GOVERNMENT NOTICES

No. 759

31 July 2009



SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Ornamental Horticulture and Landscape

registered by Organising Field 01 – Agriculture and Nature Concervation, publishes the following Qualification and Unit Standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification and Unit Standards. The full Qualification and Unit Standards can be accessed via the SAQA web-site at <u>www.saqa.org.za</u>. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification and Unit Standards should reach SAQA at the address below and *no later than 31 August 2009.* All correspondence should be marked **Standards Setting – SGB for Ornamental Hoticulture and Landscape** and addressed to

The Director: Standards Setting and Development SAQA *Attention: Mr. E. Brown* Postnet Suite 248 Private Bag X06 Waterkloof 0145 or faxed to 012 – 431-5144 e-mail: ebrown@saqa.org.za

D. MPHUTHING ACTING DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



National Certificate: Landscape Irrigation

SAQA QUAL ID	QUALIFICATION TITLE				
73109	National Certificate: Land	National Certificate: Landscape Irrigation			
ORIGINATOR	ATOR PROVIDER				
SGB Ornamental Horticulture and Landscape					
QUALIFICATION TYPE	FIELD	SUBFIELD			
National Certificate	1 - Agriculture and	Horticulture			
	Nature Conservation				
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS		
Undefined	120	Level 3	Regular-Unit Stds		
			Based		

This qualification does not replace any other qualification and is not replaced by another qualification.

PURPOSE AND RATIONALE OF THE QUALIFICATION Purpose:

This Qualification is designed to empower learners to operate efficiently in the landscape. irrigation environment. The Qualification will provide the learners with a comprehensive base of portable skills that will enable them to progress within all spheres of the horticultural industry. This Qualification forms an integral step in the career paths of the various disciplines in irrigation and follows on from the Level 2 Certificate. For those already employed in the industry, this Qualification will offer learners the opportunity to hone their skills and receive recognition for their competencies.

A learner achieving this qualification will be able to work effectively and productively within the field of irrigation, having the skills to:

- Install sprinklers, control cabling and controllers for automatic Irrigation systems.
- Install borehole and irrigation pumps to provide water to irrigation systems.
- Service and maintain all aspects of automatic irrigation systems.

For those wishing to enter the industry as an Entrepreneur, this Qualification offers a solid foundation in all aspects of the irrigation industry. This Qualification represents a vital step in the development of a career and learning pathway of individuals, both from a vocational point of view, as well as from a learning point of view.

Rationale:

Water is a critical resource that requires careful management. Most areas in South African receive insufficient rainfall to establish and maintain landscapes and sporting facilities. Irrigation is therefore vital to the landscaping industry. Through the observance of good irrigation scheduling and the utilisation of climatic sensors, optimal water conservation can be achieved. Accordingly it is essential that the installation and maintenance of irrigation systems follow stringent attention to the water conservation ethics. To realise this, the workforce in the industry must be well trained.

Qualification 73109

Through this Qualification, the learner will become conversant with the implications that a lack of attention to the installation, operation and maintenance will have on the performance of an irrigation system, and on the availability and cost of wasted water.

The Qualification will facilitate job creation and self employment opportunities, while furthering the aims of economic empowerment in South Africa.

The Qualification includes the skills necessary to apply safety principles in all aspects of working with pumps and irrigation systems, the skills needed to install, use, operate and maintain irrigation systems. Through the wide scope of electives, the specialisations of the various sectors are catered for.

The sectors of the industry that will benefit from this Qualification include:

- Landscape construction and maintenance.
- Amenity horticulture.
- Sports turf.

RECOGNIZE PREVIOUS LEARNING? Y

LEARNING ASSUMED IN PLACE

It is assumed that learners are competent in Communication and Mathematical Literacy at NQF Level 2.

Recognition of Previous Learning:

The Qualification may be achieved wholly or in part through the Recognition of Prior Learning and the Qualification may be granted to learners who have acquired the skills and knowledge without attending formal courses providing they can demonstrate competence in the Outcomes of the individual Unit Standards as required by the Fundamental, Core and Elective areas stipulated in the Qualification and by the Exit Level Outcomes.

An Recognition of Prior Learning process may also be used to credit learners with Unit Standards in which they have developed the necessary competency as a result of workplace and experiential learning.

QUALIFICATION RULES

The Qualification consists of a minimum of 120 credits, composed of:

Fundamental:

• 36 credits (compulsory).

Core:

74 credits (compulsory).

Electives:

• Learners must choose suitable Unit Standards from the listed Elective to obtain a total of not less than 10 credits.

EXIT LEVEL OUTCOMES

1. Test the pressure and flow that is available from various water sources for use in irrigation systems.

Source: National Learners' Records Database	Qualification 73109	13/07/2009	Page 2
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2. Install borehole and pressure pumps to utilise surface and groundwater for irrigation.

3. Install automatic irrigation equipment to optimise water savings on landscapes.

4. Service and maintain the pumps and automatic controls to ensure the efficient operation of irrigation systems.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

1.1 A municipal water supply is tested at different pressure and flow rates for its suitability to operate an irrigation system.

1.2 The static and dynamic water levels are monitored and recorded during the yield testing of a borehole to ensure that sufficient water is available for an irrigation system.

1.3 The flow rates of an existing surface pump are tested at different pressures to confirm its suitability to operate an irrigation system.

Associated Assessment Criteria for Exit Level Outcome 2:

2.1 A borehole pump and piping set is assembled and installed in a borehole to industry standards.

2.2 A centrifugal pump is mounted on a concrete base and all the necessary piping and valves are fitted to the suction and delivery manifolds in accordance with the drawing's dimensions.2.3 A progressive cavity pump is installed in a sump, in accordance with the manufacturer's specifications and the pressure relief valve is set to prevent the over pressurising of the delivery line.

Associated Assessment Criteria for Exit Level Outcome 3:

3.1 Electric valve in head sprinklers are installed on swing joint risers and their heights are adjusted to suit the sports field mowing tolerances.

3.2 Control cables are joined to their solenoids and all cabling is tested with a battery pack to ensure their operation before the trenches are backfilled.

3.3 An irrigation controller is installed in the required position and all solenoid control cables are connected to the controller in accordance with the manufacturer's specifications.

3.4 A rain sensor is installed in an area that will allow unimpeded rain and air movement and its control cables are connected to the sensor circuit of the irrigation controller in accordance with the manufacturer's specifications.

Associated Assessment Criteria for Exit Level Outcome 4:

4.1 The realignment of a pump and motor on a *c* mmon baseplate following the completion of the pump's repair, is demonstrated in accordance with the manufacturer's guidelines and the company's standard operating procedures.

4.2 The components on a single stage centrifugal pump that require regular inspection, lubrication and servicing in a preventative maintenance inspection are listed and the frequency at which this maintenance should take place is described in keeping with the manufacturer's recommendations.

4.3 The methods of adjusting/replacement of the gland packing and V belts on a progressive cavity pump are demonstrated in accordance with the manufacturer's guidelines and the company's standard operating procedures.

4.4 The sequence and specific tests, that should be conducted when trouble shooting a pumping problem, are demonstrated in accordance with the company's standard operating procedures.

Source: National Learners' Records Database

Qualification 73109

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Integrated Assessment:

The integrated assessment allows the Learners the opportunity to show that they are able to utilize concepts, ideas and actions across unit standards. This will allow Learners to achieve competency that is in keeping with the purpose of the Qualification.

An integrated assessment will indicate how theoretical learning is demonstrated in a practical environment in such a way that the application of the work learnt becomes second nature.

In conducting an assessment, the quality of the performance must also be evaluated i.e. both the performance and the thinking behind the action must be qualitative.

The assessment should include both formative and summative options and should use various assessment tools i.e. not by observation only. It is suggested that a Portfolio of Assessment form part of the summative assessment, with practical outcomes being demonstrated in a simulated or real work place situation.

A broad range of task-orientated and theoretical tools may be used, with the distinction between practical knowledge and disciplinary knowledge being maintained.

Unit Standards in the Qualification must be used to assess the specific and Critical Cross Field Outcomes. It is recommended that the assessment tools give Learners the opportunity to account for their decision-making and problem solving in line with the Specific Outcomes and related Assessment Criteria.

As a result of this Qualification being generic in forming the foundation for a career in horticulture, Learners should be assessed in occupational contexts and activities. The assessment should ensure that the foundational skills are portable and prepare them for further learning, whatever career path they may choose.

INTERNATIONAL COMPARABILITY

Water is a critical resource that requires careful management. The South African irrigation industry is governed by the Landscape Irrigation Association (LIA) and the South African Agricultural Irrigation Institute (SAAII). These bodies are responsible for ensuring that the standards of planning, installation, operation and maintenance of irrigation systems in the horticultural and agricultural environments are set and maintained to world class standards.

Links are maintained with the major international irrigation bodies such as the IA (Irrigation Association) of the United States and information is regularly shared. This ensures that the South African landscape irrigation industry remains at the forefront of international developments. In terms of climate, Australia has similar climatic zones and conditions to South Africa. Their landscape irrigation industry is well advanced and specialisation is conducted from level 1. In contrast, other countries have elected to begin their specialisations at NQF Levels 2 or NQF Level 3.

Various factors influence this, the most notable include:

- Adverse climatic conditions which restrict normal horticultural activities.
- Economic constraints, typically the poorly developed economies have irrigation and horticulture as a low priority.
- Relatively small markets, where economies of scale preclude specialisation.

To obtain an African perspective the Qualifications of the following SADC countries were investigated: Angola, Botswana, DRC, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, Swaziland, Tanzania, Zambia and Zimbabwe.

Qualification 73109

From a global viewpoint these countries are typified as developing nations, with their primary focus centred on subsistence farming. Consequently agricultural training is paramount to ensuring food security for their populations and as a result there are a limited number of landscape irrigation systems, the majority occurring in the hotel and tourist destinations. These systems are usually contracted to South African irrigation companies. As a consequence no specific landscape irrigation training is conducted in these areas. Their staff who maintain these landscapes are either sourced from South Africa or they obtain their training from the LIA or our tertiary institutions.

Specialisations such as fertigation and filtration are catered for in the elective unit standards of this Qualification. This ensures portability, yet allows learners to progress in their particular field of specialisation from level 3.

Various international qualifications with similar content to this Qualification were sourced. In examining these, the following have been used for comparison, although they do not necessarily address the subjects from the same perspective, they do contain aspects relevant to those used in South Africa. The following qualifications and the particular unit standards that were selected for comparison with various components of this qualification are listed hereunder.

Australia:

The landscape and horticultural industry in Australia has a similar profile to that of South Africa and their irrigation industry operates at a similar level to that in South Africa, evidenced by the fact that specialisations in a specific field occurs at an entry level.

Certificate III in Irrigation: Reference No RTE31303-Certificate 3 in Horticulture. Of all the worldwide searches that were conducted, this Level 3 Qualification is most similar to its South African counterpart. The relevant unit standards are as follows:

Reference No RTE3601A-Install irrigation systems:

• This Level 3 Unit Standard is concerned with the assembly and connection of components, installing fittings and valves to requirements and identifying and documenting faults in irrigation systems in the horticultural environments.

• The "Install and maintain valve in head sprinklers and their networks" Unit Standard incorporates a similar approach to the above

Reference No RTE3605A-Troubleshoot irrigation systems:

• This Level 3 Unit Standard covers the basic location, identification, replacement of faulty irrigation components. It also requires that records and reports of maintenance observations and activities are completed.

• The "Install and maintain irrigation controllers and climatic sensors" Unit Standard has a similar approach in fault finding procedures.

Reference No RTE3611A-Operate pressurised irrigation systems:

• This Level 3 Unit Standard covers the scheduling of water application. It also addresses the requirements of priming pumps, measuring pressure and flow rates, as well as ensuring the correction of faults in the irrigation system.

• The "Maintain landscape and sports turf irrigation systems" unit standard in essence, follows the same procedures and methodology, but includes the drafting of an annual irrigation schedule.

Source: National Learners' Records Database

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Reference No RTE3612A-Implement a maintenance programme for an irrigation system:

• This Level 3 Unit Standard speaks to the routine and preventive maintenance requirements, including the remedial action and repairs required for irrigation systems.

• The "Maintain landscape and sports turf irrigation systems" Unit Standard in essence, follows the same procedures and methodology, but includes the drafting of an annual irrigation schedule.

Other Australian Qualifications that make use of their irrigation Unit Standards are:

Qualification RTF 30803-Certificate 3 in Horticulture (Turf) makes use of the irrigation Unit Standards:

- RTE 3601A-Install irrigation components.
- RTE 3605A-Troubleshoot irrigation systems.
- RTE 3611A-Operate a pressurised irrigation system.
- RTE 3612A-Implement a maintenance programme for an irrigation systems.

A search on correspondence study through the Australian Correspondence Schools only reveals an irrigation module of training at Level 2 which addresses the entire scope of irrigation, including installation and maintenance matters. This appears to be a basic overview of irrigation.

Most of the actual training for the irrigation industry in Australia is conducted through the Irrigation Association. They provide a course which results in the qualification "Certfied Irrigation Contractor (CIC). This is not a registered course on the Qualifications Framework, but it covers detail on the installation, repair and maintenance of irrigation systems.

United Kingdom:

No specific qualification is presented that deals with irrigation. Generally short practical courses are offered by the various irrigation product distributors.

There are a few specific irrigation Unit Standards registered at level 3 which are used within other horticultural Qualifications.

The following Qualifications contain a limited range of unit standards developed to handle learning aspects on irrigation systems:

• NPTC Level 3-Advanced National Certificate in Horticulture (500/4341/9) includes Unit Standards M/501/7086-Management of soil water.

• NPTC Level 3-Advanced National Diploma in Horticulture (500/4342/0) includes Unit Standards M/501/7086-Management of soil water.

• Edexcel Level 3-BTEC National Diploma in Horticulture (500/2286/6) includes Unit Standards J/501/1178-Turf irrigation and drainage.

• NPTC Level 3-Certificate in Amenity Horticulture (QCF) (500/3354/2) includes Unit Standards Y/501/0438-Maintain drainage systems and D/501/0439-Maintain irrigation systems.

- NPTC Level 3-Award in Amenity Horticulture (QCF) (500/3344/X) includes Unit Standards Y/501/0438-Maintain drainage systems and D/501/0439-Maintain irrigation systems.
- NPTC Level 3-Diploma in Amenity Horticulture (QCF) (500/3303/7) includes Unit Standards Y/501/0438-Maintain drainage systems and D/501/0439-Maintain irrigation systems. Source: National Learners' Records Database
 Qualification 73109
 13/07/2009

Overall these irrigation unit standards cover only the basic concepts and practical outputs for maintaining irrigation systems in a horticultural environment and the identification of faults.

New Zealand:

There are two Unit Standards which are registered under the domain Production Horticulture Level 3:

• Reference no 12395-"Install an irrigation system". It serves to provide basic knowledge on the installation of an irrigation system in a horticultural environment, but it does not give the detailed knowledge which this National Certificate Landscape Irrigation seeks to address.

• Reference No 22189-"Maintain an irrigation system used in horticulture". It covers basic cleaning, maintenance and repair of irrigation equipment.

• The "Maintain landscape and sports turf irrigation systems" Unit Standards in essence, follows the same procedures and methodology.

There is also an individual Unit Standard registered:

• Reference No 21047-"Describe, produce and apply liquid fertilizer used in organic horticulture" which very briefly outlines the aspect of fertigation within the irrigation system.

• The "install and maintain fertigation systems" unit standard requires a greater depth of knowledge, in that chemical fertilisers are also used.

Scotland:

No Qualifications specific to the irrigation industry were found in the Scottish Qualifications Framework search, but two Unit Standards that cover only the basic content comparable to the South African Qualification were found. These are:

• Irrigation (0078077) and is presented as a specialist module covering basic maintenance of irrigation equipment.

• Irrigation sportsturf (1210051) addresses the basic requirements of maintenance and troubleshooting for groundsmen and greenkeepers.

To address their needs, short courses in landscape irrigation are conducted.

United States of America:

No formal Qualifications specific to irrigation exist. The Irrigation Association provides the bulk of the irrigation related training for the industry. This training is not against registered Unit Standards. In addition, garden clubs provide very limited training through short informal courses which are loosely based on the United Kingdom framework and most of the suppliers conduct short unregistered courses relevant to their products.

Conclusion:

This Qualification compares favourably against those offered in Australia. The South African unit standards have a greater content and detail than those of the above countries, which will ensure that learners will be able to gain the best possible training in the various irrigation fields.

The Scottish and New Zealand Qualifications and Unit Standards have a limited focus on irrigation and therefore offer little in comparison.

The USA has no formally recognized irrigation Qualifications at the NQF Level 3.

Source: National Learners' Records Database

Qualification 73109

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SADC countries have no irrigation Qualifications or Unit Standards, as their personnel are either sourced from South Africa or they obtain their training from the South African Landscape Irrigation Association.

In conclusion, the Qualification meets and in many instances exceeds the standards of training offered elsewhere in the world.

ARTICULATION OPTIONS

Horizontal Articulation:

- ID 59389: National Certificate: Resource Guardianship, NQF Level 3.
- ID 66649: National Certificate: Landscaping, NQF Level 3.
- ID 49052: National Certificate: Plant Production, NQF Level 3.

Vertical Articulation:

• ID 58782: Further Education and Training Certificate: Plumbing, NQF Level 4.

• ID 49127: Further Education and Training Certificate: Design Foundation, NQF Level 4.

• ID 61669: Further Education and Training Certificate: Community Water Sanitation and Health Facilitation, NQF Level 4.

MODERATION OFTIONS

• Anyone assessing a learner against these Unit Standards must be registered as an assessor with the relevant ETQA and have experience or in depth knowledge of the horticultural industry.

• Any institution offering learning that will enable achievement of these unit standards or will assess these Unit Standards 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 Qualification and the agreed ETQA procedure.

• Therefore anyone wishing to be assessed against these Unit Standards may apply to be assessed by any assessment agency, assessor or provider institution which is accredited by the relevant ETQA.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Assessors must:

- Be accredited as an assessor by the relevant ETQA.
- Have experience or in depth knowledge of the landscape irrigation industry.
- Meet any other requirements that may be stipulated by the relevant ETQA.
- Hold a Qualification in Horticulture or Agriculture at NQF Level 5 or higher.

NOTES N/A

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	119472	Accommodate audience and context needs in oral/signed communication	Level 3	5
Fundamental	9010	Demonstrate an understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations	Level 3	2
Fundamental	9013	Describe, apply, analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts	Level 3	4
Fundamental	119457	Interpret and use information from texts	Level 3	5

Source: National Learners' Records Database

Qualification 73109

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	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	9012	Investigate life and work related problems using data and probabilities	Level 3	5
Fundamental	119467	Use language and communication in occupational learning programmes	Level 3	5
Fundamental	7456	Use mathematics to investigate and monitor the financial aspects of personal, business and national issues	Level 3	5
Fundamental	119465	Write/present/sign texts for a range of communicative contexts	Level 3	5
Core	263995	Schedule the application of water to plants and landscapes	Level 2	3
Core	335935	Conduct pressure and flow tests on various irrigation water sources	Level 3	3
Core	336014	Install and maintain borehole and wellpoint pump systems	Level 3	12
Core	335994	Install and maintain irrigation controllers and climatic sensors	Level 3	10
Core	336015	Install and maintain irrigation pumps	Level 3	10
Core	335962	Install and maintain valve in head sprinklers and their control networks	Level 3	12
Core	335974	Install control cables for automatic irrigation systems	Level 3	6
Core	335995	Install irrigation water storage tanks	Level 3	5
Core	264234	Monitor and maintain health and safety standards in horticulture	Level 3	5
Core	335975	Service and maintain irrigation control valves	Level 3	8
Elective	13912	Apply knowledge of self and team in order to develop a plan to enhance team performance	Level 3	5
Elective	264235	Apply supervisory management principles in a horticultural enterprise	Level 3	10
Elective	335934	Install and maintain fertigation systems.	Level 3	5
Elective	335957	Install and maintain irrigation filtration systems	Level 3	5
Elective	336016	Install and maintain irrigation pressure vessels	Level 3	5
Elective	264041	Maintain landscape and sportsturf irrigation systems	Level 3	8

LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION None

Source: National Learners' Records Database

Qualification 73109

13/07/2009



UNIT STANDARD:

Install and maintain fertigation systems.

SAQA US ID	UNIT STANDARD TITLE	UNIT STANDARD TITLE			
335934	Install and maintain fertigation	Install and maintain fertigation systems.			
ORIGINATOR	PROVIDER				
SGB Ornamental Horticulture and Landscape					
FIELD		SUBFIELD			
1 - Agriculture and Nature Conservation		Horticulture			
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS		
Undefined	Regular	Level 3	5		

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

SPECIFIC OUTCOME 1

Show an awareness of the potential health and safety hazards in fertigation systems and the safety precautions that must be applied.

SPECIFIC OUTCOME 2

Install a dual acting backflow preventor in a potable pipeline.

SPECIFIC OUTCOME 3

Install a venturi fertigation system to an irrigation mainline.

SPECIFIC OUTCOME 4

Install a fertigator in an irrigation mainline.

SPECIFIC OUTCOME 5

Install a hydraulic dosing pump in an irrigation mainline.

SPECIFIC OUTCOME 6

Install a metering pump in an irrigation pump station.

SPECIFIC OUTCOME 7

Service and maintain fertigation systems.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	73109	National Certificate: Landscape Irrigation	Level 3



Conduct pressure and flow tests on various irrigation water sources

SAQA US ID	UNIT STANDARD TITLE			
335935	Conduct pressure and flow tests on various irrigation water sources			
ORIGINATOR	PROVIDER			
SGB Ornamental Horticulture and Landscape				
FIELD		SUBFIELD		
1 - Agriculture and Nature Conservation		Horticulture		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 3	3	

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

SPECIFIC OUTCOME 1

Demonstrate an understanding of the hydraulic principles that pertain to the testing of an irrigation water source.

SPECIFIC OUTCOME 2

Test a municipal water supply at various flow rates.

SPECIFIC OUTCOME 3

Measure the pressure and flow rates from a pump station.

SPECIFIC OUTCOME 4

Measure the pressure and flow rates from an existing borehole.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	73109	National Certificate: Landscape Irrigation	Level 3

Unit Standard 335935



UNIT STANDARD:

Install and maintain irrigation filtration systems

SAQA US ID	UNIT STANDARD TITLE			
335957	Install and maintain irrigation fi	Itration systems		
ORIGINATOR	PROVIDER			
SGB Ornamental Hortic	ulture and Landscape			
FIELD		SUBFIELD		
1 - Agriculture and Nature Conservation		Horticulture		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 3	5	

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

SPECIFIC OUTCOME 1

Demonstrate an understanding of the different filtration requirements for irrigation equipment.

SPECIFIC OUTCOME 2

Install a self flushing filter bank on an irrigation delivery pipeline and fit the interconnecting manifolds.

SPECIFIC OUTCOME 3

Assemble the components of a self flushing sand filter system and install the inlet and outlet manifolds.

SPECIFIC OUTCOME 4

Install automatic backwashing controls and set a flushing schedule.

SPECIFIC OUTCOME 5

Service and maintain an automatic self flushing filtration system.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	73109	National Certificate: Landscape Irrigation	Level 3



Install and maintain valve in head sprinklers and their control networks

SAQA US ID	UNIT STANDARD TITLE				
335962	Install and maintain valve in h	Install and maintain valve in head sprinklers and their control networks			
ORIGINATOR	PROVIDER				
SGB Ornamental Horticulture and Landscape					
FIELD		SUBFIELD			
1 - Agriculture and Nature Conservation		Horticulture			
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS		
Undefined	Regular	Level 3	12		

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

SPECIFIC OUTCOME 1

Describe the different types of valve in head sprinklers and the methods of installing.these below the finished grade.

SPECIFIC OUTCOME 2

Install and interconnect the hydraulic tubes from an irrigation controller to the VIH sprinklers.

SPECIFIC OUTCOME 3

Install and interconnect solenoid cables from an irrigation controller to the VIH sprinklers.

SPECIFIC OUTCOME 4

Install and interconnect cables from an encoding controller to the field decoders.

SPECIFIC OUTCOME 5

Service and maintain hydraulic VIH sprinklers and the hydraulic networks.

SPECIFIC OUTCOME 6

Service and maintain electric VIH sprinklers and the cabling networks.

SPECIFIC OUTCOME 7

Complete all necessary documentation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	73109	National Certificate: Landscape Irrigation	Level 3

Source: National Learners' Records Database Unit Standard 335962 10/07/2009 Page 1



UNIT STANDARD:

Install control cables for automatic irrigation systems

SAQA US ID	UNIT STANDARD TITLE	UNIT STANDARD TITLE			
335974	Install control cables for autor	Install control cables for automatic irrigation systems			
ORIGINATOR	PROVIDER				
SGB Ornamental Hor	GB Ornamental Horticulture and Landscape				
FIELD	SUBFIELD				
1 - Agriculture and Nature Conservation		Horticulture			
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS		
Undefined	Regular	Level 3	6		

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

SPECIFIC OUTCOME 1

Lay armoured cables in irrigation trenches.

SPECIFIC OUTCOME 2

Lay cab tyre cable in trenches and connect to low voltage irrigation equipment.

SPECIFIC OUTCOME 3

Install conduits and single core cables to valve manifolds in an irrigation system.

SPECIFIC OUTCOME 4

Test low voltage cables and irrigation solenoids with a suitable battery pack.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	73109	National Certificate: Landscape Irrigation	Level 3

Unit Standard 335974

10/07/2009



Service and maintain irrigation control valves

SAQA US ID	UNIT STANDARD TITLE			
335975	Service and maintain irrigation	Service and maintain irrigation control valves		
ORIGINATOR	PROVIDER			
SGB Ornamental Horticulture and Landscape				
FIELD		SUBFIELD		
1 - Agriculture and Nature Conservation		Horticulture		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 3	8	

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

SPECIFIC OUTCOME 1

Strip and replace worn or defective parts on irrigation isolation valves.

SPECIFIC OUTCOME 2

Strip and replace worn or defective parts on direction control and air release valves.

SPECIFIC OUTCOME 3

Identify the various malfunctions that may occur in the operation of a hydraulic valve and the methods of remedying these.

SPECIFIC OUTCOME 4

Identify the various malfunctions that may occur in the operation of a solenoid valve and the methods of remedying these.

SPECIFIC OUTCOME 5

Strip and replace worn or defective parts on pressure control valves.

SPECIFIC OUTCOME 6

Complete all necessary documentation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	73109	National Certificate: Landscape Irrigation	Level 3



UNIT STANDARD:

Install and maintain irrigation controllers and climatic sensors

SAQA US ID	UNIT STANDARD TITLE				
335994	Install and maintain irrigation c	Install and maintain irrigation controllers and climatic sensors			
ORIGINATOR	PROVIDER				
SGB Ornamental Horticulture and Landscape					
FIELD		SUBFIELD			
1 - Agriculture and Nature Conservation		Horticulture			
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS		
Undefined	Regular	Level 3	10		

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

SPECIFIC OUTCOME 1

Identify the different irrigation controllers and their applications in irrigation systems.

SPECIFIC OUTCOME 2

Install irrigation controllers in different locations.

SPECIFIC OUTCOME 3

Provide adequate lightning protection for irrigation controllers and their secondary circuits.

SPECIFIC OUTCOME 4

Install and connect a range of climatic sensors to irrigation controllers for water conservation.

SPECIFIC OUTCOME 5

Maintain irrigation controllers and their accessories.

SPECIFIC OUTCOME 6

Complete all necessary documentation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	73109	National Certificate: Landscape Irrigation	Level 3



Install irrigation water storage tanks

SAQA US ID	UNIT STANDARD TITLE	UNIT STANDARD TITLE		
335995	Install irrigation water storage	Install irrigation water storage tanks		
ORIGINATOR	PROVIDER			
SGB Ornamental Ho	SGB Ornamental Horticulture and Landscape			
FIELD	SUBFIELD			
1 - Agriculture and Nature Conservation		Horticulture		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 3	5	

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

SPECIFIC OUTCOME 1

Construct a concrete base for a storage tank.

SPECIFIC OUTCOME 2

Position a storage tank on a prepared base and install the necessary piping.

SPECIFIC OUTCOME 3

Fit and adjust isolation and control valves to a storage tank.

SPECIFIC OUTCOME 4

Fit and adjust float switches to a storage tank.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	73109	National Certificate: Landscape Irrigation	Level 3



UNIT STANDARD:

Install and maintain borehole and wellpoint pump systems

SAQA US ID	UNIT STANDARD TITLE			
336014	Install and maintain borehole and wellpoint pump systems			
ORIGINATOR	PROVIDER			
SGB Ornamental Horticulture and Landscape				
FIELD	D		SUBFIELD	
1 - Agriculture and Nature Conservation		Horticulture		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 3	12	

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

SPECIFIC OUTCOME 1

Demonstrate a basic knowledge of hydrology that pertains to boreholes and wellpoints.

SPECIFIC OUTCOME 2

Show an awareness of the potential hazards that are prevalent in borehole and wellpoint installations and the safety precautions that must be applied.

SPECIFIC OUTCOME 3

Construct a wellpoint and install a pump with all the necessary piping and valves.

SPECIFIC OUTCOME 4

Install a submersible centrifugal pump in a borehole utilising high density polyethylene piping and fittings.

SPECIFIC OUTCOME 5

Install a progressive cavity pump in a borehole using galvanised steel piping.

SPECIFIC OUTCOME 6

Service and maintain a range of borehole and wellpcint pumps.

SPECIFIC OUTCOME 7

Complete all necessary documentation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	73109	National Certificate: Landscape Irrigation	Level 3

Source: National Learners' Records Database Unit Standard 336014

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Install and maintain irrigation pumps

SAQA US ID	UNIT STANDARD TITLE			
336015	Install and maintain irrigation	Install and maintain irrigation pumps		
ORIGINATOR	PROVIDER			
SGB Ornamental Horticulture and Landscape				
FIELD	SUBFIELD			
1 - Agriculture and Nature Conservation		Horticulture		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 3	10	

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

SPECIFIC OUTCOME 1

Demonstrate an understanding of the hydraulic principles that pertain to the installation and maintenance of irrigation pumps.

SPECIFIC OUTCOME 2

Identify the potential hazards that can be encountered in the installation and maintenance of irrigation pumps and the safety precautions that must be adhered to.

SPECIFIC OUTCOME 3

Identify the various types of positive displacement pumps that are used in irrigation.

SPECIFIC OUTCOME 4

Identify the different types of dynamic pumps that are used in irrigation.

SPECIFIC OUTCOME 5

Mount an irrigation pump on a concrete base and construct the suction and delivery manifolds.

SPECIFIC OUTCOME 6

Service and maintain a range of irrigation pumps.

SPECIFIC OUTCOME 7

Complete all necessary documentation involved in the maintenance of irrigation pumps.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	73109	National Certificate: Landscape Irrigation	Level 3

Source: National Learners' Records Database Unit Standard 336015

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UNIT STANDARD:

Install and maintain irrigation pressure vessels

SAQA US ID	UNIT STANDARD TITLE		-	
336016	Install and maintain irrigation pressure vessels			
ORIGINATOR		PROVIDER		
SGB Ornamental Horticulture and Landscape				
FIELD		SUBFIELD		
1 - Agriculture and Nature Conservation		Horticulture		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 3	5	

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

SPECIFIC OUTCOME 1

Demonstrate an understanding of the hydraulic principles that pertain to the installation and maintenance of pressure tanks.

SPECIFIC OUTCOME 2

Identify the potential hazards that pressure vessels pose and the safety precautions that must be adhered to.

SPECIFIC OUTCOME 3

Install a hydro-pneumatic pressure vessel in a pump station and fit the necessary interconnecting piping and valves.

SPECIFIC OUTCOME 4

Install a hydrosphere in a pump station and fit the necessary interconnecting piping and valves.

SPECIFIC OUTCOME 5

Service and maintain a hydro-pneumatic pressure vessel and its air charging equipment.

SPECIFIC OUTCOME 6

Service and maintain a hydrosphere in an automatic pump station.

SPECIFIC OUTCOME 7

Complete all necessary documentation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	7 3 109	National Certificate: Landscape Irrigation	Level 3

Unit Standard 336016