Drinking Water Project (Moorthimon) in Thannithode Gram Panchayat

DETAILED PROJECT REPORT (DPR)

Submitted to KERALA LOCAL GOVERNMENT SERVICE DELIVERY PROJECT (KLGSDP)

Prepared By
Centre for Rural Management (CRM), Kottayam, Kerala

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Chapter 1
INTRODUCTION & PROFILE OF THE GRAM PANCHAYAT

INTRODUCTION

This is the detailed project report (DPR) of the ***Drinking Water Project (Moorthimon) in Thannithode*** which has been prepared for the Thannithodu Gram Panchayat of Pathanamthitta District in Kerala with the technical support of Centre for Rural Management, (CRM) Kottayam. The project is finalized by the joint sitting of the Project Management Unit of the Kerala Local Government Service Delivery Project (KLGSDP) and the functionaries of the Thannithodu Gram Panchayat. It is identified based on the socio economic conditions, the index of backwardness and the aspirations of the local citizens of the Panchayat. Participatory rural rapid appraisal tools were applied for the identification and prioritization of the Project.

PROFILE OF THANNITHODU GRAM PANCHAYAT

The Panchayat has at present 13 wards spread out in an area of 43.54 sq km surrounded by thick forest on all sides. The density of the population is only 299, which is much below than the state as well as district average. The total population of the Panchayat is 13012 with 6187 males and 6825 females. The sex ratio comes to 1035. The SC population of the Panchayat comes to 1348 with 636 males and females outnumbering males with 712. The population of the category from the Scheduled Tribe is only 65. As in the case of other social groups, here also the females have a higher strength of 39 over the male members. The recorded literacy of the Panchayat is 87.93 per cent with 87.68 per cent literate females and 88.22 per cent literate males which is much below the state as well as the district average. As special feature of the Thannithodu Panchayat is the existence of SC colonies, 14 in number in all the wards except ward No.1. The highest concentration of SC households is in Poochakkulam ward (ward No.III) with 23

households. Next comes ward No.IV, Vatamon colony with 22 households. About tribal households the number comes to 14. *Malampandaram* live in interior forest and comes out only rarely. Their share to the total households of the Panchayat is very small, only 11 in number. Officially, though they do not have the status of 'primitive tribe' the socio cultural profile of them is par with any of the primitive tribes in the State. As per the records from the Panchayat, 14 *Malavedan* households live in Thannithodu-Moozhi in Ward No.XII. Though transferred institutions such as Krishi Bhavan, Veterinary Hospital, PH Centre, Govt. Homeo -Dispensary, Ayurveda Dispensary are there in the Panchayat, the benefits of these institutions have yet to reach all sections of the people. The other public institutions are Continuing Education Centres (3), Libraries (3) and Milk Cooperative Societies (5). There are 24 *Anganwadis* in the Panchayat.

SECTOR PRIORITY (DRINKING WATER)

Sector priority was made by the Panchayat with the Support of Centre for Rural Management (CRM), Kottayam. The purpose was to assess the backwardness and to identify sector and essential projects which have the potential for sustainable local economic development and ensuring social justice. The potential projects under sectors were identified through three FGDs conducted in different parts of the GP and followed by transect walk. Discussions/consultations with the senior citizens and social workers in the Panchayat were also arranged to gather expert opinion.

To begin with the sector analysis in very precise, the consulting team (Centre for Rural Management) had a detailed discussion with the President, Vice President and other members of the GP on 31 May 2016. Subsequently, four Focus Group Discussions (FGDs) in different parts of the GP on 9th & 10th June were conducted and followed by transect walk on the same dates. Representatives of the political parties, members from community based organizations, teachers, *anganwadi* workers as well as members from *kudumbasree* were invited for active participation in the FGDs and to share their views and suggestions in prioritizing the projects. While assessing the socio economic conditions and the index of backwardness of the Panchayat, all the sectors were analyzed

in detail. And based on the detailed sector analysis, **Drinking Water** was identified as one of the priority sectors.

PROJECT RATIONAL OF THE *DRINKING WATER PROJECT (MOORTHIMON)*

Providing safe drinking water to over 700 million people in more than 1.5 million villages has been and remains one of the biggest development challenges to the Government of India. India's National Water Policy (2002) has assigned the highest priority for drinking water supply. Successive Five-Year Plans since have stressed the imperative to develop water supply and sanitation systems rapidly. Access to adequate and safe drinking water supplies grew from 30 percent to 70 percent between 1981 and 1990 during the International Drinking Water and Sanitation Decade, and increased again from 70 percent to 90 percent between 1991 and 2000 is a considerable achievement. Access to water in India is defined as having at least 135 liters per capita per day. However, over the last decade, water source sustainability, water quality problems, and inadequate scheme operation and maintenance have been formidable constraints to achieving and maintaining a higher level of service for the rural population. According to the Department of Drinking Water Supply and Sanitation, 30 percent of systems each year revert to the status of being "partially covered" or "not covered. Other challenges include the management of multi-village schemes, strengthening links between different levels of government, improving monitoring and evaluation systems to better inform policy makers, and scaling-up the reform approach to extract its full benefit.

Though there are 11 perennial ponds, 24 stream and small rivulets, and 10 public tube wells, water scarcity is very severe in the GP, particularly in summer season. It is reported that many parts of the Panchayat were facing acute drinking water problem. Panchayat had taken measures to solve the problem by installing tube wells and bore wells and by digging public wells at deferent places of the Panchayat, in addition to two water supply schemes. The number of open wells under the ownership of private

individuals is relatively low in the Panchayat. Around half of the households (45 %) are not having such water sources. Out of the public tube wells some are defunct and unfit for use. Every year the water level in the tube wells and other water resources are decreasing, and scarcity of drinking water has become a big issue. The spatial mapping of the data on the coverage of the drinking water supply in the Panchayat shows that still there are wards /areas where it was not fully covered. Such wards /areas are *Maneera* , *Srilanka-Muruppu* and *Moorthimon* . When the focus group discussions (FGDs) were conducted in the Panchayats in general and particularly in the certain wards, the local community very strongly articulated for a drinking scheme in *Moorthimon* area. The women were more vocal in raising the issue of poor availability of drinking water. The situation analysis was strongly favoured for the project idea . It was also supported by the elected functionaries of the Panchayats .

Chapter 2

PROJECT NAME, LOCATION AND OBJECTIVES

NAME OF THE PROJECT: Drinking Water Project (Moorthimon) in Thannithode Gram Panchayat

MAIN OBJECTIVE/UTILITY OF THE PROJECT

Setting up of and maintenance of water supply schemes to ensure supply of potable water to the rural population in Moorthimon in Thannithode Gram Panchayat

SUB OBJECTIVES

(i) To address the issues of water scarcity

(ii) Provision of safe drinking water in the selected village

(iii) Ensuring uninterrupted water supplying in the selected village

(iv) Improving the quality of rural water supply selected village

(v) Achieving sustainability of investments

PROJECT LOCATION

Ward Number: 3,4,5,6,7

Place Name: Thannithodu Gram Panchayat of Pathanamthitta District

Survey Number:332/898

LAND DETAILS

Ownership particular: The land for the proposed construction is owned by the Gram Panchayat

Land size: Distribution line sketch attached and surrender certificate of land for OHT is attached.

Boundary of the land: Site Plan Attached

Sketch plan: Attached

PHYSICAL INFRASTRUCTURE

The project has the following components

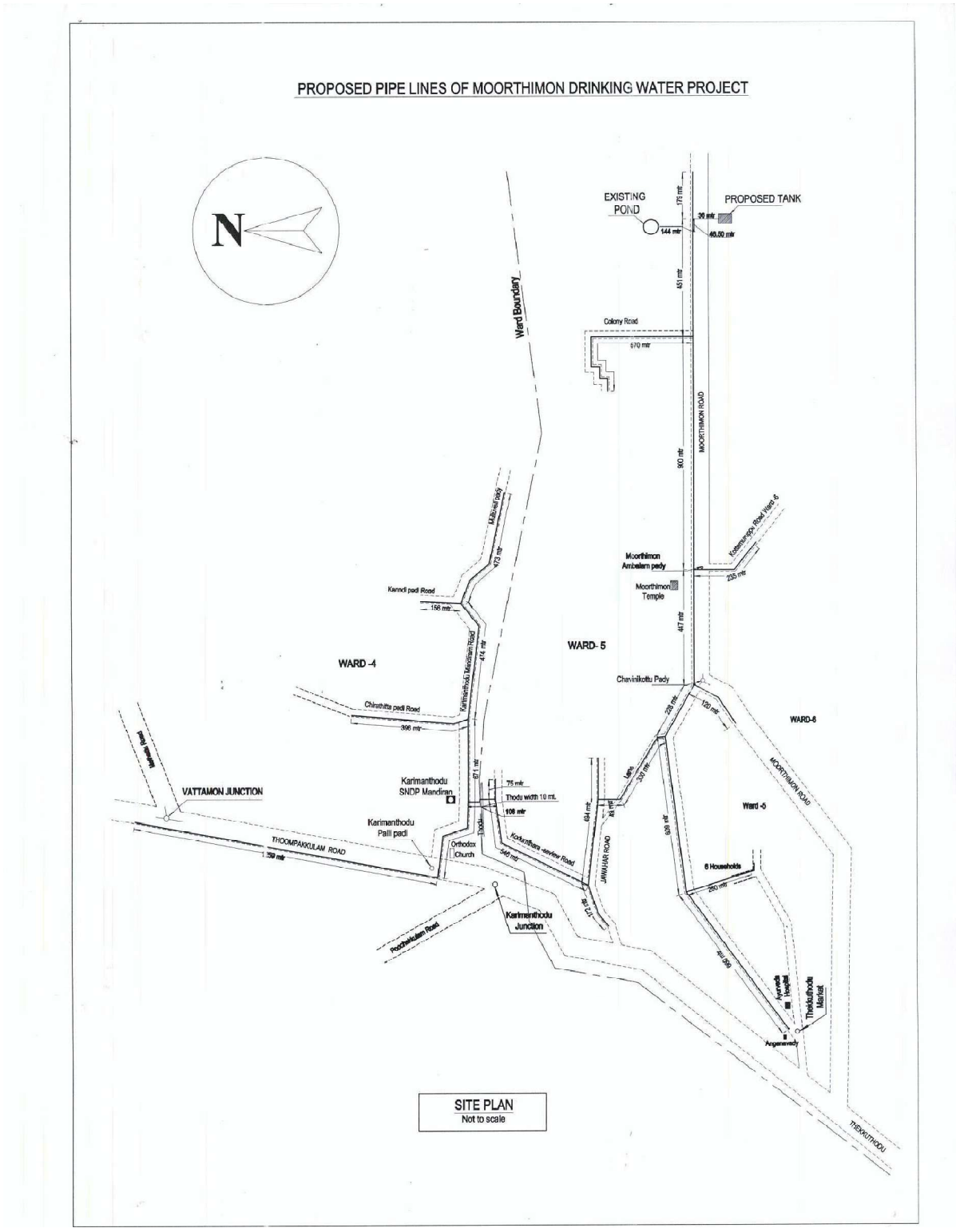
Project Designs:

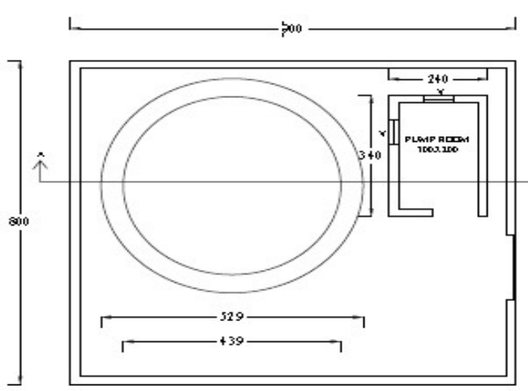
Pump House with Motor

Water Tank

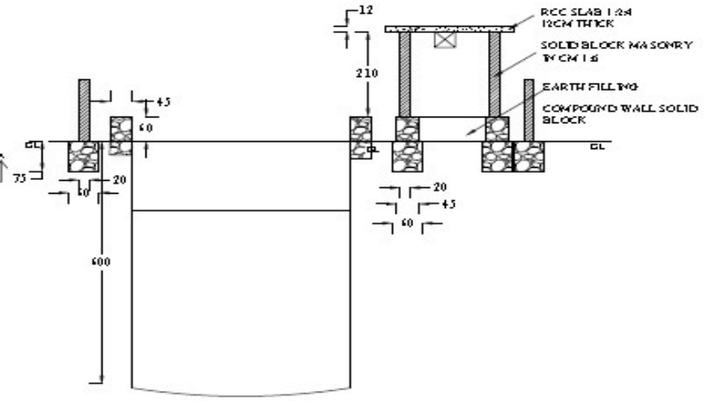
Distribution Line

Project Designs:





COMPOUND
WALL PLAN



SECTION

DRINKING WATER PROJECT
MOORTHIMON

WATER SUPPLY
CROSSECTION OF WELL & PUMP HOUSE

APPLICANT

THANNITHOD
GRAMA PANCHAYATH
PATHANAMTHITTA

WARD: THEKUTHODE CENTRAL (V)
S NUMBER: 332/PT

REFERENCE:-

DOOR D 120X210

VENTILATION V 60X60

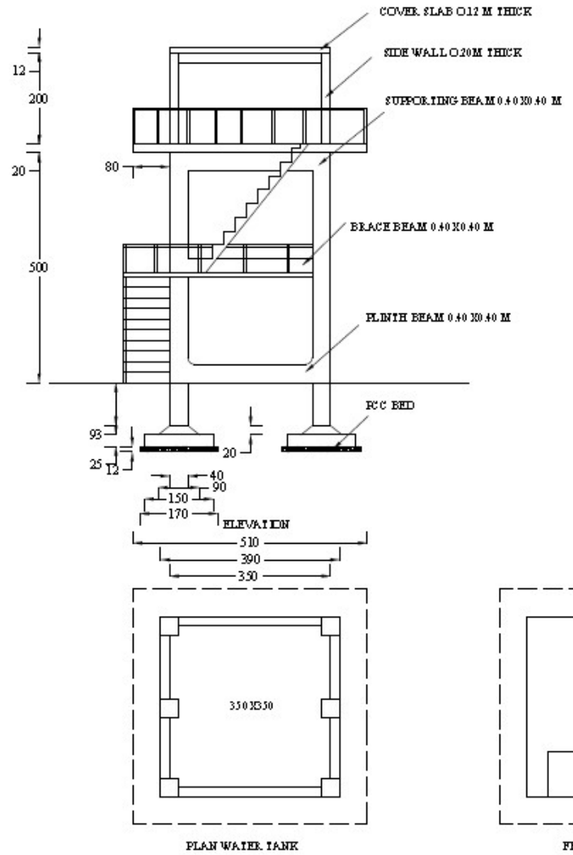
PLINTH AREA =

CARPET AREA =

SCALE=1:100 UNIT= cm's

F.A.R.= /COVERRAGE=

PREPARED BY:- .... BELLUR HOME ..... BUILDERS .... MARPANADKA....PH : 9847717873 SHARAFUDHEEN



DRINKING WATER PROJECT
MOORTHIMON

C S OF THE PROPOSED
RCC O H TANK
IN MOORTHIMON

APPLICANT

THANNITHOD
GRAMA PANCHAYATH
PATHANAMYHITTA

WARD : THEKUTHODE CENTRAL (V)

S NUMBER: 332/PT
898/PT

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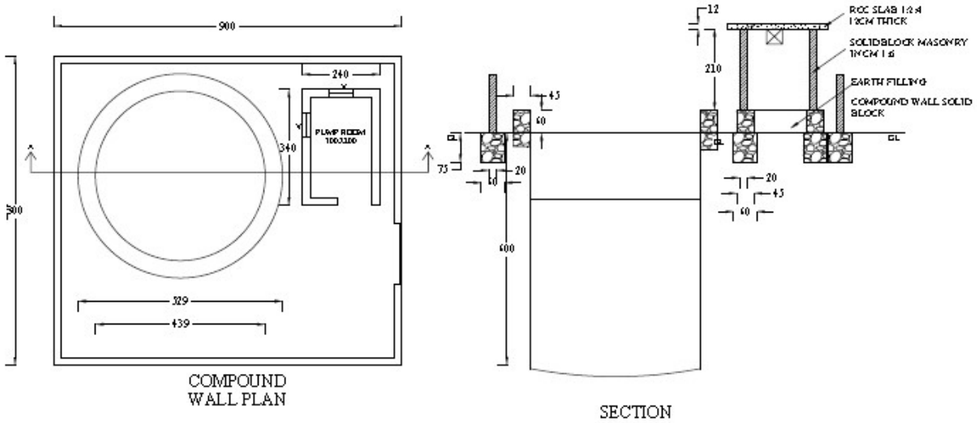
PREPARD BY:- .....**BELLUR HOME** ..... **BUILDERS**.... MARPANADKA....PH : 9847717873 SHARATH EK



COMPOUND
WALL PLAN

SECTION

DRINKING WATER PROJECT
MOORTHIMON

WATER SUPPLY
CROSSECTION OF WELL & PUMP HOUSE

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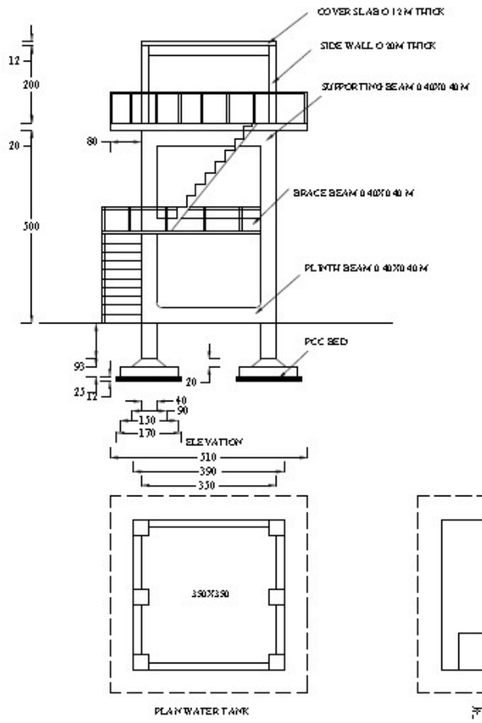

DRINKING WATER PROJECT
MOORTHIMON

C S OF THE PROPOSED
RCC O HTANK
IN MOORTHIMON

APPLICANT

THANNITHOD
GRAMA PANCHAYATH
PATHANAMYHITTA

WARD : THEKUTHODE CENTRAL (V)

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PREPARED BY:- .....BELLUR HOME ..... BUILDERS .... MARPANADKA....PH : 9847717873 SHARATH HK

DRINKING WATER PROJECT MOORTHIMON THANNITHODE GRAMA PANCHAYATH, PATHANAMTHITTA						
ABSTRACT OF PROPOSALS						
SL NO	**DSR**	**Description**	**Unit**	**Quantity**	**Rate**	**Amount (Rs)**
		IMPROVEMENT OF EXISISTING WELL				
1	2.32	Clearing grass and removal of the rubbish upto a distance of 50m outside the periphery of the area cleared.	$100M^2$	0.75	478.80	359.10
2	15.3	Demolishing R.C.C. work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material within 50 metres lead as per direction of Engineer - in- charge.	M^3	0.4	1897.58	759.03
3	15.7.4	Demolishing brick work manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge In cement mortar	M^3	3	1098.80	3296.40
4	2.6.1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed. All kinds of soil	M^3	22	226.72	4987.94
5	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	M^3	0.5	6267.21	3133.60
6	7.1.1	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with : Cement mortar 1:6 (1 cement : 6 coarse sand)	M^3	25.0	5709.06	142726.59

7	2.25	Filling available excavated earth (excluding rock) in trenches,plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m. cum 112.40	M^3	3.6	163.78	589.60
8	5.8	Reinforced cement concrete work in vertical and horizontal fins individually or forming box louvers, facias and eaves boards up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement, with 1:1½:3 (1 cement : 1½ coarse sand : 3 graded stone aggregate 20 mm nominal size	M^3	1.2	9749.16	11699.00
9	5.9.3	Centering and shuttering including strutting, propping etc. and removal of form for Suspended floors, roofs, landings, balconies and access platform	M^2	10	585.24	5852.44
10	5.22A.6	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level Thermo-Mechanically Treated bars	Kg	120	99.23	11907.42
11	OD	Solid block masonry using pre cast solid blocks (Factory made) of size 30x20x15cm or nearest available size for super structure above floor two level up to floor five level with thickness 15cm in: CM 1:6 (1 cement : 6 coarse sand) etc complete	M^3	14	6136	85904.00
12	9.48.2	Providing and fixing M.S. grills of required pattern in frames of windows etc. with M.S. flats, square or round bars etc. including priming coat with approved steel primer all completeFixed to openings /wooden frames with rawl plugs screws etc.	Kg	12	170.33	2044.02
13	9.48.2	Providing wood work (sal wood) in frames of doors, windows ,clerestory windows and other frames ,wrought framed and fixed in position with hold fast lugs or with dash fastners of required dia& length (hold fast lugs or dash fastner shall be paid for separately)	M^3	0.1	110096.44	11009.64

14	9.5.1	Providing and fixing panelled or panelled and glazed shutters for doors, windows and clerestory windows, including ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws, excluding panelling which will be paid for separately, all complete as per direction of Engineer-in-charge.	M^2			0.00
	9.5.1.1	35 mm thick shutters	M^2	1.8	3918.21	7052.79
15	9.53	Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embedding in cement concrete block 30x10x15cm 1:3:6 mix (1cement : 3 coarse sand: 6 graded stone aggregate 20mm nominal size).	Nos	8	170.99	1367.93
16	9.63.3	Providing and fixing ISI marked oxidised M.S. tower bolt black finish, (Barrel type) with necessary screws etc. complete 150x10 mm	Nos	2	66.81	133.62
17	9.88	Providing and fixing chromium plated brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	Nos	1	1151.55	1151.55
18	13.16	6 mm thick cement plaster of c m 1:3 one coat floated hard and trowelled smooth for under side of slabs including watering curing etc. complete.under side of floor DAR	M^2	10	196.27	1962.71
19	13.4	Plastering with 1:4,12 mmthick one coat floated hard and troweled smooth for walls inside & out side watering curing etc.complete. DAR 13.4	M^2	145	251.06	36403.46
20	13.48.1	Finishing with Deluxe Multi surface paint system for interiors and exteriors using Primer as per manufacturers specifications : Two or more coats applied on walls @ 1.25 ltr/10 sqm over and including one coat of special primer applied @ 0.75 ltr /10 sqm DAR 13.48.1	M^2	160	145.71	23313.60
21	13.48.2	Painting wood work with Deluxe Multi surface paint of required shade. : two or more coats applied @ 0.90 litr/10m2 over an under coat of primer applied @ 0.75 litr/10 m2 approved brand and manufacture	M^2	12	128.52	1542.19

22	13.48.3	Painting Steel work with Deluxe Multi Surface Paint to give an even shade. Two or more coat applied @ 0.90 ltr/ 10 sqm over an under coat of primer applied @ 0.80 ltr/ 10 sqm of approved brand and manufacture	M^2	10	131.14	1311.39
		OVER HEAD TANK				
23	2.6.1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed. All kinds of soil	M^3	27	226.72	6121.57
24	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	M^3	2.1	6267.21	13161.13
25	5.1.2	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20 mm nominal size	M^3	6.5	9078.02	59007.16
26	5.8	Reinforced cement concrete work in vertical and horizontal fins individually or forming box louvers, facias and eaves boards up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement, with 1:1½:3 (1 cement : 1½ coarse sand : 3 graded stone aggregate 20 mm nominal size	M^3	20	9749.16	194983.29
27	5.22A.6	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level Thermo-Mechanically Treated bars	Kg	2000	99.23	198457.02
28	5.22.6	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth	Kg	780	99.23	77398.24

29	5.9.1	Centering and shuttering including strutting, propping etc. and removal of form for : Foundations, footings, bases of columns, etc. for mass concrete.	M^2	22.00	286.25	6297.50
30	5.9.5	Centering and shuttering including strutting, propping etc. and removal of form for : Lintels, beams, plinth beams, girders, bressumers and cantilevers.	M^2	25.00	484.00	12100.00
31	5.9.6	Centering and shuttering including strutting, propping etc. and removal of form for : Columns, Pillars, Piers, Abutments, Posts and Struts.	M^2	45.00	660.60	29727.00
32	5.9.3	Centering and shuttering including strutting, propping etc. and removal of form for Suspended floors, roofs, landings, balconies and access platform	M^2	95	585.24	55598.20
33	10.25.2	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	Kg	500	131.28	65642.36
34	10.26.1	Providing and fixing hand rail of approved size by welding etc. to steel ladder railing, balcony railing, staircase railing and similar works, including applying priming coat of approved steel primer. 10.26.1 M.S. tube	Kg	100	152.56	15255.84
		DISTRIBUTION SYSTEM				
35	2.8.1	Excavating trenches of required width for pipes, cables, etc, including excavation for sockets, depth upto 1.5 m, including getting out the excavated materials, returning the soil as required in layers notexceeding 20 cm in depth, including consolidating each depositedlayers by ramming, watering etc., stacking serviceable material for measurements and disposal of unserviceable material as directed, within a lead of 50 m				
	2.13.1.1	Pipes, cables etc. not exceeding 80 mm dia				
	2.13.1	Ordinary rock	M	5100	264.97	1351365.54

	2.13.3	Hard rock (blasting prohibited)	M	1470	397.93	584962.99
	2.13.1.2	Pipes, cables etc. exceeding 80 mm dia but not exceeding 300 mm dia				
	2.13.1	Ordinary rock	M	6150	656.13	4035212.60
	2.13.3	Hard rock (blasting prohibited)	M	900	985.36	886827.49
36	OD	Conveying and fixing PVC pipes from the stacking place at site, with solvent cement etc., lowering into the trenches already made, placing in position, aligning the pipe line to the lines and levels, jointing the pipes and specials with solvent cement and testing the pipelines with water to the required test pressure, including hire charges for all tools, testing equipments, cost and conveyance of water etc complete. excluding cost of solvent cement 10Kg/cm^2				
36A		110MM PVC PIPE	M	3370	578.75	1950372.50
36B		90MM PVC PIPE	M	3680	383.36	1410775.88
36C		63MM PVC PIPE	M	5000	195.59	977932.67
36D		40MM PVC PIPE	M	1000	83.72	83724.97
36E		32MM PVC PIPE	M	470	50.14	23565.24
36F		25MM PVC PIPE	M	150	32.36	4854.33
36G		20MM PVC PIPE	M	1700	23.39	39756.97
36H		110MM SUCTION PIPE	M	10	591.58	5915.83
37	OD	Supplying and laying 15mm water tap with all fittings such as elbow tee bends suitable saddle pieces ect including cost of material and labour ect	Nos	400	400.00	160000.00
38	OD	Supplying and fixing 110mm air valve with all fitting including material and labour in complete work	Nos	5	2500.00	12500.00
39	OD	supplying and fixing GM sluice valve to control the flow of water.icluding cost of fitting and labour charges etc complete.				
39A		110MM	Nos	3	2500.00	7500.00
39B		90MM	Nos	5	2000.00	10000.00

39C		63MM	Nos	5	1800.00	9000.00
39D		40MM	Nos	5	1600.00	8000.00
39E		32MM	Nos	5	1500.00	7500.00
40	OD	Supply of centrifugal pump set suitable for pumping clear water and having a discharge of 3000lpm against a total head of 40 m and the delivery side to be connected to 90mm line ISI marked 7.5HP pump set. Along with one no n return valve and one sluice valve of suitable size and one pressure gauge including foot valve compatible for provided suction hose including the charges for the necessary alterations required on the pumping main.	Nos	2	100000.00	200000.00
41	OD	KSEB charge	LS			650000.00
		TOTAL				13512024.32
42		ADD ELECTRIFICATION CHARGE 5%				675601.22
		CONTIGENCIES				32374.46
		GRAND TOTAL				**14220000.00**
RUPEES ONE CRORE FOURTY TWO LAKHS TWENTY THOUSAND ONLY						

NAME OF WORK: DRINKING WATER PROJECT MOORTHIMON THANNITHOD GRAMA PANCHAYATH, PATHANAMTHITTA

-	-	**DETAILED ESTIMATE**						-	-
SI NO	**DSR 14 CODE**	**Description of Item**	**NO**	**L**	**B**	**H**	**QUANTITY**	**UNIT**	**AMOUNT (Rs)**
I		**IMPROVEMENT OF EXISTING WELL**							
1	2.32	Clearing grass and removal of the rubbish upto a distance of 50 m outside the periphery of the area cleared.							
			1	8	9		72	M^2	
		SAY	75	M^2 @ Rs.	478.8031	/ 100 M^2			359.10
2	15.3	Demolishing R.C.C. work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material within 50 metres lead as per direction of Engineer - in- charge.							
			1	2	2	0.1	0.4	M^3	
		SAY	0.4	M^3 @ Rs.	1897.581	M^3			759.03
3	15.7.4	Demolishing brick work manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge In cement mortar							
			1	7	2.1	0.2	2.94	M^3	
		SAY	3	M^3 @ Rs.	1098.799	M^3			3296.40
4	2.6.1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed. All kinds of soil							
		compound wall	1	34	0.6	0.75	15.3		
		long wall	2	3	0.8	0.75	3.6		
		short wall	2	2	0.8	0.75	2.4		
							21.3	M^3	
		SAY	22.00	M^3 @ Rs.	226.7248	/ M^3			4987.94
5	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 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size) cum 4301.15							
		flooring							
		room	1	3	2	0.075	0.45		
							0.45	M^3	
		SAY	0.50	M^3 @ Rs.	6267.206	/ M^3			3133.60
6A	7.1.1	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with : Cement mortar 1:6 (1 cement : 6 coarse sand)							
		compound wall	1	34	0.6	0.75	15.3		
		long wall	2	3	0.8	0.75	3.6		
		short wall	2	2	0.8	0.75	2.4		
							21.3	M^3	
		SAY	22.00	M^3 @ Rs.	5709.064	/ M^3			125599.40
6B	7.6.1	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with : Cement mortar 1:6 (1 cement : 6 coarse sand)							
		long wall	2	3	0.45	0.60	1.62		
		short wall	2	2	0.45	0.60	1.08		
							2.700	M^3	
		SAY	3.00	M^3 @ Rs.	5709.064	/ M^3			17127.19
7	2.25	Filling available excavated earth (excluding rock) in trenches,plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m. cum 112.40							
		flooring							
		room	1	3	2	0.6	3.60		
							3.6	M^3	
		SAY	3.60	M^3 @ Rs.	163.778	/ M^3			589.60
8	5.8	Reinforced cement concrete work in vertical and horizontal fins individually or forming box louvers, facias and eaves boards up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement, with 1:1½:3 (1 cement : 1½ coarse sand : 3 graded stone							

		aggregate 20 mm nominal size							
		slab gf	1	9.36		0.12	1.12	M^3	
		SAY	1.20	M^3 @ Rs.	9749.165	/ M^3			11699.00
9	5.9.3	Centering and shuttering including strutting, propping etc. and removal of form for Suspended floors, roofs, landings, balconies and access platform							
		slab	1	3.6	2.6		9.36		
							9.36	M^2	
		SAY	10.00	M^2 @ Rs.	585.2442	/ M^2			5852.44
10	5.22A .6	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level Thermo-Mechanically Treated bars							
							1.12	M^3	
		1.20	M^3	@	100	kg/M^3	120.00	kg	
		SAY	120.00	kg @ Rs.	99.22851	/ kg			11907.4212
11	OD	Solid block masonry using pre cast solid blocks (Factory made) of size 30x20x15cm or nearest available size for super structure above floor two level up to floor five level with thickness 15cm in: CM 1:6 (1 cement : 6 coarse sand) etc complete							
		compound wall	1	34	0.2	1.50	10.2		
		long wall	2	3	0.2	2.10	2.52		
		short wall	2	2	0.2	2.10	1.68		
		Parapet	1	10	0.2	0.15	0.30		
							14.70		
		Deduction GF							
		D1	1	1	0.2	2.1	0.42		
		V	2	0.6	0.2	0.6	0.14		
		OPENIG	1	1	0.2	1.5	0.30		
							0.86		
		NET QTY					13.84	M^3	
		SAY	14.00	M^3 @ Rs.	6136	/ M^3			85904.00
12	9.48.2	Providing and fixing M.S. grills of required pattern in frames of windows etc. with M.S. flats, square or round bars etc. including priming coat with approved steel primer all completeFixed to openings /wooden frames with rawl plugs screws etc.							

		V	2	0.6		0.6	0.72		
							0.72		
		0.80	M^2	@	15	kg/M^2	12	kg	
		SAY	12.00	KG @ Rs.	170.335	/ KG			2044.02
13	9.1	Providing wood work (sal wood) in frames of doors, windows ,clerestory windows and other frames ,wrought framed and fixed in position with hold fast lugs or with dash fastners of required dia& length (hold fast lugs or dash fastner shall be paid for separately)							
		D1	2	2.1	0.095	0.07	0.03		
			2	1.2	0.095	0.07	0.02		
		V	4	0.8	0.095	0.07	0.02		
			4	0.6	0.095	0.07	0.02		
							0.08	M^3	
		SAY	0.10	M^3 @ Rs.	110096.4	/ M^3			11009.64
14	9.5.1.1	35 mm thick shutters							
		D1	1	0.9		2	1.8		
							1.8	M^2	
		SAY	1.80	M^2 @ Rs.	3918.215	/ M^2			7052.79
15	9.53	Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embedding in cement concrete block 30x10x15cm 1:3:6 mix (1cement : 3 coarse sand: 6 graded stone aggregate 20mm nominal size).							
		D1	1	4			4		
		V	2	2			4		
							8	nos	
		SAY	8.00	nos @ Rs.	170.9907	/ E			1367.93
16	9.63.3	9.63 Providing and fixing ISI marked oxidised M.S. tower bolt black finish, (Barrel type) with necessary screws etc. complete 150x10 mm							
		D1	2	1			2		
							2	nos	
		SAY	2.00	nos @ Rs.	66.80804	/ E			133.62
17	9.88	Providing and fixing chromium plated brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.							
		D1	1	1			1	nos	

		SAY	1.00	nos @ Rs.	1151.546	/ E			1151.55
18	13.16	6 mm thick cement plaster of c m 1:3 one coat floated hard and trowelled smooth for under side of slabs including watering curing etc. complete.under side of floor DAR							
		slab	1	3.6	2.60		9.36		
							9.36	M^2	
		SAY	10.00	M^2 @ Rs.	196.2714	/ M^2			1962.71
19	13.4	Plastering with 1:4,12 mmthick one coat floated hard and troweled smooth for walls inside & out side watering curing etc.complete.							
		compound wall	2	34		1.50	102		
		long wall	4	3		2.10	25.2		
		short wall	4	2		2.10	16.8		
		Parapet	2	10		0.15	3		
							147		
		Deduction GF							
		D1	1	1		2.1	2.1		
		V	2	0.6		0.6	0.72		
		OPENIG	1	1		1.5	1.5		
							4.32	M^2	
		net qty					142.68	M^2	
		SAY	145.00	M^2 @ Rs.	251.0583	/ M^2			36403.46
20	13.48.1	Finishing with Deluxe Multi surface paint system for interiors and exteriors using Primer as per manufacturers specifications : Two or more coats applied on walls @ 1.25 ltr/10 sqm over and including one coat of special primer applied @ 0.75 ltr /10 sqm DAR 13.48.1							
							160.00	M^2	
		SAY	160.00	M^2 @ Rs.	145.71	/ M^2			23313.60
21	13.48.2	Painting wood work with Deluxe Multi surface paint of required shade. : two or more coats applied @ 0.90 litr/10m2 over an under coat of primer applied @ 0.75 litr/10 m2 approved brand and manufacture							

							10	M^2	
		SAY	12.00	M^2 @ Rs.	128.5162	/ M^2			1542.19
22	13.48.3	Painting Steel work with Deluxe Multi Surface Paint to give an even shade. Two or more coat applied @ 0.90 ltr/ 10 sqm over an under coat of primer applied @ 0.80 ltr/ 10 sqm of approved brand and manufacture							
							10	M^2	
		SAY	10.00	M^2 @ Rs.	131.139	/ M^2			1311.39
II		**OVER HEAD TANK**							
23	2.6.1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed. All kinds of soil							
		COLUMN	6	1.7	1.7	1.50	26.01		
							26.01	M^3	
		SAY	27.00	M^3 @ Rs.	226.7248	/ M^3			6121.57
24	4.1.8	Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering (1:4:8 cement concrete using 40 mm metal) watering curing etc. complete.							
		COLUMN	6	1.7	1.7	0.12	2.0808		
							2.0808	M^3	
		SAY	2.10	M^3 @ Rs.	6267.21	/ M^3			13161.13
25	5.1.2	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level : 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20 mm nominal size)							
		PILLAR FOOTINGS	6	1.5	1.5	0.25	3.375		
		PILLAR FOOTINGS	6	0.6	0.6	0.2	0.432		
		PILLAR FOOTINGS	6	0.4	0.4	1	0.96		
		Plinth Beam all length	4	2.6	0.4	0.4	1.664		
							6.431		

		SAY	6.50	M^3 @ Rs.	9078.02	/ M^3			59007.13
26		Reinforced cement concrete work in vertical and horizontal fins individually or forming box louvers, facials and eaves boards up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement with 1:1½:3 (1 cement : 1½ coarse sand : 3 graded stone aggregate 20mm nominal size).							
		Pillar	6	4.6	0.4	0.4	4.416		
		BRACE Beam	4	2.6	0.4	0.4	1.664		
		supporting Beam	4	2.6	0.4	0.4	1.664		
		base slab	1	4.7	4.7	0.2	4.418		
		side wall	2	3.1	2	0.2	2.48		
			2	3.5	2	0.2	2.8		
		cover slab	1	3.7	3.7	0.12	1.6428		
		platform	1	3.4	1	0.12	0.408		
							19.4928		
		SAY	20.00	M^3 @ Rs.	9749.20	/ M^3			194984.00
27	5.22A .6	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level Thermo-Mechanically Treated bars							
							20.00	M^3	
		20.00	M^3	@	100	kg/M^3	2000.00		
		SAY	2000.00	kg @ Rs.	99.22851	/ kg			198457.02
28	5.22.6	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level.							
							6.341	M^3	
		6.5	M^3	@	120	kg/M^3	780	kg	
		SAY	780.00	kg @ Rs.	99.22851	/ kg			77398.24
29	5.9.1	Centering and shuttering including strutting, propping etc. and removal of form for : Foundations, footings, bases of columns, etc. for mass concrete.							
		PILLAR FOOTINGS	24	1.5		0.25	9		
		PILLAR FOOTINGS	24	0.6		0.2	2.88		
		PILLAR FOOTINGS	24	0.4		1	9.6		
							21.48	M2	
		SAY	22.00	M2 @ Rs.	286.25	/ M2			6297.50
30	5.9.5	Centering and shuttering including strutting, propping etc. and removal of form for : Lintels, beams, plinth beams, girders, bressumers and							

		cantilevers.							
		Plinth Beam all length	8	2.6		0.4	8.32		
		BRACE Beam	8	2.6		0.4	8.32		
		supporting Beam	8	2.6		0.4	8.32		
							24.96	m2	
		SAY	25.00	M2 @ Rs.	484.00	/ M2			12100.00
31	5.9.6	Centering and shuttering including strutting, propping etc. and removal of form for : Columns, Pillars, Piers, Abutments, Posts and Struts.							
		Pillar	24	4.6		0.4	44.16		
							44.16	m2	
		SAY	45.00	M2 @ Rs.	660.60	/ M2			29727.00
32	5.9.3	Centering and shuttering including strutting, propping etc. and removal of form for : Suspended floors, roofs, landings, balconies and access platform.							
		base slab	1	4.7	4.7		22.09		
		side wall	4	3.1	2		24.8		
			4	3.5	2		28		
		cover slab	1	3.7	3.7		13.69		
		platform	1	3.4	1		3.4		
							91.98	m2	
		SAY	95.00	M2 @ Rs.	585.24	/ M2			55597.80
33	10.25.2	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works							
							500	kg	
		SAY	500.00	kg @ Rs.	131.28	kg			65642.36
34	10.26.1	Providing and fixing hand rail of approved size by welding etc. to steel ladder railing, balcony railing, staircase railing and similar works, including applying priming coat of approved steel primer. 10.26.1 M.S. tube							
							100	kg	
		SAY	100.00	kg @ Rs.	152.56	kg			15255.84
III		**DISTRIBUTION SYSTEM**							
35	2.8.1	Excavating trenches of required width for pipes, cables, etc, including excavation for sockets, depth upto 1.5 m, including getting out the excavated materials, returning the soil as required in layers notexceeding 20 cm in depth, including consolidating each depositedlayers by ramming, watering etc., stacking serviceable material for measurements and disposal of unserviceable material as							

		directed, within a lead of 50 m							
35A	2.13.1	Ordinary rock							
	2.13.1.1	Pipes, cables etc. not exceeding 80 mm dia							
		63MM PVC PIPE	1	4000			4000		
		40MM PVC PIPE	1	700			700		
		32MM PVC PIPE	1	300			300		
		25MM PVC PIPE	1	100			100		
		20MM PVC PIPE	1	1500			1500		
							5100	/ M	
		SAY	5100.00	M @ Rs.	264.97	/ M			1351365.54
	2.13.1.2	Pipes, cables etc. exceeding 80 mm dia but not exceeding 300 mm dia							
		110MM PVC PIPE	1	3000			3000		
		90MM PVC PIPE	1	3000			3150		
							6150		
		SAY	6150.00	M @ Rs.	656.13	/ M			4035212.60
35B	2.13.3	Hard rock (blasting prohibited)							
	2.13.3.1	Pipes, cables etc. not exceeding 80 mm dia							
		63MM PVC PIPE	1	1000			1000		
		40MM PVC PIPE	1	300			300		
		32MM PVC PIPE	1	170			170		
		25MM PVC PIPE	1	50			50		
		20MM PVC PIPE	1	200			200		
							1470	M	
		SAY	1470.00	M @ Rs.	397.93	/ M			584962.99
	2.13.2.2	Pipes, cables etc. exceeding 80 mm dia but not exceeding 300 mm dia							

		110MM PVC PIPE	1	370			370		
		90MM PVC PIPE	1	500			530		
							900	M	
		SAY	900.00	M @ Rs.	985.36	/ M			886827.49
36	OD	Conveying and fixing PVC pipes from the stacking place at site, with solvent cement etc., lowering into the trenches already made, placing in position, aligning the pipe line to the lines and levels, jointing the pipes and specials with solvent cement and testing the pipelines with water to the required test pressure, including hire charges for all tools, testing equipments, cost and conveyance of water etc complete. excluding cost of solvent cement 10kg/cm2 pvc pipes							
36A		110MM PVC PIPE	1	3370			3370	M	
							3370	M	
		SAY	3370.00	M @ Rs.	578.7455	/M			1950372.50
36B		90MM PVC PIPE	1	3680			3680	M	
							3680	M	
		SAY	3680.00	M @ Rs.	383.363	/M			1410775.88
36C		63MM PVC PIPE	1	5000			5000	M	
							5000	M	
		SAY	5000.00	M @ Rs.	195.5865	/M			977932.67
36D		40MM PVC PIPE	1	1000			1000	M	
							1000	M	
		SAY	1000.00	M @ Rs.	83.72497	/M			83724.97
36E		32MM PVC PIPE	1	470			470	M	
							470	M	
		SAY	470.00	M @ Rs.	50.13881	/M			23565.24
36F		25MM PVC PIPE	1	150			150	M	
							150	M	
		SAY	150.00	M @ Rs.	32.36219	/M			4854.33
36 G		20MM PVC PIPE	1	1700			1700	M	
		SAY	1700.00	M @ Rs.	23.38646	/M			39756.97
36		110MM	1	10			10	M	

H		suction pipe							
							10	M	
		SAY	10.00	M @ Rs.	591.5826	/M			5915.83
37	OD	Supplying and laying 15mm water tap with all fittings such as elbow tee bends suitable saddle pieces ect including cost of material and labour ect							
			400			1.0	400	nos	
		SAY	400.00	no @ Rs.	400.00	/ E			160000.00
38	OD	Supplying and fixing 110mm air valve with all fitting including material and labour in complete work							
			5			1.0	5	nos	
		SAY	5.00	no @ Rs.	2500.00	/ E			12500.00
39	OD	supplying and fixing GM sluice valve to control the flow of water. including cost of fitting and labour charges etc complete							
A		110MM PVC PIPE	1	3			3	nos	
		SAY	3.00	no @ Rs.	2500.00	/ E			7500.00
B		90MM PVC PIPE	1	5			5	nos	
		SAY	5.00	no @ Rs.	2000.00	/ E			10000.00
C		63MM PVC PIPE	1	5			5	nos	
		SAY	5.00	no @ Rs.	1800.00	/ E			9000.00
D		40MM PVC PIPE	1	5			5	nos	
		SAY	5.00	no @ Rs.	1600.00	/ E			8000.00
E		32MM PVC PIPE	1	5			5	nos	
		SAY	5.00	no @ Rs.	1500.00	/ E			7500.00
40	OD	Supply of centrifugal pump sets suitable for pumping clear water anfd having a discharge of 3000 lpm agaist a total head of 40 m and the delivery side to be connected to 90mm line ISI marked 7.5hp pump set							
							2	nos	
		SAY	2.00	no @ Rs.	100000.00	/ E			200000.00
41		KSEB CHARGE					LS		650000.00
		TOTAL							13512024.60
42		Add ELECTRIFICATION CHARGES 5%							675601.23
43		CONTIGENCIES							32374.17
		GRAND TOTAL							**14220000.00**
RUPEES ONE CRORE FOURTY TWO LAKHS TWENTY THOUSAND ONLY									

ENVIRONMENTAL ISSUES (IF ANY), PROTECTIVE MEASURES AND QUALITY ASSURANCE

The implementation of the project does not create any environmental issues. Protective measures are suggested, designed and inserted in the plan to arrest the possibilities water system leaks, loss of pressure, water discharges and non revenue water (NWR). Water system leaks can reduce the pressure of the water system compromising its integrity and ability to protect water quality (by allowing contaminated water to leak into the system) and increasing the demands on the source water supply, the quantity of chemicals, and the amount of power used for pumping and treatment. Leaks in the distribution system can result from improper installation or maintenance, inadequate corrosion protection, settlement, stress from traffic and vibrations, overloading, and other factors. Water lines may be periodically flushed to remove accumulated sediments or other impurities that have accumulated in the pipe. Flushing is performed by isolating sections of the distribution system and opening flushing valves or, more commonly, fire hydrants to cause a large volume of flow to pass through the isolated pipeline and suspend the settled sediment. The major environmental aspect of water pipe flushing is the discharge of flushed water, which may be high in suspended solids, residual chlorine, and other contaminants that can harm surface water bodies. Uncontrolled discharge of domestic wastewater, including sewage and grey water, into aquatic systems can lead to, among other things, microbial and chemical contamination of the receiving water, oxygen depletion, increased turbidity, and eutrophication. Wastewater discharge onto streets or open ground can contribute to spread of disease, odors, contamination of wells, deterioration of streets, etc. The protective measures include:

- Provide systems for effective collection and management of sewage and grey water
- Consider the installation of separate sewer systems for domestic wastewater and storm water runoff in the overall planning and design of new sewerage systems;

- Use appropriate locally available materials for sewer construction.
- Ensure sufficient hydraulic capacity to accommodate peak flows and adequate slope in gravity mains to prevent buildup of solids and hydrogen sulfide generation;
- Development of an inventory of system components, with information including age, construction materials, drainage areas served, elevations, etc

QUALITY ASSURANCE

Quality assurance for the implementation of the scheme will be ensured. This would deal with ensuring a quality management system, adhere to quality control requirements, suited equipments & test procedures. Attempts will be made to follow checklist protocol which ensures quality control at all the stages. The concept and operationalization of stage passing will ensure clear accountability too. The water quality test result from the proposed water source is also attached.

Chapter 3

FINANCIAL DETAILS

Details on Cost Estimate: Attached

Component wise details for each activity

Materials: The materials for the project will be supplied by the contractor as per the specification in the tender notification. The cost of the materials is included in the estimate. The cost of materials would comply with the present schedule of rates. If this schedule is not updated, then the prevailing rates above this schedule shall be used and as a proof of this (with rate analysis), copies of some sanction orders of approval of such rates for other neighboring works shall be enclosed. Prevailing rates of materials for items like pipes and pumps etc shall be used in preparing these cost estimates.

Labor: The labour charge is included in the estimate. Since it is proposed to be a work by a recognized contractor, the labor will be employed by the contractor as per the specification in the tender notification. Special provisions may be made to assure the quality of workmanship. The cost of labour would comply with the present schedule of rates.

Transport: The transporting charge is included in the estimate. While transporting the materials, all necessary care will be taken to avoid casualty.

Environmental compliance: All environmental laws, regulations, standards and other requirements (site permit, fire clearance certificate and pollution certificate) will be obtained. Environmental concerns and compliance activities are increasingly being integrated and aligned to some extent in order to avoid conflicts, wasteful overlaps and gaps. All precautions would be taken for safeguarding the environment during the course of construction.

Cost shifting of utilities: Separate costing is worked to electric supply including electric post shifting and initialization of separate electric transformer. Same is the case with water supply

Consultancy: No major consultancy is envisaged.

Stationary compliance cost: Detailed costing included

Procurement: Procurement charge is envisaged

Soil testing: Provision is included

Contingency: Contingency charges are included

Financing Source: Fund from Kerala Local Government Service Delivery Project (KLGSDP)

Chapter 4

INSTITUTIONAL FRAMEWORK

ROLE OF DIFFERENT OFFICIALS:

Panchayat Committee: The project has to be approved by the Panchayat Committee

LSGD Wing of Panchayat & Users Association: Once the Panchayat approves the project it will be vetted by the Engineer from the LSGD Engineering Wing of Panchayat. The supervision of the project will be undertaken by the LSGD Engineering Wing of Panchayat &the Users Association.

Panchayat Committee: Panchayat Committee officially submits the project to the District Planning Committee (DPC) for approval.

Procurement / Tender: After the approval of the DPC, the Panchayat has to tender the work as per the procurement /tender rule

Implementation: The project will be implemented by the LSGD Wing of Panchayat and it will be handed over to the Users' Association.

Monitoring: The Project will be monitored by the Panchayat Committee.

Beyond Panchayat: No activity is visualized beyond the Panchayat.

Chapter 5

PROJECT MANAGEMENT

PRECONSTRUCTION PHASE

In the planning phase the selection of the technology option shall be done in a joint sitting by the Panchayat and Engineer from the LSGD Wing of Panchayat. The overall planning, coordination, and control of the project from inception to completion aimed at satisfying the requirements of the Panchayat are listed in the project management phase in order to produce a functionally and financially viable project. The design and structure of the water supply system would be entirely planned and designed before being built which helped in the formation of a solid plan and associated specifications that formed the construction documents. The Panchayat would then tender the bids (or tenders) and award the project to a successful bidder/contractor, who would then undertake proposed work right from the scratch. The bidder would supply materials, labour and transportation. Pre-construction services grew out of construction cost estimating to encompass the other activities in planning a project.

The intent is to work with the Panchayat to help deliver a model project that meets the objectives of the proposed project. In addition to estimating, the pre construction team participates in design decisions, evaluations, value engineering, value analysis, scheduling, constructability reviews, and more. Design costs and permitting are included. Many items under pre-construction services are included in the project construction services. This is also accomplished in the project cost. The constructing firm then delivers the project as per the proposed tender agreement. The Panchayat and the constructing firm share any cost savings realized during construction. Before implementation a wide range of issues needs to be considered. The availability of finance for construction is important. As in case of the proposed project, it is assured from the KLGSDP. Other activities are (i) establishment of a monitoring and performance evaluation system (ii) role of the public participation (iii) technical assistance

requirements for construction, supervision and for the management and operations staff.· Preparation of tender/bid documents; and· choice of an appropriate type of construction contract is another landmark .

PHASING OF DEVELOPMENT

Setting targets for the entire work of the proposed project is the important step under the pre construction phase. The programme has incorporated practical time-frames for the construction contract lengths and the periods required for the pre-contract stages. Sufficient time is allowed for examination of detailed design, the preparation of tender documents, tendering and tender analysis, recommendations and acceptance; and the contractor's mobilization. Other matters requiring careful consideration are also included into the separate construction contracts and scheduling of equipment procurement. In order to accelerate implementation some activities are designed in such a way that it can be initiated before the real start of a project. The pre-qualification, selection of design, supervision of consultants, the preparation of tender documents are included in the initial actions .

CONTRACT ADMINISTRATION SYSTEM

A responsible person, who belongs to the LSGD Wing of Panchayat, would normally be appointed to oversee the works. Apart from day-to-day supervision of the project, it is his / her responsibilities to cover the preparation of the tender (or "bid") documents, including working details, tender drawings, specifications and bills of quantities, an overall cost plan and procurement schedules for obtaining equipment.

FINANCIAL MANAGEMENT

The timely administration and financial management of payments to contractors is the responsibility of the Panchayat, who will undertake valuations of the work completed and then prepare a certificate showing the amount for interim payment. An amount of around 5-10 percent is normally retained from the valuations to cover the making good of defects. On completion of the works the LSGD Engineering Wing of Panchayat is

entitled to prepare a final account, which will form the basis of the final payment, including the release of the retention amount. With a contract based on measured quantities (rather than a fixed price) the final account will adjust the tender sum amount to correspond to the actual works completed.

LOCAL CONTRACTING CAPACITY

To achieve the desired phasing the construction works will need to be broken up or packaged so that they can be handled by the local construction industry. The abilities of local contractors will, therefore, need to be reviewed. We have a system of licensing of contractors. In order to be registered they have to satisfy a range of minimum requirements. These criteria are related to the technical personnel they employ, the construction equipment they possess, their experience in terms of projects completed and their financial assets. Normally, contractors are graded into classes and what needs to be considered is the suitability of particular grades for different sections of the work as per the proposed project.

SELECTION AND PRE-QUALIFICATION OF CONTRACTORS

Generally, bidding should be on a selective tendering basis, taking into account the need for the contractors to have experience in high quality constructions. The proposed project requires experience in high-quality construction and therefore a general civil engineering contractor, with relevant good will, experience and professional quality would be appropriate.

CONTRACT CONDITIONS

Conditions must be clear and it should be easily administered contractual arrangements**.** Local conditions of contract are likely to exist and these may be appropriate for proposed types of work. The contract should be on a measure and pay basis, tendered on the basis of bills of quantity, for which the local conditions are ideally suited.

IMPLEMENTATION PHASE

The implementation of the planned water and sanitation activities shall be carried out in this phase. The Implementation Phase Completion Reports (IPCRs) shall be prepared. The implementation phase would involve:-

a. Procurement of the works
b. Execution of the works
c. Commissioning of the schemes

Chapter 6

FINANCIAL VIABILITY AND SUSTAINABILITY

ECONOMIC COST BENEFIT ANALYSIS (CBA):

The analysis undertaken is to comprehend whether the implementation of the scheme is worthwhile in terms of economic rationality. The financial sustainability and viability analysis of the project assesses the ability of the scheme to meet future costs including capital expenditure, O&M, debt services, depreciation, and re-investable margins if appropriate on a present value basis. In the exercise many components of the benefits and costs are intuitively obvious and therefore the basic principles are applied for the exercise. When the impact of the project is studied and computed, 'the particular area under construction' has contributed additional weightage. It is a positive amount for the particular project area, the Thannithodu Panchayat when the backwardness of the area could be interpreted.

We have constructed two hypothetical illustrations by applying 'with and without' comparison and 'before and after' comparison. (i) What the situation would be with the project and what the situation would be without the Project. (ii) What the situation would be before the project and what the situation would be after the project. All the comparisons are positive and justified economic rationality of the project. The measurement of value of human wellbeing expected to be supported by the proposed project is also favorable though there is considerable reservations to the idea of placing money value on human wellbeing. When all this has been considered, the decision making for this project is one for which the discounted value of the benefit exceeds the discounted value of cost. The net benefits are positive, this is equivalent to the benefit cost being greater than one and the internal rate of return being greater the cost of capital.

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SOCIAL COST BENEFIT ANALYSIS

All the societal effects, like, pollution, environment, safety, travel times, spatial quality, health, legal aspects, etc had been taken into consideration. We have tried to attach a price to as many effects as possible in order to uniformly weigh the above-mentioned heterogeneous effects. As a result, these prices reflect the value a society attaches to the caused effects. It has enabled us to form an opinion about the net social welfare effects of the project and set against the 'null alternative hypotheses. We have identified direct, indirect and external effects of social cost benefit. Direct effects are the costs and benefits that can be directly linked to the users of the project (the local community). All relevant costs and benefits of the project is identified and monetized as far as possible. The general principle is that the benefits of a project do not always get to the groups bearing the costs. A social cost benefit analysis gives insight in who bears the costs and who derives the benefits. However, the above general principal is not the case with the implementation of the scheme in Thannithodu Gram Panchayat. Here as per our observation, who bears the costs of the project are those who derive the benefits. Our method of monetizing effects could also influence the outcome of the social cost benefit analysis and the predictions contained major elements of uncertainty. Therefore, we are fully conscious that the result of the social cost benefit analysis was not absolute. Nevertheless, it has acted a good instrument to investigate the strong and weak points of the different aspects of the project.

The following Social benefits and costs were identified

Social Benefits

1. The major effect of the scheme development is to ensure safe and quality water supply to the Panchayat.

2. There are five wards (3, 4, 5, 6 and 7) which will be benefited by the *Moorthimon* water supply projects where the existing water supply options have not covered these wards. This would be considered through this scheme.

Social Costs

No major social cost is identified.

Time saving:

As time saving mechanism, a time scheduled(with set goals and deadlines on realistic terms) ,is included in the work plan and accord it strictly as possible **.**Application of protocol checklist for observations on how products and services are used and is recommended as ways to save time .The project steering committee will be constituted to avoid gaps in project planning, deficient contract management, and ineffective monitoring, which is mainly taking the responsibility of time saving in the project.

Cost saving:

All intense, precise, and detailed cost saving measures will be applied. Mainly, it will be achieved by competitive bidding process. Pre ender documents will be prepared in such a way to select and manage the best providers for the project in terms of service, quality and cost. It looks at how processes and procedures can be made more efficient, increasing productivity. Apply protocol checklist for simple observations on how products and services are used and recommends ways to save money. Correction of billing errors will be made by double checking. Elimination of overcharges and/or unnecessary services is another way to reduce cost. Rate reductions from current providers will be made friendly negotiations. The project steering committee will be constituted to avoid gaps in project planning, deficient contract management, and ineffective monitoring, which is mainly taking the responsibility of cost saving in the project.

Accountability

Accountability is the key element in project management. It outlines the different ways in which project activities are accountable and the mechanisms they use to account to the local communities. Since the process and end result aim to results-based management the proposed project activity should begin by introducing key features of governance and management structures in relation to the principle of accountability. The Panchayat also outlines principles for enhancing ‘downward’ or social accountability to project and

programme beneficiaries. The organizational culture is designed in such ways which lead to accountability in project management and accountability in their dealings with all stakeholders. An accountability manual would be designed to give instructions on how to keep clear, accurate financial records in accordance with international best practice. It also suggested to operational double-entry book keeping and provides guidance on generating key financial statements including income & expenditure accounts and balance sheets for social auditing.

SUSTAINABILITY

Sustainability of water supply schemes is simply the maintenance of an acceptable level of services throughout the design life of the water supply. It has been observed that indeed some water projects become conspicuously unsuccessful even without any technical failures, whilst others have achieved their targets without many hitches. It is posited that identifying the underscoring factors resulting in the failure of water projects and/or schemes would be essential not only for sustainable management of existing projects, but more so, in establishing new development projects system.

A water supply system is sustainable, if it can provide safe water can recover the cost of operation and maintenance locally for instance through water tariff. When local communities participate directly in the planning their own water supply system, these systems are more likely to be sustainable, in all schemes, local people participate in different phase of the project. The Water Users' Association will be formed. All the sustainability including maintenance of O&M will be the responsibility of the Water Users' Association. The Water Users' Association will be registered under Travancore Cochin Literary Scientific Charitable Societies Registration Act, Govt. of Kerala and it will be a democratically elected organization.

The bylaw and registration of the organization will be discussed and finalized by members. There will be 15 executive committee members for the organization. Panchayat president and all the Chairpersons of the standing committees and secretary will be the

Board of Directors in addition to the executive committee members. Water charge will be levied among the members to address the cost towards the electricity charges maintenance and salary of the pump operator (temporary appointed person on contract basis). The water supply scheme will not create any financial liability and financial commitment to the Panchayat.

Negative effects

No negative efforts are listed.

Chapter 7
MONITORING AND EVALUATION

Maintenance, monitoring and evaluation should be considered a part of the overall asset management system. Asset management may be defined as minimizing the life cycle cost of managing deteriorating facilities, including construction costs, while maintaining the level of service provided to users with limited financial and human resources, maintaining the existing assets in good condition and clearly explaining these activities to the public. On completion of the construction work the Panchayat committee will take over responsibility for looking after the physical infrastructure. The responsibility of monitoring and evaluation would be attached to the users association. The Gram Panchayat is in effect, the dejuro manager of infrastructure system. However, users association really (defacto) manage the business .To do this, the Panchayat will have to consider how the periodic monitoring and maintenance of the water supply scheme will be undertaken. At the end of an implementation period the scheme should be fully operational. However, the impact of the project on its beneficiaries is likely to be difficult to measure, particularly in the short term of a project life. Decentralization puts planning, implementation, operation and maintenance in the hands of beneficiaries abd users association . This creates ownership and commitment to action. It has been the goal of successive rural water reform programmes in India since 1999. The local communities who form a major stakeholder are also responsible for monitoring. Recurrent maintenance is required at intervals during the year depending on the topographic and climatic characteristics of the area as well as the volume of running water. The aim is to maintain the structural integrity of the water supply system. The O & M phase would involve operation and the maintenance of the schemes commissioned .Users charges would be fixed for the housed hold, collected and used for the maintenance of the schemes by the users association.

Annexure

DISTRICT FOOD TESTING LABORATORY, PATHANAMTHITTTA,
MARKET ROAD, OPPO: POLICE STATION , PATHANAMTHITTA,

WATER ANALYST'S SECTION

REPORT ON ANALYSIS OF WATER
(Chemical)

To,
The secretary,
Thannithodu Grama panchayath
Thannithodu (P O)
Pathanamthitta - Dist

WA.408/16-17

Source of Sample	Pond water(moorthymon Drinking water project)	Desirable limit
Date of Collection	29.07.2016	
Date of Receipt	30.07.2016	
PHYSICAL Appearance	Clear	
Colour, Taste, Odour	colourless	
PH	6.0	6.5 – 8.5
Electrical Conductivity	-----	
CHEMICAL Alkalinity (Parts per million)	16.0	200.0 PPM
Chlorides (Parts per million)	24.0	250.0 PPM
Nitrites (Parts per million)	Nil	0.02 PPM
Nitrates (Parts per million)	Nil	45.0 PPM
Sulphates (Parts per million)	Nil	200.0 PPM
Oxygen dissolved (Parts per million)	----	
Oxygen Absorbed (Parts per million)	-----	
Ammonia free & Saline (Parts per million)	Nil	0.01 PPM
Ammonia-Albuminoid (Parts per million)	Nil	
Total solids (Parts per million)	86.0	500.0 PPM
Loss on ignition (Parts per million)	----	
Hardness-total (Parts per million)	20.0	300.0 PPM
Hardness Temporary (Parts per million)	----	
Hardness Permanent (Parts per million)	----	
Iron (Parts per million)	nil	0.3 PPM
Other metals if any..		--
Bacteriological analysis (MPN)	1800+	Less than 2/100ml

Remarks : ബാക്ടീരിയോളജി & കെമിക്കൽ – തൃപ്തികരമല്ല. വെള്ളത്തിന്റെ പി.എച്ച്. കുറവാണ്. 4000 ലിറ്റർ വെള്ളത്തിന് 10 ഗ്രാം ബ്ലീച്ചിംഗ് പൗഡറും (രണ്ടാഴ്ച്ചയിലൊരിക്കൽ) 250 ഗ്രാം കുമ്മായവും എന്ന തോതിൽ കുളത്തിൽ കലർത്തുക

Pathanamthitta
05-08-2016

DISTRICT FOOD TESTING LABORATORY PATHANAMTHITTA

Research Officer
District Food Testing Laboratory
Pathanamthitta.

KSEB
കേരളത്തിന്റെ ഉൗർജ്ജം
KERALA STATE ELECTRICITY BOARD LTD
(Incorporated under the Indian Companies Act 1956)
Registered office: Vydyuthi Bhavanam, Pattom, Thiruvananthapuram 695004
Office of the Assistant Engineer, Electrical Section, Konni
Phone:0468 2242248 : e-mail:aeeskni@gmail.com

No. DB/Thannithodu GP/ 2016-17/20.08.2016

To,

The Secretary

Thannithodu Grama Panchayathu

Sir,

Sub: Demand notice for providing supply to Pump house- forwarding of-

Iam forwarding here with the demand notice for Rs.6,50,000 towards the estimate cost for constructing LT 3phase line for providing supply to the proposed pump house for further necessary action

Yours faithfully

ASSISTANT ENGINEER
ELECTRICAL SECTION
KONNI

KSEB
കേരളത്തിന്റെ ഊർജ്ജം

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Office of the Assistant Engineer, Electrical Section, Konni

Phone:0468 2242248 : e-mail:aeeskni@gmail.com

No. DB/Thannithodu GP/ 2016-17/20.08.2016

Demand Notice

Estimate cost for constructing 1.5 KM LT 3phase 4 wire line and laying 300 m UG cable for providing supply to pump house under Thannithodu Grama Panchayathu under PPS scheme -Rs.6,50,000

(Rs.Six lakh Fifty thousand only)

ASSISTANT ENGINEER
ELECTRICAL SECTION
KONNI

Proforma C

E&S Clearance and Compliance Format for GPs

Village: Thannilhōdu GP: Thannilhōdu Taluk: Konni District: Pathanamthitta.
Title of Proposed Activity: Moorthimon drinking water Project.
Proposed date of commencement of work:

1. Does any item in the Regulatory list apply to the proposed activity? ☐Yes ☑No
2. If yes, have necessary permissions been obtained? ☐Yes ☐No ☑NA
3. Does any item in Level 1 of Control List apply? ☐Yes ☑No
4. Does any item in Level 2 of Control List apply? ☑Yes ☐No

MITIGATION PLAN

Likely Environmental and Social Risks	Mitigation Measures to be adopted

Additional cost on account of mitigation measures added to overall project cost, if any:

Note: Use Environmental Mitigation Guidelines (Proforma E) in case of Level-1 activities or LESA report (Proforma F) in case of Level-2 activities to fill in the above section. 'Write N/A if answers to questions 2 and 3 are 'No'

Filed by: Implementing Officer (Signature)

Working Group Chairman (Signature)

Assistant Engineer
L.S.G.D Section
Thanalinadu

APPROVALS

☐ Cleared ☐ Not cleared. Chairperson, GP Committee (Signature & Comments)

☐ Cleared ☐ Not cleared Block Level Officer in the next higher tier (Signature & Comments)

☐ Cleared ☐ Not cleared Chairperson DPC (Signature & Comments)

COMPLIANCE VERIFICATION

Verified that all mitigation measures proposed have been ☐ implemented / ☐ not implemented as per the mitigation plan mentioned above.

Additional comments, if any:

Signatures: GP Implementing Officer Chairman, Monitoring Committee Block Level Officer

▪ Hazard of communicable diseases			
▪ Absence or inadequate use of occupational safety equipment			
▪ Fugitive Emissions			
IMPACTS ON BIO-DIVERSITY			
▪ Tree Felling			
▪ Threat to endangered or endemic species			
▪ Obstruction to path of migratory bird species			
▪ Obstruction to natural foraging pathway of any wild animal species			
▪ Obstruction or damage to natural breeding or roosting sites of any wild species			
▪ Threat from invasive alien species			
▪ Threat from pests or improper pest management			
IMPACTS ON COMMUNITY AND SOCIETY			
▪ Nuisance due to excessive noise to residential areas or schools/ hospitals			
▪ Accumulation of bio-medical waste			
▪ Inadequate maintenance of public toilet facilities			
▪ Possibility of resource conflict			
▪ Displacement of any indigenous community or vulnerable group			
ANY OTHER IMPACTS NOT INDICATED ABOVE:			

Analysis of Alternatives

Alternatives, if any – only if significantly more attractive	Environmental implications	Environmental mitigation measures required
	1 2	1 2
Overall Recommended Mitigation Plan	Overall cost, if any, of implementing recommended mitigation measures	

Prepared by Signature Name Designation Date	Assistant Engineer E.S.G.D Section Consultant

Notes on LESA:

The LESA shall be carried out by the GP Engineer or by an Environmental Expert or an agency using a structured format given in Proforma F. A person or agency with experience in teaching or practicing environmental science/engineering, geology, civil engineering or such other related subjects and having a perspective of environmental effects can be engaged for carrying out the LESA. Such people or agency may be available locally or in nearby areas and the local governments may enlist them on a normative search process and engage them. Tentatively, the consultation fee shall be 0.75% of the project cost with a lower limit of Rs. 1,500/-.

The desirable Terms of Reference for conducting an LESA could be the following.

- Identification of the project activities / components that could have critical environmental and social implications
- Identify the impacts of these activities on various environmental components such as land, surface and groundwater, air quality, noise level, flora and fauna and social development and their aspects
- Examine whether any in-built mitigation measures happen to be present in the project
- Identify possible risks and accidents, due to project activities and suggest ways and means to preventing the same
- Consider alternatives to the project, if any, especially in respect of project location and technology and compare the risks associated with the alternatives
- Suggest appropriate mitigation measures for reducing/offsetting the environmental effects of the project
- Determine the cost involved for implementing mitigation measures, if any

Proforma F
Format for execution of Limited Environmental and Social Assessment (LESA) for Level-2 activities

Name of the Project	In Malayalam:	മൂർത്തിമൺ കുടിവെള്ള പദ്ധതി.
	In English:	Moorthimon drinking water Project
Project Code		
Municipality / GP	Name: Thannithodu	District: Pathanamthitta.
Location of the Project	Place Name: Moorthimon	Ward No.: V
Outlay & Duration	Outlay-Rs.: 1422000/-	Duration: ..... Months

Evaluation of the Project

Objectives	Components	Resource requirements	Technology
To provide drinking water for beneficiaries	water tank, PVC pipes, taps etc.	Existing Pond and Electrification	Contract base
Project activities critical to environment	1 NA 2	1 2	
Mitigation measures inherent in the project, if any	1 NA 2	1 2	

Environmental Impact Scenario
(Tick (√) in boxes if applicable)

NA

	√	Mitigation proposed	Cost
IMPACTS ON AIR			
• Dust and particulate matter in the air			
• Smoke and fumes			
• Erosion of land due to air velocity			
IMPACTS ON WATER			
• Increased siltation in water bodies			
• Reduced availability of water			
• Erosion of soil/ land due to run off			
• Depletion of groundwater			
• Depletion of water in surface water bodies			
• Reduction on groundwater recharge capacity			
• Discharge solid and liquid waste or other pollutants into water bodies			
IMPACTS ON LAND			
• Disfiguration of landscape due to land modification or soil erosion			
• Destruction of services facilities			
• Break or interference to natural drainage			
• Interference with existing drainage pathways leading to water logging			
• Dumping of waste or littering in open areas			
• Solid or liquid waste discharge			
• Loss of open space			
• Loss of top soil and soil quality deterioration			
IMPACTS ON HEALTH AND SAFETY			
• Accumulation of domestic waste			
• Accumulation of bio-medical waste			
• Inadequate maintenance of public toilet facilities			
• Risk of accidents and hazards			
• Hazard of vector borne diseases			