

GT_{LTD} GOLTECH ENGINEERING LTD

EXPERTS IN RENEWABLE ENERGY SOLUTIONS

SOLAR PV, SMALL HYDRO TURBINES, HYDRAMS PUMPS, SMALL WIND TURBINES

P.O. BOX 532-00232 RUIRU- KENYA

Quotation

Prepared by

Eng. MBIU, Richard Njihia PE (A3885)

+254 720 568 273

rjihia2003@gmail.com

19/09/2023

To

Dear Mr. Morris

Enkopiro Camp Mara

Sikenani

REF: Proposal for Community Turbine Pump Installation

Please find attached a Turbine Pump Quotation with specifications and installation guidance. Feel free to inquire for any clarifications.

Noted:

1. The Pump site is well laid with possibilities of constructing a weir/Dam, Forebay tank and Pump drive head.
2. Drive head of 2.5 m to be created from the forebay tank.
3. 2-inch delivery pipes to be installed up to a delivery height of 260m a distance of 1.8Km

Needed:

1. Weir/Dam to be Construction,
2. Installation of an Intake gate from the weir,
3. Forbay tank to be constructed,
4. 30 m long drive pipe 6" G.I class B will be done,
5. Pump House,
6. Pumps installation
7. Delivery pipe HDPE 2"
8. Notification to local WARMA and NEMA offices Narok

Recommendations.

Considering the positive outcomes of the feasibility study, the following recommendations are made:

1. Proceed with the construction and installation of two hydraulic ram pump system, adhering to the recommended design and infrastructure requirements.
2. Monitor the pump system's performance and conduct regular maintenance to ensure optimal efficiency and longevity.
3. Continuously evaluate the pump system's environmental impact and adjust mitigation measures as needed to minimize any adverse effects.

1. Site Parameters

Site Description	
i. Location	Enkipiro Camp (Siana Springs) Sekenani Narok
ii. GPS	1°32'40.91"S 35°24'29.11"E
iii. River/ Water source	Siana Springs
iv. Available drive head from the channel	2.5 m Min
v. Required flow rate throughout the year on the channel	60 l/sec Min

2. Drive Pipe Recommendations

i. Drive pipe length	30 m
ii. Pipe diameter	6"
iii. Pipe type	GI Class B with Flanges
iv. Pipe flow velocity	2.713 m/s min

3. Delivery Pipe

i. Delivery head	Aprox. 100 m to inter-connection
ii. Flow rate required	40,000 L/Day
iii. Pipe length	1000 m
iv. Pipe diameter	2"
v. Pipe type	HDPE

4. Pump Specifications

- Mono Horizontal High Head Pump Range
- Flow rates up to 60m³/h
- Heads up to 450m
- Steady, non-pulsating flow
- Positive displacement pumping principle
- Abrasion-resistant pumping element comprising a resilient rubber stator and a hard chrome-plated rotor
- Inherently self-priming

Turbine Specification

S/N	Parameter	Value
1	Turbine speed	635
2	Speed ratio	1:2.36
3	Turbine torque	1.5
4	Turbine shaft diameter	60

5. Installation Guide

GT_{LTD} GOLTECH ENGINEERING LTD

EXPERTS IN RENEWABLE ENERGY SOLUTIONS

SOLAR PV, SMALL HYDRO TURBINES, HYDRAMS PUMPS, SMALL WIND TURBINES

P.O. Box 532-00232 RUIRU- KENYA

NO	ITEMS	Installation Guidance Cost
1.	Material & Site*	Material purchase guidance, Material sourcing, preparation and Site preparation.
2.	Pump Installation*	Pump foundation, Pump House, anchorage and securing, Drive Head Pipe testing; type, diameter, length, connectors, Civil work, Pumping Pretest Supervision
3.	Drive Pipe*	Weir Intake preparation, anchor blocks masonry work supervision
4.	Reservoir Tank	Quotation and installation as per Client specification and request
5.	Delivery	Delivery Pipe; diameter, type, length, connectors, Civil work, Trenching guidance
6.	Test, Commissioning, O&M	Pump pre-test on Pressure and operations on a standard rig, Site operation tests, Continuous Contact Consultations after installation.

6. Tentative Costing

NO.	ITEMS	Particulars	EACH @	Qty	AMOUNT
1	Weir/Dam				
		Site Assessment, Regulatory & Environmental permits, Hydrological Analysis		Lot 1	50,000.00
		Weir/Dam Design, Material sourcing, Transport and labour		Lot 1	200,000.00
		Construction execution; Damming, Labour, River flash and Erosion control.		Lot 1	100,000.00
		Monitoring, Completion, Inspection and Maintenance plans		Lot 1	50,000.00
		Sub-Total			400,000.00
2	Pump	Mono Horizontal High Head Pump Range ASME Standard, with HDS Waste and Delivery Shaft.	650,000	1	650,000.00

Building Trust In Technology

GT_{LTD} GOLTECH ENGINEERING LTD

EXPERTS IN RENEWABLE ENERGY SOLUTIONS

SOLAR PV, SMALL HYDRO TURBINES, HYDRAMS PUMPS, SMALL WIND TURBINES

P.O. Box 532-00232 RUIRU- KENYA

		Galvanized bolts and Nuts Steel Impulse Valve weights			
3	Turbine	4kW Cross-Flow Turbine			850,000.00
					1,500,000.00
4	Channel				
		Channel excavation and labour		Lot 1	50,000.00
		Material sourcing and channel lining		Lot 1	100,000.00
		Intake Gate Construction, with dart strainers, flow control gates		Lot 1	100,000.00
		Monitoring, Inspection, Completion and Maintenance plan		Lot 1	50,000.00
		Sub-Total			300,000.00
5	Drive Pipes				
		5* 6m long GI Class B with flanges	50,000	5 pcs	250,000.00
		Forebay Tank; water prove masonry work. Anchor blocks, Mechanical/ Expansion joints, Material sourcing, transport and labour			200,000.00
		Delivery pipe 2" HDPE rolls, transport and labour	30,000	18	540,000.00
6	Reservoir	High density Plastic Tanks	120,000	3	360,000.00
		Sub-Total			1,350,000.00
7	Service	Consultancy fee 10% of total cost	10%	Lot 1	355,000.00
Total Ksh.					3,905,000.00

Terms of Payment;

Building Trust In Technology

GT_{LTD} GOLTECH ENGINEERING LTD

EXPERTS IN RENEWABLE ENERGY SOLUTIONS

SOLAR PV, SMALL HYDRO TURBINES, HYDRAMS PUMPS, SMALL WIND TURBINES

P.O. Box 532-00232 RUIRU- KENYA

- *70% of the cost to be paid upon placing an order; Pump sourcing and Site mobilization,
- *20% payable upon pumps delivery, and job commencement
- *10% payable on Inspection and Commissioning.

Yours Faithfully

Received by:

Eng. Mbiu, R. Njihia PE +254 720 568 273
Mr. M. Mwai Kibuchi +254 721 475 521



Proposed Pump Type Installation Output 10,000 m³/H