

Rehabilitation of Muththammagama Wewa and Rada Wewa of Andara Wewa Cascade - Kurunagala District

Abstract

Under the financial assistance of the Integrated Rurban Development and Climate Resilience Project (IRDCRP), two minor agrarian tanks—Muththammagama wewa and Rada Wewa—have been proposed for rehabilitation

IRDCRP

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1. Rehabilitation of Muththammagama Wewa and Rada Wewa – Kurunagala District.

Under the financial assistance of the **Integrated Rurban Development and Climate Resilience Project (IRDCRP)**, two minor agrarian tanks—**Muththammagama wewa** and **Rada Wewa**—have been proposed for rehabilitation. These tanks are managed by the **Department of Agrarian Development (DAD)**, Gampola division, and are situated within the **No. 33 Gampola Grama Niladhari Division (GND)** of the Ambanpola Divisional Secretariat (DS) in the Kurunegala District, North Western Province.

These two tanks are components of the **Andarawewa Cascade,** also named as Gampola-Andarawewa cascade. This cascade lies within the **Mi Oya river basin** catchment area. The cascade is anchored by two primary storage structures: **Andara Wewa** and **Gampola Maha Wewa,** which serve as major storage tanks in the cascade and regulate water supply for downstream paddy cultivation.

The ecological and functional stability of this cascade is further supported by a series of interconnected tanks, including Muththammagama wewa, Rada wewa, Kumbuk wewa, Amunukole wewa, Waththe wewa, and Aththikulam wewa.

1.1. Approximate Flow Sequence of the Cascade Tanks:

1. Upstream (Catchment Area): Smaller tanks like *Muththamma wewa* and *Rada wewa* often act as the initial collection points.
2. Middle-Level: Tanks such as *Kumbuk wewa*, *Amunukole wewa*, and *Waththe wewa* receive spill-water and seepage from above.
3. Main Storage (Maha Wewa): Gampola Maha Wewa and Andara Wewa are the anchors of the cascade. They have the largest surface area to ensure water lasts through the Yala (dry) season.
4. Drainage/Terminal: Dunkotiwa wewa and Aththikulam wewa often sit at the lower ends of the chain, collecting drainage water from the upper paddy fields.

As noted, both Muththammagama wewa and Rada Wewa are situated adjacent to a significant forested area/upstream catchment. According to local farmers, this forest is identified as the Gampola Reserved Forest (Savarangala region). Furthermore, the access route leading to Muththammagama Wewa borders the Aliya Vatunu Wewa Reserved Forest (Figure 1).

To ensure regulatory compliance and environmental safeguard adherence, the forest reserves' name should be formally confirmed and the "No Objection Certificate" shall be obtained from

the Forest Department (FD) before any structural or desilting activities commence assuring any construction activity shall not be touched the statutory buffer zones.



Figure 1: A signboard established by the Forest Department along the part of access route to Muthtammagama Wewa.



Figure 2: Forested landscape bordering the upper shoreline of the Muththammagama wewa.

Along the upper periphery of both tanks, there are no human settlements or agricultural lands. However, downstream of both tanks, there are human settlements and agricultural activities, including not only paddy but also other crops and established access roads.



Figure 3: Forest vegetation at the upper periphery of Muththammagama wewa.



Figure 4: Upper periphery of Rada Wewa, illustrating the adjacent forest cover.

The both tanks and their respective upper catchment view are characterized by high aesthetic value and a calm, undisturbed environment.

1.2. Ecological Characteristics of the Tanks

The ecosystems surrounding **Muththammagama wewa** and **Rada Wewa** are classic examples of the Dry Zone tank-cascade landscape. The both tanks is not just a group of "water holes"; it is a living ecosystem with specific zones:



The Kattakaduwa (Interceptor) of the Muththammagama wewa consists of larger trees, mainly including *Madhuca longifolia* (මී) and *Terminalia arjuna (කුඹුක්).* The vegetation belt below the tank bund that filters salt and prevents it from entering the paddy fields.

The upstream tree belts (Gasgommana) of the both tanks consist of large trees (Figure 2, Figure 3, Figure 4, Figure 6, Figure 7, and Figure 8) that break wind speed to reduce evaporation and provide habitats for birds and other forest fauna.

The belt of reeds and grasses at the tank entrance functions as a natural silt trap, filtering mud and sediment while creating diverse habitat niches for various micro-species. This upland area typically contains drought-resistant species such as Palu (*Manilkara hexandra*), Veera (*Drypetes sepiaria*), and Ehala (*Cassia fistula*), which provide seasonal fruits for local wildlife.

Figure 5: The Kattakaduwa area of the Muththammagama wewa consists of larger trees.



Figure 6: The upper periphery of the tank is margin to a forest



The tank beds of the peripheral littoral zones of the both tanks dominated by aquatic macrophytes such as the Blue Water Lily (*Nymphaea nouchali*), Lotus (*Nelumbo nucifera*), and various species of Aponogeton (*Kekatiya*). These plants are crucial for oxygenating the water and providing breeding, spawning, and nursing grounds for native fish species as well as for freshwater molluscan species (Figure 7 and Figure 8).

The tanks support native species like the Snakehead (*Lula*), Walking Catfish (*Magura*), and the introduced Tilapia[1]. Fingerlings of different kinds of fish species can be observed in both tanks.

Given the proximity to agricultural forest patches in Ambanpola, these tanks serve as vital watering holes for wildlife, including Toque Macaques, Grey Langurs, and Wild Boar[2]. During the peak of the dry season, both tanks attract Elephants moving through the Kurunegala migratory corridors. While elephants are observed at both sites, Human-Elephant Conflict (HEC) in this specific area has not reached critical levels.

Figure 7: Shallow littoral zone of Rada Wewa enriched with native aquatic macrophytes, supporting the tank's ecological productivity.

No aquatic invasives presence in the both tanks.

[1] As reported by the farmers.
[2] As reported by the farmers.



Figure 8: The littoral zone of Muththammagama wewa, enriched with a diverse composition of both emergent and submerged aquatic macrophytes.



Figure 9: Roosting and nesting sites for avi fauna

Beyond their irrigation utility, these two tanks function as biodiversity hotspots for both resident and migratory avifauna. The ecosystem supports a wide array of species; frequently observed birds include the Little Cormorant, Grey Heron, Indian Peafowl, Common Kingfisher, Brahminy Kite, Grey-headed Fish Eagle, Yellow-billed Babbler, Asian Paradise Flycatcher, Green Bee-eater, and the Asian Openbill and many more. This mosaic of scrub-type forest patches and mature trees offers essential roosting and breeding habitats for various other bird groups.

Fishing is not practiced in either tank; however, small fingerlings (likely native species) can be observed in the peripheral areas of both.

The tanks provide a habitat for diverse reptile species, such as the Land Monitor (*Thalagoya*), the Water Monitor (*Kabaragoya*), and various dry-zone snakes. Local farmers have also observed several mammalian species around both tanks, including elephants, spotted deer (*Axis axis*), barking deer (*Muntiacus muntjac*), sambar deer (*Rusa unicolor unicolor*), porcupine (*Hystrix indica*), common toque macaque (*Macaca sinica sinica*), grey langur (*Semnopithecus priam*), and black-naped hare (*Lepus nigricollis*).

Elephants frequent the area around both tanks at dusk and occasionally at dawn, primarily to access water. While they sometimes enter home gardens and paddy fields, there have been **no** reports of aggressive human-elephant conflict in the vicinity of either tank.

2. Proposed Works

2.1. Proposed Rehabilitation of Muthtammagama Wewa

The proposed interventions for Muthtammagama Wewa, as detailed in Table 2, include the stabilization of the tank bund, repair of the CO-type spillway, and rehabilitation of the RB and LB canals. Further works involve removing of aquatic plants approximately 3.5 ha of the tank bed, repairing the bathing steps, and rehabilitating the approach road. Structural additions include the construction of a hume pipe culverts, farm turnouts, end regulators, and farm crossings.

Table 1: Rehabilitation works of Muththammagama Wewa, Kurunegala[3]

No.	Description of the Works	Unit	Qty
Head Works Development			
01	**Improvement of Tank Bund**		
	1.1 Light jungle clearing along the Tank bund & reservation with spill area by machinery.	ha	0.66
	1.2 Stripping off soil, receiving new earth, and removing spoil outside the reservoir 30 m by machinery.	m^3	365.0
	1.3 Felling and uprooting trees and disposed as directed.	Nos	1.00
	1.4 Felling and uprooting trees and disposed as directed	Nos	1.00
	1.5 Removal of ant hills, including application of anti-termites and back-filling with suitable soil, placing and compaction in forming bund, including watering. termite nests and application of insecticides, refilling with selected earth.	Nos m^3	10.00 198.00
	1.6 Benching on the tank bund slopes	m^2	4,750.0
	1.7 Stripping topsoil in the borrow area	m^2	
	1.8 Cutting, laying, and pegging of turf as directed	m^3	1560.0
	1.9 Supplying good-quality gravel		203.00
02	**Repair of CO type spill (18.50 m Long)**		
	2.1 Earth excavation for blanket wall & part back filling (manually)	m^3	4.50
03	**Construction of Head wall sluices 225 mm Ø for Left Bank**		
	3.1 Demolishing existing damaged Sluice	m^3	36.00
	3.2 Cut opening the Bund, stockpiling soil at the site, backfilling	m^3	4.50
	3.3 Earth excavation for blanket wall & part back filling (manually)		
04	**Construction of a bathing spot**	m^3	6.00
	4.1 Earth excavation for blanket wall & part back filling (manually)		
05	**Clearing Tank Bed[4]**	ha	3.50

[3] Proposed activities as per the BoQ submitted by the DAD

[4] According to the District Technical Officer (DAD - Kurunegala), the activity No. 05 – "Clearing of the tank bed" is designed solely to clear the tank bed by removing aquatic plants and their roots. None of the plants are recognized as invasive. There is no intention to increase the tank or enhance its water retention capacity.

	5.1 Desilting of scraping l50mm thick layer of vegetation, inclusive of water plants, uprooting roots from the tank bed by machinery, spoil to be as directed		
06	**Feeder canal construction**[5]		
	6.1 Light jungle clearing along the tank bund & reservation with spill area by machinery	Ha	0.120
	6.2 Cutting the canal by an excavator and depositing earth beside	m^3	108.00
Downstream Development			
07	**Rehabilitation of Irrigation canals -LB and Main canal**		
	7.1 Clearing & stripping off top soil to a depth of 75 to 150 mm along the canal trace	m^3	355.00
	7.2 Stripping topsoil in the borrow area	m^3	1580.00
	7.3 Cutting, laying, and pegging of turf as directed	m^2	1480.00
08	**Construction of Canal Concrete Lining- LB, RB, & Main canal**		
	8.1 Excavation for concrete bracket lining in supply canal (Manually)	m^3	15.20
09	**Construction of Hume pipe culvert 300mm Ø , for Tractor crossing .2 Nos**		
	9.1 Excavation for concrete bracket lining in supply canal (Manually)	m^3	3.00
	9.2 Supplying good-quality gravel	m^3	10.80
10	**Construction of 9 Nos. farm Turnouts**		
	10.1 Earth excavation in the foundation and backfilling (manually)	m^3	6.50
11	**Construction of End Regulator 2 Nos**		
	11.1 Earth excavation for foundation & part back filling (manually)	m^3	0.9
12	**Construction of Over Crossing**		
	12.1 Earth excavation for foundation & part back-filling (manually)	m^3	6.00

However, these aquatic plants provide immense support to improve the water quality and biodiversity, I recommend that this activity not be implemented or funded under the IRDCRP. This recommendation is subject to technical verification and guidance by the designated Engineer from either the IRDCRP or the DAD.
If this activity is mandatory, the project will incur significant additional costs associated with the relocation of fauna.

[5] The term 'feeder canal' appears to be a misnomer in the above table. Although the tank spill is located near the Right Bank (RB) canal, there is currently no functional spill tail canal; it may be silted, overgrown, or was never constructed. Consequently, during high-intensity rainfall (such as 'Dithva' event), spill water drains to the forest directly and then drain into the RB canal. This causes damage to the RB canal dikes and downstream structures, ultimately preventing water from reaching a portion of the paddy field. Therefore, the proposed 'feeder canal' should be correctly identified as a 'spill tail canal.' A major concern is that the proposed pathway traverses the forest area (most probably the Gampola reserved forest), making it difficult to obtain the necessary clearances from the Forest Department.
I recommend precure the civil works except the Activity No. 05 - Clearing the tank bed and Activity No.06 – Feeder canal construction under the Muththammagama Wewa.

13	**Rehabilitation of the approach Road**		
	13.1 Light jungle clearing along by machinery	ha	0.040
	13.2 Excavation of Side Drain	m^3	54.00
	13.3 Stripping topsoil in the borrow area.	m	126.00
	13.4 Supplying good-quality gravel	m^2	75.00
14	**Miscellaneous**		
	14.1 Re-planting, suitable plants for "Kattakaduwa" Reservation	No.	100.00



Figure 10: Current condition of the Muthtammagama Wewa tank bund. The spillway is located at the distal end of the bund shown in the image.

As illustrated in Figure 10, the tank bund requires minimal clearing of surface vegetation. However, two small trees identified on the embankment (Figure 11) will be removed to maintain structural integrity, with compensatory replanting to be conducted within the **Kattakaduwa** (interceptor zone). Additionally, several termite mounds located along the bund will be leveled or be relocated. Figure 11 depicts the two trees proposed for removal during the rehabilitation works; one of them is already dead. Both DBH are less than 8 inches.



Figure 11: The two trees that proposed to remove from the Muththammagama Wewa

2.2. Proposed rehabilitation works of the Rada Wewa.

Table 2:Proposed Rehabilitation Works at Rada Wewa[6]

	Description of the Works	Unit	Qty
Head Works Development			
01	**Improvement of Tank Bund**		
	1.10 Light jungle clearing along the Tank bund & reservation with spill area by machinery.	ha	0.480
	1.11 Stripping off soil, receiving new earth, and removing spoil outside the reservoir 30 m by machinery.	m^3	231.00
	1.12 Felling and uprooting trees and disposed as directed.	Nos	4.00
	1.13 Removal of ant hills, including application of anti-termites and back-filling with suitable soil, placing and compaction in forming bund, including watering. termite nests and application of insecticides, refilling with selected earth.	Nos m^3	9.00 120.00
	1.14 Benching on the tank bund slopes	m^3	1,750.00
	1.15 Stripping topsoil in the borrow area	m^2	1125.00
	1.16 Cutting, laying, and pegging of turf as directed	m^3	145.00
	1.17 Supplying good-quality gravel		
02	**Repair of CO type spill (18.50 m Long)**		
	2.1 Earth excavation for blanket wall & part back filling (manually)	m^3	1.20

[6] Proposed activities as per the BoQ submitted by the DAD

03	**Repairing of Head wall sluice 225 mm Ø for Left Bank** 3.1 Demolishing existing damaged Sluice		
04	**Construction of a bathing spot** 4.1 Earth excavation for blanket wall & part back filling (manually)	 m^3	 6.00
05	**Construction of Head wall sluices 225 mm Ø for Right Bank** 5.1 Cut opening the Bund, stockpiling soil at the site 5.2 Earth excavation for blanket wall & part backfilling (manually) 5.3 Earth works, using borrow puddle clay to construct a puddle clay wall, including watering and compaction	 m^3 m^3 m^3	 35.50 5.0 10.80
06	**Clearing of the Tank Bed**[7] 6.1 Desilting of scraping l50mm thick layer of vegetation, inclusive of water plants, uprooting roots from the tank bed by machinery, spoil to be as directed.	 ha	 3.50
07	**Feeder canal construction** 7.1 Light jungle clearing along the Tank bund & reservation with spill area by machinery 7.2 Cutting the canal by an excavator and depositing earth beside	 Ha m^3	 0.120 108.00
Downstream Development			
08	**Rehabilitation of Irrigation canals -LB and Main Canal** 8.1 Clearing & stripping off top soil to a depth of 75 to 150 mm along the canal trace 8.2 Stripping topsoil in the borrow area 8.3 Cutting, laying, and pegging of turf as directed	 m^3 m^3 m^2	 240.00 1065.00 1000.00
09	**Construction of Canal Concrete Lining- LB, RB, & Main canal** 9.1 Excavation for concrete bracket lining in supply canal (manually)	 m^3	 16.00
10	**Construction of Hume pipe culvert 300mm Ø, for Tractor crossing .2 Nos** 10.1 Excavation for concrete bracket lining in supply canal (Manually) 10.2 Supplying good-quality gravel	 m^3 m^3	 2.50 8.00
11	**Construction of 6 Nos. farm Turnouts** 11.1 Earth excavation in the foundation and backfilling (manually)	 m^3	 4.50

[7] According to the District Technical Officer (DAD - Kurunegala), activity No 06 is designed to clear the tank bed by removing aquatic plants and their roots. But there is no intention to increase the storage of the tank or enhance its water retention capacity. However, these aquatic plants are vital for trapping silt, preventing erosion near the tank bund, filtering chemicals to prevent water pollution, lowering water temperatures to reduce evaporation, and protecting fingerlings. Overall, they provide immense support to the local biodiversity. Hence, I recommend that this activity not be implemented or funded under the IRDCRP. This recommendation is subject to technical verification and guidance by the designated Engineer from either the IRDCRP or the DAD. If this activity is mandatory, the project will incur significant additional costs associated with the relocation of fauna.

12	**Construction of End Regulator 2 Nos** 12.1 Earth excavation for foundation & part back filling (manually)	 m^3	 1.50
13	**Miscellaneous** 13.1 Re-planting, suitable plants for "Kattakaduwa" Reservation 13.2. Fixing land marks boundary stones (as given in the drawing) in downstream of the tank bund reservation.	 No. No.	 100[8] 8



Figure 12: Current condition of the Rada Wewa tank bund; the neem tree shown in the photograph is proposed for removal

Figure 12 illustrates the existing conditions of the Rada Wewa embankment and its associated Kattakaduwa (interceptor zone). The Kattakaduwa may be encroached by paddy fields, but in some areas, it is 2-3 m wide.

The vegetation along the bund is minimal; however, four mature Neem trees (*Azadirachta indica*) have been identified for removal (Figure 13 illustrates the two of it, Figure 14 illustrates two). The DAD recommends their extraction on the grounds of long-term structural risk, as the decay of large root systems in aging Neem trees can lead to piping and internal erosion within the embankment.

To mitigate the removal of the four Neem trees identified on the bund, compensatory replanting shall be done within the Kattakaduwa using *Terminalia arjuna* (Kumbuk), *Madhuca longifolia* as recommended by the DAD

[8] Activity No: 13. The available land area in Kattakaduwa appears insufficient to accommodate the target of 100 plantings.

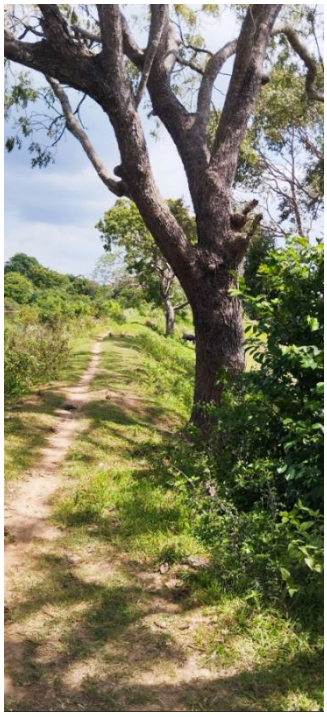

Figure 13: Two neem tress along the tank bund that proposed to remove.

Furthermore, the Kattakaduwa has narrowed to a width of approximately 1 meter, consisting of a sparse strip of mature trees that requires restoration. In specific locations, mature timber species are present, including *Terminalia arjuna* (Kumbuk), *Madhuca longifolia* (Mee), and *Azadirachta indica* (Neem).



Figure 14: In some locations of the the Kattakaduwa of Rada Wewa remains broad, characterized by mature canopy cover and sufficient land area for compensatory replanting.



Figure 15: Plastic and Polythene, are left at the bathing steps of the tank.

Distinct from other surveyed tanks, accumulations of anthropogenic waste—specifically plastic and polythene packaging from toiletries—were observed around the bathing steps. Notably, high densities of fingerlings belonging to indigenous fish species were also observed in the water column of the bathing steps.



Figure 16: Rada Wewa's water is remarkably clear, possibly as a result of the surrounding forest catchment and peripheral aquatic vegetation.

The local population uses Rada Wewa for bathing, likely drawn by its clear and unpolluted water. Because the tank is adjacent to a forest catchment, the trees act as a natural filter while aquatic plants stabilize the sediment, preventing turbidity. However, it is concerning to observe discarded toiletries left behind. This pollution must be addressed to preserve the ecosystem.

3. Impact Matrix Code

Table 3: Impact Matrix Code

Risk Level	Nature of Assessment/Impact Based Criteria	Mitigation Based Criteria
High Risk	The subproject will be classified as 'High risk' if: The sub project is expected to cause significant, severe, long-lasting, or permanent damages on the natural, physical or social environment, cannot be mitigated or; ○ Sub-projects that involve significant conversion or degradation of critical natural habitats such as sensitive ecosystems (e.g., wetlands, primary forests, protected areas). ○ The effects extend beyond the project site, potentially impacting entire regions or even neighbouring provinces. ○ The risks of the sub project are novel, complex, or the project involves specialized or hazardous processes that are difficult to manage. ○ Sub projects involving large-scale use of hazardous materials, significant air emissions, or large volumes of untreated industrial waste. ○ Sub projects that significantly alter major hydrological systems, such as large dams or barrages, which can affect river flow, aquatic biodiversity, and downstream communities. ○ Sub projects requiring the physical displacement or economic displacement (loss of land, assets, or access to resources) of a large number of people. ○ Sub projects impact on Indigenous Peoples/Vulnerable Groups ○ Sub projects that negatively affect the land, natural resources, culture, or livelihoods of Indigenous Peoples or other significantly vulnerable populations, often requiring Free, Prior, and Informed Consent (FPIC). ○ Major construction activities or infrastructure that poses severe risks to the health, safety, and security of surrounding communities (e.g., large-scale labor influx, major traffic hazards, or structural risks). ○ Destruction or significant damage to nationally or internationally recognized physical cultural resources or heritage sites.	Mitigation necessitates meticulous planning and the implementation of high-tech, costly design solutions. Even with such measures, residual effects are likely to persist.
Substantial Risk	The Subproject will be classified as a substantial risk intervention if it will directly lead to the following; ○ Activities that could lead to invasion or spread of weeds and feral animals or the use of toxic chemicals, intensive use of pesticides.	Mitigation is feasible and effective, requiring only moderate design-based and/or

	○ Activities that could dangerously lead to the exposure of sensitive/critical/vulnerable habitats. ○ Construction of large new infrastructure within or directly adjacent (in buffer zones) to protected areas. ○ Illegal Activities as defined specifically under the Forest Ordinance and Fauna and Flora Protection Ordinance. ○ Subprojects, those involve collection of seeds/farming materials from the wild. ○ Sub-projects that may impose changes in land use that restrict access to resources in legally designated parks or protected areas or other common property resources on which local people may depend for livelihood purposes. In addition, as per the screening the subproject will have a majority of large-scale E&S impacts that will cause irreversible damage to the environment and communities.	operational planning. Residual effects are expected to be nil, minor, or temporary in nature.
Moderate Risk	The subproject will be classified as 'Moderate risk' if: ○ The subproject will have a majority of reversible, small-medium scale E&S impacts, specifically limited to the civil works phase of the project that can be managed by site specific mitigation measures. ○ Require minor land acquisition or restrictions on land use, as a result of which there will be no significant impact on incomes or livelihoods. ○ Subprojects requiring adoption of Abbreviated Resettlement Action Plan (ARAP), Environmental and Social Management Plans (ESMPs) and or E&S Assessment and require further screening in line with the detailed technical designs of the respective subproject.	Mitigation is straightforward and low-cost, and it is expected to fully address the impact. No residual impacts shall remain.
Low Risk	A subproject will be classified as 'Low risk,' if: ○ The Subproject has low-negligible E&S impacts that can be managed via mitigatory codes of practice that will be defined as part of the contractual agreement/memorandums of understanding with project implementing contractors or operators. ○ The Subproject does not require any land acquisition or lead to any impact on incomes or livelihoods. ○ The Sub-project does not require formal E&S assessment, nor preparation of ESMPs and do not have identifiable negative E&S impacts.	No mitigation required or minimal preventive measures sufficient within O & M.

4. Environmental Screening

Table 4: Environmental Screening for the two tanks (Muththammagama Wewa and Rada Wewa) of Gampola/Andara Wewa Cascade

No	Screening Questions	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) **1.1.** Construction of new physical infrastructure (e.g., buildings, roads, anicuts, canals, sluice gates, pipelines *etc.*). **1.2.** Rehabilitation, expansion, or upgrade of existing physical infrastructure. **1.3.** 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	**Yes**	**Substantial Risk**	The rehabilitation of the headworks— including restoration of the tank bund—is proposed for the two tanks. Additionally, downstream works for these tanks will include canal rehabilitation, the construction of end regulators, and the installation of farm turnouts. 1.1. No new **infrastructure is** proposed for either tank, with the exception of small downstream structures such as farm turnouts, culverts, tractor crossings, and end regulators. 1.2. Yes. Rehabilitation of headworks and downstream works are proposed as described in the Table 1, and Table 2. 1.3.. NO. (Neither the tank bund height nor the spillway height will be raised). 1.4. An activity "Desilting of scraping l50mm thick layer of vegetation, inclusive of water plants, uprooting roots from the tank bed by machinery, spoil to be as directed." Is proposed by the DAD for both tanks. However, as explained by the DAD TO this activity is aiming to remove the non-invasive aquatic vegetation from the peripheral areas of the both tanks. This need to be discuss and remove from the list.

No	Screening Questions	Yes/No	Scale of Impact	Remarks
	existing spill?) that could lead to the inundation of new areas within the catchment? **1.4.** Dredging of the tank bed and the subsequent disposal of dredged materials? **1.5.** If yes, will the dredged material be disposed of on-site or off-site?? **1.6.** Solid waste management:			1.6 Residuals from removed scrub/throne jungles solid waste derived from the workforce, etc., may need to be disposed of. Additional solid waste accumulated around the tank must also be removed. Most importantly, the tank bund and immediate down stream of it have infested with number of invasive plants, clearing, cutting ad removing of them to be done with extra care.
2	Will any of the planned improvements necessitate an 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.	**No**		The construction work is scheduled to be carried out during the inter-seasonal period, avoiding the *Maha* season. Normally no considerable amount of water remains in both tanks after the maha season.
3	If the water level will be artificially drawn down, please assess the potential impacts on: **3.1. Surface Water:** Will the draw down alter water flows in nearby streams, rivers, or canals, particularly during the dry season?	**3.1. No** **3.2. No**	--	**3.1**. Tank water shall not be **purposely drawn down** for the proposed civil works. Rehabilitation of the headworks will occur only after the cultivation season; during this period, water levels are naturally low, and intentional lowering will not be required. **3.2**. No groundwater sources, such as dug wells, were identified within a one-kilometer radius of the Muthtammagama tank.

No	Screening Questions	Yes/No	Scale of Impact	Remarks
	3.2. Groundwater: Will the draw down affect the groundwater table or flow in local wells, especially during the dry season? **3.3. 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? **3.4**. 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).	**3.3. Yes**		Rada Wewa is primarily surrounded by paddy fields and forest, with only one-fifth of the area occupied by roads and human settlements. While residents in the vicinity depend mainly on pipe-borne water, the tank is also used by villagers for bathing when water levels are sufficient. **3.3**. While an intentional drawdown is not planned, the proposed desilting and clearing of the tank bed will negatively affect the tank and its surrounding ecology. Muthtammagama Tank: No invasive aquatic species were observed within the tank. However, the tank bed—particularly the peripheral areas—is heavily vegetated with native aquatic plants, providing diverse habitats for various species. Desilting activities would likely devastate this living environment. Rada Wewa: No invasive aquatic species were observed within the water column. However, the peripheral areas are densely covered with aquatic vegetation, which serves as a habitat for numerous fingerlings and likely supports a variety of other aquatic fauna.
4	Will the project cause localized flooding and/or poor drainage during construction?	**No**	--	No such an impact is expected, as nearly all activities will be conducted during the off-cultivation season when rainfall is low and tank water levels are at their minimum.
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 physical interventions for the two tanks focus primarily on the rehabilitation of existing hydrological structures and processes. Consequently, no significant changes to topographical parameters or land use patterns are expected. New downstream activities—including the construction of tractor crossings, farm turnouts, and end regulators—involve minimal earthworks across the paddy fields.

No	Screening Questions	Yes/No	Scale of Impact	Remarks
				Therefore, these interventions will not alter the topography, land use, or existing water bodies.
6	Will construction of the project cause soil erosion within the site due to steep grade or soil content?	**No**	--	The tank bund rehabilitation and spill canal construction are being proposed, there is a risk of soil erosion in specific locations, especially along the tank bund, if the civil works occur during the rainy season. However, once construction is completed, soil conservation will be improved.
7	Will the Project release pollutants or any hazardous, toxic or noxious substances to **7.1.** Air? **7.2**. Nearby surface or groundwater sources? **7.3**. Soil?	**7.1 Yes** **7.2. No** **7.3 No**	Low Risk	7.1. The project will generate minor, localized emissions from construction machinery and vehicle exhaust, causing a brief deterioration in ambient air quality. Given the limited scope and duration of work, the overall impact on air quality is considered negligible.
8	Will the proposed activities cause **8.1**. Noise? **8.2**. Vibration? **8.3**. dust emission? **8.4.** Release of light? **8.5**. Heat energy? **8.6**. Electromagnetic radiation?	**8.1.** Yes **8.2**. Yes **8.3**. Yes **8.4.** No **8.5**. No **8.6**. No	Low Risk	i. Muththammagama Wewa: Human settlements are located within one kilometer of the site; however, they are not densely populated, with houses spaced more than 200 meters apart ii. A public road and human settlements border one side of the Rada Wewa tank.

No	Screening Questions	Yes/No	Scale of Impact	Remarks
				
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**	**Substantial Risk**	iii. Muththammagama Wewa: Upper periphery and the spill area is covered by a thick forest most probably a Gampola FR. iv. Rada Wewa: A forest is margined to the upper periphery of the tank. The name of the forest and its legal status yet to be confirmed with the Forest Department. Neither wildlife protected areas nor archaeological protected areas are located within the project impact zone.
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	**Yes**	**Low Risk**	While a comprehensive ecological assessment has not been conducted for the three tanks and its surroundings, the habitat—comprising a mosaic of paddy fields, water bodies, scrub forest patches, and agricultural lands—suggests a high probability of diverse wildlife, including protected species such as elephants. These habitats likely serve as critical water sources.

No	Screening Questions	Yes/No	Scale of Impact	Remarks
	for breeding, migration routes, *etc.).*"			
11	Will the proposed project activities cause negative effects on wildlife habitats, populations, corridors or movement?	**yes**	**Low Risk**	Based on the preliminary environmental screening, direct negative impacts on wildlife populations and habitats are not anticipated. The rehabilitation activities are strictly focused on pre-existing small infrastructure, meaning no significant habitat fragmentation or destruction is foreseen. However, indirect disturbances are highly likely during the movement of machinery and vehicles, even during the daytime. Specifically, the movements can disturb ground-dwelling birds, reptiles, their nests, and associated habitats.
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**	**Low Risk**	While there are no forested areas within the immediate project footprint, the surrounding tank environment consists of forests. Site operations must account for the risk of **illegal poaching** and unauthorized wildlife interference during construction.
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**	**Low Risk**	i. Muththammagama Tank: 2, one already dead, and another smaller neem tree will be removed. ii: Rada Wewa: Four neem trees are proposed to fell Compensation planting shall be done as guided in the ESMP
15	Are there any areas or features of high landscape or scenic value on or around the location which	**Yes**	**Low Risk**	The project site is situated on relatively flat terrain, making it visually prominent to the surrounding area. During the construction phase, the aesthetics of the landscape may be affected by visual intrusions such as

No	Screening Questions	Yes/No	Scale of Impact	Remarks
	could be affected by construction activity?			stockpiled materials, heavy machinery, and dust emissions. However, these impacts are considered minor and temporary, as the site will be restored upon project completion.
16	Any invasive fauna or flora presents in the tank or surrounding area?	**Yes**	**Substantial Risk**	No aquatic invasive plants were found in b. Terrestrial Plants: • Lantana (*Lantana camara*) • *Chromolaena odorata*

5. Screening Decision and Recommendation

The two tanks belong to the same cascade and the tanks are located with 2-3 km radius together with few other tanks that belongs to the same cascade. The surrounding environment is mainly consisting of forests, paddy fields, human settlements, and shrub forest patches. The upper periphery of both tanks bordered to a forest, most probably a Gampola reserved forest.

Regarding the activity 'desilting/scraping a 150 mm thick layer of vegetation... from the tank bed'[9] for both tanks, we recommend this task be reconsidered or omitted. This intervention targets native emergent and submerged aquatic vegetation along the tank's periphery, which currently provides vital ecological services. These plants are essential for maintaining water quality and reducing the turbidity of catchment runoff entering the tank. Furthermore, they provide critical habitats, and their removal does not address any specific hydrological or structural deficiency. Since this activity offers limited hydraulic benefit while posing a significant risk to the ecological balance, I recommend its removal from the scope of work.
All the other proposed interventions for both tanks follow standard construction practices for small-scale irrigation rehabilitation and renovation. Any potential negative impacts are considered insignificant, as they are localized, short-term, and reversible. The limited potential impacts identified are associated primarily with the construction phase and are grouped as follows:

1. Occupational Health and Safety (OHS): Occupational health hazards, particularly the risk of wildlife attacks (e.g., snake bites) during material transport and construction activities.
2. Wildlife Disturbance: Disturbances to local fauna, including the potential for poaching.
3. Biological Invasion: The risk of spreading invasive terrestrial plant species.
4. Accumulation and disposal of solid waste due to proposed activities.
5. Air and Noise Pollution: Impacts related to dust, noise, and vibration.
6. Extraction of natural resources
7. Exposing and damaging physical and cultural resources
8. Soil erosion, sedimentation of nearby water bodies, and paddy fields.
9.

✅ Environmental Management and Mitigation

The contractor shall appoint a fulltime dedicated officer for envrionemntresponsible for carrying out the **EMP**[10]. The best practices listed in the **EMP**[11] must be followed as closely as possible. Provided mitigation measures are fully implemented, the proposed project can proceed.

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Title: Senior Environmental Specialist
Date: 09.02.2025

[9] As mentioned in the DAD BoQ. Although the 'tank bed' is mentioned, these plants that belongs to many species inhabit only the **peripheral littoral zones** and are not found in the deeper central areas of the tank.
[10] Environmental and Social Management Plan

[11] Social management Plan

6. Environmental Management Plan (EMP)

Table 5: EMP for Planning and Pre-construction stage of the Muthammagama Wewa, and Rada Wewa.

No	Potential Environmental, Administrative, and Legislative Compliance/ Impacts	Key project activities/reasons causing the impacts	Mitigation Measures proposed and action to be implemented by the Contractor	Mitigation Cost	Implementation	Compliance Monitoring
1.	The removal of none invasive aquatic plants inhabit in both tanks along the tank periphery, will result in several adverse impacts: the tank will receive unfiltered, turbid surface runoff from the forest, leading to increased sedimentation and water turbidity. In the absence of these natural filtering and settling agents, water quality will decline, and critical habitats for various species—including aquatic and semi-aquatic fauna at various life stages—will be lost	desilting/scraping a 150 mm thick layer of vegetation from the tank bed	This activity shall be revisited and either **removed or amended** under the **direct supervision** of the PMU Water Management Specialist.	--	DAD	PMU
2.	Clearence/No objection from the Forest Department	Both tanks' catchments consist of forests	Clerence. No objection for the FD shall be obtained before awarding the contract/or any physical implementation of the work under both tanks.	--	DAD & PMU	WB

Table 6: Environmental Management Plan (EMP) for construction and operation stages of the Muthammagama Wewa, and Rada Wewa

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	Occupational Health and Safety: Risks to workers, particularly the potential for wildlife attacks during material transport, site access, and construction activities.	**During the site access** **Material transport** **During the work**	Given that the work area is in a sensitive zone, the following mitigatory measures shall be implemented to ensure the safety of wildlife as well as project workers. 1.1. Environment, Occupational Health and Safety Officer (EOHS Officer) shall be employed by the contractor covering the both tank works. He or she will be responsible for the daily implementation of EMP and SMP[12] (ESMP[13]). 1.2. Work activities are restricted to between **8:00 AM and 5:00 PM** to avoid the peak hours of elephant and other wildlife movement, which typically occur at dusk and dawn. 1.3. Elephant Sentinel: A dedicated elephant sentinel (or lookout person) with local knowledge of elephant behaviour and movement patterns must be hired. This person's sole responsibility is to monitor for approaching elephants and alert the	Engineering cost	Contractor DAD	PMU

[12] Social Management Plan
[13] Environment and Social Management Plan

			workers. 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. 1.4. 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. 1.5. Under no circumstances shall any elephant or any other faunal species be harmed, injured, or killed as a result of project activities. All personnel must be briefed on this non-negotiable principle. 1.6. All food waste and other attractants must not be stored on the site. Any food waste is regularly removed from the site to prevent elephants from being drawn to the area. 1.7. No one shall have access to the adjacent forest areas. Harming, collecting, poaching or shooting any species of wildlife is strictly prohibited. 1.8. No mode of fire, cigarettes shall be taken into the worksite without permission from the DAD officials. 1.9. Cooking shall not be allowed on the site. However, Cooking shall not be allowed on the site for the workforce. However, if it is essential to make tea/coffee on site, the following procedure shall be followed.			

			○ Select a location on bare soil, rock, or gravel, away from overhanging branches, dry grass, or fallen leaves. ○ Create a fire buffer zone by clearing all flammable material (leaves, dry grass, twigs, *etc*.) down to the soil in a circle at least 10 feet (3 meters) in diameter around the fire site. Lay a ground cloth or large piece of foil/rock to protect the ground, then spread a layer of mineral soil, sand, or gravel at least 3-5 inches thick on top. Build the fire on this mound. The fire should be kept small to boil the required amount of water. ○ No kerosene, diesel, or petrol is used to ignite the fire. Use only dead and downed wood that can be easily broken by hand. Never cut wood from standing trees (dead or alive). Gather wood from a wide area to minimize impact or bring it from outside. Keep extra firewood and flammable items well away from the fire buffer zone. ○ Keep a bucket of water (or a large pot of water) and a shovel nearby at all times to quickly extinguish any embers or spreading flames. ○ Never leave the fire unattended, even for a moment. A responsible person must be responsible for supervising the fire until it is completely out. Finally, allow the fire to burn down to fine white ash and small embers. Pour lots of water onto the fire, ensuring all embers, coals, and wood fragments are thoroughly soaked. Do NOT use dirt to put out the fire, as it can smother the flames but insulate hot coals, allowing them to reignite later. Use a stick or shovel to stir the ashes and coals to ensure the water reaches			

			the centre and bottom layers. Drown and stir repeatedly until the mixture is cool to the touch. (The ashes and pit must be cool to the touch before leave the site in the evening. Once completely cool, scatter the ashes and any unburned wood widely over the prepared area to further minimize impact. 1.10. No one shall remain on the site after working hours. 1.11. No worker shall allow walking beyond the upper periphery of the tank or beyond without permission from the EHS officer. 1.12. Only group transport shall be provided to the entire workforce. 1.13. Speed limits and operating times mentioned above for the construction/material transport vehicles should be imposed. 1.14. Given the dry zone's history with specific health issues (e.g., chronic kidney disease of Unknown Etiology - CKDu), ensure that drinking water sources are safe and certified as potable, separate from the tank water, and not from potentially contaminated local wells. 1.15. Clean food shall be provided for the workers at all times. 1.17. Implement measures to prevent heat stroke and dehydration during the hot sunny days. o Mandatory provision of safe, clean drinking water (potable water) accessible at all times as mentioned above. o Schedule heavy work for cooler parts of the day (e.g., early morning). 1.18. Establishing labour quarters on the site is risky due to the appearance of elephants. If the contractor hires a			

			premise as labour quarters, the location shall be selected by avoiding elephant movement pathways and roaming areas. Provide adequate, clean, and separate sanitary facilities (toilets) and washing stations for workers. 1.20. Possible risks of snake bites, insect attacks, and other wild animal encounters present in the adjacent forest environment. 1.21. Safety shoes and/or boots shall be provided for all workers, and their use is mandatory on the worksite to protect against bites, sharp objects, and other ground hazards. 1.22. First Aid and Emergency Response: In the event of an incident (such as a snake bite, insect attack, or any other wildlife attack), a designated sentinel person trained in first aid and emergency response should be kept ready on site. 1.23. Immediate Hospitalization Protocol: Clear protocols must be established for immediate hospitalization and transport, ensuring rapid access to the necessary medical facilities. 1.24. Ensure all heavy equipment (excavators, bulldozers, tipper trucks) and vehicles are inspected, well-maintained, and operated only by certified and licensed operators. 1.25. A dedicated OH&S officer shall be deployed on-site for the full duration of all scheduled working hours. Further to the above, strict adherence to all applicable Sri Lankan OHS regulations and laws shall be applied under this contract. 1.26. Structural excavations for new sluices, drop structures, and Field Turn-Outs (FTOs) present high-risk environments. The following safeguard measures			

			are mandatory to ensure structural stability and personnel safety. 1.27. To prevent accidental falls and vehicle-induced collapses, all excavation sites must be clearly demarcated. • **Physical Barriers:** Use rigid barricades (e.g., scaffolding pipes or heavy-duty plastic fencing) at a minimum height of **1.1 meters** around the perimeter of the cut. • **Warning Signage:** Post high-visibility "Deep Excavation" and "Authorized Personnel Only" signs at 10-meter intervals. • **Night Visibility:** All delineation zones must be equipped with solar-powered amber flashing lights to ensure visibility during low-light conditions or heavy rain. • **Surcharge Loading:** No heavy machinery, excavated spoil, or construction materials shall be placed within **1.5 meters** (or a distance equal to the depth of the cut) from the edge of the excavation. **1.28. Structural Shoring and Stabilization:** Where excavations exceed a depth of **1 – 1.2 meters**, or where soil conditions are unstable (soft silt/clay), the following shoring measures are required: • **Timber/Steel Shoring:** Use close-sheeting or hydraulic shoring to support the vertical walls of the excavation. The design must be capable of resisting lateral earth pressure. • **Benching or Sloping:** If space allows, the sides of the excavation must be sloped to the "Angle of Repose" (typically a **1:1 or 1:1.5 gradient**) or			

			"benched" in steps to prevent sudden mass movements. • **Hydrostatic Pressure Management:** During sluice or drop-structure construction, dewatering pumps must be used to prevent the "boiling" of the excavation base or the weakening of the shoring due to water saturation. • **Ladder Safety:** Secure, industrial-grade ladders must be provided for every **15 meters** of trench length. Ladders must extend at least **1 meter** above the landing platform. 1.29. **Ramps:** For large-scale sluice excavations, stabilized ramps with a maximum gradient of **1:10** should be constructed for safe foot traffic. 1.30. The dedicated EHS Officer shall perform a **"Pre-Entry Inspection"** every morning and after any rainfall event: • Check for buckling, cracks, or shifting of the supports. • Inspect the ground surface around the perimeter for tension cracks. • In deep pits for sluices, check for oxygen deficiency or trapped gases before entry. • Ensure the Farm Turn Outs/Drop structure base is not being "undercut" by water seepage. 1.31. Work must be halted immediately if: • Seepage water begins to carry fine soil particles (piping). • Evidence of "bulging" is seen in the shoring or the excavation walls.			

			• Heavy rainfall occurs (significantly increasing the weight of the surrounding soil.)			
2	Wildlife Disturbance: Disturbances to local fauna, including the potential for poaching.	**Site clearing** **Earth works** **Construction works** **Site access Material transport**	2.1. Before the first bucket of silt is removed, a physical rescue operation must be conducted. Should the decision be made to desilt or scrape aquatic weeds, an environmental specialist/consultant should be hired to relocate as much of the local fauna as possible. This individual will also manage the relocation of affected termite hills. 2.2. Assistance from the Farmer Organization (Govi Sanvidhana) can be obtained to relocate native fish species to a nearby connected tank in the same cascade before the water is fully drained for dredging, or before dredging started. Use small mesh sized scoop nets to collect smaller fish. (Rescued animals should be kept in oxygenated tanks or buckets with fresh tank water. Avoid overcrowding; the high temperatures in the Dry Zone can deplete oxygen in a bucket in minutes.). Relocate animals to a "sister tank" within the same Cascade System. 2.3. The above consultant (or experienced local farmers) should walk the banks and shallow beds to look for nesting signs (disturbed soil, tracks). If a high-density nesting site is found that belongs to any species, mark it with stakes and a 5-meter buffer zone. Dredging must bypass this block until the eggs have hatched. 2.4. The contractor will take reasonable precautions to prevent workmen or any other persons from removing and damaging any flora and fauna,	Engineering cost	Contractor	PMU DAD

			including fishing in the tank and hunting of any animal. 2.5. No one will have access to the forest, nearby lands, or adjacent forest patches, even in the spill area or along the canals, without permission from the supervisor of the contractor. 2.6. The contractor should ensure animals' access to water is not blocked during construction. 2.7. Due consideration should be given to carefully clearing vegetation, avoiding the destruction of habitats of fauna. Even nests of birds. 2.8. Termite hills with live colonies may be relocated as appropriate without destroying them by following the instruction given in the annexed guideline.			
3	Biological Invasion: The risk of spreading invasive terrestrial plant species.	Rehabilitation of tank bund, cleaning/rehabilitation of spill canal, Material transportation	*Lantana camara,* and *Chromolaena odorata* infestations occur along the tank bund, immediately downstream areas, and adjacent to the spill area. 3.1. Physically remove plants when they are not at the fruiting (*Lantana*) or seeding (*Chromolaena*). 3.2. If fruits/seeds are present, carefully bag and remove all reproductive material first before cutting the main plant. Dispose of this material by deep burial or by burning on the site. DO not transport. 3.3. Begin removal works from the edges of the infestation inwards. (To create a buffer zone). 3.4. Physical removal shall be done by cutting the stem as close to the ground as possible and immediately applying a registered herbicide at the correct concentration directly to the freshly cut surfaces to kill the root system, preventing prolific re-sprouting. Or else uproot the root system and immediately put on a	Engineering cost	Contractor	PMU DAD

			bag for burning to the ash. Observe for a few weeks for new shoots/plants and remove them following the same procedure. 3.5. Thoroughly clean all tools and machinery (machetes, shovels, vehicle tires, and boots) before leaving the site. 3.6. 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 other form of invasive plant species is being carried with the borrow material. As much as possible, locate burrow sites within a radius of 10Km to the site 3.7. Washing the vehicles should be conducted periodically to prevent carrying any invasive species 3.8. The site should be inspected periodically to ensure that no new invasive species are established at the site.			
4	Accumulation and disposal of solid waste due to proposed activities.	Setting up of material storage yards. Stockpiling of soil and dredged materials. Removal of vegetation.	4.1 Disposal should be coordinated with the Department of Agrarian Development and the local Farmer Organization (Govi Sanvidhana). 4.2 Always consider downstream tanks. Ad-hoc dumping in one tank's catchment can cause rapid siltation in the next tank in the cascade. 4.3 If it is decided to remove the peripheral littoral vegetation and dispose in the Kattakaduwa area; ○ Do not dump resulted silt in a way that blocks the natural seepage flow from the bund to the fields. This seepage is essential for maintaining the Kattakaduwa's specific ecosystem.	Engineering Cost	Contractor	DAD PMU

		Solid waste from construction staff. Transport of construction material.	○ Any mounds created must have a gentle slope (gradient) and be immediately stabilized with vegetation (grass or trees) to prevent the silt from washing back into the drainage system. ○ Aquatic vegetation and fine silt is often nutrient-rich. It can be lightly spread around established trees in the Kattakaduwa to provide nutrients, provided it does not bury the root systems too deeply. 4.4 No labour camps shall be allowed under this contract on or around the worksite. 4.5 Reusable waste, such as cement bags, shall be either resold or reused. 4.6 Any hazardous waste must be handled with special care and according to instructions from the local authority. 4.7 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 TO - DAD officer. 4.8 Food waste shall not be discarded into the surrounding environment, as this may attract wildlife and must be removed from the site daily. 4.9 There should be no burning of wastes on site. Workforce-related solid waste shall be removed from the site on a daily basis. 4.10 Any cleared vegetation shall be removed from the construction sites under the supervision of the DAD before the commencement of proposed interventions in the bund. No debris shall be burned on the site.			

5	Air and Noise Pollution: Impacts related to dust, noise, and vibration.	**Operation of equipment and machinery. Material storage and transport.**	5.1. Working time for noise/vibration generation activities should be restricted and carried out only from 9.00 am to 4.00 pm. 5.2. All equipment and machinery should be operated of noise not to exceed 75 dB (during construction) as practically possible. Regular maintenance of all construction vehicles and machinery to meet noise control regulations stipulated by the CEA in 1996 (Gazette Extraordinary, No 924/12). Due to urgent or unavoidable reasons, if the construction activities happen during the nighttime, it is necessary to maintain the noise level below 50 dB. 5.3. 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.			
6	Water Quality Degradation: Tank water pollution stemming from construction materials and runoff.	**From the machinery, vehicles, and stores. Cement/concrete works.**	6.1. Fuel or lubricants shall not be stored anywhere on the site. 6.2. Store all oil and lubricant containers (including drums, tanks, and static plant equipment like generators) in a larger container. 6.3. Regularly inspect equipment, hoses, and storage containers for leaks, drips, or signs of wear. 6.4. Designate and use a safe area for vehicle and equipment fuelling and maintenance that is away from the water body and surrounding forest patches. 6.5. If a contamination happens, use absorbent socks, granular absorbents, or temporary barriers to immediately surround the spill and prevent its spread.	Engineering Cost	Contractor	DAD PMU

			6.6. Clean up the spilled area in an appropriate manner, and dispose of it appropriately under consultation with the Local Government Authority (LA - Pradeshiya Sabha),. 6.7. Reporting to the DAD and the PMU on the event should be performed.			
7	**Extraction of natural resources**	**Material (soil/earth/gravel) Sourcing**	7.1. The contractorshall source materials from pits/quarries that hold a valid Industrial Mining License (IML) or Artisanal Mining License (AML). Every load of sand, gravel, or soil transported to the site must be accompanied by a GSMB-issued Transport Permit. (Unauthorized transport is a legal offense). If purchasing from a third party, they must hold a Mineral Trading License. 7.2. Sourcing or purchasing of any material that is sourced from any protected areas and/or designated natural areas, is strictly prohibited. Materials cannot be extracted from within the statutory reservations of rivers, streams, or the tanks themselves (usually defined as 60m from a river bank and specific limits from the high-flood level of a tank) unless specifically approved for desilting. 7.3. The contractor is required to ensure that sand, aggregates, and other quarry material is sourced 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.	Engineering Cost	Contractor	DAD PMU

			7.4. If the contractor uses a non-commercial burrow/quarry site or tank bed, the site should be remediated accordingly once material sourcing has been completed. Prior approval shall be taken from the Engineer – DAD. For new borrow pits, under recommendation and approval of the DAD, a **Restoration Plan** must be submitted to the PMU (or else should inform to the PMU for restoration plan). This includes plans for backfilling, slope stabilization, and replanting to prevent the pits from becoming breeding grounds for mosquitoes or safety hazards. 7.5. 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 and/or the PMU. 7.6. To prevent accidents, borrow pits must be finished with slanted edges. This will reduce the danger to both humans and animals.			
8.	**Exposing and damaging 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; 8.1. Immediately stop the performing activity. (With the approval of the resident engineer, delineate the discovered site area. 8.2. 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. 8.3. Through the responsible officer of DAD, notify the responsible authorities, the Department of Archaeology, and local authorities within as soon as possible.	Engineering Cost	Contractor	DAD PMU

			8.4. Submit a brief chance find report under the supervision of the DAD officer, within a specified time period, with date and time of discovery, location of discovery, description of finding, estimated weight and dimension of PCR, and temporary protection implemented. 8.5. Responsible authorities would be in charge of protecting and preserving the site before deciding on the proper procedures to be followed. 8.6. 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. 8.7. Construction work could resume only when permission is given by the Department of Archaeology after the decision concerning the safeguard of the heritage is fully executed.			
9	**Soil erosion, sedimentation of nearby water bodies, and paddy fields.**	**Dredging of the tanks.** **Construction work including, Removal of top soil, rehabilitatio**	9.1. Soil stockpiles and other construction material shall not be placed within the tank bed or on the tank bund, canals, or access road area. Soil and gravel shall be taken to the site as required without storing/stockpiling larger volumes. 9.2. Installing and maintaining erosion and sediment control measures, such as silt traps, to avoid sediment runoff into the tank and nearby lands and paddy fields.	Engineering Cost	Contractor	DAD

		n of the tank bund, and rehabilitation of main canals.	9.3. For any activity related to the construction, the excessive clearing of ground vegetation, or the removal of trees shall not be done. 9.4. Avoid stockpiling disposed material such as removed earth from the spill area and spill canal, tank bund, and canal rehabilitation works. Those shall be reused or disposed of appropriately as guided by the TO-DAD. 9.5. All exposed soil areas shall be stabilized and re-vegetated as soon as possible on completion of works to prevent potential future erosion.			