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**SOUTH AFRICAN QUALIFICATIONS AUTHORITY  
REGISTERED UNIT STANDARD:**

**Schedule the operation and maintenance of irrigation systems**

<b>SAQA US ID</b>	<b>UNIT STANDARD TITLE</b>			
116317	Schedule the operation and maintenance of irrigation systems			
<b>ORIGINATOR</b>		<b>ORIGINATING PROVIDER</b>		
SGB Primary Agriculture				
<b>QUALITY ASSURING BODY</b>				
-				
<b>FIELD</b>			<b>SUBFIELD</b>	
Field 01 - Agriculture and Nature Conservation			Primary Agriculture	
<b>ABET BAND</b>	<b>UNIT STANDARD TYPE</b>	<b>OLD NQF LEVEL</b>	<b>NEW NQF LEVEL</b>	<b>CREDITS</b>
Undefined	Regular	Level 4	NQF Level 04	3
<b>REGISTRATION STATUS</b>		<b>REGISTRATION START DATE</b>	<b>REGISTRATION END DATE</b>	<b>SAQA DECISION NUMBER</b>
Reregistered		2009-07-01	2012-06-30	SAQA 0480/09
<b>LAST DATE FOR ENROLMENT</b>		<b>LAST DATE FOR ACHIEVEMENT</b>		
2013-06-30		2016-06-30		

*In all of the tables in this document, both the old and the new NQF Levels are shown. In the text (purpose statements, qualification rules, etc), any reference to NQF Levels are to the old levels unless specifically stated otherwise.*

This unit standard does not replace any other unit standard and is not replaced by any other unit standard.

**PURPOSE OF THE UNIT STANDARD**

A learner achieving this unit standard will be able to effectively supervise the installation, operation and maintenance of irrigation systems of agricultural crops.

Learners will gain specific knowledge and skills in irrigation and will be able to operate in a plant production environment implementing sustainable and economically viable production principles.

They will be capacitated to gain access to the mainstream agricultural sector, in plant production, impacting directly on the sustainability of the sub-sector. The improvement in production technology will also have a direct impact on the improvement of agricultural productivity of the sector.

**LEARNING ASSUMED TO BE IN PLACE AND RECOGNITION OF PRIOR LEARNING**

It is assumed that a learner attempting this unit standard will show competence against the following unit standards or equivalent:

- NQF 3: Monitor The Operation And Maintenance Of Irrigation Systems.
- NQF 4: Establish a plan for the monitoring, safe use and maintenance of equipment, implements, technology and infrastructure.

### **UNIT STANDARD RANGE**

Whilst range statements have been defined generically to include as wide a set of alternatives as possible, all range statements should be interpreted within the specific context of application.

Range statements are neither comprehensive nor necessarily appropriate to all contexts. Alternatives must however be comparable in scope and complexity. These are only as a general guide to scope and complexity of what is required.

## **Specific Outcomes and Assessment Criteria:**

### **SPECIFIC OUTCOME 1**

Install an irrigation system.

#### **OUTCOME RANGE**

Includes but is not limited to plan interpretation, site preparation, survey, pipe/valve/filter requirements, etc.

### **ASSESSMENT CRITERIA**

#### **ASSESSMENT CRITERION 1**

Irrigation design plan is interpreted.

#### **ASSESSMENT CRITERION 2**

Irrigation system is pegged out according to specification.

#### **ASSESSMENT CRITERION 3**

Conveyance system trenches are dug according to specifications.

#### **ASSESSMENT CRITERION 4**

Irrigation pipes, valves, filters, etc. are installed according to specifications.

#### **ASSESSMENT CRITERION 5**

Irrigation system is tested and evaluated according to standard procedures.

#### **ASSESSMENT CRITERION 6**

Trenches are back-filled according to specification.

### **SPECIFIC OUTCOME 2**

Maintain and evaluate an irrigation system.

#### **OUTCOME RANGE**

Includes but is not limited to regular maintenance and evaluation of the functioning of an irrigation system.

### **ASSESSMENT CRITERIA**

#### **ASSESSMENT CRITERION 1**

Pre-season maintenance is carried out.

**ASSESSMENT CRITERION RANGE**

Flush system, repairing/replacing worn/broken pipes/valves/sprinklers, etc.

**ASSESSMENT CRITERION 2**

In-season maintenance is carried out.

**ASSESSMENT CRITERION RANGE**

Daily, weekly, monthly according to standard procedures such as CU tests, pressure tests, etc.

**ASSESSMENT CRITERION 3**

Post-season maintenance is carried out.

**ASSESSMENT CRITERION RANGE**

Pumps, filters, flushing, etc.

**ASSESSMENT CRITERION 4**

Regular evaluation of the functioning of an irrigation system as per design specifications.

**ASSESSMENT CRITERION RANGE**

Functioning of pumps, motors, pressure, delivery rate, water distribution efficiency, etc. evaluated against design specifications.

**SPECIFIC OUTCOME 3**

Efficiently operate an irrigation system.

**OUTCOME RANGE**

Includes but is not limited to irrigating according to schedule, regular in-field operational checks, etc.

**ASSESSMENT CRITERIA**

**ASSESSMENT CRITERION 1**

Schedule is given to and discussed with the field/orchard operator.

**ASSESSMENT CRITERION 2**

Irrigation is monitored according to irrigation schedule.

**ASSESSMENT CRITERION RANGE**

Tensiometers, soil samples, Neutron probe, scheduling programmes, stand time, flow rate, etc.

**ASSESSMENT CRITERION 3**

Irrigation effectiveness is determined.

**ASSESSMENT CRITERION RANGE**

CU tests, water balance determination, depth of irrigation, etc.

**SPECIFIC OUTCOME 4**

Collate data pertaining to the long-term efficient management of an irrigation system.

**OUTCOME RANGE**

Includes but is not limited to general record keeping of all irrigation practices in order to be able to,

in time, allow for scientific appraisal of and improvement of all relevant practices.

## **ASSESSMENT CRITERIA**

### **ASSESSMENT CRITERION 1**

Record all relevant water use/crop yield/climatic data for later evaluation and adaptation (of, for instance, scheduling practices, if required).

### **ASSESSMENT CRITERION 2**

Recording of all relevant data in a recognised electronic format.

### **ASSESSMENT CRITERION RANGE**

Linked spread sheets, tables, etc.

### **ASSESSMENT CRITERION 3**

Regular updating of all records to comply with new generation electronic hardware/software.

### **ASSESSMENT CRITERION 4**

On-going, low-key, checking/evaluation of all data to ensure validity of, especially, electronically collated data.

### **ASSESSMENT CRITERION RANGE**

Instrument drift, calibration drift, etc.

### **ASSESSMENT CRITERION 5**

Preparation of reports for supervisor evaluation.

### **ASSESSMENT CRITERION RANGE**

Regular overview reports, reports pertaining to deviations in data (i.e. water quality), recorder problems, etc.

## **UNIT STANDARD ACCREDITATION AND MODERATION OPTIONS**

The assessment of qualifying learners against this standard should meet the requirements of established assessment principles.

It will be necessary to develop assessment activities and tools, which are appropriate to the contexts in which the qualifying learners are working. These activities and tools may include an appropriate combination of self-assessment and peer assessment, formative and summative assessment, portfolios and observations etc.

The assessment should ensure that all the specific outcomes, critical cross-field outcomes and essential embedded knowledge are assessed.

The specific outcomes must be assessed through observation of performance. Supporting evidence should be used to prove competence of specific outcomes only when they are not clearly seen in the actual performance.

Essential embedded knowledge must be assessed in its own right, through oral or written evidence and cannot be assessed only by being observed.

The specific outcomes and essential embedded knowledge must be assessed in relation to each other. If a qualifying learner is able to explain the essential embedded knowledge but is unable to perform the specific outcomes, they should not be assessed as competent. Similarly, if a qualifying learner is able to perform the specific outcomes but is unable to explain or justify their performance

in terms of the essential embedded knowledge, then they should not be assessed as competent.

Evidence of the specified critical cross-field outcomes should be found both in performance and in the essential embedded knowledge.

Performance of specific outcomes must actively affirm target groups of qualifying learners, not unfairly discriminate against them. Qualifying learners should be able to justify their performance in terms of these values.

- Anyone assessing a learner against this unit standard must be registered as an assessor with the relevant ETQA.
- Any institution offering learning that will enable achievement of this unit standard or assessing this unit standard must be accredited as a provider with the relevant ETQA.
- Moderation of assessment will be overseen by the relevant ETQA according to the moderation guidelines in the relevant qualification and the agreed ETQA procedures.

#### **UNIT STANDARD ESSENTIAL EMBEDDED KNOWLEDGE**

The person is able to demonstrate a basic knowledge of:

- Appropriate Laws and Regulation pertaining to agricultural water use, environmental safety, etc.
- Elementary hydraulics.
- Principles of irrigation, crop water requirements, soil water holding capacity, etc.
- Principles of irrigation system design.
- Principles of irrigation scheduling.
- Use of computer based irrigation scheduling programmes.
- Principles of human and resource management.

#### **UNIT STANDARD DEVELOPMENTAL OUTCOME**

N/A

#### **UNIT STANDARD LINKAGES**

N/A

### **Critical Cross-field Outcomes (CCFO):**

#### **UNIT STANDARD CCFO IDENTIFYING**

Problem solving relates to all specific outcomes.

#### **UNIT STANDARD CCFO WORKING**

Teamwork relates to all specific outcomes.

#### **UNIT STANDARD CCFO ORGANISING**

Self-organisation and management relates to all specific outcomes.

#### **UNIT STANDARD CCFO COLLECTING**

Information evaluation relates to all specific outcomes.

#### **UNIT STANDARD CCFO COMMUNICATING**

Communication relates to all specific outcomes.

#### **UNIT STANDARD CCFO SCIENCE**

Use science and technology relates to all specific outcomes.

**UNIT STANDARD CCFO DEMONSTRATING**

Inter-relatedness of systems relates to all specific outcomes.

**UNIT STANDARD CCFO CONTRIBUTING**

Self-development relates to all specific outcomes.

**QUALIFICATIONS UTILISING THIS UNIT STANDARD:**

	<b>ID</b>	<b>QUALIFICATION TITLE</b>	<b>OLD LEVEL</b>	<b>NEW LEVEL</b>	<b>STATUS</b>	<b>END DATE</b>	<b>QUALITY ASSURING BODY</b>
Core	<a href="#">49009</a>	National Certificate: Plant Production	Level 4	New Level Assignment Pend.	Reregistered	2012- 06-30	AgriSETA

**PROVIDERS CURRENTLY ACCREDITED TO OFFER THIS UNIT STANDARD:**

*This information shows the current accreditations (i.e. those not past their accreditation end dates), and is the most complete record available to SAQA as of today. Some Quality Assuring Bodies have a lag in their recording systems for provider accreditation, in turn leading to a lag in notifying SAQA of all the providers that they have accredited to offer qualifications and unit standards, as well as any extensions to accreditation end dates. The relevant Quality Assuring Body should be notified if a record appears to be missing from here.*

**NONE**

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