



## GOVERNMENT OF KERALA

### Abstract

Planning and Economic Affairs (RKI) Department- Project proposal of Department of Agriculture Development and Farmers' Welfare- "Improved Infrastructural facilities to overcome flood and drought in Thrissur Ponnani Kole Lands for increased paddy production"- Implementation- Administrative Sanction accorded- Orders issued.

---

### **PLANNING & ECONOMIC AFFAIRS (RKI) DEPARTMENT**

G.O. (Rt.) No.241/2020/P&EA

Thiruvananthapuram, Dated 03/06/2020

---

- Read:
1. G.O. (P) No. 16/2018/P&EA dated 09/11/2018.
  2. G.O. (P) No. 19/2019/P&EA dated 23/05/2019.
  3. Minutes of the 7<sup>th</sup> HLEC meeting held on 21/11/2019.
  4. Minutes of the 9<sup>th</sup> HLEC meeting held on 18/05/2020.
  5. G.O.(Ms.) No.16/2020/P&EA dated 30/05/2020.

### ORDER

The Department of Agriculture Development and Farmers' Welfare submitted a project proposal titled "Improved Infrastructural facilities to overcome flood and drought in Thrissur Ponnani Kole Lands for increased paddy production-Phase 1" to the tune of Rs.102 crore, for implementation under Rebuild Kerala Initiative.

**2.** The High-Level Empowered Committee (HLEC) of RKI, in its meeting held on 21/11/2019, the minutes of which read as 3<sup>rd</sup> paper above, considered the proposal and was of the view that the large number of the proposed elements will require significant collaboration and convergence with the Water Resources Department, and that prior scientific hydrological studies be done to ensure resilience of the interventions proposed. Prospects of sourcing funds from other sources also require to be assessed. The Committee, therefore, directed that revised proposal incorporating the above should be submitted to the RKI.

**3.** Consequently, the Department of Agriculture Development and Farmers' Welfare submitted the revised DPR for the project, which is proposed to be implemented in 4 phases at a total cost of **Rs.298.38 crore**. The HLEC, in its meeting held on 18/05/2020 in virtual mode, the minutes of which read as 4<sup>th</sup> paper above, approved the DPR and directed RKI to place the same for in-principle approval of Council of Ministers and subsequently, to issue Administrative Sanction to the project.

Subsequently, in-principle approval was accorded for the project to be taken up under RKI by sourcing requisite funds from the DPL, as per the G.O. read as 5<sup>th</sup> paper above.

4. There had been a huge impact of the 2018 and 2019 Kerala floods in the Thrissur Ponnani kole area. The rivers, canals, inner chals and paddy fields were flooded uncontrollably. The main impact of flood was the silting of canals, rivers and channels which considerably reduced the depth and eventually flow area of the canals. The silting process thus affected the cultivation directly and indirectly due to direct damage to crops and damage to canals and other ancillary structures. The kole area needs to be brought back to its previous condition to bring back the glory of cultivation in the area. This project aims to bring the kole lands to a much better condition than before, and control any future flood to minimize the damage and bring the water under control. Moreover, another major issue faced in the kole area is encroachment to the cultivation land and water bodies. While surveying the land and canals for various projects, heights of encroachments is visible. This eventually reduced the land under cultivation and the flow of canals. The encroachment reduces, obstructs and/or diverts the flow of canals and chals. This is also taken into consideration in the project for the rebuilding of the kole area. A detailed hydrology study was conducted by the Kerala Land Development Corporation ( KLDC) to understand the flow pattern in the kole area and to prepare strategy to control future floods in more sustainable and efficient manner. Desilting is the need of the hour in the rebuild and flood control management process. This desilting work, along with other projects, can help control upcoming flood and water management in the kole area to a great extent.

The components with abstract of financial outlay is given below.

<b>Sl. No.</b>	<b>Item</b>	<b>Amount Cost (Rs. lakh)</b>
1.	DEEPENING, WIDENING OF CANALS AND STRENGTHENING OF BUNDS IN KOLE LAND	66,84,51,000
2.	CONSTRUCTION OF ENGINE SHEDS AND ENGINE THARA IN THRISSUR – PONNANI KOLE AREA	14,45,85,000
3.	INSTALLATION OF SUBMERSIBLE PUMPS IN KOLE LANDS	57,00,00,000
4.	TRANSFORMERS AND CFPD INSTALLATION	3,76,50,600
5.	INFRASTRUCTURAL ASSISTANCE IN KOLE LAND PADASHE-KARAMS	153,56,61,261
6.	TRACTORS AND ACCESSORIES	2,49,72,000
7.	Documentation of Projects	15,00,000
8.	Documentation of GIS Mapping	10,00,000
	<b>Grand Total</b>	<b>298,38,19,861</b>

5. In these circumstances, the Government are pleased to accord Administrative sanction for the project "Improved Infrastructural facilities to overcome flood and drought in Thrissur Ponnani Kole Lands for increased paddy production", submitted by the Department of Agriculture Development and Farmers' Welfare at an estimated cost of **Rs.298.38 crore**, by sourcing requisite funds from the Development Policy Loan. The expenditure in this regard will be debited to the head of accounts "5475-00-115-94-Post flood Projects under Rebuild Kerala Initiative (P)". The salient features of the project are attached as **Annexure** to this order.

7. The project will be implemented by Kerala Land Development Corporation (KLDC), Kerala Agro Industries Corporation (KAICO), Kerala State Electricity Board (KSEB) and Agriculture Engineering Wing. The Department of Agriculture Development and Farmers' Welfare shall formulate an effective monitoring mechanism for the timely completion of the project. All mandatory clearances from relevant departments shall be obtained wherever applicable. All procurements as part of implementation of the work shall be done in a fair and transparent manner in accordance with the extant rules.

By order of the Governor,  
**RAJESH KUMAR SINGH**  
**ADDITIONAL CHIEF SECRETARY**

To:

Director, Agriculture Development and Farmers' Welfare Dept., Thiruvananthapuram.

Principal Secretary, & Agriculture Production Commissioner

Secretary, Agriculture.

The Principal Accountant General (A&E/ Audit), Thiruvananthapuram.

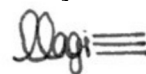
Finance Department.

Agriculture Development and Farmers' Welfare Department.

Information & Public Relations (Web & New Media) Department.

Stock File/Office Copy [F.No.RK/2/141/2019-PLGEA]

Forwarded/ By order,



Section Officer

**Salient features of the project titled "Improved Infrastructural facilities to overcome flood and drought in Thrissur Ponnani Kole Lands for increased paddy cultivation"**

**Background**

The Kole land, one of the rice granaries of Kerala, is a unique wetland ecosystem, lying in Thrissur and Malappuram Districts, covering an area of about 13,632 hectares. It is the 3rd largest paddy producing region in Kerala. The production and productivity are substantially 2 to 3 times higher than the state average. It is also one of the largest ecologically threatened wetland tracts in the State and comes in Central Asian Flyway of migratory birds. The Kole Wetlands act as natural drainage system for Thrissur and some parts of Malappuram districts, through a network of canals and ponds which connects different parts of the Kole Wetlands to rivers like Karuvannur and Kecheri and then to the Arabian sea.

The entire area of kole lands are portioned into several blocks. Each block varies from 100 acres to more than 500 acres. These blocks are locally known as Padashekarams or Padavu. More than 165 padashekarams (group of paddy-growing farmers) are currently cultivating paddy in kole lands. Each padashekaram is provided with irrigation/drainage canals, petty para with pumps, pump houses and free electricity for dewatering process. There are channels inside the padashekarams for irrigation as well as drainage system. From irrigation canals water is let into the padashekarams through sluices and with the help of petty para system, water is pumped out to these canals as and when required. There are Field bunds inside these padashekarams for transportation of inputs like lime, seeds, fertilizers and paddy. Ramps are constructed on farm bunds to get the various farm machineries into the padashekarams. During the catastrophic 2018 and 2019 Kerala floods, heavy damages occurred to various infrastructural structures in kole lands. This include bund breach, weakening of most of the bunds, silt deposition in irrigation and drainage canals and channels, damage to transformers, drowning or burning of existing motors used for dewatering, damage to pump houses, breach of field bunds and ramps etc. There had been a huge impact of the 2018 and 2019 Kerala floods in the Thrissur Ponnani kole area. The main impact of flood was the silting of canals, rivers and channels which considerably reduced the depth and eventually flow area of the canals. Desilting is the need of the hour in the rebuild and flood control management process.

**Aims**

- i. To increase the production and productivity of paddy in kole land paddy cultivation.
- ii. To minimize the effects of flood/drought by desilting the irrigation canals in kole land paddy cultivation.
- iii. To increase the potential of existing kole lands infrastructure.
- iv. To conserve the biodiversity of kole land ecosystem by adopting sustainable crop

production methods.

## **Objectives**

1. Improve the drainage and irrigation capacity of kole land canals by desilting and strengthening of the bunds.
2. Construction of pumps houses for installing and functioning of the electrical pumps for dewatering.
3. Improve the dewatering efficiency of existing petty para by substituting with submersible pumps.
4. Installing the transformers with CFPD (communicating fault pass detector) to identify and rectify the problems in transformers so as to avoid the dewatering delay in kole lands and to avoid flood during crop cultivation.
5. Assistance for infrastructural development within the kole land padashekarams to reduce the cost of cultivation.
6. To take double crop in kole lands
7. To improve the efficiency of land preparation through proper machineries like improved tractor driven rotovators with levellers so as to decrease the cost of cultivation and increase rice production.
8. To promote the use of biocontrol agents for reducing the use of chemicals in kole lands.

## **Problems to be addressed**

### **A. Canal System**

Due to deposit of silt in the canals during periodic flooding and especially during last flood, water storage capacity in the canals has decreased drastically. Even a day long rain is enough to bring the canals to overflow condition and causes floods in the paddy cultivated area and also to neighboring garden land as well as residential area. The bunds are also weakened very seriously. Some of the culverts and sluices are damaged and blocked, hampering proper irrigation/drainage during heavy rains and this also leads to flood. During second crop season (late mundakan and punja), due to poor water storage capacity in irrigation canals the water is not sufficiently made available for irrigation of paddy cultivation, which leads to drought in these regions.

The major canals in Thrissur kole lands are Kotachal, Puzhakkalchal and Chettupuzha chal. In total there have been 32 canals have been identified which are to be desilted in order to ensure proper water conveyance. These canals have to be desilted initially and bunds are to be strengthened. The desilted soil can also be used for strengthening of other nearby bunds and field bunds.

### **B. Engine sheds and bases**

Due to the low-lying nature of the kole region, pumping out of water from the fields is a major process in crop production. For this a large number of engine sheds and engine bases (thara) are required where by water is pumped out using motor pump-

sets. Most of the engine sheds and engine thara in Thrissur Ponnani region are damaged or are currently working on temporary arrangements. This leads to huge expenses every year due to damage caused to motors and accessories. Moreover, improper infrastructure leads to delay in starting of crop production in the area. Thus, sufficient number of engine sheds and engine thara is essential for profitable crop production in Thrissur Ponnani Kole area.

### **C. Dewatering**

Another problem to be addressed in Kole land cultivation is regarding the drainage and dewatering system. The Kole lands have specific requirements for dewatering, drainage, and other water management practices for supporting sustainable crop production, since kole area lies below the sea level. The cultivation method adopted in these wetlands by dewatering the flood water in kole lands from August to May which otherwise is submerged from June to November.

Rice is the most important crop cultivated in the Kole land. Sowing and transplanting of paddy is carried out after dewatering the fields during/after monsoon season. When flood waters in the fields start subsiding by the end of South West monsoon season, pumping out of water has to be carried out in a short span of 10 to 15 days. Dewatering is traditionally carried out using Petti and Para pumps which are an indigenous device developed for low lying paddy fields.

Though the petti-para system is popular for low head high discharge pumping conditions, the efficiency of the unit is quite low.

### **D. Transformers**

In kole lands, transformers are most essential for functioning of huge Petty Para pumps of 100HP, 70HP, 50 HP etc., for dewatering in kole land paddy cultivation. Most of the existing transformers are damaged due to flood and some are causing frequent power failure during dewatering process and throughout paddy cultivation due to wear and tear. During lightning and thunder, frequent power failure occurs and it is difficult to locate the problem even during day time. During night, it is also a high risk to find out the defective power lines. In such circumstances, when dewatering is delayed it leads to crop damage in the sown/transplanted fields. Similarly, during harvest period, if harvesting is delayed, there is chance of the standing crop getting lost. This leads to great financial loss to the farmers.

### **E. Field bunds and Inner Channels**

In Thrissur Ponnankole lands there are more than 165 padashekharas or land clusters which help in the management of paddy cultivation. At present each padashekharas is separated by strong earthen bunds constructed by KLDC. The size of padashekharas varies from 100 acres to 2000 acres. For drainage and irrigation within each padashekharas, there are inner channels whose lengths are about 7 to 10 kms depending on the size of the padashekharas. But only a few

padashekharas have field bunds for conveyance of farm machinery/inputs/paddy within their area. Similarly, only few have ramps and culverts (Keda) constructed for letting the vehicles, harvesters and other farm machineries into the padashekharas for various activities.

Every year in each padashekharas, during paddy cultivation farmers are facing lots of problems to reconstruct these structures. During the last flood, most of the inner channels became filled with silt and this leads to flooding of the paddy field during irrigation. In peak rainy times, it's not possible to store the water inside the padashekharas which may lead to shortage of water for paddy cultivation. This also creates poor drainage system while sowing and transplanting especially in the low-lying areas (engine thara). Transporting of paddy after harvest from the harvested plot to Field bunds/bunds by the paddy harvester for long distances becomes very expensive (Rs.1750/hr hire charge).

As the fields are 0.5 to 2.5 m below sea level, it's difficult for the machineries etc. to get into the padashekharas from the bunds. While moving the farm machineries like tillers, tractors, harvesters, across the inner canals of the padavu, farmers have to construct culverts (Keda) across the inner canals. At present, these problems are being solved by temporary structures constructed using bamboo, mud etc. by farmers themselves and harvesters run all over the field which increases the total cost of paddy cultivation every year.

## **F. Use of Machinery**

Good agricultural practices lead to good yield. In kole lands earlier only power tillers were used and even now these are being used. It consumes lot of time for land preparation. And also use of two rounds of tiller or one-time tractor and tiller for levelling, creates lot of damage to the soil. This also increases the soil acidity which is a major problem in the kole land paddy cultivation. Deep sowing and land preparation are not good for paddy growth in kole lands.

## **Strategies for Interventions**

### **A. Canal System**

Existing canals in the kole lands are to be deepened, widened, and bunds are to be strengthened. Since the time of their construction, no such activities have been done in these canals. Over a period, due to flood, the silt has been deposited in the canals and water storage capacity has reduced. As a result, even a day long rain causes flooding of the paddy fields. Also, when water is let out from Chimmini dam for irrigation, many a times lower regions get flooded and water is not stored in the canals. This causes shortage of water for paddy at critical periods.

The silt and soil from the canals can be excavated and evenly distributed on existing bunds to strengthen it. So, water storage capacity of the canal can be increased to store more water during monsoon as well as dam water during off season and this also avoids

flood. More canal water is made used for paddy cultivation and Chimmini dam water may be conserved for kole double crop.

In this proposal, the portion of Puzhakkalthodu starting from the Shobha city region to Chettupuzha is considering for deepening. Total length of this portion is 4500.00 m. For Chettupuzha canal, portion starting from Chettupuzha to Arimbur is considering for deepening. Its total length is 5019.00m. For Kottachal, portion starting from Chettupuzha to Enamavu is considering for deepening. Its total length is 4523.00m. In addition to the above-mentioned canals other 29 main canals of Thrissur Ponnani kole area has been considered for deepening and desilting.

By the implementation of this project, paddy crop can be cultivated successfully and thereby we can reduce unemployment in agriculture field. The main benefit of the project is that, the flood water that submerges the nearby land can be controlled. Two crops of paddy can also be taken as proven by the successful implementation of Operation kole double project. The investment for the deepening of channels is justified by the incremental benefit of agriculture production and water conservation system. The estimate is based on the DSR 2016. For getting the optimum level of water in canal, VCBs or check dams can be constructed at suitable locations. This will help to maintain a sufficient amount of water in the canal during all seasons. So at the time of cultivation, farmers can irrigate the field without any obstruction.

For preventing the silt deposition in the canal, side protection with rubble masonry can be provided to existing canals. Rubble masonry is a permanent structure and it will prevent the degradation of bund so that bunds will remain strong and maintenance cost becomes less, since the stones are laid dry without mortar. The advantage of rubble wall is that when heavy rain falls, their structure would allow excessive water to pass through and therefore, excess water will not ruin the structure. Soil erosion is minimized as the wall structure allows the water to pass through but it traps the soil and prevents it from being carried away from the field.

Proper drainage is intended to be provided along with dry rubble masonry, which is very essential to prevent bank degradation and also waste water leakage. This will prevent the unwanted entry of silt from the nearby catchment. The side protection by means of locally available material is introduced. It is envisaged the maintenance of the construction work should be done by the Padashekharasamithies and local bodies as the asset is formed for the social benefit. The maintenance may be done after five years of the construction. Hence it can be sustained as long as the Padashekharasamithy is willing to do the crop production.

## **B. Engine sheds and bases**

The pump houses are constructed for functioning of the electric pumps for dewatering from the kolepadavu. The pump sets and electrical appliance are the heart of the kolepadashekarams for dewatering. Well built strong pump houses are required to install the submersible pumps and to work efficiently in dewatering. Also they protect the pumps and electrical appliances from the adverse weather.



In this present work, 93 engine sheds and 8 engine thara are to be constructed which is spread in 24 sites of Thrissur Kole area and 36 sites in Ponnani Kole area. Upon completion, the project will improve the pumping efficiency from agricultural fields and thereby increase the crop production and reduce the damage of crops.

### **C. Dewatering**

A pilot project was sanctioned under RKVY 2013- 14 for replacing existing low efficient petty and para system with energy efficient water lifting devices. 8 no.s of Vertical Axial Flow pump sets were installed at various padasekharams. Vertical Axial Flow pumpsets with Submersible motors were also proposed under District panchayath project. Submersible motors have an advantage of low erection and maintenance cost.

Based on the success and acceptability of energy efficient motor pump sets, it was decided by the Kole Development Authority, Thrissur to prepare a project proposal for Supply and Installation of energy efficient water lifting devices such as Vertical Axial Flow pump sets and Submersible type Vertical Axial Flow motors pump sets.

A total of 10604.18 ha of land is identified under Kole land in 8 blocks of Thrissur District. And a total of 274 no.s of energy efficient pumps has to be installed in a phased manner.

### **D. Transformers**

The main strategy is to install CFPD with transformers so as to identify the problems caused in the transformers due to lightning, thunder and short circuit in kole lands. During night times in monsoon season it is not easy to locate the spot and solve the problem. Also, its high risk to walk along the bunds during night time to identify the default transformer area. At present to identify these problem workers have to go during night looking for the spark near the transformer lines and on day time this spark is not visible. To overcome this risk and for intervention in the right time to solve the problem, it is proposed to install CFPD and/ or transformer by KSEB. In kole lands after sowing or transplanting water should be regulated by dewatering 24 hours without power failure for a week time. If water is stagnated due to power failure it is a great loss to the farmer. Similar problem is faced by the farmer during harvest due to summer rains.

### **E. Field bunds and Inner Channels**

Within the padashekarams, assistance for infrastructure like Field bunds, culvert (keda), ramps, desilting of inner canals are most important activities to be done to double the paddy production. The dewatering from inner canals should be made faster to avoid flood and stagnation of water in the paddy field. These canals are silt deposited after flood. Also, their bunds are to be strengthened from the desilted soil. Field bunds are very much essential in padasekharams having an area of 150 to 700 acres. Especially during the harvest time, after paddy is harvested, the harvesters have to travel a lot of distance within the padasekharams to get the paddy to bund roads. Farmers have to pay lot of money @ Rs.1500 to 2000 /hr in addition to harvesting charge. Field bunds reduce the cost of transportation and harvesting and it also helps to carry the inputs like

seeds, lime and fertilizers near to the field. These should be maintained as temporary kacha bunds.

Kedasare culverts across the water canals within the padashekarams to move the harvesters, tillers, tractors and other machineries into the paddy field. At present it's being constructed using bamboo, coconut fronds, mud etc. Its recurring expense increases every year which ultimately increases the paddy cultivation expense. Substituting this by concrete pipes will solve the problem permanently.

As we know the kole lands are below sea level about 0.5m to 2.5m, it is difficult to get machineries like tractors, tillers and harvesters into the padasekharams from the bunds and also to move the lorry's/carriers into padavu for transportation of paddy after harvest. So ramps are very much essential for getting the machineries into padavu.

## **F. Use of machinery**

Land preparation is very crucial thing in kole lands. At present power tillers are used for land preparation. During land preparation with power tillers, land is not levelled uniformly and power tiller cannot be used in the field where there are too many water weeds. Also it consumes more time which ultimately increases the cost of cultivation and timely action is not done. Moreover the land preparation at present is done by either two times with power tiller or one time tractor and second time by power tiller which damages the soil texture as well as increases the acidity of the soil. To overcome these problems modern tractor driven rotovator with levellers have to be used. A single land ploughing and levelling with this machinery helps the farmers to reduce the cost of cultivation as well as helps in timely action. The land levelling also improves the water management and weed management.

## **Target Beneficiaries**

90 % of the kole lands are being cultivated either by the farmer himself or on lease system. The farmers are now 100% sure about the crop returns. So more than 50000 farmers (own or lease) are directly involved in paddy cultivation. In kole lands there is a high demand for lease cultivation in the absence of owners because of 100% surety in crop production and yield. Apart from this, there is employment generation in various activities like land preparation, sowing, transplanting, spraying, irrigation, power tillers, tractors and harvesters, *petty para* operators, labourers during harvesting loading paddy, etc., for more than 25000 farm labourers.

During paddy cultivation water stored in the canals helps in ground water recharge in nearby regions and this helps to overcome the fresh water shortage problems during off-season. Rearing fish and ducks in the canals may generate additional income to the farmers. Cultivation of coconut palms on bunds increase the coconut production and also gives an additional income to the farmers.

The increased production, assured infrastructural facility, assured price for the produce are all incentive to the new generations to come forward to invest on paddy

cultivation in kole lands. The double crop increases the employment generation, fresh water availability and also provides fresh water for garden lands till April, besides additional income to the farmers.

Storage of more water in the canals increases the activities of the flora and fauna of the kole land surroundings. Sustainable development of paddy cultivation promotes maintenance of biodiversity of kole land ecosystem.

## **Management**

The execution and supervision of the project will be done by various Government approved agencies like KLDC, KAICO, KSEB and Agri Engineering.

Kerala Land Development Corporation Thrissur has done all the infrastructural works like bunds, pump house, culverts, sluices etc., in kole lands. They will look into all the implementation procedures, technical feasibility of the project for timely implementation. Principal Agricultural Officers of Thrissur and Malappuram will monitor the scheme implementation.

Agriculture Engineer (Mechanical wing) will look into the feasibility of implementing the substitution of submersible pumps for petty para pumps in kole lands.

The Deputy Chief Engineer for KSEB, Thrissur has studied the installation of transformers with CFPD in kole lands to detect the short circuit location.

The KAICO, Thrissur will look into the purchase of tractors with rotovators and its accessories required for improved land preparation in kole land paddy cultivation.

## **Finance**

The total financial outlay of the project is 298.38 lakh. The estimate is prepared as price per PRICE 2016 and supervision charge to respective agencies and GSTs are included. Operation and maintenance of the canal after the execution of project will be conducted by irrigation department and local self-government department. Transformer and CFPD are monitored by KSEB. Farm machineries are maintained by the padasekharams. So, there is no cost sharing option in this project. After nine years, as per cost benefit analysis, the complete cost may be recovered because of the improved agriculture production. This project can be implemented as a major flood mitigation project in Thrissur.

The abstract of financial outlay is given below:

Sl. No.	Item	Amount Cost (lakhs)
<b>1</b>	<b>DEEPENING, WIDENING OF CANALS AND STRENGTHENING OF BUNDS IN KOLE LAND</b>	
1.A	Deepening and desilting of 32 canals	66,84,51,000
	<b>Sub Total</b>	<b>66,84,51,000</b>
<b>2</b>	<b>CONSTRUCTION OF ENGINE SHEDS AND ENGINE THARA IN THRISSUR – PONNANI KOLE AREA</b>	
2.A	Construction of engine thara	1,75,36,000
	Construction of engine shed in Thrissur KOLE area	4,77,05,000
2.B	Construction of engine shed in PonnaniKOLE area	7,93,44,000
	<b>Sub Total</b>	<b>14,45,85,000</b>
<b>3</b>	<b>INSTALLATION OF SUBMERCIBLE PUMPS IN KOLE LANDS</b>	
3.A	Supply and Installation of Energy Efficient Pumping system	56,44,70,000
3.B	Flow measuring equipment	6,00,000
3.C	Allowance for Price Escalation	49,30,000
	<b>Sub Total</b>	<b>57,00,00,000</b>
<b>4</b>	<b>TRANSFORMERS AND CFPD INSTALATION</b>	
4.A	100kVA transformer substation on PSC pole DP structures. 574212( inclusive of 18% GST) for 50no	2,87,10,600
4.B	Communicative Fault Pass Detector without solar system is rs.21100 (200no)	42,20,000
4.c	Communicative Fault Pass Detector with solar system is rs.23600 (200no)	47,20,000
	<b>Sub Total</b>	<b>3,76,50,600</b>
<b>5</b>	<b>INFRASTRUCTURAL ASSISTANCE IN KOLE LAND PADASHEKARAMS</b>	
5.A	Improvements to various padashekarams in Ponnani and Thris-surtaluk – Deepening of Innerchals, construction of Kida, Farm roads and Ramps	1,36,97,57,261
5.B	Improvements to Kovilakam Padam in Thrissur district	6,74,89,000
5.C	Culvert (keda) constructions (825 no)	9,84,15,000
	<b>Sub Total</b>	<b>1,53,56,61,261</b>
<b>6</b>	<b>TRACTORS AND ACCESSORIES</b>	
6.A	Tractor with dual clutch power steering 45HP @ Rs.769000 (20 no.)	1,53,80,000
6.B	Tractor driven Rotovator with leveller @ Rs.175000 (40 no)	70,00,000

6.C	Half cage wheels (40 pair ) @ Rs.22500	9,00,000
6.D	Full cage wheel (40 pair) @ Rs.42300	16,92,000
	<b>Sub Total</b>	<b>2,49,72,000</b>
<b>7</b>	<b>Documentation of Projects</b>	<b>15,00,000</b>
<b>8</b>	<b>Documentation of GIS Mapping</b>	<b>10,00,000</b>
	<b>Grand Total</b>	<b>298,38,19,861</b>

### Implementation Phasing

Sl. No.	Projects	Amount (in Rs. lakh)
<b>Phase I</b>		
1.	Desilting the Canal	<b>6684.00</b>
2.	<b>Improvements of Padasekharams</b>	
(a)	Deepening of Innerchal	500.00
(b)	Construction of Farm road	500.00
(c)	Improvements of Vilakumadam Padam	500.00
(d)	Improvements of Kovilakam Padasekharam	400.00
(e)	Construction of Kida	100.00
	<b>Sub Total</b>	<b>2000.00</b>
3.	Construction of Engine-thara & Engine-shed	1446.00
4.	Establishing Dewatering facility	2500.00
5.	Substations & Transformers	376.00
6.	Mechanization	250.00
7.	Documentation & GIS Mapping	25.00
	<b>Sub Total</b>	<b>4597.00</b>
	<b>Phase I Total</b>	<b>13281.00</b>
<b>Phase II</b>		
1	Improvements of Padasekharam	7500.00
2	Establishing Dewatering facility	3200.00
	<b>Phase II Total</b>	<b>10700.00</b>
<b>Phase III</b>		
1	Improvements of Padasekharam	5857.00
	<b>Phase III Total</b>	<b>5857.00</b>
	<b>GRAND TOTAL</b>	<b>29838.00</b>

### TIMELINE

The project will be completed in a time span of 5 years from the date of commencement of the project.

\*\*\*\*\*