AGRICULTURAL RESEARCH COUNCIL

INSTITUTE FOR AGRICULTURAL ENGINEERING

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CLIENT REPORT

RECOMMENDATIONS AND SPECIFICATIONS ARC LOSKOP EXPERIMENTAL FARM: HYDRANTS, QUICK COUPLING PIPES, SPRINKLERS AND ACCESSORIES

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Contents

1 Scope of work

- Specifications for the repair of the leaking hydrants for all the fields,
- Specifications for a quick coupling sprinkler irrigation system for 1ha that could be replicated on all the fields of the farm.

2 Location of site

- ARC -VIMP Loskop experimental farm
- -25.179111° 29.387798°

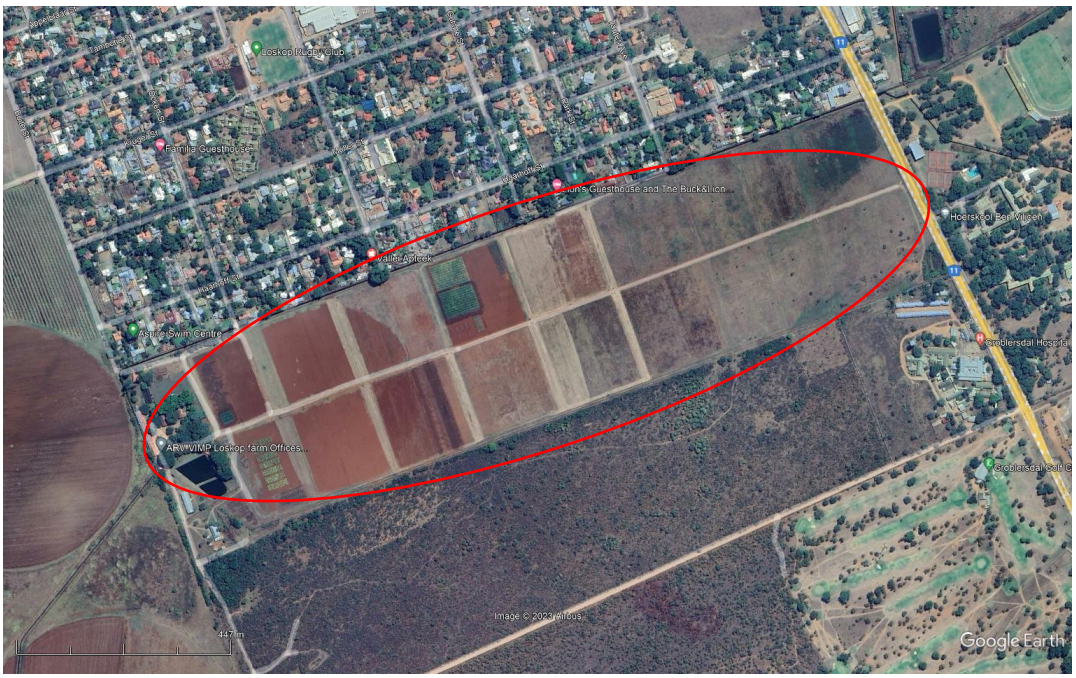

Figure 1: Location of the fields at ARC – Loskop experimental farm

3. Price breakdown

The ARC has a limited budget and thus the tenderer must give a price breakdown as the example shown in Table 1. The ARC has the right to choose only certain aspects of the quotation as set out in Table 1. One contractor will do all the selected work. The remaining work will go on a new tender proceses in the next financial year.

Table 1: Example of price breakdown

Item number	Description	Quoted price (VAT excluded)
1.	Plastic tunnel, complete shade netting and water tap	R
2.	Bins (Quantity 5)	R
3.	Trenches (Quantity 6)	R
	Subtotal (VAT excluded)	R
4.	Contingency	10% of Subtotal
	Grand total (VAT excluded)	R

4. Specifications

Supply, installation and commissioning of:

Note 1: The end user is to determine the number of "1ha" sprinkler irrigation systems that are to be acquired as well as the respective number of plastic –[4.2 – 4.5], and steel –[4.6 – 4.9] systems.

Note 2 : The components as specified in 4.2 - 4.9 are each suitable to irrigate an area of approximately 1ha at a time.

4.1. Hydrants

- Repair / replace at all the fields 100mm Bauer type valves (36 in total) to fit at the existing hydrant riser pipes to a working, non-leaking condition.
- Repair / replace at all the fields 100mm Bauer type hydrant bends (36 in total) at the existing hydrants to a working, non-leaking condition.
- 100mm x 80mm Galvanised Socket for all the hydrants. (36 in total)
- 80mm Galvanised Nipple for all the hydrants. (36 in total)

4.2. Moveable sprinkler irrigation system for 1ha, Layout 1 (HDPE Plastic system) (1 hydrant in middle of the side of the field) as a typical layout is shown in Figure 2.

Sprinkler spacing: 12m x 18m (Sprinklers are spaced 12m apart on the lateral, and the lateral is moved 18m at a time).

- 1 x 90/80mm Female threaded connection.
- 30 x 6m 90mm HDPE Quick coupling pipes.
- 7 x 90mm Side outlet Tee.
- 1 x 90mm 90° Bend.
- 8 x 90/80mm Male thread connectors.
- 8 x 75/65mm Female thread connectors.
- 8 x 80mm-65mm Galvanised Reducing Socket.
- 48 x 6m x 75mm HDPE Quick coupling pipes (with outlets for saddles).
- 40 x 6m x 75mm HDPE Quick coupling pipes.
- 48 x 75mm Saddles (25mm outlet) with foot piece.
- 8 x 75mm End plug
- 48 x Riser pipes (25mm male thread at the bottom; 20mm female thread at the top); Length -plastic 500mm, steel 1200mm -> end user to indicate preference.
- 48 x VYRSA 36 sprinklers
- 48 x 4.4mm Primary nozzles for the sprinklers.
- 48 x 2.4mm Secondary nozzles for the sprinklers.

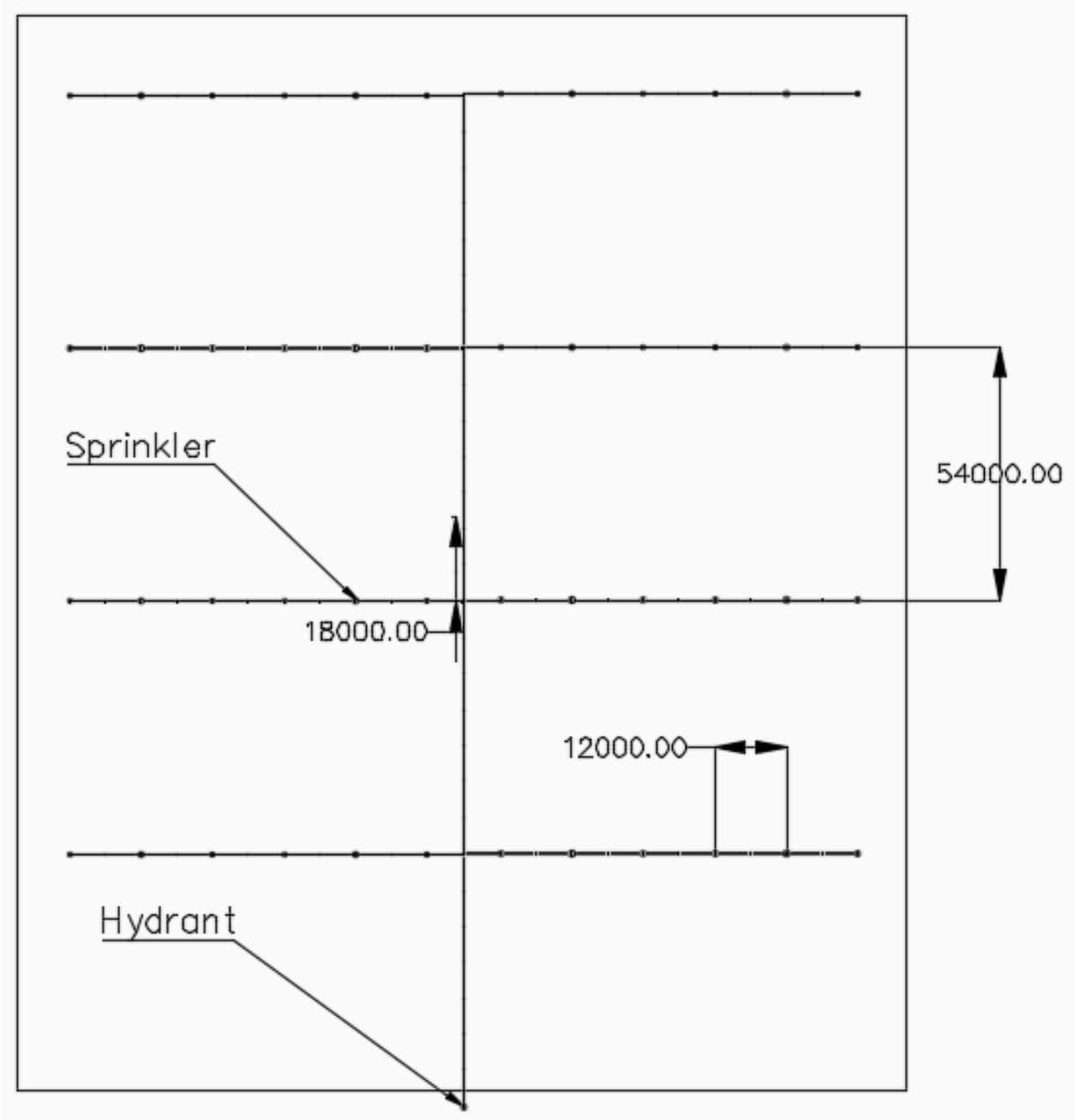

Figure 2: Typical schematic configuration of the layout of the sprinkler system for a hydrant in the middle of one side of the field

4.3. Moveable Sprinkler irrigation system for 1ha, Layout 2 (HDPE Plastic system) (1 hydrant in the corner of the field), as a typical layout is shown in Figure 3.

Sprinkler spacing: 12m x 18m (Sprinklers are spaced 12m apart on the lateral, and the lateral is moved 18m at a time).

- 1 x 90/80mm Female threaded connection.
- 30 x 6m 90mm HDPE Quick coupling pipes.
- 3 x 90mm Side outlet Tee.
- 1 x 90mm 90° Bend.
- 4 x 90/80mm Male thread connectors.
- 4 x 80mm-65mm Galvanised Reducing Socket.
- 4 x 75/65mm Female thread connectors.
- 48 x 6m x 75mm HDPE Quick coupling pipes (with outlets for saddles).
- 48 x 6m x 75mm HDPE Quick coupling pipes.
- 48 x 75mm Saddles (25mm outlet) with foot piece.
- 4 x 75mm End plug.
- 48 x Riser pipes 25mm male thread at the bottom; 20mm female thread at the top); Length - plastic 500mm, steel 1200mm -> end user to indicate preference.
- 48 x VYRSA 36 sprinklers
- 48 x 4.4mm Primary nozzles for the sprinklers.
- 48 x 2.4mm Secondary nozzles for the sprinklers.

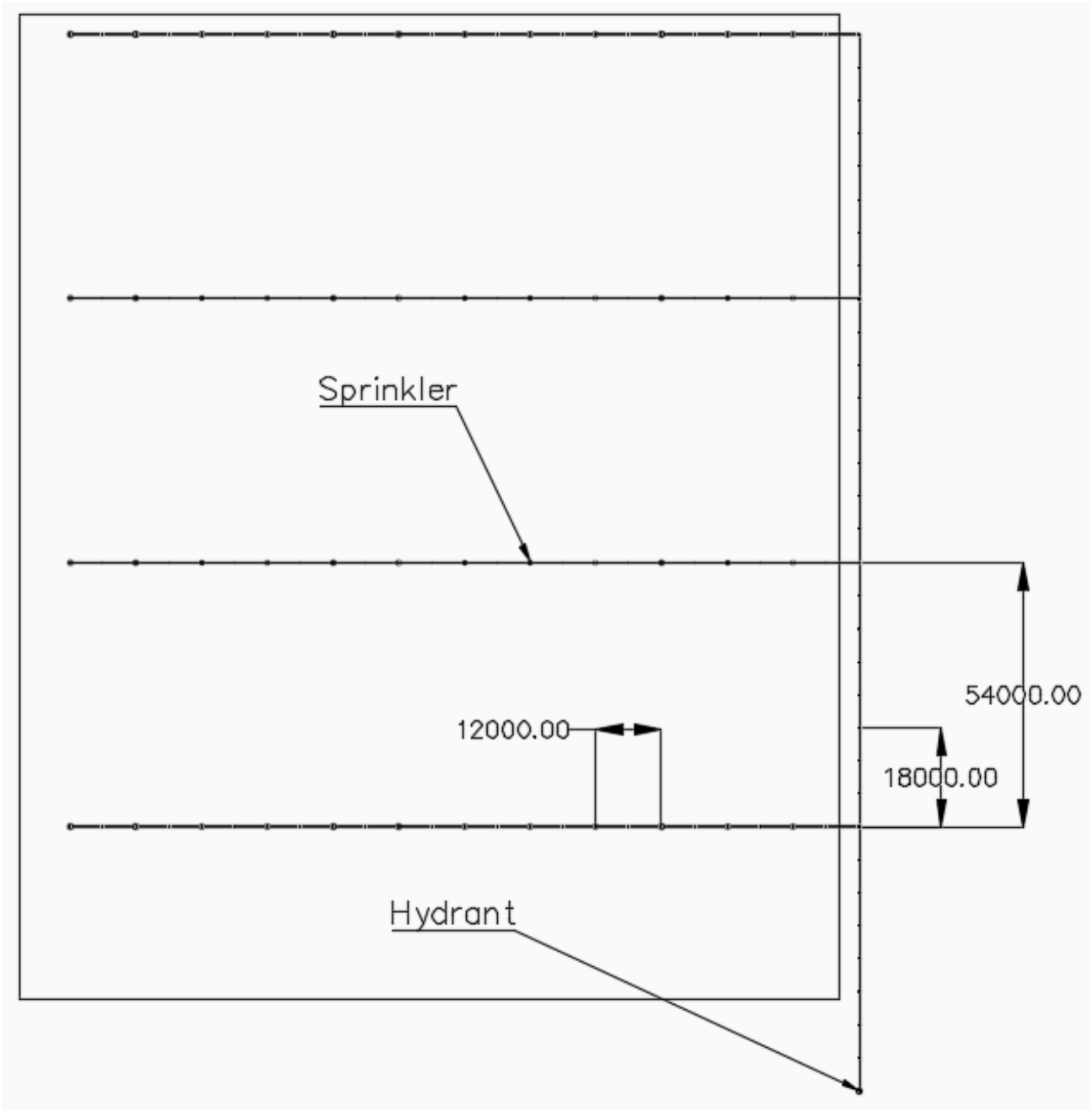

Figure 3: Typical schematic configuration of the layout of the sprinkler system for a hydrant in the corner of the field

4.4. Moveable Sprinkler irrigation system for 1ha, 2 hydrants - Layout 3 (HDPE Plastic system)

(1 hydrant in the corner, and 1 hydrant in the middle of one side of the field)

In this case the components listed in any one of Sections 4.2 or 4.3 could be used.

4.5. Moveable Sprinkler irrigation system for 1ha, 2 hydrants - Layout 4 (HDPE Plastic system)

(1 hydrant in the corner, and another hydrant in an other corner the field)

In this case the components listed in Section 4.3 could be used.

4.6. Moveable sprinkler irrigation system for 1ha, Layout 1 (Steel)

(1 hydrant in middle of the side of the field) as a typical layout is shown in Figure 2.

Sprinkler spacing: 12m x 18m (Sprinklers are spaced 12m apart on the lateral, and the lateral is moved 18m at a time).

- 1 x 89/80mm Male threaded adaptor.
- 30 x 6m 89mm Bauer type Quick coupling pipes.
- 7 x 89mm Bauer Outlet T-pieces.
- 1 x 89mm Bauer 90° Bend.
- 8 x 89/70mm Bauer Reducers.
- 48 x 6m x 70mm Bauer type Quick coupling pipes (with outlets for sprinkler standpipes).
- 40 x 6m x 70mm Bauer type Quick coupling pipes.
- 48 x 70mm Saddle top (Steel) complete with 4 bolts, nuts and gasket (25mm outlet)
- 48 x 70mm Saddle foot piece (Steel).
- 8 x 70mm Bauer End plug.
- 48 x Riser pipes steel 1200mm (25mm male thread at the bottom; 20mm female thread at the top).
- 48 x VYRSA 36 sprinklers.
- 48 x 4.4mm Primary nozzles for the sprinklers.
- 48 x 2.4mm Secondary nozzles for the sprinklers.

4.7. Moveable Sprinkler irrigation system for 1ha, Layout 2 (Steel)

(1 hydrant in the corner of the field), as a typical layout is shown in Figure 3.

Sprinkler spacing: 12m x 18m (Sprinklers are spaced 12m apart on the lateral, and the lateral is moved 18m at a time).

- 1 x 89/80mm Male threaded adaptor.
- 30 x 6m 89mm Bauer type Quick coupling pipes.

- 3 x 89mm Bauer Outlet T-pieces.
- 1 x 89mm Bauer 90° Bend.
- 4 x 89/70mm Bauer Reducers.
- 48 x 6m x 70mm Bauer type Quick coupling pipes (with outlets for sprinkler standpipes).
- 48 x 6m x 70mm Bauer type Quick coupling pipes.
- 48 x 70mm Saddle top (Steel) complete with 4 bolts, nuts and gasket (25mm outlet)
- 48 x 70mm Saddle foot piece (Steel).
- 4 x 70mm Bauer End plug.
- 48 x Riser pipes steel 1200mm (25mm male thread at the bottom; 20mm female thread at the top).
- 48 x VYRSA 36 sprinklers.
- 48 x 4.4mm Primary nozzles for the sprinklers.
- 48 x 2.4mm Secondary nozzles for the sprinklers.

4.8. Moveable Sprinkler irrigation system for 1ha, 2 hydrants, Layout 3 (Steel) (1 hydrant in the corner, and 1 hydrant in the middle of one side of the field)

In this case the components listed in any one of Sections 4.6 or 4.7 could be used.

4.9. Moveable Sprinkler irrigation system for 1ha, 2 hydrants, Layout 4 (Steel) (1 hydrant in the corner, and another hydrant in an other corner the field)

In this case the components listed in Section 4.7 could be used.

4.10. Other recommendations

- Installation of the new infrastructure should be performed in such a way that current irrigation operations are not interrupted in a way detrimental to the crops.
- For ease of maintenance it is recommended that the contractor should reside within 100km from the site.

5. Site cleaning and Safety

- The site must be clean at all times.
- The contractor will be responsible for safekeeping of all building material and tools until official site handover.
- The contractor is liable for the safety of his workers and work conditions according to the OHS act.
- Remove all construction rubble and clean the site after completion of work before the final payment will be considered.

6. Standards and dimensions

- The installation of the pumps, electrical motors, switchgear and other components should be done according to the SABI Design Norms as well as the SABI Code of practice.
- All building work must comply with the National Building Regulations & Building Standards Act SANS 0400 1990 (or latest). Local Council requirements & all relevant specifications and codes are to be adhered to.
- Indicated dimensions must be taken in preference to scaling. Overall dimensions (external) to take precedence.
- All dimensions, levels and heights to be checked on site and any discrepancies to be reported to the ARC before any work takes place.
- All dimensions on drawings and documents to be checked before commencing of any work and/or compiling of tenders.

7. Contingency

- An amount of 10% of the total cost, must be added to the total cost of the quotation for contingency.
- The contingency amount must be clearly stated in the price breakdown.
- The ARC must approve in writing any expenditure of this contingency budget.
- The ARC has the right not to spend this contingency.

8. Warranty

- The Pump station facility must carry a warranty of 3 years from date of final commissioning.

9. Training

- Training on the operation, maintenance and fault finding should be provided to the relevant farm personnel.

10. Tender enquiries:

- All technical enquiries are to be directed to:

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  Tel: 012 842 4052
  vorsters@arc.agric.za