Integrated Rurban Development and Climate Resilience Project (IRDCRP).

Ministry of Agriculture, Livestock, Lands and Irrigation



Environmental Screening Report & Environmental Management Plan

For

Rehabilitation of Panagama Tank

Package Number: MoALLI/IRDCRP/PMU/NCB/Works/Panagama wewa(R)/2025/01

IRDCRP Component No: 2.1

September, 2025

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Executive Summary

Serving as the primary irrigation source for paddy lands in the Grama Niladhari Division (GN), the Panagama Wewa is a minor tank located in the Kasikotei-West GN division. This area falls under the Ambanpola Divisional Secretariat (DS) Division of the Kurunegala District. The Thambuththa agrarian division manages the tank's operation to support local agriculture, especially paddy farming.

The proposed project interventions, to be implemented with financial assistance from the project, include improvements to the tank bund, repair of the CO-type spillway, and the construction of headwall sluices for the left bank. Additionally, the scope involves the construction of a bathing place and the clearing of the tank bed.

These activities will primarily involve earthworks and civil construction, which carry the potential for several environmental and social impacts, specifically soil erosion, generation of fugitive dust emissions, noise pollution, and vibrations.

However, it is noted that the project site does not contain residential structures within an approximate radius of 700 meters to 1 kilometer. Consequently, village residents will not be direct receivers of the primary site-specific construction impacts (noise, vibration, dust). The only interface between the project and the village will be the transport of construction materials along the existing access roads leading to the site.

The project's most significant concern is its proximity to the Gatadivula teak plantation, which has been formally declared a reserved forest. There are other types of small forest patches in the vicinity of the tank. This adjacency raises considerable concerns regarding potential ecological impacts on local fauna, particularly on the elephant population known to roam near the tank. Furthermore, the area is already identified as a critical zone for Human-Elephant Conflict (HEC).

1. Overview of the Intergraded Rurban Development and Climate Resilience Project (IRDCRP).

The IRDCRP is executed by the Ministry of Agriculture, Livestock, Land, and Irrigation and implemented by the Department of Agriculture, the Department of Agrarian Development, the Department of Irrigation, the Mahaweli Development Authority, and provincial irrigation departments. The project's development objective is to increase productivity, market access, and climate resilience of agri-food producers in selected areas. The project's main beneficiaries are small- and medium–scale producers and households engaged in the agri-food sector residing in the project areas. The project will also benefit agribusiness firms through support for improved market linkages.

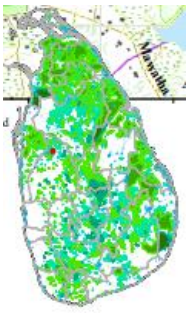
The project has five components on promotion of climate-smart production, value addition, and inclusive access to markets, , integrated management of natural resources for climate resilience (sub components for improving cascade management and on farm water, irrigation and water resources management, boosting climate smart agriculture technologies and practices,); Strengthening the enabling environment for sectorial growth, (sub components for better quality and availability of agriculture data, quality infrastructure improvements, enhancing provision of agricultural insurance), Project management , monitoring and learning, contingent emergency response component). The project development objective is to increase productivity, market access, and climate resilience of agri-food producers in selected areas.

The social and environmental screening for the proposed civil works at the Panagama tank will be conducted in compliance with the World Bank's Environmental and Social Framework (ESF) and Government of Sri Lanka (GoSL) regulations.

The Panagama tank is crucial for the livelihoods of resident families in the village and surrounding areas, as it provides water for paddy cultivation and other agricultural activities. The tank and its environs also serve as a vital source of water and a habitat for local wildlife.

1.1. Administrative Setup

Province: North-western
District: Kurunagala
Divisional Secretary Division: Ambanpola
GN Division: **Kasikotei -West**
Agrarian Service Center: Ambanpola



The red dot depicts the location of the Panagama Tank

1.2. Project Proponent

Department of Agrarian Development
Ambanpola Agrarian Service Center

1.3. Estimated cost

Rs. 11,938,700.00[1]

1.4. Contract Package Number

MoALLI/IRDCRP/PMU/NCB/Works/Panagama Wewa/(R)/2025/01

[1] As per the initial BoQ submitted by the DAD

2. General Description

The Panagama tank is a minor irrigation tank that functions under the purview of the Department of Agrarian Development (DAD) in Kurunegala District. Based on a request from the farmers' organization, the DAD has proposed an intervention with the objectives of regularizing the tank's water flow, directing water equally to the entire paddy field area, and improving access to the paddy fields.

2.1. Physical Environment

The Kurunegala District is situated at approximately 98 meters above mean sea level (MSL), and its physical environment is a blend of dry and intermediate zones. These zones influence its climate, particularly the rainfall and temperature regimes.

The region receives a mean annual rainfall ranging from 1,500 mm to 2,000 mm. The primary rainy season, referred to as the Maha season, extends from October to January, with the heaviest rainfall typically occurring in November and December. Inter-monsoonal rains are also common in March.

A notable characteristic of the climate is the drought period, which lasts for about five months, from May to early September. During this time, the weather is typically hot and dry. Average temperatures in the area range from 30◦C to 33◦C. The dominant soil types in the project area are Reddish-Brown Earth and Low Humic Clay

2.2. Habitat types

The general land use map in the area is illustrated in the Figure 2. The immediate habitat types within a one-kilometre radius of the project site are a mosaic of paddy fields, home gardens, and patches of shrub type forest patches, planted forest and degraded thorny jungle (Figure 2). The Gatadivula teak plantation a reserved forest is located may be 1 - 3 km away from the site (Figure 2).

2.3. Vegetation Structure

The vegetation within the project's impact zone—including the tank bund, downstream areas, and access roads—is diverse. The tank bund is populated with mature trees such as *Azadirachtaindica* sp., *Ficus* sp., *Terminalia* sp., *Pongamiapinnata* sp., *Celtis* sp., and *Terminalia arjuna*. There were no endemic, rare or threatened species of tress/plants along the access roads and adjacent to the tank bund. Tree species that were in the adjacent forest patch at the spill (Figure: 1) were not observed due to presence of elephant herds inside. The access roads feature a mix of scattered shrubs and trees, along with various plants cultivated in adjacent home gardens. The tank's surface is colonized by *Salvinia* sp., an invasive aquatic fern (Figure 3).

2.4. Fauna

Elephants (*Elephas maximus maximus*) are the notable species, with herds frequently observed in the forest patch adjacent to the tank spill (Figure 1, Figure 2 and Figure 3). The region is

marked by significant human-elephant conflict. Other common wildlife species associated with the dry zone are likely to inhabit the area, particularly within the adjacent forest patches, contributing to the overall biodiversity of the region.

A recent survey of the project site and its surrounding area revealed a high concentration of elephant spoor on the tank bund and tank bed, indicating that elephants frequently use this area for movement. This scenario may be seasonal.[2]

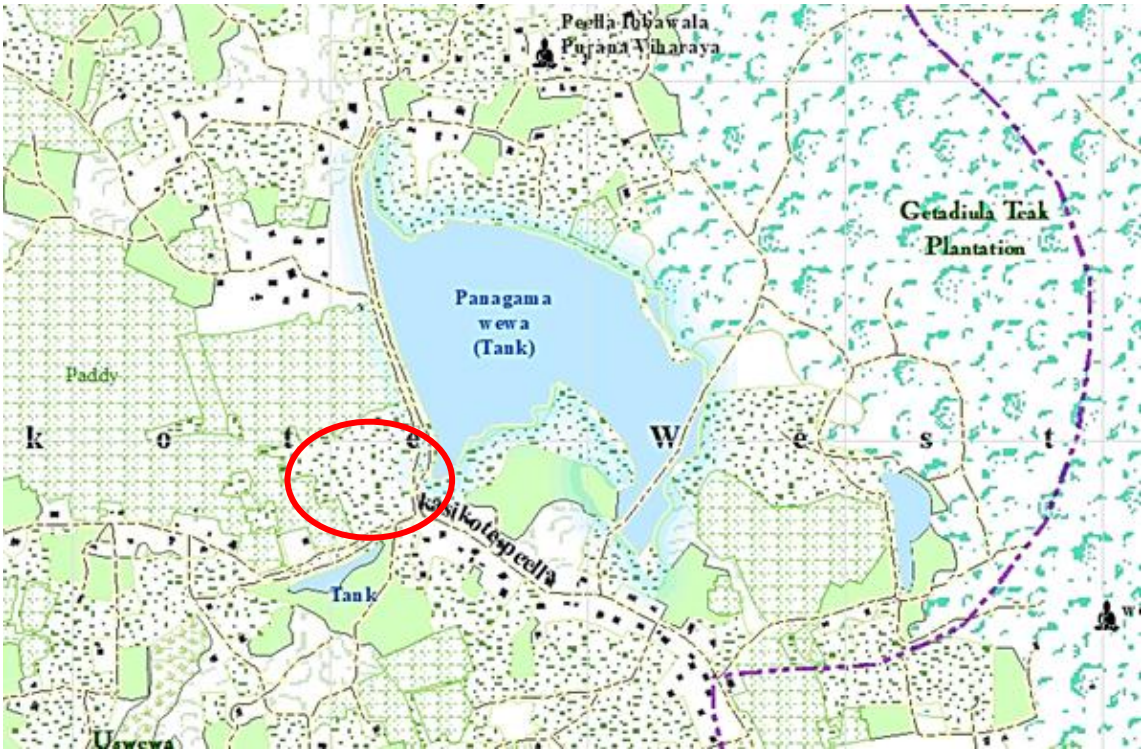


Figure 1: The map showing the immediate surroundings of the Panagama tank.

The red circle highlights a shrub forest patch of approximately 25 acres located at the end of the tank bund where the spillway is situated. This area serves as a daytime habitat for a large herd of elephants. Figure 3 also depicts this same forest patch at the spillway. The elephants roam throughout the area, including into nearby villages, the tank area, and the Gatadivula forest reserve. This movement contributes to an increase in human-elephant conflict within the region.

2.5. Natural and Geological Hazards

The project area exhibits a low risk profile for natural disasters. The region is not prone to events such as floods, prolonged droughts, or cyclones. Furthermore, the area is not susceptible to geological hazards, including landslides or rock falls.

[2] To gain a clearer understanding of how the elephants use the area—whether as a corridor, for feeding, for water or to access feeding grounds—more comprehensive surveys are required.

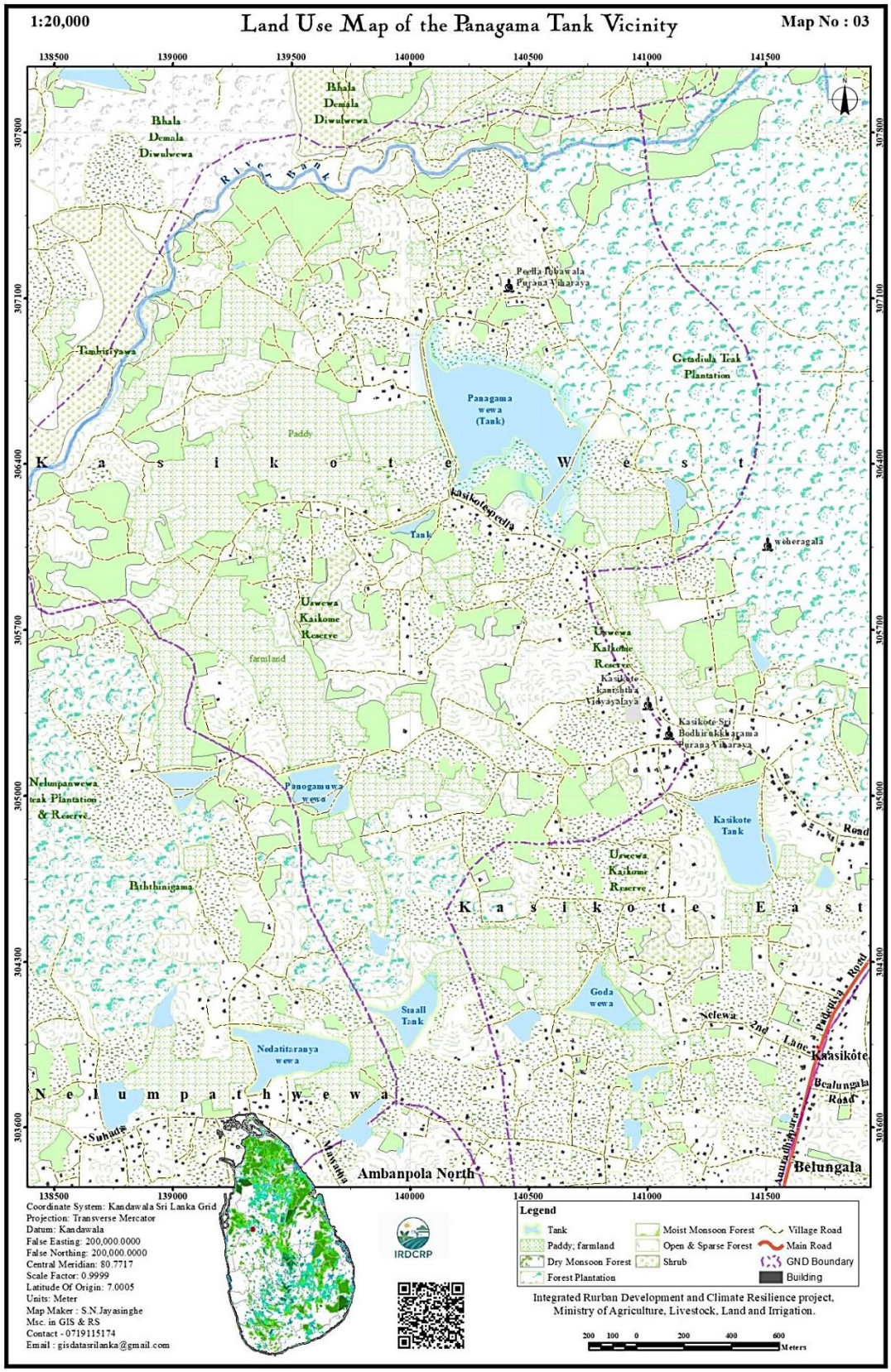


Figure 2: The land use map around the Panagma Tank and its surroundings[3].

[3] **Mr. S.N. Jayasinghe** of the Department of Archaeology, for his **generous volunteering of time and expertise** to complete the land use map is acknowledged.



Figure 3: The forest patch around the spill area where periodical appearances of elephant herds as well as other small fauna.



Figure 4: The surface of the tank is completely covered by an extensive spread of the invasive aquatic fern, *Salvinia sp.*

Figure 2 illustrates the land use pattern surrounding the Panagama tank. The Gatadivula forest reserve is located to the northeast and east of the tank. All activities under this contract are planned for the tank bund and downstream areas only, with no activities scheduled for the upper periphery. Prior to commencing work, clearance may be required from the Forest Department and relevant communication will be initiated by the PMU.

As depicted in Figure 4, a significant portion of the tank's water surface is covered by *Salvinia* sp. The red square highlights the area of *Salvinia* infestation on the tank's surface.

3. Brief description of the proposed project activities:

3.1. Headwork Development:

3.1.1. Improvements on the tank bund (Figure 6)

- Light jungle clearing along the tank bund reservation and spill area by machinery (0.630 ha)
- Stripping off of top soil along the tank bund to a depth of 75 mm (321 m^3)
- Removing of any hills (12 numbers)
- Benching along the side slops by machinery (215 m^3)
- Stripping top soil in the barrow area (tank bed or reservation of the tank) (92325 m^3).
- Cutting, laying pegging of turf including watering and keeping moist until plant growth (1465 m^3).
- Supply, spreading, watering along the tank bund (180 m^3)

3.1.2. Repair of CO type spill (18.50 m long)

- Clearing and preparation of the site.
- Earth excavation for blanket wall
- placing of cement concrete (11.30 m^3)

3.1.3. Construction of headwall sluices for left Bank

- Bund opening cut, stock piling soil, back filling, watering and compaction (36 m^3).
- Excavation for foundation (4.5 m^3)
- Placing Cement concrete (7.00 m^3)
- Fixing of Hume pipes and PVC pipes and Iron Gate as required.
- Earth works using from borrow puddle clay to construct a puddle clay wall, including watering and compaction.
- Establish a coffer dam

3.1.4. Construction of bathing place

3.1.5. Clearing the tank bed.

- Desilting of scraping 150 mm thick layer of vegetation inclusive of water plants, uprooting roots from tank bed by machinery (Haul distance 0.5 km).

The water surface of the tank shows an infestation of invasive *Salvinia*. Clearing of the tank bed is proposed. Hence Salvinia may be removed from the tank bed. Removal requires a careful approach to prevent its re-establishment and spread to other water bodies within the cascade.

Desilting must be performed with great care to avoid damaging the underlying hardpan or hardcore of the tank bed. This compacted, impermeable layer of soil is essential as it prevents water from seeping out, thus preserving the tank's storage capacity. Damaging this layer can lead to a significant loss of water storage. Although a depth of 150 mm is a general guideline for desilting, the actual depth should be re-evaluated by the Department of Agrerian Development

(DAD). The final decision must be based on the specific condition of the tank bed to ensure the hardpan isn't breached.

Desilting should only be performed during an extreme dry period when the tank is completely empty or when there is no demand for its water. This timing is critical for ensuring the safety of workers and preventing disruption to the water supply for agricultural and other uses.

The silt and sediment must be carefully removed using appropriate machinery or manual labor. Care should be taken not to scrape or dig into the underlying hardpan layer. The removed material can often be repurposed to strengthen the tank bunds or as a nutrient-rich soil supplement for agricultural land.

3.2. Downstream Development

3.2.1. Rehabilitation of two main irrigation canals

As depicted in Figure 5, both distribution canals are currently almost non-functional. They are proposed for cleaning and structural rehabilitation under this project.

Rehabilitation works will involve the removal of accumulated sediment, vegetation, and debris from the canal bed and banks to ensure efficient water flow. In addition, **structural rehabilitation** is also proposed along the canals and on the paddy fields. This work refers to the repair and strengthening of the physical structures of the canals, such as the lining and embankments.

Clearing and stripping off top soil to a depth of 75to 150 mm along the canal trace (275 m^3).

Stripping top soil in barrow area, earth excavation hauling and placement of fill material on canal bund (1225.00 m^3).

Cutting, laying pegging of turf as directed including watering and keep moist until plants growth. (1150 m^3).

Construction of canal concrete lining – LB, RB, & Main canal

Excavation for concrete bracket lining in supply canal (943 m^3)

Supplying of concrete (62.5 m^3)

Associated control structures, such as gates and culverts, are also proposed for rehabilitation under the Panagama Tank project. This work will ensure the long-term integrity and functionality of the irrigation system, preventing water loss from seepage and erosion.

3.2.2. Construction of four (04) Hume pipe culverts for tractor crossing.

3.2.3. Construction of 20 numbers of farm turnouts

These farm turnouts are designed to regulate and control the flow of water from the two main canals (Figure 5) to a smaller canal to deliver water for certain areas of the downstream paddy fields. These farm turnouts will help to better management of the tank water, delivery efficiency, and equity. Even the paddy fields located at the most distal area will receive water.

3.2.4. Construction of drainage pass

3.2.5. Construction of three (03) numbers of end regulators

This has proposed by the DAD and farmers to optimize the equitable distribution of the tank water for the surrounding paddy fields, thereby reducing water wastage and increasing agricultural productivity.

3.2.6. Rehabilitation of access road

The access road to the tank is currently unsafe for farmers due to the presence of thorny scrub jungle, which provides cover for roaming elephants. To mitigate this risk, a light clearing of the vegetation alongside the road is proposed. Additionally, the road's condition will be improved by constructing side drains and applying a new layer of soil and gravel.

- Light jungle clearing along the road trace (0.05 ha)
- Excavation of side drains (89 m^3).
- Stripping top soil in the borrow area.
- Earth excavation, spreading, watering and compaction (210 m^3).
- Supply of gravel (75 m^3)

Table 1: Environmental Screening Format for Panagama Tank Rehabilitation Works – IRDCRP

No	Screening Question	Yes No	Scale of Impact	Remarks
1.	Will the proposed project involve the **construction of new physical infrastructure or the rehabilitation of existing infrastructure**? Or; Will the project involve any of the following? (Select all that apply) **14.1.** Construction of new physical infrastructure (e.g., buildings, roads, anicuts, canals, sluice gates, pipelines *etc.*). **14.2.** Rehabilitation, expansion, or upgrade of existing physical infrastructure. **14.3.** Will the project activities involve changes to the original design levels of the headworks (Raise the height of tank bund? And/or raise the height or length of existing spill?) that could lead to the inundation of new areas within the catchment? **14.4.** Dredging of the tank bed and the subsequent disposal of dredged materials? **14.5.** If yes, will the dredged material be disposed of on-site or off-site?? **14.6.** Other (Please specify): (Please attach designs and/or BoQs if possible)	**yes**	**medium**	Both rehabilitation and new works are proposed. **14.1.** As new works; ▪ Construction of a Head wall sluice for the left bank, ▪ Construction of a bathing place, ▪ Construction of a Hume pipe culvert for tractor passing across paddy field, ▪ Construction of 20 numbers of farm turn outs ▪ Construction of a drainage pass ▪ Construction of three numbers of end regulators is proposed. **14.2.** As rehabilitation, expansion, or upgrade of existing physical infrastructure ▪ Improvements on the tank bund by clearing light jungle (Figure 5) ▪ Removing of 12 ant/termite hills (Figure 9) ▪ Benching along the side slopes (Figure 5). **14.3.** NO. (Neither the tank bund height nor the spillway height will be raised). **14.4.** The required amount of soil (2,325.00 m3) and gravel (180 m^3) for the bund works will be sourced from the tank bed. This approach will serve a dual purpose: providing the necessary materials for construction while also dredging the tank bed to increase its water retention capacity. **14.5.** The dredged material will be used and disposed of on-site only.
2	Will any of the planned improvements necessitate an	**No**		All construction work is scheduled to be performed during the off-season,

	artificial lowering of the reservoir's water level? * If the water level will be artificially lowered, please specify the anticipated duration and magnitude of the draw down.			specifically **avoiding the Maha cultivation season**. This timing is strategically chosen to coincide with periods when the water level in the tank is at its lowest, thereby minimizing disruption to agricultural activities and facilitating construction.
3	If the water level will be artificially drawn down, please assess the potential impacts on: **16.1. Surface Water:** Will the draw down alter water flows in nearby streams, rivers, or canals, particularly during the dry season? **16.2. Groundwater:** Will the draw down affect the groundwater table or flow in local wells, especially during the dry season? **16.3. Ecology:** Is there a risk that this activity will affect the ecology of the tank bed or other important wetlands around and canal systems that depend on it? **16.4**. If a risk is identified, please describe the specific potential impacts on the ecosystem (e.g., impact on aquatic life, changes to vegetation, effects on migratory birds and other fauna).	**No**		
4	Will the project cause localized flooding and/or poor drainage during construction?	**No**		All construction will be conducted exclusively during the dry season. This timing is optimal as the tank's water level is significantly reduced following the *Maha* cultivation season, and water flow in the canals ceases. Furthermore, the project area is not susceptible to flooding, even during periods of peak rainfall.
5	Will construction and operation of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in water bodies, *etc.*)	**No**		The proposed civil works primarily involve the rehabilitation of existing infrastructure. Only very few minor scale new structures such as tractor crossing with hume pipes across the paddy lands are proposed. These interventions are designed to enhance the smooth and efficient flow of water to the designated paddy fields.
6	Will construction of the project	**N**		

	cause soil erosion within the site due to steep grade or soil content?	**o**		
7	Will the Project release pollutants or any hazardous, toxic or noxious substances to **20.1.** air? **20.2**. nearby surface or groundwater sources? **20.3**. Soil?	**20.1 Yes** **20.2. No** **20.3 No**	Negligible	The project generated pollutants will be the wastewater, used oil, various solid waste materials. 20.1. Vehicles used in construction, such as excavators and trucks, emit pollutants into the atmosphere from the combustion of fossil fuels. These emissions include carbon dioxide, nitrogen oxides, and particulate matter. Additionally, construction activities can generate dust emissions from disturbed soil and the handling of materials like cement, degrading local air quality. 20.2. The main source of wastewater. There are no surface or ground water sources within 500 m to 1 km of area from the project site. 20.3. Accidental spills of fuel, lubricants, and cement on the ground may pose a threat to soil quality.
8	Will the proposed activities cause **21.1**. Noise? **21.2**. Vibration? **21.3**. dust emission? **21.4.** Release of light? **21.5**. Heat energy? **21.6**. Electromagnetic radiation?	**21.1**. Yes **21.2**. Yes **21.3**. Yes **21.4.** No **21.5**. No	Minor	**21.1**. The ambient noise levels in the project area are exceptionally low, dominated by natural sounds such as wind and the rustlings of leaves, as there are minimal human activities nearby. The proposed construction activities will introduce unwanted sound from vehicles, equipment, and human labour. However, these noise impacts are not expected to be significant, as there are no residential units within a 500-meter radius of the project site. The primary concern is the potential impact of noise on local wildlife.. 21.2. The tank bund rehabilitation works may generate some vibration impacts. However, these are not expected to affect human populations, as there are no residential units nearby. The potential victims of this disturbance would be the wildlife, but only for a limited period.

		21.6. No		
9	Does the proposed location fall within or border any gazetted protected areas (PAs) designated by the Forest Department (FD) or the Department of Wildlife Conservation (DWC), Department of Archaeology or any other?	Yes	Medium	The Gatadivula Forest Reserve is located 1 to 3 km from the site. This forest is surrounded by several villages, including Kaluwilapothana, Kasikote, and Peella. The Panagama wewa/tank is situated within the village of Peella, which also contains home gardens and small patches of scrub forest. Adjacent to the tank's spill area, there is approximately 25-acre forest patch[4].
10	Is the proposed project location known to contain any species protected under the Fauna and Flora Protection Ordinance, or any other sensitive species of fauna or flora? If yes, please provide details on the species and why they are considered sensitive (e.g., critical for breeding, migration routes, *etc.).*"	**Yes**	Medium	Site visits confirmed the presence of a nomadic herd of elephants that utilize the site to feed, drink and staying during the hot sun. Approximately 25 acres of scrub forest patch adjacent to the spill location of the tank (Figure 3 and Figure 2) and adjacent areas around the access road and tank bund (Figure 7 and Figure 6) currently serves about 60-80 individual herd of elephants during the day time. But this scenario may be seasonal.
11	Will the proposed project activities will cause negative effects on wildlife habitats, populations, corridors or movement?	yes	Medium	Based on the preliminary environmental screening, direct or irreversible negative impacts on wildlife populations and habitats are not anticipated from the proposed project. The rehabilitation activities are focused on pre-existing infrastructure, and no significant habitat fragmentation or destruction is foreseen. However, a potential for human-wildlife interaction has been identified. Wildlife movements, particularly of elephants, have been observed along the existing tank access road (Figure 7), in the tank, on the tank bund (Figure 6) and spill area (Figure 9), all of which are proposed for rehabilitation.

[4] The extend of the forest patch as information received from the famer community.

				To ensure the safety of both workers and wildlife appropriate measures should be implemented as directed by the Department of Wildlife conservation and Forest Department.
12	Will the proposed project activities cause negative effects on impact on fish migration and navigation?	**No**		Such an impact is not expected.
13	Will the proposed project activities will cause increased risk of wildlife poaching and forest fires?	**yes**	Medium	Given the presence of wildlife species like the Barking Deer, Toque Macaque, Gray Langur, and rabbits in the scrub forest area, there is a potential for wildlife poaching. This risk is considered a potential environmental impact that should be addressed in the ESMP.
14	Will tree felling be required for the proposed project activities? If yes, please provide an estimate of the number of trees to be felled and their species.	**yes**	Negligible	Only one tree of kohomba/neem tree (*Azadirachta indica*) located adjacent (Figure: 8) to the tank bund (7°.55'17.8" N - 80°14'20.1" E) is planned to be removed. The tree is already damaged by the elephants.
15	Are there any areas or features of high landscape or scenic value on or around the location which could be affected by construction activity?	**No**		The project site is located on a flat terrain, surrounded by scrub-type jungle patches (Figure: 2) and home gardens.
16	Any invasive fauna or flora presents in the tank or surrounding area?	**Yes**	Medium	*Salvinia* is widespread on the tank's surface (Figure: 4). No terrestrial invasive fauna or flora was observed around the tank.
17	Present of archeological monuments or archeological protected areas within the project impact zone?	**No**		



Figure 5: Current situstion of the Right bank and left bank outflow canal proposed for rehabilitation.



Figure 6: Rehabilitation of the tank bund is proposed and the downstrem of the bund is covered by throny type vegetation.



Figure 7: Tank Acess Road



Figure 8: Damaged Kohomba tree need to be removed as a part of bund renovation.



Figure 9: The spill o f the tank is porpoosed to rehabilitated where about 15 acre forest patch is located.



Figure 10: Remaining rightbank sluice of the tank

Table 2: Impact Matrix Code

Risk Level	Impact Based Criteria	Mitigation Based Criteria
HIgh	The impact is **significant** and **widespread**, or it affects **sensitive receptors**. It could also cause **long-term or irreversible changes** and affect **ecosystem services**.	Mitigation necessitates **meticulous planning** and the implementation of **high-tech, costly design solutions**. Even with such measures, **residual effects** are likely to persist.
Medium	The impact is **moderate**, **localized**, and may be **temporary**. It could affect specific **ecosystem components**, **users**, or **operational functions** without causing **irreversible damage**.	Mitigation is **feasible** and **effective**, requiring only **moderate design-based and/or operational planning**. Residual effects are expected to be **nil**, **minor**, or **temporary** in nature.
Minor	The impact is **minor**, **highly localized**, or **temporary**. It is unlikely to significantly affect overall **ecosystem functions**, **public use**, or **operational activities**.	Mitigation is **straightforward** and **low-cost**, and it is expected to **fully address the impact**. No **residual impacts** shall remain.
Negligible	Impacts is insignificant; changes are barely measurable or within natural variability.	No mitigation required or minimal preventive measures sufficient within O & M.

creening Decision and Recommendation:

The project site is in an extremely sensitive area due to the presence of elephants, adjacent forest patches, and a nearby reserve forest. The proposed activities are not expected to cause irreversible or significant adverse environmental impacts during either the construction or operational phases. The limited impacts associated with this project are primarily related to the construction phase and are temporary. These include:

- Dust and noise pollution
- Tank water pollution due to construction materials
- Occupational health hazards, such as the risk of wildlife attacks during the transport of materials and construction activities.
- Disturbances to local wildlife, including the potential for poaching.

To address these concerns, an **Environmental Management Plan (EMP)** is proposed. This plan will outline appropriate mitigation measures and a monitoring framework to ensure their effective implementation. Regular monitoring throughout the project's construction phase is crucial to avoid or significantly reduce these potential impacts.

Name: Maheeni Samarakoon Singappuli
Title: Senior Environmental Specialist
Signature:



Date:

4. Environmental Management Plan

Table 3: Environmental Management Plan for proposed works at Pnagama Tank

No	Potential Environmental Impacts	Key project activities causing the impacts	Mitigation Measures proposed and action to be implemented by the Contractor	Mitigation Cost	Implementation	Compliance Monitoring
1	**Over extraction of natural resources**	**Material Sourcing**	1.1 The contractor is required to ensure that sand, aggregates and other quarry material is sourced[5] from licensed sources or the instructions given by the tank ownership (The Department of Agrarian Services). The contractor is required to maintain the necessary licenses and environmental clearances for all burrow and quarry material they are sourcing – including soil, fine aggregate and coarse aggregate. 1.2. Purchasing of any material which are sourced from protected areas and/or designated natural areas are strictly prohibited. 1.3. If the contractor uses a non-commercial burrow/quarry sites, the sites should be remediated accordingly once material sourcing has been	Engineering Cost	Contractor	DAD

[5] **The BOQ submitted by the DAD (Department of Agrarian Development) includes a cost for 2, 325.00 m^3 of soil at a rate of Rs. 903.00 per cubic meter. Therefore, no soil will be borrowed from either the tank bed or the surrounding area for any soil requirements under this contract.**

			completed. Prior approval shall be taken from the Engineer – DAD. 1.4. When there is a requirement, The contractor must submit in writing all relevant numbers and details of prerequisite licenses and their current status to the DAD[6] and/or the PMU[7]. 1.5. To prevent accidents, borrow pits must be finished with slanted edges. This will reduce the danger to both humans and animals.			
2	**Ecological concerns such as;** **Elephant herds that are roaming around for food, shelter and water.** **Rremoval of a tree.** **Damage to fauna, their habitats, and vegetation cover.** **Disturbance to wild fauna.** **Illegal activities such as wildlife poaching.**	**Material Sourcing.** **Material transport.** **Construction works.**	2.1. Given that the work area is in a highly vulnerable **Human-Elephant Conflict (HEC)** zone, the following mitigatory measures must be implemented to ensure the safety of both project workers and elephants. 2.2. **Consultation:** The Department of Wildlife Conservation (DWC) regional office must be consulted before starting any work. This includes sharing the project's scope, location, and timeline. 2.3. **Work Schedule:** The work schedule must be planned and strictly followed based on the DWC's instructions.	Engineering Cost	Contractor Farmer organization DAD	PMU

[6] Department of Architectural Development

[7] Project Management Unit

			2.4. **Time Restrictions:** Work activities are restricted to between **9:00 AM and 4:00 PM** to avoid the peak hours of elephant movement, which typically occur at dusk and dawn. 2.5. **Elephant Sentinel:** A dedicated **elephant sentinel** (or lookout person) with local knowledge of elephant behavior and movement patterns must be hired. This person's sole responsibility is to monitor for approaching elephants and alert the workers. 2.6. **Early Warning System:** The sentinel should be equipped with a communication device (e.g., a horn, whistle, or mobile phone) to provide a clear and immediate warning to all on-site personnel. 2.7. **Emergency Supplies:** A supply of **firecrackers** should be obtained from the DWC regional office under the recommendation of the Department of Agricultural Development (DAD). These are to be used only in **emergency situations** to deter elephants and should be deployed by trained personnel. 2.8. **Temporary Electric Fencing:** If recommended by the DWC, a temporary electric fence shall be			

			erected around the immediate work area. The fence must be clearly marked and powered by a low-voltage unit designed for wildlife deterrence. 2.9. **No Harm Principle:** Under no circumstances shall any elephant be harmed, injured, or killed as a result of project activities. All personnel must be briefed on this non-negotiable principle. 2.10. **Waste Management:** All food waste and other attractants must not be stored on the site. Any food waste regularly removed from the site to prevent elephants from being drawn to the area. 2.11. **Indigenous Knowledge:** The contractor must actively seek and incorporate the indigenous knowledge of local villagers and farmers regarding elephant movements, seasonal migration paths, and behavioral patterns to enhance safety and effectiveness of mitigation measures. 2.12. Only one tree is identified to remove for rehabilitation works of tank bund. The following steps are to be followed for removal. 2.13. The tree shall be removed from			

			the construction sites before commencement of construction. 2.14. Compensatory plantation by way of Re-plantation of at least twice the number of trees cut should be carried out in the project area. 2.15. Replanted plants shall be monitored and look after by the farmer organization. 2.16. The cutting or pruning of other larger trees along the tank bund and adjacent areas shall not be done. 2.17. Anthills with live colonies may be relocated as appropriate without destroying them. 2.18. No one shall access to the adjacent forest patch nearby the spill. Harming, collecting, poaching or shooting any species of wildlife is strictly prohibited. 2.19. No any mode of fire, cigarettes shall be taken into the worksite without permission of the DAD officials. 2.20. Cooking shall not be allowed on the site. 2.21. No one shall remain on the site after working hours. 2.22. No worker shall allow walking along the tank bund or along the access road alone. Only group			

			transport shall be provided to the entire workforce. 2.23. Speed limits[8] and operating times mentioned above for the construction/material transport vehicles should be imposed. 2.24. Due consideration should be given to carefully clearing of vegetation avoiding destruction of habitats of fauna. 2.25. The contractor will take reasonable precaution to prevent workmen or any other persons from removing and damaging any flora (plant/vegetation) and fauna (animal) including fishing in the tank and hunting of any animal. 2.26. If any wild animal is found near the construction site at any point of time, the contractor will immediately upon discovery thereof acquaint the DAD officer or Engineer and carry out the officer's instructions for dealing with the same. 2.27. The Engineer will report to the nearby Forest Department/Department of Wild Life Conservation (range office or divisional office) and will take			

[8] 10 km per hour along the village roads and tank access road.

			appropriate steps/measures, if required in consultation with them. 2.28. The contractor should ensure animals' access to water is not blocked during construction.			
3.	Pollution concerns. Such as accumulation of solid waste and water quality deterioration.	Setting up of material storage yards. Stock piling of soil, dredged materials. Removal of vegetation. Solid waste from construction staff. Transport of construction material.	3.1. No labour camps shall be allowed under this contract on or around the worksite. 3.2. All heavy equipment and machinery shall be fitted in full compliance with the national and local regulations. 3.3. No machinery, equipment shall be parked on the site. Based on the requirement, such machinery or vehicles will approach the site. 3.4. Vehicles transporting soil, sand and other construction materials shall be covered. Limitations to speeds of such vehicles necessary. 3.5. Regular and proper maintenance of construction vehicles and machinery to avoid air emissions. 3.6. There should be no burning of wastes on site. 3.7. Workforce related solid waste shall be removed from the site on daily basis. 3.8. Any cleared vegetation that needs to be removed to facilitate proposed spill work shall be removed	Engineering Cost	Contractor	DAD PMU

			from the construction sites under the supervision of the DAD before the commencement of proposed interventions in the spill area. Any debris shall not be burnet on the site.			
4.	**Exposing and damaging of physical and cultural resources**	**Site preparatory work**	Upon discovery of physical cultural materials of Archaeological importance during construction work, the following shall be carried out; 4.1. Immediately stop the performing activity. 4.2. With the approval of the resident engineer delineate the discovered site area. 4.3. Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remains, a night guard should be present until the responsible authority takes over. 4.4. Through the responsible officer of DAD, notify the responsible authorities, the Department of Archaeology and local authorities within as soon as possible. 4.5. Submit a brief chance find report under supervision of DAD officer, within a specified time period, with date and time of discovery, location of discovery, description of finding, estimated weight	Engineering Cost	Contractor	DAD PMU

			and dimension of PCR and temporary protection implemented. 4.6. Responsible authorities would be in charge of protecting and preserving the site before deciding on the proper procedures to be followed. 4.7. An evaluation of the finding will be performed by the Department of Archaeology who may decide to either remove the Physical Cultural Resources (PCR) deemed to be of significance, further excavate within a specified distance of the discovery point and conserve on-site, and/or extend/reduce the areas demarcated by the contractor etc. This should ideally take place within about 7 days. 4.8. Construction work could resume only when permission is given from the Department of Archaeology after the decision concerning the safeguard of the heritage is fully executed.			
5.	**Spreading and/or removal of Invasive species**	**Clearing of the tank bed Material transportation**	5.1. *Salvenia* sp. is wide spread almost all over the water surface. During the tank bed clearing removal of *Salvenia* sp. shall be done. 5.2.The first step is to physically remove the Salvinia plant from the tank bed or water column. This can be done using rakes, nets, or specialized aquatic harvesting machinery, (machinery may	Engineering Cost	Contractor	PMU DAD

			needed since large, dense mats of *Salvenia* sp. is present in the tank). 5.3. As the *Salvenia* sp. is removed, it must be immediately placed in a secure location away from the water's edge to prevent any plant parts from falling back into the tank. 5.4. One of the below methodology at its convenient shall be done to destroy harvested Salvinia. • Drying and Desiccation: The removed Salvinia can be spread out on a flat, dry surface and leave to dry completely in the sun. • **Burning:** After the plant material has been thoroughly dried, it can be burned. All burning must be done in accordance with extreme care, not to spread the fire around the vicinity. • Or else, the plant material can be buried in a deep pit at a significant distance from any water source. The material should then be covered with at least several feet of soil. • **Or else,** the removed Salvinia can be bagged in thick, durable plastic bags and transported to a designated landfill or an approved waste disposal facility that can handle			

			invasive plant material. 5.5. Do not let to use compost harvested salvinia spread around the tank area. 5.6. Do not leave the removed plant material in a location where it can be carried by wind or rain back into the tank or to other water bodies. 5.7. All equipment, including rakes, nets, canoes , and machinery, must be thoroughly cleaned and dried after use to prevent the transfer of any plant fragments to other locations. 5.8. Borrow material for tank bund rehabilitation works to be brought from properly identified borrow pits and quarry sites, the sites should be inspected in order to ensure that no any other form of invasive plant species are being carried with the burrow material. As much as possible locate burrow sites within a radius of 10Km to the site 5.9. Washing the vehicles should be conducted periodically to prevent carrying any invasive species 5.10.The site should be inspected periodically to ensure that no new invasive species are established at the site.			
6	**High Noise &**	**Operation of**	6.1. Working time for noise/vibration	Engineering	Contractor	DAD

	Vibration levels that can affect nearby wildlife	**equipment and machinery. Material storage and transport**	generation activities should be restricted and carried out only from 9.00 am to 4.00 pm. 6.2. All equipment and machinery should be operated of noise not to exceed 75 dB (during construction) as practical as possible. Regularly maintenance of all construction vehicles and machinery to meet noise control regulations stipulated by the CEA in 1996 (Gazette Extra Ordinary, No 924/12). Due to urgent or unavoidable reason, if the construction activities happen during the night time, it is necessary to maintain the noise level at below 50 dB. 6.3. Construction equipment and machinery should be maintained in good condition. Contractor shall submit the list of high noise/vibration generating machinery & equipment to the PE for approval.	Cost		
7	**Soil erosion, sedimentation of nearby water bodies and low lying areas**	**Construction work including de-silting, canal bund strengthening Removal of top soil**	7.1. Soil stockpiles and other construction material shall not be placed within the tank bed or banks of the tank, canals or access road area. 7.2. Installing and maintaining erosion and sediment control measures such as silt traps to avoid sediment runoff into tank and nearby lands and paddy fields. 7.3. For any activity related to the construction, excessive clearing of	Engineering Cost	Contractor	DAD

			ground vegetation, removal of trees shall not be done. 7.4. Avoid stockpiling disposed material such as removed earth/clay from the tank bed, spill area and canal rehabilitation works, and any demolished material on the site, and those shall be disposed of appropriately as guided by the DAD. 7.5. All exposed soil areas shall be stabilized and re-vegetated as soon as possible on completion of works to prevent potential future erosion.			
8	**Impaired water quality**	**Spill out of fuels and lubricants from machinery & vehicles.** **Vegetation removal.** **Repair sluice, spill and bund.**	8.1. Avoid stockpiling of earth fill especially during the rainy season unless covered by tarpaulins or plastic sheets 8.2. Prioritize re-use of excess spoils and materials in the construction works. 8.3. Install temporary silt traps or sedimentation basins along the drainage leading to the paddy fields. 8.4. Fuel or lubricants shall not be store anywhere on the site.	Engineering Cost	Contractor	DAD PMU
9	**Solid Waste Disposal**	**Site clearing** **Waste from work force**	9.1 The contractor shall create a list of all types of waste generated from the construction activities and obtain directions from the Local Government Authority (LA - Pradeshiya Sabha), regarding suitable disposal sites for each waste type. 9.2. Reusable waste, such as cement	Engineering Cost	Contractor	DAD

			bags, shall be either resold or reused. 9.3. Any hazardous waste[9] must be handled with special care and according to instructions from the LA. 9.4. The contractor shall document all types and quantities of waste generated, including their removal from the site and their disposal locations, under the supervision of the DAD officer. 9.5. Food waste shall not be discarded into the surrounding environment, as this may attract wildlife and must be removed from the site daily.			

[9] Such wastes are not expected under this contract.