Smart City Thiruvananthapuram Limited
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NOTICE INVITING TENDER (NIT)

NIT No. SCTL/PRJ/2625/2021/UD **Issued Date: 04/03/2022**

Smart City Thiruvananthapuram Limited (SCTL) invites **bids** from **Accredited Agencies of Govt. of Kerala as per Go no77/2019/FIN of finance department** for Rejuvenation of Karimadom Pond including Construction of Embankment under the Smart Cities Mission Program of Government of India as per details given below:

S.No.	Particulars	Details
	Name of Work	Rejuvenation of Karimadom Pond including Construction of Embankment
	Location of Work	Thiruvananthapuram ABD Area
	Brief description of Work	Scope indicated under this project is to increase the water retention capacity of Karimadom pond by construction of embankment.
	Duration of Completion of Work	6 months
	Estimated Cost of Work	Rs. 4,39,64,000.00/- (Four Crore Thirty-Nine Lakhs Sixty-Four Thousand Only)
	Bid Validity period	180 days form the due date for submission of tenders (or such extended date).
	Mode of selection	**Tender Open for Accredited Agencies of Govt. of Kerala as per Go no77/2019/FIN of finance department; on percentage rate basis.** **Lowest Quoting Bidder (L1 bidder) to be selected.**

S.No.	Particulars	Details
	documents to be downloaded from (Date)	**04/03/2022; 10 30 Hrs IST**
	Publishing Date	**04/03/2022; 10 30 Hrs IST**
	Submission End Date	**17/03/2022; 16 30 Hrs IST**
	Declaration of Results of Technical Evaluation on website	**To be intimated later**
	Date & Time of Opening Price Bid	**To be intimated later to technically shortlisted bidders**
	Issue of LoA to the Selected Bidder (Contractor)	**To be intimated later**
	Websites for Tender Download and address for tender submission	https://smartcitytvm.in/ Address for Tender Submission **Chief Executive Officer** Smart City Thiruvananthapuram Limited 4th Floor, Felicity Square, Opp. AG's Office, MG Road, Near Statue, Thiruvananthapuram – 695 001, India General manager- 9846010506 Manager(PMM)- 9447778672

Submission Guidelines

1. Bid documents can be downloaded free of cost from the Website https://smartcitytvm.in/tenders. Offers are to be submitted **in physical copies** and in the designated cover(s)/ envelope(s) on the designated website.
2. More details can be had from the office of the 'Smart City Thiruvananthapuram Limited' during working hours 10 am to 5 pm IST. All other existing conditions related to bidding in force in the Kerala Public Works Department will be applicable in this tender.
3. The Smart City Thiruvananthapuram Limited reserves the right to accept or reject any or all tenders without assigning any reason thereof.

Signature and seal of Authority

For and on behalf of

Chief Executive Officer,

Smart City Thiruvananthapuram Limited

SMART CITY THIRUVANANTHAPURAM LIMITED

Project Report

Rejuvenation of Karimadom Pond including Construction of Embankment

1. Introduction

1.1. Project Location

Karimadom pond is a retention pond located in the Karimadom EWS-housing colony along the Attakulangara-Killipalam by-pass Road, Thiruvananthapuram. The pond spreads over the area of 1.38 Acres and is situated between 8°28'44.2"N , 76°57'06.1"E. The site is 1km away from Padmanabhaswamy Temple complex, Thampanoor Railway station & bus terminal and 300m away from Chalai market (Fig 1). The site is located opposite to Sanmathi Park and TRIDA Shopping complex. The project site comes under Manacaud ward (ward no. 72)(Fig 2).

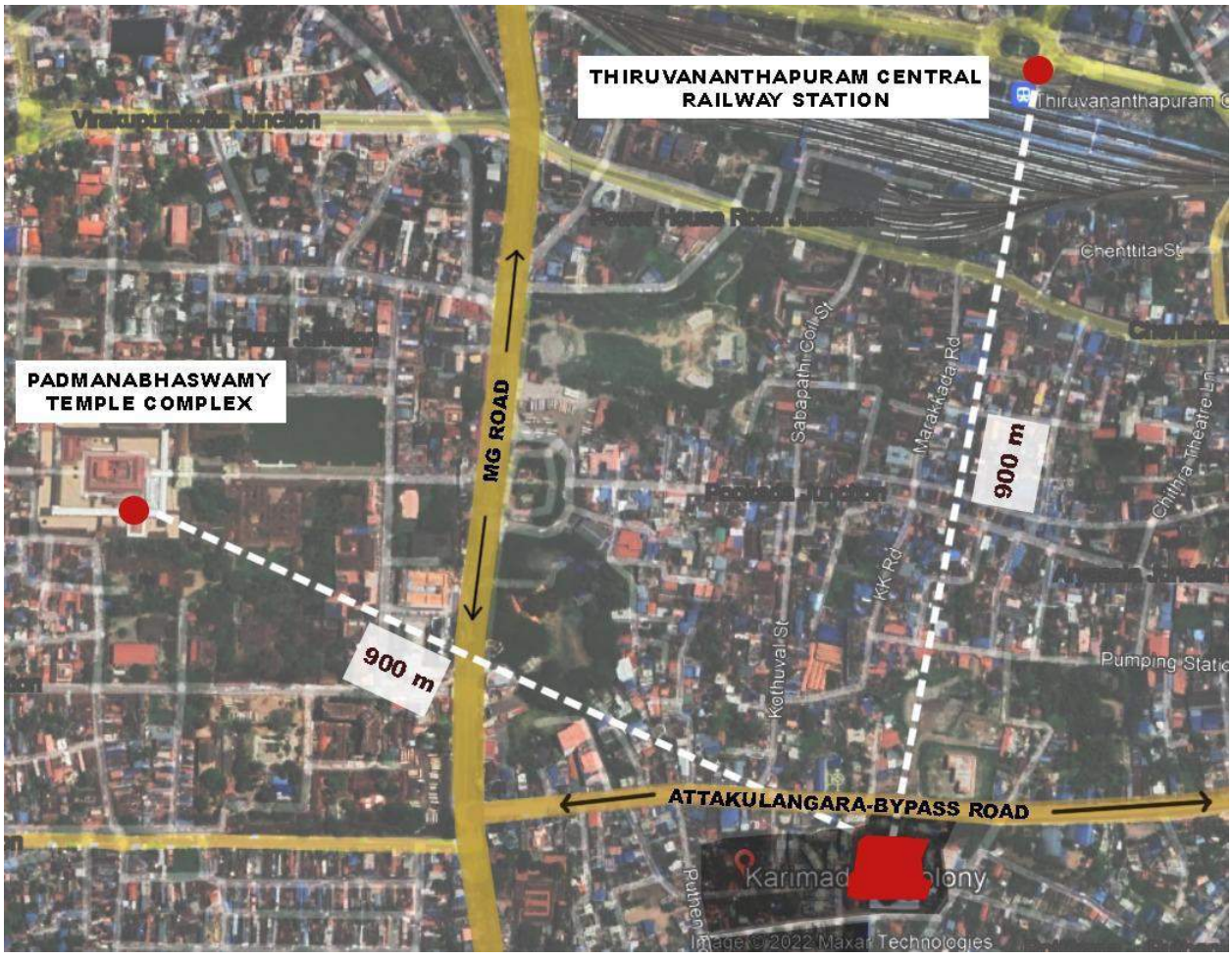


Fig 1 Location map of Karimadom Pond

Fig 2 Satellite image of Karimadom pond and neighboring buildings

Fig 3 Aerial view of Karimadom Pond & premises

Fig 4 Photograph of Karimadom Pond Edges

Fig 5 Photograph of Thekkenakkara canal starting from Karimadom Pond

1.2. Background of the project

The project was conceived as the Hon'ble Chief Secretary, Government of Kerala suggested to consider a new project which will help to mitigate flooding issues in Thiruvananthapuram at the same time help in beautification of the city and also reduce the problems pertaining to sewerage.

Subsequently, meetings were held with the Secretary, Water Resources, Government of Kerala and after Joint site visits and detailed deliberations, it was decided that SCTL could take up Rejuvenation of Karimadom Pond, which is a retention pond connected to a network of drains, which that fluctuates in response to the precipitation and runoff from the contributing areas.

1.3. Canal connections of Karimadom pond

The Thekkenekara canal is one of the main flood water canals which start from Karimadom pond and passes through the most populous areas like East Fort, Padamanabhaswamy Temple, Sreevaraham, Muttathara, N H bypass and ends in Parvathy Puthanar near Puthenpalam. Thekkenekara canal has a length of 2.5 km and an average width of 2.5m to 5m (Source: SLIP-AMRUT https://tmc.lsgkerala.gov.in/). Kuriathy Canal starts from Thekkenakkara canal and releases the storm water to Killi River at Puthenkotta. Kuriyathi canal has an average width of 2m (Source:Minor Irrigation). Killi River is one of the two major rivers which plays an important role in the drainage network of the city. In case of flood events, the excess water entering the Karimadom pond beyond its retention capacity flows out through the Thekkenakkara and Kuriathy canals. The one and only drain near the aerobin is a storm water drain which is only in use during the rainy season and is not connected to the pond. Fig 6 depicts the mentioned pond and canal connections.

Fig 6 Karimadom pond and canal connections

1.4. Immediate surroundings of Karimadom pond

The Karimadom colony spreads over an area of 9.5 acres, which comprise the pond of size about 75m x 70m. Including people in the BSUP residential buildings and squatter settlements, the colony accommodates 770 HHs, which counts approximately 5000 residents. Immediate buildings around the pond are 6 Residential Blocks, a Community Hall, Public toilet, Community Kitchen built under the BSUP Scheme of Thiruvananthapuram Municipal Corporation by COSTFORD and an Aerobin. There are five access points to approach Karimadom Pond from the adjacent roads (Fig 7).

Fig 7 Immediate Surroundings of Karimadom pond

1.5. Previous attempts to revive the pond

Previous attempts to revive the pond have happened in 2016, 2019 & 2021. In 2016, Thiruvananthapuram Municipal Corporation assigned COSTFORD to remove silt and waste from the pond. In 2019, Environmentalist Foundation of India (EFI) , an environmental conservation group in association with TMC and IndusInd Bank took up the restoration of Karimadom Pond under Jal Jeevan Mission. This restoration work included removal of solid waste & invasive weeds, desilting and dewatering, construction and strengthening of bund, protective fencing & jute pitching, plantation and construction seats near Aerobin (Source:https://efiblog.org/). Awareness program was also part of this project. This project was completed by Dec 2020. From Dec 2021 to Jan 2022, Smart City Thiruvananthapuram Limited entrusted Clean Kerala Company Limited to remove non-biodegradable waste from the pond. (Fig 8).

Fig 8 Before and After Photographs of EFI's & SCTL's projects at Karimadom

1.6. Existing scenario

The prime issue at Karimadom colony is that waste is not managed properly. That has led to waste dumping into the pond and premises. Waste dumping issues apply to Thekkenakkara Canal too. There are direct sewage discharges from the city throughout the Thekkenakkara canal. When the canal is clogged, backflow happens at Karimadom pond which invites the sewage and waste dumped into the canal to the pond too.

Following are the contaminants in Karimadom pond at present:

- The waste dumped into the pond due to the unsegregated waste reaching the adjacent Aerobin
- Direct littering from the residential blocks around the pond
- Waste from the butcher shop & poultry shop beside the pond
- Backflow of the clogged Thekkenakkara canal which contains solid waste as well as sewage discharge
- Sediments & silt from the storm water entering the pond
- Algal bloom

Karimadom Pond edge is not embanked. Currently the pond edge is a bund and protective fencing built by EFI. The bund has eroded. The fencing perimeter is around 300 meters. At the pond edge beside the community hall there is a compound wall of height 1.1m that runs 60meters in length(Fig 9).

Fig 9 Photographs of existing Karimadom pond edge & key map of the locations

There is a sewage line across the outflow of water from the pond to Thekkenakkara canal. Solid waste gets accumulated on the sewage pipe and chokes the canal mouth thus obstructing the outflow of pond water to the canal. (Fig 10) This has to be rectified in this work.

Fig 10 Photograph of the sewage pipe line obstructing the outflow of the canal

1.7. Proposal

The intervention area is Karimadom pond and its immediate surroundings as shown in Fig 13. Considering the current situation of the pond, desilting and dewatering has to be done in this project. Reclaiming the actual depth of the pond(approx 6m) is another requirement to increase the holding capacity of this retention pond. Construction of an embankment (Fig 14) around the pond is a necessity as the pond doesn't have a proper edge protection yet. Shutter and trash barriers (Fig 11 & 12) shall be fixed at the origin of Thekkenakkara canal from Karimadom pond to stop any solid waste being exchanged and also to stop sewage from Thekkenakkara canal being mixed with Karimadom pond water while back flow happens (Fig 15). A solution has to be implemented for rerouting sewage lines obstructing the canal.A system has to be in place to make sure periodic cleaning of the accumulated Solid waste is possible even post construction.

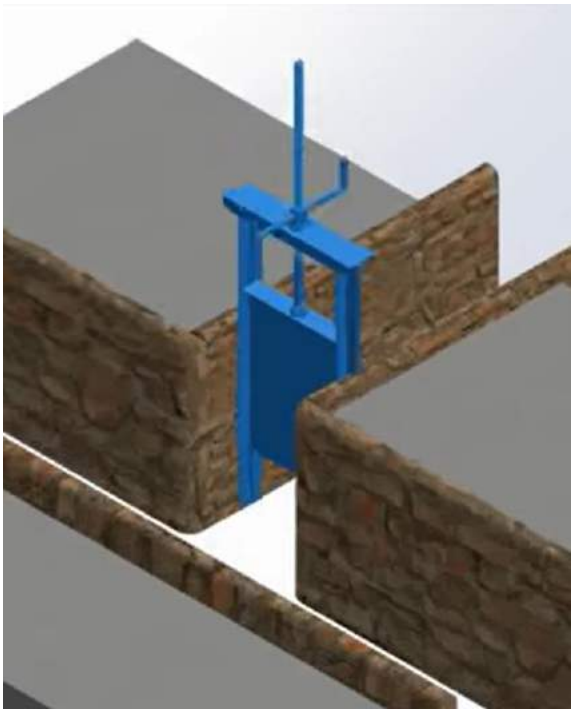


Fig 11 Sample shutter

Fig 12 Sample Trash barrier

Fig 13 SCTL's intervention area at Karimadom

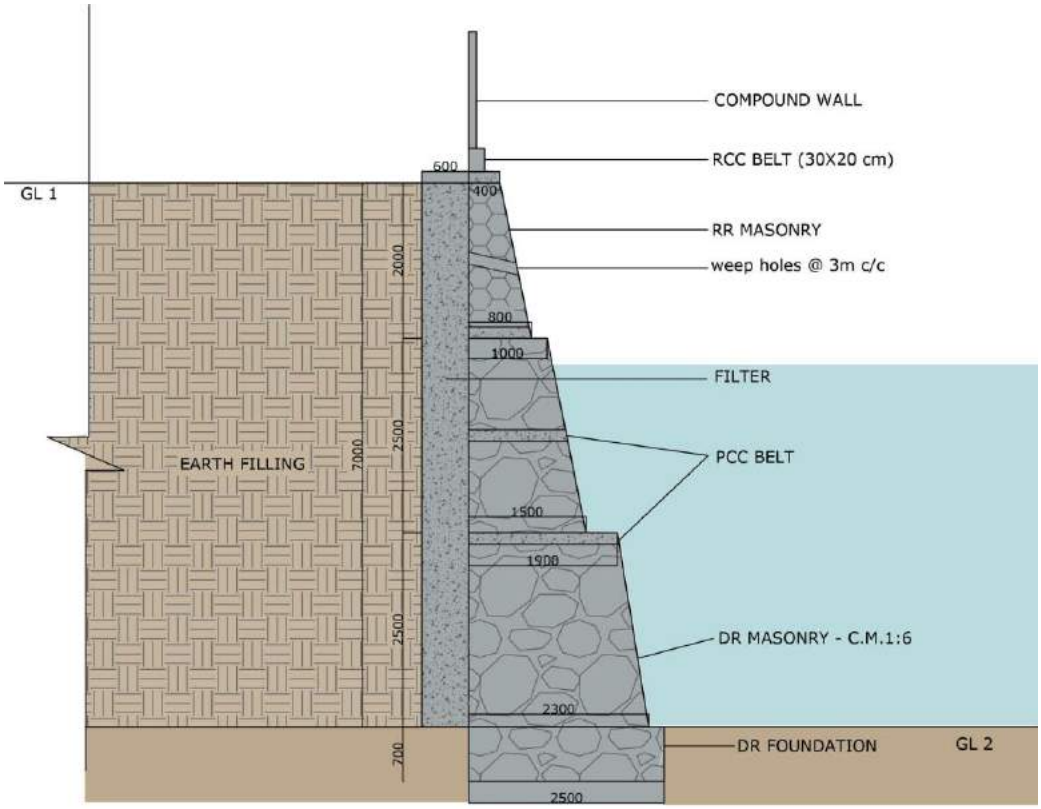


Fig 14 Typical Section of the embankment

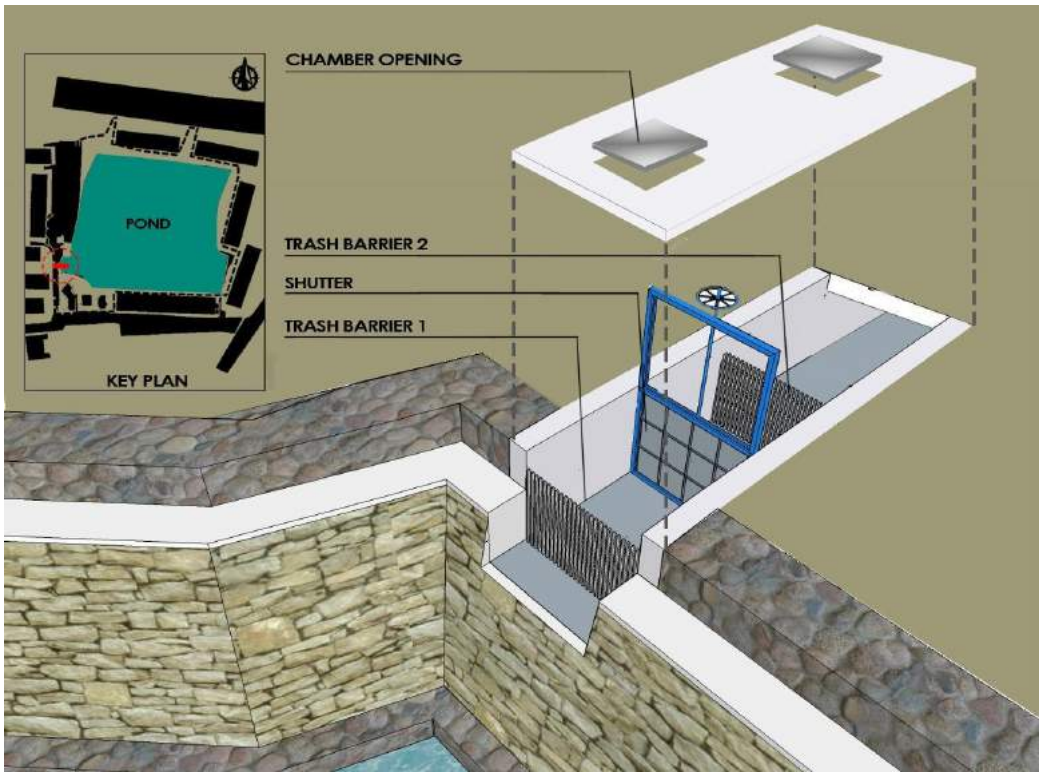
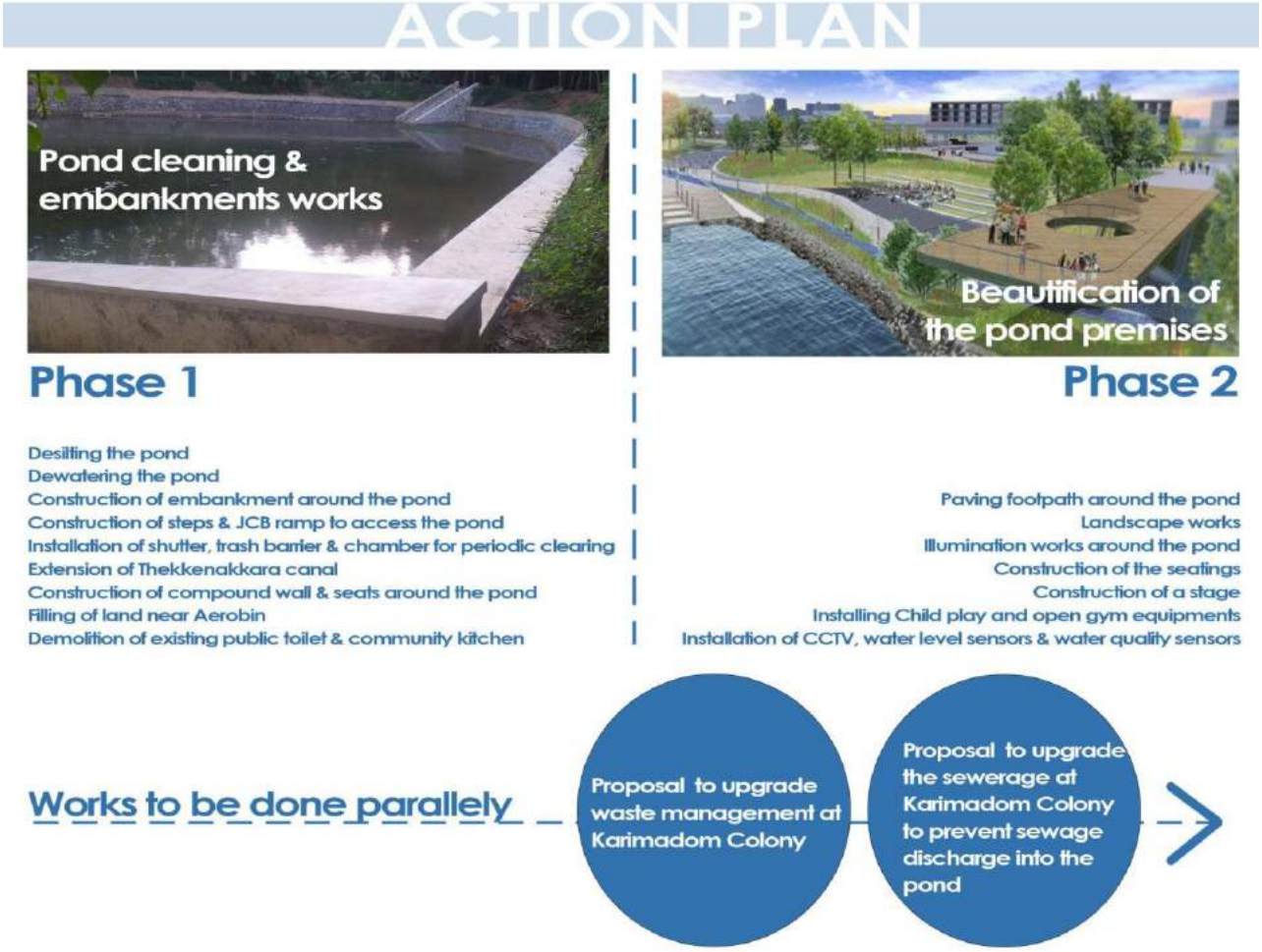


Fig 15 Typical Design for Sluice shutter chamber

1.8. Phasing

The Project can be implemented in two phases and there are some proposals that can be implemented parallelly. Schematic diagram of the proposal is as follows



1.9. Outcome of the project

The expected result from this project is a clean karimadom pond with well designed pond edges and enough facilities for periodic cleaning.

1.10. Scope of work

Broad Project Components:

1. Desilting of Karimadom Pond
2. Construction of Embankment around the Pond
3. Extending Thekkenakara Canal by 10 meters
4. Installation of Sluice Gate Shutter
5. Demolition Works
6. Filling and leveling of land

Brief Description of each Item

1. **Desilting of Karimadom Pond:**
   Contractor has to desilt the pond and clear silt deposited at the base of the pond. The Area of the pond is 1.39 Acres. Irrigation department is already scheduled to desilt approx 50% of the pond area upto a height of 2.5 Meters from base of the pond (Pond Depth is around 6 Mt).

2. **Construction of Embankment around the Pond**
   Contractor has to design and construct an embankment for the pond to ensure that the pond is well protected on the sides. Contractor may consider dewatering for the same based on their assessment of the site conditions and construction methodology. The typical cross section of the embankment is attached for reference (Fig 14). Contractor has to submit the 'Good for Construction' drawings based on their design calculations which has to be prepared by a structural engineer. Two Stair entries have to be given into the pond which is 15m and 20m wide. JCB ramp access has to be given into the pond so that future cleaning is considered. Compound wall/fence & Pond side seats attached to the compound wall have to be built on the embankment. Design details of the same are in the annexed drawings.

3. **Extending Thekkenakara Canal by 10 meters**
   The Canal has to be extended by around 10 Meters till the embankment edge and the design should be conceived in such a way that it continues to act as an outflow for the retention pond in case of heavy discharge or rains. The area to be extended is indicated in the annexed drawings . The design should be in such a manner that it reduces backflow of water and Solid Waste from Thenakara Canal. Suitable measures can be proposed for effective management of this system. A sluice shutter gate chamber has to be placed in the Canal to regulate the flow of water. Two trash guards may be installed before and after the sluice gate shutter to prevent solid waste from the pond and canal entering the sluice shutter gate chamber. Accessible Chambers may be given for periodic clearing of solid waste trapped before the trash guard and into the sluice shutter gate chamber(Fig 15). While construction contractors have to reroute the exist sewage pipe obstructing the outflow of the pond (Fig 10).

4. Installation of Sluice Gate Shutter

A Sluice Gate Shutter of rising spindle type or a suitable alternative option has to be designed and installed by the contractor which can regulate the flow of water. The system has to be in alignment with Irrigation department's usual operating procedure for water flow regulation. Contractor has to submit the design drawings, technical specifications, methodology of sluice gate shutter (Preferably SS 304 with anti corrosive coating) with appropriate seal to avoid leakages) based on site conditions and water quality (untreated polluted water) to avoid rusting and damages. The inner width of the existing canal is around 3Meters so the system has to be designed as per the width. The solutions should be able to withstand flow of water (mixed with solid waste) from two directions. Indicative drawing is attached in Fig(15).Trash guard or debris barrier also needs to be provided on both sides which can filter small solid wastes . Openable Slabs and related civil works also have to be provisioned for periodic cleaning of the solid waste/silt stuck in this area and for the operation of the shutter.

5. Demolition Works

There is a dilapidated public toilet and Community kitchen near the community hall beside Karimadom pond which needs to be demolished. The existing 1.1m high compound wall of 55m length at the pond edge beside the community hall has to be demolished. The existing fencing mesh with granite stones around the pond has to be demolished as this project includes new compound wall/fencing.

7. **Filling and leveling of land**

Land level differences(If any) will be cleared and leveled by the contractor.