BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
(SOUTHERN ZONE BENCH, CHENNAI)

Original Application No. 237 of 2017 (SZ)

IN THE MATTER OF:

Manakunnam Village, Padashekara Samrakshana Samithy

...Applicant(s)

Versus

Thripunithura Municipality, Kerala and Ors.

...Respondent(s)

ACTION TAKEN REPORT SUBMITTED BY THE CHAIRMAN OF THE JOINT COMMITTEE AND DISTRICT COLLECTOR, ERNAKULAM / 14TH RESPONDENT

M/s. E.K.KUMARESAN

Counsel for R7, R9, R10, R12 TO R16

Standing Counsel for State Government of Kerala

NGT(SZ) Chennai Bench

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ACTION TAKEN REPORT SUBMITTED BY THE CHAIRMAN OF THE JOINT COMMITTEE AND DISTRICT COLLECTOR, ERNAKULAM / 14TH RESPONDENT

It is submitted that the joint committee has been constituted on 03.05.2020 as per the direction of this Hon'ble National Green Tribunal dated 24.01.2020 comprising of the following members with District collector, Ernakulam as chairman.

1. District Collector, Ernakulam
2. State Pollution Control Board
3. Public Works Department (Irrigation, Bridges & Roads)
4. Secretary, District Panchayath, Ernakulam
5. Commissioners of the respective Municipalities & Grama Panchayaths

It is submitted that the Chairman of the Joint Committee and District Collector, Ernakulam / 14th Respondent herein has filed a action taken report in the above Original Application as per the direction of this Hon'ble National Green Tribunal dated 04.06.2021.

Therefore it is most humbly prayed that this Hon'ble Tribunal may be pleased to take the said action taken report filed by the Chairman of the Joint Committee and District Collector, Ernakulam / 14th Respondent on Record and thus render justice.

Dated at Chennai on this the 8th day of July 2021.

(E.K.Kumaresan)
Counsel for R7, R9, R10, R12 TO R16
Standing Counsel for
State Government of Kerala
NGT(SZ) Chennai Bench

OA No. 237 of 2017 (SZ)

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Standing counsel for Kerala (SZ)

Counsel for R7, R9, R10, R12 TO R16

L8-229915/2018

Collectorate, Ernakulam
Dated : 06 .07.2021

From

District Collector
Ernakulam

To

The Registrar
National Green Tribunal
Southern Zone, Chennai

Sir,

Sub: Action Taken Report on the basis of the order in O.A.237/2017 of Honb'le National Green Tribunal Southern Zone, Chennai dated 04/06/2021 - Submitting reg

Ref : 1. Order in O.A.237/2017 of Honble National Green Tribunal , Southern Zone,Chennai dated 04/06/2021

2. Letter No 175/DC1/2020/LSGD dated 24.06.2021 of Additional Chief Secratary,LSGD(DC)

3. Letter No SN2-OA 237/2017 dated 24.06.2021 of Advocate General, Ernakulam

Kind attention is invited to the reference sited. The Manakunnam Padasekhara Samrakshana Samithy, Kandanad has filed Original Application No 327/2017 before the Honble National Green Tribunal, Southern Zone, Chennai. The case relates to the rejuvenation of the river named Konothupuzha. The Action Taken Report is submitted herewith on the basis of the order in the case in O.A.237/2017 of Honb'le National Green Tribunal , Southern Zone, Chennai dated 04/06/2021.

Yours Faithfully ,

District Collector.

Enclosure : Action Taken Report

ACTION TAKEN REPORT SUBMITTED BY THE CHAIRMAN OF THE JOINT COMMITTEE & DISTRICT COLLECTOR ERNAKULAM IN OA 237/17 OF HONOURABLE NATIONAL GREEN TRIBUNAL, SOUTHERN ZONE, CHENNAI ORDER DATED 04/06/2021

Name of the Petitioner :		**Manakunnam Village Padashekara Samrakshana samithy, Kandanad P.O**
Respondent 14	**:**	**District Collector, Ernakulam**

It is submitted that the Manakunnam Village Padashekara Samrakshana Samithy, represented by its Secretary has filed an Original Application No.237/2017 before the Hon'ble National Green Tribunal, Chennai, to protect the river named "Konothupuzha", which is flowing through the jurisdiction of Kanayannur Taluk, Ernakulam district.

Considering the said OA 237/2017 filed by the petitioners, the Hon'ble National Green Tribunal , vide judgement dated 24/01/2020, has directed to appoint a Joint Committee comprising of the following members to prepare an action plan with specific timeline to abate the pollution in Konothupuzha river .

1) **District Collector,Ernakulam**
2) **State Pollution Control Board**
3) **Public Works Department (Irrigation,Bridges &Roads)**
4) **Secretary, District Panchayath, Ernakulam**
5) **Commissioners of the respective Muncipalities and Grama Panchayaths**

As per the direction of the Hon'ble National Green Tribunal, the State Government in its order under **G.O(Rt) No. 817/2020/LSGD** dated **03/05/2020** has constituted a Joint Committee with District Collector, Ernakulam as Chairman and the District level officers of the departments and the Secretaries of the Municipalities and Grama Panchayaths through which the river passes as members .

In order to comply the order of National Green Tribunal, this authority had called a meeting of the officials concerned on 15/06/2020. By considering the judgement of Hon'ble National Green Tribunal, the District Collector has passed an order to form a sub committee with the following members to submit the detailed Action Plan before the Joint committee.

1. **Executive Engineer ,Minor Irrigation Division - Convener**
2. **Executive Engineer,Pollution Control Board,Kadavanthra,Ernakulam**
3. **Secretary,Thripunithura Muncipality**
4. **Secretary, Udayamperoor Grama Panchayath**
5. **Secretary,Mulanthuruthy Grama Panchayath**
6. **Tahsildar(L R) ,Kanayannur**

A proposal was also submitted to the Government to add the members of the Sub Committee in the

Joint committee formed vide **G.O(Rt) No. 817/2020/LSGD** dated **03/05/2020**. The Sub Committee meeting held at this office on 06.07.2020. It is submitted that Konothupuzha forms part of Muvattupuzha river and flows through Udayamperoor, Amballoor, Mulanthuruthy, Chottanikkara Panchayaths and Tripunithura Municipality. The present pathetic condition of the river is known to have as a result of the following factors. The 17 km long river is subjected to heavy pollution. It is contaminated with both biodegradable and non -biodegradable pollutants. There are evident encroachments in various stretches of the river especially in the reaches coming under Tripunithura Municipality. Due to heavy deposition of silt and infestation of vegetation and water weeds, the river is almost stagnant. To protect the river, it has been decided to reduce pollution, increase the depth of the river, clean it and remove encroachments.

In order to restore the river, eviction of encroachments is an indispensable step. The boundaries of the river need to be clearly marked for preventing further encroachments. Then the Deputy Director of Survey directed to survey the river banks to detect illegal encroachments on the river . The Local Bodies have been directed to take steps to remove the encroachments identified in the survey and to identify the sources of pollution and prevent pollution. It is proposed to make earthern bund on both sides of the river with excavated silt and the same will be protected by spreading coir geo textiles to prevent soil erosion and further encroachments. The District mission Co-ordinator, Poverty Alleviation Unit was directed to adopt measures under MGNRES Scheme (Mahatma Gandhi National Rural Employment Scheme to protect the river bunds. The Executive Engineer, PWD Bridges Division was directed to identify the bridges blocking the flow/restricting the navigation through the river and to make remedial measures so as to ensure free flow of water and also to make navigation possible. The removal of excess silt deposited in the river ensure the free flow of river. The Principal Agricultural Officer, Ernakulam was directed to take steps to make available huge quantity of fertile excavated soil to farmers, to conduct soil test to assess the type of crops for which it would be suitable. The District Mission Coodinator, Suchitwa Mission was directed to monitor regularly the quality of effluent discharge to the river from various agencies /firms.

As per the direction issued from this Respondent, the Executive Engineer, Minor Irrigation Division has formulated an action plan for the rejuvenation of Konothupuzha and the Detailed Project Report for rejuvenation of the entire stretch of Konothupuzha amounting to Rs.20.80 crores is submitted before Government and is being considered by the Government for approval. The copy of the Detailed Project Report is submitted herewith.

Working progress of the duties so assigned above was reviewed by the committee on 23.07.2020, in the presence of elected members of local bodies and Legislative Assemblies concerned. Subsequently, the meeting was held on 17.08.2020 and 23.10.2020 to evaluate the progress of the work. Although it was decided to hold a review meeting on 21.04.2021 after the General Assembly Election, it was postponed due to the high surge in Covid positive cases in the District and the Lock Down of Covid Phase 2 and an online meeting was held on 30.06.2021.

As a conclusion in brief, the following actions have been taken by the committee so far.

Sl. No.	Name of agency	Responsibilities assigned	Remarks/Status
1.	Irrigation departm ent	To carry out cleaning works for the restoration of flow and to remove the temporary mud bund built to prevent salt water intrusion before the onset of monsoon.	**1.** As per the decision in meeting held on 15.06.2020, emergency restoration works for clearing and restoring flow in the most polluted reach of Konothupuzha from Karingachira bridge to Nedungapuzha road in Tripunithura Municipality was carried out for Rs.15 lakhs utilizing the emrgency fund available under the disosal of Executive Engineer ,Minor Irrigation, ernakulam. Utilizing the deposit fund from Tripunithura Municipality the immediate restoration work in the reach from Nedungapuzha to Vettuvelikadavu is also completed. **2.** Irrigation Department constructs temporary earthern bunds during summer season at both outlet points of Konothupuzha viz. Puthenkavu near Poothotta and at Vettuvelikadavu ,Tripunithura to prevent entry of saline water so as to prevent destruction to crops and to prevent contamination of ground water sources such as wells in areas adjacent to river. The closing of bund in summer results in stagnation of river water and the flow of entire river gets restricted . Now the construction of a permanent Regulator for preventing salt water intrusion has also been commenced at Puthenkavu.After completion this regulator shutters could be mechanically operated and hence the flow of water could be regulated more effectively. **3.** Detailed Project Report costing to Rs.20.85 crore to implement the National Green Tribunal order have been submitted to the Government for approval and heirarchical sanction. Presently this Detailed Project Report is with Special Working Group of State Government for further action.
2.	Local bodies	**1.** To identify and restrict the polluting sources directly to the river and indirectly through its sub drains /streams.	**1.** Munuicipal Health Department has inspected the establishments/Hotels discharging sewage/waste into the river within the limits of Tripunithura Municipality and the

		2. To penalize the defaulters. 3. To deposit fund to the Survey department for conducting boundary demarcation of the river 4. To remove the encroachments. 5. To form ward wise Committees for protection of river. 6. To implement projects for waste management so as to prevent dumping of solid waste and discharge of untreated effluents thereby contaminating the water source.	outlets setup for discharge of waste water have been removed by giving notice to the establishments and flats which have been found to be discharging Waste/Waste water into the river. 2. Inspection conducted in Udayamperoor, Mulamthuruthy and Amballoor Grama Panchayath, didnot find any effluent/sewage flowing into the river. 3. All Local bodies had deposited the survey charge to the Survey department's Head of Account. Concerned local bodies are directed to make necessary arrangements to help in survey works of the river . 4. Steps are being taken to place surveillance Cameras in places where waste is found to be dumped into the river. 5. Net is installed on both sides of the bridges over the river. 6. House hold level composting units have been set-up in all local bodies, Community Level solid waste management plants in Chottanikkara, Amballoor Grama Panchayaths and Tripunithura Municipality and Institutional Level Waste Management Plants in all Panchayaths. 7. Haritha Karma Sena is conducting door to door collection of non-bio degradable waste in al local bodies. The collected non-bio degradable wastes are segragated at MCFs and trades to authorised waste dealer companies. 8. A Septage Treatment Plant of capacity 1.5 MLD is proposed at Brahmapuram as a part of Urban Agglomeration Project, which got approval in DPC and Agency for DPR preparation is selected. This STP can be utilized for the treatment of septage reaching Konothupuzha.
3.	Pollution control Board	To monitor water quality in different reaches of the river ,to identify the polluting sources ,to monitor regularly the quality of effluent discharge to the river from various agencies /firms ,to monitor the availability and proper working of STPs .	1. Board inspected the appartments/ Commercial Buildings located at the banks of the river and during inspection, it was noticed that the STPs of some flats on the banks of Konothupuzha/ the drains joining the Konothupuzha were not functioning. KSPCD issued notices/directions ton all the violators directly them to take immediate action provide for proper treatment facilities. 2. Water samples and sediment samples were collected to

			know the change in water quality of the river. The analysis reports show the presence of coliform organisams.
4.	PWD bridges	To identify the bridges blocking the flow/restricting the navigation through the river and to take remedial measures so as to ensure free flow of water and also to make navigation possible.	A total of 6 bridges are there across Konothupuzha which comes under PWD(bridges) department,Ernakulam,out of which 3 have low vertical clearance which are Karingachira bridge, Kaniyavally bridge and Kandanad bridge. Proposal for investigation estimate for these three bridges are submitted by PWD department and no administration sanction has been received till date.
5.	Survey Departm ent	To conduct survey and demarcate the boundaries of the river along its length.	**1.** Survey Deputy Director,Ernakulam submitted estimate for survey works on 29/07/2020.Local bodies deposited the survey charges to the Head of Account of DD,Survey. A survey team including one Head Surveyor and six other surveyors was formed by survey department This survey team started their survey work on 19/08/2020 under the supervision of Tahsildar (LR), Kanayannur . **2.** Tahsildar(LR),Kanayannur informed that survey works completed for 2.849 km in Nadama Village, 1.606 km in Thekkumbhagam Village, 1.288km in Kurikkad Village, 5.644 km in Thiruvankulam Village, 2.043 km in Amballoor Village, 2.021 km in Mulamthuruthy Village and 5.885 km in Manakunnam Village. Thus a total of 21.336 km has been surveyed on both banks of the river. **3.** The Taluk Surveyor informed that the survey could not be carried out as the rest of the river was covered with grass, mud and moss making it impassable. Local bodies have been directed to provide necessary assistance for the removal of silt and mosses. **4.** Several encroachments were noticed in Nadama, Thekkumbhagam, Thiruvankulam and Kureekkad Villages. **5.** Instructed the Tahsildar to hand over the details of encroachment found in the survey so far and sketch and other relevant documents to the Local bodies for taking action against the encroachers.
6.	Agricul tural depart	To take steps to make available huge quantity of fertile excavated soil to farmers ,to conduct soil test to assess the	**1.** As per report submitted by the agricultural department, a committee comprising members of local bodies,agricultural officers,ADC members will be formed who will make a list

	ment	type of crops for which it would be suitable	of farmers who will be the beneficiaries of the fertile excavated soil. The amount of this fertile soil can be fixed for each farmer . **2.** But due to the inadequacy of fund, the work of increasing the depth of the river has not started.
7.	Haritha Kerala Mission	To identify barren land and take steps to extend cultivation and rejuvenation of streams discharging to Konothupuzha	**1.** Tripunithura Municipality, Chottanikkara, Amballoor, Mulamthuruthy and Udaymperoor Grama Panchayaths are having door to door non-bio degradable collection system. The collected non-bio degradable wastes are segragated at MCFs and trades to authorised waste dealer companies. **2.** The Mulamthuruthy Block Panchayath has completed the construction of Resource Recovery Facility (RRF) with bailing machine having an installed capacity of 25 tons. The RRF is conveniently located in the Industrial Area owned by Mulanthuruthy Block Panchayath and the infrastructure facilities can be shared by the five panchayaths in the block that includes Chottanikkara, Amballoor, Mulamthuruthy and Udayamperoor. All the four panchayaths can use this nearby facility.
8.	Suchitwa Mission	To take steps for preventing the deposition of wastes into the river	**1.** Under the supervision of Suchitwa Mission, House hold level composting units have been set-up in all local bodies, Community Level solid waste management plants in Chottanikkara, Amballoor Grama Panchayaths and Tripunithura Municipality and Institutional Level Waste Management Plants in all Panchayaths. **2.** A Septage Treatmentn Plant of capacity 1.5 MLD is proposed at Brahmapuram as a part of Urban Agglomeration Project, which got approval in DPC and Agency for DPR preparation is selected. This STP can be utilized for the treatment of septage reaching Konothupuzha. **3.** Currently there is no project for slaughter waste management. It has been informed that Suchithwa Mission will provide necessary technical support if a suitable site is identified. p

9.	Poverty Allevia tion Unit	To provide coir geo textiles over the bund formed using excavated soil to prevent soil erosion.	**1.** As per Action Plan for bund formation and to provide coir geo textile estimate total of Rs.75 lakhs got approval by Mulanthuruthi block panchayath. **2.** The Panchayath Committee has approved the work of strengthening then sides of the river by spreading coir geotextiles in Amballoor, Chottanikkara, Mulamthuruthy and Udayamperoor Panchayaths. **3.** Coir geotextiles spreading on the deeper sides of the river is not feasible and after strengthening the sides with machinery in these areas, fodder cultivation and planting of saplings in these areas cna be undertaken under the MGNRES scheme.
10	Planning Board	To submit a plan for collecting the working capital towards the cost of rejuvenation of the river	As per report submitted by District Planning Officer, for the rejuvenation of this river, a proposal of Rs. 16 crore 10 lakh was submitted before Government which needs approval .
11.	Tourism dept.	To implement projects for beautification of river banks to increase the tourism potential	Dircted to implement the beautification of river banks and new projects for the modification of the same.

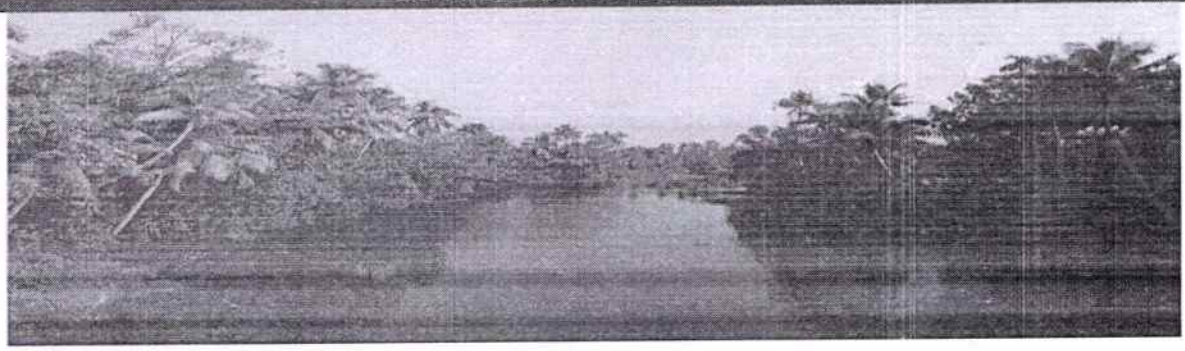
The District Administration is carrying out all possible activities on the basis of the order of the Honourable National Green Tribunal for the protection and rejuvenation of Konothupuzha. The District Level Monitoring Committee Meeting is being conducted at regular intervals and the local bodies have been strictly instructed to implement Solid Waste Management Rules. It is submitted that all earnest efforts are being taken by this Respondent to ensure the protection of the river.

Chairman
Joint Committee & District Collector
Ernakulam

GOVERNMENT OF KERALA

KERALA STATE IRRIGATION DEPARTMENT

REJUVENATION OF KONOTHUPUZHA FROM PUTHENKAVU TO VETTUVELIKKADAVU FOR 17 KM IN ERNAKULAM DISTRICT



Minor Irrigation Division , Ernakulam

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1. EXECUTIVE SUMMARY

The Konothupuzha forms part of Muvattupuzha river and flows through Udayamperoor, Amballoor, Mulanthuruthy & Chottanikkara Panchayats and finally joins Chitrapuzha at Vettuvelikkadavu in Trippunithura Municipality. This project is proposed for rejuvenating the heavily silted up Konothupuzha so as to ensure unobstructed flow of water in the 17 km reach of the Puzha from Puthenkavu to Vettuvelikkadavu (Eroor, Tripunithura) in Ernakulam district. Due to heavy deposition of silt and infestation of vegetation and water weeds, the river is almost stagnant creating unhealthy environment in its premises. The 17 km long precious water source is also subjected to heavy pollution .

In this project the 17 km Konothpuzha is planning to Rejuvenate to past glory for the benefit of people living in and around this area.

The specific tasks to be executed towards the rejuvenation of Konothupuzha are as follows.

I Cleaning & Desilting the thodu

II Bund formation & Protection works

III Bathing ghatts and side protection works

IV Reconstruction of Nedungapuzha and Kaniyavally VCB cum bridges

V Operation & Maintenance

The total amount for this project is works out to be 20, 850,0,000.00(Twenty Crores Eighty Five Lakhs)

2.INTRODUCTION

Ernakulam, the industrial capital of the state is rich in its network of canals, backwaters and rivers which had played a pivotal role in the maritime history of the region. Tripunithura Municipality is located south east to Ernakulam town and occupies a prominent place in history as the capital of Kingdom of Kochi. It is actually a sub urban centre between Kochi Metropoly and other important towns such as Kottayam , Muvattupuzha ,Vaikom etc. Centuries back these waterways were the main routes of trade and commerce when the Crangannur (Kodumgallur)port was active. It was a spice rout of Kochi and Travancore (Ernakulam and Kottayam districts).When the Kodungallur Port got ruined and Kochi port got prominence after the great flood in the 14th century then also these water ways were in use for trade and commerce towards Kochi and Mattancherry. Konothpuzha was also a main part of the network .Both sides of the river was having a very fertile land and there was a lot of paddy fields. Udayaperoor Kari, Nedumgapuza paddy fields ,Thottarappunja are some examples. There was a lot of agriculture related people resided in the nearby area of the river. Lot of fishermen depended this puzha and related waterbodies for their livelihood.

'Pookaitha' a plant along the banks was a natural protection of the river so the river was then called as 'Pookaithayar'. The leaves of the pookaitha was used for the manufacturing of mats of different varities, Vallam (a kind of bag for the storage of Paddy and other agricultural products). It was also an effective inland navigation medium when vehicles were not popular. Thus the river and surrounding areas were known for prosperity and wealth of the Kochi dynasty and was lifeline of state's economy till independece.

Konothupuzha is a fresh water body lies parallel to the Tripunithura -Vaikom road connecting Vembanattu back waters to Kochi Back waters. It flows south –

north through Tripunithura Municipality, Chottanikkara, Mulanthuruthy ,Udayamperoor and Amballoor Grama panchayaths. Northern part of it reaches at Champakkara canal and southern part flows from Poothotta to Vembanattu lake and Murinjapuzha in Kottayam district .

At present it is known as Vettuvelipuzha in Vettuvelikkadavu part , Kaniyavalli puzha in the middle part and Poothottapuzha in Poothotta, which was a fresh water source for people residing in the nearby area of the thodu. Nearby ponds and wells were being recharged from this puzha. More than 200 fishermen families earned their livelihood from this puzha. Moreover nearby paddy fields of an area about 3500 acre including Thottarappunja met the irrigation requirement out of this .

After independence Ernakulam became the commercial capital of Kerala. Meanwhile people diverted to other jobs from their traditional jobs and on development of road transportation system the slow conveyance mode was neglected.

At present this puzha is in a pitiable, poor, dying condition due to heavy organic waste deposits, silt deposit, Reduction of physical dimensions due to encroachments , Construction activities ,

withering of thick vegetation, hyacinth and other aquatic plants, Micro channels and streams are filled up resulting in over flow and flooding, Irregular and inadequate maintenance etc. In some portion it is seen that the grass and aquatic plants have been grown thickly and their roots firmly grown in to the river bed. Due to this the water is stagnant in these reaches and this leads to grave problems such as destruction of aquatic life, breeding of mosquitoes etc. This also causes health hazards to the people residing along the sides of the puzha. The structures crossing the puzha causing hindrance to the free flow as they are not having sufficient clearance. Being silted up the capacity of the puzha has also reduced to a great extent and is under threat of extinctio

3.CONTEXT

The Konothupuzha forms an integral part of Muvattupuzha river and extends from Poothotta in Udayamperoor Panchayat to Vettuvelikkadavu in Trippunithura Municipality in Ernakulam district. Along its course of 17 km length, the puzha flows through Udayamperoor, Amballoor, Mulanthuruthy & Chottanikkara Panchayats and finally joins Chitrapuzha at Vettuvelikkadavu in Trippunithura Municipality. It is also interlinked with Vembanad lake at its southern end near Poothotta and also to Champakara canal through Andhakara thodu near its 12 km chainage portion from Poothotta end. The river is locally known as Poothottapuzha near Poothotta area, Kaniyavallipuzha in its mid reaches and Vettuvelipuzha near its end at Vettuvelikadavu.

Historically, the river formed an inherent part of major water transportation route of various goods, mainly spices from ancient Travancore to Kochi Port. There were vast and rich fertile agricultural fields along the banks of the river . The river was also abode to numerous species of fishes. It also served as a reliable fresh water source for both domestic and agricutural purposes. But as time passed by , Ernakulam sprung up as the industrial & commercial capital of Kerala. Rapid urbanisation caused significant changes in land use, better road transportation facilities and also provided various alternate means of occupation. Gradually, agriculture lost its shine as a profitable occupation and people shifted to other means of earning a living. The agricultural lands lay barren or were rapidly filled up for construction of residential areas. Water transportation also lost its sheen due to the fast development of roads. Industrialization along the banks of the river polluted the river and the river could no longer be used as a drinking water source.

There is a case pending at National Green tribunel Southern zone Chennai bunch

between MANAKUNNAM VILLAGE PADASHEKARA SAMRAKSHANA SAMITHY REPRESENTED BY ITS SECRETARY VS THRIPUNITHURA MUNICIPALITY REPRESENTED BY ITS SECRETARY and its interim order directed the Irrigation department to clean the Konothupuzha.(OA 237/2017 interim order dated 10/08/2020)

"The State Irrigaton Departrment shall be directed to clean the river Konothupuha and the streams connecting the same periodically to ensure free flow of water. Lt is learned that the Irrigation Department constructs temporary mud bunds at Champakkara Canal side (it is here the river starts) and Poothotta (it is here the river ends) to prevent the enty of salt water during summer season. Strict instruction should be given to the irrigation department to remove these bunds before the onset of monsoon every year, so that clogging at that points can be avoided."

4.LOCATION AND PROJECT AREA:

Type of river	Perennial
River basin	Muvattupuzha
District	Ernakulam
Taluk	Kanayannoor
Local bodies involved	Amballoor,Udayamperoor,Mulanthuruthy, Chottanikkara Panchayats and Trippunithura Municipality
GPS location	Starting point at Puthenkavu 9.852251, 76.387674 Mouth at Vettuvelikkadavu 9.979778, 76.343348
Total length of river	17 km
Width of river	10 m to 80 m
Water depth	1m to 4m

CROSSINGS ACROSS KONOTHUPUZHA

There are 12 no.s of bridges across Konothupuzha. They are listed below in the order from starting point of Puzha at Puthenkavu to its mouth at Vettuvelikkadavu in Ernakulam.

Sl no	Chainage in m	Name of bridge
1	0m	Puthenkavu bridge
2	2800m	Mattathankadavu bridge
3	6050m	Kolencherykadavu bridge
4	8050m	Kandanad bridge
5	9250m	Kaniyavely bridge
6	9450m	Puthiyakavu bridge
7	11800m	Rail bridge
8	12500m	Karingachira bridge
9	13350m	Aliyar bridge
10	14600m	Nedungapuzha bridge
11	15800m	Rail yard bridge
12	16750m	Vettuvelikadavu bridge

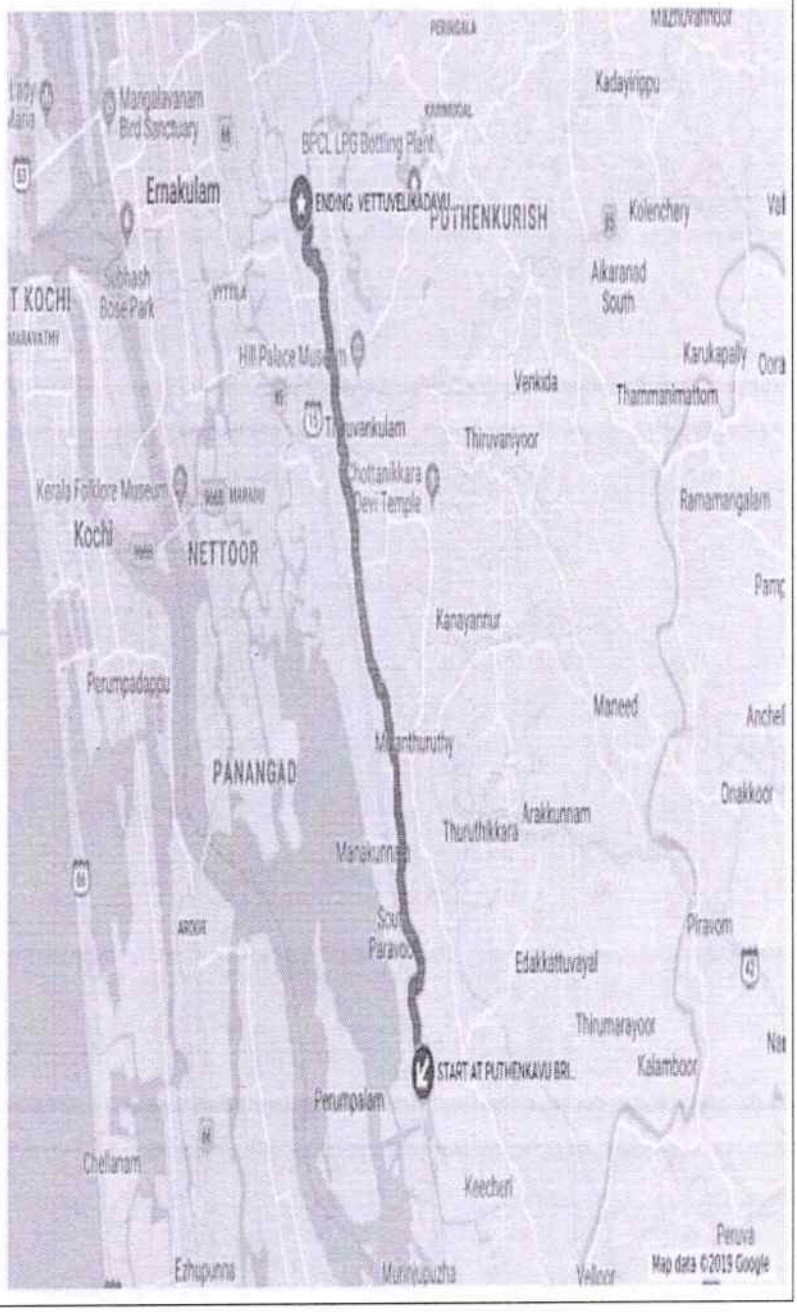
OOGLE MAP

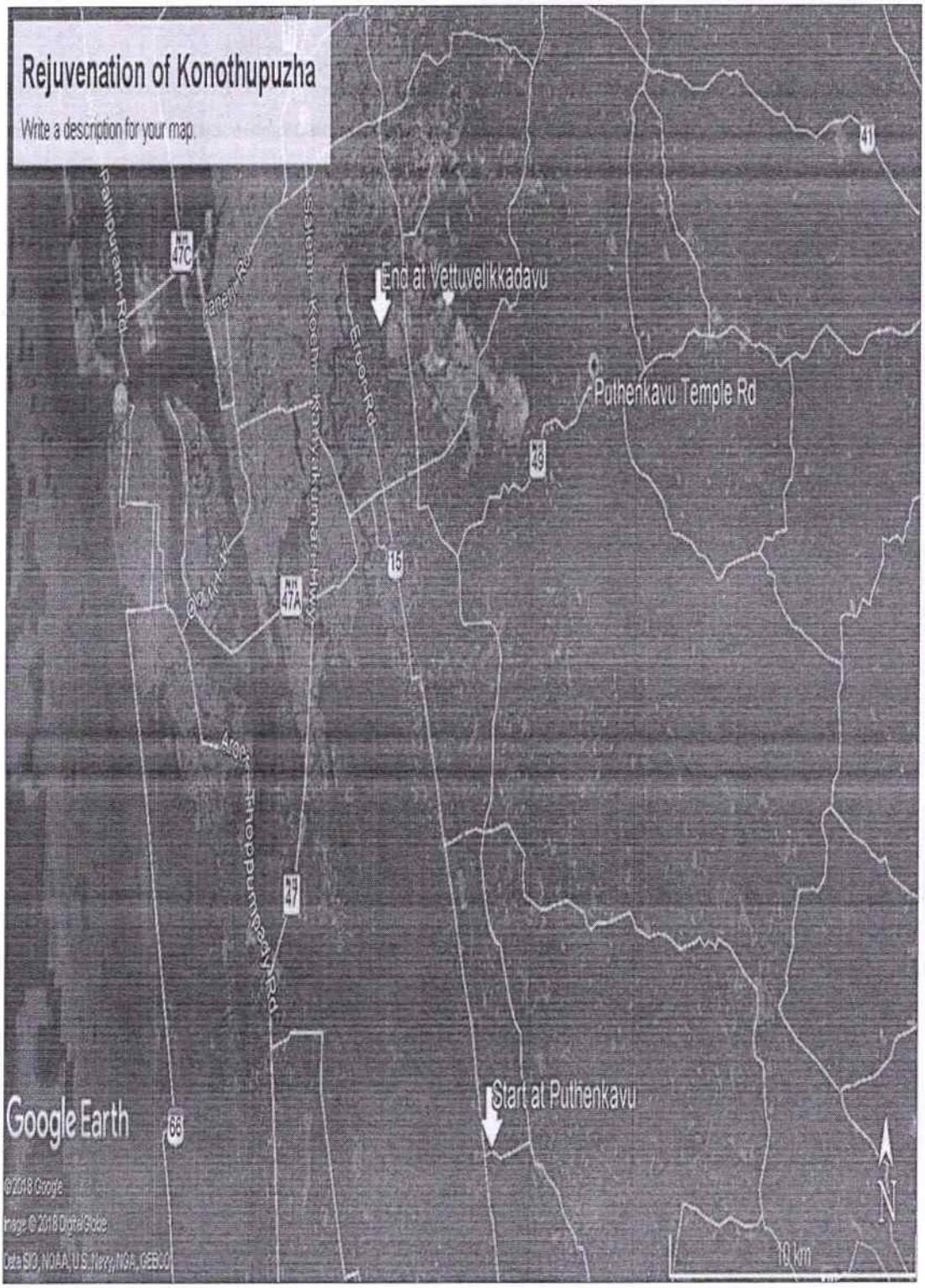
Konothpuzha Rejuvenation

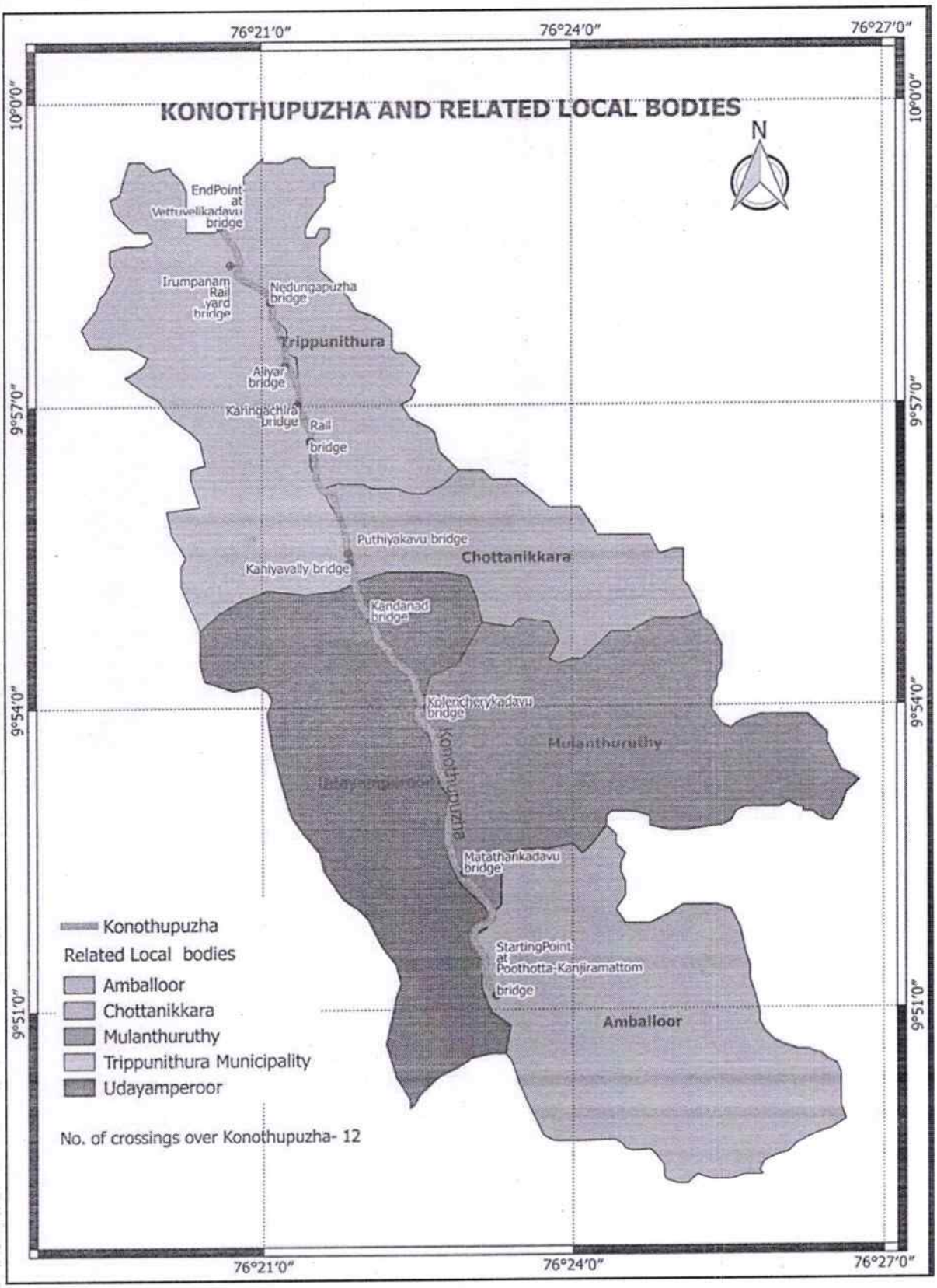
KONOTHUPUZHA FROM PUTHENKAVU TO VETTUVELIKKADAVU IN ERNAKULAM

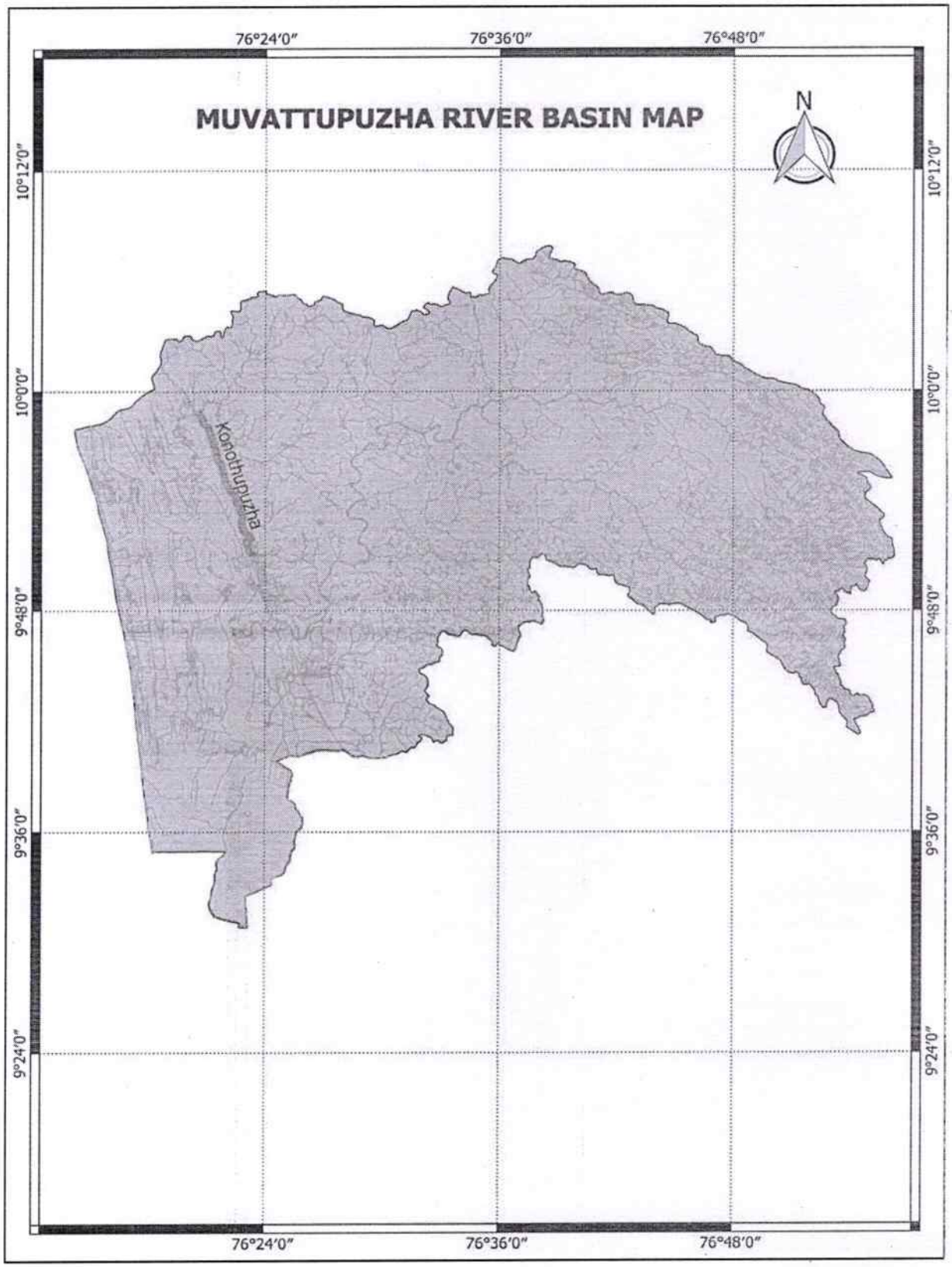
START AT PUTHENKAVU BRIDGE

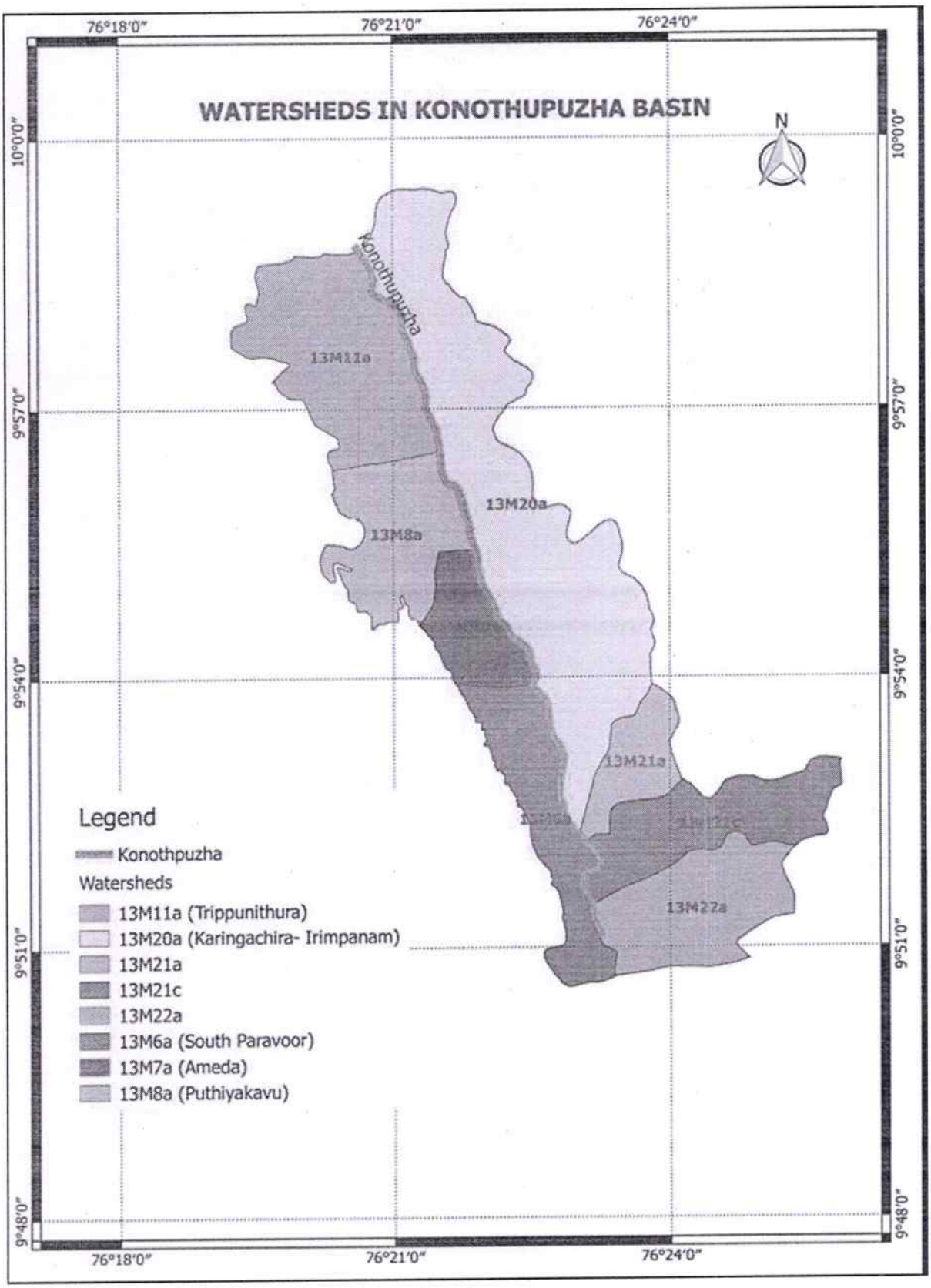
ENDING VETTUVELIKKADAVU




Rejuvenation of Konothupuzha
Write a description for your map.
End at Vettuvelikkadavu
Puthenkavu Temple Rd
Start at Puthenkavu
Google Earth
10 km
N


KONOTHUPUZHA AND RELATED LOCAL BODIES
N
76°21'0"
76°24'0"
76°27'0"
10°0'0"
9°57'0"
9°54'0"
9°51'0"
EndPoint at Vettuvelikadavu bridge
Irumpanam Rail yard bridge
Nedungapuzha bridge
Trippunithura
Aliyar bridge
Kanjiracheera bridge
Rail bridge
Puthiyakavu bridge
Chottanikkara
Kahiyavally bridge
Kandanad bridge
Kolencherykadavu bridge
Mulanthuruthy
Udayamperoor
Konothupuzha
Matathankadavu bridge
StartingPoint at Poothotta-Kanjiramattom bridge
Amballoor
Konothupuzha
Related Local bodies
Amballoor
Chottanikkara
Mulanthuruthy
Trippunithura Municipality
Udayamperoor
No. of crossings over Konothupuzha- 12


MUVATTUPUZHA RIVER BASIN MAP
N
76°24'0"
76°36'0"
76°48'0"
10°12'0"
10°0'0"
9°48'0"
9°36'0"
9°24'0"
Kothuppuzha


WATERSHEDS IN KONOTHUPUZHA BASIN
N
76°18'0"
76°21'0"
76°24'0"
10°0'0"
9°57'0"
9°54'0"
9°51'0"
9°48'0"
Konothupuzha
13M11a
13M20a
13M8a
13M21a
13M22a
Legend
Konothpuzha
Watersheds
13M11a (Trippunithura)
13M20a (Karingachira- Irimpanam)
13M21a
13M21c
13M22a
13M6a (South Paravoor)
13M7a (Ameda)
13M8a (Puthiyakavu)

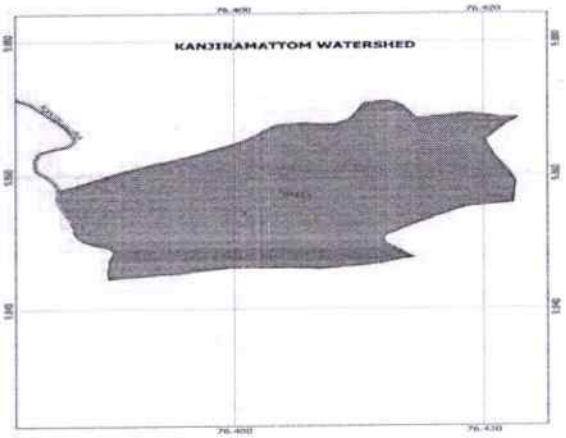
WATERSHEDS ASSOCIATED WITH KONOTHUPUZHA:

Konothupuzha sub basin forms a part of the vast Muvattupuzha river basin. The Konothupuzha sub basin having an area 7057.87 Ha constitutes about 4.5 % of the Muvattupuzha river basin. It lies between 9.852251 to 9.979778 0N latitude and 76.3876740 to 76.343348 0 E longitude.This basin receives good rainfall and has humid atmosphere throughout the year. Konothupuzha sub basin consists of 8 micro watersheds, the details of which are as given below.

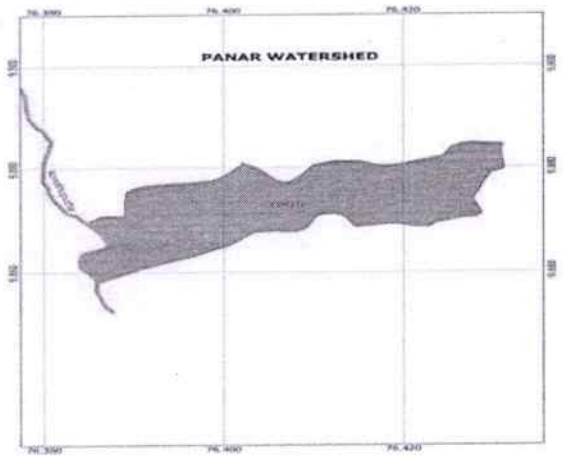
SI. No	Watershed name	Water shed code	Area[Ha]
1	Thripunithura	13M 11a	1122.98
2	Karingachira- Irimpanam	13M 20a	2407.62
3	Puthiyakavu	13M 8a	696.41
4	Ameda	13M 7a	380.34
5	South Paravoor	13M 6a	662.35
6	Kottepadam	13M 21a	329.77
7	Panar	13M 21c	701.6
8	Kanjiramattom	13M 22a	756.8
		TOTAL	7057.87 Ha

1. Kanjiramattom Watershed (13 M22a)

The starting reach of Konothupuzha for an approximate length of 800m is along the boundary shared between Kanjiramattom and South Paravoor watersheds. The Kanjiramattom watershed having a total area of 756.8 Ha comes under Amballoor and Edakkattuvayal Panchayats.The damaged regulator-cum- bridge at Puthenkavu marking the 0th chainage of Konothupuzha falls within this watershed. This watershed is located between latitude 9.84350 to 9.87020N and longitude 76.3877 to 76.422720 E. The width of Konothupuzha in this reach is in the range of 45 to 60m. The flow through Konothupuzha in the reach through this watershed is steady though scattered clusters of water hyacinth / algae are present.There are about 1000 acres of coal paddy fields available in this watershed.



2. Panar Watershed (13M21c)



About 1750m length of Konothupuzha passes along the boundary of this watershed. Panar watershed is located between latitude 9.8573 to 9.88400N and longitude 76.3833 to 76.43150 E. The watershed area of 701.6 Ha is spread

under Amballoor and Edakkattuvayal Panchayats. The western area of this watershed along the banks of Konothupuzha comprises of coal paddy fields of approx area 1200 acres. Apart from this, various crops such as rubber, pineapple, tapioca, pepper, vegetables etc are also

3. Kottepadam watershed (13M21a)

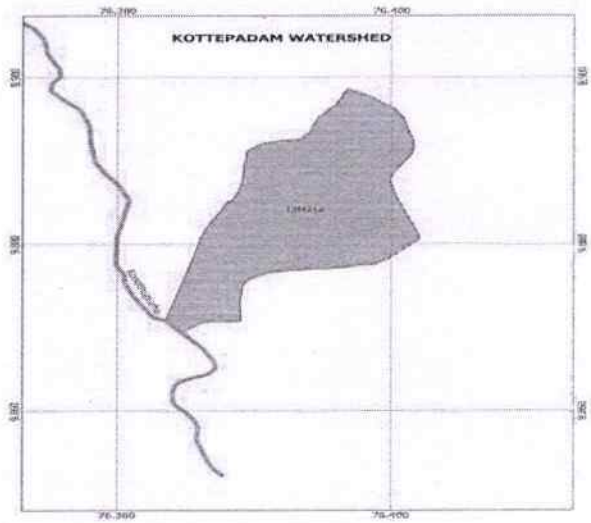
Kottepadam watershed having an area of 329.77 Ha is located in Mulanthuruthy Panchayat. The GPS location of this watershed is between latitude 9.8693 to 9.89820N and longitude 76.3843 to 76.40090 E. About 250m length of Konothupuzha passes along the boundary of this watershed. Paddy fields to an extent of 150 acres is available in this

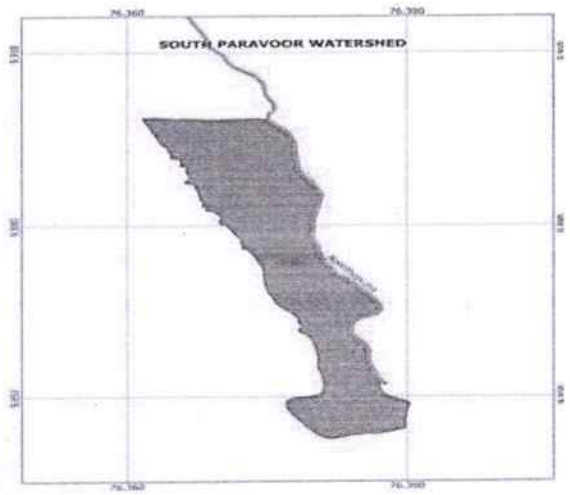
4. South Paravoor Watershed (13M6a)

This watershed is located in Udayamperoor Panchayat between latitude 9.8433 to 9.89880N and longitude 76.3771 to 76.38680 E. South Paravoor watershed is having a total area of 662.35 Ha. About 6300m length of Konothupuzha passes along the boundary of this watershed. Paddy rubber, pineapple, tapioca, pepper, vegetables etc are widely cultivated in this watershed area

cultivated in this watershed area.The width of Konothupuzha in this reach is in the range of 40to 70m. The river is infested with thick floating algae obstructing smooth navigation of fishermen boats through this area of the river.

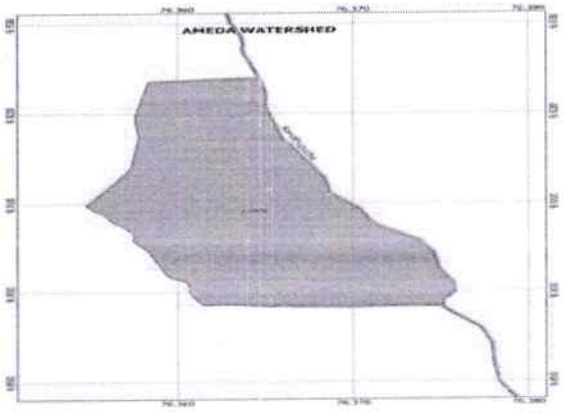
watershed.





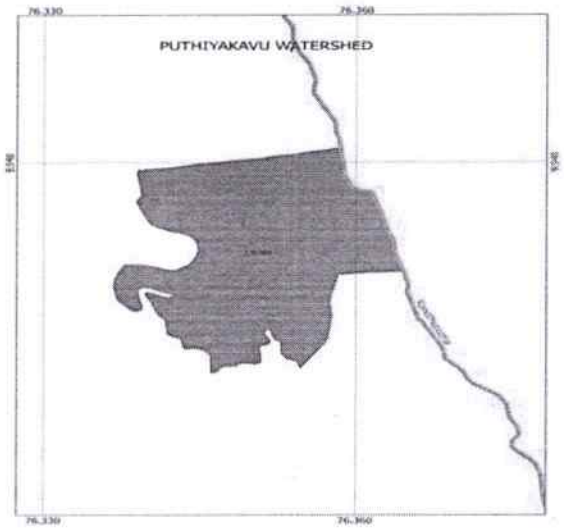
5. Ameda watershed (13M7a)

Ameda watershed having a total area of 380.34 Ha is located in Udayamperoor Panchayat.It is located between 9.8978 to 9.92310N latitude and 76.3843 to 76.40090 E longitude. 3400m length of Konothupuzha is flowing along the boundary of this watershed. The areas along the banks of the Puzha in this watershed are mainly waterlogged / barren areas which could be put back to cultivation by the completion of this-Project.



6. Puthiyakavu watershed (13M8a)

Puthiyakavu watershed area of 696.41 Ha is spread under Udayamperoor Panchayat and Trippunithura Municipality.The watershed is located between 9.9090 to 9.93900N latitude and 76.3371 to 76.36170 E longitude. 2400m length of Konothupuzha is flowing along the boundary of this watershed. 25 acres of paddy is being cultivated in this watershed . Paddy, rubber,pepper, pineapple are also cultivated in many areas in this watershed.



7. Karingachira- Irimpanam watershed (13 M20a)

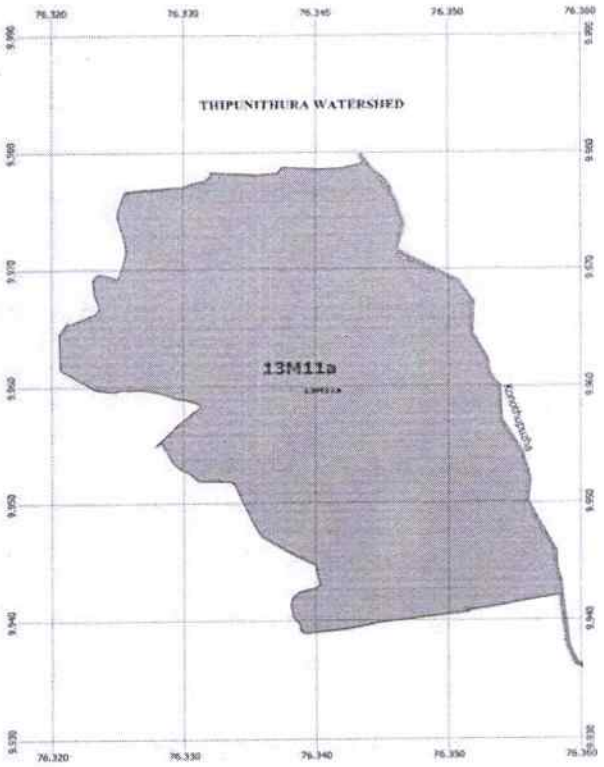
This watershed having an area of 2407.62 Ha is spread under Chottanikkara, Udayamperoor, Mulanthuruthy Panchayats and Trippunithura Municipality. About 14.2 km of the last reach of Konothupuzha flows along the boundary of this watershed. The banks of Konothupuzha are severely encroached and hence the width of the river decreases along the boundary of this watershed especially in Trippunithura region. About 570 Ha of cultivable land is available in this watershed out of which major portion lies barren. Presently cultivation is being carried out in only an extent of 40 acres .

8. Trippunithura Watershed(13M 11a)

The Trippunithura watershed having a total area of 1122.98 Ha covers a major portion of Trippunithura Municipality. The watershed is located between latitude 9.940660 and 9.9782780N and longitude 76.32087 to 76.35110 E. About 4.9 km of the last reach of Konothupuzha flows along the boundary of this watershed which is equally shared by Karingachira- Irimpanam watershed . The stretch of Konothupuzha along this watershed is subject to severe encroachment. Hence there is drastic change

in the width of the river along this watershed. At the portion near Aliyar bridge, the width of the river is reduced to as low as 10m. Also about 46 Ha of agricultural field is available in this watershed.

Aprroximately 50 Ha area is lying barren which could be put back to cultivation by the completion of this Project.



5.PROBLEMS TO BE ADRESSED:

Due to overexploitation and neglect, the Konothupuzha is currently in a pathetic situation. The river is heavily silted up and after the initial reach of 10 km the river is in almost stagnant condition. The accumulation of organic waste from the adjacent inhabited areas has made the river eutrophic and has resulted in excessive growth of algae and aquatic plants thus worsening the situation. The major problems diagnosed are as follows.

- Excessive siltation in the river has affected the water carrying capacity of the river
- Excessive growth of algae causing obstruction to water flow and accumulation of wastes
- Deteriorating quality of water in the river
- River is stagnant in many reaches causing unhealthy situation
- Adjacent areas prone to flooding in monsoon season

CONTAMINATION OF THE RIVER

The river is contaminated with both biodegradable and non-biodegradable pollutants. Domestic wastes, wastes from the butcher shops, poultry farms, restaurants etc in polythene bags are dumped into the river and to the nearby premises of the river especially at points of bridge crossings like Kolenchery kadavu bridge, Kandanad bridge, Vettuvelikkadavu , Nedungapuzha etc. There are numerous feeder thodus connected to the river which also convey all types of wastes into the river. For e.g. Anthakarathodu in Tripunithura. Wastes are also being dumped in the barren paddy fields lying adjacent to the river. Wastes from several automobile workshops which include waste oil are also found being discharged into the river. Sewage from old type toilets near Puthenkavu area is also a cause of pollution.

As per a study conducted by Shastra Sahitya Parishad, the biological oxygen demand of water in the Puzha is found to be in the range 54-76 mg/litre ,chemical oxygen demand in 350-420 mg/litre and MPN (Most Probable number) 1600-1800/100ml . These values are too high compared to the acceptable limits set up by Central Pollution Control Board and World Health Organization. About 40 species of fish existed in the Puzha but due to severe pollution and stagnancy condition prevailing in the river, many of them are extinct now.

At present this puzha is in a pitiable, poor, dying condition due to heavy organic waste deposits, silt deposit, Reduction of physical dimensions due to encroachments , Construction activities ,withering of thick vegetation, hyacinth and other aquatic plants, Micro channels and streams are filled up resulting in over flow and flooding, Irregular and inadequate maintenance etc. In some portion it is seen that the grass and aquatic plants have been grown thickly and their roots firmly grown in to the river bed. Due to this the water is stagnant in these reaches and this leads to grave problems such as destruction of aquatic life, breeding of mosquitoes etc. This also causes health hazards to the people residing along the sides of the puzha.

VARIATION OF WIDTH AND DEPTH OF KONOTHUPUZHA ALONG ITS LENGTH:

Sl No	Approx Chainage	Location	Width	Depth
1	0m	Puthenkavu	58m	3m
2	1000m	Pullukadveli	75m	3.1m
3	1350m	South Paravoor	45m	3m
4	1500m	Kozhikari	80m	3.8m
5	1800m	Manthuruthel	60m	2.8m
6	2800m	Mattathankadavu	42m	2.8m
7	3500m	Chekidarithazham	40m	2.6m
8	4500m	Kochupally	70m	3.1m
9	5300m	IOC	35m	2.4m
10	6050m	Nadakkavu	30m	1.8m
11	7250m	Valiyakulam	30m	1.8m
12	8050m	Kandanadu	35m	1.5m
13	9250m	Kaniyaveli	50m	1.4m
14	9450m	Puthiyakavu	30m	0.8m
15	11500m	Near Rail crossing	30m	0.3m
16	12550m	Karingachira bridge	10m	0.3m
17	13400m	Aliyar bridge	10m	0.3m
18	14650m	Nedungapuzha	35m	0.8m
19	15800	Rail yard Irimpanam	30m	1.3m
20	16750	Vettuvelikadavu	35m	1.6m

6. STRATEGY:

The specific tasks to be executed towards realising the broad objectives are as follows.

I Cleaning & Desilting the thodu

Provision for clearing jungle, removing hyacinth weeds, removing thickly grown grass and desilting the river are proposed to regain the capacityof the river for sufficient storage of water and easy flow. Earthwork excavation for deepening the river is proposed to be done by using Hydraulic excavator. and depositing the excavated silt on the banks and conveying the balance spoil if any to the contractors own place of choice.

II Bund formation & Protection works

On the both sides of thodu earthen bunds are proposed with the excavated silt and the same will be protected by geotextile and planting Ramacham, kaitha etc over a silt layer over geotextiles . This will enable to prevent further soil erosion. By constructing the bunds possibilities of encroachments in these areas can be prevented in future.

III Total station & Boundary stone

Total station survey is incorporated in the estimate for fixing the boundary of the river . Once the boundary fixed, it will be demarcated by Boundary stones. It will help to protect the valuable natural water resources from encroachment in future.

IV Bathing ghatts and side protection works

Bathing ghatts for public usage and for access to small boats,' vanchi' etc and side protection works using Dry Rubble masonry in very needy places are included in the project.

V Operation & Maintenance

This aspect has to be given utmost priority as otherwise the objective envisaged in the project will not be served. Hence it is proposed to constitute beneficiary committees in all local bodies for the proper periodical maintenance and operation works.

7. AIMS AND OBJECTIVES OF THE PROJECT

1. The major goal underlying the project is the 'REJUVENATION' of Konothpuzha, bringing a dying river in to life. Preserving a wealthy resource and providing a healthy atmosphere to the inhabitants nearby, flood control, providing navigation facilities, increasing productivity , utilising the chances of Tourism, increasing the living standards of fishermen, etc and also to have a proper connection between Champakkara canal and Muvattupuzha river thereby regaining the past historic water way and maintain a proper environmental system in the river basin area.

   Other External Benefits

- Avoidance of water-logging /flooding
- Prevention of mosquito breeding, fly nuisance etc. posing health risks
- Less contaminated sediment and sludge build-up
- Less biological/bio-chemical oxygen demand (BOD)
- Reduced chance of nuisance/toxic algal blooms
- Employment during civil works
- Employment due to O & M

  Indirect employment through tourism , commerce etc.

At present this puzha is in a pitiable, poor, dying condition due to heavy organic waste deposits, silt deposit, Reduction of physical dimensions due to encroachments , Construction activities ,withering of thick vegetation, hyacinth and other aquatic plants, Micro channels and streams are filled up resulting in over flow and flooding, Irregular and inadequate maintenance etc. In some portion it is seen that the grass and aquatic plants have been grown thickly and their roots firmly grown in to the river bed. Due to this the water is stagnant in these reaches and this leads to grave problems such as destruction of aquatic life, breeding of mosquitoes etc. This also causes health hazards to the people residing along the sides of the puzha.

REJUVENATION PROJECT- PHASE- I

PROPOSED WORK METHODOLOGY

Only the utmost basic measures for reviving the dying Konothupuzha are proposed to be taken up under Phase-1 of the Rejuvenation Project. The Project execution is to be carried out in two stages- Preliminary stage and Implementation stage. Under Preliminary Stage, localised Committees are to be formed for better identification of problems faced by the river and to make the Project a public participatory one.The implementation of the project is planned incorporating modern sophisticated equipments for ensuring quality and speedy completion of the work.

1. Formation of Area wise Committee

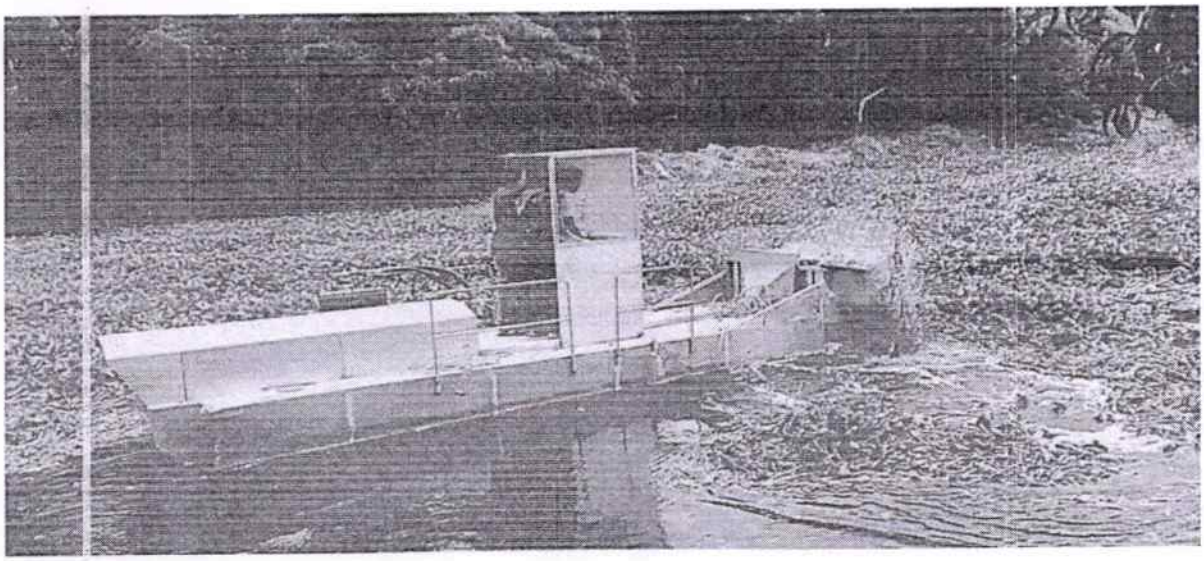
The entire 17 km stretch of the river may be divided into chainages of 1 km length each and Chainage wise committees to be formed for locating problems at root level. The Committee should include representatives of residents, ward members of concerned Panchayats, Officials in charge from Agriculture, Irrigation and Revenue departments and representatives of NGOs etc. in that particular chainage. The Committee is to be entrusted with locating the entry points of wastes to the river, encroachment etc. Area wise meetings to be conducted periodically and suggestions may be collected locally for better formulation of the proposal. Sufficient publicity may be given for the Konothupuzha Rejuvenation program by conducting awareness classes in schools, colleges, Residency associations etc so as to make the program a public participatory one.

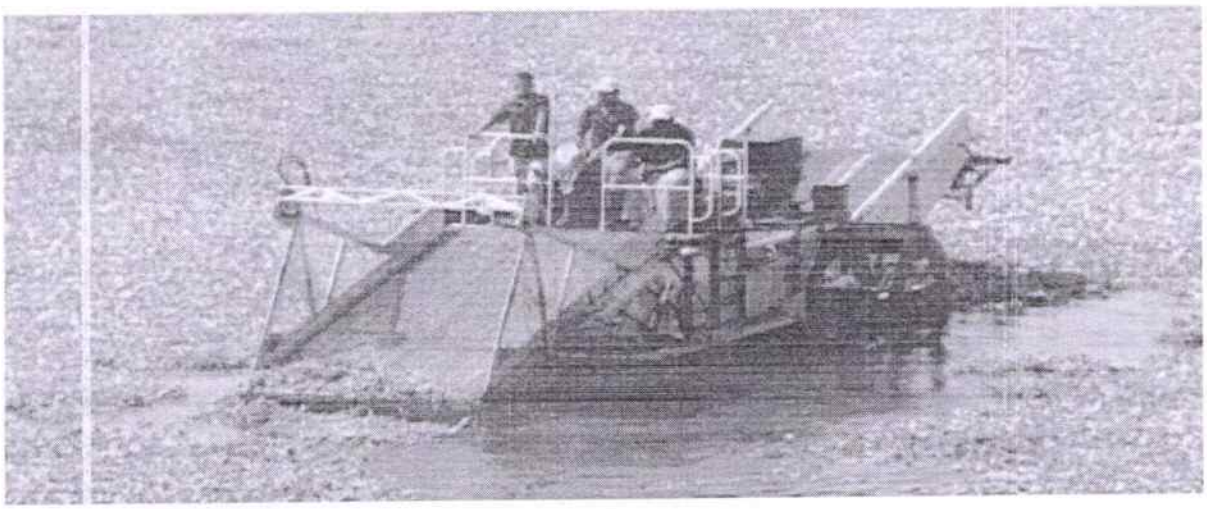
2. Boundary demarcation

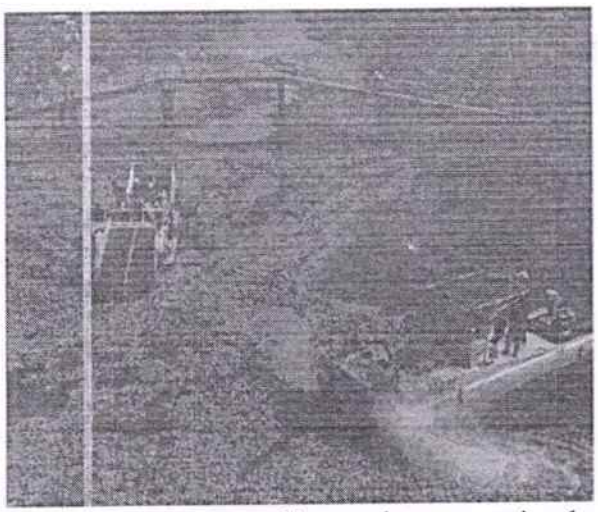
There are evident encroachments in various stretches of the river especially in the reaches coming under Trippunithura Municipality. In order to restore the river to its past glory , eviction of these encroachments is an indipensable step. The boundaries of the river need to be clearly marked for preventing further encroachments. Provision is included in the estimate for planting boundary stones to avoid further encroachment.

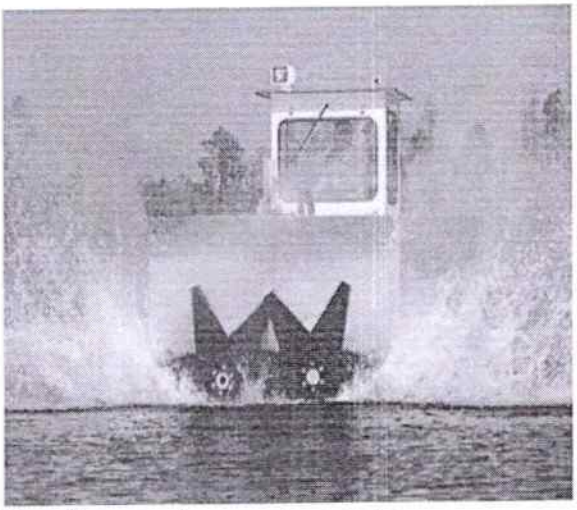
3. Removal of weeds and water hyacinth

Almost the entire reach of Konothupuzha is infested with weeds , water hyacinth and other aquatic plants. After the initial 9 km reach of Puzha , the presence of these aquatic weeds along with excess siltation has obstructed the flow through the river thus making it stagnant and thereby causing unhealthy environment. Chemical methods of arresting the weed growth are not advisable as it will cause long term consequences on ecosystem. As an ecofriendly solution , mechanical harvesting of weeds is proposed to be done using modern equipments like aquatic shredders-cum- harvesters which are specially designed for this purpose. The cutting arms of these equipment can cut through the thick dense vegetation and are capable of even rooting out the stubborn growth of hyacinth to avoid its recurrence. The cut floating matter can be collected through a conveyor system mounted on the equipment and transferred to storage area available in the equipment itself. This collected bio debris can be conveyed to places of disposal using this equipment itself or by making use of additional transport barges . The bio debris can be composted and converted into manure , thus making the whole process a green solution to the weed problem. The movement of paddle wheels and cutters of the equipment also help to aerate the water thus improving the water quality. They can be used to clear all types of floating debris including plastic, tyres, small logs of wood etc .





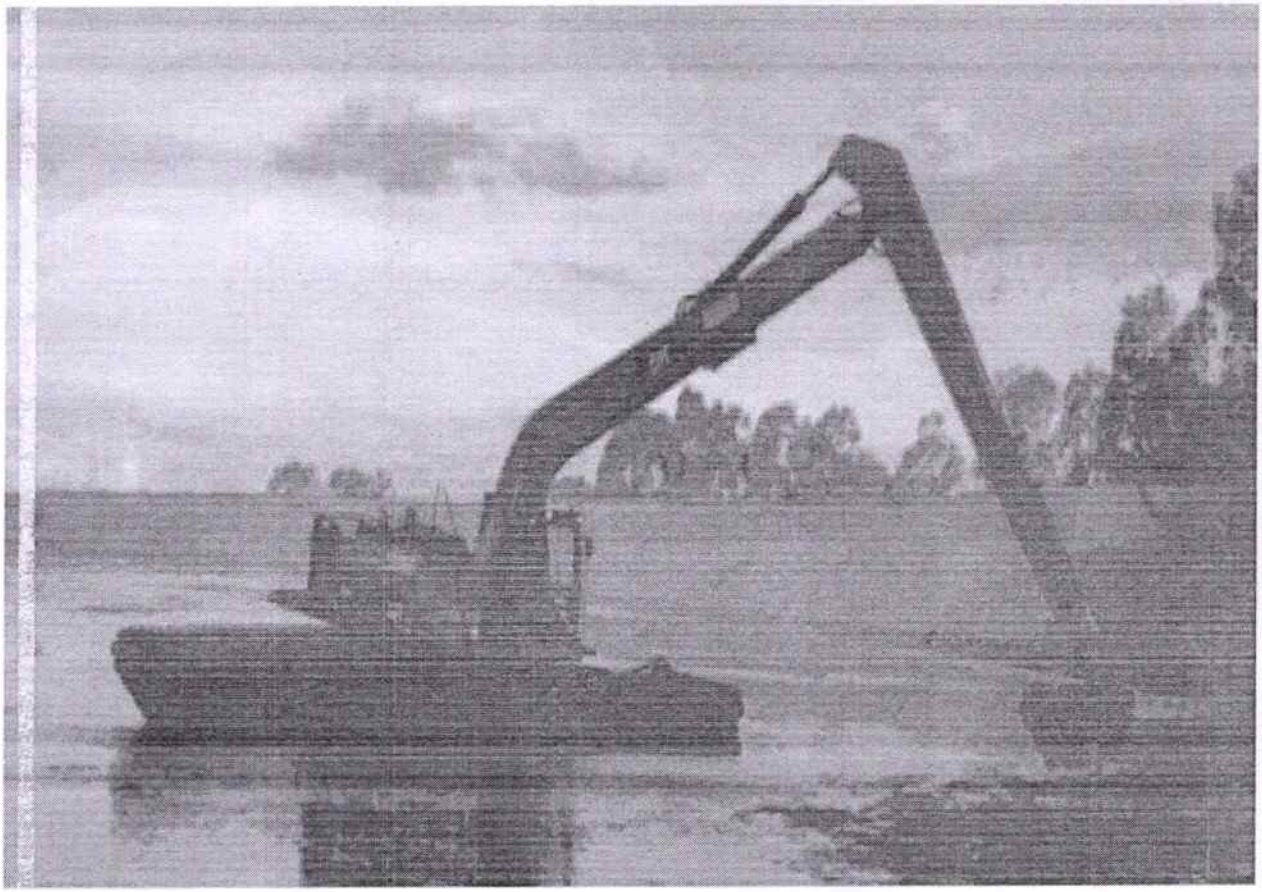




Deweeding using aquatic shredder / harvester equipments

4. Desilting using amphibian excavator and formation of earthen bund on both banks and protection using coir geotextiles

The removal of excess silt deposited in the river hindering free flow of water is the crucial step in ensuring the free flow of water through the river. It is proposed to use modern equipments such as amphibian excavators/silt removers for speedy implementation of the project. Amphibious excavator is better adapted for removing silty clay,and heavier debris from river bed than traditional barge - mounted equipment .They can be easily operated in deep and shallow waters. The removed silt is to be used for formation of earthen bunds on both banks of the river which is to be protected by using ecofriendly coir geotextiles. Tree saplings and suitable vegetation is to be planted on both banks of the river as a measure of afforestation and for protecting the banks.



DESILTING USING AMPHIBIAN EXCAVATOR

COIR GEOTEXTILES FOR PROTECTION OF OUTER BUND ON BOTH BANKS

5. Construction of bathing ghats

It is also proposed to provide bathing ghats at various reaches along the river to provide safe and easy access to river for people living nearby. Provision for 20 no.s of bathing ghats is included in the proposal. These ghats can also serve as access points to small boats used for navigation by fishermen through the river.

6. Reconstruction of Nedungapuzha and Kaniyavally VCB cum bridges

The width of the thodu is reduced to about 1/3 by blocking waterway with filled up earth at these points hindering the free flow .Hence these old dilapulated VCB s has to be reconstructed to ensure free flow through this portion.

8.TARGET BENEFICIARIES:

This project will be beneficial to the inhabitants living on the outskirts of Tripunithura Municipality, Chottanikkara, Mulanthuruthy ,Udayamperoor & Amballoor Grama panchayaths

The rejuvenation aims at the developments in following sectors.

I) Navigation

II) Inland tourism

III) Flood Control

IV) Agricultural development

V) Protection of Natural Water resource

VI) Fisheries

I Navigation

Eco friendly atmosphere will definitely bring back the earlier navigation system from Kanjiramattom & Thalayoalaparambu to Ernakulam through this river. Proper support and monitoring from the local bodies and beneficiaries will bring the aim in full success.

II Inland tourism

Ernakulam city is famous for its scenic beauty which attracts tourists from all over the world. Thripunithura is a part of Kochi Metropolitan area , famous for numerous historic temples viz, Sree Poornathrayesha temple , Kannankulangara temple, 'Perumthrikkovil' etc. Tripunithura was the capital of the erstwhile King-dom of Cochin. The hill palace situated near Tripunithura was the palace of the Maharaja of Cochin, the ruler of the kingdom. Chottanikkara temple is also a very famous pilgrim centre. Moreover, various palaces are historic predominance of the place.

In this project , it is proposed to clean and desilt the entire length of the puzha so as to make the area ecofriendly and attract the tourists to see the beauty of nature. On both sides of thodu earthern bunds are proposed with the excavated silt and the same will be protected by geotextile and vegetation. This will enable to prevent

further soil erosion. By constructing the bunds possibilities of encroachments in these areas can be prevented in future.

III Flood Control

On deepening the puzha the area on both banks become free from flood during the rainy season and it leads to further developments in agriculture and related sectors.

IV Agricultural development

We have around 1400 ha paddy fields getting irrigated by the river and the present fallow land become fertile and leads to enhanced productivity of paddy. Moreover the other crops can also be developed with the available fresh water resource.

V Protection of Natural Water resource

Natural water resources are becoming nominal is the present scenario. Bringing back to life , beauty and maximum utility of the river is a dream of the residents of the panchayaths included and Tripunithura municipality.

VI Fisheries

On Raising the income from fisheries Living standard of the fishermen living in the surrounding area and regaining the fresh water fish wealth is also one of the aim of the project.

9. CALCULATION OF BENEFIT- COST RATIO (Phase-I)

Capital amount		:	Rs. 20,85,00,000/-
Benefitted ayacut area		:	1000 ha
i	Paddy cultivation	:	
	Cost of cultivating paddy/ Hectare	=	Rs. 70,000/Ha
	Total annual cost of cultivating paddy	=	1000 x 70000 = Rs. 7,00,00000
	Yield per Hectare	=	2500 kg/Ha
	Benefit from paddy cultivation @ Rs. 35/kg	=	2500 X 1000 X 35 = Rs. 87,500,000
ii	Fisheries	:	
	According to a study by Fisheries dept, it is estimated that annually average of 3500 kg fish can be harvested per Ha of Inland water bodies. Considering the 17 km stretch of Konothupuzha having average width 40 m, value of fish resources available@Rs.100/kg	= =	(17000 X 40 X3500 X 100)/ (40.47X100X2.47) Rs. 238 lakh

Annual Benefit from various fields:

- Agriculture Rs 875,00,000/-
- Navigation Rs 10,00,000/-
- Tourism Rs 10,00,000/-
- Fisheries Rs.238,00,000/-

Total benefit Rs 113,300,000/-

Annual Cost involved:

1. Annual cost : Rs 208,50,000/-

(@ 10% of capital amount)

2. Depreciation : Rs 41,70,000/-

   (@ 2% of capital amount)

3. Annual maintenance : Rs 10,00,000/-

   Charges (Rs 1000/ha)

4. Cost incurred for cultivation : Rs.70000000

Total Annual Cost (1+2+3+4) : Rs 330,20,000/-

Benefit- Cost Ratio = Rs. 113,300,000/330,30,000 = 3.43 > 2

Hence the Project is feasible.

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BENEFITS ON COMPLETION OF PHASE-I

The following are the immediate benefits on successful completion of Phase-1 of the Project.

1. Konothupuzha will be restored to its past glory in terms of aesthetics , unobstructed water flow and improved water quality.
2. Various local bodies along the banks of the river now depending solely upon Choondi Water Supply Scheme in Muvattupuzha river can utilize Konothupuzha as their alternate reliable source for drinking water supply.
3. Availability of fresh water in Puzha will help to provide favourable environment for agriculture . Hence the vast agricultural fields presently lying barren along the banks of the Puzha can be brought back to cultivation.
4. Improvement in water quality will also increase the fish resources in the river which will be highly beneficial to fishermen depending on Konothupuzha for their livelihood.
5. Improvement in water carrying capacity of the river will help to avoid the flooding problem experienced during monsoon in the densely populated Trippunithura area.
6. Apart from providing a healthy environment to people living nearby, the Project will also help to enhance the tourism potential of the area which will be profitable in terms of revenue and employment generation.

ACTION TO BE TAKEN BY LOCAL BODIES:

The Konothupuzha passes through many local bodies along its full course of 17km . Hence public participation is inevitable to make the rejuvenation project a long lasting one. There should be area wise Committees viz. Puzha Samrakshana Sena to see to it that the Puzha is kept free of pollution.The peoples representatives, volunteers of NGOs, representatives of residency associations etc. may be made part of these Committees. These Committees should be entrusted with the responsibility of locating the points of disposal of domestic/industrial sewage to the river and bringing them to the notice of concerned local body authority. Similarly, encroachments also to be located . The following measures are to be taken by local bodies in protecting the river.

- The local body authorities should take strict action in sealing all waste discharge pipes to the river and also in eviction of encroachments .
- Warning notice boards should be displayed along the course of the river on both banks displaying the penalty for depositing waste into and nearby premises of the river.
- Closed circuit cameras are to be installed on major threat points of waste deposition.
- Protective screens should be fixed on all the bridge crossings across Konothupuzha to check throwing of waste from moving vehicles over the bridges.
- The numerous small thodus joining Konothupuzha should also be regularly cleaned and maintained free from pollution with the help of MNREGS workers.
- Subsidies may be given to domestic users as well as industrial units for constructing composting units and soak pits to encourage managing disposal of wastes generated by them in their own premises .
- Slaughter houses without biowaste treating and composting system should be banned.
- Regular checking of quality of water at various reaches of the river should be done by concerned local bodies and the variation in quality parameters should be closely monitored and recorded in registers. These registers are to be inspected periodically by Pollution Control Board authorities and the reasons of significant variations in quality parameters should be investigated and sorted out.
- Walks may be conducted occasionally on river sides by participating celebrities, politicians etc. for better publicityand also including volunteers from various NGOs , residency associations , school/college children etc. to create an awareness among public about the importance of preserving the river.

10. TIME SCHEDULE

Summary of Project time schedule

Sl No	Description of works	Duration in Months
1	DPR preparation	1
2	AS & TS Process	2
3	Tendering	2
4	Clearing jungle	1
5	Total station survey	2
6	Providing Boundary stone	2
7	Cutting and removing thickly grown	2
8	Earth work excavation & bund formation	6
9	Dry rubble masonry	3
9	Protection by geotextile	4
10	Supplying and planting seedings of Plants	4
	Total expected completion period	16months

PROPOSED PROGRAM EXECUTION CHART

Name of work:- Rejuvanation of Konothupuzha from Puthenkavu to Vettuvelikkadavu for 17.00 km in Ernakulam district

PROJECT DURATION: 16MONTHS

Name of item	Period	Month															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Preparation of DPR	1																
AS & TS	2																
Tender Process	2																
Clearing jungle	1																
Total station survey	2																
Providing boundary stone	2																
Cutting & removing thick grown	2																
Earth work & Bund Formation	6																
Geotextile	4																
Planting Ramacham	4																
DR masonry	4																

NAME OF WORK : NABARD RIDF XVII-Rejuvenation of Konothupuzha from Puthenkavu to Vettuvelikkadavu (17 km) in Ernakulam District

ESTIMATE REPORT

Estimate Amount : Rs. 208.5 Lakh

This estimate is proposed for rejuvenating the heavily silted up Konothupuzha so as to ensure unobstructed flow of water in the 17 km reach of the Puzha from Puthenkavu to Vettuvelikkadavu (Eroor, Tripunithura) in Ernakulam district. The Konothupuzha forms part of Muvattupuzha river and flows through Udayamperoor, Amballoor, Mulanthuruthy & Chottanikkara Panchayats and finally joins Chitrapuzha at Vettuvelikkadavu in Trippunithura Municipality. It is also interlinked with Vembanad lake at its southern end near Poothotta and also to Champakara canal through Andhakara thodu near its 12 km chainage portion from Poothotta end. The river is of width varying from 100 m to as low as 10 m due to massive encroachments along its banks. Due to heavy deposition of silt and infestation of vegetation and water weeds, the river is almost stagnant creating unhealthy environment in its premises. The 17 km long precious water source is also subjected to heavy pollution . There are 12 no.s of crossings/bridges over Konothupuzha which are major points of waste deposition. The depth of water in many reaches of the river is diminishing day by day, threatening the very existence of the river.

In this estimate, it is proposed to carry out clearing of water hyacinth, weeds ,other aquatic plants blocking the water flow using modern sophisticated equipments such as amphibian weed harvesters for speedy implementation of the project. The excess silt deposited in the river is to be removed by amphibian excavators assisted by transport barges/ boats for easy conveying of excavated spoil to the places of disposal. It is proposed to utilize the excavated earth for bund formation on both banks of the river. These bunds are to be protected by fixing coir geotextiles and then planting anti erosion plants such as Ramacham as a mode of ecofriendly bank protection. The boundaries of the river are also to be demarcated for evicting encroachments. Provision is also included in the estimate for conducting total station survey for fixing boundary of the river and for planting boundary stones at an interval of 50m on both banks of the river. It is also proposed to construct 20 no.s of bathing ghats so that the public can easily access the river for their daily water requirements and also as access points to board small boats/Vanchi used by fishermen for navigation through the river.

Reconstruction of Nedungapuzha and Kaniyavally VCB cum bridges are included since the width of the thodu is reduced to about 1/3 by blocking waterway with filled up earth at these points hindering the free flow .Hence these old dilapulated VCB s has to be demolished and reconstructed to ensure free flow through this portion.Provisionfor mobilizing and demobilizing piling equipments,testing of piles are also included in this estimate.The total length of bridge is 30 mtre in span of 15mtre each is proposed.

Including provision for 12% GST, the total estimate amount comes to Rs 20.85.00 crores as per Delhi schedule of rates 2016 with cost index 39.89% for Ernakulam.

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Detailed Estimate

NABARD RIDF XXVII-REJUVENATION OF KONOTHUPUZHA FROM PUTHENKAVU TO VETTUVELIKKADAVU FOR 17 KM IN ERNAKULAM DISTRICT

(Cost Index Applied for this estimate is 39.89%)

Sl No	Description	No	L	B	D	CF	Quantity	Remark
	1 Appendix- A Cleaning & Desilting							
1	od4784/2021_2022/IA Cleaning of waterway/river with suitable amphibian cleaning equipments or any equivalent mechanical equipment with necessary accessories, cleaning the entire existing width of Konothupuzha stretch between Puthenkavu and Vettuvelikkadavu ,removing all debris, water plants, floating hyacinth and all other rubbish including plastic/non-plastic waste etc. from the river, cutting of trees/ branches in the river and river banks, clearing vegetation on the river banks etc., as directed by the Engineer-in-charge to provide a neat and tidy appearance for the river/river banks and to ensure free flow in the river. The rate shall include, temporary storage of all waste material on the banks or other suitable locations for drying/reduction of volume if required/as directed, transportation to the locations for final disposal of the waste material by means of loaders / tippers/ mechanized boats / pontoons /country boats etc., as appropriate and as directed, and final disposal on the river banks or nearby locations, including excavating trenches and disposal of waste in excavated trenches or otherwise and providing a suitable soil cover of appropriate thickness including cost, conveyance of all materials, hire charges for equipment, labour, incidentals etc., including all taxes and duties (GST) complete as per the directions of the Engineer in Charge for fulfilling the final objective of removing all obstructions and to ensure free flow of water in the river.(Output 3000 sqm for 8 hours)							
	Puthenkavu to South Paravoor	1	1380.000	55.000			75900.000	Avg width in the reach taken
	South Paravoor to Mattathankadavu	1	1350.000	60.000			81000.000	Avg width in the reach taken
	Mattathankadavu to Pullukkad	1	1800.000	45.000			81000.000	Avg width in the reach taken
	Pullukaad to IOC	1	750.000	26.000			19500.000	Avg width in the reach taken
	IOC to Nadakkavu	1	700.000	20.000			14000.000	Avg width in the reach taken

	Nadakkavu to Valiyakulam	1	1200.000	20.000			24000.000	Avg width in the reach taken
	Valiyakulam to Udayamperoor Policestation	1	800.000	18.000			14400.000	Avg width in the reach taken
	Udayamperoor Police station to Kaniyavally	1	1200.000	50.000			60000.000	Avg width in the reach taken
	Kaniyavally to puthiya kavu	1	200.000	25.000			5000.000	Avg width in the reach taken
	Puthiya kavu to Trippunithura Govt colleg	1	1600.000	70.000			112000.000	Avg width in the reach taken
	Thrippunithura Govt.College to Andhakara thodu	1	750.000	60.000			45000.000	Avg width in the reach taken
	Andhakara thodu to Karingachira	1	750.000	35.000			26250.000	Avg width in the reach taken
	Karingachira to Aliyar bridge	1	850.000	35.000			29750.000	Avg width in the reach taken
						Total Quantity	587800.000 sqm	
						Total Deducted Quantity	0.000 sqm	
						Net Total Quantity	587800.000 sqm	
						Say 587800.000 sqm @ Rs 18.00 / sqm	**Rs 10580400.00**	
2	2.31 Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared							

	Puthenkavu to South Paravoor	1	1400.000	55.000			77000.000	average depth and width taken
	South Paravoor to Mattathankadavu	1	1400.000	50.000			70000.000	average depth and width taken
	Mattathankadavu to Pullukad	1	1700.000	45.000			76500.000	average depth and width taken
	Pullukaad to IOC	1	750.000	26.000			19500.000	average depth and width taken
	IOC to Nadakkavu	1	700.000	20.000			14000.000	average depth and width taken
	Nadakkavu to Valiyakulam	1	1200.000	20.000			24000.000	average depth and width taken
	Valiyakulam to Udayamperoor Police station	1	800.000	30.000			24000.000	average depth and width taken
	Udayamperoor Police station to Kaniyavally	1	1000.000	50.000			50000.000	average depth and width taken
	Kaniyavally to Puthiya kavu	1	150.000	25.000			3750.000	average depth and width taken
						Total Quantity	358750.000 sqm	
						Total Deducted Quantity	0.000 sqm	
						Net Total Quantity	358750.000 sqm	
						Say 358750.000 sqm @ Rs 10.07 / sqm	**Rs 3612612.50**	
3	od4785/2021_2022/IA							

	Earth work in excavation for removal of silt from Puthenkavu to Vettuvelikkadavu of Konothupuzha (17Km) by mechanical means using sophisticated equipments like amphibian excavator or any equivalent mechanical equipment with necessary accessories like transport barges, mechanized boats etc as appropriate and as directed, to the desired depth to ensure free flow in the river including getting out and disposal of excavated earth with lead upto 50 m and lift upto 3 m and formation of earthen bund on both banks of the river and disposal of excess spoil to places as directed by Engineer-in-charge The rate shall include disposal of excavated earth/clay, temporary storage of all materials on the banks or other suitable locations by means of loaders/tippers/mechanized boats etc as appropriate as directed. The rate shall include all the charges for labour, equipments, conveyance of materials, incidentals, all taxes , duties, GST complete as per the directions of the Engineer in Charge for fulfilling the final objective of removing all obstructions and to ensure free flow of water in the river.							
	Puthenkavu to South Paravoor	1	1400.000	30.000	0.300		12600.000	average depth and width taken
	South Paravoor to Mattathankadavu	1	1400.000	30.000	0.300		12600.000	average depth and width taken
	Mattathankadavu to Pullukad	1	1800.000	35.000	0.300		18900.000	average depth and width taken
	Pullukaad to IOC	1	750.000	25.000	0.600		11250.000	average depth and width taken
	IOC to Nadakkavu	1	700.000	20.000	0.600		8400.000	average depth and width taken
	Nadakkavu to Valiyakulam	1	1200.000	20.000	0.900		21600.000	average depth and width taken
	Valiyakulam to Udayamperoor Police station	1	800.000	18.000	0.900		12960.000	average depth and width taken
	Udayamperoor Police station to Kaniyavally	1	1200.000	25.000	1.000		30000.000	average depth and width taken

	Kaniyavally to Puthiya kavu	1	200.000	25.000	1.000		5000.000	average depth and width taken
	Puthiya kavu to Trippunithura Govt college	1	1600.000	35.000	1.000		56000.000	average depth and width taken
	Thrippunithura Govt.College to Andhakara thodu	1	750.000	35.000	1.600		42000.000	average depth and width taken
	Andhakara thodu to Karingachira	1	750.000	25.000	1.600		30000.000	average depth and width taken
	Karingachira to Aliyar bridge	1	850.000	35.000	1.600		47600.000	average depth and width taken
	Aliyar bridge to Nedungapuzha	1	1250.000	40.000	1.600		80000.000	average depth and width taken
	Nedungapuzha to Vettuvelikkadavu	1	2100.000	25.000	1.000		52500.000	average depth and width taken
						Total Quantity	441410.000 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	441410.000 cum	
						Say 441410.000 cum @ Rs 176.20 / cum	**Rs 77776442.00**	
4	2.8.1 Earth work in excavation by mechanical means (Hydraulic excavator) /manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift up to 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.All kinds of soil							
	For foundation of bathing ghat and its side wall	1	4.800	5.600	0.500		13.440	

	For foundation of boundary stone	680	0.500	0.500	0.500		85.000	
						Total Quantity	98.440 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	98.440 cum	
						Say 98.440 cum @ Rs 232.78 / cum	**Rs 22914.86**	
5	60.7.1 DRY RUBBLE MASONRY _ Dry rubble without concrete levelling course masonry with good quality blasted rubble including packing to compactness to lines and levels cost and conveyance of all materials labour charges etc. complete as per direction of Departmental officers at site							
	foundation of kadavu	20	5.600	4.800	0.500		268.800	
	superstructure (steps)	20	3.000	4.600	0.200		55.200	
	"	20	3.000	3.600	0.200		43.200	
	"	20	3.000	3.300	0.200		39.600	
	"	20	3.000	3.000	0.200		36.000	
	"	20	3.000	2.700	0.200		32.401	
	"	20	3.000	2.400	0.200		28.800	
	"	20	3.000	2.100	0.200		25.201	
	"	20	3.000	1.500	0.200		18.000	
	"	20	3.000	1.200	0.200		14.400	
	"	20	3.000	0.900	0.200		10.800	
	"	20	3.000	0.600	0.200		7.200	
	"	20	3.000	0.300	0.200		3.600	
	side wall	20	2*3	(1.2+0.4)/2	2.400		230.401	
						Total Quantity	813.603 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	813.603 cum	
						Say 813.603 cum @ Rs 2684.91 / cum	**Rs 2184450.83**	
6	4.1.5 Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)							
	Wearing coat on steps	20*11	3.000	0.300	0.050		9.900	
		20	3.000	1.000	0.050		3.000	

		20	3.000	0.600	0.050		1.800	
	Top of side wall	20	2*3	0.400	0.075		3.600	
	For foundation of boundary stone	680	0.500	0.500	0.400		68.000	
						Total Quantity	86.300 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	86.300 cum	
						Say 86.300 cum @ Rs 6892.38 / cum	**Rs 594812.39**	
7	16.23 Providing and fixing 15 cm dia at top, 20 cm at bottom and 90 cm high precast reinforced cement concrete 1:1.5:3 (1 cement : 1.5 coarse sand: 3 graded stone aggregate 20 mm nominal size) boundary stone as per standard design, including finishing smooth with cement mortar 1:3 (1 cement: 3 fine sand) (cost of excavation, refilling and concreting to be paid for separately).							
	Boundary stone at 50m intervals on both banks	680					680.000	
						Total Quantity	680.000 each	
						Total Deducted Quantity	0.000 each	
						Net Total Quantity	680.000 each	
						Say 680.000 each @ Rs 642.23 / each	**Rs 436716.40**	
8	od4786/2021_2022/IA Protection by using geotextiles(CGT H2M5(740gm) dressing up surface of the bund, plastering the side slopes with excavated mud,fixing the geo textiles with bamboo pegs ,covering with excavated mud for protection and base for planting ramacham, kaitha etc.including cost of all materials and labour cost etc,complete.							
	For protection over earthen bund formed using excavated earth on both banks	2	14490.000	6.000			173880.000	
						Total Quantity	173880.000 sqm	
						Total Deducted Quantity	0.000 sqm	
						Net Total Quantity	173880.000 sqm	
						Say 173880.000 sqm @ Rs 318.81 / sqm	**Rs 55434682.80**	

Sl No	Description	No	L	B	D	CF	Quantity	Remark
2 Provision for shifting of utilities such as KSEB lines, pipe lines etc.								
Lump-Sum Total							**Rs 100000.00**	

	Sl No	Description	No	L	B	D	CF	Quantity

Remark	**3 Provision for conducting Total Station survey**							
	Lump-Sum Total						**Rs 800000.00**	
	Sl No	Description	No	L	B	D	CF	Quantity
Remark	**4 Appendix B- Construction of Bridge at Nedughapuzha**							
1	15.3 Demolishing R.C.C. work manually / by mechanical means including stacking of steel bars and disposal of unserviceable material with in 50 metres lead as per direction of Engineer -in-Charge.							
	Demolishing existing RCC structures							
	Foundation	1	15.000	3.000	0.500		22.500	
	Basement	1	15.000	5.000	1.000		75.000	
	Slab	1	15.000	10.000	0.150		22.500	
						Total Quantity	120.000 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	120.000 cum	
						Say 120.000 cum @ Rs 2034.77 / cum	**Rs 244172.40**	
2	60.1.1 RING BUND Type-I-Putting up ring bund as per approved shape 2.5m bottom width, 1m top width using empty gunny/polythene bags filled with earth placed in 2 rows at 0.6m apart and filled in between with puddle clay to form bund for an average height 2.00m including labour dismantling the bund after completion of the work etc. complete.							
	Across river	2		18.000	(2+3)/2		90.000	
						Total Quantity	90.000 metre	
						Total Deducted Quantity	0.000 metre	
						Net Total Quantity	90.000 metre	
						Say 90.000 metre @ Rs 1291.52 / metre	**Rs 116236.80**	
3	60.2.3 Bailing out water using pump above 5 HP and Up to 10 HP-Bailing out water with engine and pump set above 5HP and up to 10HP, including conveyance to site and erection,cost of fuel, lubrication oil and other stores, pay of staff etc complete							
		1			100.000		100.000	
						Total Quantity	100.000 hour	
						Total Deducted Quantity	0.000 hour	
						Net Total Quantity	100.000 hour	
						Say 100.000 hour @ Rs 296.98 / hour	**Rs 29698.00**	
4	2.6.1 Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas							

	(exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50 m and lift up to 1.5 m, disposed earth to be levelled and neatly dressed.All kinds of soil							
	Pile cap river side	2	7.500	3.400	1.000		51.000	
	Centre portion	1	5.000	3.400	1.000		17.000	
						Total Quantity	68.000 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	68.000 cum	
						Say 68.000 cum @ Rs 176.19 / cum	**Rs 11980.92**	
5	20.1.6 Providing, driving and installing driven cast-in-situ reinforced cement concrete piles of grade M-25 of specified diameter and length below the pile cap, to carry safe working load not less than specified, excluding the cost of steel reinforcement but including the cost of shoe and the length of pile to be embedded in the pile cap etc. all complete. (Length of pile for payment shall be measured from top of shoe to the bottom of pile cap):1000 mm dia piles							
	River side	12	27.000				324.000	
	Centre	4	27.000				108.000	
						Total Quantity	432.000 metre	
						Total Deducted Quantity	0.000 metre	
						Net Total Quantity	432.000 metre	
						Say 432.000 metre @ Rs 12270.17 / metre	**Rs 5300713.44**	
6	4.1.8 Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40 nominal size)							
	Bed for pile cap for river side	2	7.500	3.400	0.100		5.100	
	Center	1	5.000	3.400	0.100		1.700	
						Total Quantity	6.800 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	6.800 cum	
						Say 6.800 cum @ Rs 6264.48 / cum	**Rs 42598.46**	
7	5.2.2 Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. up tot floor five level excluding cost of centering, shuttering, finishing and reinforcement :1:1.5:3(1 cement : 1.5 coarse sand : 3 graded stone aggregate 20 mm nominal size)							

	Pile cap for river side	2	7.500	3.400	1.000		51.000	
	centre	1	5.000	3.400	1.000		17.000	
	Abutment	2	4.000	2.500	5.000		100.000	
		1	3.000	2.000	5.000		30.000	
	Abutment cap& dirt wall	2	3.000	0.600	1.000		3.600	
		2	3.000	0.300	0.600		1.080	
		1	3.000	0.600	1.000		1.800	
		1	3.000	0.300	0.600		0.540	
	Wing wall	4	(0.50+0.80)/2	(1.00+0.70)/2	5.000		11.050	
						Total Quantity	216.070 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	216.070 cum	
						Say 216.070 cum @ Rs 9996.26 / cum	**Rs 2159891.90**	
8	5.9.1 Centering and shuttering including strutting, etc. and removal of form for:Foundations, footings, bases of columns, etc for mass concrete							
	bed for Pile cap for river side	2	21.800		0.100		4.360	
	centre	1	16.800		0.100		1.680	
	for Pile cap	2	21.800		1.000		43.600	
		1	16.800		1.000		16.800	
	Abutment	2	13.000		5.000		130.000	
		1	10.000		5.000		50.000	
	Abutment cap river side	2	7.200		1.000		14.400	
	centre portion	1	7.200		1.000		7.200	
	Dirt wall centre portion	1	6.600		0.600		3.960	
	river side	2	7.200		1.000		14.400	
	Wing wall	4	3.000		5.000		60.000	
						Total Quantity	346.400 sqm	
						Total Deducted Quantity	0.000 sqm	
						Net Total Quantity	346.400 sqm	
						Say 346.400 sqm @ Rs 271.32 / sqm	**Rs 93985.25**	

9	5.3 Reinforced cement concrete work in beams, suspended floors, roofs, having slope up to 15^0 landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases up to floor five level excluding the cost of centering, shuttering, finishing and reinforcement, with1:1.5:3 (1 cement : 1.5 coarse sand (Zone III) : 3 graded stone aggregate 20 mm nominal size).							
	slab	2	15.000	6.000	0.750		135.000	
	post of hand rail	2*15	0.200	0.200	1.200		1.440	
	rail top	2*1	0.200	0.200	30.000		2.400	
	rail intermediate	2*2	0.100	0.150	30.000		1.800	
						Total Quantity	140.640 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	140.640 cum	
						Say 140.640 cum @ Rs 10338.99 / cum	**Rs 1454075.55**	
10	4.1.3 Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:1:2:4 (cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)							
	Wearing coat on slab	2	15.000	6.000	0.100		18.000	
	Paver block sides	2*2	50.000	0.300	0.100		6.000	
	do	2*1	10.000	0.300	0.100		0.600	
						Total Quantity	24.600 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	24.600 cum	
						Say 24.600 cum @ Rs 7668.70 / cum	**Rs 188650.02**	
11	5.9.3 Centering and shuttering including strutting, etc. and removal of form for:Suspended floors, roofs, landings, balconies and access platform							
	slab side	2*2	42.000		0.550		92.400	
	slab bottom	2*2	15.000		6.000		360.000	
	post of hand rail	2*15	0.800		1.200		28.800	
	rail top bottom	2	27.000		0.200		10.800	
	do side	2*2	27.000		0.200		21.600	
	Top belt for DR works	4*2	50.000		0.075		30.000	
						Total Quantity	543.600 sqm	
						Total Deducted Quantity	0.000 sqm	
						Net Total Quantity	543.600 sqm	

							Say 543.600 sqm @ Rs 590.76 / sqm	**Rs 321137.14**
12	5.22.6 Steel reinforcement for R.C.C work including straightening, cutting, bending, placing in position and binding all complete upto plinth levelThermo - Mechanically Treated bars of grade Fe-500D or more							
	Pile (3.14x0.5x0.50x27)	16	21.195			80.0	27129.600	
	Pile cap	1	68.000			90.0	6120.000	
	Abutment& cap	1	113.390			90.0	10205.100	
	Slab	1	104.640			110.0	11510.400	
							Total Quantity	54965.100 kilogram
							Total Deducted Quantity	0.000 kilogram
							Net Total Quantity	54965.100 kilogram
							Say 54965.100 kilogram @ Rs 79.18 / kilogram	**Rs 4352136.62**
13	56.1.a Mobilization including transportation of all necessary plan and equipment's and materials of boring field testing and sampling and demobilization after completing the workFor machine boring							
	For piles	16					16.000	
							Total Quantity	16.000 set
							Total Deducted Quantity	0.000 set
							Net Total Quantity	16.000 set
							Say 16.000 set @ Rs 15798.00 / set	**Rs 252768.00**
14	20.9 Integrity testing of pile using Low Strain / Sonic Integrity Test/ Sonic Echo Test method in accordance with IS 14893 including surface preparation of pile top by removing soil, mud, dust & chipping lean concrete lumps etc. and use of computerised equipment and high skill trained personal for conducting the test & submission of results, all complete as per direction of Engineer-in-charge. Note:- The inclusion of the above item in the schedule of work shall be judiciously decided by the technical sanctioning authority, keeping in view the quality control, type of soil strata & importance of the project.							
	For piles	16					16.000	
							Total Quantity	16.000 per test
							Total Deducted Quantity	0.000 per test
							Net Total Quantity	16.000 per test
							Say 16.000 per test @ Rs 1050.50 / per test	**Rs 16808.00**
15	20.6.2.2 Vertical load testing of piles in accordance with IS 2911(Part IV) including installation of loading platform and preparation of pile head or construction of test cap and dismantling of test cap after test etc. complete as per specification & the direction of engineer -in-Charge.Single pile above 50 tonne and upto							

	100 tonne capacityRoutine test							
	for 1m dia pile	1					1.000	
						Total Quantity	1.000 per test	
						Total Deducted Quantity	0.000 per test	
						Net Total Quantity	1.000 per test	
						Say 1.000 per test @ Rs 37370.91 / per test	**Rs 37370.91**	
16	60.7.2 DR PACKING Under foundation - Dry stone packing under foundation with good quality blasted rubble including conveyance of material and labour charges etc. complete as per direction of departmental officers at site.							
	DR works for approche road	4	50.000	1.200	0.500		120.000	
						Total Quantity	120.000 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	120.000 cum	
						Say 120.000 cum @ Rs 2067.85 / cum	**Rs 248142.00**	
17	60.7.1 DRY RUBBLE MASONRY _ Dry rubble without concrete levelling course masonry with good quality blasted rubble including packing to compactness to lines and levels cost and conveyance of all materials labour charges etc. complete as per direction of Departmental officers at site							
	DR works for approach road	4	50.000	(1.20+0.5) /2	(2.0+0.50) /2		212.500	
						Total Quantity	212.500 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	212.500 cum	
						Say 212.500 cum @ Rs 2684.91 / cum	**Rs 570543.38**	
18	4.1.6 Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size)							
	Top belt of DR works	4	50.000	0.500	0.075		7.500	
						Total Quantity	7.500 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	7.500 cum	
						Say 7.500 cum @ Rs 6735.07 / cum	**Rs 50513.02**	
19	50.2.26.1							

	Filling with contractor own earth (excluding rock) in open areas in layers not exceeding 20 cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m as per direction of site Engineer-in-charge.							
	For approach road	2	50.000	10.000	(2.5+0)/2		1250.000	
						Total Quantity	1250.000 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	1250.000 cum	
						Say 1250.000 cum @ Rs 278.73 / cum	**Rs 348412.50**	
20	16.78.3 Construction of granular sub- base by Providing close graded Material conforming to specifications, mixing in a mechanical mix plant at OMC, Carriage of mixed material by tippers to work site, for al leads & lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in- Charge.With material conforming to Grade - III (size range 26.5 mm to 0.075 mm) having CBR Value - 20							
	For approach road	2	50.000	10.000	0.200		200.000	
						Total Quantity	200.000 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	200.000 cum	
						Say 200.000 cum @ Rs 2701.98 / cum	**Rs 540396.00**	
21	16.68 Providing and laying 60 mm thick factory made cement concrete interlocking paver block of M - 30 grade made by block making machine with strong vibratory compaction, of approved size, design & shape, laid in required colour and pattern over and including 50 mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	For approach road	2	50.000	10.000			1000.000	
						Total Quantity	1000.000 sqm	
						Total Deducted Quantity	0.000 sqm	
						Net Total Quantity	1000.000 sqm	
						Say 1000.000 sqm @ Rs 861.30 / sqm	**Rs 861300.00**	

Sl No	Description	No	L	B	D	CF	Quantity	Remark
	5 Provision for Investigation purpose of Nedughapuzha Bridge							
	Lump-Sum Total						**Rs 300000.00**	

	Sl No	Description	No	L	B	D	CF	Quantity
Remark	**6 Appendix C - Construction of Kaniyavally Bridge**							

1	15.3 Demolishing R.C.C. work manually / by mechanical means including stacking of steel bars and disposal of unserviceable material with in 50 metres lead as per direction of Engineer -in-Charge.							
	Demolishing existing RCC structures							
	Foundation	1	15.000	3.000	0.500		22.500	
	Basement	1	15.000	5.000	1.000		75.000	
	Slab	1	15.000	10.000	0.150		22.500	
						Total Quantity	120.000 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	120.000 cum	
						Say 120.000 cum @ Rs 2034.77 / cum	**Rs 244172.40**	
2	60.1.1 RING BUND Type-I-Putting up ring bund as per approved shape 2.5m bottom width, 1m top width using empty gunny/polythene bags filled with earth placed in 2 rows at 0.6m apart and filled in between with puddle clay to form bund for an average height 2.00m including labour dismantling the bund after completion of the work etc. complete.							
	Across river	2		18.000	(2+3)/2		90.000	
						Total Quantity	90.000 metre	
						Total Deducted Quantity	0.000 metre	
						Net Total Quantity	90.000 metre	
						Say 90.000 metre @ Rs 1291.52 / metre	**Rs 116236.80**	
3	60.2.3 Bailing out water using pump above 5 HP and Up to 10 HP-Bailing out water with engine and pump set above 5HP and up to 10HP, including conveyance to site and erection,cost of fuel, lubrication oil and other stores, pay of staff etc complete							
		1			100.000		100.000	
						Total Quantity	100.000 hour	
						Total Deducted Quantity	0.000 hour	
						Net Total Quantity	100.000 hour	
						Say 100.000 hour @ Rs 296.98 / hour	**Rs 29698.00**	
4	2.6.1 Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50 m and lift up to 1.5 m, disposed earth to be levelled and neatly dressed.All kinds of soil							
	Pile cap river side	2	7.500	3.400	1.000		51.000	
	Centre portion	1	5.000	3.400	1.000		17.000	

	For DR work foundation	4	50.000	1.200	0.500		120.000	
						Total Quantity	188.000 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	188.000 cum	
						Say 188.000 cum @ Rs 176.19 / cum	**Rs 33123.72**	
5	20.1.6 Providing, driving and installing driven cast-in-situ reinforced cement concrete piles of grade M-25 of specified diameter and length below the pile cap, to carry safe working load not less than specified, excluding the cost of steel reinforcement but including the cost of shoe and the length of pile to be embedded in the pile cap etc. all complete. (Length of pile for payment shall be measured from top of shoe to the bottom of pile cap):1000 mm dia piles							
	River side	12	25.000				300.000	
	Centre	4	25.000				100.000	
						Total Quantity	400.000 metre	
						Total Deducted Quantity	0.000 metre	
						Net Total Quantity	400.000 metre	
						Say 400.000 metre @ Rs 12270.17 / metre	**Rs 4908068.00**	
6	4.1.8 Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40 nominal size)							
	Bed for pile cap for river side	2	7.500	3.400	0.100		5.100	
	Center	1	5.000	3.400	0.100		1.700	
						Total Quantity	6.800 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	6.800 cum	
						Say 6.800 cum @ Rs 6264.48 / cum	**Rs 42598.46**	
7	5.2.2 Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. up tot floor five level excluding cost of centering, shuttering, finishing and reinforcement :1:1.5:3(1 cement : 1.5 coarse sand : 3 graded stone aggregate 20 mm nominal size)							
	Pile cap for river side	2	7.500	3.400	1.000		51.000	
	centre	1	5.000	3.400	1.000		17.000	
	Abutment	2	4.000	2.500	5.000		100.000	

		1	3.000	2.000	5.000		30.000	
	Abutment cap& dirt wall	2	3.000	0.600	1.000		3.600	
		2	3.000	0.300	0.600		1.080	
		1	3.000	0.600	1.000		1.800	
		1	3.000	0.300	0.600		0.540	
	Wing wall	4	(0.50+0.80)/2	(1.00+0.70)/2	5.000		11.050	
						Total Quantity	216.070 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	216.070 cum	
						Say 216.070 cum @ Rs 9996.26 / cum	**Rs 2159891.90**	
8	5.9.1 Centering and shuttering including strutting, etc. and removal of form for:Foundations, footings, bases of columns, etc for mass concrete							
	bed for Pile cap for river side	2	21.800		0.100		4.360	
	centre	1	16.800		0.100		1.680	
	for Pile cap	2	21.800		1.000		43.600	
		1	16.800		1.000		16.800	
	Abutment	2	13.000		5.000		130.000	
		1	10.000		5.000		50.000	
	Abutment cap river side	2	7.200		1.000		14.400	
	centre portion	1	7.200		1.000		7.200	
	Dirt wall centre portion	1	6.600		0.600		3.960	
	river side	2	7.200		1.000		14.400	
	Wing wall	4	3.000		5.000		60.000	
						Total Quantity	346.400 sqm	
						Total Deducted Quantity	0.000 sqm	
						Net Total Quantity	346.400 sqm	
						Say 346.400 sqm @ Rs 271.32 / sqm	**Rs 93985.25**	
9	5.3 Reinforced cement concrete work in beams, suspended floors, roofs, having slope up to 15^0 landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases up to floor five level excluding the cost of centering, shuttering, finishing and reinforcement, with1:1.5:3 (1 cement :							

	1.5 coarse sand (Zone III) : 3 graded stone aggregate 20 mm nominal size).							
	slab	2	15.000	6.000	0.750		135.000	
	post of hand rail	2*15	0.200	0.200	1.200		1.440	
	rail top	2*1	0.200	0.200	30.000		2.400	
	rail intermediate	2*2	0.100	0.150	30.000		1.800	
						Total Quantity	140.640 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	140.640 cum	
						Say 140.640 cum @ Rs 10338.99 / cum	**Rs 1454075.55**	
10	4.1.3 Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:1:2:4 (cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)							
	Wearing coat on slab	2	15.000	6.000	0.100		18.000	
	Paver block sides	2*2	50.000	0.300	0.100		6.000	
	do	2*1	10.000	0.300	0.100		0.600	
						Total Quantity	24.600 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	24.600 cum	
						Say 24.600 cum @ Rs 7668.70 / cum	**Rs 188650.02**	
11	5.9.3 Centering and shuttering including strutting, etc. and removal of form for:Suspended floors, roofs, landings, balconies and access platform							
	slab side	2*2	42.000		0.550		92.400	
	slab bottom	2*2	15.000		6.000		360.000	
	post of hand rail	2*15	0.800		1.200		28.800	
	rail top bottom	2	27.000		0.200		10.800	
	do side	2*2	27.000		0.200		21.600	
	Top belt for DR works	4*2	50.000		0.075		30.000	
						Total Quantity	543.600 sqm	
						Total Deducted Quantity	0.000 sqm	
						Net Total Quantity	543.600 sqm	
						Say 543.600 sqm @ Rs 590.76 / sqm	**Rs 321137.14**	
12	5.22.6 Steel reinforcement for R.C.C work including straightening, cutting, bending, placing in position and							

	binding all complete upto plinth levelThermo - Mechanically Treated bars of grade Fe-500D or more							
	Pile (3.14x0.5x0.50x27)	16	19.625			80.0	25120.000	
	Pile cap	1	68.000			90.0	6120.000	
	Abutment& cap	1	113.390			90.0	10205.100	
	Slab	1	104.640			110.0	11510.400	
						Total Quantity	52955.500 kilogram	
						Total Deducted Quantity	0.000 kilogram	
						Net Total Quantity	52955.500 kilogram	
						Say 52955.500 kilogram @ Rs 79.18 / kilogram	**Rs 4193016.49**	
13	56.1.a Mobilization including transportation of all necessary plan and equipment's and materials of boring field testing and sampling and demobilization after completing the workFor machine boring							
	For piles	16					16.000	
						Total Quantity	16.000 set	
						Total Deducted Quantity	0.000 set	
						Net Total Quantity	16.000 set	
						Say 16.000 set @ Rs 15798.00 / set	**Rs 252768.00**	
14	20.9 Integrity testing of pile using Low Strain / Sonic Integrity Test/ Sonic Echo Test method in accordance with IS 14893 including surface preparation of pile top by removing soil, mud, dust & chipping lean concrete lumps etc. and use of computerised equipment and high skill trained personal for conducting the test & submission of results, all complete as per direction of Engineer-in-charge. Note:- The inclusion of the above item in the schedule of work shall be judiciously decided by the technical sanctioning authority, keeping in view the quality control, type of soil strata & importance of the project.							
	For piles	16					16.000	
						Total Quantity	16.000 per test	
						Total Deducted Quantity	0.000 per test	
						Net Total Quantity	16.000 per test	
						Say 16.000 per test @ Rs 1050.50 / per test	**Rs 16808.00**	
15	20.6.2.2 Vertical load testing of piles in accordance with IS 2911(Part IV) including installation of loading platform and preparation of pile head or construction of test cap and dismantling of test cap after test etc. complete as per specification & the direction of engineer -in-Charge.Single pile above 50 tonne and upto 100 tonne capacityRoutine test							
	for 1m dia pile	1					1.000	
						Total Quantity	1.000 per test	

						Total Deducted Quantity	0.000 per test	
						Net Total Quantity	1.000 per test	
						Say 1.000 per test @ Rs 37370.91 / per test	**Rs 37370.91**	
16	60.7.2 DR PACKING Under foundation - Dry stone packing under foundation with good quality blasted rubble including conveyance of material and labour charges etc. complete as per direction of departmental officers at site.							
	DR works for approche road	4	50.000	1.200	0.500		120.000	
						Total Quantity	120.000 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	120.000 cum	
						Say 120.000 cum @ Rs 2067.85 / cum	**Rs 248142.00**	
17	60.7.1 DRY RUBBLE MASONRY _ Dry rubble without concrete levelling course masonry with good quality blasted rubble including packing to compactness to lines and levels cost and conveyance of all materials labour charges etc. complete as per direction of Departmental officers at site							
	DR works for approach road	4	50.000	(1.20+0.5) /2	(2.0+0.50) /2		212.500	
						Total Quantity	212.500 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	212.500 cum	
						Say 212.500 cum @ Rs 2684.91 / cum	**Rs 570543.38**	
18	4.1.6 Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size)							
	Top belt of DR works	4	50.000	0.500	0.075		7.500	
						Total Quantity	7.500 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	7.500 cum	
						Say 7.500 cum @ Rs 6735.07 / cum	**Rs 50513.02**	
19	50.2.26.1 Filling with contractor own earth (excluding rock) in open areas in layers not exceeding 20 cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m as per direction of site Engineer-in-charge.							
	For approach road	2	50.000	10.000	(2.5+0)/2		1250.000	

						Total Quantity	1250.000 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	1250.000 cum	
						Say 1250.000 cum @ Rs 278.73 / cum	**Rs 348412.50**	
20	16.78.3 Construction of granular sub- base by Providing close graded Material conforming to specifications, mixing in a mechanical mix plant at OMC, Carriage of mixed material by tippers to work site, for all leads & lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in- Charge.With material conforming to Grade - III (size range 26.5 mm to 0.075 mm) having CBR Value - 20							
	For approach road	2	50.000	10.000	0.200		200.000	
						Total Quantity	200.000 cum	
						Total Deducted Quantity	0.000 cum	
						Net Total Quantity	200.000 cum	
						Say 200.000 cum @ Rs 2701.98 / cum	**Rs 540396.00**	
21	16.68 Providing and laying 60 mm thick factory made cement concrete interlocking paver block of M - 30 grade made by block making machine with strong vibratory compaction, of approved size, design & shape, laid in required colour and pattern over and including 50 mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	For approach road	2	50.000	10.000			1000.000	
						Total Quantity	1000.000 sqm	
						Total Deducted Quantity	0.000 sqm	
						Net Total Quantity	1000.000 sqm	
						Say 1000.000 sqm @ Rs 861.30 / sqm	**Rs 861300.00**	
Sl No	Description	No	L	B	D	CF	Quantity	Remark
	7 Provision for Investigation purpose for Kaniyavally Bridge							
	Lump-Sum Total						**Rs 365000.00**	
						Total Amount	186160470.00	
						Provision for GST payments (in %) @	**12.0%**	
						Amount reserved for GST payments	**22339256.40**	
						Total	**208499726.40**	
						Lumpsum for round off	**273.60**	
						TOTAL Rs	**208500000.00**	
						Rounded Total Rs	**20,85,00,000**	

SUPERINTENDING E
MINOR IRRIGATION CENTRAL CIRCLE
ERNAKULAM
KAKKANAD - 30

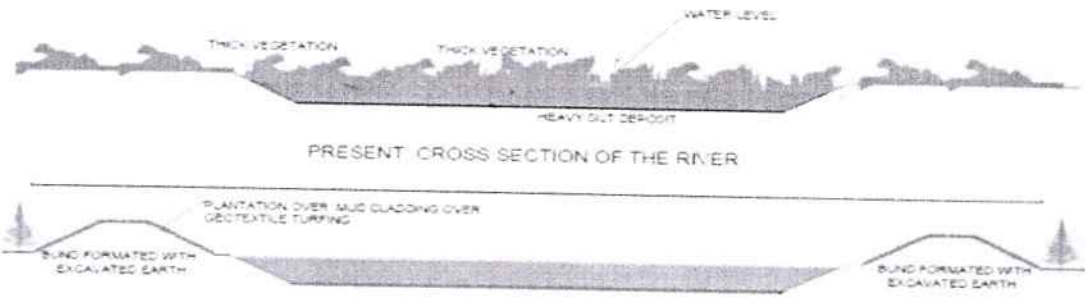
EXECUTIVE ENGINEER
MINOR IRRIGATION DIVISION
ERNAKULAM

ASSISTANT EXECUTIVE ENGINEER
Minor Irrigation Sub Division
ERNAKULAM
Civil Station, Kakkanad

ASSISTANT ENGINEER
MINOR IRRIGATION SECTION
TRIPUNITHURA

Rupees Twenty Crore Eighty Five Lakh Only

(Cost Index Applied for this estimate is 39.89%)



PRESENT CROSS SECTION OF THE RIVER

PROPOSED CROSS SECTION OF THE RIVER ON COMPLETION

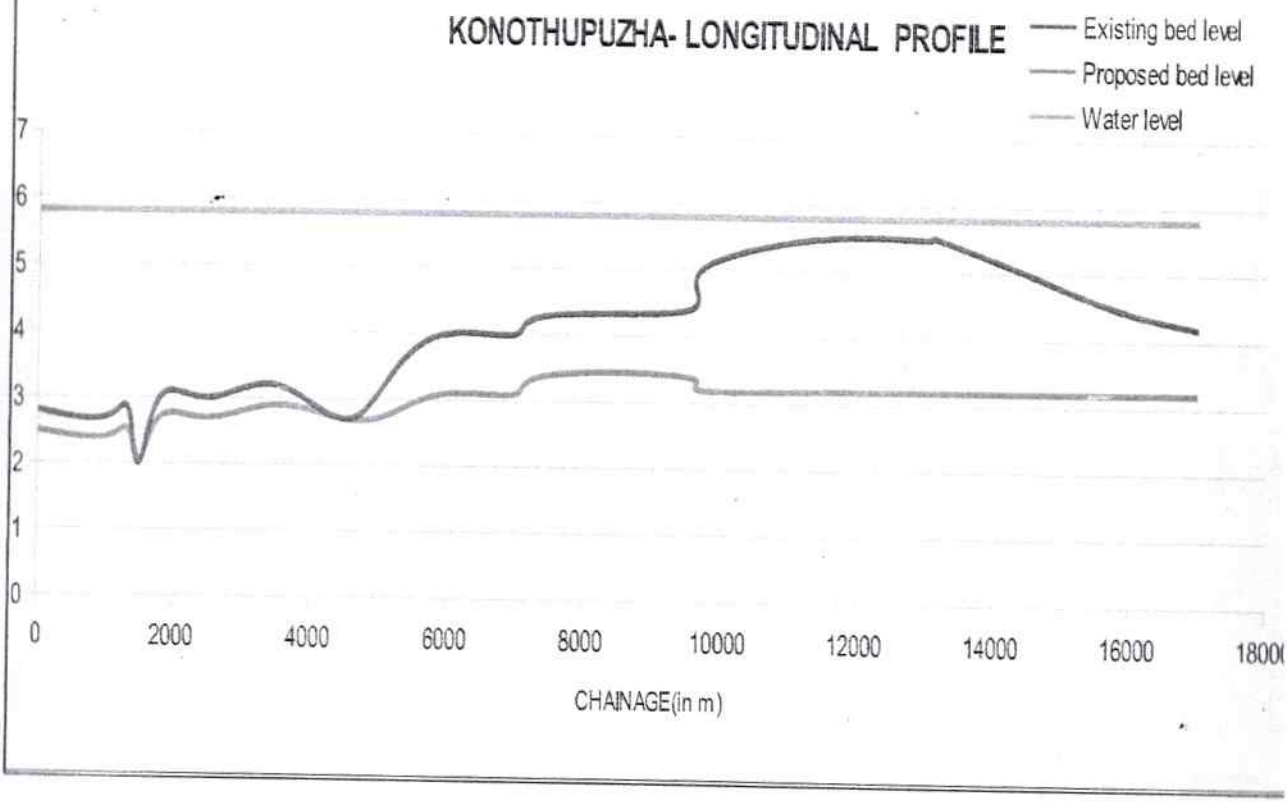
NOTE
RIVERDEPTH VARIES FROM 1M-3.6 M
RIVER WIDTH VARIES FROM 13M-100M
SILT DEPOSIT VARIES FROM 0M-1.5M

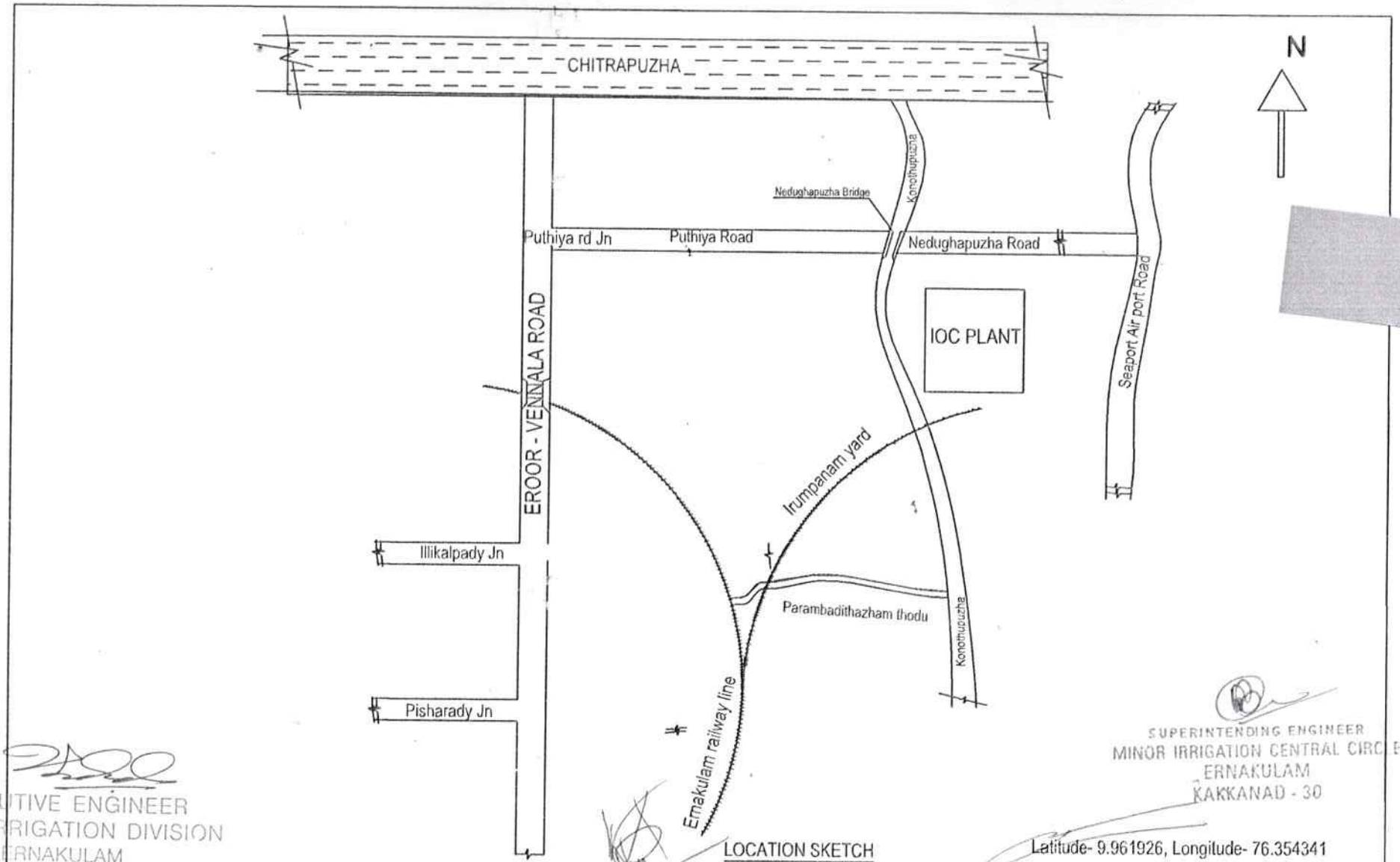
NAME OF WORK :- REJUVENATION OF KONOTHPUZHA FROM PUTHANKAVU VETTUVELI KADAVU FOR 17 KM IN ERNAKULAM DISTRICT

MINOR IRRIGATION DIVISION ERNAKULAM

LEGEND
WATER
SILT
VEGETATION

SCALE N/S





LOCATION SKETCH

Latitude- 9.961926, Longitude- 76.354341

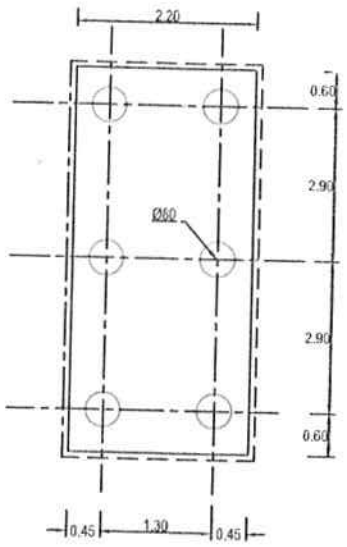
EXECUTIVE ENGINEER
MINOR IRRIGATION DIVISION
ERNAKULAM

SUPERINTENDING ENGINEER
MINOR IRRIGATION CENTRAL CIRCLE
ERNAKULAM
KAKKANAD - 30

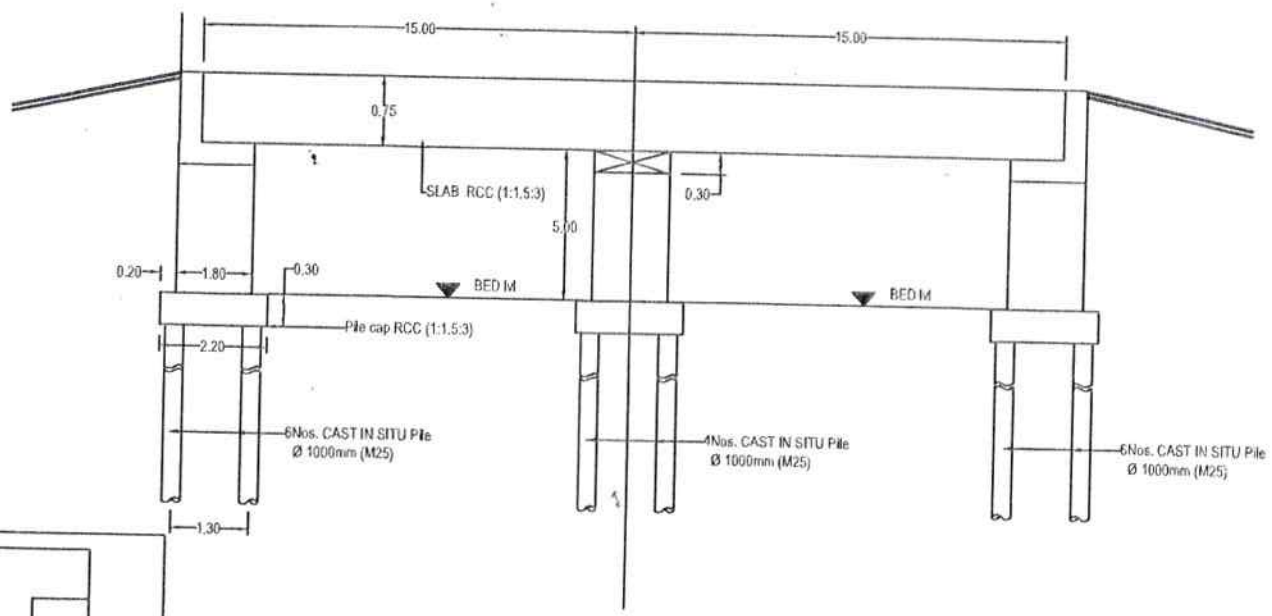
ASSISTANT EXECUTIVE ENGINEER
Minor Irrigation Sub Division
ERNAKULAM

ASSISTANT ENGINEER
MINOR IRRIGATION SECTION
TRIPUNITHURA

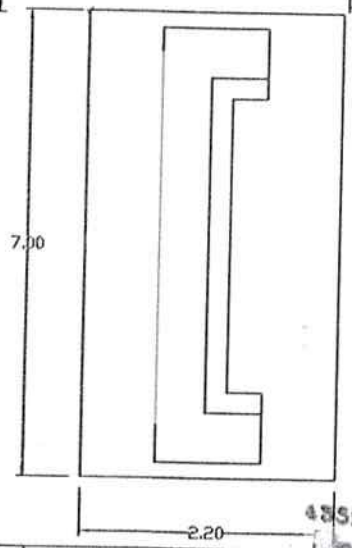
MINOR IRRIGATION SECTION TRIPUNITHURA	Name of Work :- NABARD RIDF XXVII-REJUVENATION OF KONOTHUPUZHA FROM PUTHENKAVU TO VETTUVELIKKADAVU FOR 17 KM IN ERNAKULAM DISTRICT	SCALE.NTS	DRAWN BY
			CHECKED BY
			APPROVED BY



PLAN



CROSS SECTION



EXECUTIVE ENGINEER
MINOR IRRIGATION DIVISION
ERNAKULAM

ASSISTANT EXECUTIVE ENGINEER
Minor Irrigation Sub Division
ERNAKULAM

ASSISTANT ENGINEER
MINOR IRRIGATION SECTION
TRIPUNITHURA

SUPERINTENDING ENGINEER
MINOR IRRIGATION CENTRAL CIRCLE
ERNAKULAM
KAKKANAD - 30

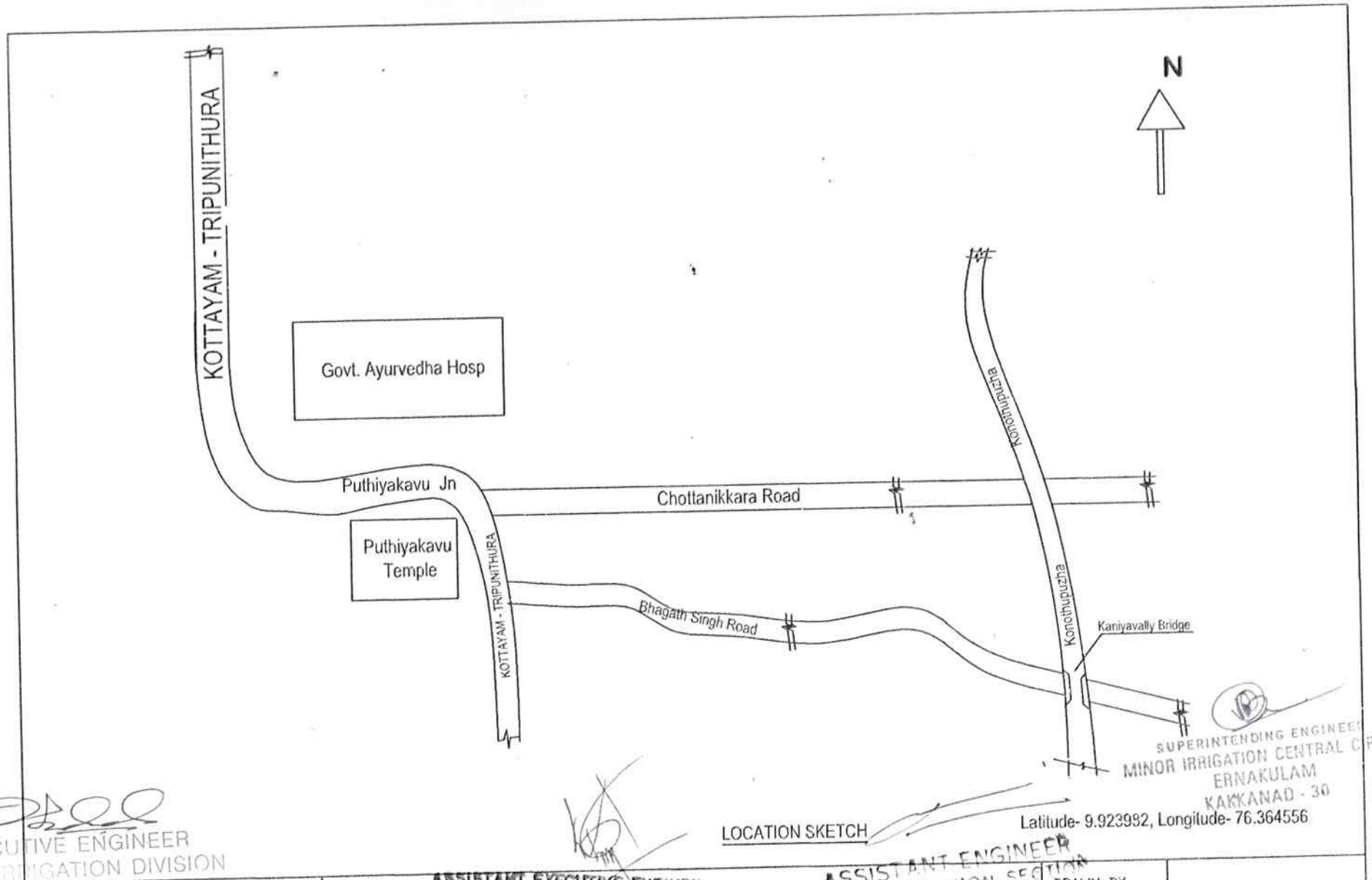
MINOR IRRIGATION
SECTION
TRIPUNITHURA

Name of Work :-

NABARD RIDF XXVII-REJUVENATION OF KONOTHUPUZHA FROM PUTHENKAVU TO VETTUVELIKKADAVU FOR 17 KM IN ERNAKULAM DISTRICT

DRAWN BY

CHECKED BY



SUPERINTENDING ENGINEER
MINOR IRRIGATION CENTRAL CIRCLE
ERNAKULAM
KAKKANAD - 30

EXECUTIVE ENGINEER
MINOR IRRIGATION DIVISION
ERNAKULAM

ASSISTANT EXECUTIVE ENGINEER
Minor Irrigation Sub Division
ERNAKULAM

ASSISTANT ENGINEER
MINOR IRRIGATION SECTION

MINOR IRRIGATION SECTION TRIPUNITHURA

Name of Work :- NABARD RIDF XXVII-REJUVENATION OF KONOTHUPUZHA FROM PUTHENKAVU TO VETTUVELIKKADAVU FOR 17 KM IN ERNAKULAM DISTRICT

SCALE:NTS

DRAWN BY	
CHECKED BY	
APPROVED BY	

PUBLIC UTILITY CERTIFICATE

Name of Work: *NABRAD RIDf XXVII* - Rejuvanation of Konothupuzha from Puthenkavu to Vettuvelikkadavu for 17.00 km in Ernakulam district.

Certified that the proposed project will be beneficial to the public and is not intended for a single beneficiary.

Executive Engineer,	Assistant Executive Engineer,	Assistant Engineer,
MI Division,	MI Sub Division,	MI Section
Ernakulam.	Ernakulam	Tripunithura

SUPERINTENDING ENGINEER
MINOR IRRIGATION CENTRAL CIRCLE
ERNAKULAM
KAKKANAD - 30

LAND AVAILABILITY CERTIFICATE

Name of Work: *NABRAD RIDf XXVII* - Rejuvanation of Konothupuzha from Puthenkavu to Vettuvelikkadavu for 17.00 km in Ernakulam district.

Certified that the land required for this work is available under Government custody

Executive Engineer,
MI Division,
Ernakulam.

Assistant Executive Engineer,
MI Sub Division,
Ernakulam

Assistant Engineer,
MI Section
Tripunithura

SUPERINTENDING ENGINEER
MINOR IRRIGATION CENTRAL CIRCLE
ERNAKULAM
KAKKANAD - 30

OBSERVED DATA CERTIFICATE

Name of Work: : *NABRAD RIDf XXVII* - Rejuvanation of Konothupuzha from Puthenkavu to Vettuvelikkadavu for 17.00 km in Ernakulam district.

Certified that the provisions in the Observed Data of item no 1,3, 4 & 9 are the minimum requirement and the market rates are the least prevailing at site.

Executive Engineer,
MI Division,
Ernakulam.

Assistant Executive Engineer,
MI Sub Division,
Ernakulam

Assistant Engineer,
MI Section
Tripunithura

SUPERINTENDING ENGINEER
MINOR IRRIGATION CENTRAL CIRCLE
ERNAKULAM
KAKKANAD - 30

CERTIFICATE

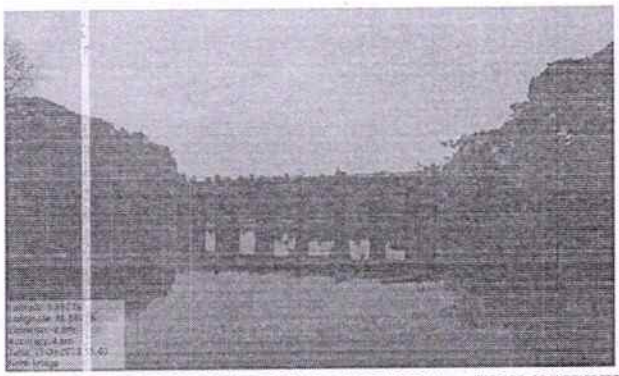
Name of Work: : *NABRAD RIDf XXVII* - Rejuvanation of Konothupuzha from Puthenkavu to Vettuvelikkadavu for 17.00 km in Ernakulam district.

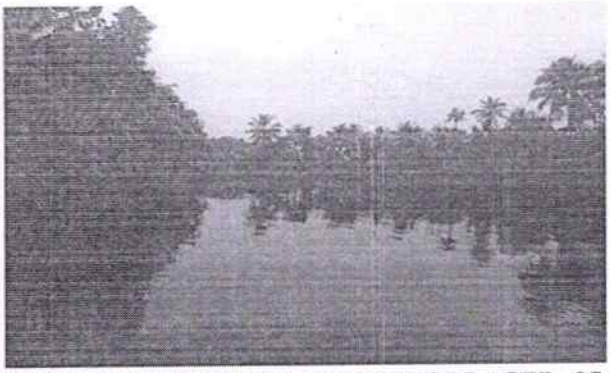
Certified that this work is not taken up in any schemes for last three years and not part of any on-going works.

Executive Engineer,	Assistant Executive Engineer,	Assistant Engineer,
MI Division,	MI Sub Division,	MI Section
Ernakulam.	Ernakulam	Tripunithura

SUPERINTENDING ENGINEER
MINOR IRRIGATION CENTRAL CIRCLE
ERNAKULAM
KAKKANAD - 30

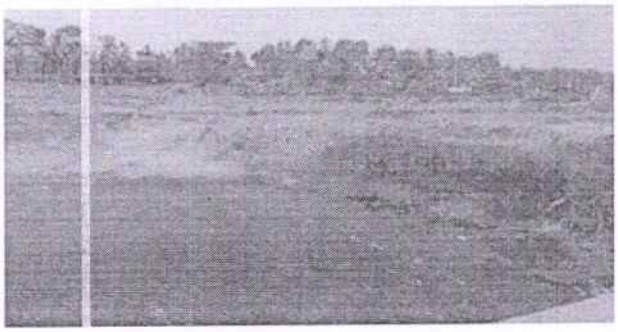
KONOTHUPUZHA – PRESENT STATUS AT VARIOUS LOCATIONS

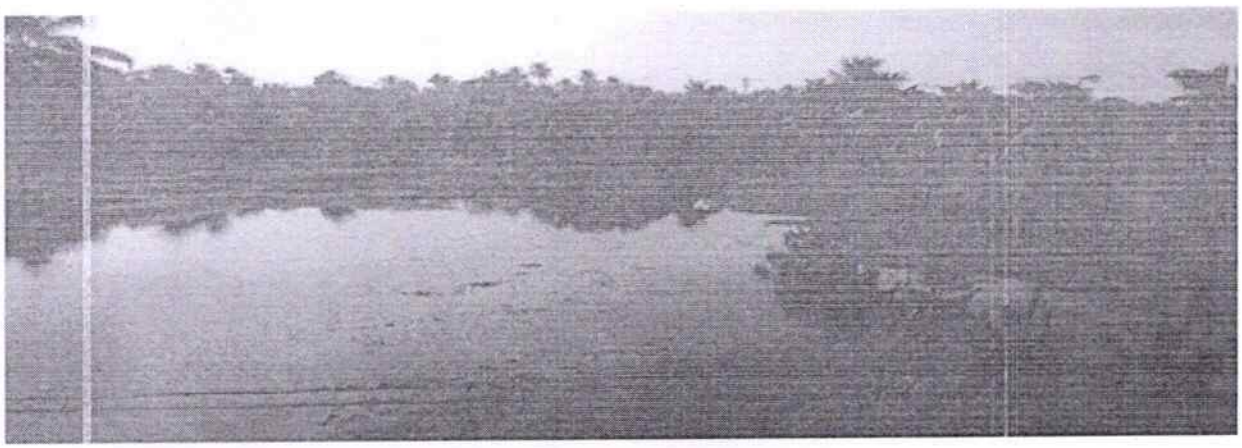


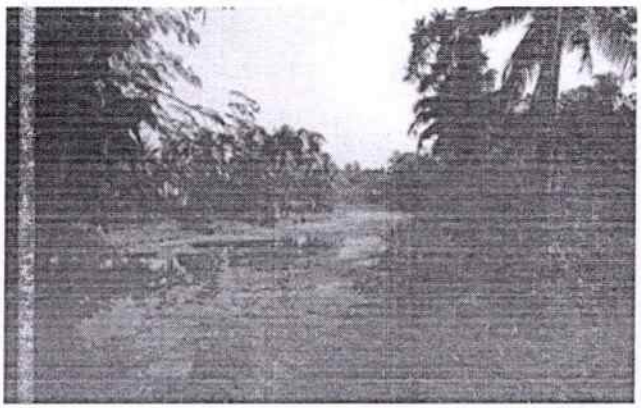


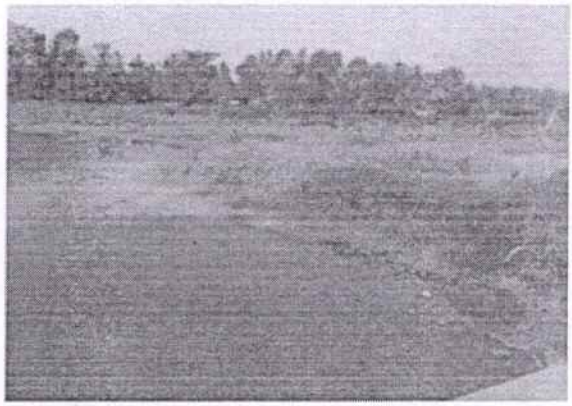
KONOTHUPUZHA AT PUTHENKAVU BRIDGE PORTION (CH. 0M)

PRESENT STATUS @ MATTATHANKADAVU

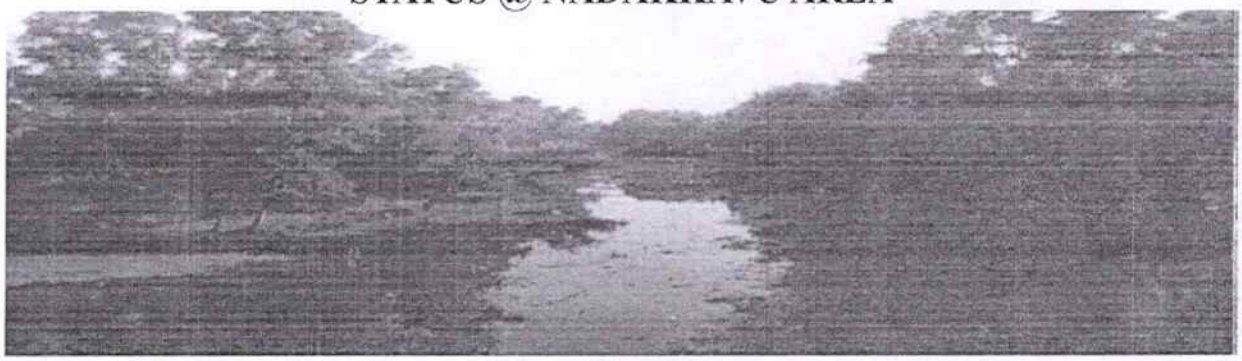


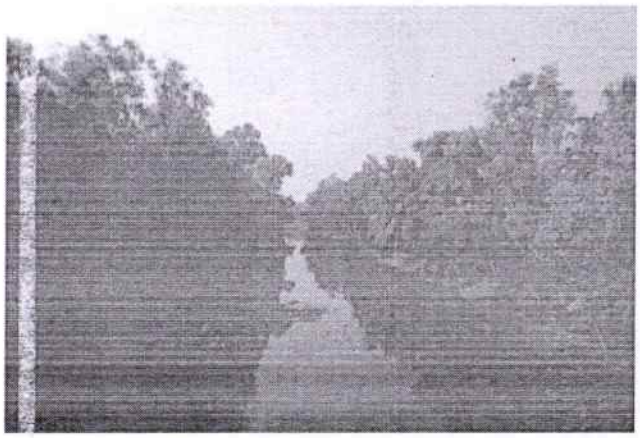


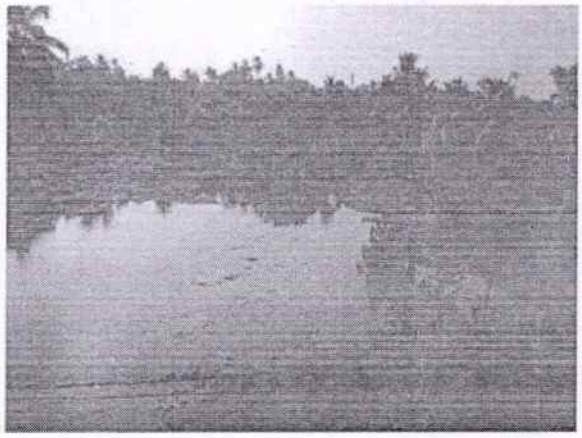




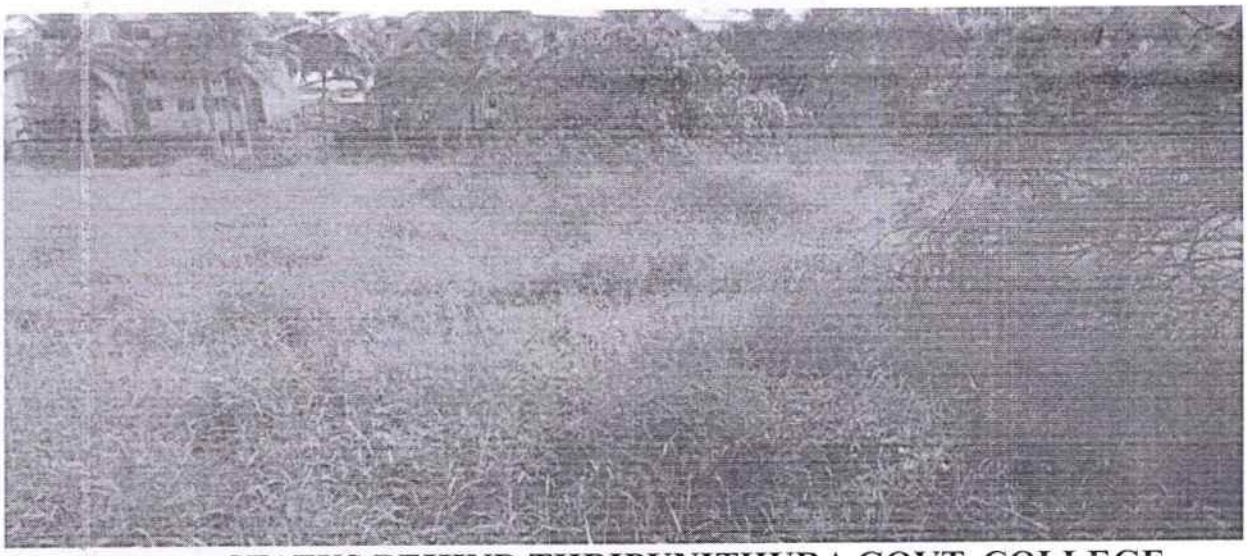
STATUS @ NADAKKAVU AREA





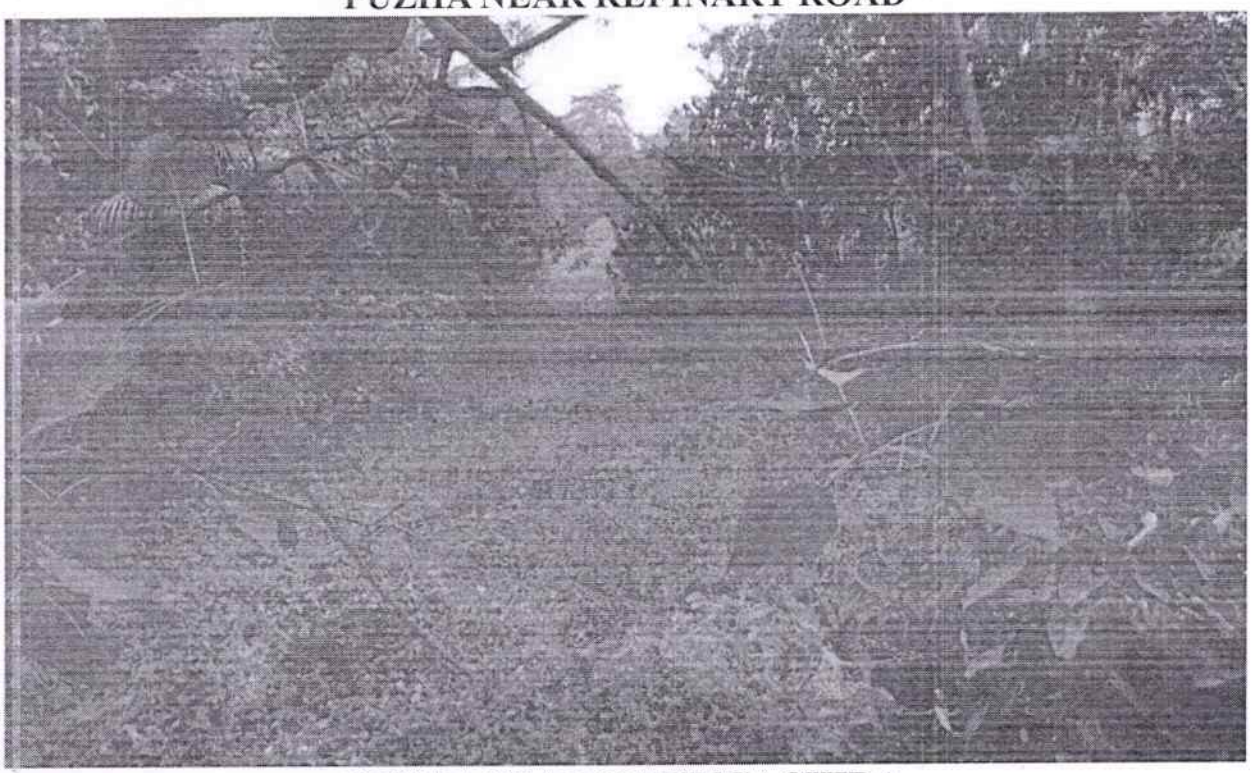


VIEW FROM KOLENCHERY KADAVU BRIDGE

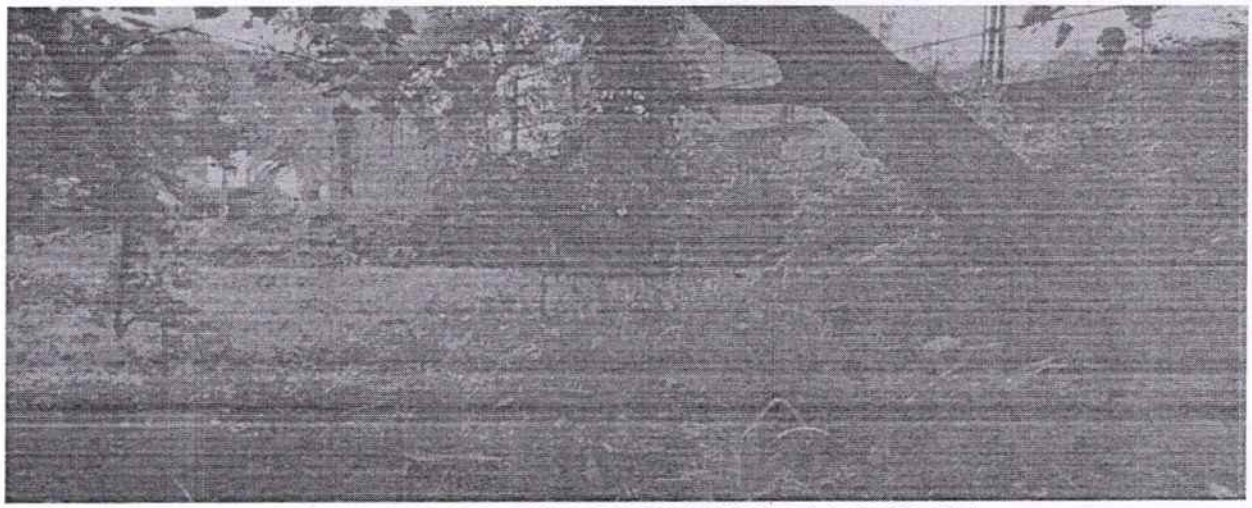


STATUS BEHIND THRIPUNITHURA GOVT. COLLEGE

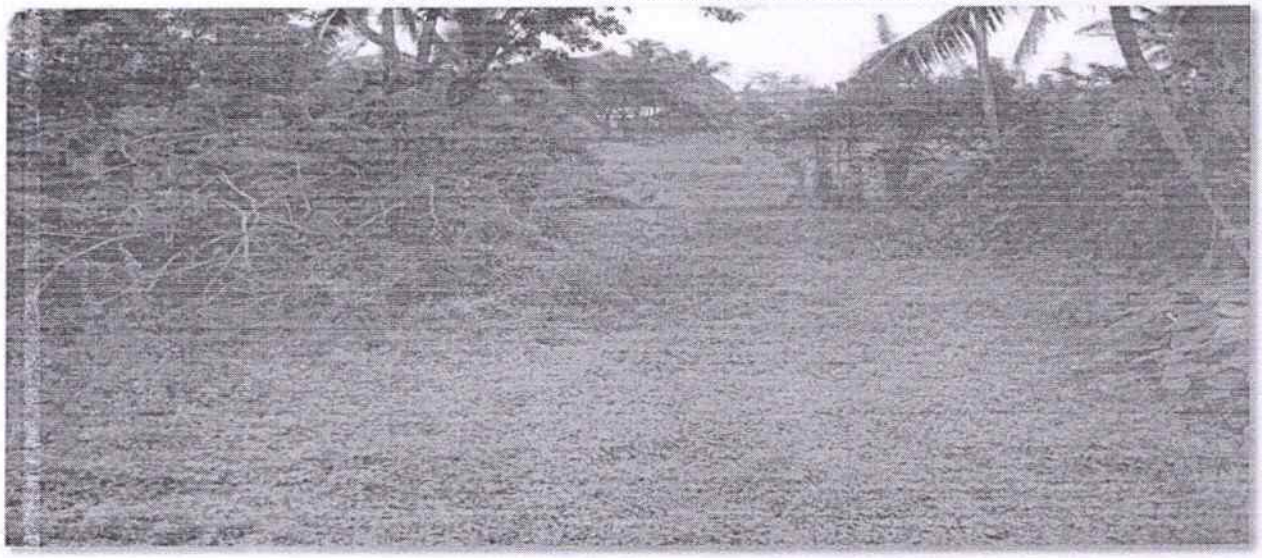
PUZHA NEAR REFINARY ROAD



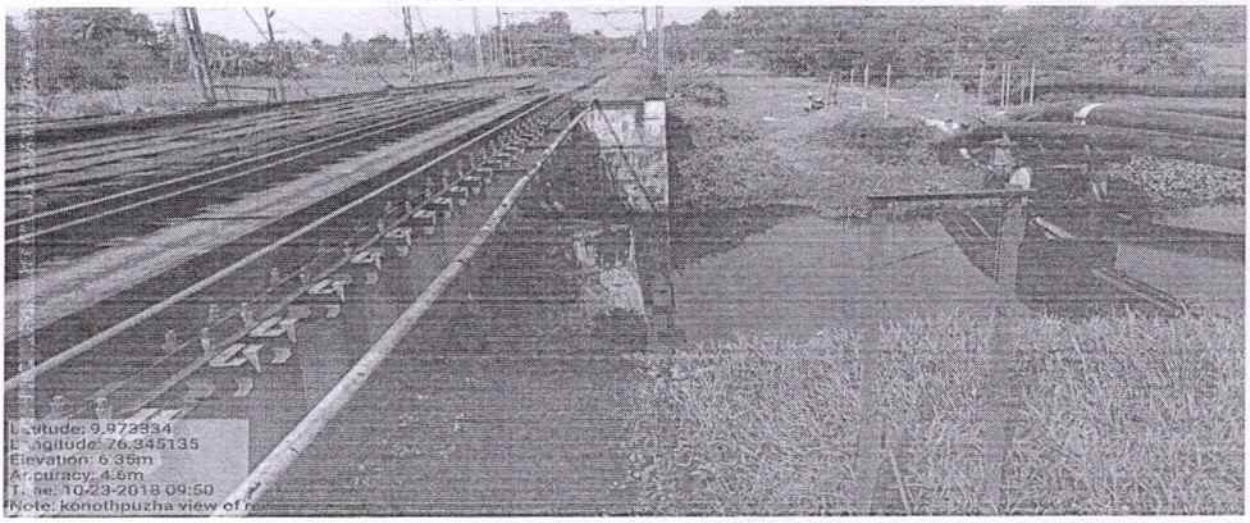
PUZHA NEAR KARINGACHIRA



PUZHA NEAR KARINGACHIRA BRIDGE



PUZHA NEAR ALIYAR BRIDGE



RAIL CROSSING OVER KONOTHUPUZHA AT IRIMPANAM

അഡ്വ. എം. സ്വരാജ്
(തൃപ്പൂണിത്തുറ)
മെമ്പർ
കേരള നിയമസഭ
ഫ്ലാറ്റ് നമ്പർ 1 ഡി
റോയൽ സൺഫ്ലവർ
എം. കെ. കെ. നായർ

ഫോൺ :
ഓഫീസ് : 0471-2512578
9446383337
മൊബൈൽ : 9447681581
പെരിയാർ ബ്ലോക്-202,
എം. എൽ. എ ഹോസ്റ്റൽ,
തിരുവനന്തപുരം.

03/DEV/TLC/2018

സ്ഥലം Thiruvananthapuram

തീയതി 07/02/2018

The Executive Engineer

Minor Irrigation Division,Ernakulam

പ്രിയപ്പെട്ട ചീഫ് എഞ്ചിനിയർ ,

കൊണോത്ത് പുഴയിൽ എന്റെ മണ്ഡലത്തിലെ പുത്തൻകാവ് മുതൽ വെട്ടുവേലിക്കടവ് (എഞ്ചർ)വരെയുള്ള ഭാഗത്തെ മാലിന്യങ്ങൾ നീക്കം ചെയ്ത് ആഴം കൂട്ടി ആവശ്യമായ സ്ഥലങ്ങളിൽ കയർ ഭൂവസ്ത്രം വിരിച്ച് പുഴയുടെ ഒഴുക്ക് സുഗമമാക്കുന്നതിനുള്ള പ്രവർത്തനങ്ങൾ സമയബന്ധിതമായി പൂർത്തീകരിക്കുന്നതിന് ആവശ്യമായ നടപടികൾ അടിയന്തിരമായി സ്വീകരിക്കുവാൻ താല്പര്യപ്പെടുന്നു.

സസ്നേഹം

എം.സ്വരാജ് എം എൽ എ

നം 5/18-19 dtd 7/01/19

പ്രേഷിത

AGRICULTURAL OFFICER
Krishi Bhavan
Mulanthuruthy-682 314
Ernakulam (Dist.)

സ്വീകർത്താവ്

അസിസ്റ്റന്റ് എഞ്ചിനീയർ
അസി: എഞ്ചിനീയറുടെ കാര്യാലയം
മൈനർ ഇറിഗേഷൻ സെക്ഷൻ - 1
കാക്കനാട്, സിവിൽ സ്റ്റേഷൻ, എറണാകുളം

സർ,

വിഷയം:- എറണാകുളം ജില്ലയിലെ - കോണോത്തുപുഴയുടെ പുനരുജ്ജീവനം - സംബന്ധിച്ച്:-

മുളന്തുരുത്തി ഗ്രാമപഞ്ചായത്ത് കൃഷിഭവന്റെ കീഴിൽ കോണോത്ത് പുഴയിലെ വെള്ളം കൊണ്ട് ജലസേചനം നടത്തുന്ന കൃഷി ആവശ്യത്തിനായി ഉപയോഗപ്പെടുത്തുന്ന കൃഷിയിടങ്ങളുടെ ആകെ വിസ്തൃതി 150 ഹെക്ടർ ആണ്. ഇതിൽ കരഭൂമി 110 ഹെക്ടറും നിലം 40 ഹെക്ടറും ആണെന്ന് ഇതിനാൽ സാക്ഷ്യപ്പെടുത്തുന്നു.

(signature)

AGRICULTURAL OFFICER
Krishi Bhavan
Mulanthuruthy-682 314
Ernakulam (Dist.)

KBT 2/18-19

11.01.2019

സാക്ഷ്യപത്രം

പുത്തൻകാവ് മുതൽ ഏരൂർ വെട്ടുവേലിക്കടവ് വരെയുള്ള കോണോത്തുപുഴയുടെ പുനരുജ്ജീവനംകൊണ്ട് തിരുവാങ്കുളം പ്രദേശത്തെ ഏകദേശം 100 ഏക്കർ സ്ഥലത്തെ കൃഷിക്ക് നേരിട്ടോ അല്ലാതെയോ പ്രയോജനപ്പെടുമെന്ന് സാക്ഷ്യ പെടുത്തുന്നു.

AGRICULTURAL OFFICER
KRISHIBHAVAN THIRUVANKULAM
THIRUVANKULAM P. O

കൃഷിഭവൻ ഉദയംപേരൂർ

ഉദയംപേരൂർ പി. ഓ.- 682307
ഫോ: (0484)2791261
e-mail: aokbupr@gmail.com

കൃഷി ഓഫീസറുടെ കാര്യാലയം
ഉദയംപേരൂർ
പിൻ - 682 307
കൃഷി ഭവൻ

നംബർ: KBUPR-..32.../2018-19 തീയതി: 05/01/2019

പ്രേഷകൻ

കൃഷിഓഫീസർ
കൃഷിഭവൻ ഉദയംപേരൂർ

സ്വീകർത്താവ്

അസിസ്റ്റന്റ് എഞ്ചിനീയർ
കാക്കനാട്

സർ,

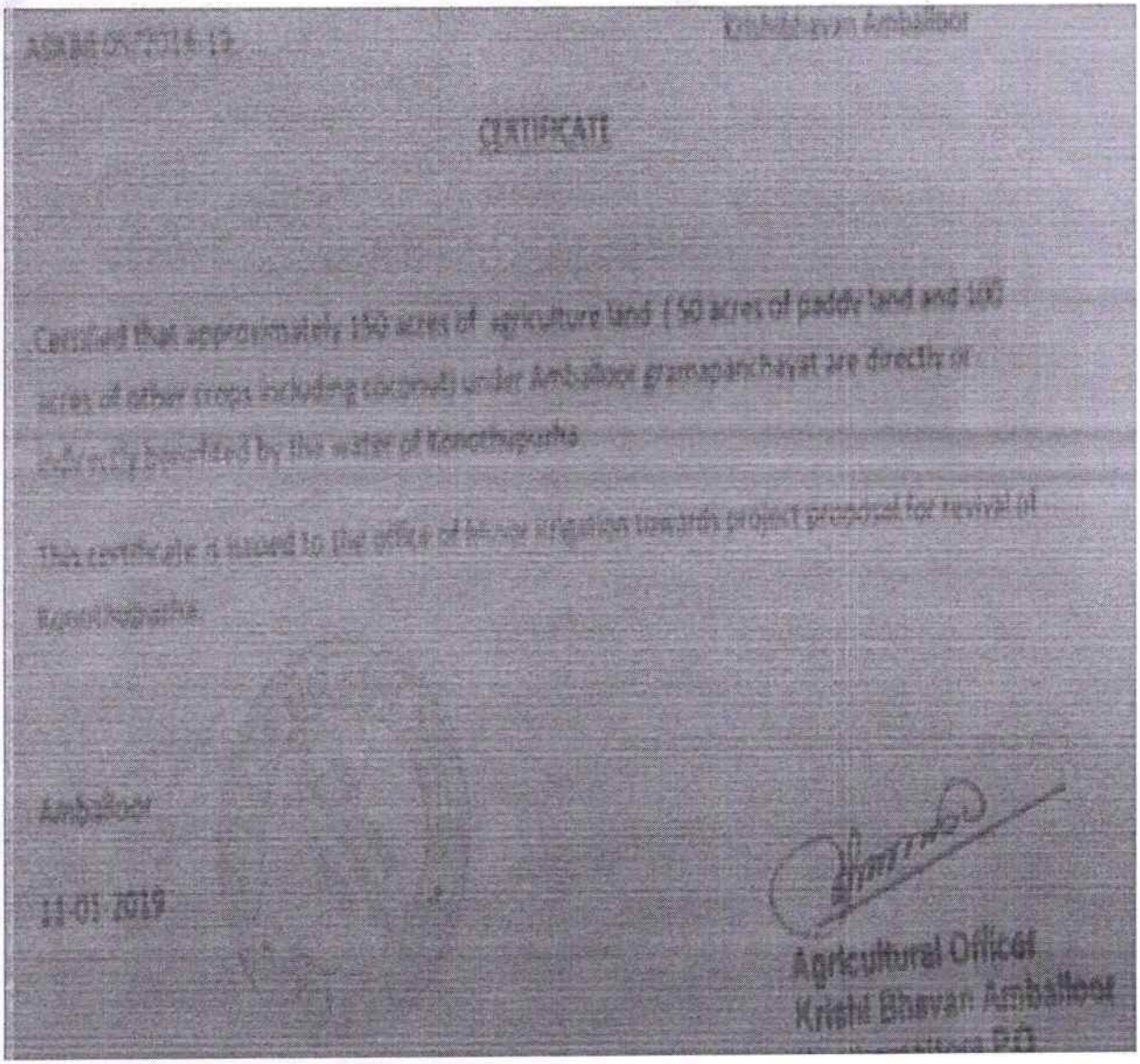
വിഷയം : എറണാകുളം ജില്ലയിലെ ഉദയംപേരൂർ പഞ്ചായത്തിനുള്ളിലെ കോണോത്തു പുഴയുടെ ജല ഉപയോഗം സംബന്ധിച്ച് സംബന്ധിച്ചു.

സൂചന : താങ്കളുടെ ഓഫീസിലെ S1 -101/2018 നവംബറിൽ 4/1/19 തീയതിയിലെ കത്ത്

സൂചനയിലേക്ക് ശ്രദ്ധ ക്ഷണിക്കുന്നു. കോണോത്തു പുഴയിലെ വെള്ളം ഉപയോഗിച്ച് ഉദയംപേരൂർ പഞ്ചായത്തിലെ 300 ഹെക്ടർ കൃഷിയിടങ്ങളിൽ നേരിട്ടോ അല്ലാതയോ പ്രയോജനം ലഭിക്കുന്നു എന്ന് ഇതിനാൽ സാക്ഷ്യപ്പെടുത്തുന്നു.

വിശ്വസ്തതയോടെ

സുനിൽ 05/1/19
കൃഷി ഓഫീസർ
കൃഷി ഭവൻ, ഉദയംപേരൂർ
പിൻ - 682 307



CERTIFICATE

Certified that approximately 150 acres of agriculture land (50 acres of paddy land and 100 acres of other crops including coconut) under Ambalavu grama panchayat are directly or indirectly benefited by the water of Kanchirapuzha

This certificate is issued to the office of minor irrigation towards project proposal for revival of Kanchirapuzha

Ambalavu

11-01-2019

Agricultural Officer
Krishi Bhavan Ambalavu

16. CONCLUSION:

'Rivers are the lifeline of a nation without which the nation would not exist'. The Phase I of the Konothupuzha Rejuvenation Project forms the primary step in reviving and restoring Konothupuzha ,a precious natural water source to its past glory in terms of aesthetics, unobstructed water flow and improved water quality. The total cost of the Phase I of the Project comes to Rs. 20.85 crores. Beautification works such as construction of walkways, gardens/parks, kiosks, boat jetties etc. along the banks of the river can be taken up under Phase II of the Project. The Project is envisaged to bring out exponential developments in various fields such as agriculture, fisheries, navigation, tourism etc. resulting in overall development of the area.