

# **Note on OPERATION ANANTHA - Flood control of Thampanoor from May 2015 till March 2016**

The project "OPERATION ANANTHA" was launched in the month of May 2015 as a permanent solution to the flooding problem, starting with the Thampanoor-Eastfort area, within the capital city of Thiruvananthapuram. Later, because of public demand, this was extended to areas like, Karimadom colony - Yamuna Nagar - Aryashala, Kariyila thodu near Enchakkal, Pattom - Marappalam area and Technopark. The project not only evicted encroachments over the Amayizhanchan thodu and several long forgotten drains by the side of roads over a total length of around 30 kms, but widened such drains / canals to a width of 2 - 4 metres. The flooding at the Thampanoor central Bus Depot and Central Railway Station as well as the busy East Fort City Bus Stand area was a nightmare to the passengers. Even on the onset of the lightest rains, the 3 stations, which are the main transport hubs of Thiruvananthapuram city, got submerged for hours together.

In the first phase of the project, it was decided to concentrate on the flood mitigation of Thampanoor-East Fort area. This activity was completed on a war footing basis and it could achieve the results intended even though not on a permanent nature. This is clearly evident as the Thampanoor area was relieved of the water logging issues since 2016, but only lasted for few years till 2021 or so. The main reason was the project, which the impromptu task was later named as "Operation Anantha", had to be aborted abruptly for reasons known and unknown.

## **How the project started:**

Shri.Jiji Thomson IAS, then Chief Secretary, received several complaints over phone from passengers of three stations, during April 2015, that

they were forced to stand for hours in filthy drainage water, where fecal matter was floating around them. In most places, the people had to wait for buses in knee deep or even hip deep foul-smelling water, which carried all the filth of the city. It was found during the operations that less than 10 percent of houses and big hotels on both sides of Amayizhanchan Thodu had their septic waste lines connected to the KWA sewerage lines and over 90% were discharging the fecal matter directly to the Thodu. In addition to this organised gangs as well as traders were dumping the shop wastes – leftovers of food, thermocol packaging materials, even discarded mattresses etc into the thodu. These wastes blocked the drains.

Every year, government allocated Rs 1-5 Cr for the management of floods in Thampanoor area to the PWD and Irrigation departments. The irrigation or PWD department spent several crores of rupees, but the remedy was to raise the level of the road between railway station and bus terminal to the present height, repeatedly, without understanding or addressing the basic reasons for flooding, which forced the water to flood the railway station above the platform level. Trains stopped running, the railways had to replace all its ground mounted signaling/controlling equipment to a height, to be untouched by water.

Shri. Biju Prabhakar, District Collector (2014-16) showed on ground the encroachments and the presence of pipelines and cables inside the drains which blocked the flow of water through Amayizhanchan Thodu and the road side drains to the Chief Secretary Shri.Jiji Thomson from Bakery junction till Kannammoola. The CS who walked by the side of the entire stretch of the Thodu taking along with a PRD camera team, who filmed and made a short film. The CS showed the film before the Cabinet. The CM and the cabinet okayed the need for eviction of encroachment and widening the drains and canals and the operation was launched at East Fort and Thampanoor.

The East Fort team, mainly revenue officials, some engineers and contracted equipment was led by Sri Biju Prabhakar, District Collector

and the Thampanoor team was headed by Dr Karthikeyan, Sub-Collector. The operations were launched at 5 pm on 1<sup>st</sup> May 2015 and by 8 am on the same day, the entire media was telecasting the operations "live". Trivandrum witnessed a never before encroachment eviction drive and the public support garnered even from the early hours of the commencement of the project, was a real motivating factor to the field team. The CS teamed up the bright engineers from KSEB, KWA, Irrigation apart from the revenue team of the District Collector. The CS reviewed the activities almost every day and visited various spots once in every 2-3 days, became the spokesperson of the actions. The team did not experience any undue pressure from any quarters because of this. Funds were made available through the decisions of the CS meetings, which was issued as Government orders within a few days, since the Finance Secretary and other department secretaries were present in the review meetings convened by CS.

The situation in Thampanoor, before and after the implementation of Operation Anantha-I is shown in the figure below:



Figure 1 East fort during floods



Figure 2 Thampanoor during rains



Figure 3 Thampanoor during floods



Figure 4 Thampanoor during floods

## About the topography

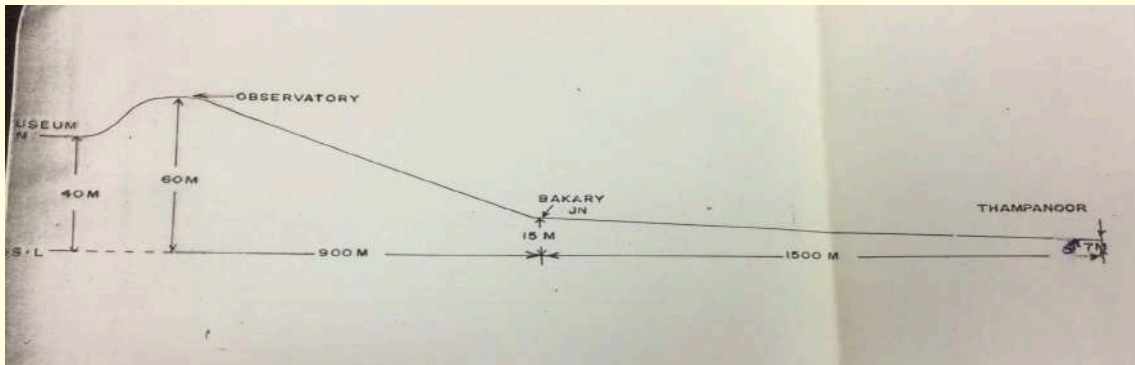


Figure 5 The sloppy elevation from Observatory hills to Thampanoor

There are two major water streams passing through the heart of the city of Thiruvananthapuram. One of these canals originate from the KWA plant installed at the Observatory Hills shown as A. This is intended to carry the back wash/overflow water from the water treatment plant in observatory hills. This stream of water joins the storm water canal namely Amayizhanjan thodu, before the Bakery Junction. From there,

the Amayizhanjan thodu passes through the Chenkal Choola aka Rajaji Nagar to reach the KSRTC Bus Station at Thampanoor and then water flows through the 140 meter long box culvert lying below the railway line in the Central railway station premises. The thodu moving by side of Putharikandom Maidan then takes a u-turn, in front of the Pazhavangadi Ganapathi Kovil, to reach the Uppidammoodu bridge. From here, the thodu takes a 90 degree turn to flow to Pattor in front of the Court complex and then to Kunnukuzhi.

The second stream is the Thekkinikkara canal. This is a man-made canal, constructed during the reign of Travancore Maharaja. The water stabilization tank inside the Karimadom colony is the point of origin of this canal. This canal crosses the Attakulangara – Killipalam Road near Attakulangara and enters into the Central School campus, from where entire stretch is underground. The canal flows further and crosses the East Fort – Thiruvallom Road again to pass through the side of Karimpanal Arcade at East Fort. From this point onwards, the canal passes underneath a set of structures owned by private parties and Sree Padmanabha Swami Temple, to reach Vazhichal, near Sree Varaham Temple, where the water falls down to lower plains.



Figure 6 a shop on top of the drain

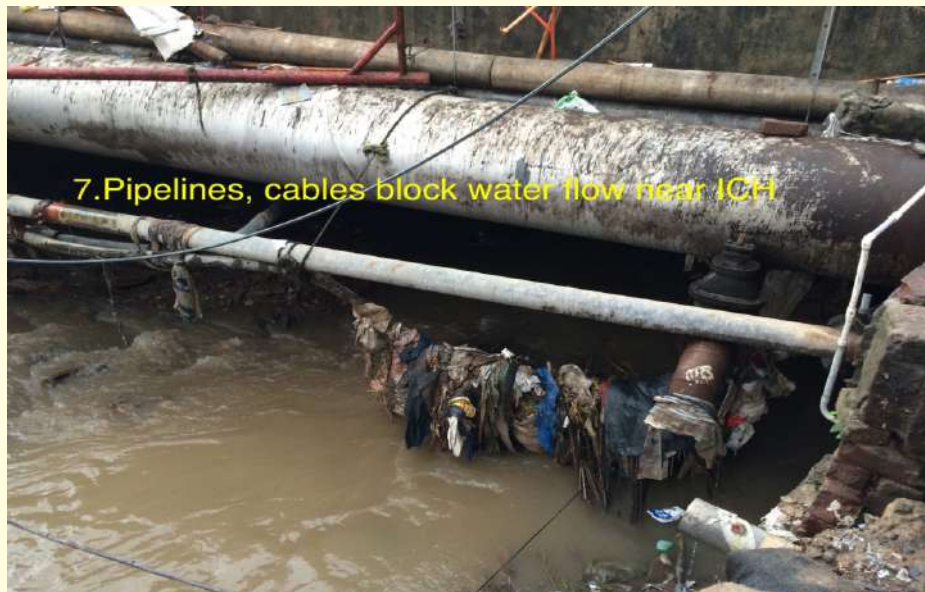


Figure 7 Pipelines blocking near Indian Coffee House

## **Reasons for Flooding of Thampanoor & Eastfort**

These two canals do not have adequate capacity to hold large quantity of water received during the rainy days. Originally, Putharikkandom Maidanam was remaining as paddy field and has been acting as a floodplain. During those days, the overflow of water from the Amayizhanjan thodu was collected in these paddy fields and acted as a reservoir (room for river). Further, the excess water from the paddy fields was flowing to the Thekkinikkara canal crossing the Chala Road through another small canal. However, the remnants of this water flow path continued to exist on the southern side of Putharikkandom, as a narrow stream, but no connectivity offered by the raised ground of Putharikkandom maidan. The free flow of water from Amayizhanchan Thodu was obstructed consequent to the conversion of the paddy fields into Putharikkandom Maidanam into a convention ground, forcing whatsoever quantity of water from Thampanoor to flow through only the amayizhanchan thodu to Pattoor and KunnuKuzhi to ultimately reach the Parvathi Puthanar river.

Now, the connectivity of Amayizhanjan thodu with Putharikkandom Maidanam is disrupted and the pipe lines and cable under the culvert

near the Ganapathi Kovil, blocking the flow of water, the Amayizhanchan thodu overflows to East fort, flooding the entire east fort area, the water carrying all the filth it carried. There were several ponds (rooms for river) estimated to around 12 like the Pathrakulam, the manjalikulam, etc, which were all converted as school grounds, lorry parking areas or even given on assignment to private parties, who filled and converted as vantage land parcels.

There were two major reasons for the flooding in the Thampanoor area. The first reason was that the free flow of water through the Thodu near the Indian Coffee House (ICH) in Thampanoor was obstructed by several pipelines installed at various points, crossing the the Thodu. The second major reason is the accumulation of large quantity of wastes, sludge and filth within the box culvert underneath the railway lines preventing the free flow of water. On the southern side of railway station, at the end of the box culvert under railway lines, near the station gate, there existed the remains of, presumably, a pile foundation of size 2m X 3m X 1m. This structure has actually prevented the flow, and solid wastes and sand carried by the stream got accumulated at this point and finally reduced the speed of flowing water. This was the major contributor to the water logging problem in Thampanoor area. Beyond these concrete blocks, the water channel does not possess the required depth, as the sand and sludge accumulated were never removed, even today.

### **Activities under Operation Anantha:**

The following activities carried out during the Operation Anantha-I, to ensure free flow of water.

1. The first and foremost among there was the widening of the Amayizhanjan Thodu in the stretch from Bakery Junction to Thampanoor. The width could be increased to over 3 meters in most of the sections. There were two major constructions by private agencies which actually restricted the flow of water due to encroachment. These structures were demolished using heavy duty equipment. This ensured free flow up to the entrance to box culvert inside the

Thampanoor railway station.

2. But the team could not demolish the concrete blocks built right inside the canal since it belonged to the railways and also the Anantha was aborted abruptly.
3. About 700 truckloads of construction and demolition (CND) wastes were collected from the canal up to the south railway gate. These wastes had to be removed from railway station premises and dumped in the open area of the old NH, since the construction of four lane of NH had not begun during that time.
4. Further, some engineering initiatives were implemented at the East Fort area to ensure smooth flow of water. These were essentially in the form of demolition of the encroachments into the canal by various parties.
5. There were small culverts, bridges and different kinds of protruding constructions inside the canal, which were demolished and widened.



Figure 8 illegal construction on top of filled up drains



Figure 9 Blocked drains due to foundations of buildings inside drain



Figure 10 Buildings on top of the filled up drains

6. Behind the Ganapathy Kovil temple, the entire stretch was covered with earth and there was steel shed with two huge generators of a textile shop installed therein.



Figure 11 the green building is a generator room on top of drains



Figure 12 the remanants of old bypass canal connecting Amayizhanchan and Thekkinakkara canals

## **Abrupt end to Operation Anantha:**

Since the Chief Secretary, ordered not to call tenders for any new works other than one already started on ground, the demolition of culvert in front of the Ganapathy Kovil did not start. There were other locations where the demolition was done, but the work was delayed due to tendering, rains and other host of reasons. The cables and pipeline had to be shifted and it required co-ordination with several government and private agencies. Unexpected expenses were also estimated and raised for fund allotment by these agencies. The blockage created by huge pipelines, cable, etc, under the Ganapathi Kovil culvert remained as such and it was sure that the East fort would be flooded because of the overflow at this culvert.



Figure 13 Pipe lines crossing drains at attackulangara



Figure 14 Drains chocked with deposited sand and debris



Figure 15 what is left over as the Putharikandom (paddy fields)

Therefore, PWD was asked to construct an overflow duct of 2 m x 2 m cutting right across the Putharikandom maidan, connecting the remnants of old canal at south side of the maidan to the big thekkinikara canal.

This over flow duct was designed in such a way that water flows inside only when overflow from amayizhanchan thodu happens, through the opening of the duct. The opening to overflow duct is located around 2.5 mts above the bottom level of the thodu. This duct opening is near the Central Theatre and when water level rises, the excess water flowed smoothly to Thekkinakara Kanal.



Figure 16 The overflow duct constructed to connect amayizhanchan and Thekkinikara canals

As a Plan B to prevent any flooding of east fort, two new canals — one passing through the Govt Homeo hospital and Abhedananda Ashram, reaching the PWD drain by the side of Padmatheertha pond, was constructed with 3.5 m width. The PWD drain was also widened by 3

mts and constructed at a depth of 1.5 m (only 30 cm wide and 20 cm deep was the original drain). The water from East fort finally flowed smoothly to Thekkinikara Kanal.

As an abundant precaution, once more new drain was constructed in front of KSRTC north bus stand towards Thekkinikara Kanal joining it near karimpanal arcade. Thus, not only the overflow from Amayizhanchan thodu was prevented, but the storm water collected in east fort was provided with two exit ways to Thekkinikara canal, which carried it to Vazhachal.

The various measures implemented during the Operation Anatha – I, prevented flooding at the Thampanoor area. These initiatives have also served as a solution to the water logging problem at the East Fort area. But the raised bed level of the Amayizhanchan thodu from South Gate of railway station is still blocking the smooth flow of water and this is the main reason sludge and waste accumulates in the 140 meter box culvert under the railway lines inside station premises.



Figure 17 The level difference at the outlet of 140 m Box culvert

It was pointed out that in several meetings and even through blogs that, it is this raised bed level of the thode and four other structures blocking the water, causes the accumulation of waster materials, if not removed, will cause flooding of Thampanoor (not at east fort- which has no flooding) again.

The Operation Anantha also paved way for the timely completion of the two major works (listed below), since Chief Secretary was conducting frequent reviews, till he retired in February 2016

1. The open drains in from Vanchiyoor Court complex was covered with two lines of pre-cast box culverts – now road width is above 20 metres facilitating 4 lane traffic
2. The small bridge at Kothalam – the road connecting Attakulangara to Enchakkal was blocked for traffic for several months, if not more than an year.

## **PRESENT SCENARIO**

As pointed out above earlier, the level of canal bed beyond the box culvert, is at a higher level compared to that till the box culvert. This results in the continuous piling up of all kinds of wastes in the box culvert leading to water logging at Thampanoor. There are four blockades that restrict the free flow of water in the stretch between East Fort to Kunnukuzhi. The details are given below:

1. Several pipelines of varying sizes are still present under the culvert near Pazhavangadi Temple (the place where Pathira kattil is being sold illegally)
2. The foot path to Railway Overbridge to SL theatre area, behind the Sree Chitra Poor Home, was constructed inside the canal reducing its width to almost 1.5 metres from about 5 metres near Ganapathy Kovil area.
3. Sewage line carrying sewage to the Pattoor Treatment Plant to Muttathara Sewage Plant crosses the stream.

4. The abutment of old Uppidammoodu bridge restricts the width of the channel from 3 meters to 1 meter.



Figure 18 protruded abutment at Uppliamoodu



Figure 19 protruded abutment at Uppliamoodu

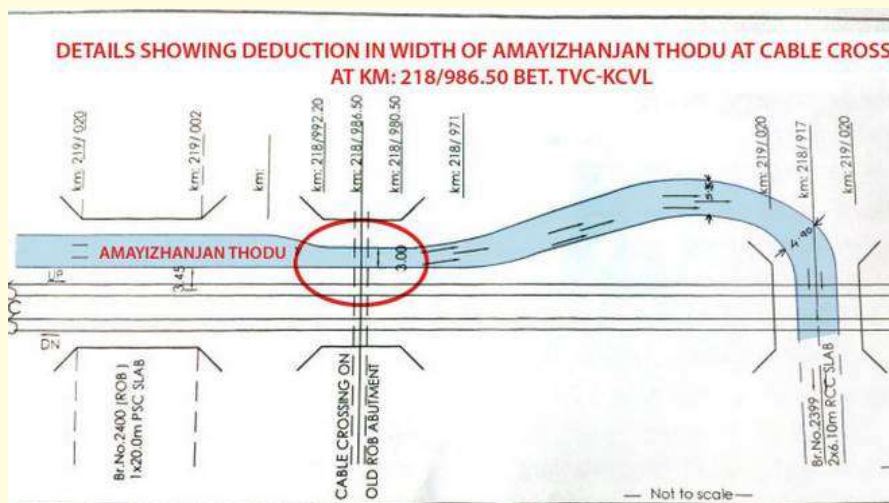


Figure 20 schematic sketch of the amayizhanjan thodu near Uppilamoodu

The above-mentioned blockades are to be removed immediately to facilitate free flow of water through the canals. Therefore, in order to have a permanent solution to the issue of flooding in the city of Thiruvananthapuram, atleast the blockages listed above have to be removed in a time bound manner once rain is over.

As part of this, two other activities were also planned in its phase II operations. The Secretariat and adjoining buildings are situated on the top of a hill. Similarly, the Arts College, Women's College, etc are on the top of another hill nearby. In between these two hillocks, there is a valley and the road to Thampanoor from Palayam via Bakery Junction pass through this valley. (Please see sketches attached).

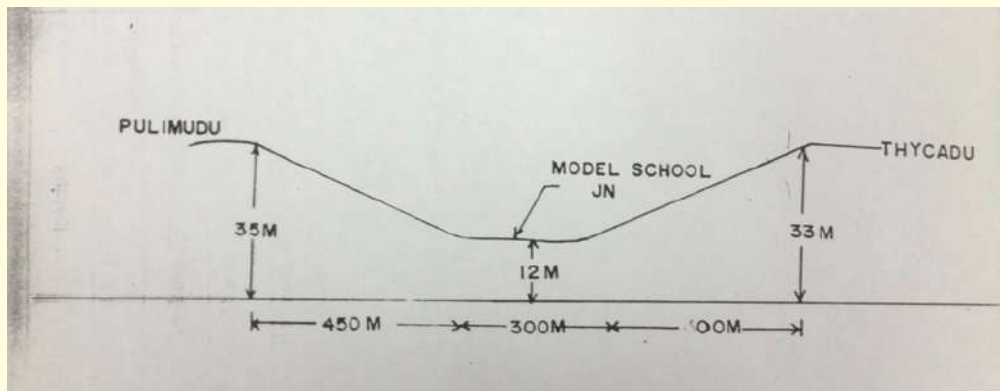


Figure 21 The trough created by two Hillocks

The huge quantity of storm water collected in the compound of Secretariat, its two annexes, central stadium etc during the rainy season, reaches down to this valley portion and flows finally into the Amayizhanjan Thodu towards Thampanoor. As an alternative to this, the entire quantity of water can be collected in an underground reservoir in the Secretariat compound or central stadium and then pumped to Kunnukuzhi area through pipe. Similarly, the rain water from the other hillock consisting of Govt Womens college, Xanadu and other ministers Bunglows, police parade ground, Govt Arts college and model school could be diverted to Killiyar river, near Jagathi – towards the east. Thus, if these two streams of rainwater collections are prevented from reaching Thampanoor, it is certain in that the place will never get flooded.

## **Cleaning of Canals:**

The canals including the box culvert in the railway compound were widened with an aim that they could be cleaned with the help of machines. The drains now are wide enough to allow bulldozers or excavators to push the sludge and waste outside to convenient locations, from where it could be loaded to lorries and taken away. There are remotely operated bulldozers, which will be more effective than the manually operated ones to move waste inside confined spaces. In short, the width of 3 m and above has been provided in almost all sections of the canals just for facilitating the entry of the cleaning machines.



Figure 22 The excavator can pass through the box culvert under railway lines

Unfortunately, manual cleaning was resorted to now— it is not only dangerous and only serves the purpose of corruption and eye washing the government and public that cleaning has been done.

## **Flooding still in other areas:**

Several works were planned to be undertaken where demolition works were undertaken, but could not be completed due to the abrupt end.

Near the Rottikkada Junction, in the canal from Karimodam nagar to Killiyar, a small housing complex has been built over of the stream, thereby restricting its width to less than a metre. Further, beyond this point, the canal was filled up to construct a road. In this process, more than 80% of the width of the canal was used up for the road. This is one of major reason for flooding in the Karimodam - Yamuna Nagar. This is also an urgent work to be taken up.

The flooding at SS Kovil road is usually shown as floods in Thampanoor by the media. This road was planned to be raised up since its level is below the flood water line of Amayizhanchan thodu. The residents and the shop owners of the area objected and hence work was not done. This area is still under water. The PWD later, in 2019 or so, has spent several crores, as usual without understanding the reasons and it is still hip deep water whenever there is rain even a small one.

The above components, envisaged in the Operation Anantha phase I itself could not be accomplished due to the abrupt end of the programme, mainly due paucity of fund and also due to some unknown reasons also.

### **Others works to be carried forward**

1. As a permanent engineering solution to the problem of dumping of waste by organized gangs, the canals are to be covered properly to prevent dumping of wastes into it. If a roof is provided along with covered drain, people from Thampanoor Bus depot could use canal top as a walkway during rains and sunny days.
2. It is also essential that the septage waste should be diverted to the sewer lines to prevent the unhygienic conditions existing there.
3. If the canals are covered properly, it can create several kilometers new roads (estimated around 25 kms) cross-crossing the city, without incurring any cost or public outcry against land acquisition.
4. Some covered areas could be utilized for the rehabilitation of street vendors also.

5. The Akkulam lake is a blemish of this beautiful city. The entire fecal matter is accumulated in the lake and flows through the parvathi puthanar, and has a confluence at thiruvallom, where Hindus dip during karkidaka Vavu. This faith could be at least washed away if the break water at Veli which was planned at a cost of Rs 22 Cr was undertaken.

### **Cost estimated then:**

It is estimated then, 9 years ago, that another Rs. 30 Cr may be required for undertaking all the remaining works associated with Thampanoor, east fort and Attakulangara. For completing all the works in others parts of city, which had begun during that time as part of flood control, another 30 Cr was also estimated. Now it is possible to complete the entire works by spending Rs.100 to Rs 125 Cr.

In short, Operation Anantha has not only eliminated the flooding in the heart of city where the main hubs of transportation are situated, but also reclaimed several acres of priced land of city back to the people. Flooding in Trivandrum is preventable unlike Kochi city, since it has a hilly terrain which facilitates gravity movement and it is situated at a height difference of minimum 2.5 metres from mean sea level. A new break water near Veli, would have ensured water flow in Akkulam lake and Parvathy Puthanar but also prevented the growth of Water Hycinth. This Operation Anantha eventhough done as a knee jerk reaction, but was a well thought out plan executed in a Mission mode.

17 July 2024

**Biju Prabhakar IAS**