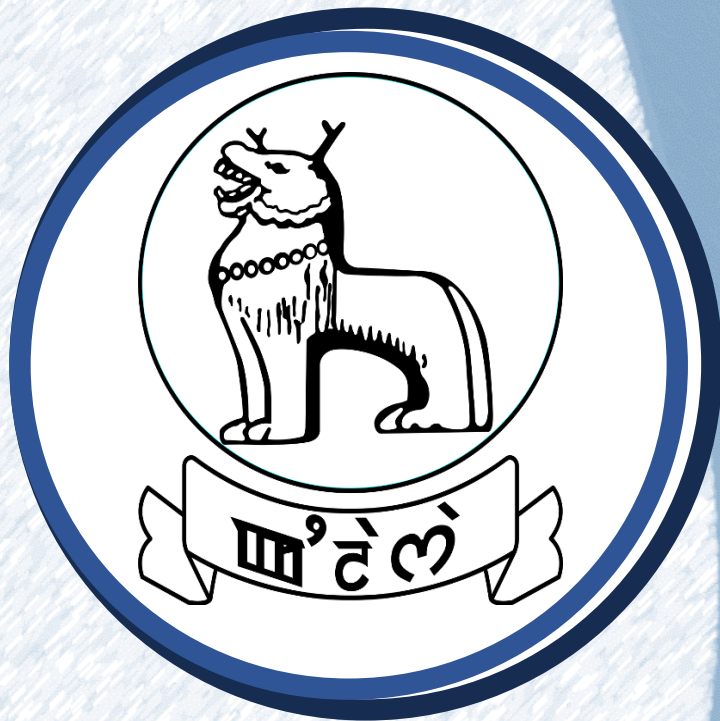


**REJUVENATION OF  
LEIKAI PUKHRI ACHOUBA AT WARD NO-5 IN  
BISHNUPUR MUNICIPAL COUNCIL  
(UNDER AMRUT 2.0)**

**DETAILED PROJECT  
REPORT  
APRIL, 2024**



**GOVERNMENT OF MANIPUR  
TOWN PLANNING DEPARTMENT**

Technical Associate

**NCPE Infrastructure India Private Ltd.**

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## INTRODUCTION

### 1.0 Project Background

Tanks and water bodies form important surface water storage structures. Most of the existing ponds and tanks in Urban Local Bodies have been silted over the years, resulting in capacity reduction and inability to recharge the groundwater aquifer. Further, in case of many water bodies, the bunds need strengthening and the regulatory structures like surplus weir and sluices need to be operationalized.

The Government of India has launched the 'Atal Mission for Rejuvenation and Urban Transformation 2.0 (AMRUT 2.0)' on 1st October, 2021. The Mission has a reform agenda focused towards financial sustainability and water security of ULBs. Rejuvenation of water bodies is one of the three reforms related to water, the other two being reduction of non-revenue water and reuse of treated waste water.

All over the world, the first victims of water pollution from sewage are the urban water bodies like ponds, lakes and reservoirs so much so that even one-time drinking water source reservoirs are now facing the pollution crisis. In the last half of 20th Century, the lakes underwent unprecedented environmental degradation on account of population explosion, large scale industrialization, chemical intensive agriculture, and water intensive lifestyles. The factors that lead to degradation of lakes include urbanization, pollution of water due to sewage, nutrient rich agricultural run-off and industrial toxic liquid waste and reclamation leading to siltation and loss of morphometry.

Urbanization and /or industrialization of the lake catchments in particular has had its extremely adverse impact as they have become dumping sites for untreated domestic sewage, industrial effluents and municipal solid waste. The case of small water bodies is still pathetic; many of these are already reclaimed and the remaining are being systematically destroyed by dumping waste, garbage and silt. The total water spread and depth of all the major



reservoirs is progressively reducing due to siltation from natural and man-made factors.

In this scenario, AMRUT 2.0 envisages to contribute towards the rejuvenation of the urban water bodies by including it within the reform's agenda focussed on financial sustainability and water security of ULBs. The challenge process of Pey Jal Survekshan launched as a component of AMRUT 2.0 includes conservation of water bodies in the city as one of the service level benchmarks.

While the CWBPs will include details of water sources including water bodies, the CWAP will comprise the list of projects proposed by the ULB in the priority sectors of water supply; sewerage/ septage management; rejuvenation of water bodies including green spaces & parks.

The Government of Manipur has appointed M/s. NCPE Infrastructure India Private Limited as the consultant for the 'Preparation of DPRS for the various developmental works like water supply, development and beautification of water bodies in the ULBs under AMRUT 2.0'.

The Bishnupur Municipality of Bishnupur district in Manipur has various water bodies within its jurisdiction. Out of these water bodies, the Municipality has identified Leikai Pukhri Achouba for rejuvenation project under AMRUT 2.0.



Figure 1 Leikai Pukhri Achouba in Bishnupur Municipality

The geographical location of Leikai Pukhri Achouba is 24°37'15.83"N Latitude and 93°45'29.06"E Longitude. The water body is spread over an area of 0.001 sq.km. The Figure 1 shows the photograph of the pond taken during the site survey.

## 1.1 Project Relevance

Lakes, ponds and step-wells are examples of urban water sources that have traditionally been used to supply water for drinking, washing, farming, fishing, and religious / cultural purposes. Due to encroachment, waste dumps, and the discharge of untreated wastewater, many cities' surface water bodies and traditional water collecting systems have either dried up or perished. If these water bodies are revived, besides increasing the aesthetic value of the area, they can store water and recharge ground water.

AMRUT 2.0, lays emphasis on rejuvenation of urban water bodies in order to ensure water security for the city. Rejuvenation, in general, consist of the following actions:

- i. Water bodies need to be treated using bio-remediation approaches, de-silting, aeration, removing floating and other invasive aquatic plant species, or any other method appropriate to the local environment.
- ii. To prevent invasion, the shorelines of water bodies should be appropriately walled. The water body's inlet and outlet need to be reinforced.
- iii. Only treated effluent may be discharged into the water body, and untreated wastewater entering the water body should be stopped.
- iv. It is possible to treat the catchment region by afforestation, storm water drainage management, silt traps, etc.
- v. Waterfront development along the periphery of the water body may be undertaken, keeping in mind the water body's eco-system, current environmental legislation, and conservation of the location's social and cultural holiness.
- vi. Public space creation may be undertaken to promote public awareness and vigilance to guard against encroachment or garbage-throwing.

- vii. ULBs should regularly check the water quality in the chosen body of water and take the necessary steps to improve it as needed.

## **1.2 Admissible Elements as per AMRUT 2.0**

As per section 4.1 of the AMRUT 2.0 Operational Guidelines, the admissible elements of projects aimed at rejuvenation of water bodies to augment water and enhance amenity value and development of green spaces are as follows:

- Rejuvenation of wetlands, water bodies by desilting, strengthening the embankments, and stone packing
- Diverting the polluting drains to treatment plants
- Harvesting the rain water through storm water drains into water body (which is not receiving sewage/ effluent)
- Strengthening/ rejuvenation of the aquifers/ community wells
- Creation and strengthening of storm water drains around water body
- Provision of STP to treat inflow into water body
- Development of the community green spaces linked to a clean water body

## **1.3 Selection of water bodies as per AMRUT 2.0**

As per section 8.3.3 of the operational guidelines of AMRUT 2.0, ULBs which take up projects for rejuvenation of water bodies will be incentivised based on the number of water bodies taken up for rejuvenation as per the city population, DPR preparation, award of contract and execution of work. Further, the ULBs will be evaluated based on improvement of quality of water in water body, diversion of drain / sewer from water body and development of quality public spaces around the water body. The ULB is accorded the option to choose the water body for rejuvenation.

## **1.4 Scope of Work**

The scope of work conforms to the admissible project components presented in the AMRUT 2.0 operational guidelines. The admissible components are divided into Rejuvenation measures and Preventive Measures. A flow chart is

presented in Figure 1 showing the admissible components under different heads.

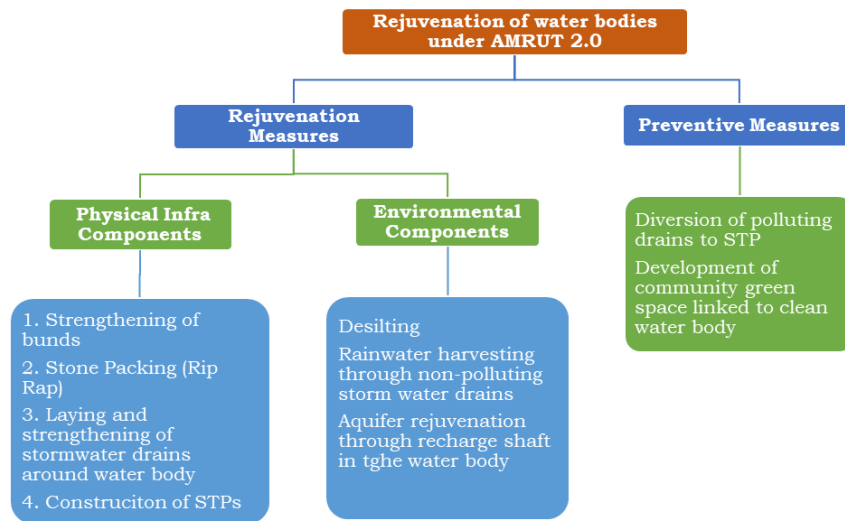


Figure 2 Flow chart showing the admissible components of rejuvenation of water bodies as per AMRUT 2.0 operational guidelines

## 1.5 Methodology

Water body and tanks restoration and rejuvenation initiatives must be thorough and methodical in order to be sustainable. Therefore, a strong feedback approach has been recommended and used to ensure that actions for the restoration and renewal of the pond are sustainable. According to the model's nature, it permits the incorporation of site-specific data into the model and the design and implementation of personalised interventions for the specific research area in accordance with the particular restrictions and liberties that can be taken into consideration.

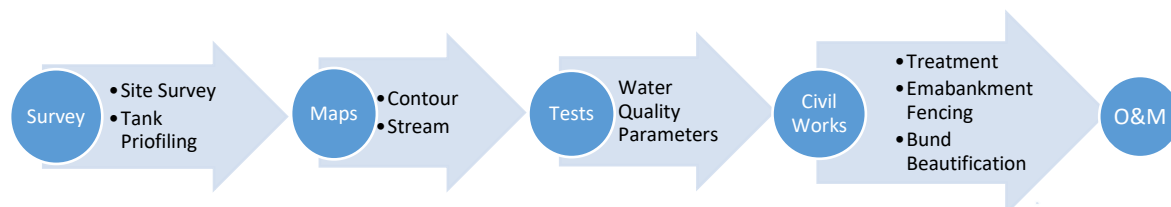


Figure 3 Model used for water body restoration and rejuvenation model

This model propels innovative design solutions on ground, as this model allows for the customised solutions to be designed. Moreover, the



sustainability of the interventions therefore remains ensured; all factors and constraints of the particular challenges faced for the Water body restoration and rejuvenation of a particular site will already be accounted for from the initial steps of design and planning stages.

## PROJECT AREA

### 2.0 Manipur State

Manipur in northeast India is a small beautiful state with Imphal as its capital. The word Manipur literally means “a jewelled land” and the state was described as the “Jewel of India” by the late Prime Minister Pandit Jawaharlal Nehru. Manipur was a princely state under the British rule in 1891. A democratic form of government with Maharaja as the executive head was established in 1947, under the Manipur Constitution act. This ruling family gave them a long peaceful era in which they developed their arts and crafts undisturbed. The territory became a full-fledged state with the integration on 21st January 1972. The state, was a single district territory with 10 subdivisions and was recognized in 1969. The state now consists of 16 districts, Bishnupur, Churachandpur, Jiribam, Imphal East, Kamjong, Senapati, Imphal West, Tengnoupal, Ukhrul, Thoubal, Noney, Pherzawl, Chandel, Kakching, Tamenglong and Kangpokpi.

Manipur has a geographical area of 22,327 sq.km. and is situated at an altitude of 790 meter. To the north of Manipur lies Nagaland, to the south lies Mizoram, to the west is Assam and to the east it is bordered by the international boundary of Myanmar. The state is surrounded by mountain ranges all around. The Barak River, the largest river of Manipur, originates in the Manipur hills. The state is blessed with lush green beauty and is surrounded by blue hills with an oval shaped valley. Manipur enjoys moderate climatic condition

### 2.1 Bishnupur Municipality

Bishnupur is a Census Town city in district of Bishnupur, Manipur. The population as per census 2011 is 12167. The present population (2023) is estimated to be 15190.

The projected population for the base year, prospective year and the ultimate year is presented in Table 1.

Table 1 Population projections for Bishnupur Municipality

S. No.	Year	Projected population
1	Base year 2023	15190
2	AMRUT year 2025	15768
3	Prospective year 2038	20398
4	Ultimate year 2053	27452

The Bishnupur Municipality has total of 61.29 km of road network within its municipal limits which is spread in the area of 4.12 sq.km. Bishnupur Municipality consist 12 wards within its jurisdiction. The elevation of the Bishnupur Municipality varies from 730 m to 845 m.

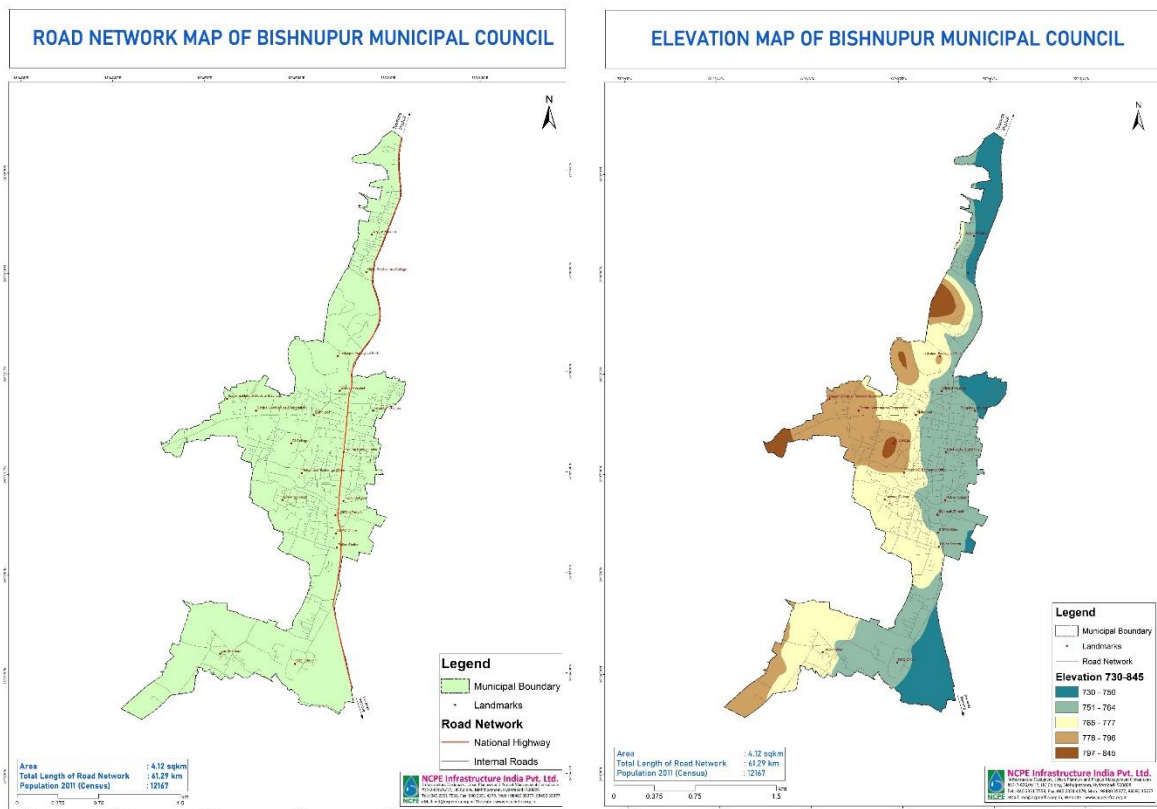


Figure 4 Road Network and Elevation Map of Bishnupur Municipality

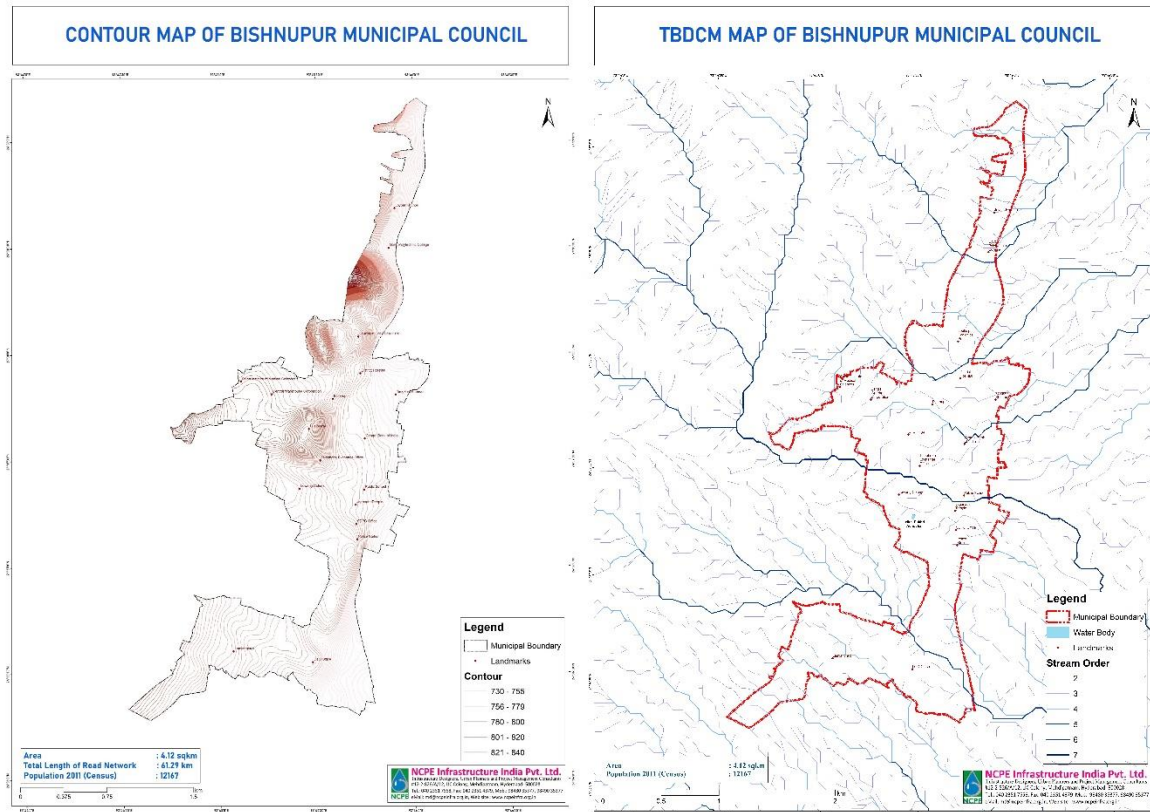


Figure 5 Contour and TBDC Map of Bishnupur Municipality

Contour and TBDC map of the Bishnupur Municipality is shown above. TBDC stands for the terrain-based drain connectivity, which shows the natural flow of the water in the respective area of the land.

## 2.2 Selected Water Body

One water body has been selected for the rejuvenation in AMRUT 2.0. The Google Earth image of the selected water body, Leikai Pukhri Achouba, within the municipal limits is shown in Figure 6.



Figure 6 Google Earth Image of Leikai Pukhri Achouba in Bishnupur Municipality

Leikai Pukhri Achouba has an area of 0.001 sq.km. The water seems to be clean from the naked eyes. The test for water quality parameter has been also done and test report of the water sample collected from the pond is shown in the Table 2.

Table 2 Water quality parameters of water sample taken from the selected pond

Parameter	Test results		Permissible limits	
	Value	Units	Value	Units
DO	7.5	mg/L	>4.0	mg/L
BOD	3.1	mg/L	<3.0	mg/L
COD	8.9	mg/L	<50	mg/L
TDS	97	mg/L	<2000	mg/L
Turbidity	92	NTU	1 to 5	NTU

After analysing the test results, it has been observed that the BOD of the pond is not in the permissible limit. The ratio of BOD/COD ratio is a strong indicator for the type of treatment technology to be chosen. The limits of



BOD/COD ratio and the interpreted quality of water, according to which the class of treatment may be suggested as given in the Table 3.

Table 3 The inferences made from BOD/COD ratio to decide

BOD/COD Ratio	Type of Water Quality	Type of Treatment Suggested
2.0-3.0	The biodegradable fraction of pollution is high	Biological treatment would suffice.
3.0-4.5	Both Biodegradable and Inert materials are high	A combination of biological and mechanical treatment (aeration) would be required
>4.5	Inert and chemically polluted wastewater	Purely electromechanical or chemical means of treatment would be required

The respective ratio (BOD/COD) of water sample of the selected pond doesn't fall in any of the criteria. This suggest that the selected pond majorly isn't required the suggested treatments.

## 2.3 Profile of Water Body

Pond Profiling is the step that allows for identification of the water body and the particular problems that need to be addressed in order for the restoration and rejuvenation of the ponds.

By carrying out the process of water body profiling, one will be able to gain details about the water body such as source of pollution, and other major problems associated with the water body. The water body profiling process is an essential step to understand the topography of the area and determine the possible challenges on site according to the area available for possible interventions. While physical landscapes around the water body are subject to change, it is important to also note the changes in physical landscapes and landmarks over the years that may influence the physical features around the

water body. Physical features around the water body are the determinant factor of whether technological intervention for water body rejuvenation can take place on site.

Therefore, the technical team that undertakes the task of water body restoration and rejuvenation would need to carry out the detailed study of the water body in a scientific manner as they would be able to assess the factors required for both designing and implementation of proposed restoration and rejuvenation projects. Water body Profiling is also an essential step to understand the function that the particular water bodies serve, and attempt for the intervention implemented will be able to maximise the function that it serves in the local community, apart from its natural function of recharging ground water. Therefore, water body profiling is done in a manner to understand not only the current scenario of the water body, but the historical significance that the water body served and the future purposes that it may serve in the local community and environment at large.

Table 4 Profile of water body

S. No.	Physical Description	
1	Name of Pond	Leikai Pukhri Achouba
2	Latitude and Longitude	24°37'15.83"N 93°45'29.06"E
3	Area of Pond (sqkm)	0.001
4	Maximum depth in meters (Mtrs)	3
5	Mean depth in meter (Mtrs)	2
6	Type of pond (Natural or Artificial/Man-made)	Man-made
7	Current status of Pond	Polluted
8	Is there any outflow from the pond	No
9	Water level changes (annual)	0.5 - 1 m

10	Are there any river/canal/ major open drain passes within a radius of 2-5 km of the water?	Yes
12	Does pond dry out completely? (frequency)	No
13	Catchment area of the pond in sq. m.	5405
14	Built-up in catchment area (in %)	60%
15	Total Population of ULB (as per Census 2011)	12167
16	Is the pond used by animals for drinking and bathing? Yes/No	No
17	Type of flora and fauna around the pond	N/A
18	Geo-tagged pictures of the pond	Attached
19	Ownership of the land (Public/Private)	Pubic
20	Landscaping around the pond	No
21	Can Pond be used as active urban and public space	No
<b>Functions of Pond</b>		
22	Is Pond being used for any purpose?	No
23	Function of the pond	N/A
<b>Source of Pollution and Problem</b>		
24	Does solid waste dumping take place near the pond?	No
25	Source of pollution in the pond	Local Activity
26	Major Problems	Silt, Weed, Algae
<b>Remedial Measures</b>		
27	Are local communities aware of the problems of the pond?	Yes

28	Are local communities interested in the restoration of the pond?	Yes
29	Are there active local conservation groups or NGOs that are interested in the pond?	No
30	Any measures taken in the past to restore the pond?	No
31	Is it possible to source good quantum of rainwater/treated water throughout the year?	No
32	Restoration activities required?	Yes

## 2.4 Project Proposals

The proposals are based on the necessity of improving the quality of the water and prevent against further contaminating the water body. The proposals must be implemented to improve the water quality of the water body -

- Desilting of the water body.
- Supply and installation of the 1 numbers of high-speed floating aerators with 2HP capacity each.
- Fencing around the boundary of the water body.
- Cleaning and levelling of area
- Street furniture like solar street lights.

### Water Body Rejuvenation Project

#### Project No.2: Rejuvenation of Leikai Pukhri Achouba , Ward No. 5 in Bishnupur under AMRUT 2.0 in Manipur State

Area of water body: **0.001** Sq.Km  
(or) 1000 Sq.m  
(or) 0.247 Acres

Water parameters based on test report

Parameter	Test results		Permissible limits	
	Value	Units	Value	Units
DO	<b>7.5</b>	mg/L	>4.0	mg/L
BOD	<b>3.1</b>	mg/L	<3.0	mg/L
COD	<b>8.9</b>	mg/L	<50	mg/L
TDS	<b>97</b>	mg/L	<2000	mg/L
Turbidity	<b>92</b>	NTU	1 to 5	NTU

From the above table, BOD of the water body is more than the permissible limits.  
Hence, aerators are proposed to increase the oxygen levels and decrease the BOD level to permissible limits in the water body.

Number of aerators required : For every 1 acre two aerators are proposed (rounded upward)

Hence provide 2 Nos.

Assuming water depth to be 2.4 m

Volume of water in the pond 2400000 Liters

BOD of water body 3.10 mg/L

Permissible limit of BOD 3.00 mg/L

Excess BOD to be treated 0.10 mg/L

Excess BOD in Kg 0.24 Kg

1.5 Kg of oxygen is required to treat 1 Kg of BOD

Amount of oxygen required to treat 0.1 mg/L of BOD is  $1.5 \times 0.24 \text{ Kg} = 0.36 \text{ Kg}$

Oxygen Transfer Rate	Low Speed Surface Aerator		Low Speed Surface Aerator with draft tube		High Speed Floating Aerator	
Minimum:	0.521	Kg/HP/hr	0.521	Kg/HP/hr	0.521	Kg/HP/hr
Maximum:	0.951	Kg/HP/hr	1.042	Kg/HP/hr	0.951	Kg/HP/hr



Considering High Speed Floating Aerator with an Oxygen Transfer Rate of 0.951 Kg/HP/hr

$$\begin{aligned}\text{Total HP required for Aerators} &= \text{Oxygen Required} / (\text{Oxygen Transfer Rate} \times 24 \text{ hr/day}) \\ &= 0.36 / (0.951 \times 24) \\ &= 0.016 \text{ HP}\end{aligned}$$

Capacity of HP required for each Aerator                      0.008 HP

Minimum HP required for warm climates or lakes with high algae is 2 HP

Since the overall HP required is less and the number of aerators proposed are 2 (as per above) which is more than required.

**Hence provide 1 Nos. High Speed Floating Aerators with 2HP capacity each**

**BISHNUPUR MUNICIPALITY****Project No.2: Rejuvenation of Leikai Pukhri Achouba in Ward No. 5 in  
Bishnupur Municipality under AMRUT 2.0****GENERAL ABSTRACT**

S. No.	Description of Item	Qty	Unit	Amount in Rs.	
	<b>Conservation Measures</b>				
1	Supply and installation of Aerators	1	No	2,60,000.00	Centre + State
2	Removal of wet silt and sludge	301	cum	1,91,372.00	Centre + State
	<b>Protection Measures</b>				
3	Providing chain link mesh fencing	215	Rmt	6,40,215.00	Centre + State
	<b>Beautification Measures</b>				
4	Solar Street Light	5	No	1,20,536.00	Centre + State
5	Providing Three Seater Siting Benches along the Bund	3	No	13,500.00	Centre + State
6	Cleaning and Leveling of Bund area	434	Cum	2,53,541.00	Centre + State
7	Providing Pathways along the bund	165	Sqm	1,42,967.00	Centre + State
	<b>Sub Total</b>			<b>16,22,131.00</b>	
8	Add Contingency charges @ 3%			48,664.00	Centre + State
9	Add Labour Cess@ 1%			16,221.00	Centre + State
10	Add GST @ 18%			2,91,984.00	Centre + State
11	Add O&M			1,04,000.00	State only
	<b>Total</b>			<b>20,83,000.00</b>	
12	Add 11.75% Agency Charge			1,90,600.00	State only
	<b>Grand Total</b>			<b>22,73,600.00</b>	

**BISHNUPUR MUNICIPALITY****Project No.2: Rejuvenation of Leikai Pukhri Achouba in Ward No. 5 in Bishnupur Municipality under AMRUT 2.0****GENERAL ABSTRACT****Central & State share**

								Amount in Rs
S.No.	Particulars	Project Cost	Central Share	State Share				Grand Total
				Project	O&M	Agency Charge	Total State Share	
1	Rejuvenation of Water Supply Pond	16,22,131	14,59,918	1,62,213				16,22,131
2	Add Contingency charges @3%	48,664	43,798	4,866				48,664
3	Add Labour Cess @1%	16,221	14,599	1,622				16,221
4	Add GST @18%	2,91,984	2,62,786	29,199				2,91,985
5	Add O&M	1,04,000			1,04,000			1,04,000
<b>Total</b>		<b>20,83,000</b>	<b>17,81,101</b>	<b>1,97,900</b>	<b>1,04,000</b>			<b>20,83,001</b>
6	Add 11.75% Agency Charge	-	-			1,90,600		1,90,600
<b>Total</b>		<b>20,83,000</b>	<b>17,81,101</b>	<b>1,97,900</b>	<b>1,04,000</b>	<b>1,90,600</b>	<b>4,92,500</b>	<b>22,73,601</b>

**BISHNUPUR MUNICIPALITY****Project No.2: Rejuvenation of Leikai Pukhri Achouba in Ward No. 5 in Bishnupur Municipality under AMRUT 2.0**

AERATORS														
DETAILED AND ABSTRACT ESTIMATE														
S No	Item/Code No	Description of work	Nos			Length	Breadth	Depth	Quantity		Rate		Per	Amount
		SUPPLY AND INSTALLATION OF AERATORS												
1	Non SoR	Supply and installation of 2 HP 4 Paddle Solar Aerator with battery with following specification; (i) 1 set 2HP 4 Paddle Wheel Aerator (ii) 7 Pcs Solar Panel with total of 2000W - 2200W (iii) 4 Pcs Solar Panel with total of 1200W for battery charging (iv) 4 Pcs Solar Battery 200AH (v) 3 KVA Solar Invertor (vi) Timer (vii) 1 VFD, MCB for 2HP 3 Phase Motor (viii) 1 Pc VFD Box (ix) 50m Copper Wire of 2.5mm (x) 20m DC Wire (xi) Ground mounted Structure for Solar Panel (xii) Approximate running time 15Hrs on full sunlight												
			1	x	1				1	Nos	260000.00	1	Nos	260000.00
		Total											Rs	260000.00
													Rs	2.60 Lakhs

**BISHNUPUR MUNICIPALITY****Project No.2: Rejuvenation of Leikai Pukhri Achouba in Ward No. 5 in Bishnupur Municipality under AMRUT 2.0**

REMOVAL OF WET SILT AND SLUDGE														
DETAILED AND ABSTRACT ESTIMATE														
S No	Item/Code No	Description of work	Nos			Length	Breadth	Depth	Quantity		Rate	Per		Amount
1	Non SoR	Repair and rejuvenation of pond by dredging / excavation /removal of silt, weeds and muck etc. from the pond having water .Under saturated condtions with in all lead and lifts as given below -												
			1	x	1	1003		0.3	300.90					
									300.90	cu.m	636.00	1	cu.m	191372.40
		Total											Rs	191372.00
													Rs	1.91 Lakhs



## BISHNUPUR MUNICIPALITY

## Project No.2: Rejuvenation of Leikai Pukhri Achouba in Ward No. 5 in Bishnupur Municipality under AMRUT 2.0

DETAILED AND ABSTRACT ESTIMATE FOR CONSTRUCTION OF CHAIN LINK FENCING												
SI No.	Description of work	Nos			L	B	D	Qty		Rate	Per	Amount
	Providing Drain With chain link mesh fencing for				215.00							
	Length as per the Drawing - Periphery				215.00							
1	Earthwork in excavation over areas exceeding 30cm in depth 1.5m in width as well as 10sqm on plan including disposal of excavated earth lead upto 50m lift upto 1.5m disposed earth to be levelled and neatly dressed in											
	for Gate Columns	1	x	2	1.20	1.20	1.50	4.32				
	for foundations of MS fencing posts - Main	1	x	72	0.30	0.30	0.45	2.92				
	for foundations of MS fencing posts - Inclined support at every 30m	1	x	7	0.30	0.30	0.45	0.28				
								7.52	Cum	204.70	1 Cum	1,539.34
2	Providing and Laying cement concrete in foundation and plinth excluding the cost of centering and shuttering in											
	for Gate Columns	1	x	2	1.20	1.20	0.15	0.43				
	for foundations of MS fencing posts - Main	1	x	72	0.30	0.30	0.075	0.49				
	for foundations of MS fencing posts - Inclined support at every 30m	1	x	7	0.30	0.30	0.075	0.05				
								0.97	Cum	7383.35	1 Cum	7,161.85
3	Providing and laying in position ready mixed or site batched design mix cement concrete for plain cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate /retard setting of concrete, to improve durability and workability without impairing strength including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centoring, shuttering, finishing and reinforcement as per direction of the engineer-in-charge for the following grades of concrete. Concrete of M-20 grade with minimum cement content of 270 kg/cum											
	for Gate Columns	1	x	2	1.00	1.00	0.30	0.60				
	for Gate Pedestals	1	x	2	0.45	0.45	0.60	0.24				
	for Gate Column upto GL	1	x	2	0.30	0.30	2.95	0.53				
	for foundations of MS fencing posts - Main	1	x	72	0.30	0.30	0.38	2.43				
	for foundations of MS fencing posts - Inclined support at every 30m	1	x	7	0.30	0.30	0.38	0.24				
								4.04	Cum	9465.20	1 Cum	38,239.41
4	Reinforcement for R.C.C Work including bending, binding and placing in position complete											
	for Gate Columns	1	x	0.60	Cum	75.00	Kg/cum	45.00				
	for Gate Pedestals	1	x	0.24	Cum	70.00	Kg/cum	16.80				
	for Gate Column upto GL	1	x	0.53	Cum	180.00	Kg/cum	95.40				

SI No.	Description of work	Nos			L	B	D	Qty		Rate	Per	Amount
								157.20	Kg	99.76	1 Kg	15,682.27
5	Plastering with 12mm thick in CM (1:4) for Gate Column Above GL	1	x	2	1.20		2.50	6.00				
		1	x	2	0.30	0.30		0.18				
								6.18	Sqm	248.86	1 Sqm	1,537.95
6	White washing with lime to give an even shade new work (three or more coats)	1	x	1				6.18	Sqm	25.35	1 Sqm	156.66
	Colot washing such as green,blue or buff to give an even shade	1	x	1				6.18	Sqm	33.96	1 Sqm	209.87
7	Providing and fixing G.I. chain link fabric fencing of required width in mesh size 50x50 mm including strengthening with 2 mm dia wire or nuts, bolts and washers as required complete as per the direction of Engineer-in-charge.											
	Made of G.I. wire of dia 4 mm	1	x	1	215.00		1.80	387.00	Sqm	719.66	1 Sqm	2,78,510.06
8	Supplying at site Angle iron post & strut of required size including bottom to be split and bent at right angle in opposite direction for 10 cm length and drilling holes upto 10 mm dia. etc. complete.											
	Angle iron post 75mm x 75mm x 4mm	1	x	72	5.70	Kgs/mtr	2.50	1026.00				
		1	x	7	5.70	Kgs/mtr	2.50	99.75				
	Angle iron post 50mm x 50mm x 3mm	1	x	2	215.00	2.30	Kgs/mtr	989.00				
								2114.75	Kg	128.09	1 Kg	2,70,885.95
9	Supplying and fixing of MS Gate using 45 x 45 x 6mm MS equal angle alround and 2 Nos 35x35x5mm Equal angles horizontal supports at 0.50m c/c, 2.00mm MS sheet at bottom 0.30m height and 12mm MS square bars Vertically at 125mm centre to centre including fixing with 4 Nos of MS Z holdfasts (2 on each side) duly making cutting brick masonry, fixing and making to original surface neatly and painting gate with one coat of red oxide primer including cost and conveyance of all materials,Locking arrangment, Ornamental pieces etc ,cutting, bending, welding including all operational charges and all labour charges etc., complete for finished item of work.											
	for main gate (2 Wings of 2.50m length and 1.80m Avg. height)	1	x	2	74.60	Kg		149.19	Kg	176.23	1 Kg	26,291.75
	<b>Total of Working Items</b>										<b>Rs</b>	<b>6,40,215.00</b>
											<b>Say</b>	<b>6.40 Lakhs</b>

**BISHNUPUR MUNICIPALITY****Project No.2: Rejuvenation of Leikai Pukhri Achouba in Ward No. 5 in Bishnupur Municipality under AMRUT 2.0**

SOLAR STREET LIGHTING												
DETAILED AND ABSTRACT ESTIMATE												
S. No.	Item/Code No	Description of Work	Nos	Length	Breadth	Depth	Quantity	Unit	Rate	Per		Amount
1	Non SoR	Supply and installation of 15 W Solar Street Lamp with following specifications; (i) 15 W LED BULB (ii) 50 W Solar Panel (iii) 20 Ft GI Pole (iv) 13 AH, 12.8 V Lithium Battery (v) Installation and transportation	5				5	No.	24,107.14	1	No.	1,20,536
		Total									Rs	120536.00
											Rs.	1.21 Lakhs

**BISHNUPUR MUNICIPALITY****Project No.2: Rejuvenation of Leikai Pukhri Achouba in Ward No. 5 in Bishnupur Municipality under AMRUT 2.0****DETAILED & ABSTRACT ESTIMATION FOR BENCHES**

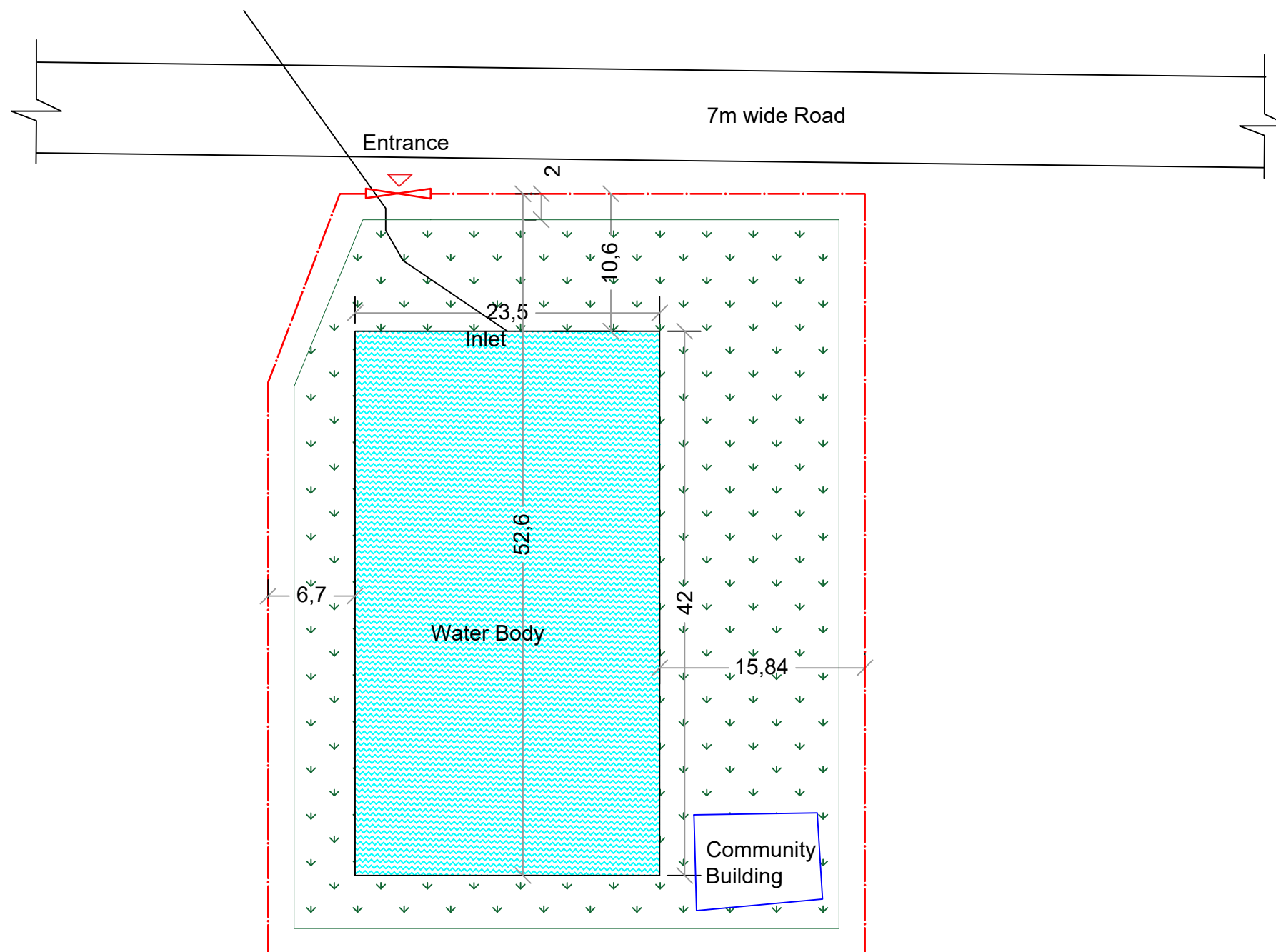
S.N.	Description of Item	Nos			L	B	D	Qty		Rate	Per		Amount
	<b>Providing Three Seater Siting Benches along the Bund</b>									Quotation			
1	Supplying, fixing and installation of Cast Iron benches with 3 seater facility and wooden planks as for sitting base and back support for outer décor etc complete as directed by the Engineer in charge.												
	Three Seater Siting Benches	1	x	3				3.00	Nos	4500.00	1	Nos	13500.00
	<b>Total Cost of Siting Benches</b>									<b>3 Nos</b>	<b>Rs.</b>	<b>13,500.00</b>	
											<b>Say</b>	<b>0.14 Lakhs</b>	

**BISHNUPUR MUNICIPALITY****Project No.2: Rejuvenation of Leikai Pukhri Achouba in Ward No. 5 in Bishnupur Municipality under AMRUT 2.0**

<b>CLEANING AND LEVELING OF BUND AREA</b>													
<b>DETAILED AND ABSTRACT ESTIMATE</b>													
<b>S No</b>	<b>Item/Code No</b>	<b>Description of work</b>	<b>Nos</b>			<b>Length</b>	<b>Breadth</b>	<b>Depth</b>	<b>Quantity</b>		<b>Rate</b>	<b>Per</b>	<b>Amount</b>
	MSR - 2022												
1	2.2.1	Earth Work in rough excavation, banking excavated earth in layers not exceeding 20 cm in depth, nreaking clods watering, rolling each layer with 1/2 tonne roller of wooden or steel rammers, and rolling every 3rd and top-most layer with power roller of manimum 8 tonne and dressing up in embankments for roads, floods banks, marginal banks and guide banks of filling up ground depressions, lead upto 50 m and lift upto 1.5m											
		Bund Area	1	x	1	1907.74		0.30	572.32	cum			
		Along the bund	-1	x	1	396.00		0.30	-118.80	cum			
		Community Hall	-1	x	1	66.37		0.30	-19.91	cum			
									<b>433.61</b>	cum	584.72	1 cum	253541.02
		Total										Rs	<b>253541.00</b>
												Say	Rs <b>253541.00</b>
												Rs	<b>2.54 Lakhs</b>



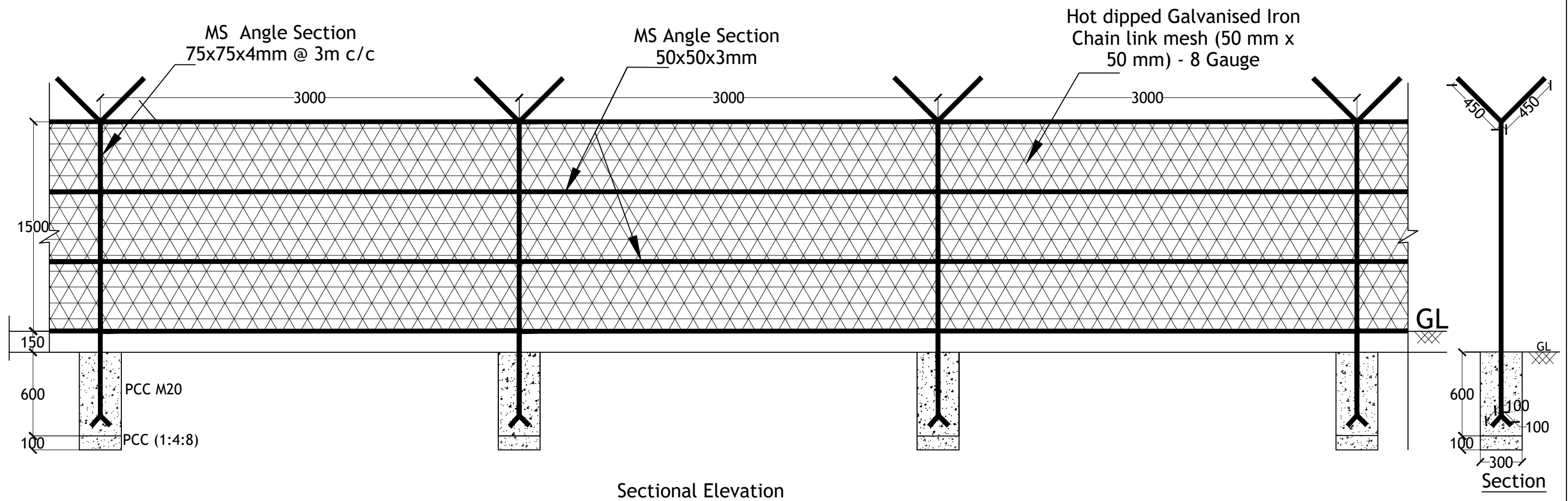
NAMBOL MUNICIPALITY												
Project No.1: Rejuvenation of Kabowakching Makha Leikai Pukhri Achouba in Nambol Municipality under AMRUT 2.0												
DETAILED AND ABSTRACT ESTIMATIONS FOR CONSTRUCTION OF PATHWAY ALONG THE BUND												
S No.	Description	Nos.			MEASUREMENTS			Quantity		Rate		Amount
					L	B	D					
<b>A</b>	<b>PATHWAY ALONG THE BUND</b>											
	<b>3.0m Wide</b>				55.00							
					<b>55.00</b>	Rmt						
1	Earthwork in excavation over areas exceeding 30cm in depth 1.5m in width as well as 10sqm on plan including disposal of excavated earth lead upto 50m lift upto 1.5m disposed earth to be levelled and neatly dressed in											
	3.00 wide as per Drawing - Kerb walls	1	x	1	55.00	0.25	0.250	3.44				
	<b>for sectioning the area between walls</b>											
	3.00 wide Pathway	1	x	1	55.00	3.00	0.200	33.00				
					<b>55.00</b>			<b>36.44</b>	Cum	<b>204.70</b>	1 Cum	7,459.27
2	Supplying and filling in plinth with sandy soil under floors including,watering,ramming consolidating and dressing complete.											
	3.00 wide Pathway	1	x	1	55.00	3.00	0.25	41.25				
								<b>41.25</b>	Cum	<b>762.15</b>	1 Cum	31,438.69
3	Providing and fixing at or near ground level precast cement concrete in kerbs, edgings etc. as per approved pattern and setting in position with cement mortar 1:3 (1 Cement: 3 coarse sand) including the cost of required centering, shuttering complete											
	3.00 wide Pathway	1	x	2	55.00	0.25	0.350	9.63				
								<b>9.63</b>	Cum	<b>9887.18</b>	1 Cum	95,213.54
4	Cement plaster 1:3 (1 cement: 3 coarse sand) finished with a floating coat of neat cement. 12mm cement plaster.											
	Plastering to the Kerb walls above GL+ top face ( 0.2+0.05+0.1)	1	x	1	55.00		0.350	19.25	Sqm	<b>360.44</b>	1 Sqm	6,938.47
5	Distemper with dry distemper of approved brand and manufacture (two or more coats) and of required shade on new work, over and including priming coat of whitening to give an even shade:-											
	to Kerb stones - Qty as per Plastering							19.25	Sqm	<b>99.59</b>	1 Sqm	1,917.11
	<b>Sub- Total for Pathway</b>											<b>1,42,967.00</b>
												<b>1,42,967.00</b>
											<b>Say</b>	<b>1.43 Lakhs</b>



**Legend**

- Total Area
- Water Body
- Community Building
- Inlet
- Road
- Entrance

**Rejuvenation of Leikai Pukhri Achouba in Ward No. 5 in Bishnupur Municipality under AMRUT 2.0**



All Dimensions are in mm

Rejuvenation of Leikai Pukhri Achouba in Ward No. 5 in Bishnupur Municipality  
under AMRUT 2.0

Fencing Details

N.T.S

NCPE Infrastructure India Pvt. Ltd.  
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