ESR & EMP

Karuwalagaswewa DSD

PUTTALAM - DAD

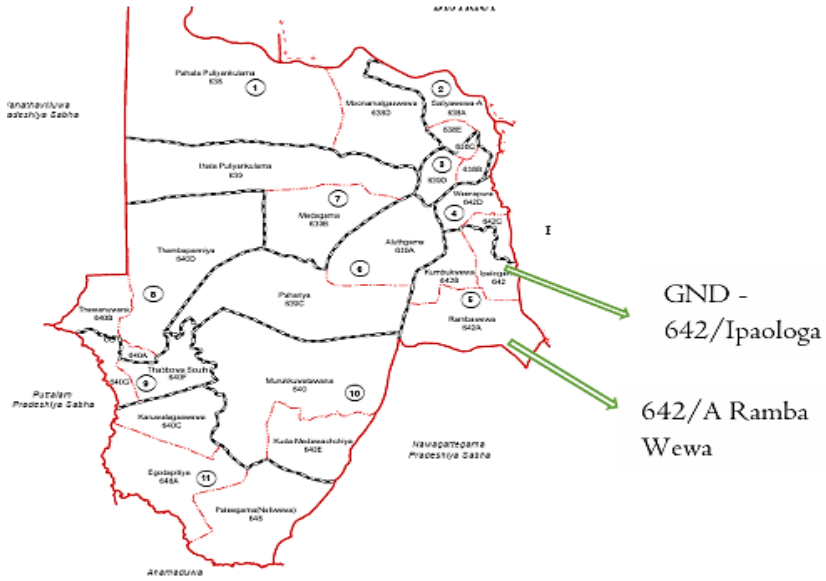


Divulgas Wewa, Siyambalagas Wewa, Wewwala Wewa, Ipalogama Wewa, & Kekulawala Wewa from the Ihalapuliyankulama Agrarian Division

1. Introduction

Five tanks, namely Divulgas Wewa, Siyambalagas Wewa, Wewwala Wewa, Ipalogama Wewa, and Kekulawala Wewa, under the management of the Ihalapuliyankulama Agrarian Division in the Karuwalagaswewa Divisional Secretariat Division of the Puttalam District, are going to be rehabilitated under IRDCRP funds by the Department of Agrarian Development (DAD).

No	Name of Tank	GND's	Divisional Secretariat	GPS Coordinate	
1	Siyabalagas wewa	642/Ipaologama	Karuwalagas wewa	8.10576	80.0986
2	Ekamuthugama wewa			8.10598	80.10362
3	Wewwala wewa			8.11267	80.1025
4	Kekulavala Wewa			8.10418	80.10775
5	DiulgasWewa	642/A Ramba Wewa		8.10484	80.08777



Both headworks and downstream works are proposed for the rehabilitation of each tank; however, desilting, intentional lowering of water levels, and changes to initial design parameters shall not be undertaken. These tanks are interconnected, and serves water for paddy cultivation, especially during the Maha season, but water for Yala season is a concern. With the rehabilitation works proposed, it is expected to reserve water for the second cycle. Well organized farmer organizations are present at each tank. Aquatic invasive species are a concern in almost all the tanks, but terrestrial invasive species are not present, except for a few isolated plants. Human-elephant conflict (HEC) is a concern in some locations while absent in others; however, the area is not classified as a red zone. Other than elephants, there are no records of endangered or endemic fauna or flora within the immediate project impact zone.

2.Proposed Works under the Each Tank

2.1. Diulgas wewa

Divulgas Wewa is a minor irrigation tank located in the Puttalam District, falling under the purview of the Department of Agrarian Development (DAD). The activities mentioned in Table 1 have been proposed for the rehabilitation of the tank's headworks and downstream areas. The area is surprisingly free of elephant incursions; hence, no human-elephant conflict (HEC) issues remain. Desilting of the tank bed is not proposed, and the earth required for bund rehabilitation works will be obtained from the tank bed.

No terrestrial invasive species were observed in the vicinity of the tank, but *Salvinia* has covered a considerable scale of the water column surface (Figure 1 and 2). Massive trees have also grown on the tank bed and bund as illustrate in Figure 2 and 4. A few trees, as mentioned in Table 2, shall be removed from the bund to facilitate machinery access and strengthen the tank bund.

Table 1: ***Description of the works of Diulgas Wewa, Puttalam District***

1	Improvement of Tank Bund	Unit	Qty
1.1	Light Jungle clearing along the bund by machinery, including removing spoil outside the reservation and burning	ha	0.45
1.2	Felling & uprooting trees and disposing as directed, then tidying up the site- Girth from 301 mm-600 mm	nos	4.00
1.3	Stripping topsoil to receive new earth & removing spoil outside the reservoir 30m by machinery	m^3	506.00
1.4	Removal of ant hills, including application of anti-termites and backfilling with suitable soil, placing and compaction in forming bund, including watering.	nos	5.00
1.5	Benching on the existing tank bund slope to receive new earth and spoil to be used for forming the bund, inclusive of watering and compaction	m^3	183.00
1.6	Earth excavation from the burrow area (cut & lift 0-1.5 m), including spreading, watering, compaction, forming bund by sheep foot rollers in horizontal layers, cut and finish smooth true slope with proper compaction, Degree of compaction, and finished true slope. Transport by tractor 0.5 km.	m^3	3120.00
1.7	Cutting, laying, and pegging of turf as directed, including watering and keeping moist until plant growth has been re-established, and transport 0.4 km by tractor.	m^2	1148.00
1.9	Supplying of approved quality gravel, including spreading, watering & compaction by double drum smooth wheel roller. - 3Km	m^3	135.00

2	**Repair of New 225 mm Dia. Head Wall Sluice (L/B)**		
2.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	0.11
3	**Reconstruction of New 225 mm Dia. Head Wall Sluice (L/B)**		
3.1	Removing existing sluice Structure & pipe with all accessories		
3.2	Excavation in trenches or cut opening the bund, stockpiling soil at the site, back-filling, including placing, watering & compaction by machinery, vibrating roller, and dozer. Cut 1.5 - 3.0m lift up to 3.0m spread 30m.	m^3	29.00
3.3	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	3.10
3.4	Earth work, using from burrow puddle clay to construct of puddle clay wall, including watering & compaction by machinery	m^3	7.50
4	**Construction of Bathing Steps-02 N0**		
4.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	5.10
5	**Construction of Foot Path to Climb Bund-01 N0**		
5.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	0.93
6	**Construction of Lining for L/B Canal**		
6.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5 m spread 30 m by machinery.	m^3	2.40
7	**Construction of Lining for R/B Canal**		
7.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	2.40
8	**Rehabilitation of spill Channel**		
8.1	Light Jungle clearing along the bund by machinery, including removing spoil outside reservation and burning	ha	0.35
8.2	Earth excavation & forming canal bund cut & lift up to 1.5 - 3.0 m spread 30 m by machinery including watering & compaction	m^3	1575.00
8.3	Cutting, laying, pegging of turf as directed including watering and keeping moist until plant growth has been re-established, transport 0.4 km by tractor.	m^2	630.00
9	**Construction of Drop structure for the spill canal**		
9.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5 m spread 30 m by machinery.	m^3	6.75

10	**Construction of Box Culvert In Spill channel - 01 Nos**		
10.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	6.75
10.2	Furnishing, cutting, bending, laying in position & binding of tor steel reinforcement as directed.	Kg	179.00
11	**Construction of Retaining Wall in Spill Channel - 20m**		
11.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	6.75
12	**Construction of Tractor Crossing -5No**		
12.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5 m spread 30 m by machinery.	m^3	8.80
13	**Construction of Distribution Box- 02 No**		
13.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	5.40
14	**Construction of Farmer Turnout-20No**		
14.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	ha	15.10
14.2	2" thk special class planks for farm gates, including applying hot tar	m^3	26.50
15	**Reconstruction of Course way Spill (15m)**		
15.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	15.00
16	**Rehabilitation of Agri Road**		
16.1	Earth excavation from borrow area (cut & lift 0-1.5m), including spreading, watering, compaction and forming Agri Road bund by machinery. Transport by tractor 30m - 0.5 km	m^3	338.00
16.2	Supplying of approved quality gravel including spreading, watering & compaction. Compaction by double drum smooth wheel roller. - 3Km	m^3	262.00
16.3	Cutting, laying, pegging of turf as directed including watering and keeping moist until plant growth has been re-established, transport 0.4 km by tractor.	m^2	135.00



Figure 1: Current appearance of the Divulgas wewa



Figure 2: Some areas of the divulges wewa is hevily infested with aquatic invasives and clear area is d use for bathing



Figure 3: LB and RB canals of the Divul gas wewa at the downstream

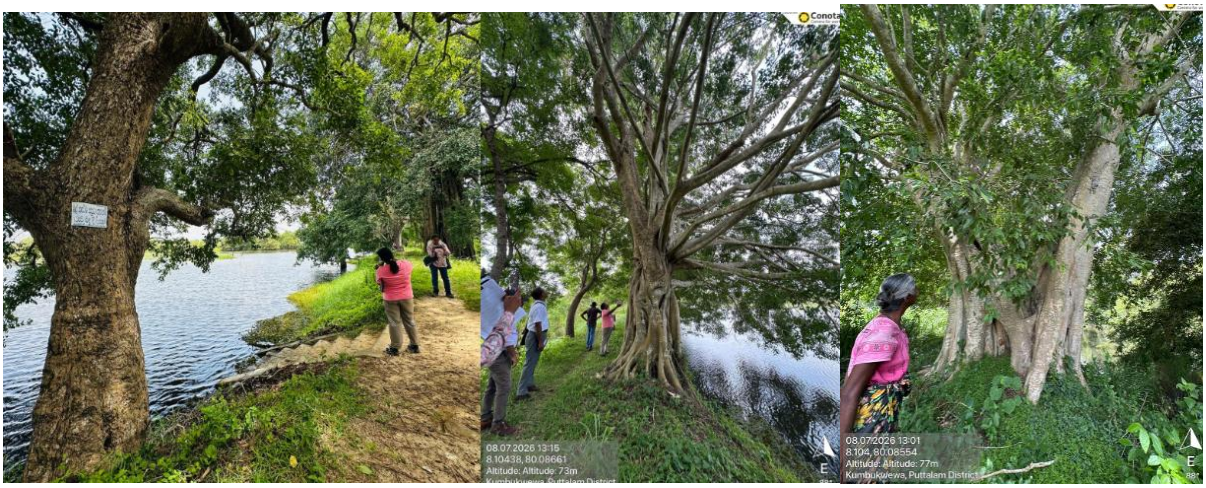
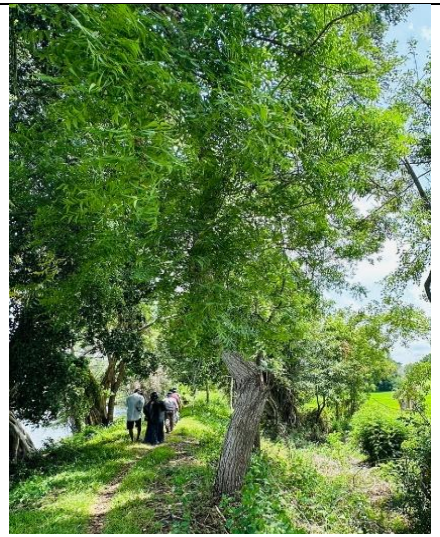


Figure 4: Large tress grown on the tank bund

Table 2: Tree removal list – Divulgas wewa

No	Common name of the tree	Scientific Name	DBH	Coordinates	Justification for Removing	Picture
01	Ceylon ironwood (Palu)	*Manilkara hexandra*	1.231m (Girth 12.5 ft)	8.10484 80.08777	The trees are located on the tank bund, and removal is proposed to facilitate bund rehabilitation and to prevent potential root-related damage and weakening of the bund structure	
02	Neem Tree (Kohomba Tree)	*Azadirachta indica*			The tree stands on the tank bund, and removal is proposed to facilitate bund rehabilitation and to prevent potential root-related damage and weakening of the bund structure	

03	1.Halamba (හැලබ) 2. Neem Tree (Kohomba Tree) (Two trees have grown together and are proposed to be removed as a single tree)	1. *Mitragyna parvifolia* 2. *Azadirachta indica*	1.358m (Girth 14 ft)	8.10438 80.08661	The trees grow on the tank bund, and removal is proposed to facilitate bund rehabilitation and to prevent potential root-related damage and weakening of the bund structure	
04	ඇහැටු ගහ (Ahetu / Ahettu)	*Antidesma alexiteria*	0.776m (Girth 8 ft)	8.104 80.08554	The tree is on the tank bund, and removal is proposed to facilitate bund rehabilitation (no machinery can be operated) and to prevent potential root-related damage and weakening of the bund structure	

2.2. Wewwala Wewa

Wewwala Wewa is a minor rural irrigation tank situated within the dry zone landscape of the Puttalam District, falling under the administrative framework of the DAD. It functions as part of a local cascading water management system, supporting smallholder agrarian activities, seasonal paddy cultivation, and livestock needs in the surrounding community. The tank receives water from the upper catchment area as well as spill water from Siyambalagas Wewa, Kwkulawala wewa and releases water to Ipalogama Wewa.

HEC is not a major concern, and only rare visits by elephants are reported. The tank is infested with aquatic invasive species, but no terrestrial invasive species were observed around the tank. Both headworks and downstream works are proposed to rehabilitate the tank, as mentioned in Table 3. Desilting is not proposed, but the required soil for bund renovation will be obtained from the tank bed.

Table 3: ***Description of rehabilitation works at Wewwala Wewa, Puttalam District***

1	**Improvement of Tank Bund**		
1.1	Light Jungle clearing along the bund by machinery, including removing spoil outside the reservation and burning	ha	0.425
1.2	Felling & uprooting trees and disposing as directed, then tidying up the site- Girth from 301 mm-600 mm	nos	1.00
1.3	Stripping topsoil to receive new earth & removing spoil outside the reservoir 30 m by machinery	m^3	382.50
1.4	Removal of ant hills including application of anti-termite and backfilling with suitable soil, placing and compaction in forming bund including watering.	nos	25.00
1.5	Benching on the existing tank bund slope to receive new earth and spoil to be used for forming bund inclusive of watering and compaction	m^3	172.00
1.6	Earth excavation from burrow area (cut & lift 0-1.5 m), including spreading, watering, compaction forming bund by sheep foot rollers in horizontal layers, cut and finish smooth true slope with proper compaction, for any compacted layer and finished true slope. Transport by tractor 0.5 km.	m^3	2205.00
1.7	Cutting, laying, pegging of turf as directed including watering and keeping moist until plant growth has been re-established, transport 0.4 km by tractor.	m^2	1083.75

1.9	Supplying of approved quality gravel including spreading, watering & compaction by double drum smooth wheel roller. - 3Km	m^3	127.50
2	**Construction of New 225 mm Dia. Head Wall Sluice (L/B)**		
2.1	Removing existing sluice Structure & pipe with all accessories	Item	allow
2.2	Excavation in trenches or cut opening the bund, stockpiling soil at the site, backfilling including placing, watering & compaction by machineries Vibrating roller and dozer. Cut 1.5 - 3.0m lift up to 3.0m spread 30m.	m^3	25.20
2.3	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	3.10
2.4	Earthwork, using burrow puddle clay to construct puddle clay wall, including watering & compaction by machinery	m^3	5.25
3	**Repair of 225mm Dia. Head Wall Sluice -(R/B)**		
3.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	0.22
4	**Reconstruction of Spill**		
4.1	Demolishing 1:3:6 (40mm) cement concrete (demolished parts use as filling materials in spill channel protection)	m^3	23.68
4.2	Leveling of canal bed, cut and depositing soil by 90HP dozer	Hr	8.00
4.3	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	39.20
5	**Construction of Lining for L/B Canal**		
5.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	1.80
6	**Construction of Lining for R/B Canal**		
6.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5 m spread 30 m by machinery.	m^3	2.40
7	**Construction of Farmer Turnout-20No (L/B 10, R/B 10)**		
7.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	15.14
8	**Construction of Tractor Crossing -3No**		
8.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift to 1.5 m spread 30 m by machinery.	m^3	5.27
9	**Construction of Distribution Box- 03 No**		

9.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5 m spread 30 m by machinery.	m^3	8.16
10	**Construction of Footing Bridge**		
10.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	5.50
11	**Rehabilitation of Agri Road**		
11.1	Earth excavation from burrow area (cut & lift 0-1.5m), including spreading, watering, compaction and forming Agri Road bund by machinery. Transport by tractor 30m - 0.5 km	m^3	112.50
11.2	Supplying of approved quality gravel including spreading, watering & compaction by double drum smooth wheel roller. - 3Km	m^3	300.00
11.3	tting, laying, pegging of turf as directed including watering and ping moist until plant growth has been re-established, transport 0.4 by tractor.	m^2	90.00



Figure 5: The bund of the Wewwala Tank is clear but the water column infested with the AIs

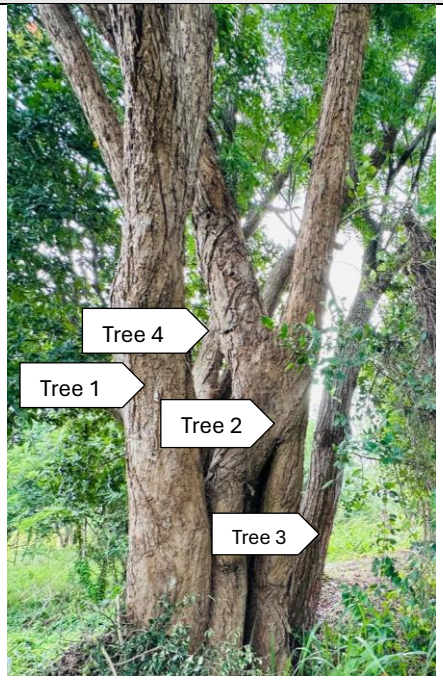


Figure 6: Proliferation of Salvinia and Eichhornia crassipes along the spill tail canal.



Figure 6: The spill is going to be demolished and reconstructed.

Table 4: Tree removal list of Wewwala tank

No	Common name of the tree	Scientific Name	DBH	Coordinates	Justification for Removing	Picture
01	Tree 1 - Lolu tree (Indian cherry/Glue berry) Tree 2 - Lolu tree Tree 3 – Neem tree Tree 4 – Lolu tree	*Cordia dichotoma* *Cordia dichotoma* *Cordia dichotoma*	0.340m (Girth 3.5ft) 0.485 (Girth 5ft) Tree 3 – 0.256m (Girth – 0.805m) Tree 4 - 0.776m (Girth - 2.438)	8.11267 80.1025	The trees are located within the tank bund, and removal is proposed to facilitate bund rehabilitation and to prevent potential root-related damage and weakening of the bund structure	

2.3 Kekulawala Wewa

Kekulawala Wewa is located in the Karuwalagaswewa Divisional Secretariat Division and serves as the uppermost tank in the cascade. The spill water from Kekulawala Wewa is received by Wewwala Wewa, while drainage water from the Ipalogama farm/fields flows into the Kekulawala tank.

Elephants commonly visit the tank and paddy field areas, but no human or elephant fatalities have been reported. An electric fence has been erected by the Department of Wildlife Conservation along the tank bund. Similar to other tanks in the cascade, this tank is infested with *Salvinia* and *Eichhornia crassipes* (water hyacinth), though no terrestrial invasive species are present around the tank.

For the rehabilitation works, 16 mature trees, as illustrated in Table 6, shall be removed from the bund. The earth required for bund rehabilitation will be obtained from the tank bed, and desilting is not proposed.

Table 5: ***Description of Rehabilitation Works in Kekulawala Wewa, Puttalam***

1	Improvement of Tank Bund	Unit	Qty
1.1	Light Jungle clearing by machinery, including removing spoil outside the reservation and burning	Ha	0.55
1.2	Stripping topsoil to receive new earth & removing spoil outside the reservoir 30m by machinery	m^3	248.00
1.3	Felling & uprooting trees (Girth 601mm - 900mm) and disposing as directed, then tidying up the site.	Nos	16.00
1.4	Removal of Ant Hills, including application of anti-termite and backfilling with suitable soil, placing and compaction in forming bund, including watering. (Average ant hill 0.5cum)	Nos	13.00
1.5	Benching on the existing tank bund slope to receive new earth and spoil to be used for forming bund inclusive of watering and compaction.	m^3	149.00
1.6	Earth excavation from borrow area (cut & lift 0-1.5 m), including spreading, watering, compaction, forming bund by vibrating rollers in horizontal layers, cut and finish smooth true slope with proper compaction, finished true slope. Transport by tractor 0.5km.	m^3	1,745.00
1.7	Cutting, laying, pegging of turf as directed including watering and keeping moist until plant growth has been re-established, transport 0.4 km by tractor.	m^2	1,279.00

1.8	Construction of (size 300x300x450 mm) concrete block on bund top levels as per instruction, using Grade15 concrete.	Nos	3.00
1.9	Supplying of approved quality gravel including transporting, spreading, watering & compaction by machinery, 3km	m^3	132.00
1.10	Earthwork, using burrow puddle clay to construct puddle clay wall, including watering & compaction by machinery	m^3	22.50
2	**Construction of Causeway spill**		
2.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	14.80
3	**Construction of 225mm Dia. Head Wall Sluice (02Nos)**		
3.1	Removing existing damaged sluice	Item	Allow
3.2	Excavation in trenches or cut opening the bund, stockpiling soil at the site, backfilling including placing, watering & compaction by machineries Vibrating roller and dozer. Cut 1.5 - 3m lift up to 3m spread 30m.	m^3	81.90
3.3	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	7.60
3.4	Earthwork, using from burrow puddle clay to construct of puddle clay wall, including watering & compaction by machinery	m^3	12.00
4	**Rehabilitation of L/B Channel**		
4.1	Earth excavation & forming canal bund cut & lift up to 1.5 m spread 30 m by machinery including watering & compaction.	m^3	182.30
4.2	Cutting, laying, pegging of turf as directed including watering and keeping moist until plant growth has been re-established, transport 0.4 km by tractor.	m^2	270.00
5	**Construction of Lining (LB @ RB)-15 m**		
5.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5 m spread 30 m by machinery.	m^3	3.60
6	**Construction of Farmer Turnout - 06 Nos**		
6.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	4.15



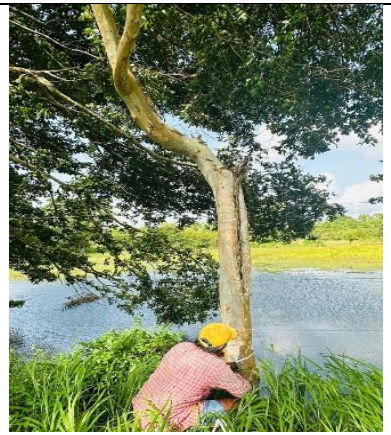
Figure 7: Current apperence of the Kekulawala Wewa



Figure 8:

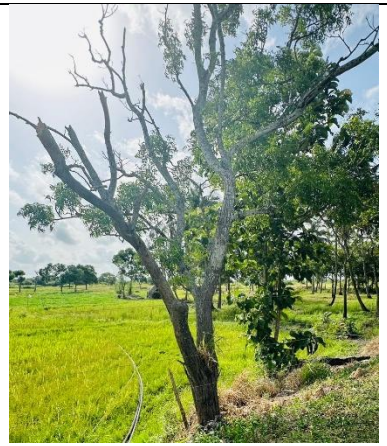
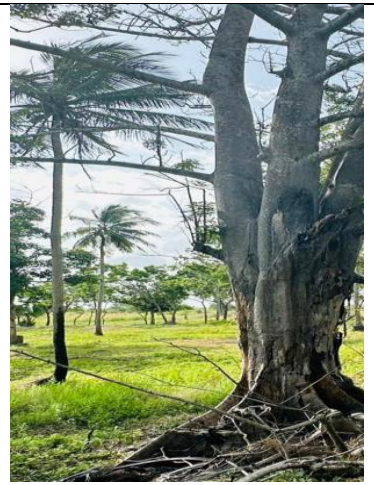
Table 6: ***Removing trees in Kakulawala Wewa***

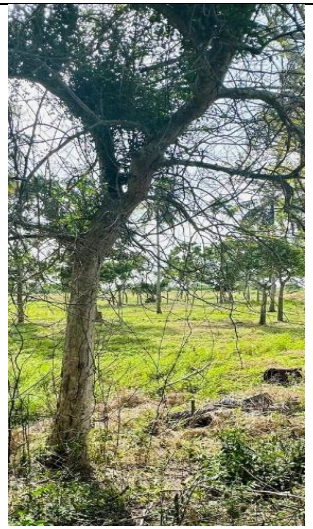
No	Common name of the tree	Scientific Name	DBH	Coordinates	Justification for Removing	Picture
01	Kumbuk Tree	*Terminalia arjuna*	0.38m (Girth 4ft)	8.10418 80.10775	All the trees are located on the tank bund, and removal is proposed to facilitate bund rehabilitation and to prevent potential root-related damage and weakening of the bund structure. Machinery movements for the bund rehabilitation works also impossible due to these trees.	
02	Kumbuk Tree	*Terminalia arjuna*	0.369 m (Girth 3.8ft)	8.10418 80.10775		
03	Kumbuk Tree	*Terminalia arjuna*	0.582 m (Girth 6ft)	8.10414 80.10776		

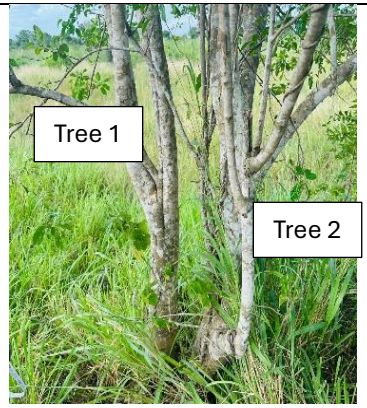
						
04	Kumbuk Tree	*Terminalia arjuna*	0.233 m (Girth 2.4 ft)	8.10414 80.10776		
05	Kumbuk Tree	*Terminalia arjuna*	0.485 m (Girth 5ft)	8.10403 80.10769		

						
06	Kumbuk Tree	*Terminalia arjuna*	2.012 m (Girth 6.6ft)	8.10403 80.10769		

7			0.243m (Girth 2.5ft)	8.10373 80.10761	Fallen tree by elephant	
8	Wood apple	*Limonia acidissima L.*	0.475 m (Girth 4.9ft)	8.10373 80.10761		
9	Neem	*Azadirachta indica A. Juss*	0.340m (Girth 3.5ft)	8.10376 80.10771		

10	Neem	*Azadirachta indica A. Juss*	0.340m (Girth 3.5ft)	8.1039 80.10773		
11	Kapok tree / Silk-cotton tree	*Ceiba pentandra (L.) Gaertn.*	0.679m (Girth 7ft)	8.10416 80.10769		

12	නිතුල්ල		0.9144m (Girth 0.291m)	8.10423 80.10774		
13	Kapok tree / Silk-cotton tree	*Ceiba pentandra (L.) Gaertn.*	0.611 m (Girth 6.30)	8.10423 80.1078		

14	කරද		0.243 m (Girth 2.5ft)	8.10425 80.10778		
15	Maila Trees	*Bauhinia racemosa Lam*	Tree 1 – 0.204m (Girth – 2.1ft) Tree 2 – 0.213m (Girth – 2.2ft)	8.10613 80.10645		

2.4. Ekamuthugama wewa

The tank is located in the No. 642 Ipalogama GND of the Karuwalagaswewa DS division. The tank features small-scale micro-catchments designed to capture seasonal Maha rains, and its command area typically supports small paddy allotments for local farming families.

The tank is currently in a degraded condition, and rehabilitation works as illustrated in Table 7 have been proposed by the Department of Agrarian Development (DAD). The tank bund remains clear of vegetation; hence, no tree removal is proposed. Required earth for bund rehabilitation is proposed to be sourced from the tank bed. Human-Elephant Conflict (HEC) is present in the area, but not at a severe or life-threatening level for either party.

Table 7: ***Description of Rehabilitation Works at Ekamuthugama Wewa***

1	**Improvement of Tank Bund**	**Unit**	**Qty**
1.1	Light Jungle clearing by machinery, including removing spoil outside the reservation and burning	Ha	0.53
1.2	Stripping topsoil to receive new earth & removing spoil outside the reservoir 30m by machinery	m^3	315.00
1.3	Removal of Ant Hills, including application of anti-termite and backfilling with suitable soil, placing and compaction in forming bund including watering. (Average ant hill 0.5cum)	Nos	5.00
1.4	Benching on the existing tank bund slope to receive new earth and spoil to be used for forming bund inclusive of watering and compaction.	m^3	119.00
1.5	Earth excavation from borrow area (cut & lift 0-1.5 m), including spreading, watering, compaction, forming bund by vibrating rollers in horizontal layers, cut and finish smooth true slope with proper compaction, finished true slope. Transport by tractor 0.5km.	m^3	1,430.00
1.6	Cutting, laying, pegging of turf as directed including watering and keeping moist until plant growth has been re-established, transport 0.4 km by tractor.	m^2	893.00
1.7	Supplying of approved quality gravel including spreading, watering & compaction by double drum smooth wheel roller. - 4Km	m^3	94.50
2	**Reconstruction of Spill**		
2.1	**Removing existing damaged Spill**		
2.1.2	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	16.30

2.1.2	Earth excavation & forming canal bund cut & lift up to 1.5 m spread 30 m by machinery, including watering & compaction.	m^3	275.00
2.1.3	Cutting, laying, pegging of turf as directed, including watering and keeping moist until plant growth has been re-established, transport 0.4 km by tractor.	m^2	225.00
3	**Reconstruction of 225mm Dia. Head Wall Sluice R/B & Repair of LB Sluice**		
3.1	**Removing existing damaged sluice**		
3.1.1	Excavation in trenches or cut opening the bund, stockpiling soil at the site, backfilling including placing, watering & compaction by machineries Vibrating roller and dozer. Cut 1.5 - 3.0m lift up to 3.0m	m^3	47.30
3.1.2	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	3.70
3.1.3	Earthwork, using burrow puddle clay to construct a puddle clay wall, including watering & compaction by machinery	m^3	5.30
4	**Rehabilitation of Downstream**		
4.1	**Construction of Lining for L/B Canal - (15m x 2)**		
4.1.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	3.60
4.2	**Construction of Farmer Turnout-03 No (1.8m)**		
4.2.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	2.10
4.3	**Construction of Farmer Turnout-01 No (3.6m)**		
4.3.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	0.70
4.4	**Rehabilitation of Downstream Canal**		
4.4.1	Stripping topsoil to receive new earth & removing spoil outside the reservoir 30m by machinery	m^3	15.00
4.4.2	Earth excavation from borrow area, (cut & lift 0-1.5m), including spreading, watering, compaction and forming canal bund by machinery. Transport by tractor 30m - 0.5 km	m^3	79.20
4.4.3	Earth excavation & forming canal bund cut & lift up to 1.5 m, spread 30 m by machinery including watering & compaction.	m^3	23.40
4.4.4	Cutting, laying, pegging of turf as directed including watering and keeping moist until plant growth has been re-established, transport 0.4 km by tractor.	m^2	36.00
5	**Rehabilitation of Access Road**		
5.1.1	Preparation of Surface Using Motor Grader (120-150 HP)	Hr.	10.0

5.1.2	Supplying of approved quality gravel including spreading, watering & compaction. Compaction by double drum smooth wheel roller. - 4Km	m^3	238.0
5.2	**Construction of Tractor Crossing-02 N0 (3.6m)**		
5.2.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	3.80
5.3	**Construction of Tractor Crossing-02 N0 (4.8m)**		
5.3.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	3.80
5.4	**Construction of Distribution Box - 01Nos**		
5.4.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	2.00
5.5	**Construction of Causeway in Spill Channel**		
5.5.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	11.90
5.6	**Construction of Box Culvert**		
5.6.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	6.80



Figure 9: Ekamuthugama wewa



Figure 10: The Bund of the Ekamuthugama wewa



Figure 11: The Agri road proposed to be rehabilitated under Ekamuthugama interventions.

2.5. Siyambalagas wewa

The tank is located in the No. 642 Ipalogama GND of the Karuwalagaswewa DS division and its command area typically supports small paddy for local farming families. The tank is currently in a degraded condition, and rehabilitation works as illustrated in Table 8 have been proposed by the DAD. The tank bund remains clear of vegetation; hence, no tree removal is proposed. Required earth for bund rehabilitation is proposed to be sourced from the tank bed.

Table 8: ***Descriptions of Rehabilitation works at Siymbalagaswewa, Puttalam District***

1	**Improvement of Tank Bund**	**Unit**	**Qty**
1.1	Light Jungle clearing by machinery, including removing spoil outside the reservation and burning	Ha	0.64
1.2	Stripping topsoil, receiving new earth & removing spoil outside the reservoir 30m by machinery	m^3	383.00
1.3	Removal of Ant Hills, including application of anti-termite and backfilling with suitable soil, placing and compaction in forming bund including watering. (Average ant hill 0.5cum)	Nos	16.00
1.4	Benching on the existing tank bund slope to receive new earth and spoil to be used for forming bund inclusive of watering and compaction.	m^3	144.00
1.5	Earth excavation from burrow area (cut & lift 0-1.5 m), including spreading, watering, compaction forming bund by vibrating rollers in horizontal layers, cut and finish smooth true slope with proper compaction, finished true slope. Transport by tractor 0.5km.	m^3	2,593.00
1.6	Cutting, laying, pegging of turf as directed including watering and keeping moist until plant growth has been re-established, transport 0.4 km by tractor.	m^2	1,084.00
1.7	Supplying of approved quality gravel including spreading, watering & compaction by double drum smooth wheel roller. - 3Km	m^3	106.30
2	**Repair of Spill**		
2.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	5.50
3	**Reconstruction of 225mm Dia. Head Wall Sluice (01Nos-L/B)**		
3.1	Removing existing damaged sluice	Item	Allow
3.2	Excavation in trenches or cut opening the bund, stockpiling soil at the site, backfilling including placing, watering & compaction by machineries Vibrating roller and dozer. Cut 1.5 - 3m lift up to 3m spread 30m.	m^3	47.30
3.3	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5 m spread 30 m by machinery.	m^3	3.80

3.4	Earthwork using barrow-puddle clay to construct of puddle clay wall, including watering and compaction machinery	m^3	6.00
4	**Down Stream Development L/B & R/B Canals**		
4.1	**Down Stream Development L/B Canal**		
4.1.1	**Rehabilitation of L/B Canal**		
4.1.1.1	Desilting channels by PC 20 or 30 Excavator in loose soil without pontoon cutting depth 300mm	m^2	450.00
4.1.1.2	Earth excavation & forming canal bund cut & lift up to 1.5 m, spread 30 m by machinery including watering & compaction.	m^3	36.00
4.1.2	**Construction of Lining for L/B Canal - 10m**		
4.1.2.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	1.20
4.1.3	**Construction of Farmer Turnout - 10Nos (L/B)**		
4.1.3.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	6.90
4.1.4	**Reconstruction of Over Crossing**		
4.1.4.1	Removing existing Over Crossing Structure & pipe with all accessories	Item	Allow
4.1.4.2	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	5.90
4.2	**Downstream Development R/B Canal**		
4.2.1	**Rehabilitation of R/B Canal**		
4.2.1.1	Desilting channels by PC 20 or 30 Excavator in loose soil without pontoon cutting depth 300mm	m^2	300.00
4.2.2	**Construction of Lining for R/B Canal- 05m**		
4.2.2.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	0.60
4.2.3	**Construction of Farmer Turnout - 08Nos (R/B)**		
4.2.3.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5 m spread 30 m by machinery.	m^3	6.10
4.3	**Construction of Tractor Crossing-01 N0 (3.6m)**		
4.3.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	1.90
5	**Improvement Of Agri Roads**		
5.1	**Construction Of Agri Roads**		
5.1.1	Light Jungle clearing along by machinery, including removing spoil outside the reservation and burning.	Ha	0.30

5.1.3	Stripping topsoil, receiving new earth & removing spoil outside the reservoir 30 m by machinery	m^3	58.50
5.1.4	Earth excavation & forming canal bund cut & lift up to 1.5 m, spread 30 m by machinery including watering & compaction.	m^3	202.50
5.1.5	Earth excavation from borrows area (cut & lift 0-1.5 m), including spreading, watering, compaction, forming bund by machinery, Transport by tractors. Haul distance up to 0.5 km.	m^3	369.00
5.1.6	Supplying of approved quality gravel including spreading, watering & compaction. Compaction by double drum smooth wheel roller. - 3Km	m^3	465.00
5.1.7	Cutting, laying, pegging of turf as directed including watering and keeping moist until plant growth has been re-established, transport 0.4 km by tractor.	m^3	203.00
5.2	**Construction Of Causeways (02 Nos-L/B)**		
5.2.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5 m spread 30 m by machinery.	m^3	14.80
5.3	**Construction of Hume Pipe Culvert -04 Nos(L/B)**		
5.3.1	Common earth excavation in foundation & spoil to waste or fill material cut up to 1.5 m lift up to 1.5m spread 30m by machinery.	m^3	7.00



Figure 12: Siyambalagas wewa access and agri road going to be renovated.

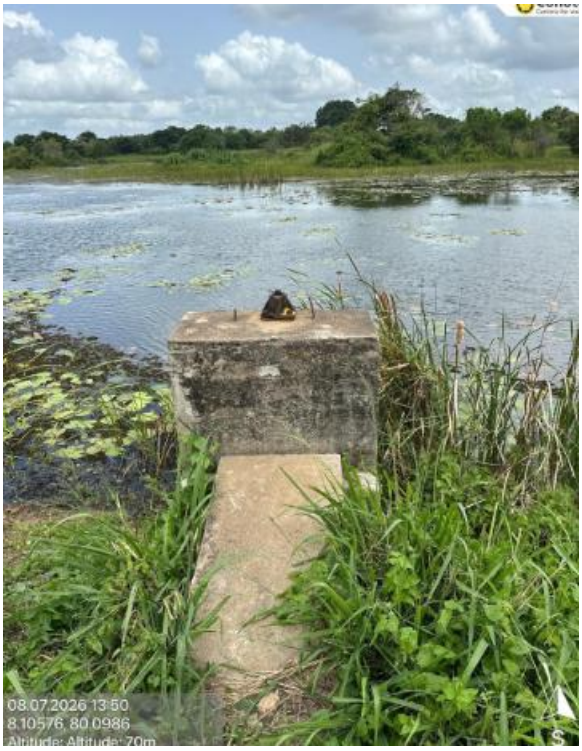


Figure 13: This slice will be removed



Figure 14: Terrestrial and aquatic invasives were found in and around the Siyabalagas wewa

3. Impact Matrix Code

Table 9: 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 damage to 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 neighboring 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;	Mitigation is feasible and

	○ Activities that could lead to invasion or spread of weeds and feral animals or the use of toxic chemicals, intensive use of pesticides. ○ 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.	effective, requiring only moderate design-based and/or 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.

2. Environmental Screening

Table 10: Environmental Screening for the proposed rehabilitation works

No	Screening Questions	Yes/No	Scale of Impact	Remarks
1	Will the proposed project involve the **<u>construction of new physical infrastructure or the rehabilitation of existing infrastructure</u>**? 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 existing spill?) that could lead to the inundation of new areas within the catchment?	**1.1. Yes** **1.2. Yes** **1.3. No** **1.4. No**	**Low Risk**	**Rehabilitation of the headworks** and **downstream developments** are proposed. The specific scope of work is outlined below: **1.1. New Works** The following new structures and improvements under different tanks are proposed for both tanks: • Canal Lining • Bathing steps • New foot paths to access the bund • New slice gates • Farm Turnouts • Tractor Crossings • Hume Pipe Culverts **1.2. Bund, spill and canal rehabilitation works, and Agri Road Improvements** • Rehabilitation of tank bunds • Rehabilitation of downstream canals including spill canals • Improvements to the existing farm access roads. **1.4. Dredging of tank beds are not proposed.**

No	Screening Questions	Yes/No	Scale of Impact	Remarks
	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:			
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 drawdown.	No	--	As informed by the DAD and the Farmer Organizations, ther no intention to lower the tank water levels for the propose rehabilitation works. Construction activities shall only be carried out following the completion of the cultivation seas
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?	**No**	--	

No	Screening Questions	Yes/No	Scale of Impact	Remarks
	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).			
4	Will the project cause localized flooding and/or poor drainage during construction?	**No**	--	No such impact is expected.
5	Will the 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**	**--**	No such an impact is possible.
6	Will construction of the project cause soil erosion within the site due to steep grade or soil content?	**No**	**--**	The proposed **tank bund renovation** and **canal rehabilitation** works in the selected tanks involve significant earthworks. However, the risk of significant soil erosion is considered minimal due to the following factors: • The construction design does not require steep embankment cuts, ensuring better structural stability of the slopes. • The prevailing soil profile in the tank area is not predominantly sandy; instead, it consists of cohesive properties that are less susceptible to rapid erosion. • The construction schedule is aligned with the **dry season**. By avoiding periods of heavy monsoon

No	Screening Questions	Yes/No	Scale of Impact	Remarks
				rainfall, the potential for sediment runoff and water-induced erosion is reduced.
7	Will the Project release pollutants or any hazardous, toxic or noxious substances to **7.1.** Air? **7.2**. Nearby surface or groundwater sources? **20.3**. Soil?	**7.1. Yes** **7.2. No** **7.3. No**	Low Risk	7.1. The project will generate temporary, localized emissions from the combustion of fossil fuels by construction equipment and project-related vehicles. However, these emissions will not be on a significant scale. While dust emissions may occur due to soil disturbance during dry periods, the overall impact is considered negligible and insignificant given the limited duration and scope of construction. These activities will not result in the long-term release of hazardous, toxic, or noxious substances. **7.2.** There are no groundwater sources/water wells along the project boundary; therefore, no such impact is expected, as interventions are limited to the surface layers of the soil.
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	While the proposed rehabilitation works—specifically tank bund renovation and excavation—will generate noise and vibration, the overall impact on the local community is expected to be temporary and localized **8.3**. Dust emission will occur with the dry weather and wind action prevails. But in the sense of the community, it is not a concern. However, the gravel and sand access roads may be a source of dust during construction due to

No	Screening Questions	Yes/No	Scale of Impact	Remarks
				vehicle movements, and dust suppression measures should be implemented along them concerning the wildlife even. **8.4**. No nighttime works shall be involved under this contract 8.5 & 8.6. 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?	**No**	**--**	There ia a PA at the upper catchment at the Siymbalagas wewa and Kekulawala Wewa. However, these Pas are beyond 2 km away from the working areas.
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**	**Moderate risk**	Wild elephants are the main protected species in the area. Other species protected under the FFPO may exist; however, a comprehensive biodiversity assessment was beyond the scope of this screening.
11	Will the proposed project activities cause negative effects on wildlife habitats, populations, corridors or movement?	**No**	**--**	The project areas are identified as a **Human-Elephant Conflict (HEC) zones**. Elephants are encroaching paddy lands frequently. Additionally, there have been sightings of other common wildlife species around the tanks' vicinity.

No	Screening Questions	Yes/No	Scale of Impact	Remarks
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**	Wildlife may approach the tank for water, particularly during the evening hours, which presents a potential risk for poaching. This risk should be mitigated by establishing appropriate protective measures and monitoring programs.
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**	Details are provided under chapter 2 above.
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 situated on relatively **flat terrain**, primarily characterized by **human habitation** and **paddy cultivation**. Forest can be observed at the upper catchment areas. However, no significant impacts on the natural environment or scenic value of the surrounding environment are anticipated or considered likely as a result of the proposed works.
16	Any invasive fauna or flora presents in the tank or surrounding area?	**Yes**	**Low Risk**	There are aquatic invasive plants found in the tanks or along the canal segment or around the paddy field. But terrestrial invasive plants such as *Lantana* sp. were observed along the tank bunds and canal segments as isolated plants.

No	Screening Questions	Yes/No	Scale of Impact	Remarks
17	**Details of headwork structures and reservoir** • Bund Height: • Tank storage volume: • Year of last rehabilitation:	**Bund Height / Tank Storage:** "Variable across the cascade; official data unavailable at the DAD regional office." **Year of Last Rehabilitation:** "Unknown/Unrecorded; approximately more then 15–30 years ago according to local farmers. About most of the tanks, farmers have no memory of rehabilitation works, except mild interventions such as construction of bathing steps, etc." **Structural Assessment:** "No records of a formal structural assessment prior to the current proposal." **Siltation Issues:** "Significant siltation observed across most tank beds; requires desilting to restore design capacity."		
18	**Structural Integrity of Bund and Structures** 18.1. Has a structural assessment been done prior to the proposed rehabilitation? 18.2. Is the spill and tail canal large enough and clear of debris, trees, and sediment? 18.3. Are the spillway and the bund protected against erosion? 18.4. Is there enough height between the normal water level and the top of the dam to handle unexpected rainfall?	18.1. No formal structural assessment has been conducted prior to this proposal. 18.2. While the spillway and tail canal function adequately under normal weather conditions, the current capacity of the few tanks is insufficient to handle extreme weather events (e.g., heavy monsoonal storms). Since some of the spill tail canals become sedimented, vegetation over grown *etc.* 18.3. The tank bunds are primarily covered by naturally occurring vegetation, which provides some protection; however, there is minimal evidence of active maintenance or anthropogenic intervention by farmers to reinforce the bunds against erosion. 18.4. The freeboard is generally sufficient, as spilling typically only occurs during the Northeast Monsoon. Under normal circumstances, there are no records of water overtopping the tank bunds.		

No	Screening Questions	Yes/No	Scale of Impact	Remarks
19	**Potential Losses of a Bund Failure** 19.1. Are there any houses and community buildings within the potential flood path downstream? If yes, please define. • Would a bund failure wash out roads, bridges, culverts? • Are there other tanks downstream that could fail in a cascade effect? • Would a bund failure result in significant environmental or severe economic loss (e.g., to farmland, houses, roads, culverts)?	The smaller tanks and bunds within the selected tanks under this screening are situated adjacent to village access roads. In some cases, residential units are located within a 500 m periphery, or project impact zone. There are also road culverts in the vicinity. Consequently, any failure of the tank bunds could result in considerable loss or damage to humans, roads, culverts, and nearby few residences. Impact on wildlife is not known actually. The tanks selected for this intervention are located along nearly the same contour line and are interconnected by canals, all of which are less than one kilometer in length. There are downstream smaller tanks a.t some locations.		

5. Screening Decision

5.1. Project Context and Scope

The proposed rehabilitation works for five tanks in the Putthlam district within two DNDs are connected vis spill water, and support communities for agriculture especially paddy farming and day other requirements such as bathing and animal husbandry.
As detailed in Chapter 2, the project scope includes bund renovation, and specific downstream irrigation improvements. No desilting activities are proposed.

5.2 Key Findings

Social & Occupational Health and Safety (OHS): The project entails standard construction-related health and safety risks, which should be managed by adhering to mandatory OHS protocols with special attention on focusing on preventing snakebites and human-elephant encounters.

Physical Environment: The proposed civil works will involve extensive earthworks. Risks of localized soil erosion and fugitive dust emissions are anticipated during the rehabilitation of tank bunds, and canal linings. Required earth are planned to be taken from the tank bed. Possible impacts are localized, temporary, and manageable through standard engineering best practices.

Biological and Cultural Context: Some locations are free of HEC, while others are not. While the proposed works are not located within or adjacent to designated forests or any other protected areas, the potential for archaeological chance finds remains a concern during earthworks. Furthermore, the presence of aquatic IAS within the selected tanks poses a risk of further spreading; therefore, controlled biosecurity practices must be enforced during the construction phase to prevent any further spread.

The removal of trees and clearing of riparian vegetation for bund rehabilitation works present potential risks to local fauna, particularly nesting birds and reptiles. Therefore, site-clearing operations must be closely monitored, and active nesting sites must be protected. To offset the loss of vegetation, a compensatory tree-planting program must be implemented and managed appropriately in accordance with local environmental regulations.

Tank bunds are going to receive earth from the respective tank bed for rehabilitation works. Improper dredging risks puncturing the tank's natural clay seal or hard core, which can permanently ruin its water retention capacity through excessive leaking. This should be managed carefully, and earth-received areas shall be flattened and attended to.
Agricultural Continuity: To minimize socio-economic impacts on the local farming community, all physical rehabilitation works should be scheduled during the dry season (**post-Yala season**) or

during the fallow period between cultivation cycles. This phasing ensures zero disruption to the irrigation water delivery schedules.

5.3 Conclusion and Recommendation

In conclusion, the activities proposed by the DAD, Puttlam District, are not anticipated to cause significant, long-term, or irreversible environmental degradation.

Therefore, the project is recommended for implementation, subject to the strict adherence and execution of the standard mitigation measures outlined in the **EMP**.

Name: Maheeni Samarakoon Singappuli
Title: Senior Environmental Specialist - IRDCRP
Date: 07.09.2026

Table 11: Environmental Management Plan for the Selected Tanks under Maha Kirimatiyawa and Kokebe Cascades.

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 snake attacks during material transport, site access, and construction activities. Dehydration for workers.	**During the site access** **Material transport** **During the physical work**	1.1. Environment, Occupational Health and Safety Officer (EOHS Officer) shall be employed by the contractor covering the entire work program under this contract. He or she will be responsible for the daily implementation of EMP and SMP[1] (ESMP[2]). 1.2. Implement measures to prevent heat stroke and dehydration during the hot sunny days. Mandatory provision of safe, clean drinking water accessible at all times. It may schedule heavy work for cooler parts of the day (e.g., early morning). Clean food shall be provided for the workers at all times. 1.3. A **temporary workers' shelter** shall be constructed near the site to provide a rest area for the workers. 1.4. Possible risks of snake bites, insect attacks. - safety shoes and/or boots shall be provided for all workers, and their use is mandatory on the worksite to protect against snake bites, sharp objects, and	Construction cost	Contractor	DAD PMU

[1] Social Management Plan
[2] Environment and Social Management Plan

			other ground hazards. No one shall remain on the site after working hours. 1.5. First Aid and Emergency Response: In the event of an incident (such as a snake bite, insect attack, or any other), a designated sentinel person trained in first aid and emergency response should be kept ready on site. Immediate Hospitalization Protocol: readily available facilities must be established on site for immediate hospitalization, ensuring rapid access to the necessary medical facilities. 1.6. Cooking shall not be allowed on the sites. 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 center 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. **1.7**. Ensure all equipment and vehicles are inspected, well-maintained, and operated only by certified and licensed operators. **1.8.** To prevent accidental falls and vehicle-induced collapses, all 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, as appropriate.			

			Warning Signage: Post high-visibility "Deep Excavation" and "Authorized Personnel Only" signs at 10-meter intervals, as appropriate/if required. **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. **1.9. 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. **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. **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. **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.			

			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. **1.10. Traffic Management and Public Safety** **Site Access and Haulage** Construction materials may need to transported via main roads as well as village roads (which are not constructed appropriately). Almost all the tanks located within the villages where public use the tank access roads. Hence; ▪ **Driver Briefings:** All drivers must be formally briefed on defensive driving techniques, strict adherence to national speed limits, and local traffic regulations. • **Scheduling:** To minimize congestion and risk, material haulage should be scheduled during **off-peak hours** (low traffic periods) whenever possible. ▪ **Safety on Village roads, Agricultural Roads & Tank Bunds.** Where above roads are utilized as tank access roads, the following safety measures are mandatory to protect local commuters and infrastructure: • **Signage and Awareness:** Clear, high-visibility warning signs (e.g., **"Construction in Progress," "Caution: Deep Excavation"**) must be installed at least **50 meters** ahead of the work zone from both approach directions. • **Night Safety and Perimeter Control:** Any excavations remaining open overnight must			

			be securely cordoned off using **high-visibility reflective tape**, **orange safety cones**, or **barricades** equipped with amber flashing lights to ensure visibility in low-light conditions. **1.11. Construction Material Management:** ▪ No stockpiling of excavated silt or construction materials on the road surface. Ensure the road remains clear for the passage of vehicles at all times. ▪ Identify a suitable area for temporary material storage near the tank where sufficient space is available, subject to the authority and approval of the DAD. **1.12. Dust and Air Quality Control** **Water Sprinkling:** The contractor must implement regular water sprinkling on the dry canal banks and the road shoulder during active work hours to suppress dust, which can affect the health of villagers and visibility for riders. **1.13. Vehicle Maintenance:** Ensure that all machinery (backhoes, tractors) is well-maintained to prevent excessive smoke emissions or oil leaks onto the public roadway. **1.14. Work Scheduling:** Coordinate with the local **Farmer Organization (FO)** to avoid construction during peak cultivation or harvesting times when vehicle movement (tractors/trailers) might increase temporarily.			

2	Biological Invasion: The risk of spreading invasive terrestrial and aquatic plant species.	Rehabilitation of pond dikes, canal dikes, cleaning/rehabilitation of canals, and Material transportation.	**Aquatic invasive species occurrence is a concern in the tanks. Therefore, no chance shall be kept to spread invasives further under this contract.** 2.1. None of the chance shall be kept to inoculate aquatic invasives or any other species to the canal segments. 2.2. All tools and machinery (machetes, shovels, vehicle tires, and boots) shall be cleaned before leaving the site. 2.3. Borrow material for farm road 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.	-----	Contractor	DAD PMU
3.	Accumulation and disposal of solid waste due to proposed activities.	Removal of vegetation. Solid waste from construction staff.	3.1. Disposal should be coordinated with the Department of Agrarian Development and the local Farmer Organization (Govi Sanvidhana). 3.2. Demolished structures, such as sluices and concrete spill structures, should be **disposed of** in an appropriate location or buried **in consultation with** the DAD Engineer. 3.3. Always consider surrounding paddy fields. Ad-hoc dumping in one area can cause rapid pollution in the next tank in the cascade. 3.4. No labour quarters shall be allowed on site under this contract on or around the worksite due to elephant encounters. A suitable location shall be found by the contractor.	------	Contractor	DAD

			3.5. Reusable waste, shall be either resold or reused. 3.6. Any hazardous waste must be handled with special care and according to instructions from the local authority. 3.7. 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. 3.8. **Food waste must not be discarded** into the surrounding environment under any circumstances. All organic and food-related waste shall be collected in containers and **removed from the site daily**. Strict adherence to this protocol is mandatory to prevent the **attraction of elephants** and other wildlife to the work site, thereby minimizing the risk of human-wildlife conflict and ensuring the safety of personnel. 3.9. There should be no burning of wastes on site. 3.10. Workforce-related solid waste shall be removed from the site on a daily basis. 3.11. 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. Timber should be handed over to the Timber cooperation via the Divisional Secretary or following the existing regulations by the DAD. **Cleared vegetation/branches of trees along the canal may be hand over to the community, for fire woods.** 3.12. All excess material should be moved immediately to a pre-identified disposal site away			

			from the road drainage system to prevent clogging during rainy spells.			
4	Air and Noise Pollution: Impacts related to dust, noise, and vibration.	**Operation of equipment and machinery. Material storage and transport.**	4.1. Working time for noise/vibration generation activities should be restricted and carried out only from 7.00 am to 5.00 pm. 4.2. 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.	----	Contractor	DAD
5	**Extraction of natural resources**	**Material (soil/earth/gravel) Sourcing**	5.1. If the required earth or gravel is to be sourced from the tank bed, the following measures shall be applied: • **Silt Removal & Depth Management:** Limit excavation strictly to the designated areas and approved depths within the silted zone to avoid compromising the structural integrity of the tank bund or breaching the impermeable clay layer beneath. • **Drainage & De-watering:** Ensure proper drainage management during excavation to prevent stagnant water pools from forming, which can create breeding sites for vectors. • **Protection of Inlet & Outlet Structures:** Maintain a safe buffer distance between the excavation pits and key infrastructure such as	-----	Contractor	ID PMU

			the sluice (*biso kotuwa*), spillway, and major feeder inflows. • **Topsoil Management:** Stockpile any stripped fertile topsoil separately for later reuse, such as for turfing the reconstructed bund slopes. • **Haulage & Dust Control:** Implement dust suppression measures along transport routes and restrict heavy vehicle movement during adverse weather conditions to minimize damage to local access tracks. **Hard core/Water Retention Protection** • Establish strict depth limits for excavate the tank bed by the engineer. • Prohibit deep-pit dredging in the middle of the tank bed; instead, prioritize uniform, shallow scraping or desilting of accumulated sediment layers to enhance water storage capacity safely. • Ensure all excavated borrow areas and earth-received zones on the bunds are properly leveled, graded, and compacted to prevent localized water pooling, and erosion. **Erosion and Sedimentation Control** • Schedule earth extraction and bund rehabilitation during the dry season (dry spells) to minimize runoff and turbidity in remaining water pools. • Construct temporary silt traps, sediment barriers, or bunded settling areas downstream of the excavation zone to prevent eroded soil			

			from clogging sluice gates, canals, or downstream agricultural lands. • Re-vegetate exposed embankment slopes and borrow areas immediately after earth placement using native grasses or turf-forming vegetation to stabilize the soil against monsoon rains. **5.2. Aquatic and Terrestrial Biosecurity (IAS Management)** • Inspect tank beds prior to excavation to identify the presence of aquatic invasive alien species (IAS) such as *Salvinia molesta*, *Eichhornia crassipes* (Water Hyacinth), or *Typha* species. • Excavated soil or sediment containing IAS roots and seeds must not be dumped haphazardly or used on bunds where runoff can spread them; instead, stockpile and dry IAS-infested material securely away from waterways, or bury it deep within designated non-water-holding areas. • Wash down and clean all machinery and transport vehicles before moving them between different tanks to prevent cross-contamination of aquatic weeds. **5.3. Fauna and Habitat Protection** • Conduct pre-construction walkthroughs to identify active bird nesting sites, reptile habitats, or fauna utilizing the riparian and tank-bed vegetation.			

			• Restrict heavy machinery operation to designated daytime hours to minimize disturbance to local wildlife, particularly migratory and water birds frequenting Puttlam's tank ecosystems. • Retain buffer strips of riparian vegetation around the tank periphery where feasible to maintain ecological corridors. **5.4. Human-Elephant Conflict (HEC) Safeguards** • Evaluate whether the specific tank location falls along recognized elephant movement paths or seasonal foraging routes common in parts of the Puttlam District. • Prohibit workers from lingering near the site after dark, avoid open food waste dumping that attracts wildlife, and establish a clear evacuation or alert protocol if wild elephants approach the active work zone. 5.5. **Archaeological and Cultural Chance Finds** • Brief machine operators and site supervisors on the protocol for archaeological chance finds. • Halt excavation immediately in the vicinity if pottery shards, brick structures, or unusual artifacts are uncovered, and inform the Engineer/TO DAD before resuming work. 5.6. If the earth/gravel are sourced from Out side the Tank below measures shall be applied.			

			▪ The contractor shall 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. ▪ 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. ▪ The contractor is required to ensure that sand, aggregates (if required for this contracts), 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.			

6	**Soil erosion, sedimentation of paddy fields.**	**Construction work including, clearing surface vegetation** **Removal of top soil along the canal segments and farm road.**	6.1. 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, shall be done. 6.2. For any activity related to the construction, the excessive clearing of ground vegetation, or the removal of trees shall not be done. 6.3. Avoid stockpiling disposed material such as removed earth from canal rehabilitation works. Those shall be reused or disposed of appropriately as guided by the TO-DAD. 6.4. All exposed soil areas shall be stabilized and re-vegetated as soon as possible on completion of works to prevent potential future erosion. 6.5. Prohibit stockpiling within riparian buffers. All stockpiles should be at least 10 m away from the edge of a canal/waterway or the tank bund. 6.6. Cover all stockpiles with tarpaulins, or dry coconut leaves *etc*. or any other suitable locally sourced material and carry out water sprinkling prevent wind erosion. 6.7. Construct temporary containment bunds and catch basins around storage piles to capture runoff shall be done as required.	Construction cost	Contractor	PID
7	**Removal of Trees**	**Tree removal for bund rehabilitation works**	The number of trees listed for removal in the Bill of Quantities (BoQ) may not reflect the actual number required for removal. Therefore, before any physical implementation begins on site, the DAD must reassess the trees that need to be removed and inform the PMU in writing of the exact number for each site.	Construction cost	DAD Contractor	PMU

			7.1. Furthermore, the DAD must mark all trees designated for removal before the contractor mobilizes. 7.2. Only trees that have been reconsidered, approved, and physically marked with high-visibility paint by the DAD shall be removed. The Contractor must ensure that adjacent trees, particularly mature native canopy trees and those within the *Kattakaduwa* – Interceptor zone, are fully protected from accidental damage by heavy machinery. 7.3. Prior to the removal of any marked trees or any other vegetation, the Contractor—under the supervision of the DAD Technical Officer or an Environmental officer—must conduct a thorough physical inspection of the branches and canopy for active bird nests, roosting sites, or wildlife habitats. 7.4. **Protection of Active Bird Nests:** If an active bird nest (containing eggs or chicks) is discovered, the tree must not be cut, trimmed, or disturbed. A temporary buffer zone with a minimum radius of 10 meters must be established around the tree. Removal activities for that specific tree and its immediate surroundings must be suspended until the nesting cycle is complete and the fledglings have permanently left the nest. 7.5. Standard administrative procedure for removal of trees shall be followed by the contractor under supervision and guidance of the DAD. Required approvals, clearances shall be obtained. Timber handing over procedure to the Timber cooperation via the divisional secretary shall be sticky followed.			

			7.6. Unwanted segments such as branches of the trees etc. shall be handed over to the community as per their request for fire wood etc. or else shall be removed from the site appropriately under supervision of DAD.			
8	**Compensation replanting**[3]	**Removal of three trees along the** tank bunds.	**8.1. Compensatory replanting** shall maintain a **1:5 ratio** for every tree removed. **8.2. Species selection** is subject to the approval of the **DAD**. **8.3.** The **DAD** will facilitate the selection of replanting sites within **DAD-managed lands**. **8.4.** Minimum sapling height shall be **2 feet**. **8.5.** The contractor shall initiate planting at the start of the contract and manage maintenance (watering/monitoring) until project completion, after which the relevant Farmer **Organization** will assume care.	Construction cost.	Contractor FO[4] DAD	PMU
9	**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; 9.1. Immediately stop the performing activity. (With the approval of the resident engineer, delineate the discovered site area. 9.2. 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.	---	Contractor	DAD PMU

[3] If the **Department of Agriculture Development (DAD) Engineer** determines that additional plant removal is required during the project implementation period, a **replanting ratio of 1:5** shall be strictly maintained. All replanting activities, including subsequent maintenance and monitoring, must be conducted in accordance with the protocols specified in the **EMP**.

[4] Farmer organization.

			9.3. Through the responsible officer of DAD, notify the responsible authorities, the Department of Archaeology, and local authorities within as soon as possible. 9.4. 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. 9.5. Responsible authorities would be in charge of protecting and preserving the site before deciding on the proper procedures to be followed. 9.6. 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. 9.7. 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.			
10.	Water Quality Degradation: Tank water pollution stemming from	**From the machinery, vehicles, and stores.**	10.1. Fuel or lubricants shall not be stored anywhere on the site. 10.2. Store all oil and lubricant containers (including drums, tanks, and static plant equipment like generators) in a larger container.	Construction cost	Contractor	DAD PMU

	construction materials and runoff.	**Cement/concrete works.**	10.3. Regularly inspect equipment, hoses, and storage containers for leaks, drips, or signs of wear. 10.4. Designate and use a safe area for vehicle and equipment fueling and maintenance that is away from the water body and surrounding forest patches. 10.5. If a contamination happens, use absorbent socks, granular absorbents, or temporary barriers to immediately surround the spill and prevent its spread. 10.6. Clean up the spilled area in an appropriate manner, and dispose of it appropriately under consultation with the Local Government Authority (LA - Pradeshiya Sabha). 10.7. Reporting to the DAD and the PMU on the event should be performed.			