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REPUBLIC OF SOUTH AFRICA
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AIDS HELPLINE: 0800-0123-22 Prevention is the cure

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GOVERNMENT NOTICES

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

No. 373

26 March 2004

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Hatfield Forum West
1067 Arcadia Street
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Tel: +27 (0) 12 431 5000
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Established in terms of Act 58 of 1995

The South African Qualifications Authority in terms of the National Standard Body Regulations (Government Gazette No. 18787) published on 28 March 1998, hereby publishes the new appointments of the National Standards Bodies.

NSB 02 : CULTURE & ARTS

Category	Nomination	Nominated by	Workplace
Critical Interest Group	Mr W M Chuene	Tourism, Hospitality and Sport Education and Training Authority (THETA)	Tourism, Hospitality and Sport Education and Training Authority (THETA)

NSB 05 : EDUCATION, TRAINING AND DEVELOPMENT

Category	Nomination	Nominated by	Workplace
Labour	Mr Xolani Nduna	South African Democratic Teachers Union	South African Democratic Teachers Union (Gauteng Provincial Office)

NSB 07 : HUMAN AND SOCIAL STUDIES

Category	Nomination	Nominated by	Workplace
Critical Interest Group	V V Q Tshangela (replacing Rev Hlongwane)	SA Council for Theological Education (SACTE)	John Wesley College

Yours sincerely

JOE SAMUELS
DIRECTOR : STANDARDS SETTING AND DEVELOPMENT

SAQA'S MISSION

"To ensure the development and implementation of a National Qualifications Framework which contributes to the full development of each learner and to the social and economic development of the nation at large."

No. 374

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*Established in terms of Act 58 of 1995*

The South African Qualifications Authority in terms of the National Standards Body Regulations (Government Gazette No. 18787) published on 28 March 1998, hereby give notice of additional names of the following Standards Generating Body:

SGB for Plastics Manufacturing**Additional Names for the Plastics SGB**

NOMINEE	WORKPLACE	NOMINATING BODY	EXPERIENCE/ QUALIFICATIONS
Jan Jooste	Iscor Innovation Centre, Vaal University of Technology	Vaal University of Technology	Higher Education, Industrial Engineering, Technical - Composites, Research, Product design and development, Management (general, project, production), Consulting to industry

Yours sincerely,

JOE SAMUELS

DIRECTOR : STANDARDS SETTING AND DEVELOPMENT

No. 375

26 March 2004

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The South African Qualifications Authority in terms of the National Standards Body Regulations (Government Gazette No. 18787) published on 28 March 1998, hereby give notice of additional names of the following Standards Generating Bodies:

NSB 04 : Communication Studies and Language**Additional names for the SGB for South African Sign Language (SASL)**

NOMINEE	WORKPLACE	NOMINATING BODY	EXPERIENCE/ QUALIFICATIONS
Karl Patrick Reddy	World Deaf Leadership	NSB 04	Postgraduate Diploma in Education (UNISA); BSc (International Business/Business Administration); Currently Project Manager; Educator; Graphic Designer; Business Analyst; Student Development Educator

Yours sincerely,

JOE SAMUELS

DIRECTOR : STANDARDS SETTING AND DEVELOPMENT



Established in terms of Act 58 of 1995

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In order to proceed with the recognition of Standards Generating Bodies in terms of Government Regulations 19(1)(c) and 22(2) of 28 March 1998, National Standards Body 06; Manufacturing, Engineering and Technology, invites public comment with respect to *the acceptability of the nominees and the representativeness of the key education and training stakeholder interest groups* listed as SGB applicants below.

In addition, the NSB invite submissions from interested parties wishing to serve on such an SGB. Interested parties should take note of the section on SGB Information below.

All nominations/ applications should be accompanied by curricula vitae.

More information regarding this application may be obtained on the SAQA website or from the SAQA offices.

Comment should reach the NSB at the address below by not later than **26 April 2004**. All correspondence should be marked **SGB for Plastics Manufacturing** and be addressed to:

The Director: Standards Setting and
Development
SAQA
Attention: Mr. D Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 431-5144

SGB INFORMATION

As a necessary step in the development and implementation of the National Qualifications Framework, The National Standards Bodies are briefed [regulation 19(1)(c) of 28 March 1998] to recognise or establish Standards Generating Bodies (SGBs).

SGBs shall:

- a. generate standards and qualifications in accordance with the Authority requirements in identified sub-fields and levels;
- b. update and review standards;
- c. recommend standards and qualifications to National Standards Bodies;
- d. recommend criteria for the registration of assessors and moderators or moderating bodies; and
- e. perform such other functions as may from time-to-time be delegated by their National Standards Body.

Any bodies wishing to nominate representatives, make application to serve on, or make any other submission with regard to the above SGB should note the following information.

SGBs should be composed of organisations, which shall be key education and training stakeholder interest groups and experts in the sub-field. The NSB, when making its final decisions will have due regard for, among other things, *'the need for representativeness and equity, redress and relevant expertise in terms of the work of the SGBs.'*

Organisations proposing to nominate persons to SGBs should be sensitive to the need for **equity** and **redress**, and shall nominate persons who-

- (a) will be able to consider issues of productivity, fairness, public interest and international comparability as related to education and training in the sub-field;
 - (b) enjoy credibility in the sub-field in question, who enjoy respect; have the necessary expertise and experience in the sub-field and have the support or backing of the nominating body;
 - (c) are able to advocate and mediate the needs and interests of all levels within the sub-field covered by the Standards Generating Body;
 - (d) are able to exercise critical judgement at a high level; and
 - (e) are committed to a communication process between the Standards Generating Body, the National Standards Body and the Constituency.
-

PUBLIC NOTICE BY NSB 06, MANUFACTURING, ENGINEERING AND TECHNOLOGY, OF AN APPLICATION TO RE-REGISTRATOR THE SGB FOR PLASTICS MANUFACTURING

NSB 06 has received an application to re-register SGB for Plastics Manufacturing from 12 March 2004 to 11 February 2006.

BRIEF OF THE SGB

1. Develop learning pathways for potential qualifications and standards in the sub-field Manufacturing and Assembly in organizing field 06 from Level 2 through to Level 7 in Plastics and Industrial Rubber Manufacturing [Regulation 24(1)(e)].
2. Review and revise the following registered qualifications and standards in accordance with Authority requirements, at NQF levels 1 to 5: [Regulation 24(1)(b)].
 - National Certificates in Plastics Manufacturing (Levels 2 & 3)
 - Further Education and Training Certificate in Plastics Manufacturing (level 4)
 - National Certificates in Industrial Rubber Manufacturing (Mixing OR Extruding OR Moulding OR Calendaring) (Level 2, 3 & 5)
 - Further Education and Training Certificate in Industrial Rubber Manufacturing (Mixing OR Extruding OR Moulding OR Calendaring) (Level 4)
 - National Certificates in Thermoplastic Fabrication (Levels 2 & 3)
 - Further Education and Training Certificate in Thermoplastic Fabrication (Level 4)
 - National Certificates in Polymer Composites Fabrication (Levels 2 & 3)
 - Further Education and Training Certificate in Polymer Composites Fabrication (Level 4)
3. Generate the following qualifications and standards in accordance with Authority requirements, at NQF levels 1 to 7: These would cover plastics and industrial rubber manufacturing and related activities, including the preparation, processing and inspection of polymeric materials, and the use of moulds, dies and other forming devices. [Regulation 24(1)(a)].
 - National Diploma in Plastics Manufacturing (Level 5)
 - National First Degree in Plastics Manufacturing (Level 6)
 - National Masters Degree in Plastics Manufacturing (Level 7)
 - National Certificate in Thermoplastic Fabrication (Level 5)
 - National Certificate in Polymer Composites Fabrication (Level 5)
 - National Certificates in Inspection and Assessment of Polymeric Materials and Composites (Level 5)
 - National Certificates in Technical Advisory Services (Levels 2 & 3)
 - Further Education and Training Certificate in Technical Advisory Services (Level 4)
 - National Certificates in Composites Resin Castings (Levels 2, 3 & 5)
 - Further Education and Training Certificate in Composites Resin Castings (Level 4)
 - National Certificates in Composites Continuous Processes (Levels 2, 3 & 5)
 - Further Education and Training Certificate in Composites Continuous Processes (Level 4)
4. Recommend the qualifications and standards revised and generated under 2 and 3 above to the National Standards Body [Regulation 24(1)(c)].
5. Recommend criteria for the registration of assessors and moderators or moderating bodies [Regulation 24(1)(d)].
6. Review these qualifications and unit standards and effect the necessary changes [Regulation 24(1)(b)].
7. Maintain liaison, during the process of developing standards and qualifications, with other related Standards Generating Bodies as and when directed by NSB 06 [Regulation 24(1)(e)].

PROPOSED COMPOSITION OF THE SGB

Nominee	Workplace	Nominating Body	Experience/Qualifications
George Ashmore	Treofan SA (Pty) Ltd	Plastics Converters' Association	Maintenance, Production, Training, Quality, National Occupational Safety Association
Kirtida Bhana	Self-employed	Plastics Institute of Southern Africa	Production, Quality, Training, Technical
Desmond Hadebe	Trade & Investment SA Division	Department of Trade and Industry	Education, Research chemist
Anton Hanekom	Plastics Federation of South Africa	Plastics Federation of South Africa	Human Resources, Training & Development
Jan Jooste	Iscor Innovation Centre, Vaal University of Technology	Vaal University of Technology	Higher Education, Technical, Research, Design, Composites
Wally Kinghorn	Denel Aviation	Plastics Converters' Association	Technical, Maintenance, Design, Composites, Training
Gibson Lephallo	Nampak Liquid Packaging	National Union of Metalworkers of South Africa	Production, Industrial Relations, Shop Steward
Josephine Makawa-Mbewe	Sasol Polymers (Polymer Technology Centre)	University of Stellenbosch	Higher Education, Technical, Polymer research
Mosehla Mampho	Petzetakis Africa	South African Chemical Workers' Union	Production, Sales, Shop Steward, National representative
Pranesh Maniraj	Petzetakis Africa	Thermoplastic Welding Institute of SA	Technical, Quality, Production Management, Marketing & Sales
Zachariah Mazibuko	MERSETA	Chemical, Energy, Paper, Printing, Wood & Allied Workers' Union	Production, Shop Steward, Standards setting
S'bu Qholosha	Nampak Flexible Cluster	Plastics Converters' Association	Training, Production, Training & Development, Management, Standards setting
Warick Ralph	Consol Plastics	Plastics Converters' Association	Human Resources, Training & Development, Industrial Relations
Christoph Vorwerk	Xasa Facilitating & Consulting cc	Convenor / facilitator	Training, Education, Technical, Standards setting and qualifications design



Established in terms of Act 58 of 1995

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In order to proceed with the recognition of Standards Generating Bodies in terms of Government Regulations 19(1)(c) and 22(2) of 28 March 1998, National Standards Body 06, Manufacturing, Engineering and Technology, invites public comment with respect to *the acceptability of the nominees and the representativeness of the key education and training stakeholder interest groups* listed as SGB applicants below.

In addition, the NSB invite submissions from interested parties wishing to serve on such an SGB. Interested parties should take note of the section on SGB Information below.

All nominations/ applications should be accompanied by curricula vitae.

More information regarding this application may be obtained on the SAQA website or from the SAQA offices.

Comment should reach the NSB at the address below by not later than **26 April 2004**. All correspondence should be marked **SGB for Mining and Minerals** and be addressed to:

The Director: Standards Setting and
Development
SAQA
Attention: Mr. D Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 431-5144

SGB INFORMATION

As a necessary step in the development and implementation of the National Qualifications Framework, The National Standards Bodies are briefed [regulation 19(1)(c) of 28 March 1998] to recognise or establish Standards Generating Bodies (SGBs).

SGBs shall:

- a. generate standards and qualifications in accordance with the Authority requirements in identified sub-fields and levels;
- b. update and review standards;
- c. recommend standards and qualifications to National Standards Bodies;
- d. recommend criteria for the registration of assessors and moderators or moderating bodies; and
- e. perform such other functions as may from time-to-time be delegated by their National Standards Body.

Any bodies wishing to nominate representatives, make application to serve on, or make any other submission with regard to the above SGB should note the following information.

SGBs should be composed of organisations, which shall be key education and training stakeholder interest groups and experts in the sub-field. The NSB, when making its final decisions will have due regard for, among other things, *'the need for representativeness and equity, redress and relevant expertise in terms of the work of the SGBs.'*

Organisations proposing to nominate persons to SGBs should be sensitive to the need for **equity** and **redress**, and shall nominate persons who-

- (a) will be able to consider issues of productivity, fairness, public interest and international comparability as related to education and training in the sub-field;
 - (b) enjoy credibility in the sub-field in question, who enjoy respect; have the necessary expertise and experience in the sub-field and have the support or backing of the nominating body;
 - (c) are able to advocate and mediate the needs and interests of all levels within the sub-field covered by the Standards Generating Body;
 - (d) are able to exercise critical judgement at a high level; and
 - (e) are committed to a communication process between the Standards Generating Body, the National Standards Body and the Constituency.
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SOUTH AFRICAN QUALIFICATIONS AUTHORITY**PUBLIC NOTICE BY NSB 06 MANUFACTURING, ENGINEERING AND TECHNOLOGY OF, THE
REGISTRATION OF AN SGB FOR MINING AND MINERALS**

NSB 06 wish to re-register an SGB for Mining and Minerals for a period of three years from 12 March 2004 to 11 February 2006.

BRIEF OF THE SGB

1. Develop learning pathways for potential qualifications and unit standards in the sub-field Manufacturing and Assembly from level 1 through to level 8 [*Regulation 24(1)(e)*].
2. Generate standards and qualifications for Mining and Minerals and related engineering areas where required necessary, in accordance with Authority requirements for NQF levels 1 to 8 [*Regulation 24(1)(a)*].

Standards and qualifications will be developed across the areas listed below:

- Underground Hard Rock
 - Underground Coal
 - Surface Mining
 - Exploration and Mining Geology
 - Rock Engineering
 - Cement Manufacture
 - Gemstone Processing
 - Jewellery Manufacture
 - Mineral Survey
 - Engineering related with impact to Mining and Minerals
3. Recommend the standards and qualifications generated under 2 above to the National Standards Body [*Regulation 24(1)(c)*].
 4. Recommend criteria for the registration of assessors and moderators or moderating bodies [*Regulation 24(1)(d)*].
 5. Review the relevant qualifications and unit standards and effect the necessary changes [*Regulation 24(1)(b)*].

It is incumbent upon the Mining SGB to identify and include any other national parties/stakeholders/interest groups as and when the need arises.

COMPOSITION OF THE SGB

	NOMINEE	WORKPLACE	NOMINATING BODY	QUALIFICATIONS	EXPERIENCE
1	Bloys S	De Beers	De Beers	Bachelor of Social Science Labour Relations Development Programme.	98-02 Senior HR Officer 99-02 Employee Relations Manager Present: Employment Equity Superintendent
2	Dougall A W	Technikon Witwatersrand	Technikon Witwatersrand	GDE Mining Engineering GDE Metallurgy B Tech Education B Tech Mining Engineering M Tech Educational Management NHD Metalliferous Mining NHD Surface Mine Management NHD Coal Mining	73-90 Learner Official, Diplomat Official, Heads production planning, project engineer, mine manager 90-95 SNR Regional Engineer, DME 95- Present: SNR Lecturer. HOD Mining TWR: School of Mines
3	Ferguson T H	Ingwe	Ingwe	National Diploma Electrical Engineering South African Certificate of Competency Factories Mines and Works	70-74 Apprentice Electrician 74-82 Technician and Project Engineer 82-83 Project Engineer 83-91 Opencast Engineer 91-92 Underground Engineer 92-95 Assistant Resident Engineer 95-98 Engineering Manager (Rietspruit) 98-01 Engineering Manager (Duvha) 01-02 Engineering Manager Process and Logistics 02- Present: Ingwe Engineering Manager Services
4	Gumede T	National Union of Mine Workers	National Union of Mine Workers	Matric Negotiation skills Mines Health and Safety Act Employment Equity and Skills Development	Security Officer : Greenside Colliery Security Officer : Clydesdale Colliery Full time Shop Steward Mine Store Clerk Eyesizwe National Co-ordinator
5	Jansen Z	Impala Platinum	Impala Platinum	Baccalareus Degree in Technology Safety Management National Higher Diploma in Safety Management Mine overseer	Shift Supervisor Safety Officer Acting Mine Overseer Chief Safety Officer Training Manager : Mining

				Ticket	
6	Knock A	Anglo Platinum	MQA Board	BSc Engineering Mining MSc Engineering Professional Engineer Member South African Institute for Mining Metallurgy	71 Learner official 79 Professional Engineer 91-95 General Manager 97 Council of Mine Managers 97 MQA Employer's representative 02 SGB member Present Business Manager (Anglo Platinum)
7	Lesibe T	National Union of Mine Workers	National Union of Mine Workers	National Abet Practitioner Certificate National Certificate in Industrial Marketing	Abet Practitioner Industrial Marketer Member of NUM
8	Mayixale P E	Harmony Gold Mines	Harmony Gold Mines	Bachelor of Business Administration Business Administration Diploma Project Management Diploma	79-80 Gold Fields Security Force 81 Personnel Assistant 82-84 Senior Personnel Assistant 84-86 Personnel Assistant 87-88 Hostel Assistant 88-89 Assistant Hostel Manager 89-95 Manager/ Social Services and Hostels 95-98 H R manager Present : H R Development Manager
9	Nundlall A R	Department of Minerals and Energy	Department of Minerals and Energy	Certificate in mines environmental control Certificate programme in Law Master Degree in Public Health	85-96 Section Ventilation Officer 96-98 Senior Ventilation Officer 98-Present : Senior Inspector of Mines
10	Paynter W	Anglogold	Standard and Qualifications Coordinating Group	NTC 3 Artisan Diploma in Training Managers Diploma in Chamber of commerce	Artisan Fitter and Turner Trainer officer Learning Material Developer Technical Training Supervisor Project Leader Training Superintendent Member of MQA committees and working groups Facilitator of 1-4 Standards Generating Group and Technical Reference Group

11	Teteme A	National Union of Mine Workers	National Union of Mine Workers	Practitioner's certificate in ABET	84-86 Northern Cape Admin Board Clerk 86-95 Geology Clerical 95-99 NUM Education Officer 99- Present : J.B. Marks co-ordinator
12	Van der Merwe A	Department of Minerals and Energy	Department of Minerals and Energy	General Nursing, Midwifery and Occupational Medicine qualifications	Development and maintenance of effective, legislative and enforcement framework Govern the mining sector to be safe and healthy Liaise with sectors Render a service to Tripartite structures as required by the MHSA.
13	Mr M.M. A. Zondi	Department of Minerals and Energy	Department of Minerals and Energy	BSc Engineering	93- Engineering assistants 96- Electrical Engineer 97- Director in Minerals and Energy Chairperson of Mining Regulations. Advisory Committee (MRAC) Present: Chief Director of Offshore and Mine Equipment Member of Mine Health and safety council Represent DME in the MQA
14	Mr E. Tantsi	Impala Services	Impala Services	Matric Higher Certificate in non formal education	ABET Practitioner
15	Ms S.R. Carthy	Chamber of Mines	Chamber of Mines	1 st year BA Transvaal Teachers Diploma Institute of Personnel Management Diploma Short courses for business and personal skills	77-85 Various teaching posts in government and private primary and secondary schools. 89-88 Mining Industry Engineering Trades Training Board Administrative 92 as Manager. 95-96 Manager, Technical Training Services, Chamber of Mines in conjunction with abovementioned post. 96-Present : Assistant Adviser of Education and Training Unit, Chamber of Mines

16	Mr J.N. Swart	Carletonville Technical College	Carletonville Technical College	National Certificate for technician (T3) UNISA HED UNISA B.A UNISA B.Ed	70-Department of Commerce: Assigning of Measuring Instruments 71-77 Draftsman 77-80 Drawing Teacher 81-86 Lecturer 87-88 Senior Lecturer 88-97 Head of Department 97- Present: Vice Rector
17	Ms L. Kirsten	Engineering Council of South Africa	Engineering Council of South Africa	BSc (Physical Sciences) Higher Education Diploma WOU International Certificate in Technology Education	92-94 Teacher 94-96 Curriculum Development Department Manager 97-98 Assessment and Accreditation Manager 98 Outcomes Based Education and Training Consultant 98- Present : Standards & Procedures Manager
18	Mr R. Mc Loughlin	Department of Minerals and Energy	Department of Minerals and Energy	72-98 Gold Mine Industry 78-80 Shaft sinking contracting company 88-90 Engineering product Supplier 91 Inspector of Mines (Department of Minerals) 95-96 Inspector of Mines (Johannesburg & Welkom) 97 Principal Inspector of Mines	Government Certificate of Competency in Electrical Government Certificate of Competency in Mechanical
19	Mr D.J. Van Niekerk	Siyazi Consultant	South African Institute for Mining and Metallurgy and Mining Professional Association	Mine Manager Certificate Mine Overseer Certificate Managing Development Programme-Unisa Advisory Engineering Programme-Unisa Strategic Management Stellenbosch	85-86 Underground Manager Van Dyksdrift 86-93 Underground Manager Welgedacht 93-94 Strategic Manager Rand Coal Ltd 92-93 Mine Manager Douglas Colliery 94-97 Mine Manager Ermelo mines 96-02 Mine Manager Gloria 00-01 Tech.Manager Douglas Colliery
20	G.J. Brokenshire	Anglogold	Standard and Qualifications Coordinating Group	B.Sc. Electrical Engineering Management Development Diploma	71-79 Electrical Supply Commission 79-82 Section Engineer 89- Chief Electrical Engineer

				Government Certificate of Competency (Factories) Government Certificate of Competency (Mines and Works)	92- Senior Division Training Manager Present - Chairman of the MQA's Learnership Committee
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**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

Forestry

Registered by NSB 01, Agriculture and Nature Conservation, publishes the following qualifications 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 upon which qualifications are based. The full qualification and unit standards can be accessed via the SAQA web site at www.saqo.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, Hatfield Forum, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the unit standards should reach SAQA at the address ***below and no later than 26 April 2004***. All correspondence should be marked **Standards Setting – SGB for Forestry** and addressed to

The Director: Standards Setting and Development
SAQA

Attention: Mr. D Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 431-5144
dmphuthing@saqa.co.za

JOE SAMUELS

DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



National Certificate in Forestry: Timber Harvesting - NQF Level 3

Registration Number:

Field: Agriculture and Nature Conservation

Sub-field: Forestry

NQF Level: 3

Credits: 121

Issue date:

Review date:

Rationale of the qualification

Candidates for this qualification are likely to be working in the forestry sub-field. The qualification will give them the opportunity to balance their practical skills with the essential knowledge required to earn a formal qualification in timber harvesting.

There is also a critical need in the industry to identify people who are able to conduct the essential operations associated with efficient and safe operation in at least one of the mechanised timber harvesting operations.

Purpose:

This qualification is aimed at people who work or intend to work within a timber harvesting context, and who seek recognition for essential skills in forestry operations.

Recipients of this qualification are able to enhance safety and productivity in timber harvesting, and this qualification provides evidence of a proven ability to:

- Use complex and sophisticated felling and extraction systems and machinery necessitating various specialised skills and operations

- prepare an operational timber harvest plan;
- manage oneself;
- supervise other persons directly involved in the timber harvesting operation;
- perform a range of work associated with timber harvesting;
- solve problems that will be encountered in normal operating conditions

This qualification is designed to be flexible and accessible so that people are able to demonstrate the competencies required to work safely in timber harvesting in general and effectively and safely in at least one of the following mechanised timber harvesting specialist areas:

- Cable Yarding
- Feller Buncher
- Harvester
- Tractor
- Skidder
- Forwarder

Access to the Qualification

Open access.

This qualification series recognises skills, knowledge and values relevant to a workplace. It is designed for learners who:

- Have attended courses and then apply the knowledge gained to activities in the workplace
- Are already workers and have acquired the skills and knowledge without attending formal courses
- Is part of a Learnership programme which integrates structured learning and work experience.

Learning assumed to be in place

It is assumed that candidates embarking on learning programmes towards this qualification may or may not have previous experience in the forestry industry and is therefore open to all learners.

Entry assumptions as stipulated in the individual unit standards will be applicable.

This qualification has the following exit level outcomes:

Exit level outcome 1

Demonstrate the ability and understanding to communicate in a variety of ways and use mathematics in real life situations which are suitable to and in the context of this qualification

Associated Assessment Criteria:

- Communication is regular and ongoing.
- Information is clear and accurate and conveyed in a timely manner.
- Relationships with peers and supervisory/management levels are established and functioning.

Exit level outcome 2

Demonstrate the ability to maintain safe work operations in a forestry environment

Associated Assessment Criteria

- Safety procedures during wildfire suppression are identified and explained
- An understanding of how to contribute to suppression of wild fires is demonstrated
- Knowledge of basic safety in forestry operations is demonstrated

Exit level outcome 3

Demonstrate the ability to plan a timber harvest operation

Associated Assessment Criteria

- The ability to conduct basic forestry map reading is demonstrated
- The ability to prepare an operational timber harvest plan is demonstrated

Exit level outcome 4

Demonstrate the ability to use a chainsaw safely in a production environment

Associated Assessment Criteria

- The ability to use and maintain a chainsaw is demonstrated
- Trees are felled using standard techniques and felling levers
- Felled trees are de-branched and cross-cut in a production situation
- Learner is able to evaluate the benefits and difficulties of team work within his/her own work context
- Safe working practices are explained and demonstrated
- Appropriate Legislation is referred to when explanations are given.

Exit level outcome 5

Demonstrate knowledge of timber harvesting operations in relation to the forestry environment

Associated Assessment Criteria

- Knowledge of key elements of commercial forestry is demonstrated
- Knowledge of mechanical timber handling equipment is demonstrated
- Knowledge of cable extraction is demonstrated
- Knowledge of choking and de-choking timber is demonstrated
- Knowledge of ground-based machine extraction is demonstrated
- Learner is able to evaluate the benefits and difficulties of team work within his/her own work context
- Safe working practices are explained and demonstrated
- Appropriate Legislation is referred to when explanations are given.

Specialist Areas**Exit level outcome 6**

Demonstrate the ability to extract timber using cable yarding systems in a production situation

Associated Assessment Criteria

- Knowledge of rigging equipment and accessories is demonstrated
- The ability to prepare rigging equipment and accessories is demonstrated
- The ability to use a cable yarder in a production situation is demonstrated
- The ability to use a loader in a production situation is demonstrated
- Learner is able to evaluate the benefits and difficulties of team work within his/her own work context
- Safe working practices are explained and demonstrated
- Appropriate Legislation is referred to when explanations are given.

Exit level outcome 7

Demonstrate the ability to fell timber with a feller buncher in a production situation

Associated Assessment Criteria

- The ability to prepare, operate and maintain a mechanised timber harvesting machine is demonstrated
- The ability to use a feller buncher in a non-production and production situation is demonstrated
- The ability to choke and dechoke timber with a skidding machine is demonstrated
- Learner is able to evaluate the benefits and difficulties of team work within his/her own work context
- Safe working practices are explained and demonstrated
- Appropriate Legislation is referred to when explanations are given.

Exit level outcome 8

Demonstrate the ability to fell and prepare timber with a harvester in a production situation

Associated Assessment Criteria

- The ability to prepare, operate and maintain a mechanised timber harvesting machine is demonstrated
- The ability to fell, debranch and debark trees in a production and non-production situation is demonstrated
- The ability to fell and process trees in a production and non-production situation is demonstrated
- Learner is able to evaluate the benefits and difficulties of team work within his/her own work context
- Safe working practices are explained and demonstrated
- Appropriate Legislation is referred to when explanations are given.

Exit level outcome 9

Demonstrate the ability to extract timber with a tractor in a production situation

Associated Assessment Criteria

- The ability to prepare, operate and maintain a tractor in a non- production situation is demonstrated
- The ability to extract timber with an attachment is demonstrated
- The ability to choke and dechoke timber with an attachment is demonstrated
- The ability to extract and short-haul timber with an attachment is demonstrated
- The ability to extract and short-haul timber with an attachment fitted with a self loading crane is demonstrated
- Learner is able to evaluate the benefits and difficulties of team work within his/her own work context
- Safe working practices are explained and demonstrated
- Appropriate Legislation is referred to when explanations are given.

Exit level outcome 10

Demonstrate the ability to extract timber with a skidder in a production situation

Associated Assessment Criteria

- The ability to extract timber to a landing is demonstrated
- The ability to choke and dechoke timber fitted with a winch is demonstrated
- The ability to operate a skidding machine in machine assisted tree felling is demonstrated
- Learner is able to evaluate the benefits and difficulties of team work within his/her own work context
- Safe working practices are explained and demonstrated
- Appropriate Legislation is referred to when explanations are given.

Exit level outcome 11

Demonstrate the ability to extract timber with a forwarder in a production situation

Associated Assessment Criteria

- The ability to extract logs in a production situation is demonstrated
- The ability to load, off-load and stack timber in a production situation is demonstrated
- Learner is able to evaluate the benefits and difficulties of team work within his/her own work context
- Safe working practices are explained and demonstrated
- Appropriate Legislation is referred to when explanations are given.

Exit level outcome 12

Demonstrate an understanding of options for further learning in this or a related field of learning and preparation requirements for such learning.

Associated Assessment Criteria

- The various options for further learning and the purpose thereof are explained.
- The preparation requirements are explained and the learning areas identified and selected.
- An individual learning plan is developed in the context of the qualification and the workplace.

Rules of combination for this qualification

- All Fundamental unit standards are compulsory (37 Credits)
- All Core unit standards are compulsory (30 Credits)
- A selection of one of the specialist areas:
 - Cable Yarding (51 Credits)
 - Feller Buncher (53 Credits)
 - Harvester (97 Credits)
 - Tractor (55 Credits)
 - Skidder (50 Credits)
 - Forwarder (55 Credits)
- A selection of a minimum of 10 credits from the Individual Elective unit standards
- The total minimum combination of credits for this qualification is 121.

International comparability

This qualification and the component unit standards have been compared with similar qualifications from New Zealand. The New Zealand Qualifications Framework has two qualifications that relate to this one: National Certificate in Forestry (Timber harvesting) at level 4, consisting of 230 credits and the National Certificate in Forestry (Mechanised timber harvesting) also at level 4, consisting of 230 credits.

It was felt that 2 different qualifications would not serve the purpose for South African conditions, therefore a direct comparison between the New Zealand and the South African qualification cannot be made, although there are similarities in some of the unit standards that are included.

Integrated Assessment

Integrated assessment at the level of the qualification provides an opportunity for learners to show they are able to integrate concepts, actions and ideas achieved across a range of unit standards and contexts.

Integrated assessment must evaluate the quality of observable performance as well as the thinking behind the performance.

Some assessment aspects will demand practical demonstration while others may not. In some case inference will be necessary to determine competence depending on the nature and context within which performance takes place.

Since this is a foundational qualification, it is necessary to ensure that the fundamental part of the qualification is also targeted to ensure that while the competence may have been achieved in a particular context, learners are able to apply it in a range of other contexts and for further learning. The assessment should also ensure that all the critical cross-field outcomes have been achieved.

Recognition of prior learning

This qualification may be obtained through a process of RPL. The learner should be thoroughly briefed prior to the assessment and support provided to assist in the process of developing a portfolio. While this is primarily a workplace-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit-level outcomes.

Articulation possibilities

The qualification has been designed and structured so that qualifying learners can move from one context to another. Employers or institutions should be able to evaluate the outcomes of this qualification against the needs of their context and structure top-up learning appropriately.

Equally, holders of other qualifications may be evaluated against this qualification for the purpose of RPL.

Moderation Options

- Anyone assessing a learner against this qualification must be registered as an assessor with the relevant ETQA
- Any institution or learning provider offering learning towards the achievement of this qualification should be accredited as a provider with the relevant ETQA
- Moderation of assessment should be overseen by the relevant ETQA according to the moderation guidelines provided for in this qualification as well as the agreed ETQA procedures

Criteria for registration of assessors

The following criteria should be applied by the relevant ETQA:

- Appropriate qualification and a minimum of 3 years experience in the field of Forestry: Timber Harvesting or a similar environment. The subject matter experience of the assessor can be established by recognition of prior learning.
- Appropriate experience and understanding of assessment theory, processes and practices
- Good interpersonal skills and the ability to balance the conflicting requirements of:
 - Maintaining national standards
 - The interests of the learner
 - The need for transformation and redressing the legacies of the past
 - The cultural background and language of the learner
- Registration as an assessor with the relevant ETQA

QUALIFICATION MATRIX**National Certificate in Forestry: Timber Harvesting NQF Level 3**

Fundamental			
NLRD	Communication	Level	Credits
8968	Accommodate context needs in oral communication.	3	5
8969	Interpret and use information from texts.	3	5
8970	Write texts for a range of communicative contexts.	3	5
12461*	Communicate with clients	3	3
9529	Compile feasibility and commissioning reports	3	3
	Mathematics		
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	3	2
7456	Use mathematics to investigate and monitor the financial aspects of personal and business issues	3	5
9012	Investigate life-related problems using data and probabilities	3	5
14108	Measure, estimate and calculate physical quantities and explore, describe and represent, interpret and justify geometrical relationships in two and three dimensional space relevant to the life or workplace of the community	3	4
	Total Fundamental		37
NLRD	CORE	Level	Credits
New	N4 - Fell trees using a chainsaw in a production situation	3	5
New	G1 - Demonstrate knowledge of basic safety in forestry operations	2	1
New	U5- Conduct basic forestry map reading	3	2
New	P1 - Prepare an operational harvest plan	4	4
New	N1 - Maintain a chainsaw and cut felled timber using a chainsaw	2	4
New	N5 - Debranch felled trees using a chainsaw in a production situation	2	3
New	N6 - Crosscut felled trees using a chainsaw in a production situation	2	2
New	L1 - Demonstrate knowledge of mechanical timber handling equipment	2	1
New	Y3 - Demonstrate knowledge of cable extraction	2	2
New	E1 - Demonstrate knowledge of ground-based machine extraction	2	1
	Total Core		25

ELECTIVE			
NLRD	1. Specialist: Cable Yarding	Level	Credits
New	Y1 - Demonstrate knowledge of wire ropes, rigging accessories, anchor systems and rigging in cable yarding operations.	3	3
New	Y2 - Prepare anchors, rig intermediate supports, tailtrees and a tower and set up working cables for a cable yarding operation.	3	15
New	Y4 - Extract timber to a landing using a cable yarder in a production situation	3	10
New	L5 - Load, off-load and stack timber using a loader in a production situation	3	20
New	C3 - Choke and dechoke timber during extraction with a cable yarder in a production situation	2	3
	Total		51
NLRD	2. Specialist: Feller Buncher	Level	Credits
New	M1 - Prepare, operate and maintain a mechanised harvesting machine	3	5
New	M2 - Fell and bunch trees using a slew boom feller buncher in a non-production situation	3	15
New	M4 - Fell and bunch trees using a feller buncher in a production situation	4	15
New	C2 - Choke and dechoke timber during extraction with a skidding machine fitted with a winch	2	3
New	M3 - Fell and bunch trees using a drive-to-tree feller buncher in a non-production situation	3	15
	Total		53
NLRD	3. Specialist: Harvester	Level	Credits
	M1 - Prepare, operate and maintain a mechanised harvesting machine	3	5
New	M5 - Fell, debranch and debark trees using a harvester in a non-production situation	3	20
New	M6 - Fell, debranch and debark trees using a harvester in a production situation	4	20
New	M7 - Fell and process trees into products using a harvester in a non-production situation	3	26
New	M8 - Fell and process trees into products using a harvester in a production situation	4	26
	Total		97

NLRD	4. Specialist: Tractor	Level	Credits
New	T1 - Prepare, operate and maintain a tractor in a non-production situation	2	3
New	T2 - Extract timber to a landing using a tractor fitted with a skidding attachment in a production situation	3	12
New	C2 - Choke and dechoke timber during extraction with a skidding machine fitted with a winch	2	3
New	T3 - Extract and short-haul timber using a tractor and trailer in a production situation	3	12
New	T4 - Extract and short-haul timber using a tractor and trailer fitted with a self-loading crane in a production situation	4	25
Total			55
NLRD	5. Specialist: Skidder	Level	Credits
New	S1 - Extract timber to a landing using a cable skidder in a production situation	3	20
New	C2 - Choke and dechoke timber during extraction with a skidding machine fitted with a winch	2	3
New	S2 - Extract timber to a landing using a grapple skidder in a production situation	3	25
New	S3 - Operate a skidding machine fitted with a winch in machine assisted tree felling	3	2
Total			50
NLRD	6. Specialist: Forwarder	Level	Credits
New	F1 - Extract logs to a landing using a forwarder in a production situation	4	35
New	L5 - Load, off-load and stack timber using a loader in a production situation	3	20
Total			55
INDIVIDUAL ELECTIVES			
NLRD	Title	Level	Credits
New	N2 - Fell trees with a chainsaw using the standard technique and felling Levers	2	2
New	M9 - Delimb tree lengths using a static delimber in a production situation	3	15
New	N7 - Fell trees using a chainsaw and machine assistance.	3	2

New	L2 - Prepare, operate and maintain a 3-wheeled loader in a non-production situation	3	5
New	L3 - Prepare, operate and maintain a self-propelled knuckle boom loader in a non-production situation	3	5
New	L4 - Prepare, operate and maintain a vehicle mounted knuckle boom loader in a non-production situation	3	5
New	N3 - Fell trees with a chainsaw using specialised techniques	3	2
New	N9 - Scale tree lengths into poles in a production situation	3	3
New	N10 - Scale tree lengths into saw and veneer logs in a production situation	3	10
	Total minimum individual electives		10
	Total minimum for qualification		121

**NATIONAL CERTIFICATE IN FORESTRY: TIMBER HARVESTING - NQF LEVEL 3
NEW UNIT STANDARDS AND SPECIFIC OUTCOMES**

1. Unit standard title: Demonstrate knowledge of wire rope, rigging accessories, anchor systems and rigging in cable yarding operations.

- Specific outcome 1: Demonstrate knowledge of wire ropes used in cable yarding operations.
Specific outcome 2: Demonstrate knowledge of rigging accessories.
Specific outcome 3: Demonstrate knowledge of anchor systems.
Specific outcome 4: Demonstrate knowledge of the rigging of intermediate supports, talltrees and a tower for a cable yarding operation.

2. Unit standard title: Prepare, operate and maintain a 3-wheeled loader in a non-production situation.

- Specific outcome 1: Demonstrate knowledge of the 3-wheeled loader.
Specific outcome 2: Prepare and start-up a 3-wheeled loader.
Specific outcome 3: Operate a 3-wheeled loader.
Specific outcome 4: Park, shut-down and maintain a 3-wheeled loader after use.

3. Unit standard title: Prepare, operate and maintain a self-propelled knuckle boom loader in a non-production situation.

- Specific outcome 1: Demonstrate knowledge of the self-propelled knuckle boom loader.
Specific outcome 2: Prepare and start-up a self-propelled knuckle boom loader.
Specific outcome 3: Operate a self-propelled knuckle boom loader.
Specific outcome 4: Park, shut-down and maintain a self-propelled knuckle boom loader after use.

4. Unit standard title: Prepare, operate and maintain a vehicle mounted knuckle boom loader in a non-production situation.

- Specific outcome 1: Demonstrate knowledge of the vehicle mounted knuckle boom loader.
Specific outcome 2: Prepare and start-up a vehicle mounted knuckle boom loader.
Specific outcome 3: Operate a vehicle mounted knuckle boom loader.
Specific outcome 4: Shut-down and maintain a vehicle mounted knuckle boom loader after use.

5. Unit standard title: Load, off-load and stack timber using a loader in a production situation.

- Specific outcome 1: Prepare for loading, off-loading and stacking of timber.
Specific outcome 2: Load a forestry transport vehicle in a production situation.
Specific outcome 3: Off-load a forestry transport vehicle in a production situation.
Specific outcome 4: Stack timber in a production situation.

6. Unit standard title: Prepare, operate and maintain a mechanised harvesting machine in a non-production situation

- Specific outcome 1: Demonstrate knowledge of the mechanised harvesting machine.
Specific outcome 2: Prepare and start-up the mechanised harvesting machine.
Specific outcome 3: Operate the mechanised harvesting machine.
Specific outcome 4: Park, shut-down and maintain the mechanised harvesting machine after use.

7. Unit standard title: Fell and bunch trees using a slew boom feller-buncher in a non-production situation

- Specific outcome 1: Demonstrate knowledge of factors influencing efficiencies and safety in felling and bunching of trees with a slew boom feller-buncher.
Specific outcome 2: Prepare the felling head for felling.
Specific outcome 3: Demonstrate knowledge of the slew boom feller-buncher.
Specific outcome 4: Fell and bunch trees with a slew boom feller-buncher in a non-production situation.
Specific outcome 5: Maintain the felling head after use.

8. Unit standard title: Fell and bunch trees using a drive-to-tree feller-buncher in a non-production situation

- Specific outcome 1: Demonstrate knowledge of factors influencing efficiencies and safety in felling and bunching of trees with a drive-to-tree feller-buncher.
Specific outcome 2: Prepare the felling head for felling.
Specific outcome 3: Demonstrate knowledge of the drive-to-tree feller-buncher.
Specific outcome 4: Fell and bunch trees with a drive-to-tree feller-buncher in a non-production situation.
Specific outcome 5: Maintain the felling head after use.

9. Unit standard title: Fell and bunch trees using a feller buncher in a production situation

- Specific outcome 1: Describe the operational plan.
Specific outcome 2: Fell and bunch trees in a production situation complying with operational requirements.

10. Unit standard title: Fell, debranch and debark trees using a harvester in a non-production situation

- Specific outcome 1: Demonstrate knowledge of factors influencing efficiencies and safety in felling, debranching and debarking of trees with a harvester.
- Specific outcome 2: Prepare the harvester head for felling.
- Specific outcome 3: Demonstrate knowledge of the harvester.
- Specific outcome 4: Fell, debranch and debark trees with a harvester in a non-production situation.
- Specific outcome 5: Maintain the harvester head after use.

11. Unit standard title: Fell, debranch and debark trees using a harvester in a production situation

- Specific outcome 1: Describe the operational plan.
- Specific outcome 2: Fell, debranch and debark trees in a production situation complying with operational requirements.

12. Unit standard title: Fell and process trees into products using a harvester in a non-production situation

- Specific outcome 1: Demonstrate knowledge of factors influencing efficiencies and safety in felling and conversion of trees with a harvester.
- Specific outcome 2: Prepare the harvester head for felling.
- Specific outcome 3: Demonstrate knowledge of the harvester.
- Specific outcome 4: Fell and process trees with a harvester in a non-production situation.
- Specific outcome 5: Maintain the harvester head after use.

13. Unit standard title: Fell and process trees into products using a harvester in a production situation

- Specific outcome 1: Describe the operational plan.
- Specific outcome 2: Fell and process trees into products in a production situation complying with operational requirements.

14. Unit standard title: Delimb tree lengths using a static delimber in a production situation

- Specific outcome 1: Demonstrate knowledge of factors influencing efficiencies and safety in delimbing tree lengths with a static delimber.
- Specific outcome 2: Demonstrate knowledge of the static delimber.
- Specific outcome 3: Prepare and start-up the static delimber.
- Specific outcome 4: Prepare for static delimbing.
- Specific outcome 5: Delimb tree lengths with a static delimber in a production situation complying with operational requirements.

Specific outcome 6: Shut-down and maintain the static delimber after use.

15. Unit standard title: Cross-cut tree lengths using a slasher in a production situation

Specific outcome 1: Demonstrate knowledge of factors influencing efficiencies and safety in cross-cutting tree lengths with a slasher.

Specific outcome 2: Demonstrate knowledge of the slasher.

Specific outcome 3: Prepare and start-up the slasher.

Specific outcome 4: Prepare for cross-cutting.

Specific outcome 5: Cross-cut tree lengths with a slasher in a production situation complying with operational requirements.

Specific outcome 6: Shut-down and maintain the slasher after use.

16. Unit standard title: Maintain a chainsaw and cut felled timber using a chainsaw.

Specific outcome 1: Demonstrate knowledge of chainsaw parts and basic mechanics.

Specific outcome 2: Demonstrate knowledge of safety during chainsaw use.

Specific outcome 3: Prepare and start a chainsaw.

Specific outcome 4: Cut felled timber with a chainsaw.

Specific outcome 5: Do periodic maintenance on a chainsaw.

17. Unit standard title: Fell trees with a chainsaw using the standard technique and felling levers.

Specific outcome 1: Demonstrate knowledge of factors influencing efficiencies in tree felling.

Specific outcome 2: Demonstrate knowledge of safety during felling.

Specific outcome 3: Fell trees with a chainsaw using the standard technique and felling levers.

18. Unit standard title: Fell trees with a chainsaw using specialised techniques.

Specific outcome 1: Fell trees using specialised techniques if wedges are not required.

Specific outcome 2: Fell trees using specialised techniques if wedges are required.

19. Unit standard title: Fell trees using a chainsaw in a production situation.

Specific outcome 1: Describe the operational plan.

Specific outcome 2: Prepare for felling.

Specific outcome 3: Fell trees in a production situation complying with operational requirements.

20. Unit standard title: Debranch felled trees using a chainsaw in a production situation.

Specific outcome 1: Demonstrate knowledge of factors influencing efficiencies in debranching.

Specific outcome 2: Prepare for debranching.

Specific outcome 3: Debranch felled trees in a production situation complying with operational requirements.

21. Unit standard title: Cross-cut felled trees using a chainsaw in a production situation.

Specific outcome 1: Demonstrate knowledge of factors influencing efficiencies in cross-cutting.

Specific outcome 2: Prepare for cross-cutting.

Specific outcome 3: Cross-cut felled trees in a production situation complying with operational requirements.

22. Unit standard title: Fell trees using a chainsaw and machine assistance.

Specific outcome 1: Demonstrate knowledge of machine assisted tree felling.

Specific outcome 2: Prepare for felling.

Specific outcome 3: Fell trees using a chainsaw and machine assistance.

23. Unit standard title: Scale tree lengths into standard log lengths in a production situation

Specific outcome 1: Demonstrate knowledge of factors influencing efficiencies in scaling tree lengths into standard log lengths.

Specific outcome 2: Prepare for scaling.

Specific outcome 3: Scale tree lengths into standard log lengths to meet specifications.

24. Unit standard title: Scale tree lengths into poles in a production situation

Specific outcome 1: Demonstrate knowledge of factors influencing efficiencies in scaling tree lengths into poles.

Specific outcome 2: Prepare for scaling.

Specific outcome 3: Scale tree lengths into poles to meet specifications.

25. Unit standard title: Scale tree lengths into saw and veneer logs in a production situation

Specific outcome 1: Demonstrate knowledge of factors influencing efficiencies in scaling tree lengths into saw and veneer logs.

Specific outcome 2: Prepare for scaling.

Specific outcome 3: Scale tree lengths into saw and veneer logs to meet specifications.

26. Unit standard title: Demonstrate knowledge of choking and dechoking timber.

Specific outcome 1: Demonstrate knowledge of choking equipment, wire ropes and choking techniques.

Specific outcome 2: Demonstrate knowledge of choking and dechoking productivity.

27. Unit standard title: Choke and dechoke timber during extraction with a skidding machine fitted with a winch in a production situation.

- Specific outcome 1: Prepare for choking and dechoking.
Specific outcome 2: Choke timber for extraction with a skidding machine.
Specific outcome 3: Dechoke timber on the landing.

28. Unit standard title: Demonstrate knowledge of ground-based machine extraction

- Specific outcome 1: Demonstrate knowledge of ground-based machine extraction methods.
Specific outcome 2: Demonstrate knowledge of factors influencing efficiencies in ground-based machine extraction.

29. Unit standard title: Extract timber to a landing using a forwarder in a production situation

- Specific outcome 1: Demonstrate knowledge of the forwarder.
Specific outcome 2: Prepare and start-up the forwarder for extraction.
Specific outcome 3: Prepare for extraction.
Specific outcome 4: Extract timber using a forwarder in a production situation.
Specific outcome 5: Park, shut-down and maintain the forwarder after use.

30. Unit standard title: Demonstrate knowledge of basic safety in forestry operations.

- Specific outcome 1: Explain the duties of employers & employees and identify the safety representative & first aid person for the specific work place.
Specific outcome 2: Demonstrate knowledge of hazards, safety and emergency procedures in forestry operations.

31. Unit standard title: Demonstrate knowledge of mechanical timber handling equipment.

- Specific outcome 1: Demonstrate knowledge of mechanical timber handling equipment.
Specific outcome 2: Demonstrate knowledge of factors influencing efficiencies in mechanical timber handling.

32. Unit standard title: Demonstrate knowledge of mechanical timber handling equipment.

- Specific outcome 1: Demonstrate knowledge of mechanical timber handling equipment.
Specific outcome 2: Demonstrate knowledge of factors influencing efficiencies in mechanical timber handling.

33. Unit standard title: Prepare an operational harvest plan.

- Specific outcome 1: Explain the impacts, impacts, interrelationships and protection requirements associated with harvesting operations.

- Specific outcome 2: Collect data for the preparation of an operational harvest plan.
- Specific outcome 3: Balance the harvesting and transport system with regard to equipment and personnel allocations required for the specific site conditions.
- Specific outcome 4: Determine the operational requirements for the stand to be harvested.

34. Unit standard title: Extract timber to a landing using a cable skidder in a production situation

- Specific outcome 1: Demonstrate knowledge of the cable skidder.
- Specific outcome 2: Prepare and start-up the skidder for extraction.
- Specific outcome 3: Prepare for extraction.
- Specific outcome 4: Extract timber to a landing using a cable skidder in a production situation.
- Specific outcome 5: Park, shut-down and maintain the skidder after use.

35. Unit standard title: Extract timber to a landing using a grapple skidder in a production situation

- Specific outcome 1: Demonstrate knowledge of the grapple skidder.
- Specific outcome 2: Prepare and start-up the skidder for extraction.
- Specific outcome 3: Prepare for extraction.
- Specific outcome 4: Accumulate timber for extraction with the winch fitted on the grapple skidder.
- Specific outcome 5: Extract timber to a landing using a grapple skidder in a production situation.
- Specific outcome 6: Park, shut-down and maintain the skidder after use.

36. Unit standard title: Operate a skidding machine fitted with a winch in machine assisted tree felling

- Specific outcome 1: Demonstrate knowledge of machine assisted tree felling.
- Specific outcome 2: Prepare for machine assisted tree felling.
- Specific outcome 3: Operate a skidding machine in machine assisted tree felling.

37. Unit standard title: Prepare, operate and maintain a tractor in a non-production situation

- Specific outcome 1: Demonstrate knowledge of the tractor.
- Specific outcome 2: Prepare and start-up the tractor.
- Specific outcome 3: Operate the tractor.
- Specific outcome 4: Park, shut-down and maintain the tractor after use.

38. Unit standard title: Extract timber to a landing using a tractor fitted with a skidding attachment in a production situation

- Specific outcome 1: Demonstrate knowledge of the skidding attachment.
- Specific outcome 2: Prepare the skidding attachment for extraction.

- Specific outcome 3: Prepare for extraction.
- Specific outcome 4: Extract timber to a landing using a tractor and skidding attachment in a production situation.
- Specific outcome 5: Park and shut-down the tractor, and maintain the skidding attachment after use.

39. Unit standard title: Extract and short-haul timber using a tractor and trailer fitted with a self-loading crane in a production situation

- Specific outcome 1: Demonstrate knowledge of the trailer and crane.
- Specific outcome 2: Prepare the trailer and crane for extraction and short-haul.
- Specific outcome 3: Prepare for extraction and short-haul.
- Specific outcome 4: Extract and short-haul timber using a tractor and trailer fitted with a crane in a production situation.
- Specific outcome 5: Park the tractor and trailer, shut-down the tractor and crane, and maintain the trailer and crane after use.

40. Unit standard title: Prepare anchors, rig intermediate supports, tailtrees & a tower and set up working cables for a cable yarding operation.

- Specific outcome 1: Prepare and install anchors for a cable yarding operation.
- Specific outcome 2: Rig intermediate supports and tailtrees.
- Specific outcome 3: Rig a tower.
- Specific outcome 4: Set up the working cables for a highlead configuration.
- Specific outcome 5: Set up a cable yarder in standing skyline configuration where an intermediate support is used.

41. Unit standard title: Demonstrate knowledge of cable yarder extraction.

- Specific outcome 1: Demonstrate knowledge of cable yarder extraction systems.
- Specific outcome 2: Demonstrate knowledge of factors influencing efficiencies in cable yarder extraction.

42. Unit standard title: Extract timber to a landing using a cable yarder in a production situation.

- Specific outcome 1: Demonstrate knowledge of the cable yarder.
- Specific outcome 2: Prepare and start-up the cable yarder for extraction.
- Specific outcome 3: Prepare for extraction.
- Specific outcome 4: Operate a cable yarder to extract timber to a landing in a production situation.
- Specific outcome 5: Shut-down and maintain a cable yarder after use.

43. Unit standard title: Choke and dechoke timber during extraction with a cable yarder in a production situation.

- Specific outcome 1: Prepare for choking and dechoking.
Specific outcome 2: Choke timber for extraction with a cable yarder.
Specific outcome 3: Dechoke timber on the landing.

44. Unit standard title: Extract and short-haul timber using a tractor and trailer in a production situation

- Specific outcome 1: Demonstrate knowledge of the trailer.
Specific outcome 2: Prepare the trailer for extraction and short-haul.
Specific outcome 3: Prepare for extraction and short-haul.
Specific outcome 4: Extract and short-haul timber using a tractor and trailer in a production situation.
Specific outcome 5: Park the tractor and trailer, shut-down the tractor and maintain the trailer after use.

45. Unit standard title: Contribute to the suppression of wildfires at basic fire-fighting level.

- Specific outcome 1: Identify and explain basic features of fire behaviour to enable safe and effective fire suppression.
Specific outcome 2: Perform manual methods and procedures for extinguishing wildfires.
Specific outcome 3: Communicate using verbal and hand signaled instructions in accordance with Industry standards.
Specific outcome 4: Identify and demonstrate the use of water hose equipment.
Specific outcome 5: Conduct mop-up procedures.

46. Unit standard title: Conduct basic forestry map reading

- Specific outcome 1: Read and interpret appropriate forestry maps.
Specific outcome 2: Apply map reading skills.

47. Unit standard title: Identify, explain and demonstrate standard safety procedures during active wildfire suppression.

- Specific outcome 1: Identify unsafe acts and conditions and explain standard safety rules and measures applied to overcome dangerous fire situations.
Specific outcome 2: Demonstrate safety procedures in wildfire suppression situations

No. 379

26 March 2004

**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

Primary Agriculture

Registered by NSB 01, Agriculture and Nature Conservation, publishes the following qualifications 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 upon which qualifications are based. The full qualification and unit standards can be accessed via the SAQA web site at www.saga.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, Hatfield Forum, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the unit standards should reach SAQA at the address ***below and no later than 26 April 2004***. All correspondence should be marked **Standards Setting – SGB for Primary Agriculture** and addressed to

The Director: Standards Setting and Development
SAQA

Attention: Mr. D Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 431-5144
dmphuthing@saga.co.za

JOE SAMUELS**DIRECTOR: STANDARDS SETTING AND DEVELOPMENT**



National Certificate: Landcare Facilitation NQF Level 5

Field: Agriculture and Nature Conservation – NSB 01

Sub-field: Primary Agriculture

Level: 5

Credits: 125

Issue date:

Review date:

Rationale for the qualification

Agricultural communities need to optimise the use of natural resources in a sustainable manner for the production of food, fuel and fibre. Since agricultural practices need to respond to human survival, social development and the economic empowerment of all individuals, the National Certificate in Landcare facilitation is designed to meet the needs of those learners who are already involved in the primary agriculture sector at management level or at agricultural extension level and who are engaged in facilitating improved agricultural practices for sustainable development.

Landcare facilitation necessitates a participatory approach to community development so that a deeper understanding of the interface between the man, the environment and the economy is achieved. This qualification provides the learner with the skills, knowledge and values required to facilitate landcare and sustainable agricultural practices in rural communities for social development and economic empowerment.

Purpose of the qualification

The purpose of the qualification is to provide learners, education and training providers and employers with the standards and the range of learning required to mobilise communities and individuals to set up agricultural initiatives for sustainable development.

This qualification describes the learning outcomes (the skills, knowledge and values) required to effectively facilitate and manage landcare in rural communities in a sustainable and financially viable manner.

For those who have been in the primary agricultural sector for a long time, this qualification can be used in the Recognition of Prior Learning (RPL) process to recognise and assess the skills already acquired in the primary agricultural context, without the benefit of formal education or training.

For education and training providers, this qualification provides the framework for the development of appropriate learning programmes. For employers, this qualification enables skills gaps to be identified and provides guidance for the development of programmes to close skills gaps.

This qualification will provide the learner with the skills, knowledge and values required to facilitate landcare by:

- Working with and mobilising rural communities / people for sustainable development and economic empowerment.
- Planning, setting up and supporting sustainable farming initiatives
- Designing and resourcing participatory landcare projects
- Monitoring and reporting on progress of landcare initiatives.
- Managing finances within the context of sustainable farming initiatives
- Facilitating learning through community involvement in landcare projects
- Coordinating strategies for sustainable landcare and development
- Coordinating the implementation of new and alternative approaches and practices to landcare and agriculture

Access to Qualification

This qualification recognises skills, knowledge and values relevant to the context of primary agriculture. It is designed for learners who engage actively in primary agricultural practices.

It is suitable for learners who:

- Have already attended courses relevant to the primary agricultural context and wish to apply the knowledge gained to activities in the workplace viz. primary agricultural context (Portfolio to reflect formative assessment)
- Are already working within the context of primary agriculture and have acquired the skills and knowledge without attending formal courses (RPL can be done through the summative assessment and portfolio of evidence)
- Have gained the appropriate work experience to facilitate landcare

- Are part of a learnership programme which integrates structured learning and work experience

Learning assumed to be in place

Learners should be competent in Communication and Numeracy at NQF Level 4 or equivalent.

Motivation for credits assigned to Fundamental, Core and Elective Standards.

For this qualification, the credits are as follows:

Fundamental	26
Core	87
Elective	12
Total	125

Fundamental Standards

These standards are compulsory to achieve the purpose of the qualification. They provide the underpinning learning required by the practitioner to facilitate landcare within the primary agricultural sector. Effective landcare facilitation necessitates good management skills to effectively manage landcare projects. Hence, practical project management skills and knowledge constitutes fundamental learning to the achievement of this qualification.

Core Standards

These standards respond directly to the context and the purpose of the qualification. These standards represent the nature and complexity of the skills required by the practitioner to respond to and interface with specific rural/ agricultural communities to facilitate landcare.

Electives

These standards provide options for additional learning in order to achieve and fully contribute to the purpose of the qualification. The learner has the option of choosing standards to the credit value of 12 to adequately satisfy the requirements of the qualification.

Exit level Outcomes

Qualifying learners can:

Exit Level Outcome 1:

Facilitate participatory planning processes to resource landcare projects and facilitate learning and working effectively with others on agricultural projects

Associated Assessment Criteria

- Learning is facilitated in a participative manner through a variety of techniques
- Rural/ agricultural communities are mobilised to participate in sustainable agricultural initiatives
- Key issues concerning agricultural practices and the environment are identified, discussed and documented
- Views, suggestions, alternatives and recommendations are listened to and the merits thereof are considered and documented.
- Resolutions are agreed and documented with clear actions, responsibilities, timeframes and reporting procedures

Exit Level Outcome 2:**Design, set up, manage and support sustainable farming initiatives****Associated Assessment Criteria**

- Viable agricultural initiatives are identified and designed to meet the needs of the specific rural community.
- Practical project management principles are applied to landcare projects
- Agricultural projects are supported through various techniques and methods
- Agricultural communities are supported during their involvement in landcare initiatives
- Landcare initiatives are managed optimally

Exit Level Outcome 3:**Plan and apply financial control techniques for sustainable agricultural projects****Associated Assessment Criteria**

- Agricultural initiatives are budgeted
- Financial control is maintained on all aspects of the project
- Landcare projects are completed within allocated budget
- Financial reports are compiled and disseminated to relevant stakeholders

Exit Level Outcome 4**Facilitate the Implementation of agricultural practices which enhance the quality, safety and health of individuals and the environment****Associated Assessment Criteria**

- Sustainable agricultural principles and practices are applied and implemented.
- Compliance to relevant and applicable legislation governing sustainable agriculture is demonstrated

Exit Level Outcome 5**Monitor, evaluate and report on progress and make recommendations on sustainable agricultural/ landcare initiatives****Associated Assessment Criteria**

- Progress on landcare projects is monitored and evaluated and any changes to initial implementation plan are recorded and motivated.
- Progress on landcare projects is documented and disseminated to relevant stakeholders
- Information on all aspects of the agricultural projects is collected, summarised and recorded
- Recommendations are made on landcare projects and disseminated to all relevant stakeholders

International Comparability

In the case of the primary agricultural context it is difficult to compare the qualification and unit standards because of the vast differences in the level of mechanisation, the level of literacy of the farm operators, climate and other conditions as well as the variety in commodities.

However, New Zealand and Australian qualifications and unit standards were sourced and evaluated for applicability.

Integrated Assessment

The integrated assessment must be based on a summative assessment guide. The guide will spell out how the assessor will assess different aspects of the performance and will include:

- Observing the learner at work (in the primary activity as well as in other interactions)
- Asking questions and initiating short discussions to test understanding
- Looking at records and reports in the portfolio and reviewing previous assessments

The learner may choose in which language s/he wants to be assessed. This should be established as part of a process of preparing the learner for assessment and familiarising the learner with the approach being taken.

The assessment process should cover both the explicit tasks required for the qualification as well as the understanding of the concepts and principles, which underpin the activities and the agricultural practices. The assessment process should also establish how the learning process has advanced the critical outcomes.

Assessors should also evaluate evidence that the learner has been performing consistently over a period of time. The assessment can include a small project or projects, which need more time to complete than is practical in a live assessment session.

Recognition of prior learning

This qualification may be obtained through a process of RPL. The learner should be thoroughly briefed prior to the assessment and support provided to assist in the process of developing a portfolio. As with integrated assessment, while this is primarily a workplace-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit-level outcomes.

Articulation possibilities

The qualification has been designed and structured so that qualifying learners can move from one context to another. Employers or institutions should be able to evaluate the outcomes of this qualification against the needs of their context and structure top-up learning appropriately. Equally, holders of other qualifications may be evaluated against this qualification for the purpose of RPL.

Moderation Options

Moderators for the qualification should be qualified and accredited with an appropriate Education and Training Quality Assurance Body (ETQA) and have a qualification in primary Agriculture. To assure the quality of the assessment process, the moderation should cover the following:

1. assessor credentials
2. the assessment instrument
3. the assessment process (including preparation and post-assessment feedback)

Where assessment and moderation are taking place in sectors other than the primary agricultural sector, assessment and moderation should be in terms of a Memorandum of Understanding negotiated with the relevant ETQA.

Criteria for registration of assessors

The following criteria should be applied by the relevant ETQA:

1. Appropriate qualification in the field of primary agriculture for example in community conservation areas
2. Assessed successfully against a nationally recognised unit standards/s reflecting experience and understanding of assessment theory, processes and practices
3. Good interpersonal skills and the ability to balance the conflicting requirements of:
 - Maintaining national standards

- The interests of the learner
- The need for transformation and redressing the legacies of the past
- The cultural background and language of the learner

No. 380

26 March 2004

**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

Safety in Society

Registered by NSB 08, Law, Military Science and Security, publishes the following qualifications 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 upon which qualifications are based. The full qualification and unit standards can be accessed via the SAQA web-site at www.saga.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, Hatfield Forum West, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the unit standards should reach SAQA at the address *below and no later than 26 April 2004*. All correspondence should be marked **Standards Setting – Safety in Society** and addressed to

The Director: Standards Setting and Development
SAQA

Attention: Mr. D Mphuthing

Postnet Suite 248

Private Bag X06

Waterkloof

0145

or faxed to 012 – 431-5144

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JOE SAMUELS**Director: Standards Setting and Development**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY*Established in terms of Act 58 of 1995*

Title: National Diploma Policing-NQF Level 5
Level: 5
Credits: 240 (Minimum)
Field: NSB 08: Law, Security and Military Science
Sub-field: Safety in Society
Issue date:
Review date:

Rationale of the qualification

This qualification reflects the workplace-based needs of the sector Safety in Society that relate to supervisory and managerial competencies to perform the relevant roles in maintaining public order, prevention of crime, investigation of crime, combating crime and protection of people and property by upholding. It allows learners employed in the Safety in Society sector to progress in supervisory and managerial competencies to perform the relevant roles in the broader policing environment and pursue studies at a more advanced managerial level. This qualification will further ensure better service delivery to the community thereby providing a safe and secure community environment, which will enhance growth of the economy.

Purpose:

The purpose of this qualification is to obtain a nationally recognized qualification in the policing environment and to uplift the professional standards of policing. The qualification will make sure that it will change perceptions of the lack of integrity and business ethics. It will improve relationships between employer and employees and organization and client (community) and attract and retain quality employees.

The unit standards in this qualification will allow vertical and horizontal progression and mobility to obtain supervisory and managerial skills. Elective standards will further allow for progression and career pathing into specialist areas. The qualification will make provision for the movement between

different domains of Safety in Society.

The learner obtaining this qualification will be able to enhance service delivery to the internal and external clients that will enhance satisfaction and trust. Qualifying learners are able to exercise their managerial responsibilities in accordance with the constitution of SA. The qualification will allow for transformation within the policing environment through the recognition of prior learning that will allow for the recognition of formal, non-formal and informal learning leading to the achievement of a national qualification by learners.

A learner acquiring this qualification will have skills, knowledge and experience to:

- Demonstrate supervisory and management skills by professionally executing daily functions and maintaining community relations
- Manage human and physical resources through monitoring and improving employer/employee practices, leading and developing a team of people and appropriately applying industrial relations concepts and processes
- Communicate with peers, the team, members of supervisory / management levels and end-users
- Implement a document management system by producing documentation on information gathered and summarized from a range of sources.
- Plan, implement and assess operations and duties
- Conduct inspections and control activities by ensuring a smooth running unit/centre
- Co-ordinate and uphold the execution of the Constitution of South Africa and the Law of Evidence by ensuring compliance with the requirements as stated in relevant legislations
- Identify, assess, formulate and solve problems while performing tasks related to maintaining public order, prevention of crime, investigation of crime, combating crime and protection of people and property by uphold the law in selected functional core.

Access to the Qualification

The qualification is open to everyone who wishes to pursue a supervisory / middle management career in the safety in society sector, policing environment in particular.

Learning assumed to be in place

This qualification assumes learners have a National Certificate in Visible Policing NQF Level 5. In order to achieve the exit level outcomes of this qualification, learners need the following knowledge, skills, attitudes and values:

- The ability to read, write, and use written resource material for communication purposes in a policing environment
- The ability to use and understand fundamental mathematical / numeracy concepts

- Balance constitutional and legal rights of individuals with the competence to legally infringe those rights in the service of maintaining a safe and secure society.
- Conduct themselves as effective members of a policing team by the prevention of crime, supporting criminal investigations, conducting a lawful arrest and conducting armed response
- Monitor, reflect and improve own practices.

Exit Level Outcomes

The qualification consists of unit standards that describe the knowledge and skills that will change the values of the learner and that describe competence in a specific unit standard. The outcomes are specified in terms of a combination of specific and critical cross-field outcomes as defined in the different unit standards. On achieving this qualification, learners are able to:

FUNDAMENTAL

- Describe, interpret, relate and apply knowledge of mathematics to solving problems related to planning and / or operation and / or maintenance of policing functions.
- AC** Knowledge of mathematics is used to solve problems that are related to planning and/ or operation and/or maintenance of policing functions.
- Communicate technical, supervisory and general management information effectively, both orally and in writing, using appropriate language structures, styles and graphical support.
- AC** Technical, supervisory and general management information is communicated orally and in writing using appropriate language, style and graphical support.

CORE

- Demonstrate supervisory and management skills by professionally executing daily functions and maintaining community relations
- AC** Supervisory and basic management principles are applied in the policing environment during the execution of policing functions and good relations with internal and external clients are maintained to enhance service delivery by building a positive image of the organization.
- Manage human and physical resources through monitoring and improve employer/ employee practices, by leading and developing a team of people and applying industrial relations concepts and processes appropriately.
- AC** Supervisory activities contribute to improve employer/employee relations and the officials under supervision are appraised and developed to become competent.
- Implement a document management system by producing documentation on information gathered and summarized from a range of sources.
- AC** A document management system is implemented to ensure a better and proper preparation and completion of documentation.

- Plan, implement and assess operations and duties
- AC** Operations are planned, implemented, monitored and assessed to enhance a better service to the communities.
- Conduct inspections and control activities by ensuring a smooth running unit/center
- AC** Various inspections are conducted on the duties and functions of officials, registers and various resources to maintain a professional service delivery to the communities.
- Co-ordinate and uphold the execution of the Constitution of South Africa and the Law of Evidence by ensuring compliance with the requirements as stated in relevant legislations
- AC** Operations are coordinate, prioritized and supervised to ensure compliance with the law and to minimize civil actions against the state.

ELECTIVE

- Identify, assess and solve problems while performing tasks related to the area of specialization
- AC** Problems related to own area of specialization are identified, assessed and solved in the performance of duties.

The qualification consists of unit standards, which describe the knowledge, skills and values that will enhance the ability of the learner with reference to a specific unit standard

International comparability

Since 1994, the South African Police Service has engaged in extensive liaison with colleagues and related services in the international community. Material, best practices and many other innovations have been considered and integrated into this qualification.

In addition, it has been bench marked against the qualifications of the Multi Implementation Team (Commonwealth, Netherlands, Sweden and the United Kingdom) who helped plan and implement a new basic policing training programme for community police constables in the post 1994 South Africa. This qualification is built in such a way that it will receive constant international review and input.

Other national institutions and Departments were consulted during the standards generation processes such as the Department of Correctional Services, Community Policing Agencies, and Business against crime, Metro Police etc.

During the year 2002 the South African Police engaged in an assessment and assessment practices project with the Swedish Police. The two organizations will assist each other in evaluating and generating assessment and assessment practices.

Integrated Assessment

The applied competence (practical, foundational and reflective competencies) of this qualification will be achieved if a learner is able to achieve all exit level outcomes of the qualification. The identification and solving of known problems, team work, organising self, using of data, implication of actions and reactions in the world as a set of related systems must be assessed during any combination of practical, foundational and reflexive competencies assessment methods and tools to determine the whole person development and integration of applied knowledge and skills.

Certain exit level outcomes are measurable and verifiable through assessment criteria assessed in one application. Applicable assessment tool(s) to establish the foundational, reflective and embedded knowledge to problem solving and application of the world as a set of related systems within the Policing environment. Competence will be assessed when conducting formative and summative assessment.

Formative assessment

The assessment criteria for formative assessment are described in the various unit standards. Formative assessment takes place during the process of learning and assessors should use a range of assessment methods and tools that support each other to assess total competence.

These tools include the following:

- *In-situ* (on-the-job) observations
- Role-play simulations
- Structured group discussions
- Knowledge tests, exams, case studies, projects, registers, logbooks, workbooks
- Oral report backs (presentations)
- Portfolios of evidence
- Projects
- Experiential learning
- Working in teams
- Scenario sketching

The assessment methods and/or tools used by the assessor must be fair in a sense that they do not hinder or advantage the learner, valid in a sense that they measure what they intend to

measure, reliable in a sense that they are consistent and delivers the same output across a range of learners and practical in a sense that they take into account the available financial resources, facilities, equipment and time.

Summative assessment

Summative assessment / Terminal assessment are carried out at the end of the learning programme to assess the achievement of the learner. A detailed portfolio of evidence is required to prove the practical, applied and foundational competencies of the learner.

Assessors and moderators

Assessors and moderators should develop and conduct their own integrated assessment by making use of a range of formative and summative assessment methods. Assessors should assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.

Unit standards associated with the qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflective competencies.

Recognition of prior learning

This qualification may be achieved in part or in whole by recognition of prior learning. The candidate in this case must be assessed / evaluated in the same manner as described in the paragraph that deals with integrated assessment above.

Articulation possibilities

On completion of this qualification, learners will proceed to the Bachelors Degree in Policing. The choice of elective learning component allows the learner to change to another pathway in policing environment at the same level or at the next level.

Some fundamental and non-policing core learning components will equip the learner with credits that will be useful in the safety in society sector and other learning fields that the learner may wish to pursue.

Moderation Options

All providers offering the learning to achieve this qualification must be accredited by the relevant ETQA or through a memorandum of understanding with the relevant ETQA.

All assessors must be registered with the relevant ETQAs, and must comply with the requirements for assessors as prescribed by the relevant ETQAs. In addition, the assessors must have at least

the skills levels in this field equivalent to those require by the NQF at level 6, plus two years of practice in this field as a worker, expert consultant or provider. All moderators moderating the assessment of a learner for this qualification must be registered with the relevant ETQAs.

Criteria for registration of assessors

For an applicant to be registered as an assessor, the applicant needs the following:

- A minimum of five years practical, relevant occupational experience;
- Declared competent in all the outcomes of the National Assessor Unit Standards as stipulated by SAQA;
- Detailed documentary proof of educational qualification, practical training undergone, and experience gained by applicant must be provided;
- Must have successfully completed the National Diploma in Policing NQF Level 5
- Meet any other requirements stipulated by the ETQAs.

Rules of combination

Learners undertaking the National Diploma in Policing will be required to do all 79 Fundamental credits and all 98 core credits. For the achievement of the minimum 240 credits required to achieve the qualification, learners will be required to achieve at least 63 credits in the elective component. It is strongly advised that learners should not only achieve the minimum 61 credits in the elective component but that they should ensure **for career purposes** that once they chose an elective stream, they should complete all the credits in that stream.

Critical Cross- Field Outcomes

This qualification addresses the following critical cross-field outcomes. The way in which the critical cross-field outcomes are addressed is presented in detail in the unit standards.

- identifying and solving problems in which responses display that responsible decisions using critical and creative thinking have been made
- working effectively with others as a member of a team, group, organisation, or community
- organizing and managing oneself and one's activities responsibly and effectively
- collecting, analysing, organizing and critically evaluating information
- communicating effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion
- using science and technology effectively and critically, showing responsibility towards the environment and health of others
- demonstrating an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

TITLES MATRIX: NATIONAL DIPLOMA IN POLICING) – NQF LEVEL 5

National Diploma in Policing at NQF Level 5		240 credits	
FUNDAMENTAL		L	Cr
9014 Use mathematics to investigate and monitor the financial aspects of personal, business and national issues	5	6	
14510 Demonstrate knowledge and insight into the impact of HIV/AIDS on financial products, markets and workforce	6	6	
14553 Demonstrate insight into current global events and their potential impact on a business sector in South Africa	6	10	
Map Orientation and Use of a Handheld Global Positioning System for Tactical Operations	4	3	
Identify and apply principles of law of evidence	5	6	
11979 Identify and apply relevant knowledge about law in general related to policing	5	9	
11974 Conduct oneself in a professional manner in a policing environment	5	4	
11973 Build and maintain relationships with local communities	5	4	
11977 Identify and apply specific and statutory offences	5	12	
11978 Identify and apply sections of the Criminal Procedure Act	5	9	
Attending an incident as a first responder	4	10	
TOTAL			79
CORE			
7886 Develop and Implement a business plan	5	8	
14505 Apply the principles of ethics and professionalism to a business environment	6	6	
Oversee the professional execution of daily functions	6	5	
Coordinate and uphold the execution of the Constitution of South Africa (Chapter 2 – Bill of Rights) and legal prescripts	6	5	
Develop competent officials	6	3	
Demonstrate and apply supervisory and basic management skills	6	8	
Maintain good relations with internal and external clients	6	6	
7883 Manage workplace relations	5	5	
7859 Lead and manage teams of people	6	6	
Implement an information management system	6	5	
Plan, implement and assess operations and activities	6	6	
14131 Use appropriate force to uphold and enforce the law and protect people and property	5	8	
Conduct inspections and control activities	6	4	
11995 plan and perform special operations in the prevention and resolving of crime	6	5	
Use force to uphold and enforce the law and protect people and property	5	18	

TOTAL		98
ELECTIVES 61 Credits (Minimum)		
TACTICAL OPERATIONS		
Direct small teams operations	5	8
Tactical Options for Small Teams Tactical operations	5	6
Management of Tactical Policing Operations	5	15
CRIME PREVENTION		
Tactical Options for Crime Prevention Operations	5	6
Manage Sector Policing	6	4
Establish and maintain Community Forum Structures	6	6
Oversee custody of suspects and detainees	6	5
CRIME INTELLIGENCE		
114507 Understand, identify, and plan the exploitation of operational resources to collect information	5	35
114506 Apply intelligence analysis tradecraft	5	35
PROTECTION SERVICES		
11506 Conduct evacuations and emergency drills	4	17
Apply advanced driving skills / techniques in defensive and offensive situations	5	9
11510 Provide close protection of designated people	5	40
11497 Protection of premises and assets under all conditions	3	30
11512 Protect assets in transit	4	20
BORDER CONTROL		
Perform duties as an immigration official at a port of entry	5	6
Perform duties as a custom official at a port of entry	5	6
Perform duties as a Agricultural official at a port of entry	5	6
Perform duties as a Health official at a port of entry	5	6
Perform duties as a Police official at a port of entry	5	6
Apply relevant legislation	5	9
Detect and identify places of concealment	5	6
Profiling and selection of goods at a port of entry	5	8
Profiling and selection of persons at a port of entry	5	8
Administer and control movement of persons and goods across international borders at port of entry	5	9
SPECIALISED GROUP TECHNIQUES		
Use ropes to support tactical operations	5	4
Advance use of primary weapons for assault team operations	4	10

Use pyrotechnical aids in support of policing operations (This is a very specialised skill that is not included in the initial Certificate at level 5)	3	6
Prepare officials and individuals to survive a hostage incident	4	2
Assault team movement for special operations	5	11
CROWD MANAGEMENT		
Tactical options for Crowd Management Operations	4	8
Manage Crowds	4	8
TOTAL		63



Established in terms of Act 58 of 1995

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

Civil Engineering and Construction

Registered by NSB 12, Physical Planning and Construction, publishes the following qualifications 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 upon which qualifications are based. The full qualification and unit standards can be accessed via the SAQA web-site at www.saqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, Hatfield Forum West, 1065 Arcadia Street, Hatfield.

Comment on the unit standards should reach SAQA at the address ***below and no later than 26 April 2004***. All correspondence should be marked **Standards Setting – SGB Civil Engineering and Construction** and addressed to

The Director: Standards Setting and Development
SAQA

Attention: Mr. D Mphuthing
Postnet Suite 248
Private Bag X06
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or faxed to 012 – 482 0907
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JOE SAMUELS

Director: Standards Setting and Development

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Qualification Title:	National Certificate in Wastewater Reticulation Services
NQF Field:	Physical Planning and Construction - NSB 12
Sub-field:	Civil Engineering Construction
Level:	2
Credit:	128
Issue date:	
Review date:	

Rationale of the Qualification

As a result of past legacies many practitioners within the water sector were denied advancement and possible recognition as qualified tradesmen. Both employers and employees in the water sector have expressed the critical need for technical, skills based Qualifications for those working with the provision of wastewater reticulation systems. The introduction of a National Certificate in Wastewater Reticulation Services based on Unit Standards will allow learners the opportunity to reach their full potential of advancement without formal education becoming an impassable barrier and will also allow for the recognition of prior learning. This Qualification reflects the need of employers and employees both now and for the future. This Qualification provides learners with horizontal access to the National Certificate in Water Reticulation Services (NQF 2) and the National Certificate in Wastewater Process Operations (NQF 2), as there is a degree of flexibility, in terms of Unit Standards that appear in all three Qualifications. This will enable learners to pursue different careers within the water sector, enhance productivity and employability within the water sector and contribute towards the ecological sustainability and improvement of the water environment.

Purpose of the Qualification

The Qualification will provide the learner with the knowledge and skills to work in a wastewater reticulation services department or as a utility leader attending to the construction and operation of wastewater reticulation systems. Qualifying learners are able to:

- Apply health and safety legislation in the workplace;
- Plan work tasks;
- Operate in a team;
- Use power hand tools effectively;
- Read and interpret maps and drawings;
- Identify pipes, associated fittings and valves in a wastewater reticulation system;
- Join pipes and install associated fittings;
- Lay pipes for a wastewater reticulation system;

- Operate and maintain a wastewater reticulation system.

The scope of the Qualification provides a range of opportunities from large-scale urban conditions to small, rural community situations. This Qualification forms the foundation for advancement to the National Certificate in Wastewater Reticulation Services on NQF level 3 and will also lay the foundation for future career advancement across similar trades within the sector. The individual will have the capacity to advance and gain skills and self-respect, as the qualified learner will be able to competently fulfil wastewater reticulation contracts safely and professionally to ensure that industry standards are maintained. This Qualification has been developed to assist with standardisation across the wastewater reticulation industry.

Access to the Qualification

As this is a Unit Standard based Qualification, learners will have equal access provided that the learner meets the requirements for the learning assumed to be in place for each Unit Standard. Learners entering the wastewater reticulation field are advised to complete the General Education and Training Certificate: Water NQF level 1 as an overview and introduction to the sector. The completion of this certificate will enable the learner to develop foundational and life skills at NQF Level 1.

Learning assumed to be in place

A knowledge, comprehension and application of language and mathematics at NQF level 1.

Exit level Outcomes

On achieving this Qualification the qualifying learner will be able to:

Exit level 1: Plan and organise tasks and resources needed for tasks.

Associated Assessment Criteria

- Tasks are planned and prioritised.
- Work schedules or job cards are prepared.
- Materials requirements needed for the completion of stated tasks are determined.
- Labour and equipment requirements for the completion of stated tasks are determined.
- Transportation of resources to working location is arranged.

Exit level 2: Join and lay pipes and install connections.

Associated Assessment Criteria

- knowledge of pipe types, associated fittings and valves is demonstrated.
- pipes, associated fittings and valves are stored.
- Trenches are excavated safely
- Pipes are joined and associated fittings and connections are installed.
- The wastewater reticulation system is tested

Exit level 3: Use and maintain appropriate power hand tools in a wastewater reticulation context.

Associated Assessment Criteria

- All relevant tools used on wastewater reticulation systems are identified.
- Tools are used effectively and for the correct purpose
- Tools are clean and maintained according to specifications.

Exit level 4: Operate and maintain a wastewater reticulation system effectively.

Associated Assessment Criteria

- Maps and engineering drawings related to wastewater reticulation systems are read and interpreted.
- Knowledge of the materials used for construction and maintenance of wastewater reticulation systems is demonstrated.
- Pipeline systems are constructed and repaired.
- New or existing pipeline systems are constructed or maintained.

Exit level 5: Demonstrate knowledge of occupational health & safety.

Associated Assessment Criteria

- Knowledge of occupational health & safety is demonstrated.
- Personal health, hygiene and presentation in the working environment is maintained according to the Occupational Health and Safety Act.
- Skills relevant to construction, maintenance and operation of wastewater reticulation systems appropriately are applied.

Exit level 6: Demonstrate interactive and communication skills.

Associated Assessment Criteria

- The learner interacts with work colleagues, management and customers
- Communication skills are used to interact in a meaningful way with colleagues and customers
- A range of generic skills are used as a foundation for learning.
- The learner communicates effectively with others in both learning and work-oriented situations.

International comparability

The core and elective components have been developed taking into account South Africa's unique context. The working group has been unable to find any international wastewater reticulation Qualifications in America, Australia, Britain or Scotland against which to benchmark the Unit Standards. The working group did find a water Qualification in New Zealand, but it is combined Water and Wastewater and is therefore not really comparable. The fundamental components, reflecting

foundational learning and generic skills and knowledge have been derived from registered, local adult education Unit Standards.

Integrated Assessment

Integrated assessment at the level of Qualification provides an opportunity for learners to show that they are able to integrate concepts, ideas and actions across Unit Standards to achieve competence that is grounded and coherent in relation to the purpose of the Qualification. Integrated assessment should show how already demonstrated competence in individual areas can be linked and applied for the achievement of a holistic outcome.

Integrated assessment must judge the quality of the observable performance, and also the quality of the thinking that lies behind it. Assessment tools must encourage learners to explain the thinking and decision-making that underpin their demonstrated performance. Some assessment practices will demand practical evidence while others may be more theoretical, depending on the type of outcomes to be assessed, and the nature and level of the Qualification. The ratio between action and interpretation is not fixed, but varies according to the demands of the Qualification.

While the generic component (literacy, communication and life skills) of this Qualification at NQF Level 2 can be assessed through occupational contexts and activities relating to wastewater reticulation, care must be taken in both the learning programme and the assessment to ensure that these foundational skills are truly portable. The primary aim of this Qualification is to ensure that learners have a sound base of general education to prepare them for further learning, whatever career path they may choose. Learners must be able to transfer generic skills such as language, computation and learning skills etc across a number of different contexts, and apply them within a number of learning areas.

A broad range of task-orientated and theoretical assessment tools may be used, with the distinction between practical knowledge and disciplinary knowledge maintained so that each takes its rightful place. Unit Standards in the Qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflexive competencies.

Recognition of prior learning

This Qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience. Any learner wishing to be directly assessed may arrange to do so, without attending further training or education. The assessor and learner will decide together on the most appropriate assessment route to be taken.

Articulation possibilities

This Qualification will allow a person to articulate vertically to the National Certificate in Wastewater Reticulation Services at NQF level 3. This Qualification will also provide articulation with a range of Qualifications in both technical and management areas in wastewater, water reticulation and other related sectors.

Criteria for registration of assessors

For an applicant to register as an assessor, the applicant needs:

- A minimum of two years practical, relevant occupational experience.
- Declared competent in all the outcomes of the generic assessor standard, and certificated by the relevant ETQA or by any other ETQA that has signed a memorandum of understanding (MoU).
- Detailed documentary proof of educational Qualification, practical training undergone, and experience gained by the applicant must be provided (Portfolio of evidence).
- Able to demonstrate competence in relation to these specified standards and Qualifications, at or above, the level of the Qualifications in question.
- Meet any other additional requirements laid down by their constituent ETQA.

The subject matter experience of the assessor can be established by recognition of prior learning.

The status of registered assessors can be checked on the appropriate ETQA database or website.

Moderation

Anyone assessing a learner against these standards must be registered as an assessor with the relevant ETQA.

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 relevant Qualification and the agreed ETQA procedures. Therefore anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

A note on the compilation of standards in this Qualification

In line with the SAQA principle of avoiding duplication, existing registered standards were used where possible.

A note on the definition of wastewater reticulation

Wastewater reticulation in this context refers to the entire pipe network.

National Certificate in Wastewater Reticulation Services
NQF Level 2 (128 credits)

FUNDAMENTAL			CORE			ELECTIVE		
Compulsory 40 credits	L	C	Compulsory 80 credits	L	C	Select a minimum of 8 credits	L	C
Demonstrate understanding of rational and irrational numbers, and number systems, within the context of relevant calculations (8982)	2	3	Demonstrate Knowledge Of Water Cycle, Water And Wastewater Systems (12033)	2	5	Perform Basic Building Works (11782)	3	8
Use mathematics to investigate and monitor the financial aspects of personal and community life (7469)	2	2	Demonstrate Knowledge of Wastewater Systems	1	3	Render Basic First Aid (9995)	2	3
Apply basic knowledge of statistics in order to investigate life and work related problems (14085)	2	3	Orientate Self In The Workplace (12036)	2	6	Operate A Wastewater Pump Station	3	12
Measure, estimate and calculate physical quantities and explore, describe and represent geometrical relationships in 2-dimensions in different life or workplace contexts (12444)	2	3	Apply Personal Safety Practices In The Water Sector (12035)	2	4	Connect A Customer Sewerage System To A Public Wastewater System	3	7
Work with a range of patterns and functions to solve problems (8963)	2	5	Operate In A Team (Registered)	2	4	Operate, Maintain and Provide Technical Support For On Site Sanitation Systems	3	8
Maintain and adapt oral communication (8962)	2	5	Read And Interpret Maps And Engineering Drawings of Water Reticulation Systems (14024)	2	4	Operate A Personal Computer (7547)	2	6
Access and use information from texts (8963)	2	5	Use and Maintain Power Hand Tools On A Construction Site (12878)	1	5			
Write for a defined context (8964)	2	5	Demonstrate Knowledge Of Pipes, Associated Fittings And Valves Used In Wastewater Reticulation Systems	2	10			
Use Language and Communication in Occupational learning programmes (8967)	2	5	Plan Team Work Functions And Complete Reports (14019)	3	4			
Demonstrate an understanding of HIV/AIDS and its implications (8494)	2	4	Join Pipes And Install Associated Fittings	3	10			
			Lay Pipes For A Wastewater Reticulation System	3	10			
			Operate And Maintain A Wastewater Reticulation System	3	15			
Total credits on level 2	2	40	Total credits on level 2		33			
Total credits	2	40	Total credits		80	Total credits		44

National Certificate in Wastewater Reticulation Services NQF 2**UNIT STANDARDS ON NQF LEVEL 1**

The learner must achieve all of the following Unit Standards.

Title 1: Demonstrate Knowledge Of Wastewater Systems

UNIT STANDARDS ON NQF LEVEL 2

The learner must achieve all of the following Unit Standards.

Title 1: Demonstrate Knowledge Of Pipes, Associated Fittings And Valves Used In Wastewater Reticulation Systems

UNIT STANDARDS ON NQF LEVEL 3

Title 1: Join Pipes And Install Associated Fittings

Title 2: Lay Pipes For A Wastewater Reticulation System

Title 3: Operate And Maintain A Wastewater Reticulation System

Title 4: Operate A Wastewater Pump Station

Title 5: Connect A Customer Sewerage System To A Public Wastewater System

Title 6: Operate, Maintain And Provide Technical Support For On Site Sanitation Systems

Unit Standards And Specific Outcomes For The National Certificate In Wastewater Reticulation Services NQF 2**UNIT STANDARDS ON NQF LEVEL 1**

1. TITLE: DEMONSTRATE KNOWLEDGE OF WASTEWATER SYSTEMS
- Specific outcome 1.1: Explain the purpose of a wastewater system.
- Specific outcome 1.2: Discuss different types of sanitation systems.
- Specific outcome 1.3: Explain the principles and elements of a gravity wastewater system.
- Specific outcome 1.4: Identify the elements of a wastewater pumping system on site.
- Specific outcome 1.5: Identify and explain the purpose of wastewater maintenance equipment.

UNIT STANDARDS ON NQF LEVEL 2

1. TITLE: DEMONSTRATE KNOWLEDGE OF PIPES, ASSOCIATED FITTINGS AND VALVES USED IN WASTEWATER RETICULATION SYSTEMS
- Specific outcome 1.1: Identify and explain different pipe sizes, classes and types used in wastewater reticulation systems.
- Specific outcome 1.2: Identify and explain the characteristics of associated fittings in wastewater reticulation systems.
- Specific outcome 1.3: Identify and explain the types and functions of valves used on wastewater reticulation systems.
- Specific outcome 1.4: Store pipes, associated fittings and valves.

UNIT STANDARDS ON NQF LEVEL 3

1. TITLE: JOIN PIPES AND INSTAL ASSOCIATED FITTINGS
- Specific outcome 1.1: Identify safety risks and implement safety procedures.
- Specific outcome 1.2: Secure, lift and lower pipes and associated fittings.
- Specific outcome 1.3: Join similar pipe types.
- Specific outcome 1.4: Join different pipe types.
- Specific outcome 1.5: Install associated fittings.

2. TITLE: LAY PIPES FOR A WASTEWATER RETICULATION SYSTEM

- Specific outcome 2.1: Check relevant resources are available on site in accordance with work plan.
- Specific outcome 2.2: Excavate trenches safely.
- Specific outcome 2.3: Install shoring.
- Specific outcome 2.4: Lay the pipeline.
- Specific outcome 2.5: Connect and test the system.
- Specific outcome 2.6: Complete final backfill and construction work.

3. TITLE: OPERATE A WASTEWATER PUMP STATION

- Specific outcome 3.1: Identify and explain pumps.
- Specific outcome 3.2: Comply with safety procedures in pump station.
- Specific outcome 3.3: Operate pumping system.
- Specific outcome 3.4: Provide basic maintenance for pumps.
- Specific outcome 3.5: Maintain and repairs valves in a pumping system.
- Specific outcome 3.6: Service drive-units of pumps.

4. TITLE: CONNECT A CUSTOMER SEWERAGE SYSTEM TO A PUBLIC WASTEWATER SYSTEM

- Specific outcome 4.1: Plan work and prepare work site for wastewater connection.
- Specific outcome 4.2: Set out work site and excavate to required levels.
- Specific outcome 4.3: Lay and joint pipes and connect to sewer connecting points.
- Specific outcome 4.4: Inspect connection laid by others to ensure compliance with work procedures.

5. TITLE: OPERATE, MAINTAIN AND PROVIDE TECHNICAL SUPPORT FOR ON SITE SANITATION SYSTEMS

- Specific outcome 5.1: Explain different on site sanitation systems.
- Specific outcome 5.2: Advise on application of new on site sanitation system.
- Specific outcome 5.3: Monitor the construction of on site sanitation system.
- Specific outcome 5.4: Operate and maintain on site sanitation system.

6. TITLE: OPERATE AND MAINTAIN A WASTEWATER RETICULATION SYSTEM

- Specific outcome 6.1: Identify cause and scope of faults in a wastewater reticulation system.
- Specific outcome 6.2: Communicate effectively with customers.
- Specific outcome 6.3: Complete repairs on wastewater rising mains.
- Specific outcome 6.4: Clear obstructions in a wastewater gravity system.
- Specific outcome 6.5: Repair wastewater gravity system.
- Specific outcome 6.6: Conduct preventative maintenance procedures.
- Specific outcome 6.7: Demonstrate contamination prevention methods in wastewater operations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Qualification Title: Further Education and Training Certificate in Supervision of Wastewater Reticulation Operations NQF Level 4

NQF Field: Physical Planning and Construction - NSB 12

Sub-field: Civil Engineering Construction

Level: 4

Credit: 149 credits

Issue date:

Review date:

Rationale of the Qualification

This Qualification reflects the needs of the wastewater reticulation sector, both now and in the future, for a general skills pool. This Qualification is intended for a supervisor and will include working as a leader and supervising several wastewater reticulation teams including resources and equipment. Once having gained this competence, learners may choose to develop further management competences or specialise in water specific Qualifications.

This Qualification is intended for those with prior work experience or the NQF3 Qualification in wastewater reticulation or an equivalent. The prospective candidate for this Qualification may be a person who is entering the work place or who has been working in the workplace with limited formal wastewater reticulation supervisory competence.

The Qualification gives accessibility and flexibility to the learner and to the employed. The level of flexibility reflects the multiple job roles, organisational requirements and changing technological nature of the industry and at the same time it allows the individual to work towards a nationally recognised Qualification. This will enable learners to pursue different careers within the water sector, enhance productivity and employability within the water sector and contribute towards the ecological sustainability and improvement of the water environment.

Purpose of the Qualification

The National Certificate in Supervision of Wastewater Reticulation Operations (NQF level 4) will prepare learners to function independently in a supervisory capacity. This Qualification focuses on the full development of the learner and further mobility and transportability within the water sector. The Qualification will provide the learner with the knowledge and skills to supervise a wastewater reticulation services department attending to the construction and operations of a wastewater reticulation system. Qualifying learners are able to:

- Supervise teams of people;
- Supervise health and safety practices in the workplace;

- Plan, organise and supervise the implementation of work tasks on a wastewater reticulation system;
- Complete administrative tasks;
- Handle a range of customer complaints; and
- Monitor the departmental budget

This Qualification forms the foundation for advancement to management Qualifications within the sector and will also lay the foundation for future career advancement across similar trades. For those who have been in the workplace for a long time, this Qualification can be used in the recognition of prior learning to recognise workplace skills acquired without the benefit of formal education and training.

This Qualification has been developed to assist with standardisation across the wastewater reticulation industry. The individual will have the capacity to advance and gain skills and self-respect, as the qualified learner will be able to work in a professional manner, to ensure that industry standards are maintained.

Access to the Qualification

As this is a Unit Standard based Qualification, learners will have open access provided that the learner meets the requirements for the learning assumed to be in place for each Unit Standard. The achievement of the National Certificate For Water Reticulation Services NQF level 3 will assist with progression and access to the Qualification. It is not considered essential to have achieved the National Certificate in Wastewater Reticulation at level 3.

Learning assumed to be in place

A knowledge, comprehension and application of language and mathematics at NQF level 3. Candidates will be required to demonstrate competence in all the core Unit Standards described in the National Certificate For Wastewater Reticulation Services at NQF level 3.

Exit level Outcomes

On achieving this Qualification the qualifying learner will be able to:

Exit level 1: Demonstrate supervisory skills.

Associated Assessment Criteria

- Staff is supervised and developed within own scope of responsibility
- Staff is supervised to achieve work objectives
- Interaction with staff, work colleagues, customers and management is achieved satisfactory
- Conflict within own scope of responsibility is handled
- Technology is used appropriately to achieve objectives

Exit level 2: Demonstrate administrative skills required on a wastewater treatment works.

Associated Assessment Criteria

- Skills relevant to a wastewater reticulation context appropriately are applied
- Administrative skills required in the workplace are demonstrated
- An ability to prioritise administrative tasks to facilitate an efficient flow of documentation is demonstrated

Exit level 3: Demonstrate planning and organising skills.**Associated Assessment Criteria**

- Knowledge of the development and review of action plans and year plans is demonstrated
- Knowledge of staff development plans is demonstrated
- Staff is developed in accordance with development plans
- Knowledge of all reports and forms required in the workplace and their completion is demonstrated

Exit level 4: Implement and control construction, operation and maintenance tasks.**Associated Assessment Criteria**

- Teams are briefed on tasks and the availability of the required resources is ensured
- Construction, operation and maintenance tasks are supervised in accordance with legislation and work policies and procedures
- Check completion of construction, operation and maintenance tasks
- Supervise health and safety practices in the workplace

Exit level 5: Demonstrate financial control within own department.**Associated Assessment Criteria**

- Analyse and prioritise cash flow needs of different disciplines to determine budget percentage allocation
- Allocate available budget based on identified needs
- Monitor the budget by checking income and expenditure at regular, appropriate intervals
- Maintain effective and accurate records of financial expenditure in accordance with work policies and procedures.
- Obtain authorisation for any modifications to agreed budgets during the accounting period
- Provide feedback regularly to relevant role players.

Exit level 6: Deal with customers.**Associated Assessment Criteria**

- Customers complaints are identified and responded to in an appropriate manner
- correct solution to customers' problems are planned, organised and provided
- Effectively communication with all relevant stakeholders with regard to customer problems is maintained
- Practical business solutions to customer problems are provided

International comparability

The core and elective components have been developed taking into account South Africa's unique context. The working group has been unable to find any international wastewater reticulation Qualifications in America, Australia, Britain or Scotland against which to benchmark the Unit Standards. The working group did find a water Qualification in New Zealand, but it is combined Water and Wastewater and is therefore not comparable. The fundamental components, reflecting foundational learning and generic skills and knowledge have been derived from registered, local adult education Unit Standards.

Integrated Assessment

Integrated assessment at the level of Qualification provides an opportunity for learners to show that they are able to integrate concepts, ideas and actions across Unit Standards to achieve competence that is grounded and coherent in relation to the purpose of the Qualification. Integrated assessment should show how already demonstrated competence in individual areas can be linked and applied for the achievement of a holistic outcome.

Integrated assessment must judge the quality of the observable performance, and also the quality of the thinking that lies behind it. Assessment tools must encourage learners to explain the thinking and decision-making that underpin their demonstrated performance. Some assessment practices will demand practical evidence while others may be more theoretical, depending on the type of outcomes to be assessed, and the nature and level of the Qualification. The ratio between action and interpretation is not fixed, but varies according to the demands of the Qualification.

While the generic component (literacy, communication and life skills) of this Qualification at NQF Level 4 can be assessed through occupational contexts and activities relating to wastewater reticulation, care must be taken in both the learning programme and the assessment to ensure that these foundational skills are truly portable. The primary aim of this Qualification is to ensure that learners have a sound base of general education to prepare them for further learning, whatever career path they may choose. Learners must be able to transfer generic skills such as language, computation and learning skills etc across a number of different contexts, and apply them within a number of learning areas.

A broad range of task-orientated and theoretical assessment tools may be used, with the distinction between practical knowledge and disciplinary knowledge maintained so that each takes its rightful place. Unit Standards in the Qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflexive competencies.

Recognition of prior learning

This Qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience. Any learner wishing to be directly assessed may arrange to do so, without attending further training or education. The assessor and learner will decide together on the most appropriate assessment route to be taken.

Articulation possibilities

This Qualification has been developed for mobility across similar trades within the industry and is intended to allow for further learning towards management certificates or diplomas within this sector or other sectors on NQF level 5 or 6. This Qualification will provide articulation with a range of Qualifications in both technical and management areas.

Criteria for registration of assessors

For an applicant to register as an assessor, the applicant needs:

- A minimum of two years practical, relevant occupational experience.
- Declared competent in all the outcomes of the generic assessor standard, and certificated by the relevant ETQA or by any other ETQA that has signed a memorandum of understanding (MoU).
- Detailed documentary proof of educational Qualification, practical training undergone, and experience gained by the applicant must be provided (Portfolio of evidence).

- Able to demonstrate competence in relation to these specified standards and Qualifications, at or above, the level of the Qualifications in question.
- Meet any other additional requirements laid down by their constituent ETQA.

The subject matter experience of the assessor can be established by recognition of prior learning. The status of registered assessors can be checked on the appropriate ETQA database or website.

Moderation

1. Anyone assessing a learner against these standards must be registered as an assessor with the relevant ETQA.
2. 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.
3. Moderation of assessment will be overseen by the relevant ETQA according to the moderation guidelines in the relevant Qualification and the agreed ETQA procedures.
4. Therefore anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

Notes

A note on the compilation of standards in this Qualification

In line with the SAQA principle of avoiding duplication, existing registered standards were used where possible.

A note on the definition of wastewater reticulation

Wastewater reticulation in this context refers to the entire pipe network.

Further Education and Training Certificate in Supervision of Wastewater Reticulation Operations

NQF Level 4 (149 credits)

FUNDAMENTAL			CORE			ELECTIVE		
Compulsory 70 credits	L	C	Compulsory 69 credits	L	C	Select a minimum of 10 credits	L	C
Use mathematics to investigate and monitor the financial aspects of personal, business, and national issues (7468)	4	6	Supervise Personal Safety Practices In The Water Sector (12061)	4	4	Conduct CCTV Pipe Inspections	4	8
Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems (9015)	4	6	Lead And Supervise Construction Teams (14417)	4	8	Operate Telemetric and Electronic Equipment and Scientific Instrumentation (12066)	4	12
Measure, estimate and calculate physical quantities and explore, critique and prove geometrical relationships in two and three-dimensional space in the life and workplace of the adult with increasing responsibilities (12417)	4	4	Plan And Organise Construction, Operation And Maintenance Of A Wastewater Reticulation System.	4	8	Demonstrate Basic Knowledge Of Different Types Of Trenchless Technologies in Water and Wastewater Environment	5	8
Engage in sustained oral communication and evaluate spoken texts (8974)	4	5	Implement And Control Construction, Operation And Maintenance Tasks On A Water Reticulation System (14025)	4	12	Demonstrate Sound Environmental Practices In Wastewater Operations	4	7
Use language and communication in occupational learning programmes (8979)	4	5	Demonstrate Knowledge of The Principles Of Hydraulics (12059)	4	6			
Read, analyse and respond to a variety of texts (8975)	4	5	Demonstrate Knowledge Of Corrosion Control (12341)	5	7			
Write for a wide range of contexts (8976)	4	5	Handle A Range of Customer Complaints (10025)	4	4			
Accommodate audience and context needs in oral communication (level 3) (8968)	3	5	Demonstrate Knowledge and Operation of Mechanical and Electrical Systems (12058)	4	5			
Interpret and use information from text (8969)	3	5	Perform Site Administration Functions (14425)	4	10			
Write texts for a range of communicative contexts (8970)	3	5	Apply The Budget Function In A Business Unit (13941)	4	5			
Use language and communication in occupational learning programmes (8973)	3	5						
Demonstrate Knowledge of and Produce Computer Spreadsheets using Basic Functions (7572)	2	3						
Operate Personal Computer Systems (7547)	2	6						
Produce word processing documents for business (7570)	3	5						
Total credits on level 4		36	Total credits on level 4		62			
Total credits		70	Total credits		69	Total credits		35

Further Education and Training Certificate In Supervision of Wastewater Reticulation Operations NQF Level 4**UNIT STANDARDS ON NQF LEVEL 4**

- Title 1: Plan And Organise Construction, Operation And Maintenance Of A Wastewater Reticulation System.
- Title 2: Conduct CCTV Pipe Inspections
- Title 3: Demonstrate Sound Environmental Practices In Wastewater Operations

UNIT STANDARDS ON NQF LEVEL 5

- Title 1: Demonstrate Basic Knowledge Of Different Types Of Trenchless Technologies in Water and Wastewater Environment

Unit Standards And Specific Outcomes For The Further Education and Training Certificate In Wastewater Reticulation Services NQF 4

1. TITLE: PLAN AND ORGANISE CONSTRUCTION, OPERATION AND MAINTENANCE OF A WASTEWATER RETICULATION SYSTEM.
- Specific outcome 1.1: Prepare and review action plans.
- Specific outcome 1.2: Prepare and review year plan.
- Specific outcome 1.3: Communicate with relevant stakeholders.
- Specific outcome 1.4: Brief work teams on daily tasks.
2. TITLE: CONDUCT CCTV PIPE INSPECTIONS
- Specific outcome 2.1: Plan for CCTV inspections.
- Specific outcome 2.2: Inspect and prepare site.
- Specific outcome 2.3: Carry out inspections.
- Specific outcome 2.4: Re-instate work site.
- Specific outcome 2.5: Complete reports including recommendations.
3. TITLE: DEMONSTRATE SOUND ENVIRONMENTAL PRACTICES IN WASTEWATER OPERATIONS
- Specific outcome 3.1: Explain the harmful effects of wastewater spillage on the environment.
- Specific outcome 3.2: Demonstrate contamination prevention methods in wastewater operations.
- Specific outcome 3.3: Demonstrate remedial techniques regarding wastewater spillages.
- Specific outcome 3.4: Demonstrate knowledge of odours and remedial techniques in wastewater systems

Unit Standards And Specific Outcomes at NQF 5

1. TITLE: DEMONSTRATE BASIC KNOWLEDGE OF DIFFERENT TYPES OF TRENCHLESS TECHNOLOGIES IN WATER AND WASTEWATER ENVIRONMENT
- Specific outcome 1.1: Explain trenchless technologies.
- Specific outcome 1.2: Explain the preparation for the execution of trenchless technologies.
- Specific outcome 1.3: Identify potential problems that may occur during execution and recommend solutions
- Specific outcome 1.4: Evaluate and recommend the optimal solution for a specific application.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY



Qualification Title: National Certificate in Wastewater Reticulation Services
NQF Level 3

NQF Field: Physical Planning and Construction - NSB 12

Sub-field: Civil Engineering Construction

Level: 3

Credit: 120

Issue date:

Review date:

Rationale of the qualification

Many people working within the wastewater reticulation sector have no formal qualification in wastewater reticulation, yet they are required to lead small teams of people out into the field to install, operate and maintain wastewater reticulation systems in a range of contexts. Whereas the National Certificate In Wastewater Reticulation Services at NQF level 2 will provide all the operational skills required to provide wastewater reticulation services, the National Certificate In Wastewater Reticulation Services at NQF level 3 will prepare the operators to investigate problems on a wastewater reticulation system, consider environmental issues, operate more complex equipment and function more independently in the work place.

Having a qualification and unit standards at this level will make the framework of wastewater reticulation qualifications more flexible and accessible and enable candidates to obtain recognition for their knowledge and experience. It will also enable providers to structure training programmes in accordance with nationally recognised standards.

Candidates who obtain the National Certificate In Wastewater Reticulation Services at NQF level 3 will be able to progress to the supervisory qualification at NQF level 4. The achievement of the wastewater level 4 qualification will give them access to higher qualifications in the field of water or management qualifications.

Purpose of the qualification

The qualification will provide the learner with the knowledge and skills to work in a wastewater reticulation services department as a team leader or junior supervisor. Qualifying learners are able to:

- Supervise a team;
- Operate and maintain a wastewater pump station;
- Investigate problems on a wastewater reticulation system;
- Demonstrate knowledge of wastewater treatment processes;
- Operate and maintain on site sanitation systems;
- Connect customer sewerage systems to a public wastewater systems;

- Provide customer service; and
- Perform general office administrative tasks

This qualification forms the foundation for advancement to the National Certificate in Supervision of Wastewater Reticulation Services on NQF level 4 and will also lay the foundation for future career advancement across similar trades and to other supervisory qualifications within the sector.

For those who have been in the workplace for a long time, this qualification can be used in the recognition of prior learning to recognise workplace skills acquired without the benefit of formal education and training. For the new entrant this qualification describes the learning outcomes required to effectively participate in a structured workplace. For education and training providers this qualification provides guidance for the development of relevant training programmes and assessment material.

This qualification has been developed to assist with standardisation across the wastewater reticulation industry. The individual will have the capacity to advance and gain skills and self-respect, as the qualified learner will be able to work in a professional manner, to ensure that industry standards are maintained.

Access to the Qualification

As this is a unit standard based qualification, learners will have open access provided that the learner meets the requirements for the learning assumed to be in place for each unit standard. The achievement of the National Certificate For Water Reticulation Services NQF level 2 will assist with progression and access to the qualification. It is not considered essential to have achieved the National Certificate For Wastewater Reticulation at level 2.

Learning assumed to be in place

A knowledge, comprehension and application of language and mathematics at NQF level 2. Candidates will be required to demonstrate competence in all the core unit standards described in the National Certificate For Wastewater Reticulation Services at level 2.

Exit level Outcomes

On achieving this qualification the qualifying learner will be able to:

Exit level 1: Lead and supervise a small team of workers.

Associated Assessment Criteria

- Knowledge of the principles of team work is demonstrated
- The team is briefed on tasks to be completed
- The team is led in a manner which ensures the achievement of tasks in accordance with work and safety standards
- Effective working relationships with team members are maintained
- Problems associated with team members are identified and solved
- Communication skills are used to interact in a meaningful way with work colleagues, team members, customers and management

Exit level 2: Plan and organise tasks in an effective manner and complete administrative tasks.

Associated Assessment Criteria

- Tasks are planned and prioritised.
- Work schedules or job cards are prepared.

- Materials, labour and equipment requirements are determined for the completion of stated tasks
- Administration tasks are completed and accurate records are kept

Exit level 3: Operate and maintain a wastewater pump station.

Associated Assessment Criteria

- Wastewater pumps are identified and explained
- Wastewater pumps are operated in accordance with safety procedures
- basic maintenance for wastewater pumps and valves is provided
- Drive units on wastewater pumps are serviced
- Problems associated with wastewater pumps are identified and solved

Exit level 4: Investigate and rectify problems on a wastewater reticulation system.

Associated Assessment Criteria

- Elementary hydraulics on a wastewater reticulation system are explained.
- Potential faults on a wastewater system are identified
- Faults and abnormal sewer flows on a wastewater reticulation system are investigated.
- Problems in a wastewater reticulation system are rectified in accordance with safety procedures and report back is provided on action taken
- Customer service is provided in accordance with work procedures
- Wastewater treatment processes and the impact of poor, faulty wastewater reticulation on wastewater treatment processes are explained.

Exit level 5: Supervise the procurement, use and storage of materials used for wastewater reticulation tasks

Associated Assessment Criteria

- Relevant construction materials and resources are procured
- Construction materials and resources are received, checked and stored
- Construction materials and resources are issued and reconciled.
- The use of materials and resources is supervised when completing wastewater reticulation tasks

Exit level 6: Operate and maintain on site sanitation systems.

Associated Assessment Criteria

- Different on site sanitation systems are explained
- Consumers are advised on suitable on site sanitation options based on site and environmental conditions and operation and maintenance costs
- The construction of on site sanitation systems is monitored
- On site sanitation systems, including the identification and rectification of problems are operated and maintained

International comparability

The core and elective components have been developed taking into account South Africa's unique context. The working group has been unable to find any international wastewater reticulation qualifications in America, Australia, Britain or Scotland against which to benchmark the unit

standards. The working group did find a water qualification in New Zealand, but it is combined Water and Wastewater and is therefore not really comparable. The fundamental components, reflecting foundational learning and generic skills and knowledge have been derived from registered, local adult education unit standards.

Integrated Assessment

Integrated assessment at the level of qualification provides an opportunity for learners to show that they are able to integrate concepts, ideas and actions across unit standards to achieve competence that is grounded and coherent in relation to the purpose of the qualification. Integrated assessment should show how already demonstrated competence in individual areas can be linked and applied for the achievement of a holistic outcome.

Integrated assessment must judge the quality of the observable performance, and also the quality of the thinking that lies behind it. Assessment tools must encourage learners to explain the thinking and decision-making that underpin their demonstrated performance. Some assessment practices will demand practical evidence while others may be more theoretical, depending on the type of outcomes to be assessed, and the nature and level of the qualification. The ratio between action and interpretation is not fixed, but varies according to the demands of the qualification.

While the generic component (literacy, communication and life skills) of this qualification at NQF Level 3 can be assessed through occupational contexts and activities relating to wastewater reticulation, care must be taken in both the learning programme and the assessment to ensure that these foundational skills are truly portable. The primary aim of this qualification is to ensure that learners have a sound base of general education to prepare them for further learning, whatever career path they may choose. Learners must be able to transfer generic skills such as language, computation and learning skills etc across a number of different contexts, and apply them within a number of learning areas.

A broad range of task-orientated and theoretical assessment tools may be used, with the distinction between practical knowledge and disciplinary knowledge maintained so that each takes its rightful place. Unit standards in the qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflexive competencies.

Recognition of prior learning

This qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience. Any learner wishing to be directly assessed may arrange to do so, without attending further training or education. The assessor and learner will decide together on the most appropriate assessment route to be taken.

Articulation possibilities

This qualification will allow a person to articulate vertically to the National Certificate in Supervision of Wastewater Reticulation Services at NQF level 4. This qualification will also provide articulation with a range of qualifications in both technical and management areas in wastewater and other related sectors.

Criteria for registration of assessors

For an applicant to register as an assessor, the applicant needs:

- A minimum of two years practical, relevant occupational experience.

- Declared competent in all the outcomes of the generic assessor standard, and certificated by the relevant ETQA or by any appropriate ETQA.
- Detailed documentary proof of educational qualification, practical training undergone, and experience gained by the applicant must be provided (Portfolio of evidence).
- Able to demonstrate competence in relation to these specified standards and qualifications, at or above, the level of the qualifications in question.
- Meet any other additional requirements laid down by their constituent ETQA.

The subject matter experience of the assessor can be established by recognition of prior learning. The status of registered assessors can be checked on the appropriate ETQA database or website.

Moderation

Anyone assessing a learner against these standards must be registered as an assessor with the relevant ETQA.

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 relevant qualification and the agreed ETQA procedures.

Therefore anyone wishing to be assessed against this qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

A note on the compilation of standards in this qualification

In line with the SAQA principle of avoiding duplication, existing registered standards were used where possible.

A note on the definition of wastewater reticulation

Wastewater reticulation in this context refers to the entire pipe network.

National Certificate in Wastewater Reticulation Services

NQF Level 3 (120 credits)

FUNDAMENTAL			CORE			ELECTIVE		
Compulsory 40 credits	L	C	Compulsory 67 credits	L	C	Select a minimum of 13 credits	L	C
Accommodate audience and context needs in oral communication (8968)	3	5	Operate A Wastewater Pump Station	3	12	Conduct CCTV Pipe Inspections	4	8
Interpret and use information from texts (8969)	3	5	Investigate Problems In A Wastewater Reticulation System	3	10	Operate Telemetric and Electronic Equipment and Scientific Instrumentation (12066)	4	12
Demonstrate an understanding of HIV/AIDS and its implications (9386)	2	4	Operate, Maintain And Provide Technical Support For On Site Sanitation Systems	3	8	Demonstrate Knowledge of The Principles Of Hydraulics (12059)	4	6
Write texts for a range of communicative contexts (8970)	3	5	Demonstrate Knowledge of Wastewater Treatment Processes	3	4	Demonstrate Knowledge Of Corrosion Control (14053)	5	7
Use language and communication in occupational learning programmes (8973)	3	5	Connect A Customer Sewerage System To A Public Wastewater System	3	7	Demonstrate Basic Knowledge Of Different Types Of Trenchless Technologies in Water and Wastewater Environment	5	8
Demonstrate understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations (9010)	3	2	Maintain Effective Working Relationships With Other Members of Staff (12510)	3	1	Demonstrate Sound Environmental Practices in Wastewater Operations	4	7
Use Mathematics to investigate and monitor the financial aspects of personal and business issues (9011)	3	5	Provide Customer Service	4	8	Operate A Personal Computer system (7547)	2	6
Investigate life and work related problems, using data and probabilities (9012)	3	5	Supervise The Procurement, Use And Storage Of Construction Materials (14430)	4	10	Demonstrate Knowledge of and Produce Computer Spreadsheets using Basic Functions (7568)	2	3
Describe, apply, analyse and calculate shape and motion in two and three-dimensional space in different contexts (14108)	3	4	Executing General Office Administration (8015)	2	4	Produce word-Processing documents for business (7570)	3	5
			Render Basic First Aid	2	3			
Total credits on level 3	3	36	Total credits on level 3	3	42			
Total credits		40	Total credits		67	Total credits		62

National Certificate in Wastewater Reticulation Services NQF 3**UNIT STANDARDS ON NQF LEVEL 3**

- Title 1: Operate A Wastewater Pump Station
- Title 2: Investigate problems In A Wastewater Reticulation System
- Title 3: Operate Maintain and provide Technical Support For On Site Sanitation Systems
- Title 4: Demonstrate Knowledge of Wastewater Treatment Processes
- Title 5: Connect A Customer Sewerage System To A Public Wastewater System

UNIT STANDARDS ON NQF LEVEL 4

- Title 1: Conduct CCTV Pipe Inspections
- Title 2: Demonstrate Sound Environmental Practices in Wastewater Operations

UNIT STANDARDS ON NQF LEVEL 5

- Title 1: Demonstrate Basic Knowledge Of Different Types Of Trenchless Technologies in Water and Wastewater Environment

Unit Standards And Specific Outcomes For The National Certificate In Wastewater Reticulation Services NQF 3**1. TITLE: INVESTIGATE PROBLEMS IN A WASTEWATER RETICULATION SYSTEM**

- Specific outcome 1.1: Explain elementary hydraulics.
- Specific outcome 1.2: Investigate abnormal sewer flows.
- Specific outcome 1.3: Locate irregularities in wastewater infrastructure.
- Specific outcome 1.4: Report back on investigations and irregularities.
- Specific outcome 1.5:

2. TITLE: DEMONSTRATE KNOWLEDGE OF WASTEWATER TREATMENT PROCESSES

- Specific outcome 2.1: Explain and identify wastewater treatment processes.
- Specific outcome 2.2: Identify and explain the inlet works.
- Specific outcome 2.3: Identify and explain the primary treatment process.
- Specific outcome 2.4: Identify and explain the secondary treatment processes.
- Specific outcome 2.5: Demonstrate knowledge of the disinfection process.
- Specific outcome 2.6: Explain the sludge treatment processes.

3. TITLE: OPERATE A WASTEWATER PUMP STATION

- Specific outcome 3.1: Explain the working principles of pumps.
- Specific outcome 3.2: Comply with safety procedures in pump station.
- Specific outcome 3.3: Operate pumping system.
- Specific outcome 3.4: Provide basic maintenance for pumps.
- Specific outcome 3.5: Maintain and repairs valves in a pumping system.
- Specific outcome 3.6: Service drive-units of pumps.

- 4. TITLE:** CONNECT A CUSTOMER SEWERAGE SYSTEM TO A PUBLIC WASTEWATER SYSTEM
- Specific outcome 4.1: Plan work and prepare work site for wastewater connection.
- Specific outcome 4.2: Set out work site and excavate to required levels.
- Specific outcome 4.3: Lay and joint pipes and connect to sewer connecting points.
- Specific outcome 4.4: Inspect connection laid by others to ensure compliance with work procedures.
- 5. TITLE:** OPERATE, MAINTAIN AND PROVIDE TECHNICAL SUPPORT FOR ON SITE SANITATION SYSTEMS
- Specific outcome 5.1: Explain different on site sanitation systems.
- Specific outcome 5.2: Advise on application of new on site sanitation system.
- Specific outcome 5.3: Monitor the construction of on site sanitation system.
- Specific outcome 5.4: Operate and maintain on site sanitation system.

Unit Standards And Specific Outcomes at NQF 4

- 1. TITLE:** CONDUCT CCTV PIPE INSPECTIONS
- Specific outcome 1.1: Plan for CCTV inspections.
- Specific outcome 1.2: Inspect and prepare site.
- Specific outcome 1.3: Carry out inspections.
- Specific outcome 1.4: Re-instate work site.
- Specific outcome 1.5: Complete reports including recommendations.
- 2. TITLE:** DEMONSTRATE SOUND ENVIRONMENTAL PRACTICES IN WASTEWATER OPERATIONS
- Specific outcome 2.1: Explain the harmful effects of wastewater spillage on the environment.
- Specific outcome 2.2: Demonstrate contamination prevention methods in wastewater operations.
- Specific outcome 2.3: Demonstrate remedial techniques regarding wastewater spillages.
- Specific outcome 2.4: Demonstrate knowledge of odours and remedial techniques in wastewater systems

Unit Standards And Specific Outcomes at NQF 5**1. TITLE: DEMONSTRATE BASIC KNOWLEDGE OF DIFFERENT TYPES OF TRENCHLESS TECHNOLOGIES IN WATER AND WASTEWATER ENVIRONMENT**

Specific outcome 1.1: Explain trenchless technologies.

Specific outcome 1.2: Explain the preparation for the execution of trenchless technologies.

Specific outcome 1.3: Identify potential problems that may occur during execution and recommend solutions

Specific outcome 1.4: Evaluate and recommend the optimal solution for a specific application.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY**Further Education and Training Certificate in Sanitation Project Facilitation
NQF level 4**

Field: Physical Planning and Construction - NSB 12

Sub-field: Civil Engineering Construction

Level: 4

Credits: 151

Issue date:

Review date:

Rationale of the Qualification

This Qualification reflects the workplace-based needs of project agents implementing primarily on-site, dry sanitation projects in the water and health sectors that are expressed by employers and employees, both now and for the future. While at this level the person will work to a large extent on his or her own, it is likely that this work will be done under the supervision of a project coordinator. This qualification provides the learner with a career path and progression within the water and health sectors. It is applicable to employed and unemployed learners. This qualification will enable learners to reach their full potential of advancement without formal education becoming an impassable barrier and in addition will allow for the recognition of prior learning. There is an on-going need for highly skilled, sanitation project personnel and a need for a well developed learning pathway to cater for these personnel at the various levels at which they operate. The Qualification provides learners with access to Project Management Qualifications on NQF level 4 and 5 and the National Certificate in Sanitation Project Management on NQF level 5. This will enable learners to pursue different careers within the water and health sectors, enhance productivity and employability and contribute towards the ecological sustainability and improvement of the water environment. This qualification reflects the skills, knowledge and understanding required to participate effectively in the water and health sectors, whether in micro, small, medium or large operations.

The National Certificate in Sanitation Project Facilitation at NQF level 4 is the second Qualification in a learning pathway that starts with the National Certificate In Community Water, Health And Sanitation Promotion NQF level 2 and progresses to the National Certificate in Sanitation Project Management NQF Level 5. It is planned that tertiary institutions will develop a postgraduate diploma in Sanitation at level 6 as the final step in the learning pathway.

The National Certificate in Sanitation Project Facilitation at NQF Level 4 supports the objectives of the NQF in that it gives the learner access to a registered Qualification. It will ensure that the quality of education and training in the sub-field is enhanced

and of a world-class standard. The Qualification will also allow learners to develop their knowledge and skills in the field of sanitation project facilitation.

Purpose of the Qualification

This Qualification is for any individual who is, or wishes to be, involved in the sanitation project facilitation field in any organization or business as well as in non-commercial organisations such as non-governmental organisations and charitable organisations.

This Qualification will enable the learner to define core competencies required for field based practitioners to implement an integrated approach to sanitation improvement, which addresses hygiene awareness, behaviour and infrastructure. The qualified learner will be able to competently complete a range of project tasks relating to the improvement of sanitation and hygiene in a professional manner that ensures consistency of performance and sustainability of interventions.

The qualifying learner will be able to:

- Explain sanitation and the sanitation environment;
- Promote health and hygiene improvement;
- Facilitate processes using participatory methodologies and tools;
- Work in a project team and co-ordinate project processes in accordance with the project quality plan;
- Assist with the preparation phase of a community sanitation improvement project;
- Assist with the implementation of a community sanitation improvement project;
- Collect and interpret data required for sanitation improvement projects ;
- Complete required project documentation; and
- Plan and organise project meetings and workshops.

This Qualification has been developed to assist with standardisation in the implementation of sanitation projects. This will allow learners to lay a foundation for future career advancement and access to other community based Qualifications within the water sector. This Qualification has been developed to enhance the sustainability of sanitation projects, which will contribute towards improved health and reduce sanitation and water related diseases within communities. This competence will contribute to assisting the individual with the capacity to advance and gain skills, which are portable, and in so doing gain self-respect.

The Qualification has building blocks that can be developed further in Qualifications at a higher level. It contains all the competencies, skills and values required by a learner who wishes to access the National Certificate in Sanitation Project Management at NQF Level 5. It also focuses on the skills, knowledge, values and attitudes required to progress further. The intention is:

- To promote the development of knowledge, skills and values that are required for service excellence within the field of administration;
- To release the potential of people; and
- To provide opportunities for people to progress.

Access to the Qualification

The Qualification is available to anyone because it is aimed at opening access and addressing past imbalances. The achievement of the National Certificate for Community Water, Health And Sanitation Promotion at NQF level 3 together with literacy at NQF level 3 and numeracy at NQF level 3, will assist with progression and

access to this qualification. It is considered essential to have achieved a level 3 National Certificate but the achievement of this Qualification will provide a foundation for the learning required in the level 4 certificate.

Learning assumed to be in place

A knowledge, comprehension and application of two languages at NQF level 3 and mathematics at NQF level 3.

Exit level Outcomes

In particular, assessors should check that the learner can demonstrate an ability to apply learned competencies, skills and knowledge in an integrated way, as well as an ability to consider a range of options and make decisions.

On achieving this qualification the qualifying learner will be able to:

Exit level 1: Explain sanitation and relevant policies.**Associated Assessment Criteria**

- Knowledge and comprehension of sanitation improvement in the context of sustainable development is demonstrated.
- Sanitation concepts are discussed and issues of why sanitation matters to people are explained
- Knowledge and comprehension of relevant sanitation policy is demonstrated.
- Factors that influence the sustainability of sanitation interventions are discussed
- The relevance of gender and equity principles in sanitation improvement are discussed.

Exit level 2: Promote health and hygiene improvement in sanitation projects.**Associated Assessment Criteria**

- The link between sanitation, water, health and the environment is explained.
- Required health and hygiene processes are identified.
- The promotion of health and hygiene process is planned.
- Promote awareness of health and hygiene improvement using participatory methodologies
- Health and hygiene improvement is monitored using appropriate tools
- Progress and improvements are reported to project co-ordinator

Exit level 3: Demonstrate communication skills.**Associated Assessment Criteria**

- Communication skills are used to interact in a meaningful way with work colleagues and all relevant stakeholders including community members.
- The learner communicated effectively with others in both learning and work-oriented situations.
- Different communicateeffectively orally and in writing.

Integrated Assessment

Integrated assessment at the level of qualification provides an opportunity for learners to show that they are able to integrate concepts, ideas and actions across unit standards to achieve competence that is grounded and coherent in relation to the purpose of the qualification. Integrated assessment should show how already demonstrated competence in individual areas can be linked and applied for the achievement of a holistic outcome.

Integrated assessment must judge the quality of the observable performance, and also the quality of the thinking that lies behind it. Assessment tools must encourage learners to give an account of the thinking and decision-making that underpin their demonstrated performance. Some assessment practices will demand practical evidence while others may be more theoretical, depending on the type of outcomes to be assessed, and the nature and level of the Qualification. The ratio between action and interpretation is not fixed, but varies according to the demands of the Qualification.

While the generic component (literacy, communication and life skills) of this Qualification at NQF Level 3 and 4 can be assessed through occupational contexts and activities relating to community sanitation projects, care must be taken in both the learning programme and the assessment to ensure that these foundational skills are truly portable. The primary aim of this Qualification is to ensure that learners have a sound base of general education to prepare them for further learning, whatever career path they may choose. Learners must be able to transfer generic skills such as language, computation and learning skills etc across a number of different contexts, and apply them within a number of learning areas.

A broad range of task-orientated and theoretical assessment tools may be used, with the distinction between practical knowledge and disciplinary knowledge maintained so that each takes its rightful place. Unit Standards in the Qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflexive competencies.

Recognition of prior learning

This Qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience. Any learner wishing to be directly assessed may arrange to do so, without attending further training or education. The assessor and learner will decide together on the most appropriate assessment route to be taken.

Articulation possibilities

This Qualification allows for vertical articulation to, inter alia, the National Certificate in Sanitation Project Management NQF level 5, a tertiary qualification such as a diploma in sanitation or a degree. This Qualification will also provide articulation with a range of Qualifications in both technical and management areas in water and other related sectors.

Exit level 4: Demonstrate facilitation skills using participatory methodologies.**Associated Assessment Criteria**

- Relevant situations or context are identified for the use of participatory tools.
- The process is planned according to the chosen method
- Participatory tools are used in an appropriate manner.
- Effective participation in groups is facilitated using participatory methodologies.
- The implementation of the intervention plan is developed and monitored.

Exit level 5: Monitor the construction of two types of on-site dry sanitation technologies.**Associated Assessment Criteria**

- A range of sanitation technology options, and the advantages and disadvantages of each option are explained.
- The application of each option is explained.
- The most relevant option in a specific community based on situational factors is determined.
- The construction of two types of on-site dry toilet constructions is monitored.

Exit level 6: Assist with the preparation and implementation of monitor sanitation projects.**Associated Assessment Criteria**

- The key leaders and stakeholders involved in the sanitation project are identified
- The baseline survey process is facilitated using appropriate participatory methods and tools.
- The decision-making process is facilitated using appropriate participatory methods and tools.
- Project tasks are scheduled and implemented in accordance with the work plan.
- The implementation of sanitation projects is monitored in accordance with the key indicators and the quality plan.
- Progress is reported and appropriate action is taken within own scope of responsibility.

International comparability

The core and elective components have been developed taking into account South Africa's unique context. The working group has used GHK Search and Training Limited (London UK) to do an international search for a project agent qualification. No existing qualifications have been found on NQF level 4. The search revealed that only sanitation courses exist in the international arena. The fundamental components, reflecting foundational learning and generic skills and knowledge have been derived from registered, local adult education unit standards.

Criteria for registration of assessors

For an applicant to register as an assessor, the applicant needs:

- To be competent at the same level or be at a level above this level 4 Qualification /Unit Standards;
- A minimum of two years sanitation practical, relevant occupational experience.
- Declared competent in all the outcomes of the of the generic assessor standard, and certificated by the the relevant ETQA or by any appropriate ETQA in agreement with the the relevant ETQA in this regard.
- Detailed documentary proof of educational qualification, practical training undergone, and experience gained by the applicant must be provided (Portfolio of evidence).
-
- Meet any other additional requirements laid down by their constituent ETQA.

The subject matter experience of the assessor can be established by recognition of prior learning. The status of registered assessors can be checked on the appropriate ETQA database or website.

Moderation

Anyone assessing a learner against these standards must be registered as an assessor with the relevant ETQA.

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 relevant qualification and the agreed ETQA procedures.

Therefore anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

Notes

Level credits and learning components assigned to the Qualification

This certificate is made up of a planned combination of learning outcomes that have a defined purpose and will provide qualifying learners with applied competence and a basis for further training. The Qualification is made up of Unit Standards that are classified as Fundamental, Core and Elective. A minimum of 151 credits are required to complete the Qualification.

In this Qualification the credits are allocated as follows

Fundamental	56 credits	37%
Core	80 credits	53%
Electives	15 credits	10%
TOTAL	151 credits	100%

Note that 53% of the credits, therefore, relate directly to sanitation project facilitation. The elective component allows the learner to select Unit Standards that are:

- Directly related to the work done by the learner in an organisation.
- Related to specialist areas of sanitation project related work that the learner might be interested in.

This is to ensure that while there is a strong sanitation project focus, there is scope for learners to select additional Unit Standards that are relevant to their own situations.

Motivation for number of credits assigned to fundamental, core and elective

Allocation of Fundamental credits

Unit Standards to the value of 20 credits in Communication, 16 credits in Mathematical Literacy and 20 credits in a second language in accordance with the SAQA rules of combination have been selected for the Fundamental Component. These Unit Standards will add value to learners both socially and economically in terms of their ability to operate and communicate as literate and numerate workers in a global economy. All these Unit Standards are compulsory.

Allocation of Core credits

Eighty credits have been allocated to Unit Standards in the Core Component of this qualification. This is to ensure that the qualification has a strong sanitation project facilitation focus. The Unit Standards classified as Core describe sanitation knowledge and skills that are generic to sanitation projects and facilitation processes. They provide an opportunity to develop knowledge of sanitation project facilitation through case studies, formal learning and workplace practice and/or simulated situations. The Unit Standards encourage application of knowledge and skills in real situations. The Core Unit Standards provide the basic knowledge and skills that all workers need to know about sanitation project facilitation. All Unit standards are compulsory.

Allocation of Elective credits

There are Unit Standards totalling 55 credits in this component. Learners are required to select electives that add up to at least 15 credits from the Elective Component of the qualification. The elective unit standards will enhance the learner's work performance.

A note on the compilation of standards in this Qualification

In line with the SAQA principle of avoiding duplication, existing registered standards were used where possible.

FETC IN SANITATION PROJECT FACILITATION
NQF level 4 (151 credits)

FUNDAMENTAL			CORE			ELECTIVE		
Compulsory 56 credits	L	C	Compulsory 80 credits	L	C	Select a minimum of 15 credits	L	C
Use mathematics to investigate and monitor the financial aspects of personal, business, and national issues (7468)	4	6	Demonstrate Knowledge Of Sanitation And The Sanitation Environment	4	4	Plan An Integrated School Sanitation Project	5	6
Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems (9015)	4	6	Promote Health And Hygiene Improvement In A Project-Level Sanitation Project	4	12	Apply A Range Of Project Management Tools (10140)	4	8
Measure, estimate and calculate physical quantities and explore, critique and prove geometrical relationships in two and three-dimensional space in the life and workplace of the adult with increasing responsibilities (12417)	4	4	Monitor Dry On-Site Construction In Order To Recognise & Report Problems	4	4	Contribute To The Management Of Project Risk Within Own Field Of Expertise (10141)	4	5
Engage in sustained oral communication and evaluate spoken texts (8974)	4	5	Carry Out Activities That Support The Preparation Phase Of A Community Sanitation Improvement Project	4	12	Produce Word Processing Documents for Business (7570)	3	5
Use language and communication in occupational learning programmes (8979)	4	5	Carry Out Activities That Support The Implementation Phase Of A Community Sanitation Improvement Project	4	16	Demonstrate Knowledge of and Produce Computer Spreadsheets Using Basic Functions (7572)	2	3
Read, analyse and respond to a variety of texts (8975)	4	5	Collect and Interpret Data (14015)	4	4	Build block walls (9364)	3	14
Write for a wide range of contexts (8976)	4	5	Facilitate Community Participation Processes (12353)	4	12	Fulfil Procurement Activities And Supervise Procurement Administration (10142)	4	8
Accommodate audience and context needs in oral communication (8968)	3	5	Conduct Project Documentation Management To Support Project Processes (10137)	4	6	Participate in the estimation and preparation of cost budgets for an element of work and monitor and control actual cost against budget (10134)	4	6
Interpret and use information from text (8969)	3	5	Provide Assistance In Implementing And Assuring Project Work Is Conducted In Accordance With The Project Quality Plan. (10150)	3	6			
Write texts for a range of communicative contexts (8970)	3	5	Plan, Organise And Support Project Meetings And Workshops (10136)	4	4			
Use language and communication in occupational learning programmes (8973)	3	5	Credits on level 4	4	74			
Total credits		56	Total credits		80	Total credits		55

Learners exiting this Qualification before completion, retain the credits for Unit Standards successfully completed and may carry them over to other Qualifications to which they are applicable. Learners may also retain the credits until a later stage should studies be recommenced, provided the Unit Standards are still relevant to the Qualification.

The table below shows the spread of Critical Cross-field Outcomes across the Unit Standards that are classified as Core for sanitation project facilitation.

Unit Standard Title	Critical Cross-field outcomes supported by the Unit Standard						
	Solve problems	Team work	Organisation	Information	Communicate	Technology	Related systems
Core							
Demonstrate knowledge of sanitation and the sanitation environment					X	X	X
Promote health and hygiene improvement in a project-level sanitation project	X	X	X	X	X	X	X
Monitor dry on-site construction in order to recognise & report problems	X	X		X	X	X	X
Carry out activities that support the preparation phase of a community sanitation improvement project	X	X	X	X	X	X	X
Carry out activities that support the implementation phase of a community sanitation improvement project	X	X	X	X	X	X	X
Plan an integrated school sanitation project			X	X	X	X	X

**Further Education and Training Certificate in Sanitation Project
Facilitation NQF level 4****UNIT STANDARDS ON NQF LEVEL 4**

- Title 1: Demonstrate Knowledge Of Sanitation And The Sanitation Environment
- Title 2: Promote Health And Hygiene Improvement In A Project-Level Sanitation Project
- Title 3: Monitor Dry On-Site Construction In Order To Recognise & Report Problems
- Title 4: Carry Out Activities That Support The Preparation Phase Of A Community Sanitation Improvement Project
- Title 5: Carry Out Activities That Support The Implementation Phase Of A Community Sanitation Improvement Project

UNIT STANDARDS ON NQF LEVEL 5

- Title 6: Plan An Integrated School Sanitation Project

Unit Standards And Specific Outcomes For The Further Education and Training Certificate in Sanitation Project Facilitation NQF level 4**UNIT STANDARDS ON NQF LEVEL 4**

1. TITLE: DEMONSTRATE KNOWLEDGE OF SANITATION AND THE SANITATION ENVIRONMENT
 - Specific outcome 1.1: Explain sanitation and why sanitation matters to people.
 - Specific outcome 1.2: Explain the national sanitation policy and the legislative framework.
 - Specific outcome 1.3: Discuss the factors that influence the sustainability of sanitation interventions.
 - Specific outcome 1.4: Discuss the relevance of gender and equity principles in sanitation improvement.
2. TITLE: PROMOTE HEALTH AND HYGIENE IMPROVEMENT IN A PROJECT-LEVEL SANITATION PROJECT
 - Specific outcome 2.1: Identify what health and hygiene interventions will be necessary based on information collected locally.
 - Specific outcome 2.2: Undertake sanitation-related health and hygiene promotion using appropriate methods.
 - Specific outcome 2.3: Assist in health monitoring and data collection using appropriate tools.
 - Specific outcome 2.4: Report monitoring indicators to the project co-ordinator.
3. TITLE: MONITOR DRY ON-SITE CONSTRUCTION IN ORDER TO RECOGNISE & REPORT PROBLEMS
 - Specific outcome 3.1: Monitor the construction of pits and soakaways for VIP and UDS toilets.
 - Specific outcome 3.2: Monitor the construction of the cover slab.
 - Specific outcome 3.3: Monitor the construction of a pedestal and toilet seat.
 - Specific outcome 3.4: Monitor construction of the toilet top structure and ventilation.
 - Specific outcome 3.5: Monitor the construction of hand washing facilities.
 - Specific outcome 3.6: Monitor the operation and maintenance practices of users in the initial handover period.

4. TITLE: CARRY OUT ACTIVITIES THAT SUPPORT THE PREPARATION PHASE OF A COMMUNITY SANITATION IMPROVEMENT PROJECT

- Specific outcome 4.1: Facilitate the project initiation phase.
Specific outcome 4.2: Facilitate the baseline survey process using participatory methods and tools as appropriate.
Specific outcome 4.3: Facilitate public decision-making process to select project options using participatory methods and tools as appropriate.
Specific outcome 4.4: Communication, liaising and reporting to relevant project role-players.

5. TITLE: CARRY OUT ACTIVITIES THAT SUPPORT THE IMPLEMENTATION PHASE OF A COMMUNITY SANITATION IMPROVEMENT PROJECT

- Specific outcome 5.1: Facilitate household or public participation in the implementation phase.
Specific outcome 5.2: Support construction of toilet and hand washing facilities.
Specific outcome 5.3: Undertake activities to promote sustainability of sanitation promotion interventions.
Specific outcome 5.4: Undertake project completion and handover activities.

UNIT STANDARDS ON NQF LEVEL 5

1. TITLE: PLAN AN INTEGRATED SCHOOL SANITATION PROJECT

- Specific outcome 1.1: Plan the implementation of a school sanitation programme.
Specific outcome 1.2: Describe and plan an effective school management and maintenance system according to participatory principles.
Specific outcome 1.3: Identify opportunities and plan for local community involvement and local economic development in a school sanitation project.
Specific outcome 1.4: Develop an outline plan of the in-school elements of a school sanitation project according to participatory principles.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY**National Certificate in Sanitation Project Co-ordination NQF level 5**

Field: Physical Planning and Construction - NSB 12

Sub-field: Civil Engineering Construction

Level: 5

Credits: 148

Issue date:

Review date:

Rationale of the qualification

This qualification reflects the needs of the water and sanitation sector for a project manager with a sound knowledge base and experience for implementing primarily on-site, dry sanitation projects. A generic project management qualification in the past did not satisfy the needs of the sector. A sanitation project co-ordination qualification contextualised within the sanitation sector is a need expressed by employers and employees, both now and for the future. This qualification provides the learner with a career path and progression within the water and health sectors. It is applicable to employed and unemployed learners. This qualification will enable learners to reach their full potential of advancement without formal education becoming an impassable barrier and in addition will allow for the recognition of prior learning.

There is an on-going need for highly skilled, sanitation project co-ordinators/managers and a need for a well developed learning pathway to cater for these personnel at the various levels at which they operate. The qualification provides learners with access to tertiary qualifications such as diplomas and degrees. This will enable learners to pursue different careers within the water and health sectors, enhance productivity and employability and contribute towards the ecological sustainability and improvement of the water environment. This qualification reflects the skills, knowledge and understanding required to participate effectively in the water and health sectors, whether in micro, small, medium or large operations.

The National Certificate in Sanitation Project Co-ordination at NQF level 5 is the third qualification in a learning pathway that starts with the National Certificate In Community Water, Health And Sanitation Promotion NQF level 2, progresses to the National Certificate in Sanitation Project Facilitation NQF Level 4 and currently ends in the National Certificate in Sanitation Project Co-ordination at NQF level 5. It is planned that tertiary institutions will develop a postgraduate diploma in Sanitation at level 6 as the final step in the learning pathway.

The National Certificate in Sanitation Project Co-ordination at NQF Level 5 supports the objectives of the NQF in that it gives the learner access to a registered qualification. It will ensure that the quality of education and training in the sub-field is enhanced and of a world-class standard. The qualification will allow learners to develop their knowledge and skills in the field of sanitation project co-ordination and management.

Purpose of the qualification

A person acquiring this qualification will be able to effectively manage team performance, co-ordinate sanitation project implementation, control a quality assurance system and manage project related documentation. This qualification will contribute to the full development of the learner within the sanitation environment by providing recognition, further mobility and transportability within the sector. The skills, knowledge and understanding demonstrated within this qualification are essential for social and economic transformation and contribute to the upliftment and economic growth of sanitation personnel.

This qualification will enable the learner to define core competencies required for sanitation project managers to co-ordinate an integrated approach to sanitation improvement, which addresses hygiene awareness, behaviour and infrastructure. The qualified learner will be able to competently complete a range of project tasks relating to the improvement of sanitation and hygiene in a professional manner that ensures consistency of performance and sustainability of interventions.

The qualifying learner will be able to:

- Explain sanitation and the sanitation environment in the context of a development-oriented approach to planning and implementing sanitation improvement
- Co-ordinate sanitation-related health and hygiene promotion activities at sanitation project level
- Develop a sanitation project implementation plan according to accepted practices
- Develop a reporting framework for sanitation projects according to current best practice
- Implement and co-ordinate a sanitation project
- Develop a quality management system for a sanitation improvement projects
- Develop contracts for sanitation projects
- Implement and monitor project activities in accordance with the project implementation plan
- Prepare supporting documents for monitoring and evaluation of the project

This qualification has been developed to assist with standardisation in the implementation and co-ordination of sanitation projects. This will allow learners to lay a foundation for future career advancement and access to other community based qualifications within the water sector. This qualification has been developed to enhance the sustainability of sanitation projects, which will contribute towards improved health and reduce sanitation and water related diseases within communities. This competence will contribute to assisting the individual with the capacity to advance and gain skills, which are portable, and in so doing gain self-respect.

The intention is:

- To promote the development of knowledge, skills and values that are required for service excellence within the field of administration
- To release the potential of people
- To provide opportunities for people to progress

Access to the Qualification

The achievement of the National Certificate in Sanitation project Facilitation at NQF level 4 together with literacy and numeracy at NQF level 4, will assist with progression and access to this qualification. It is not considered essential to have achieved the level 4 national certificate but the achievement of this qualification will provide a foundation for the learning required in the level 5 certificate.

Learning assumed to be in place

A knowledge, comprehension and application of language and mathematics at NQF level 4.

Exit level Outcomes

In particular assessors should check that the learner can demonstrate an ability to apply learned competencies, skills and knowledge in an integrated way, as well as an ability to consider a range of options and make decisions.

On achieving this qualification the qualifying learner will be able to:

Exit level 1: Explain sanitation and relevant policy.

Associated Assessment Criteria

- Demonstrate knowledge and comprehension of sanitation improvement in the context of sustainable development.
- Explain sanitation and why sanitation matters to people
- Demonstrate knowledge and comprehension of relevant sanitation policy and legislative framework
- Discuss the factors that influence the sustainability of sanitation interventions including the principles of technological, social, environmental and financial sustainability
- Describe a development-oriented approach to planning and implementing sanitation improvement
- Contrast and explain demand-responsive and supply-driven approaches to sanitation improvement

Exit level 2: Co-ordinate the promotion of health and hygiene improvement in sanitation projects.

Associated Assessment Criteria

- Identify what health and hygiene processes are required
- Use appropriate tools to conduct water and sanitation-related health and hygiene promotion and education activities
- Provide support to team members promoting health and hygiene education activities
- Set up a health and hygiene monitoring and data collection system
- Monitor the indicators and report on progress/ problems

Exit level 3: Demonstrate communication skills.

Associated Assessment Criteria

- Use communication skills to interact in a meaningful way with work colleagues and all relevant stakeholders including community members.
- Communicate effectively with others in both learning and work-oriented situations.
- Communicate effectively orally and in writing.

Exit level 4: Plan a sanitation project.**Associated Assessment Criteria**

- Identify what sanitation improvement interventions are needed in a given settlement
- Identify most viable and sustainable sanitation technical options
- Facilitate effective participation in groups using participatory methodologies
- Develop a sanitation project implementation plan that indicates the outputs, costings and sequencing of processes
- Develop a reporting framework for the sanitation project

Exit level 5: implement and manage a sanitation project.**Associated Assessment Criteria**

- Develop a quality management system for a sanitation improvement project.
- Develop contracts for sanitation projects.
- Develop supporting documents for monitoring and evaluation of the project.
- Set up a reporting system for sanitation projects
- Implement, co-ordinate and monitor all aspects of sanitation projects
- Report on project progress to relevant role players

Exit level 6: Evaluate and improve the project team's performance**Associated Assessment Criteria**

- Identify best practices relevant to operational human resource responsibilities
- Identify strengths and areas for improvement in team members and provide appropriate interventions and support
- Monitor team performance and report to relevant role players
- Identify strengths and areas for improvement in own learning through self-reflection

International comparability

The core and elective components have been developed taking into account South Africa's unique context. The working group has used GHK Search and Training Limited (London UK) to do an international search for a project co-ordination and management qualification. No existing qualifications have been found on NQF level 4 or 5. The search revealed that only sanitation courses exist in the international arena. The fundamental components, reflecting foundational learning and generic skills and knowledge have been derived from registered, local adult education unit standards.

Integrated Assessment

Integrated assessment at the level of qualification provides an opportunity for learners to show that they are able to integrate concepts, ideas and actions across unit standards to achieve competence that is grounded and coherent in relation to the purpose of the qualification. Integrated assessment should show how already demonstrated competence in individual areas can be linked and applied for the achievement of a holistic outcome.

Integrated assessment must judge the quality of the observable performance, and also the quality of the thinking that lies behind it. Assessment tools must encourage learners to give an account of the thinking and decision-making that underpin their demonstrated performance. Some assessment practices will demand practical evidence while others may be more theoretical, depending on the type of outcomes to be assessed, and the nature and level of the qualification. The ratio between action and interpretation is not fixed, but varies according to the demands of the qualification.

While the generic component (literacy, communication and life skills) of this qualification at NQF Level 3 and 4 can be assessed through occupational contexts and activities relating to community sanitation projects, care must be taken in both the learning programme and the assessment to ensure that these foundational skills are truly portable. The primary aim of this qualification is to ensure that learners have a sound base of general education to prepare them for further learning, whatever career path they may choose. Learners must be able to transfer generic skills such as language, computation and learning skills etc across a number of different contexts, and apply them within a number of learning areas.

A broad range of task-orientated and theoretical assessment tools may be used, with the distinction between practical knowledge and disciplinary knowledge maintained so that each takes its rightful place. Unit standards in the qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflexive competencies.

Recognition of prior learning

This qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience. Any learner wishing to be directly assessed may arrange to do so, without attending further training or education. The assessor and learner will decide together on the most appropriate assessment route to be taken.

Articulation possibilities

This qualification allows for vertical articulation to The National Certificate in Sanitation Project Management NQF level 5, a tertiary qualification such as a diploma in sanitation or a degree. This qualification will also provide articulation with a range of qualifications in both technical and management areas in water and other related sectors.

Criteria for registration of assessors

For an applicant to register as an assessor, the applicant needs:

- A minimum of two years practical, relevant occupational experience.

- Declared competent in all the outcomes of the of the generic assessor standard, and certificated by the ETDP SETA or by the relevant ETQA in agreement with the ETDP SETA in this regard.
- Detailed documentary proof of educational qualification, practical training undergone, and experience gained by the applicant must be provided (Portfolio of evidence).
- Able to demonstrate competence in relation to these specified standards and qualifications, at or above, the level of the qualifications in question.
- Meet any other additional requirements laid down by their constituent ETQA.

The subject matter experience of the assessor can be established by recognition of prior learning. The status of registered assessors can be checked on the appropriate ETQA database or website.

Moderation

Anyone assessing a learner against these standards must be registered as an assessor with the relevant ETQA.

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 relevant qualification and the agreed ETQA procedures. Therefore anyone wishing to be assessed against this qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

Notes

Level credits and learning components assigned to the qualification

The certificate is made up of a planned combination of learning outcomes that have a defined purpose and will provide qualifying learners with applied competence and a basis for further training. The qualification is made up of Unit Standards that are classified as Fundamental, Core and Elective for the purpose of this qualification. A minimum of 148 credits is required to complete the qualification.

In this qualification the credits are allocated as follows

Fundamental	38 credits	26%
Core	90 credits	60%
Electives	20 credits	14%
TOTAL	148 credits	100%

Note that 60% of the credits, therefore, relate directly to sanitation project co-ordination and management. The elective component allows the learner to select Unit Standards that are:

- Directly related to the work done by the learner in an organisation.
- Related to specialist areas of sanitation project related work that the learner might be interested in.

This is to ensure that while there is a strong sanitation project focus, there is scope for learners to select additional Unit Standards that are relevant to their own situations.

Motivation for number of credits assigned to fundamental, core and elective

Allocation of Fundamental credits

Unit Standards to the value of 15 credits in Communication, 10 credits in Mathematical Literacy, 8 credits in computer literacy and 5 credits in life skills (managing conflict) have been selected for the Fundamental Component. These Unit Standards will add value to learners both socially and economically in terms of their ability to operate and communicate as literate and numerate workers in a global economy. All these Unit Standards are compulsory.

Allocation of Core credits

Ninety credits have been allocated to Unit Standards in the Core Component of this qualification. This is to ensure that the qualification has a strong sanitation project co-ordination focus. The Unit Standards classified as Core describe sanitation knowledge and skills that are generic to sanitation project co-ordination. They provide an opportunity to develop knowledge of sanitation project co-ordination and management through case studies, formal learning and workplace practice and/or simulated situations. The Unit Standards encourage application of knowledge and skills in real situations. The Core Unit Standards provide the basic knowledge and skills that all practitioners need to know about sanitation project co-ordination and management. All Unit standards are compulsory.

Allocation of Elective credits

There are Unit Standards totalling 70 credits in this component. Learners are required to select electives that add up to at least 20 credits from the Elective Component of the qualification. The elective unit standards will enhance the learner's work performance.

A note on the compilation of standards in this qualification

In line with the SAQA principle of avoiding duplication, existing registered standards were used where possible.

NATIONAL CERTIFICATE IN SANITATION PROJECT CO-ORDINATION
NQF level 5 (148 credits)

FUNDAMENTAL			CORE			ELECTIVE		
Compulsory 38 credits	L	C	Compulsory 90 credits	L	C	Select a minimum of 20 credits	L	C
Apply workplace communication skills (8647)	5	10	Demonstrate Integrated Knowledge Of Sanitation & The Sanitation Environment	5	4	Supervise a project team of a business project to deliver project Objectives (10148)	5	14
Present information in a public setting (13925)	5	5	Undertake And Co-Ordinate Sanitation-Related Health And Hygiene Promotion Activities At Sanitation Project Level	5	8	Supervise a project team of a technical project to deliver project objectives (10147)	5	14
Participate in the management of conflict (14609)	5	4	Plan A Sanitation Project	5	8	Lead a Complex Team	5	15
Mathematical literacy	5	10	Implement And Co-ordinate A Sanitation Project	5	16	Solve Complex Problems	5	10
Demonstrate the ability to use a database for business purposes (7576)	3	5	Monitor Dry On-Site Construction In Order To Recognise & Report Problems	4	4	Conduct on-the-job coaching (7818)	5	5
Demonstrate knowledge of and produce a presentation using base functions (7572)	2	3	Supervise A Project Team Of A Developmental Project To Deliver Project Objectives (10146)	5	14	Guide and support learners (9932).	5	12
			Plan An Integrated School Sanitation Project	5	6			
			Support The Project Environment And Activities To Deliver Project Objectives (Registered 10149)	5	14			
			Apply A Range Of Project Management Tools (10140)	4	8			
			Evaluate And Improve The Project Team's Performance (10145)	5	8			
Credits on level 5		29	Credits on level 5		78	Credits on level 5		70
Total credits		37	Total credits		90	Total credits		70

Learners exiting this qualification before completion, retain the credits for Unit Standards successfully completed and may carry them over to other qualifications to which they are applicable. Learners may also retain the credits until a later stage should studies be recommenced, provided the Unit Standards are still relevant to the qualification.

Table showing the spread of Critical Cross-field Outcomes across the Unit Standards that are classified as Core for sanitation project facilitation for the purpose of this qualification.

Unit Standard Title	Critical Cross-field outcomes supported by the Unit Standard						
	Solve problems	Team work	Organisation	Information	Communicate	Technology	Related systems
Core							
Demonstrate Integrated Knowledge Of Sanitation & The Sanitation Environment	X			X	X	X	X
Undertake And Co-Ordinate Sanitation-Related Health And Hygiene Promotion Activities At Sanitation Project Level	X	X	X	X	X	X	X
Plan A Sanitation Project	X	X	X	X	X	X	X
Implement And Co-ordinate A Sanitation Project	X	X	X	X	X	X	X
Plan An Integrated School Sanitation Project			X	X	X	X	X
Monitor Dry On-Site Construction In Order To Recognise & Report Problems	X	X		X	X	X	X

Unit Standards Titles

- Title 1: Demonstrate Integrated Knowledge Of Sanitation & The Sanitation Environment
Title 2: Implement And Co-ordinate A Sanitation Project
Title 3: Plan a sanitation project
Title 4: Plan An Integrated School Sanitation Project
Title 5: Undertake And Co-Ordinate Sanitation-Related Health And Hygiene Promotion Activities At Sanitation Project Level

Unit Standards Titles and Associated Specific Outcomes at NQF level 5**Title 1: Demonstrate Integrated Knowledge Of Sanitation & The Sanitation Environment**

- Specific outcomes 1.1: Explain sanitation and why sanitation matters to people
Specific outcomes 1.2: Explain the national sanitation policy and the legislative framework.
Specific outcomes 1.3: Discuss the factors that influence the sustainability of sanitation interventions.
Specific outcomes 1.4: Describe a development-oriented approach to planning and implementing sanitation improvement.

Title 2: Implement And Co-ordinate A Sanitation Project

- Specific outcomes 2.1: Develop a quality management system for a sanitation improvement project.
Specific outcomes 2.2: Develop contracts for sanitation projects.
Specific outcomes 2.3: Prepare effective supporting documents for monitoring and evaluation of the project.
Specific outcomes 2.4: Set up a reporting system within overall programme requirements.
Specific outcomes 2.5: Implement activities in accordance with the project implementation plan.
Specific outcomes 2.6: Monitor project progress in relation to own and project plan.
Specific outcomes 2.7: Report on project progress.

Title 3: Plan a sanitation project

- Specific outcomes 3.1: Identify what sanitation improvement interventions are needed in a given settlement.
Specific outcomes 3.2: Identify different sanitation technical options and

- include the most viable and sustainable ones for the situation in the planning process.
- Specific outcomes 3.3: Develop a sanitation project implementation plan in accordance with current best practice.
- Specific outcomes 3.4: Develop a reporting framework for the sanitation project in accordance with current best practice.

Title 4: Plan An Integrated School Sanitation Project

- Specific outcomes 4.1: Plan the implementation of a school sanitation programme.
- Specific outcomes 4.2: Describe and plan an effective school management and maintenance system according to participatory principles.
- Specific outcomes 4.3: Identify opportunities and plan for local community involvement and local economic development in a school sanitation project.
- Specific outcomes 4.4: Develop an outline plan of the in-school elements of a school sanitation project according to participatory principles.

Title 5: Undertake And Co-Ordinate Sanitation-Related Health And Hygiene Promotion Activities At Sanitation Project Level

- Specific outcomes 5.1: Undertake sanitation-related health and hygiene promotion using appropriate methods and support the project team to do so.
- Specific outcomes 5.2: Set up a health and hygiene monitoring and data collection system in a sanitation project.
- Specific outcomes 5.3: Report on health and hygiene promotion activities to programme management using appropriate tools.
- Specific outcomes 5.4: Ensure that sanitation technologies and practices that improve health are in place.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY*Established in terms of Act 58 of 1995*

Qualification Title: Further Education and Training Certificate In Water Purification Processes NQF Level 4

NQF Field: Physical Planning and Construction - NSB 12

Sub-field: Civil Engineering Construction

Level: 4

Credits: 160

Issue date:

Review date:

Rationale of the Qualification

This Qualification reflects the workplace-based needs of water purification process controllers working in the water sector that is expressed by employers and employees, both now and for the future. This Qualification is intended for supervisors and will include supervising operators on a water purification plant. Learners may further choose to develop further management competences or specialise in water specific Qualifications once having gained this competence.

Many water purification process operators and controllers have no formal Qualification in water purification yet they are required to perform the job. This Qualification provides the learner with a career path and progression from water purification process operations to water purification process control. The prospective candidate for this Qualification may be a person who is entering the work place or a person who has been working on a water purification plant with limited formal water purification supervisory competence.

The Qualification gives accessibility and flexibility to the new entrant and to the employed. The level of flexibility reflects the multiple job roles, organisational requirements and changing technological nature of the industry, and at the same time, it allows the individual to work towards a nationally recognised Qualification. This will enable learners to pursue different careers within the water sector, enhance

productivity and employability within the water sector and contribute towards the ecological sustainability and improvement of the water environment.

Purpose of the Qualification

The National Certificate in Water Purification Process Control will prepare learners to function independently and in a supervisory capacity on a water purification plant. Qualifying learners are able to:

- Supervise teams of people;
- Manage conflict within the workplace;
- Supervise health and safety practices in the workplace;
- Plan, organise and supervise processes at a water purification plant;
- Manage stock and fixed assets at the workplace; and
- Complete administrative tasks and reports

This Qualification forms the foundation for advancement to management or tertiary Qualifications and will also lay the foundation for future career advancement across similar trades. For those who have been in the workplace for a long time, this Qualification can be used in the recognition of prior learning to recognise workplace skills acquired without the benefit of formal education and training.

This Qualification has been developed to assist with standardisation in water purification operations. The qualified learner will have the capacity to advance and gain skills and self-respect, work in a professional manner, as well as ensure that industry standards are maintained in a range of water purification contexts.

Access to the Qualification

As this is a Unit Standard based Qualification, learners will have open access provided that the learner meets the requirements for the learning assumed to be in place for each Unit Standard. The achievement of the National Certificate In Water Purification Process Operations (NQF level 2) together with literacy and numeracy at NQF level 3, will assist with progression and access to this Qualification. It is considered essential to have achieved the level 3 National Certificate but the achievement of this Qualification will provide a foundation for the learning required in the level 4 certificate.

Learning assumed to be in place

A knowledge, comprehension and application of language and mathematics at NQF level 3. Candidates will be required to demonstrate competence in all the core Unit Standards described in the National Certificate For Water Purification Process Operations at NQF level 3. These may also be achieved through RPL.

Exit level Outcomes

Qualifying learners can:

Exit level 1: Monitor the application of relevant health and safety legislation.

Associated Assessment Criteria

- Knowledge and comprehension regarding personal safety practices is applied in a water purification environment in accordance with standard operating procedures and safety requirements.

- Personal health, hygiene and presentation in a water purification environment is maintained in accordance with the Occupational Health and Safety Act,
- Good housekeeping on a water purification plant is maintained in accordance with legislation and work policies and procedures
- Compliance of treated water is ensured in accordance with SABS241 (latest version)

Exit level 2: Demonstrate supervisory skills in the workplace.

Associated Assessment Criteria

- Active interaction with staff, work colleagues, customers and management is maintained.
- The development of staff within own scope of responsibility is supervised
- Staff is supervised to achieve work objectives
- Conflict is handled within own scope of responsibility
- Computer technology is used appropriately to achieve objectives

Exit level 3: Monitor and Co-ordinate the Water Treatment Process

Associated Assessment Criteria

- Tasks are planned and co-ordinated in accordance with priorities and daily requirements
- Relevant laboratory tests are conducted, results analysed and appropriate actions are implemented.
- Water science principles are applied to the chemical process involved in water treatment
- The efficiency of the plant is optimised.
- Routine production maintenance and other tasks are co-ordinated
- Mechanical and electrical equipment and hydraulic control systems relevant to water purification are operated.

Exit level 4: Demonstrate planning and organising skills.

Associated Assessment Criteria

- Knowledge of the development and review of action plans, development plans and year plans is demonstrated
- Staff is developed in accordance with development plans
- Knowledge of all reports and forms required in the workplace and their completion is demonstrated
- Technology is used appropriately to complete work tasks
- The ability to organise administrative tasks in priority order and to facilitate an efficient flow of documentation is demonstrated.

Exit level 5: Implement and co-ordinate operation and maintenance tasks.

Associated Assessment Criteria

- Staff is briefed on tasks and ensure required resources are available.
- Stock and fixed assets on a water purification plant are monitored.
- Operation and maintenance tasks are supervised in accordance with legislation and work policies and procedures.

- Effective and accurate records of financial expenditure are maintained in accordance with work policies and procedures.
- Authorisation for any modifications to agreed budgets during the accounting period is obtained
- Feedback is provided regularly to relevant role players.

International comparability

The core and elective components have been developed taking into account South Africa's unique context, but also looking at international best practice. Benchmarking was done against Certificate IV in Water Industry Operations from Australia. The Australian Qualification has no fundamental Unit Standards. The core consists of two Unit Standards on Health and Safety, and Environmental Plans and Procedures. The South African Qualification has an equivalent for Health and Safety but no equivalent for Environmental Plans. The Australian Qualification has electives that cover all fields of water whereas the South African Qualification is specific to water operators. Similarities were found in content, level and degree of complexity with the four Unit Standards that relate to water operators. The Australian Qualification is at a slightly higher level and has a greater emphasis on management. Management will be accommodated at level five in the South African context. The fundamental components, reflecting foundational learning and generic skills and knowledge have been derived from registered, local adult education Unit Standards.

Integrated Assessment

Integrated assessment at the level of Qualification provides an opportunity for learners to show that they are able to integrate concepts, ideas and actions across Unit Standards to achieve competence that is grounded and coherent in relation to the purpose of the Qualification. Integrated assessment should show how already demonstrated competence in individual areas can be linked and applied for the achievement of a holistic outcome.

Integrated assessment must judge the quality of the observable performance, and also the quality of the thinking that lies behind it. Assessment tools must encourage learners to give an account of the thinking and decision-making that underpin their demonstrated performance. Some assessment practices will demand practical evidence while others may be more theoretical, depending on the type of outcomes to be assessed, and the nature and level of the Qualification. The ratio between action and interpretation is not fixed, but varies according to the demands of the Qualification.

While the generic component (literacy, communication and life skills) of this Qualification at NQF Level 4 can be assessed through occupational contexts and activities relating to water purification care must be taken in both the learning programme and the assessment to ensure that these foundational skills are truly portable. The primary aim of this Qualification is to ensure that learners have a sound base of general education to prepare them for further learning, whatever career path they may choose. Learners must be able to transfer generic skills such as language, computation and learning skills etc across a number of different contexts, and apply them within a number of learning areas.

A broad range of task-orientated and theoretical assessment tools may be used; with the distinction between practical knowledge and disciplinary knowledge maintained so that each takes its rightful place. Unit Standards in the Qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflexive competencies.

Recognition of prior learning

This Qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience. Any learner wishing to be directly assessed may arrange to do so, without attending further training or education. The assessor and learner will decide together on the most appropriate assessment route to be taken.

Articulation possibilities

This Qualification has been developed for mobility across similar trades within the industry and is intended to allow for further learning towards management certificates or diplomas within this sector or other sectors on NQF level 5 or 6. This Qualification will provide articulation with a range of Qualifications in both technical and management areas.

Criteria for registration of assessors

For an applicant to register as an assessor, the applicant needs:

- A minimum of five years practical, relevant occupational experience.
- Declared competent in all the outcomes of the of the generic assessor standard, and certificated by the relevant ETQA or by any other appropriate ETQA in agreement with the ETDP SETA in this regard.
- Detailed documentary proof of educational Qualification, practical training undergone, and experience gained by the applicant must be provided (Portfolio of evidence).
- Able to demonstrate competence in relation to these specified standards and Qualifications, at or above, the level of the Qualifications in question.
- Meet any other additional requirements laid down by their constituent ETQA.

The subject matter experience of the assessor can be established by recognition of prior learning.

The status of registered assessors can be checked on the appropriate ETQA database or website.

Moderation

Anyone assessing a learner against these standards must be registered as an assessor with the relevant ETQA.

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 relevant Qualification and the agreed ETQA procedures.

Therefore anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

A note on the compilation of standards in this qualification

In line with the SAQA principle of avoiding duplication, existing registered standards were used where possible.

FETC IN WATER PURIFICATION PROCESS CONTROL NQF level 4 (160 credits)

FUNDAMENTAL Total 68 credits	L	C	CORE Total 80 credits	L	C	ELECTIVE Select a minimum of 12 credits	L	C
Use mathematics to investigate and monitor the financial aspects of personal, business, and national issues (9014)	4	6	Supervise Personal Safety Practices In The Water Sector (12061)	4	4	Operate and Maintain Various Disinfection and Oxidation Processes	5	6
Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems (9015)	4	6	Demonstrate Knowledge of the Principles and Application of Potable Water Science	4	20	Operate An Alternative Filter System	4	6
Measure, estimate and calculate physical quantities and explore, critique and prove geometrical relationships in two and three-dimensional space in the life and workplace of the adult with increasing responsibilities (9016)	4	4	Supervise Work Unit To Achieve Work Unit Objectives (individuals and teams) (10981)	4	12	Control Water Intakes	4	8
Engage in sustained oral communication and evaluate spoken tests (8974)	4	5	Supervise And Optimise The Operation Of Separation Processes	4	8	Conduct On The Job Coaching (7818)	5	5
Evaluate literary texts (8977)	4	5	Describe And Apply The Management Of Stock And Fixed Assets In A Business Unit. (13945)	4	2	Operate Telemetric And Electronic Equipment And Scientific Instrumentation (12066)	4	12
Read, analyse and respond to a variety of texts (8975)	4	5	Operate And Maintain a Rapid Gravity Filter (12070)	4	5	Apply The Budget Function In A Business Unit (13941)	4	5
Write for a wide range of contexts (8976)	4	5	Demonstrate Knowledge and Operation of Mechanical and Electrical Systems (12058)	4	5	Read and Interpret and Use Construction Drawings and specifications (144260)	4	10
Use language and communication in occupational learning programmes (8973)	3	5	Operate Mechanical, Electrical and Hydraulic Equipment and Control Systems	4	10			
Demonstrate Knowledge of and Produce Computer Spreadsheets using Basic Functions (7572)	2	3	Plan and Implement a Sampling Program to Monitor Water Quality	4	4			
Produce Word Processing Documents for Business (7570)	3	5	Calculate and Control Chemical Dosing Parameters	4	5			
Participate in Management of Conflict (14609)	5	4	Monitor and Co-ordinate the Water Treatment Process	4	5			
Accommodate audience and context needs in oral communication (8968)	3	5						
Interpret and use information from texts (8969)	3	5						
Write texts for a range of communicative contexts (8970)	3	5						
Total credits on level 4		36	Total credits on level 4		80			
Total Credits		68	Total Credits		80	Total Credits		52

Further Education and training Certificate In Water Purification Processes NQF 4

UNIT STANDARDS ON NQF LEVEL 4

- Title 1: Demonstrate Knowledge of the Principles and Application of Potable Water Science
- Title 2: Supervise And Optimise The Operation Of Separation Processes
- Title 3: Operate Mechanical, Electrical and Hydraulic Equipment and Control Systems
- Title 4: Plan and Implement a Sampling Program to Monitor Water Quality
- Title 5: Calculate and Control Chemical Dosing Parameters
- Title 6: Monitor and Co-ordinate the Water Treatment Process
- Title 7: Operate An Alternative Filter System
- Title 8: Control Water Intakes

UNIT STANDARDS ON NQF LEVEL 5

- Title 9: Operate and Maintain Various Disinfection and Oxidation Processes

Unit Standards And Specific Outcomes For The Further Education and Training In Water Purification Processes NQF 4

NQF Level 4 Unit Standards

1. TITLE: DEMONSTRATE KNOWLEDGE OF THE PRINCIPLES AND APPLICATION OF POTABLE WATER SCIENCE
 - Specific outcome 1.1: Describe the chemical characteristics of raw water and perform relevant laboratory tests.
 - Specific outcome 1.2: Describe the physical characteristics of raw water and perform relevant laboratory tests.
 - Specific outcome 1.3: Explain water microbiology and perform microbiological tests.
 - Specific outcome 1.4: Describe and apply water science principles to the chemical process involved in water treatment.
2. TITLE: SUPERVISE AND OPTIMISE THE OPERATION OF SEPARATION PROCESSES
 - Specific outcome 2.1: Explain the principles of separation processes and calculate load factors.
 - Specific outcome 2.2: Explain and evaluate the performance of different separation processes.
 - Specific outcome 2.3: Demonstrate the removal of different contaminants.
 - Specific outcome 2.4: Supervise the operation of separation processes.
 - Specific outcome 2.5: Optimise the operation of separation processes.
3. TITLE: PLAN AND IMPLEMENT A SAMPLING PROGRAM TO MONITOR WATER QUALITY

- Specific outcome 3.1: Plan a sampling program.
Specific outcome 3.2: Prepare the implementation of a sampling program.
Specific outcome 3.3: Monitor the collection of microbiological, physical and chemical samples.
Specific outcome 3.4: Liaise with customers.
Specific outcome 3.5: Compile and complete reports.

4. TITLE: CALCULATE AND CONTROL CHEMICAL DOSING PARAMETERS

- Specific outcome 4.1: Prepare chemical solutions of pre-determined strengths.
Specific outcome 4.2: Calculate the mass of chemical required obtaining a given dosage in a fixed volume of water.
Specific outcome 4.3: Calculate the chemical application rate in order to obtain a fixed dosage within a constant flow rate of water.
Specific outcome 4.4: Calibrate chemical dosing equipment for dosing liquids and solids.
Specific outcome 4.5: Interpret jar test results to determine the optimum dosage.
Specific outcome 4.6: Calculate chemical use (daily, weekly and monthly) and related costs for past or future time periods.

5. TITLE: MONITOR AND CO-ORDINATE THE WATER TREATMENT PROCESS

- Specific outcome 5.1: Plan work tasks.
Specific outcome 5.2: Identify and arrange for required resources for the plant.
Specific outcome 5.3: Complete and submit reports.
Specific outcome 5.4: Co-ordinate routine production and maintenance tasks.
Specific outcome 5.5: Optimise efficiency of the plant.

6. TITLE: OPERATE AN ALTERNATIVE FILTER SYSTEM

- Specific outcome 6.1: Demonstrate knowledge of the design and functioning of the relevant filtration process.
Specific outcome 6.2: Operate the filter.
Specific outcome 6.3: Complete the cleaning process.
Specific outcome 6.4: Maintain the filtration system.

7. TITLE: CONTROL WATER INTAKES

- Specific outcome 7.1: Maintain catchment area.
Specific outcome 7.2: Operate and maintain abstraction works.
Specific outcome 7.3: Monitor and adjust flow rates at rivers and reservoirs.
Specific outcome 7.4: Monitor and adjust flows at boreholes in accordance with works procedures.
Specific outcome 7.5: Monitor abstraction point quality and conditions.
Specific outcome 7.6: Isolate the abstraction point in emergency conditions in accordance with works procedures.
Specific outcome 7.7: Maintain and update records.

8. TITLE: OPERATE AND MAINTAIN VARIOUS DISINFECTION AND OXIDATION PROCESSES

- Specific outcome 8.1: Demonstrate knowledge of principles of oxidation for disinfection

- Specific outcome 8.2: Operate and maintain various disinfection processes in accordance with work policies and procedures.
- Specific outcome 8.3: Monitor and control oxidant dosing in accordance with work policies and procedures

NQF Level 5 Unit Standards**9. TITLE: OPERATE AND MAINTAIN VARIOUS DISINFECTION AND OXIDATION PROCESSES**

- Specific outcome 9.1: Demonstrate knowledge of principles of oxidation for disinfection purposes.
- Specific outcome 9.2: Operate and maintain various disinfection processes.
- Specific outcome 9.3: Monitor and control oxidant dosing.
- Specific outcome 9.4: Monitor and control oxidant storage and handling.

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26 March 2004

**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

Food

Registered by NSB 06, Manufacturing, Engineering and Technology, publishes the following unit standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the unit standard. The unit standard can be accessed via the SAQA web-site at www.saqqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, Hatfield Forum West, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the unit standards should reach SAQA at the address ***below and no later than 26 April 2004***. All correspondence should be marked **Standards Setting – SGB for Food Manufacturing** and addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D Mphuthing
Postnet Suite 248
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JOE SAMUELS
DIRECTOR: STANDARDS SETTING AND DEVELOPMENT

SOUTH AFRICAN QUALIFICATIONS AUTHORITY**National Diploma in Maintenance of High-speed Production Processes (Fast-moving Consumer Goods): NQF Level 5**

Field: Manufacturing, Engineering and Technology

Sub-field:

Level: 5

Credit: 308

Issue date:

Review date:

Rationale for the qualification:

There is an increased sophistication in the machinery and equipment used for high-speed production processes. The management of failure in such an environment presents opportunities for qualified artisans to pursue a career in maintenance beyond NQF level 4 or artisan level.

This qualification represents a further step in a career in the science and technology of maintenance as a discipline. This qualification forms the second stage of a qualification that begins with, and includes, the credits for the National Certificate in Maintenance of High-speed Production Processes (Fast-moving Consumer Goods) Level 5.

Purpose of the qualification:

Qualified maintenance personnel (artisans) in the past had few options in pursuing formal qualifications in their field. They had a choice between becoming technicians or following a general management route.

The purpose of this qualification is to describe the skills and knowledge required in what is becoming a new discipline: the science and technology of maintenance in the context of sophisticated, high-speed production lines.

The increased sophistication is reflected in:

- greater automation
- integrated lines that combine a range of processing operations, product handling and packaging
- combinations of mechanical, electrical and electronic components
- measurement, control and communication devices
- an in-depth understanding of the production or manufacturing processes and their impact on the maintenance processes

A failure in any part of the system can have severe implications in terms of reduced output, damage to product, wastage and possible injury. Consequences of such failure can include negative impacts on the health of workers and consumers and on the profitability and reputation of the company.

The process of managing failure has implications for the maintenance of such equipment and requires new sets of skills and knowledge, representing a shift away from hand skills to the skills required to analyse data in records and make recommendations, plan and implement specific maintenance programmes and install new or updated equipment.

This and the related qualification, the National Certificate in Maintenance of High-speed Production Processes (Fast-moving Consumer Goods), will act as a framework for providers, assessors and learners to plan, implement and measure the outcomes of suitable learning programmes, or the recognition of prior learning, in this new discipline.

The specific purpose of the qualification represents the skills and knowledge required by competent practitioners to:

Plan, initiate, implement and oversee strategies that:

- ensure high-speed production lines operate continuously at optimum efficiency
- introduce new technology, equipment and product lines

- ensure that maintenance staff and contractors perform effectively
- optimise, through continuous improvements, the maintenance process

This qualification can be obtained in the context of a variety of manufacturing operations for fast-moving consumer goods.

The two qualifications, the National Certificate and the National Diploma in Maintenance of High-speed Production Processes (Fast-moving Consumer Goods): NQF Level 5, are conceptualised as an integrated qualification, which together fulfil all the requirements for a National Diploma.

Learning assumed to be in place:

The credits and the related unit standards assume that the learner has already achieved the outcomes of the National Certificate in Maintenance of High-speed Production Processes (Fast-moving Consumer Goods): NQF Level 5.

Access to the qualification:

Open access.

This qualification series recognises skills, knowledge and values relevant to the workplace. It is designed for learners who:

- Have attended courses and then apply the knowledge and skills gained to activities in the workplace or
- Are already workers and have acquired the skills and knowledge without attending formal courses or
- Are part of a learnership programme which integrates structured learning and work experience

Exit level Outcomes:

The exit level outcomes for this qualification reflect a combination of specific outcomes and critical cross-field education and training outcomes. The way in which the critical outcomes have been advanced through the learning required for this qualification is embedded in the unit standards, ie how it is reflected and assessed in the context of the specific outcomes.

Exit level outcome 1

Implement a variety of maintenance strategies

Associated Assessment Criteria

- Implemented strategy results in measurable improvement

- Maintenance meets manufacturing objectives
- An understanding of maintenance methodologies and of processes, practices and procedures involved in implementing changes is demonstrated

Exit level outcome 2

Monitor, maintain and manage assets

Range:

Assets include tools, equipment, machinery, infrastructure

Associated Assessment Criteria

- Plant availability is maximised
- Optimal and efficient use is made of spares
- Optimal use is made of funds and resources within budgetary parameters
- An understanding of factors involved in decisions to repair or replace is demonstrated

Exit level outcome 3

Plan, implement and monitor multiple projects

Range:

Typical projects: install new line, upgrade equipment, implement product and size changeovers

Associated Assessment Criteria

- The intervention is successfully commissioned
- The project is completed on time and within budget
- Project-related documentation is completed, distributed and stored
- Issues and choices related to the planning, implementation and management of projects are explained and discussed

Exit level outcome 4

Introduce continuous improvement techniques and technologies

Associated Assessment Criteria

- The most appropriate solution is implemented
- The planned results are achieved
- The choice of techniques and technologies is justified

- Issues related to quality management and work engineering systems are explained and discussed

International comparability:

A search for similar qualifications elsewhere was made. This was done in three phases:

1. Reviewing qualifications on the New Zealand Qualifications Framework
2. Conducting a search on the world-wide web
3. Liaising with respondents in the international partner sites of local companies

No comparable qualifications were found. This is not surprising since it is a relatively new and emerging discipline. Some overseas respondents expressed an interest in such a qualification for their own use.

Integrated Assessment:

The integrated assessment must be based on a summative assessment guide. The guide must spell out how the assessor will assess different aspects of the performance and will include:

- Observing (and listening to) the learner at work, both in primary activities as well as in other interactions, or in relevant simulations
- Asking questions and initiating short discussions to test understanding
- Looking at records and reports, and evaluating projects included in a portfolio of evidence

The learner may choose in which language s/he wants to be assessed. This should be established as part of a process of preparing the learner for assessment and familiarising the learner with the approach being taken.

While this is primarily a workplace-based qualification, evidence from other areas of endeavour may be presented if pertinent to any of the exit level outcomes.

The assessment process should cover the explicit tasks required for the qualification as well as the understanding of the concepts and principles that underpin the activities required for installation, repair and maintenance of high-speed and integrated production equipment. The assessment process should also establish how the learning process has advanced the critical outcomes.

Assessors should also evaluate evidence that the learner has been performing consistently over a period of time

Recognition of prior learning:

This qualification may be obtained through the process of RPL. The learner should be thoroughly briefed prior to the assessment and support should be provided to assist the learner in the process of developing a portfolio. While this is primarily a work-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit level outcomes.

Articulation possibilities:

This qualification has been designed and structured so that qualifying learners can move from one context to another. Employers or institutions should be able to evaluate the outcomes of this qualification against the needs of their context and structure top-up learning appropriately. Equally, holders of other qualifications may be evaluated against this qualification for the purpose of RPL.

Overview of the proposed qualifications pathway and articulation possibilities:

NQF level	Manufacturing	Maintenance		Engineering	
5		Diploma: Maintenance of high-speed production processes (FMCG) 240		Engineering Diplomas, mechanical, electrical...	
5	Various Manufacturing qualifications	Certificate: Maintenance of high-speed production processes (FMCG) 120		<i>Millwright?</i> ←	Mechatronics ←
4		'Fitting'	<i>Industrial Electrical Maintenance</i>	<i>Millwright</i> t	Mechatronics
3		'Fitting'	<i>Industrial Electrical Maintenance</i>	<i>Millwright</i> t	Mechatronics
2		'Fitting'	<i>Industrial Electrical Maintenance</i>	<i>Millwright</i> t	Mechatronics
1	National Certificate in Manufacturing, Engineering and Related Activities: NQF 1				

'Fitting', Industrial Electrical Maintenance and Millwright represent either trade qualifications or appropriate National Certificates in Mechanical Engineering (Fitting) or (Fitting and Machining) or any others that may still be developed. Qualifications in italics represent existing trades that are currently being transformed into NQF qualifications. There is a possibility of an NQF 5 certificate qualification being developed for the millwright qualification pathway – hence this is followed by a question mark.

Moderation options:

Moderators for the qualification should be qualified and accredited with an appropriate ETQA. To assure the quality of the assessment process, the moderation should cover the following:

- Assessor credentials
- The assessment instrument
- The assessment process

Criteria for registration of assessors:

The following criteria should be applied by the relevant ETQA:

1. Appropriate qualification in the field of maintenance science, with a minimum of 2 years' experience in a high-speed manufacturing environment. The subject matter expertise of the assessor can be established by recognition of prior learning.
2. Appropriate experience and understanding of assessment theory, processes and practices.
3. Good interpersonal skills and ability to balance the conflicting requirements of:
 - Maintaining national standards
 - The interests of the learner
 - The need for transformation and redressing the legacies of the past
 - The cultural background and language of the learner.
4. Registration as an assessor with a relevant ETQA.
5. Any other criteria required by a relevant ETQA.

NOTE: Since this a new field it may be some time before there are sufficient qualified assessors. The relevant ETQAs should allow interim arrangements to be made.

NATIONAL DIPLOMA IN MAINTENANCE OF HIGH-SPEED PRODUCTION PROCESSES (FAST-MOVING CONSUMER GOODS): NQF LEVEL 5

NLRD	Fundamental	L	C
	Communication		
10622	Conduct communication within a business environment	5	8
	Mathematics		
12675	Use mathematical and statistical techniques effectively as a rubber technologist <i>contextualised for Maintenance of High-speed Production Processes</i>	5	34
	Project management		
	Manage multiple installation and maintenance projects	5	9
	Total Fundamental		51
	Core		
	Maintenance		
	Plan, develop and implement a new maintenance strategy	5	44
	People interacting, leading and developing		
	Manage installation and maintenance contractors	5	16
	Business Relations		
	Monitor, maintain and manage high-speed production assets	5	25
	Total Core		85

	Elective		
	Maintenance		
13114	Install, test and maintain a complex computer integrated manufacturing system <i>if not selected for the Certificate qualification</i>	5	20
	Quality Assurance		
10144	Identify, suggest and implement corrective actions to improve quality <i>if not selected for the Certificate qualification</i>	4	6
	Business Relations		
9897	Manage inventory	5	3
	People interacting, leading and developing		
10147	Supervise a project team of a technical project to deliver project objectives	5	14
14710	Manage and develop the performance of work group members in fabrication activities <i>contextualised for Maintenance of High-speed Production Processes</i>	4	6
	Minimum elective credits required for qualification		12
	Credits from National Certificate Maintenance Of High-Speed Production Processes (Fast-Moving Consumer Goods)		160
	Total for qualification		308

**UNIT STANDARDS AND SPECIFIC OUTCOMES IN
NATIONAL DIPLOMA IN MAINTENANCE OF HIGH-SPEED PRODUCTION PROCESSES
(FAST-MOVING CONSUMER GOODS): NQF LEVEL 5**

UNIT STANDARDS ON NQF LEVEL 5

- Title 1:** Plan, develop and implement a new maintenance strategy
Title 2: Manage installation and maintenance contractors
Title 3: Monitor, maintain and manage high-speed production assets

Title 1: Manage multiple installation and maintenance projects

- Specific outcome 1.1:** Demonstrate the use of methods and tools to plan, co-ordinate and monitor activities in multiple projects
- Specific outcome 1.2:** Manage conflicting priorities, respond to issues and delays and optimise the use of resources
- Specific outcome 1.3:** Schedule and co-ordinate the resources, activities and interactions of internal teams, contractors and manufacturing personnel who are affected by the projects
- Specific outcome 1.4:** Collect information on progress, and compile and present reports on multiple projects to a variety of interested parties
- Specific outcome 1.5:** Evaluate the effectiveness of the project implementation

Title 2: Plan, develop and implement a new maintenance strategy

- Specific outcome 2.1:** Plan, implement and conduct the annual maintenance review
- Specific outcome 2.2:** Develop, propose and obtain approval for appropriate changes to maintenance strategies
- Specific outcome 2.3:** Plan and organise overall plan, schedules, documentation and changes to systems
- Specific outcome 2.4:** Organise resources; brief, prepare and train maintenance personnel and pilot the new strategies
- Specific outcome 2.5:** Obtain feedback and evaluate, modify and update roll out plans
- Specific outcome 2.6:** Monitor roll out and evaluate, adjust and report impact of changes made

Title 3: Manage installation and maintenance contractors

- Specific outcome 3.1: Scope the work and develop specifications, tenders and selection criteria
- Specific outcome 3.2: Notify preferred suppliers and request quotations
- Specific outcome 3.3: Select the most suitable contractor, create the order and obtain authorisation
- Specific outcome 3.4: Verify that plant and safety inductions have been completed
- Specific outcome 3.5: Monitor the work and safety practices of the contractors and provide feedback
- Specific outcome 3.6: Resolve issues of non-compliance and poor performance by the contractors
- Specific outcome 3.7: Compile progress reports, verify completion of contract and authorise payments

Title 4: Monitor, maintain and manage high-speed production assets

- Specific outcome 4.1: Analyse equipment and spares reports; identify and investigate problem areas
- Specific outcome 4.2: Evaluate economic feasibility options and make recommendations on options and choices
- Specific outcome 4.3: Monitor changes in availability, reliability and operability of equipment
- Specific outcome 4.4: Compile reports on findings, make recommendations and present these to appropriate meetings
- Specific outcome 4.5: Maintain asset registers, develop budgets and monitor and report on expenditure

National Diploma in Maintenance of High-speed Production Processes (Fast-moving Consumer Goods): NQF Level 5

NLRD	Fundamental	L	C	NLRD	Core	L	C	NLRD	Elective	L	C
	Communication				Maintenance				Maintenance		
10622	Conduct communication within a business environment	5	8		Plan, develop and implement a new maintenance strategy	5	44	13114	Install, test and maintain a complex computer integrated manufacturing system <i>if not selected for the Certificate qualification</i>	5	20
	Mathematics				People interacting, leading and developing				Quality Assurance		
12675	Use mathematical and statistical techniques effectively as a rubber technologist <i>contextualised for Maintenance of High-speed Production Processes</i>	5	34		Manage installation and maintenance contractors	5	16	10144	Identify, suggest and implement corrective actions to improve quality <i>if not selected for the Certificate qualification</i>	4	6
	Project management				Business Relations				Business Relations		
	Manage multiple installation and maintenance projects	5	9		Monitor, maintain and manage high-speed production assets	5	25	9897	Manage inventory	5	3
									People interacting, leading and developing		
								10147	Supervise a project team of a technical project to deliver project objectives	5	14
								14710	Manage and develop the performance of work group members in fabrication activities <i>contextualised for Maintenance of High-speed Production Processes</i>	4	6
									Choice of additional unit standards suitable to the purpose of the qualification		
	Total Fundamental		51		Total Core		85		Elective credits required for qualification		12
									Credits from National Certificate in Maintenance Of High-Speed Production Processes (Fast-Moving Consumer Goods)		160
									Total for qualification		308

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