TERMS OF REFERENCE (ToRs) FOR THE SUPPLY, CONSTRUCTION AND COMMISSIONING OF SOLAR POWERED IRRIGATION SYSTEM AT DAHWE RADICAL TERRACES SITE LOCATED IN NDORA SECTOR, GISAGARA DISTRICT

1. Introduction

DUHAMIC-ADRI is implementing the Climate Just Communities (CJC) programme funded by The Scottish Government (SG) aiming to build resilience in vulnerable communities while addressing social inequalities. The program is being implemented in Gisagara and Ngororero Districts by DUHAMIC-ADRI in partnership with Trōcaire.

2. Tender background

DUHAMIC-ADRI wants to hire a competent contractor who will supply and install a solar powered irrigation system for 12 hectares of radical terraces in Ndora Sector (Dahwe Cell), Gisagara District with the overall objective to secure dependable dry-season water while keeping capital and operating costs manageable for a community-run scheme.

3. Bid data sheet

Client	DUHAMIC-ADRI
Project	Supply and install a solar powered irrigation system for 12 hectares of radical terraces
Location	Gisagara District, Ndora Sector, Dahwe Cell
Timeline	The execution period is 3 months with 12 months of defect liability period.
Works	Supply and install a solar powered irrigation system for 12 hectares of radical terraces
Company Profile	**Administrative Documents (Mandatory)** A Company registration certificate issued by RDB related to irrigation systems construction. A valid certificate of good standing issued by RDB A Valid Tax Clearance Certificate from RRA A Valid RSSB Clearance certificate Proof of using EBM Invoice (An invoice submitted in the past) A signed commitment letter confirming the bidder's ability to execute the work within 3 months after signing the contract. A site visit certificate to be issued by DUHAMIC-ADRI (visitor should be the person who is able to understand the assignment). Certificate of origin for main equipment such as solar pumps, solar panels and pipes with conformity to the proposed technical specifications

Financial capacity	The company must provide **Certified proof of liquid assets** (bank deposits or cash) or **a valid credit line or promise of credit line equivalent to 150 million** or above, specifically for this tender. This credit line must **remain valid for the duration of the contract**.
Language	The language of the bid is: **English**
References	▪ **Three (3) project references** from irrigation systems construction projects of similar scope and complexity completed within the **last five (5) years.** ▪ Each reference must have a **minimum contract value of at least 150,000,000** Rwf. Projects with a lower value will not be considered. ▪ All references must be supported by **notified** copies of **good completion** certificates and their corresponding **contracts**.
Schedule	**Work plan** and methodology outline how the bidder intends to implement and complete the work within the agreed timeframe.
Bills of quantity and costs	A Detailed bill of quantities (**BOQ**) with unit rates and total cost estimates with all applicable taxes included. Contract unit prices will be firm and not subject to adjustment throughout the period of the execution of **the contract.** The single currency for price conversions is: **Rwandan francs**

4. List of Required Construction Equipment

#	**Description of Equipment**	**Number of required equipment**
1	One Concrete mixer (productivity of 1m3 per hour)	1
2	One truck 5m3	1
3	DGPS	1
4	HDPE Welding Fusion	1
5	Water tank of 10 m3	1
6	Excavator (2 Point)	1

The bidder must provide proof of possession or leasing. For leasing contracts signed between both parties must be notarized, 5.indicating tender name and period of agreement confirmed by the presentation of copies of the yellow card for vehicle, machinery and EBM invoices or notarized copies of invoices for other equipment.

5. Contractor's Representative and Key Personnel

Position	Relevant minimum academic qualifications	Responsibilities
Project Manager	A master's degree in Irrigation or Water Resources Engineering or Agriculture Engineering with demonstrated experience of at least 5 years in irrigation projects development and must have at least 1 certificate of similar project in irrigation as a project manager	Overall coordination and management of the project. -Ensure project activities are completed on time, within budget, and to quality standards. -Supervise all construction work and resolve site-related issues. -Liaise with DUHAMIC-ADRI and supervising consultants. -Prepare and submit regular progress reports, including updates on timelines, costs, and risks. Working closely with the project stakeholders
Permanent Site Engineer	Hold at least bachelor's degree in civil engineering with Minimum 5 years' experience in irrigation projects and must have at least 1 certificate of similar projects in irrigation.	Full-time site supervision of all construction works -Review and verify structural designs and drawings. -Ensure all structural works comply with approved designs -Facilitating regular visits conducted by DUHAMIC-ADRI and other stakeholders

Position	Relevant minimum academic qualifications	Responsibilities
Surveyor/Topographer	At least A0 in land surveying /Topography. Minimum 5 years' experience as Topographer/Surveyor and at least 1 certificate as a surveyor in irrigation projects.	-Conduct topographic surveys, mapping terrain features and elevation profiles to support design and planning. -Establish control points, set out project boundaries, and perform precise land measurements using GPS, total stations, and other surveying tools. - Produce accurate survey maps, contour plans, and digital terrain models (DTMs) for engineering and construction works. -Verify site levels during construction, ensure alignment with design specifications, and provide as-built survey data for project completion.
Electrical engineer:	At least bachelor's degree in electrical engineering with valid certificate from RURA for installation of class C and having a valid certificate from institution of engineers with Minimum 3 years of experience in installation of solar systems especially in irrigation or water supply. at least 1 certificate as an Electrical engineer in irrigation projects	-Design and supervise electrical/solar panels installations in compliance with national standards. -Ensure all electrical work, including wiring, panels, and lighting systems, are installed safely and correctly. -Inspect and test solar systems and coordinate with other technical staff.
Hydraulic Engineer /Hydrologist:	The Hydraulic Engineer / Hydrologist shall hold a bachelor's degree in Hydraulic Engineering, Hydrology, Civil Engineering, or a related field. The candidate must have a minimum of ten (10) years' proven experience in hydraulic and hydrological work and possess at least 1 certificate as an Hydraulic Engineer /Hydrologist	-Assess water resources and conduct site investigations to determine irrigation feasibility. -Design irrigation infrastructure, including intakes, borehole, canals, pipelines, pumps, and drainage systems. -Supervise construction works to ensure quality, accuracy, and compliance with technical standards. -Monitor water use, manage hydrological data, ensure environmental compliance, and support efficient system operation and maintenance.

Position	Relevant minimum academic qualifications	Responsibilities
Irrigation Engineer:	Bachelor's degree in Irrigation Engineering, or Water Resources Engineering The Irrigation Engineer shall 5 years of experience that demonstrate the capacity to effectively manage and execute irrigation and civil works projects. Proven by 1 certificate as Irrigation Engineer in similar projects	-Design, plan, and size irrigation systems, including distribution networks, pumping units, and on-farm watering technologies. -Conduct field assessments, soil–water analysis, and layout of irrigation command areas to ensure efficient water use. -Oversee construction and installation of irrigation infrastructure, ensuring quality control and adherence to technical standards. -Provide guidance on system operation and maintenance, water scheduling, and farmer/beneficiary capacity-building for sustainable irrigation practices.
Environmental and socials safeguard officer	At least a bachelor`s degree in environmental sciences or environmental studies with At least 5 years of experience in monitoring the implementation of ESMP/ESIA. Must be registered in RAPEP as Associate Expert proven by a valid membership certificate	-Conduct environmental and social impact assessments (ESIAs) and ensure projects comply with national regulations and donor safeguard standards. - Develop and implement Environmental and Social Management Plans (ESMPs), including mitigation measures and monitoring activities. -Engage communities and stakeholders, address grievances, and ensure inclusion of vulnerable groups throughout project implementation. - Monitor environmental and social performance on-site, prepare compliance reports, and guide contractors in adhering to safeguard requirements
Permanent site Foreman (1)	Hold at least an A1-level qualification in Irrigation, Civil Engineering, or a related field, with a minimum of four (4) years' experience in irrigation and civil works projects, and at least 1 completion certificate from similar projects.	-Supervise day-to-day site operations and workforce management. -Ensure construction works follow approved drawings and specifications. -Monitor safety, labor productivity, and site cleanliness.

6. Evaluation Criteria

EVALUATION	**EVALUATION OF BIDS** The evaluation of the technical bids will take place in two stages: Criteria, sub-criteria, and point system for the evaluation of Full Technical Proposals are: **Step I: ANALYSIS OF THE ADMINISTRATIVE COMPLIANCE** The Procurement Committee will first review the technical envelope to determine if all required documents have been submitted, they are consistent, valid and duly signed. Absence, non-compliance or the validity of a threshold document classified as "administrative" will automatically reject the offer. Any offer rejected at the end of this stage will be excluded from further evaluation. **Step II: TECHNICAL EVALUATION** To be admissible, the technical proposals should have received a score of at least 70% of points. Second, only the financial bids corresponding to acceptable technical proposals are opened. Other financial proposals will be returned unopened. Technical proposals will be evaluated based on the following criteria.

Criteria	Criteria description	Weight / 100
Company Profile	**Administrative Documents** - Company registration certificate issued by RDB related to irrigation systems construction. - A valid certificate of good standing issued by RDB - A Valid Tax Clearance Certificate from RRA - A Valid RSSB compliance certificate - Proof of using EBM Invoice (An invoice submitted in the past) - A signed commitment letter confirming the bidder's ability to execute the work within 3 months after signing the contract. - A site visit certificate to be issued by DUHAMIC-ADRI (visitor should be the person who is able to understand the assignment).	**Eliminatory**

Criteria	Criteria description	Weight / 100
Work plan &Methodology	**Work plan** (4 Points*)* outlining how the bidder intends to implement and complete the works within the agreed timeframe. (**3 months)** Prepare a well detailed methodology (6Points) explaining how the assignment will be carried out and how the training and exchange visit for similar sustained irrigation facilities to group representatives (around 15 people from District, Sector, Cell and Villages) will be facilitated The contractor must justify the proposed equipment and a justified costing related to the pump and solar panels in relation to the current site conditions	**10**
Equipment	One Concrete mixer (productivity of 1m3 per hour) (2 Points) One truck 5m3 (2 Points) DGPS (2 Point) HDPE Welding Fusion (2 Point) Water tank of 10 m3 (2 Point) Excavator (2 Point)	**12**
Team Composition	Qualification and experience (CVs) & notified degrees of the proposed team personnel as well as their signed availability commitment note to perform the assigned tasks: - **Project manager** (Degree:*1 point*, IER Certificate: *1 point*, 1 similar experience (reference): 1 *point*) - **Permanent Site Engineer** (Degree:1 point, IER Certificate: 1 point, 1 similar experience (reference): 1 point) - **Electrical engineer:** (Degree:1 point, IER Certificate: 1 point, 1 similar experience (reference): 1 point), RURA licence: 1 Point - **Surveyor/Topographer**: (Degree *1 point*, IER Certificate *1 point*, 1 similar experience(references): 0.5 *points*) **Hydraulic Engineer /Hydrologist:** (Degree 1 point, IER Certificate 1 point, 1 similar experience (reference): 0.5 point) **Irrigation Engineer:** (Degree 1 point, IER Certificate 1 point **Environmental and socials safeguard officer:** (Degree 0.5 point, IER Certificate 0.5 Point **-Site foreman** (Degree 0.5 point, IER Certificate 0.5 Point	**18**
Company Experience	**Three (3) project references** from irrigation systems construction projects of similar scope and complexity completed within the **last five (5) years** Each reference must have a **minimum contract value of at least 150,000,000** RWF. Projects with a lower value will not be considered. All references must be supported by **notified** copies of **good completion** certificates and their corresponding **contracts**. **(10Points on each certificate and contract)**	**30**
Total technical evaluation marks		**70**

Criteria	Criteria description	Weight / 100
Financial Proposal	A Detailed bill of quantities (BOQ) with unit rates and total cost estimates with all applicable taxes included **(As per the annexed BOQ)** **Bidders should also include training/visit fees intended to be used during the training to the irrigation facility users.**	30
TOTAL		**100**

8. Scope of work

The scope of the work includes design review, supply and installation of solar powered irrigation to irrigate 12 hectares of hillside radical terraces located in Ndora Sector (Dahwe Cell); Gisagara District and the following are main deliverables:

(1) Design Review and Construction of water intake, the structure layout is explained by the layout illustrated by the figure1
(2) Pump station construction with solar system and control systems with all necessary securities with automation system.
(3) Design and construction of concrete reservoir with sufficient water storage capacity to fully irrigate 12 hectares in dry season. Refer to the figure 4
(4) Pipe layout and irrigation system layout as per figure 3
(5) Hydrology review for validation
(8) detailed drawing and design report are attached to these Terms of reference

9. Responsibility of the Client

The client will:
(i)Ensure free access to the site and locations connected with the execution.
(ii)Provide the Contractor with any assistance as the Contractor may be entitled to in accordance with the Terms of Reference.
(iii)Provide the Contractor with all documents, information reports, data, any existing photographs and other information that are available.
(iv)Facilitate organization of planned handover sessions.

10. Responsibility of the Contractor

(1) The Contractor shall carry out the work in a professional manner in keeping with internationally accepted standards, using qualified and appropriate staff. They shall endeavour to implement the assignment with diligence and within the time agreed upon in the contract. In this regard the Contractor shall provide to the DUHAMIC-ADRI the full curriculum vitae of each of the members of the team it proposes for the work.
(2) The Contractor shall be responsible for providing their staff all payments including salaries, travel and accommodation cost as they may be required. The Contractors shall replace any staff

member who is unable to carry out the work or is considered by the Client to be unsuitable. As per the rules in keeping with internationally accepted standards for assignment of this nature, the replacement of any of the Contractors' staff should be by a person of equal competence at the same cost and subject to the approval of the Client.

(3) The Contractor shall be responsible for its office costs, the cost of housing and other services for his staff whilst in Rwanda and procurement and transport of all office, technical equipment, machinery and hire of vehicles needed for the work.

(5) The contractor shall work together with relevant professional and technicians from GISAGARA district and RAB and other institutions with experience and expertise in irrigation development.

(6) The contractor will work with client until the final handover by DUHAMIC-ADRI and its stakeholders.

(7) Design Review and Construction of water intake, the structure layout is explained by the layout illustrated by the figure1

(8) Pump station construction with solar system and control systems with all necessary securities with automation system.

(9) Design and construction of concrete reservoir with sufficient water storage capacity to fully irrigate 12 hectares in dry season. Refer to the figure 4

(10) Pipe layout and irrigation system layout as per the figure 3

(11) Hydrology review for validation

(12) detailed drawing and design report are attached to this Terms of reference

11. General Conditions

The Contractors shall commence work after the signature of the contract, and shall, as promptly as practical, notify the Client in writing of the date on which field operations are to commence.

The parties shall agree to be bound by the General and Special Conditions of Contract for the work by the Public Procurement Directorate, Ministry of Finance

12. Proposal Submission

All interested companies shall submit their proposals (**Technical and Financial**) in **one sealed outer envelope**, which must contain **two separate inner envelopes**:

- One marked **"Technical Proposal"**
- One marked **"Financial Proposal"**

Both envelopes must be clearly titled:

"Supply, Construction and Commissioning of Solar Powered Irrigation System at Dahwe Radical Terraces Site Located in Ndora Sector, Gisagara District."

- Submissions shall be made in **hard copy only** and must be delivered **not later than Friday, November 28, 2025, at 11:00 AM.**
- On the submission date, there will be **no public opening** of the technical proposals. DUHAMIC-ADRI will receive submissions for analysis.
- Results of the technical evaluation will be communicated via email. Only bidders who score at least **70%** in the technical evaluation will be shortlisted and invited to the financial proposal opening.
- The financial proposals of non-shortlisted bidders will remain unopened. Such bidders will be invited to collect their financial proposals.
- The **date and time of the financial proposal opening** will be communicated by email to the shortlisted bidders.

13.Contract Management

The **terms and conditions of the contract**, including **payment modalities,** will be agreed upon during contract negotiations between DUHAMIC-ADRI and the successful bidder.

14. Safeguarding Clauses

Safeguarding and protection from Sexual Exploitation and Abuse (PSEA) is everyone's responsibility who works directly or indirectly with DUHAMIC-ADRI services delivery and operations. All DUHAMIC-ADRI staff and affiliates, including volunteers and Suppliers; sub-Suppliers' staff and implementing partners are required to adhere to DUHAMIC-ADRI's full safeguarding and protection policy procedures and the separate Code of Conduct that always values principles of PSEA.

DUHAMIC-ADRI has a zero tolerance to Sexual Exploitation and any other form of abuse. Child and vulnerable abuse, exploitation, harassment, discrimination, and human trafficking are strongly prohibited behaviours. All implementing partners/suppliers who are contracting with DUHAMIC-ADRI must adhere to DUHAMIC-ADRI's full safeguarding and protection policy in addition to the code of conduct.

By applying to this tender, the supplier, is committed to denounce and to report any safeguarding issues or fraud face to face or at the reporting email for safeguarding issues at" feedback@duhamic.org.rw ", Toll Free: 8470 and telephone number: 0788305329 without delays.

By Applying to this tender as a supplier, I understand that DUHAMIC-ADRI has the rights to ensure 100% compliance with safeguarding and protection policies via spot checks or any other form of control mechanisms.

If my business isn't compliant, DUHAMIC-ADRI will take appropriate measures or immediately stop the contract of financial support depending on the nature and severity of the safeguarding incident detected.

Confidentiality:

- All information provided by bidders will be treated as confidential. The procurement process will be conducted in a transparent manner to ensure fairness and competitiveness.

Note:

- **The company should provide certificates of origin for the main equipment, including the solar pump, solar panels, and pipes, confirming their conformity with the proposed technical specifications. These items must carry a one-year warranty.**

All interested bidders are required to participate in a mandatory site visit, scheduled from November 26, 2025, From 11: 00 AM

- For team composition, all proposed staff must be registered with the Institution of Engineers Rwanda (IER) and hold up-to-date certificates.
- Participation through a joint venture is not allowed for this tender
- After the financial proposal opening session, each bidder will be requested via email to submit an Excel version of their financial proposal (quotation), which must match the hard copy submitted for verification purposes. In case of any discrepancies, the hard copy submission will be considered as the official version.
- Bidders who score below 70% in their technical proposals will not be shortlisted for the financial proposal opening, and their financial proposals will be returned unopened.
- DUHAMIC-ADRI reserves the right to conduct due diligence on the references provided by bidders. If any reference is found to be unauthentic, it will result in immediate disqualification. The same applies to administrative documents such as Tax Clearance, RSSB Clearance, bid security, Credit line, and others
- Bidders who are blacklisted by RPPA are not eligible to participate in this tender. DUHAMIC-ADRI reserves the right to reject such bids
- Prior to contracting, DUHAMIC-ADRI may request the successful bidder to provide a performance guarantee of the contract value.
- Prior to contracting, DUHAMIC-ADRI reserve the right to conduct a vetting process to the successful bidders to ensure compliance with anti-terrorism and other regulatory requirements.
- The proposed team composition must be available during the execution period. In case the bidder wishes to replace any team member, they shall formally communicate this to DUHAMIC-ADRI, which reserves the right to reject any proposed replacement who lacks the required qualifications and experience.
- Women and persons with disabilities fulfilling required conditions and qualifications are encouraged to apply.
- The proposed costs must include all applicable taxes.
- Please refer to the annexed Bills of Quantities and drawings below:

Done at Kigali, on November 21,2025

BIILL OF QUANTITY (BOQ)

No.	Item description	Unit	Quantity	UNIT PRICE (RWF)	TOTAL AMOUNT
	Item 1: PRELIMINARY WORKS				
	The rates shall include for all strutting, shuttering, stabilizing the excavation faces and keeping the excavation free of water by pumping, bailing or other means. Excavate for foundations, part backfill after construction and remainder, cart away to tips or use as fill on site, all as directed by the Engineer				
1.1	Site mobilisation: The work consists of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under the contract.	LS	1		

1.2	Topography before, during and after works	Ls	1		
1.3	Cutting of tress including cutting of trunks, bushes, branches and removal of stumps,roots and shrubs	LS	1		
1.4	Mobilize community and local leaders to secure needed land for water intake and other related canals	LS	1		
Sub-total for Item 1					
Total for Preliminary Works					
BILL OF QUANTITY - BOREHOLE STRUCTURE					
Item 2 : BOREHOLE DEVELOPMENT					
2.1	Drilling and Construction of Production Boreholes (≤80 m, Ø200 mm) Complete drilling, sampling, geological logging, and borehole construction including temporary casing, UPVC permanent casing and screen (Ø140 mm, Class D), gravel pack, sanitary seal, and well development by air-lift/surging. Includes step-drawdown and 24-hour constant-rate pumping test, recovery measurement, and borehole logging/video inspection.	nr	2		
2.3	Geophysical Survey and Borehole Siting (VES/EM) – For locating and confirming borehole positions prior to drilling, under Contractor supervision. Contingency for Borehole Relocation/Failure – To be used only upon Engineer's written instruction.	nr	2		
2.4	Testing, Water Quality, and Commissioning-Sampling and laboratory analysis for full physico-chemical and bacteriological parameters (pH, EC, TDS, Fe, Mn, F^-, NO_3^-, hardness, turbidity, coliforms, E. coli); system testing, commissioning, submission of as-built drawings, O&M manuals, and 12-month performance warranty.	ls	1		
Sub-total for Item 2					
Total for Intake Structure					
BILL OF QUANTITY - PUMP HOUSE					
	Item 3: EARTHWORKS				

3.1	Earthworks, cut, fill and evacuation or overlay of the surplus soils, including all accruals	m3	788.9		
3.2	Filling with selected and imported rubble masonry: deposited, spread levelled rammed and well compacted according to the drawing	m3	238.14		
Sub-Total for Item 3					
Item 4 :	**CONCRETE AND MASONRY WORKS**				
4.1	Hardcore filling-500mm Thick at the base of Pump house	m^3	60.5		
4.2	Plain concrete class 15/20 in 100 mm thick blinding layer under base slab	m^3	12.1		
4.3	Hydraulic Reinforced Concrete Base Slab - 300mm thick class C30	m^3	36.3		
4.4	Hydraulic Reinforced Concrete Shear walls for Pumping house- 300mm thick class C30	m^3	65.36		
4.5	Hydraulic Reinforced Concrete Upper Slab for bridge - 200mm and 250mm thick class C30	m^3	24.15		
4.6	200mm thick ditto on wall for Toilet room in (1:3) cement sand mortar joints (4000mm high new toilets walling)	m^2	178.4		
4.7	20mm thick plaster (1:3) Mixed with sika latex Water proofing,apply sticco on plastered area	m^2	178.4		
4.8	Apply Sticco on plastered area	m^2	178.4		
4.9	Prepare surfaces and apply two coat of primer paint (enduit) to walls as per technical specifications, and description,Prepare surfaces and apply two finishing coats of silk vinyl emulsion paint to plastered walls,Prepare and apply wall master paint on top of weather guard on all external plastered wall surface,Prepare and apply wall master paint on top of weather guard on all external plastered wall surface	m^2	178.4		
4.1	Install Mettalic doors	Pcs	1		
4.11	60 x 40 x 2mm RHS welded to make roof trusses	lm	60		

4.12	40 x 40 x 1.5mm RHS welded to make purlins spaced not more than 800mm and truss spaced not more than 2200mm	lm	45		
4.13	install Gauge 28 prepainted IT4 corrugated galvanised iron roofing sheets fixed with and including galvanised hook bolts and caps to purlins on steel trusses (m.s).	sqm	171.86		
Sub-total for Item 4					
Item 4:	**Mechanical Works: Pumps, Motors, and Accessories**				
4.1	Raw water pump inlet and Outlet valves	Ls	6		
4.2	Pump specifications: Total Head is 120m and Discharge is 43 m^3, the pump controller must be hybrid power (solar / grid / generator) with Inputs for water meter, pressure sensors, digital switches, Integrated MPPT (Maximum Power Point Tracking) and Power max. 21 Kw.	LS	2		
4.3	Suction & discharge pipework DN200 HDPE PN10, including fittings, flanges, supports, bends, thrust restraints, gate & non-return valves,Approx DN200 PE mains ~20 m + suction ~10 m + valve packages,Flowmeter high accuracy ±0.5% + gauges & installation	LS	1		
4.4	Instrumentation & appurtenances: pressure gauges (0-10 bar), tapping assemblies, magnetic flowmeter DN200 (4-20 mA output) on common header	LS	1		
Sub-total for Mechanical Works item 4					
	Electrical Works and Controls				
4.5	Supply, installation, testing, and commissioning of a complete electrical and solar photovoltaic power system for the pumping station	Watts	52,000.00		
Subtotal electrical works and control					
Total for Pump House					
BILL OF QUANTITY - RESERVOIR AND IRRIGATION SYSTEM					
	Item 5 : EARTHWORKS				
5.1	Earthworks, cut, fill and evacuation or overlay of the surplus soils, including all accruals	m3	2,133.75		

5.2	Filling with selected and imported rubble masonry: deposited, spread levelled rammed and well compacted according to the drawing	m3	422		
Sub-total for Item 5					
Item 6 :	**EDGE PROTECTION AND PIPELINES**				
6.1	Supply and Install Granular materials	m3	219.52		
6.2	Supply and Install HDPE Membrane 0.5mm Thick on a Non- Woven Geotextile 200 gr/m2	m2	1097.6		
6.3	Well compacted,murram soil (20cm Thick) for Access Road around the reservoir	m3	187.2		
6.4	Stone masonry drainage channel	m3	67.797		
6.5	Reinforced concrete for Outlet and Inlet Chambers	m3	19		
6.6	Supply and Install - HDPE DN200 PN16 with All accessories	lm	261		
6.7	Supply and Install - HDPE DN110 PN10 with All accessories (Reservoir to VC1)	lm	40		
6.8	Supply and Install - PVC DN90 PN10 with All accessories	lm	975.3		
6.9	Supply and Install - PVC DN75 PN10 with All accessories	lm	796.26		

6.1	Supply, install, connect, test, and commission a complete irrigation field hydrant outlet, fully functional and pressure-tested, including all accessories and fittings necessary for operation. The work comprises the provision of a branch connection from the buried distribution pipeline using a pressure-rated tee or service saddle (PN10 minimum), installation of an isolation valve (gate or full-bore ball type), and a vertical riser or standpipe in galvanized steel, raised to approximately 0.8–1.0 m above ground level and fitted with a 2-inch (50 mm) quick-coupling or camlock outlet compatible with the farmer's flexible hose. The assembly shall be anchored on a concrete thrust block to withstand hydraulic and handling stresses and, where required, provided with a small concrete collar or valve chamber with a removable cover for protection and maintenance. A visible marker or guard post shall be installed for identification and protection. Each hydrant shall deliver approximately 5 litres per second at a minimum pressure head of 15 metres under design operation. The item shall be deemed to include all materials, fittings, valves, couplers, supports, excavation, anchoring, backfilling, reinstatement, pressure testing, and commissioning necessary to complete the hydrant in full accordance with the drawings and technical specifications, with no separate payment for individual components or accessories.	Pcs	11		

6.11	Supply and deliver high-quality flexible lay-flat hose pipes for field irrigation use, compatible with 2-inch (50 mm internal diameter) hydrant outlets and quick-coupling connections. Each hose shall be made of UV-stabilized, reinforced PVC or polyester-jacket NBR/TPU-lined material, rated for PN10 working pressure (≥ 10 bar) and burst pressure ≥ 30 bar. The hose shall be lightweight, abrasion-resistant, and suitable for repeated rolling and handling by farmers during rotational irrigation. Each length shall be supplied complete with factory-fitted couplings or adaptors compatible with the hydrant outlet and on-farm irrigation equipment. Hoses shall be delivered in standard 50 mm diameter, with uniform wall thickness, smooth internal surface, and adequate flexibility for portable field use. The item shall include all accessories, couplings, end fittings, and delivery to site in good condition. The contractor shall provide product certificates and test data demonstrating compliance with relevant ISO/EN standards for lay-flat hoses.	lm	1771.56		
6.12	Training/visit fees intended to be used during the training to the irrigation facility users.	**Person**	**15**		
Sub-total for Item 700					
Total for Reservoir and Irrigation System					
(A) Global Total excluding VAT					
(B) VAT 18% ON (A)					
(C) Total all taxes inclusive (A+B)					