direction*	*Existing condition, Service and command area*		
			Potential problem from the works		

B11	**Main Settlement and Trade Centre**		
	Mention the Bazaar areas, major settlements, settlement of special groups in influence zone?		
	Name of settlement and market Centre, location in relation to structure	*Description (approximate no. of HH and population and significant features)*	*Potential problem to these settlements due to proposed construction*

B12	**Area or site of Significant Tourism development , Recreational and Aesthetic value along zone of influence ?**	
	Place	*Potential benefit or problem from purposed development*

B13	**Area or site of Significant Development of (Fertile land, horticulture and Silviculture etc.)**	
	Place	*Potential benefit or problem from purposed development*

B 14	**Area or site of Significant Development Potential for Natural Resource (like Minerals deposits, mines)**	
	Place	*Potential benefit or problem from purposed road*

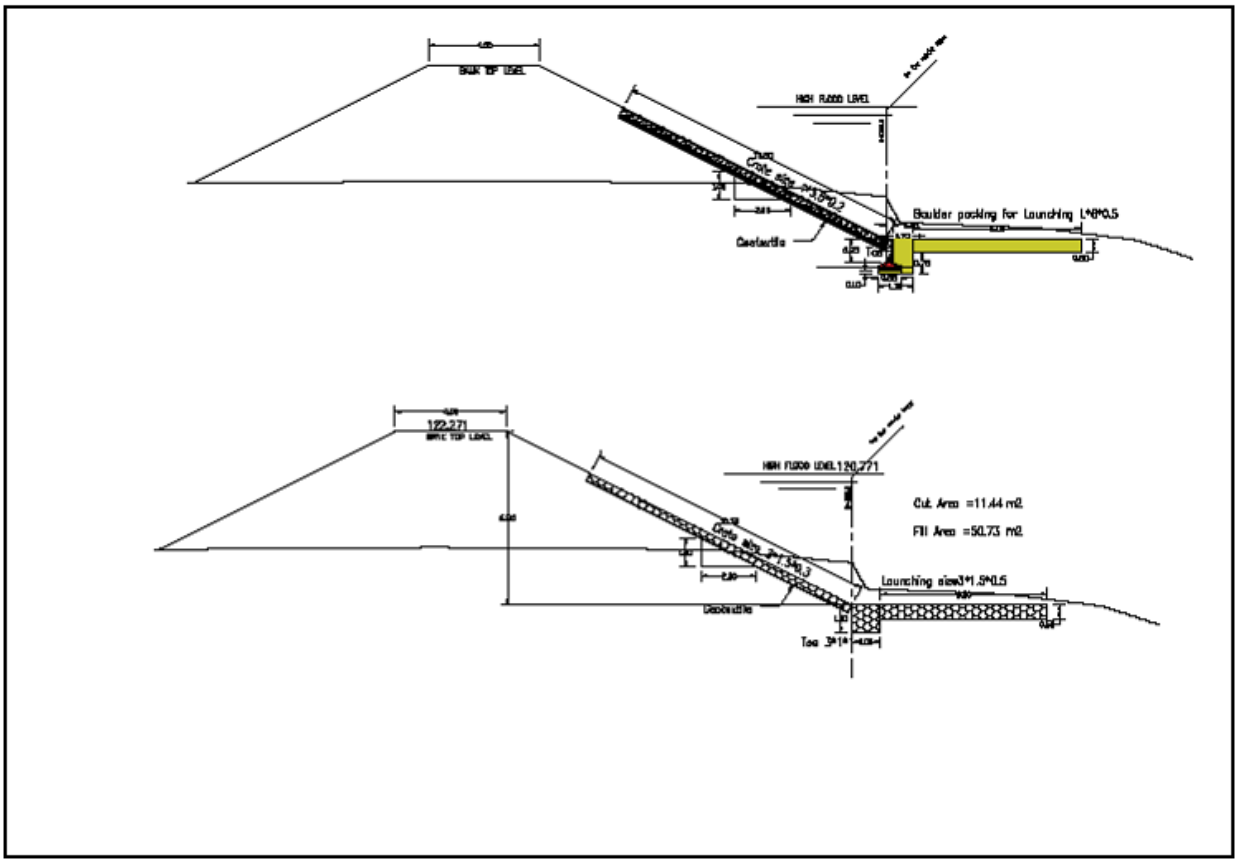
B15	**Induced Impacts**	
	Mention the surrounding settlements, encroachment of forest/ marginal lands, common property, quarrying, heath impact, change in agricultural practices, girl trafficking etc.	
	Place	*Induced Impacts*

Summary of Findings of Screening and Recommendations

Findings	**Recommendations**

Name:
Signature:
Date of data collection:
Number of Participants:

Annex 2: Typical Cross Section of Embankment



Annex 3: Cost Estimate of Animal Ramp

Government of Nepal
Ministry of Energy, Water Resources and Irrigation
Department of Water Resources and Irrigation

Rani Jamara Kulariya Irrigation Project

Tikapur, Kailali

QUANTITY ESTIMATE AND COST

Name of Work: Command Area Protection (CAP) Works
Location: Tikapur-7, Dhungana Tole,Baidi & Bhajani-8,Kadadhik

Animal Ramp

Item No.	Description of Works	Nos	Length m	Width m	Height m	Quantity	Unit	Rate	Amount	Remarks
1	Filling with stones in Gabion box									
	For left Bank									
	For lunching portion	1	16	6	0.5	48				
	For slope,2 side	1	16	10.5	0.3	50.4				
					Total	98.4	cum	4400.00	432960.00	

Annex 5: List of Important Fishes in Mohana River

S.N.	Scientific Name	Common Name \ Vernacular Name	Size Class Weight Kg
1.	*Anguilla bengalensis*(Gray)	Freshwater eel \ Rajabam	12-20
2.	*Raiamas bola* (Ham)	Trout \ Goha	1.3- 2.5
3.	*Banganadero* (Ham	Kalabans \ Gurdi	5-10
4.	*Cirrhinusmrigala*(Ham)	Mrigal \ Mrigal, Naini	5.3-10.5
5.	*Cirrhinusreba* (Ham)	Reba Carp \ Mrigal	1.2-2.5
6.	*Labeoangra (Ham)*	AngraLabeo \ Thed	3-5
7.	*Labeoboga* (Ham)	BogaLabeo \ BogaTikauli	3-8
8.	*Labeocatla* (Ham)	River Carp \ Vakur, Katlagi	5-20
9.	*Labeopangusia* (Ham)	PausiKalaacha	4-8
10.	*Labeorohita* (Ham)	Rohu	4-8
11.	*Tor tor* (Ham)	Deep bodied Mahseer \Falame Sahar	15-40
12.	*Tor putitora* (Ham)	Golden Mahseer \ Pahale Sahar Mahseer	15-60
13.	*Salmostomabacaila*(Ham)	Large RazorbellyMinnow \ Chilwa	0.01-0.03
14.	*Wallagoattu* (Schneider)	Boharil \ Buhani	5-20
15.	*Glyptothoraxcavia* (Ham)	Capre	0.03-0.05
16.	*Bagariusbagarius* (Ham)	Giant catfish \ Gounch	25-200
17.	*Clupisomagarua* (Ham)	Jalkapoor	1-1.5
18.	*Mystustengara*(Ham)	Tengaramystus \ Tenger	0.01-0.04
19.	*Sperataseenghala* (Sykes)	River catfish, Seenghari \ Suhjana, Tenger	25-50
20.	*Clariasmagur* (Linnaeus)	Magur \ Mangur, Mungar	5-15
21.	*Heteropneustesfossilis*(Bloch)	Stinging catfish \ Singhi	0.05-0.10
22.	*Channamaurilus* (Bloch & Schneider)	Asiatic Snakehead \ Garahi	8-25
23.	*Monopteruschuchia* (Ham)	Gangetic Mudeel \ Bamali, Andho Bam	5-8
24.	*Mastacembelusarmatus* (Lacepede)	Tire-Track, Spiny Eel \ Gaichi, Chuche Bam	0.03-0.05

Note: Recommended on report "Study Potential Impacts of Civil Structures on Dolphin Conservation and Eco-friendly Promotional Strategy"

Annex 5: Public Discussion Meeting Minutes

आज मिति २०७४/१०/१२ गते रानीजमरा कुलरिया सिंचाइ आयोजना को पहलमा यस आयोजनाले गर्ने विस्फोटन भेग (पर्खाल, बाँध, सोहना) अन्तर्गत नदि नियन्त्रण/व्यवस्थापन कार्य गर्नु पूर्व गरिने क्रियाकलाप हरु सामाजिक क्रियाकलाप, वातावरणीय क्रियाकलाप र निःशुल्क जग्गा दिने सम्बन्धि छलफलमा उपस्थित महानुभावहरु निम्न रहेको छ।

तपसिल

उपस्थित स्थान: भजनी-८, कैलाली

उपस्थिति

१. दुखी लाल चमला, वार्ड सदस्य, भजनी-८
२. जय प्रसाद ढुंगाना, सचिव - वार्ड-८
३. मिन बहादुर घर्ती मगर, कृषक
४. मना देवी बम ,,
५. हर्क बहादुर घर्ती मगर ,,
६. धन बहादुर शाह ,,
७. अमर बहादुर शाही ,,
८. भीम बहादुर शाह ,,
९. लाल बहादुर शाह ,,
१०. ओजराज ढुंगाना ,,
११. विष्णु शाही ,,

निर्णय

१. रानीजमरा कुलरिया सिंचाइ आयोजना बाट प्रस्तावित गरिएको भजनी-८ काँडेखोला मा नदी नियन्त्रण सम्बन्धी तटबन्ध बनाउने बारे छलफल हुँदा उक्त क्षेत्रमा रहेका सम्बन्धित कृषक हरुबाट /जग्गा धनी बाट निःशुल्क जग्गा प्रदान गर्ने निर्णय गरियो।

२. आयोजना बाट गरिने तटबन्ध को काम बाट स्थानीय जनता/समुदाय लाई कुनै पनि नकारात्मक सामाजिक तथा वातावरणीय प्रभाव नपर्ने निर्णय गरियो।

३. आयोजना बाट गरिने निर्माण कार्यहरुमा स्थानीय श्रम हरु उपलब्ध रहेकोले स्थानीय श्रम लाई प्राथमिकता उपयोग गराउने निर्णय गरियो।

आज मिति २०६४/१०/१३ गते रानीजमरा कुलरिया सिंचाइ आयोजना को पहलमा यस आयोजना ले गर्ने पथरैया, काँडा, मोहना नदी किनारमा नदि नियन्त्रण / तटबन्ध कार्य गर्ने सम्बन्धमा स्थानीय लोकको विचार तथा, सम्बन्धित सरोकारवालाहरु को उपस्थितिमा सामाजिक विकास तथा वातावरणीय विकास लगायत अन्य विविध विषयमा छलफल गरी निम्न निर्णय गरियो।

उपस्थित स्थान :- टीकापुर-६ ढुंगाना होटल

उपस्थिति

१)	प्रजापती न्यौपाने	टीकापुर- मसुरी-८	प्रजापति
२)	सिद्ध प्रसाद ढुंगाना	टीकापुर-६	सि.द्र. [illegible]
३)	नरेन्द्र प्रसाद रेग्मी	" "	[illegible]
४)	शिवराज ढुंगाना	" "	शि/वारा
५)	नरेन्द्र ढुंगाना	" "	नरेन्द्र
६)	रोमनाथ ढुंगाना	" "	[illegible]
७)	कल्पना ढुंगाना	" "	[illegible]
८)	गोमती देवी न्यौपाने	" "	गोमती
९)	गीता देवी ढुंगाना	" "	गीता
१०)	अर्जुन डाँगी	" "	[illegible]
११)	शिवानन्द पाण्डे	" "	[illegible]
१२)	गज बहादुर जोशी.	" "	—
१३)	नारायण प्रसाद काफ्ले	"	नारायण
१४)	ललित बहादुर भण्डारी	"	[illegible]
१५)	मोतिराम काफ्ले	"	मोती
१६)	वासुदेव बोहरा	"	[illegible]
१७)	फुलराम चौधरी	"	फुल
१८)	देवराज न्यौपाने	"	देवराज
१९)	दिल्ली प्रसाद पाण्डे	"	[illegible]
२०)	शिवराज साउद	"	[illegible]
२१)	धनसिंह मुखिया	"	[illegible]
२२)	कमल बुढा	"	Kamal

निर्णय

१) नतीजामा कुलरीया सिंचाइ आयोजना बाट कार्यान्वयन गरिने स्याबिती भेरी, डुंगाना टोला, कुलीन सम्म को नदि नियन्त्रण कार्य गर्न सहमति दिने निर्णय गरियो।

२) तटबन्ध बाँध लाई आवश्यक पर्ने जग्गा निशुल्क गरिदिने निर्णय गरियो।

३) आयोजना बाट गरिने निर्माण तथा तटबन्ध कार्य बाट स्थानीय जनता तथा समुदाय लाई सामाजिक तथा वातावरणीय नकारात्मक प्रभाव नपर्ने निर्णय गरियो।

४) निर्माण को कामका स्थानीय जनता लाई श्रम कार्य मा संलग्न गराउने निर्णय गरियो। प्राथमिकता दिने निर्णय गरियो।

५) निर्माण को कार्य बाट स्थानीय जनताको जनजीवन असर नपर्ने निर्णय गरियो।

प्रजापति

आज मिति २०७५/१०/१६ गते रानी जमरा कुलरिया सिचाइ आयोजनाको पहलमा यस आयोजनाले गर्ने डुबान क्षेत्र (पथरैया, कौडा, मोहना) अन्तरगत नदि नियन्त्रण/व्यवस्थापन कार्य गर्नु पूर्व गरिने क्रियाकलापहरु जस्तै सामाजिक सुरक्षा, वातावरणीय सुरक्षा र निःशुल्क जग्गा दिने सम्बन्धि छलफलमा उपस्थित सहभागीहरु यस प्रकार रहेका छन्।

तपसिल

उपस्थित भई छलफल गरेको स्थान: टिकापुर नगरपालिका – ६, कालाकुण्डा

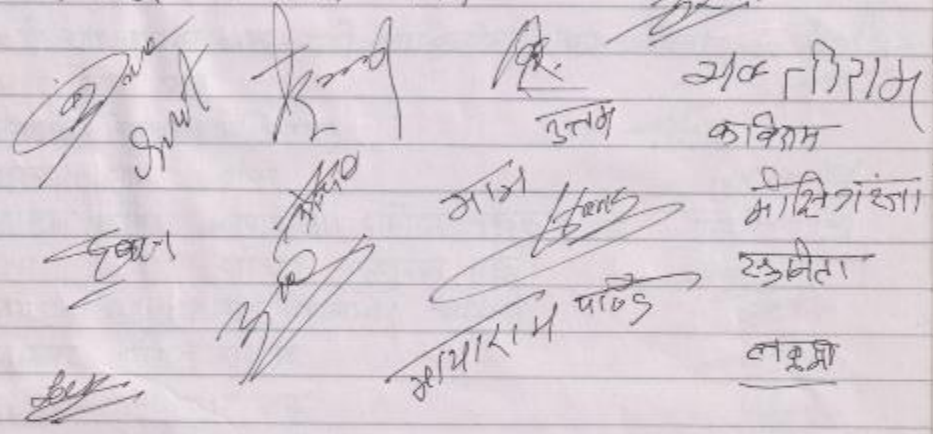
उपस्थिती

१. नरेन्द्र प्रसाद रेग्मी	टिकापुर – ६	
२. विर बहादुर दसौंदी	टिकापुर – ६	
३. डिल बहादुर खड्का	टिकापुर – ६	
४. गोविन्द सुनार	"	गोविन्द
५. भक्तीराम ज्ञवाली	टिकापुर – ६	भक्तीराम
६. डिल्ली प्रसाद पाण्डे	"	
७. कवि राम अधिकारी	"	कविराम
८. मान बहादुर बुढा	"	
९. मदन साउद	"	
१०. नर बहादुर सारुमगर	टिकापुर ६	
११. मान बहादुर साउ	"	मान
१२. सुनिता पुन	"	सुनिता
१३. लक्ष्मी पौडेल	"	लक्ष्मी
१४. मोहन अरन्जा	टिकापुर ६	
१५. उत्तम सिजाली मगर	"	उत्तम
१६. भोज राज दुङ्गाना	"	
१७. विजय थापा	"	
१८. लाल बहादुर सुनार	"	
१९. श्रीपाल चौधरी	टिकापुर – ९	
२०. सालिक राम चौधरी	टिकापुर – ९	सालिकराम
२१. हरि थापा	टिकापुर – ९	
२२. नन्द बहादुर मल्ल	" – ९	

उक्त स्थानमा भएको सामुहिक छलफल बाट देहाय बमोजिम निर्णय गरियो।

१. रानी जमरा कुलरीया सिचाइ आयोजना बाट कार्यान्वयन गरिने टिकापुर-९, कालाकुण्डा मा गरिने नदि नियन्त्रण कार्य गर्न दिने निर्णय गरियो।

२. तत्सम्बन्धमाई आवश्यक पर्ने अन्य नि:शुल्क दिने निर्णय गरिनेछ।
३. आयोजना बाट गरिने निर्माण तथा तत्सम्बन्ध कार्यबाट स्थानीय मानिस तथा समुदायलाई सामाजीक तथा वातावरणीय नकारात्मक प्रभाव नपर्ने निर्णय गरिनेछ।
४. निर्माणको चरणमा आवश्यक पर्ने श्रम को परिपूर्ती गर्न स्थानीय श्रमलाई पहिलो प्राथमिकता दिनु पर्ने निर्णय गरिनेछ।
५. निर्माणको चरणमा गरिने निर्माण कार्य बाट प्रभावित स्थानीय जनताहरुको जनस्वास्थ्यमा असर नपर्ने निर्णय गरिनेछ।



आज मिति २०७९।११।२६ गते रानी जमरा कुलरिया सिंचाइ आयोजना र ज. उ. स को संयुक्त पहलमा यस आयोजनाले गर्ने पथरैया, काडा र मोहना नदीमा तटबन्ध कार्य गर्ने सम्बन्धमा आयोजनाबाट प्रभावित सम्बन्धित कृषकहरु तथा स्थानीय सरोकार निकायहरुको उपस्थितिमा देहायका विषयहरुमा सामुहिक छलफल गर्दै निम्न निर्णयहरु गरियो।

उपस्थित स्थान: टिकापुर -७, दुगांनाटोल, बैदी।

उपस्थिती: 'हस्ताक्षर'

१. सि. डि. ई रण बहादुर बम - रानी जमरा कुलरिया सिंचाइ आयोजना

२. " दिनेश भट्ट "

३. व. समाजशास्त्री विमल राम देवकोटा "

४. समाजशास्त्री सागर अर्याल "

५. ज. उ. स मूल समिति, उपाध्यक्ष दामोदर खड्का

६. " सचिव, परशुराम महतो

७. जमरा ज. उ. स का अध्यक्ष लालविर चौधरी

८. कन्सलटायन्ट नविन रावल

९. " भागिरथ भट्ट

१०. " चार्ल्स प्रधान

११. अमिन हेमन्त थापा

१२. सामाजिक परिचालक पार्वती चौधरी

१३. भोजराज ढुङ्गाना, बैदी-७, ढुंगानाटोल

१४. नरेन्द्र प्रसाद रेग्मी " "

१५. धनीराम रेग्मी " "

१६. खेमराज पाण्डे " "

१७. कल्पना ढुङ्गाना " "

१८. सिद्ध राज ढुंगाना " "

१९. धनीराम ~~रेग्मी~~ ढुंगाना " "

२०. अमृता डीतली पाण्डे " "

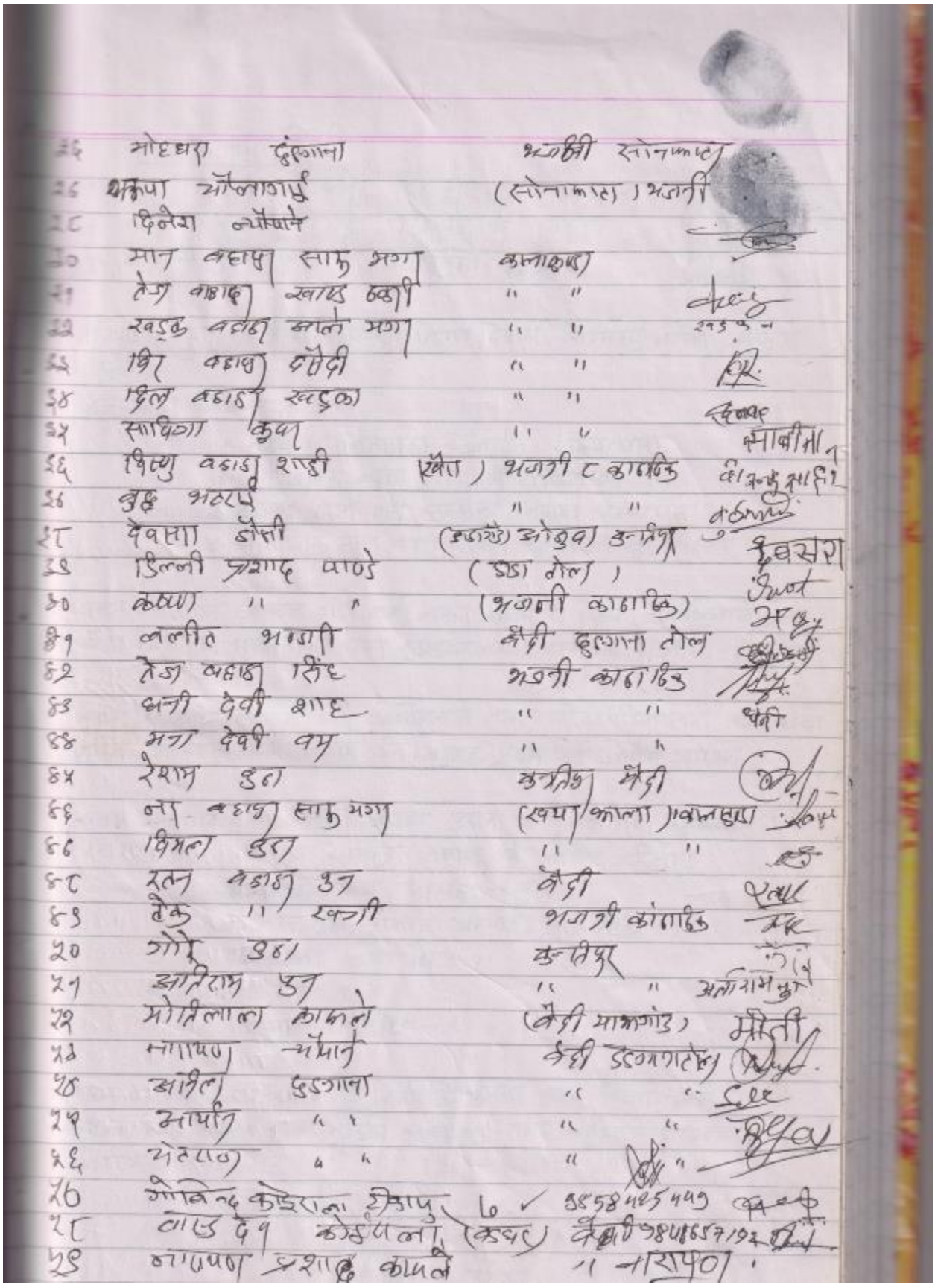
२१. नन्दाराम न्यौपाने " "

२२. धन बहादुर शाह (छेत्री) (भजनी कार्यालय) [illegible]

२३. [illegible] ढुङ्गाना

२४. नरेन्द्र ढुङ्गाना

२५. प्रजापति चौलागाईं भजनी टिकापुर



विशेष उपस्थिति

५० श्री रामलाल चौधरी, टिकापुर वडा ६ - अध्यक्ष
५१ श्री श्यामलाल रेग्मी, टिकापुर ६ सदस्य
५२ श्री जय प्रकाश ढुंगाना वडा प्रचिव मन्त्री-८

माथिका महानुभावहरुको उपस्थितिमा देहाय विषयहरु माथि छलफल गरियो।

छलफलका विषयहरु:

१. तटबन्ध निर्माणको डिजाईन सम्बन्धमा
२. नि:शुल्क जग्गा प्रदान गर्ने सम्बन्धमा
३. जग्गा प्रदान गर्ने संयन्त्र निर्माण सम्बन्धमा
४. सामाजिक तथा वातावरणीय मूल्याङ्कन सम्बन्धमा

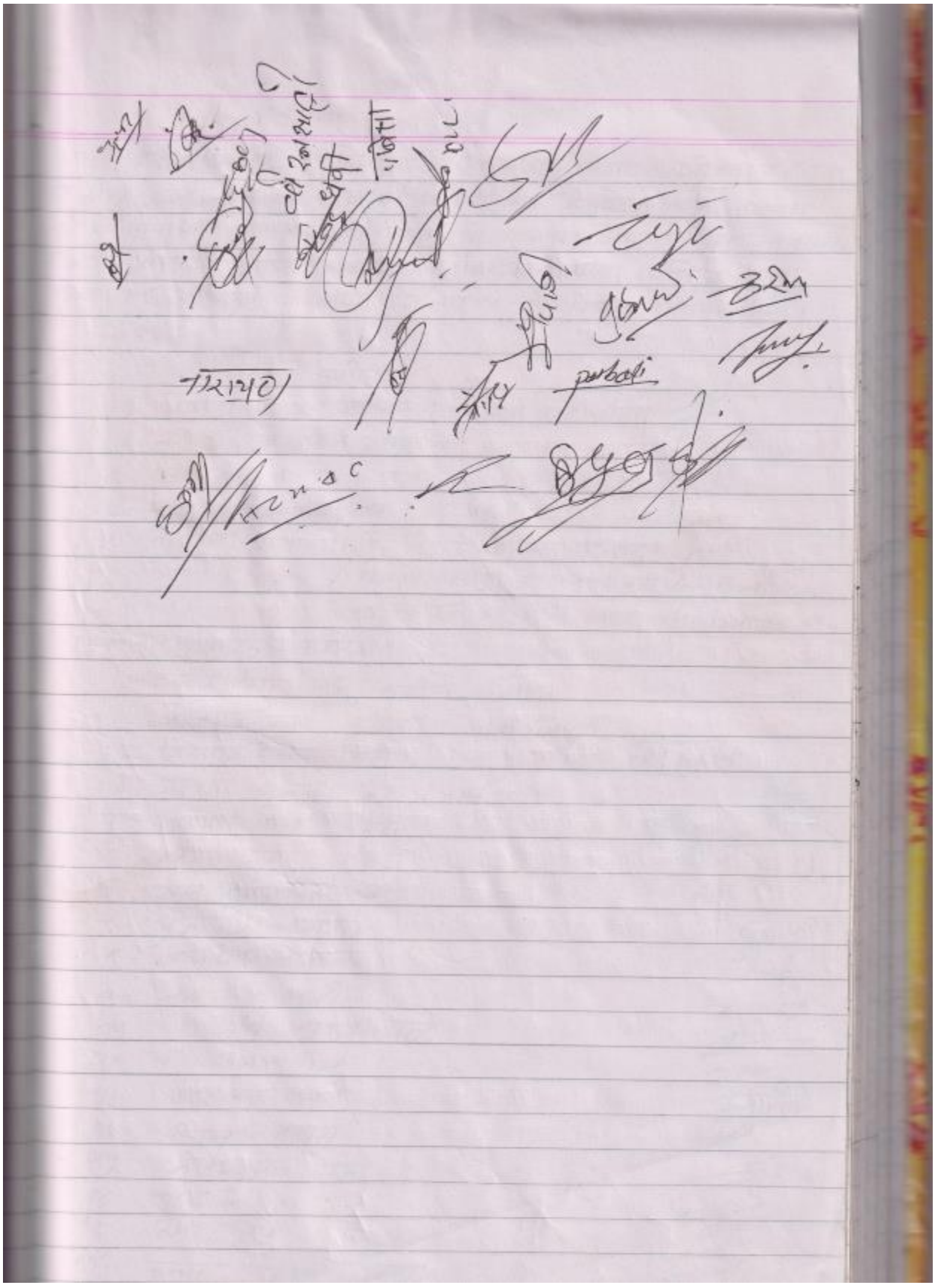
विषय १ माथि छलफल गर्दा रानी जमरा कुलरिया सिंचाई आयोजनाले तयार पारेको डिजाईनमा सम्भव भए सम्म कृषकको जग्गा बच्ने गरी रिडिजाईन तयार पार्ने।

विषय २ माथि छलफल गर्दा आयोजनाले तयार पारेको रिडिजाईनमा तटबन्धको लागि आवश्यक पर्ने जग्गा नि:शुल्क प्रदान गर्ने निर्णय गरियो।

विषय ३ माथि छलफल गर्दा जग्गा प्रदान गर्ने प्रक्रियामा समन्वय गर्न देहाय बमोजिमको एउटा संयन्त्र निर्माण गर्ने निर्णय गरियो।

सम्बन्धित वडा अध्यक्ष - १
जै.उ.स मूल समिति अध्यक्ष/प्रतिनिधि - १
आयोजना प्रतिनिधि - १
सम्बन्धितवडा धा - १
महिला प्रतिनिधि - १

विषय ४ माथि छलफल गर्दा निर्माणको क्रममा तथा निर्माण भन्दा अगाडी कार्यक्रम निर्माण स्थल तथा घरहरुको सामाजिक तथा वातावरणीय अध्ययन गर्नु पर्ने निर्णय गरियो।



Annex 8: Photographs

Pic 1: Downstream of Mohana Patheriya Confluence

Pic 2: Confluence of Mohana Kanda (PC- Charles Pradhan)

Pic 3: Open grazing and animal herding on old embankment

Pic 4: Mohana Patheriya Confluence

Pic 5: Dolphin tower near Mohana Patheriya Confluence

Pic 6: Old eroded embankment at Mohana