No. 985 **19 September 2008**

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

Electrical Engineering and Construction

registered by Organising Field 12, Physical Planning and Construction, publishes the following Qualification and Unit Standards for public comment.

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

Comment on the Qualification and Unit Standards should reach SAQA at the address below and ***no later 20 October 2008.*** All correspondence should be marked **Standards Setting – Electrical Engineering and Construction** addressed to

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SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:
National Certificate: Electrical Engineering

SAQA QUAL ID	*QUALIFICATION TITLE*		
63789	National Certificate: Electrical Engineering		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
QUALIFICATION TYPE	*FIELD*	*SUBFIELD*	
National Certificate	12 - Physical Planning and Construction	Electrical Infrastructure Construction	
ABET BAND	*MINIMUM CREDITS*	*NQF LEVEL*	*QUAL CLASS*
Undefined	140	Level 2	Regular-Unit Stds Based

This qualification replaces:

Qual ID	Qualification Title	NQF Level	Min Credits	Replacement Status
48473	National Certificate: Electrical Engineering	Level 2	143	Will occur as soon as 63789 is registered

PURPOSE AND RATIONALE OF THE QUALIFICATION
Purpose:

The purpose of this qualification is to provide learners, education and training providers and employers with the standards and the range of learning required to work effectively within various industries, making use of electrical engineering knowledge and skills to meet the challenges of such an environment.

Qualifying learners will also be able to relate their learning to scientific and technological principles and concepts. They will also be able to maintain and support the various policies and procedures related to the safety, health, environment and quality systems that govern their workplace.

Qualifying learners at NQF Level 2 will be able to perform trade-related skills, with specific reference to:

> Use engineering tools, measuring instruments and electrical technology.
> Read, interpret and produce basic electrical engineering drawings and circuits.
> Apply hand skills applicable to electrical installation and maintenance.
> Understand and apply basic electrical installation assembly techniques to install, maintain, repair, overhaul or recondition designated circuits, electrical machines and sub-components.
> Understand basic electrical theory and the application in relation to the maintenance and function of machines.

With this understanding, learners will be able to participate in workplace activities. The foundational learning in this Qualification would serve as a basis for further learning where they will engage in more advanced installation, maintenance and repair activities.

Rationale:

This is the first of a three-level qualification series that reflect the workplace-based needs of the electrical field that is expressed by employers and employees, both now and for the future. This electrical engineering qualification provides the foundational competencies required to work on designated electrical circuits and installations. This qualification provides the learner with accessibility to be employed within the electrical engineering field and provides the flexibility to pursue different careers across various industry sectors and articulate within industries such as:

> Manufacturing and Engineering.
> Energy Sector.
> Mining.
> Chemical.
> Transport.
> Other related engineering industry sectors.

This qualification will enhance the status and productivity of the learner as well as contribute to improved quality, production rate and growth within relevant electrical sectors. The range of typical learners at this level could include individuals preparing to qualify in occupations or trades such as:

> Electrician.
> Domestic Appliance Repair.

This electrical engineering qualification provides the foundational competencies required to work on designated electrical circuits and installations. An intermediate set of skills to work on integrated circuits and installations would be acquired at NQF Level 3 with the learner able to work on integrated systems and installations and operate as a skilled worker performing Artisan duties in the electrical field upon graduating at NQF Level 4.

This qualification could assist with the achievement of national government and industrial development policies and strategies to grow a pool of scarce and other related skills in support of sustainable economic growth. People working in the electrical engineering fields require specialized technical skills and knowledge in order to meet the requirements of continually changing environment of the various industries. Through its design, this qualification will meet the needs of learners within the electrical engineering sectors who require technical expertise and essential knowledge needed to earn formal qualifications. This qualification facilitates access for previously disadvantaged groups and other learners to acquire the technical knowledge and skills that are required as well as provide access and mobility into higher-level more specialised occupations. This will allow the learner greater employability and support the development of small and medium enterprises (SME).

RECOGNIZE PREVIOUS LEARNING?
Y

LEARNING ASSUMED IN PLACE
It is assumed that learners are already competent in:

> Communication and Mathematical Literacy at NQF Level 1.
> Basic concepts of Natural and/or Engineering Science and Technology.
> The term 'Basic' throughout the Qualification refers to 'Base, Fundamental, simplest or lowest in-level' and is consistent in literature dealing with electricity.

Recognition of Prior Learning:

This qualification can be obtained wholly or in part through the recognition of prior learning (RPL). The learner should be thoroughly briefed on the process. Support and guidance should

be provided. The process should not be so onerous as to prevent learners from taking up the RPL option in obtaining the qualification.

Access to the Qualification:

Access to this qualification is open. However, it is assumed that learners have completed a National Certificate at NQF Level 1 in a trade-related sub-field or an equivalent qualification. The learner must be physically able to perform the outcomes as specified in the unit standards and be able to differentiate between various colours applicable to the industry.

QUALIFICATION RULES
Fundamental Component:

The fundamental component consists of 20 credits in the field of Communication and 16 credits in the field of Mathematical Literacy. All unit Standards in the fundamental component are compulsory.

Core Component:

The compulsory unit standards in the Core Component of this qualification reflect the generic competencies required in the field of Electrical Engineering for all industrial environments. The learner must demonstrate competence in the Core Component for the total of 84 credits.

Elective Component:

This component consists of several specialisations each with its own set of unit standards. Learners are to choose a specialisation area and complete a minimum of 20 credits from the unit standards listed under that specialisation area so as to attain a minimum of 140 credits required for certification purposes.

Specialisation area 1:

Mining:

Unit Standard Title; Level; Credits:

> Carry out basic electric arc welding in an electrical environment; Level 2; 8 Credits.
> Carry out basic gas welding, brazing and cutting in an electrical environment; Level 2; 8 Credits.
> Handle and Care for portable electrical earthing gear and related equipment; Level 2; 2 Credits.
> Identify, handle and assemble Medium or High voltage line hardware and related materials; Level 2; 4 Credits.
> Inspect and clean Medium or High voltage yards and enclosures; Level 2; 2 Credits.
> Carry out a detailed inspection on an overhead trolley line; Level 2; 4 Credits.
> Maintain batteries, battery rooms or tripping rooms; Level 2; 7 Credits.
> Install low voltage transformers; Level 2; 6 Credits.
> Construct, maintain and dismantle LV overhead networks; Level 2; 10 Credits.
> Carry out close inspection and repair defects on a flameproof enclosure; Level 2; 2 Credits.
> Carry out a detailed inspection on an isolated overhead line; Level 2; 3 Credits.

Specialisation area 2:

Electrical Construction:

Unit Standard Title; Level; Credits:

> Carry out basic electric arc welding in an electrical environment; Level 2; 8 Credits.
> Develop a learning plan and a portfolio for assessment; Level 2; 6 Credits.
> Operate a personal computer system; Level 1; 3 Credits.
> Use a Graphical User Interface (GUI)-based word processor to create and edit documents; Level 1; 4 Credits.
> Construct, maintain and dismantle LV overhead networks; Level 2; 10 Credits.

Specialisation area 3:

Chemical:

Unit Standard Title; Level; Credits:

> Demonstrate an understanding of the uses and safety aspect associated with flammable energy sources; Level 2; 3 Credits.
> Handle and care for portable electrical earthing gear and related equipment; Level 2; 2 Credits.
> Maintain batteries, battery rooms or tripping rooms; Level 2; 7 Credits.
> Develop a learning plan and a portfolio for assessment; Level 2; 6 Credits.
> Carry out close inspection and repair defects on a flameproof enclosure; Level 2; 2 Credits.

Specialisation area 4:

Electrical Distribution:

Unit Standard Title; Level; Credits:

> Ensure safety at road works; Level 2; 2 Credits.
> Handle and care for portable electrical earthing gear and related equipment; Level 2; 2 Credits.
> Identify, handle and assemble Medium or High voltage line hardware and related materials; Level 2; 4 Credits.
> Inspect and clean Medium or High voltage yards and enclosures; Level 2; 2 Credits.
> Maintain batteries, battery rooms or tripping rooms; Level 2; 7 Credits.
> Maintain servitudes, wayleaves and clearances; Level 2; 5 Credits.
> Construct, maintain and dismantle LV overhead networks; Level 2; 10 Credits.
> Carry out a detailed inspection on an isolated overhead line; Level 2; 3 Credits.

Specialisation area 5:

Electrical Generation:

Unit Standard Title; Level; Credits:

> Maintain batteries, battery rooms or tripping rooms; Level 2; 7 Credits.
> Perform basic fire fighting Level 2; 4 Credits.
> Perform basic first aid Level 2; 4 Credits.
> Develop a learning plan and a portfolio for assessment; Level 2; 6 Credits.
> Install low voltage transformers; Level 2; 6 Credits.

Specialisation area 6:

Transport:

Unit Standard Title; Level; Credits:

> Carry out basic electric arc welding in an electrical environment; Level 2; 8 Credits.
> Carry out basic gas welding, brazing and cutting in an electrical environment; Level 2; 8 Credits.
> Install low voltage transformers; Level 2; 6 Credits.
> Demonstrate an understanding of the uses and safety aspect associated with flammable energy sources; Level 2; 3 Credits.
> Handle and care for portable electrical earthing gear and related equipment; Level 2; 2 Credits.
> Maintain batteries, battery rooms or tripping rooms; Level 2; 7 Credits.

Specialisation area 7:

Renewable Energy:

Unit Standard Title; Level; Credits:

> Carry out basic electric arc welding in an electrical environment; Level 2; 8 Credits.
> Develop a learning plan and a portfolio for assessment; Level 2; 6 Credits.
> Install low voltage transformers; Level 2; 6 Credits.
> Operate a personal computer system; Level 1; 3 Credits.
> Use a Graphical User Interface (GUI)-based word processor to create and edit documents; Level 1; 4 Credits.
> Install and commission photovoltaic supplied water pump; Level 2; 3 Credits.
> Inspect, service and maintain a photovoltaic supplied pump; Level 2; 2 Credits.

EXIT LEVEL OUTCOMES

1. Understand the procedures for electrical installations and be able to install electrical equipment and installations and select, use and maintain basic tools.

2. Demonstrate the ability to carry out routine maintenance on electrical equipment and installations.

3. Demonstrate a basic operational knowledge of mathematical, technological and theoretical concepts during the execution of tasks with an ability to read, interpret technical drawings and sketch basic electrical wiring diagrams.

4. Operate safely and efficiently in a working environment.

5. Apply known solutions to familiar and well-defined problems related to working in the electrical engineering field with a basic understanding of forms of energy, energy efficiency and safety and environmental awareness.

Critical Cross-Field Outcomes:

These are embedded in the unit standards, which make up the qualification and are thus also reflected in the Exit Level Outcomes of the qualification.

The critical cross-field outcomes are supported by the exit level outcomes as follows:

Identifying and solving problems in which responses display that responsible decisions using critical thinking have been made:

> Solving problems related to the installation and maintenance of electrical machinery, components and circuits.

Working effectively with others as a member of a team, group, organization and community:

> All tasks and work-related experience are performed within a team environment.
> Taking into account, the safety of others.
> Communicating with production, quality control and supervisory personnel and/or clients.

Organising and managing oneself and one's activities responsibly and effectively:

> Related to planning and preparation for installation and maintenance activities.
> Developing best practice behaviour in work performance and adhering to standard operating procedures.
> Focussing on housekeeping, safe practices and care and storage of tools and equipment.

Collecting, analyzing, organizing and critically evaluating information:

> Completion of technical reports related to the job activity.
> Interpret findings to solve familiar problems during the execution of electrical tasks.

Communicating effectively using visual, mathematical and/or language skills:

> Execution of commands and completion of technical reports related to the job activity.
> Communicating as a part of a team.

Using science and technology effectively and critically, showing responsibility toward the environment and health of others:

> Application of science and technology during the installation and maintenance of electrical machinery, components and circuits.
> Relating to the safety of others and paying attention to environmental issues.
> Solving problems and applying science and technology to the job activity.

Demonstrate an understanding of the world as a set of related systems by recognizing that problem contexts do not exist in isolation:

> Integrating the task with the functionality of electrical installations.
> Solving problems through the integration of various sources of information.
> Demonstrating and understanding of related systems through the use of general and specific channels of communication when dealing with peers, production, quality control and supervisory personnel and/or clients.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

1.1 Knowledge of and an understanding of tools, components and equipment is demonstrated relating to installation of designated circuits/wire ways.
1.2 The application, identification and installation of different types and sizes of cables, conductors and cable accessories is understood in the context of designated circuits.
1.3 The application of, identification and installation of different types of wire ways, luminaries and measuring instruments is undertaken in accordance with drawings, plans and specified requirements.
1.4 Appropriate hand tools, power tools (fixed and portable), components and measuring instruments are selected and used in accordance with standard operating procedures.
1.5 Knowledge of and application of statutory requirements pertaining to designated installations is demonstrated.

Associated Assessment Criteria for Exit Level Outcome 2:

2.1 Designated circuits to be worked on are isolated and secure.
2.2 Correct application of cleaning materials, solvents and appliances is demonstrated.
2.3 The principles and operation of circuit and equipment protection is demonstrated in designated circuits.
2.4 Cleaning and inspection Isolated electrical equipment is cleaned and inspected and repairs are carried out in designated circuits and components.

Associated Assessment Criteria for Exit Level Outcome 3:

3.1 Basic principles of electricity are understood and applied to designated circuits and equipment.
3.2 Electrical drawings and diagrams relating to designated circuits are read and interpreted.
3.3 Principles of operation of electrical components utilised in designated circuits are understood and described.
3.4 Electrical units of measurement are understood and utilised in the context of designated circuits.

Associated Assessment Criteria for Exit Level Outcome 4:

4.1 Verbal and simple written instructions are understood and executed in the performance of the designated task.
4.2 Peers and supervisors communicate effectively with in an effective manner in the workplace.
4.3 Efficient operation as a team member is demonstrated.
4.4 Knowledge and understanding of personal and occupational health and safety practices in a commercial, industrial or domestic energy environment is applied according to standard operating procedures and safety requirements.
4.5 Basic problems and hazards are recognised and verbally reported accorded to workplace requirements.
4.6 Specified reporting and recording requirements are complied in respect of:
a. Reporting to supervisor.
b. Submitting reports.

Associated Assessment Criteria for Exit Level Outcome 5:

5.1 Known solutions to familiar and well-defined problems within the electrical construction and maintenance environment are identified and applied according to standard practices.
5.2 Energy efficiency and related environmental issues that enable a learner to resolve problems in the work environment are identified and discussed.

Integrated Assessment:

Integrated assessment during the implementation of this qualification provides an opportunity for learners to show that they are able to integrate knowledge, skills and values integral to a range of unit standards and practical contexts. Some assessment aspects will demand practical demonstration.

Assessors will be required to collect evidence of the learner's competence by:

> Observing the learner at work (both in primary activities, as well as other interactions) or by relevant simulations.
> Asking questions and initiating formative discussions to assess understanding.
> Evaluating records and reports.

A detailed portfolio of evidence is required to prove the practical, applied and foundational competencies of the learner.

INTERNATIONAL COMPARABILITY

This qualification forms part of a progression across the three levels of the Further Education and Training band. The international comparability section for the field of Electrical Engineering applies to NQF Levels 2, 3 and 4 of the qualification series.

The qualification series was compared to similar outcomes-based qualifications in New Zealand, Australia, United Kingdom, and to some African countries in the Southern African Development Community (SADC); Mozambique, Namibia, Botswana, Zimbabwe, as well as countries in the East African Community (EAC); Kenya, Tanzania and Uganda.

SADC:

Mozambique, Zimbabwe and Zambia:

Amongst the Southern African Development Community (SADC) there are countries which align with the United Kingdom's model of Vocational Education and Training (VET), through the London City and Guilds qualification framework and the National Vocational Qualification system (NVQ). Despite the fact that SADC countries are not as industrialised as the United Kingdom, it could be concluded that countries using the British qualifications compare favourably to similar South African qualifications as discussed under the U.K. section. In all SADC countries researched, none currently have an active training infrastructure in electrical engineering.

Botswana:

The Botswana Training Authority website provides information on the development and co-ordination of an integrated and standards-based vocational training system. At this present time, focus on the development of standards-based qualifications through a Botswana Vocation Education and Training System (BVET) has focused on the Wholesale and Retail and Tourism sectors.

Currently, electricians in Botswana are trained through the apprenticeship system. The length and duration of the practical and theoretical components differ slightly to the South African apprenticeship system, but the learning competencies are similar, with a focus on the predominant diamond mining and small local manufacturing and engineering industries.

Namibia:

There are currently no qualifications or unit standards for electrical training registered on the Namibian Training Framework.

EAC:

In Kenya, Tanzania, and Uganda, the three member states of the East African Community (EAC), no comparable qualification systems and related infrastructure could be identified.

Through enquiry and research in the Mining and Chemical sectors, it has been established that training, in the field of electrical engineering, of foreign nationals from Mozambique, Nigeria, Tanzania as well as, Zambia and Zimbabwe employed in International companies, takes place in South Africa. These candidates are trained in-house and achieve company certificates for Unit Standards completed.

New Zealand:

The South African 'National Certificate: Electrical Engineering Level 2 has elements of both Levels 2 and 3 of the New Zealand 'National Certificate in Electrical Engineering'. Although NZ qualifications are also unit standard based, the focus of the NZ unit standards at Level 2 [NQF Ref: 0174] and 3 [NQF Ref: 0223] is largely on knowledge acquisition whereas the practical competencies are assessed only at Level 4.

In New Zealand, a learner could register for the Level 4 qualification over a 3-4 year period and be awarded the Level 2 and 3 certificates as well because the level 4 NZ qualification shares credit/unit standards with both levels 2 and 3 qualifications. Holders of the NZ NC in Electrical Engineering (Electrician for Registration) (Level 4) [NQF Ref: 1195] can apply to the Electrical Workers Registration Board (EWRB) for electrical registration and practising license. The SA Electrical Engineering qualifications in comparison require competencies achieved at levels 2 and 3 or through RPL processes to gain entry to level 4 and a further trade test before full licensing is achieved. The NZ level 5 qualification [NQF Ref: 0951] focuses mainly on management skills and business skills in the elective component but the core electrical unit standards are similar to the level of those in the SA Level 4 qualification.

United Kingdom:

To qualify as an electrician in the U.K. the learner must have the Electrotechnical Services NVQ at Level 3, which is awarded by City & Guilds (2356) and EMTA Awards Limited. As another option in England, Wales and Northern Ireland, an apprentice between the ages of 16-19 may sign up with an electrical contractor or building company. An alternative for those not eligible for apprenticeship or direct access into the NVQ is the City & Guilds (2330) Technical Certificate in Electrotechnical Technology Levels 2 and 3 at a college. Graduates would then need to gain employment in the industry to complete the NVQ. These technical certificates would compare with the SA National certificates: Electrical Engineering Levels 2 & 3. The NVQ (Level 3) compares with the SA Level 4 qualification.

Australia:

The following information was obtained on the website: http://www.ntis.au (National Information Training System) with regards to qualifications in electrical engineering training streams in Australia.

"Australian Apprenticeships" is the new name for the scheme formerly known as `New Apprenticeships`.

Australian Apprenticeships encompass all apprenticeships and traineeships. They combine time at work with training and can be full-time, part-time or school-based. The change of name and appearance is the first step in a range of improvements to be introduced in Australian Apprenticeships. The qualifications for electricians cover:

> ASCO4311-11 General Electrician.
> ANZSCO341111 Electrician (General).

Comments:

> Apprenticeships and VET programmes: In all the examples found, learning is vocational-based. In some countries (England, Scotland, New Zealand and Australia) these are called "modern apprenticeships". These take the form of two categories, namely a programme-led apprenticeship where learners are able to follow a vocational programme at a college and then seek employment as trainees/apprentice/interns in order to qualify as artisans; and an employer-led apprenticeship, in which learners are engaged in a formal contract of learning and most learning is workplace-based. In most cases learners "earn while they learn".

> International qualifications researched, do not lead to three different qualifications, but in most cases culminate in one qualification over a four-year period. It is only in the vocational context, that we find the tendency to "break up" the traditional trades into levels of learning. This practice is endemic of those countries which have a close association with outcomes-based methodology and standards-based qualifications development.

References:

> New Zealand: www.nzqa.go.nz.
> Australia: www.ntis.gov.au; www.aqf.edu.au.
> U.K.: www.aset.ac.uk; www.learndirect-advise.co.uk.
> Botswana: www.bota.org.bw; www.unesco.org.
> Namibia: www.nta.com.

ARTICULATION OPTIONS
The qualification was designed to enable qualifying learners to move from one electrical engineering context to another and still get recognition for successful learning achievements in the previous context. This means that credit accumulation towards certification could be obtained across industries.

Vertical articulation:

> ID 63790: National Certificate: Electrical Engineering, NQF Level 3.
> ID 49056: National Certificate: Domestic Appliance Repair, NQF Level 3.

Horizontal articulation:

Fundamental learning at this level applies to equivalent credit accrual for engineering-related qualifications at NQF Level 2. Other horizontal articulation options may exist and need further investigation in cases where recognition of prior learning is sought.

MODERATION OPTIONS
> Anyone assessing a learner against this qualification must be registered as an assessor with a relevant ETQA.

> Any institution or learning provider offering learning towards the achievement of this qualification should be accredited as a provider with a relevant ETQA.

> Moderation of assessment should be overseen by a relevant ETQA according to the moderation guidelines provided for in this qualification, as well as the ETQA guidelines.

CRITERIA FOR THE REGISTRATION OF ASSESSORS
The following criteria should be applied by a relevant ETQA as a minimum requirement:

Assessors should be in possession of an appropriate qualification, namely:

> Electrical Engineering at least NQF Level 3 or higher and a minimum of 2 years related experience.
Or
> An artisan qualification in Electrical Engineering (Trade test certificate or completed contract of apprenticeship) with a minimum of 2 years related experience.
Or
> Subject matter experience, which may be established through recognition of prior learning (RPL).

Evidence of competency in a unit standard related to assessment theory, processes and practices.

Good inter-personal skills and the ability to:

> Maintain national and local industry standards.
> Act in the interest of the learner.
> Understand the need for transformation.
> Respect for the cultural background and language of the learner.

Registration as an assessor with a relevant ETQA.

NOTES

This qualification replaces qualification 48473, "National Certificate: Electrical Engineering", Level 2, 143 credits.

A generic qualification was developed to give meaning to NQF objectives to provide articulation possibilities, enable learners to get recognition for learning achievements across.

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	119463	Access and use information from texts	Level 2	5
Fundamental	9009	Apply basic knowledge of statistics and probability to influence the use of data and procedures in order to investigate life related problems	Level 2	3
Fundamental	7480	Demonstrate understanding of rational and irrational numbers and number systems	Level 2	3
Fundamental	9008	Identify, describe, compare, classify, explore shape and motion in 2-and 3-dimensional shapes in different contexts	Level 2	3
Fundamental	119454	Maintain and adapt oral/signed communication	Level 2	5
Fundamental	119460	Use language and communication in occupational learning programmes	Level 2	5
Fundamental	7469	Use mathematics to investigate and monitor the financial aspects of personal and community life	Level 2	2
Fundamental	9007	Work with a range of patterns and functions and solve problems	Level 2	5
Fundamental	119456	Write/present for a defined context	Level 2	5
Core	258925	Apply and maintain safety in a working environment	Level 2	5
Core	258932	Apply soldering techniques	Level 2	2
Core	258935	Design and construct a single phase circuit	Level 2	5
Core	12466	Explain the individual`s role within business	Level 2	4
Core	259017	Identify, inspect, clean and maintain electrical rotating machines	Level 2	6
Core	258957	Identify, inspect, use, maintain and care for engineering hand tools	Level 2	6
Core	258960	Install electric wire ways	Level 2	6
Core	258942	Install luminaires	Level 2	4
Core	258919	Install or replace electrical metering units or measuring instrument	Level 2	4
Core	258921	Install, join and terminate Low Voltage cables and conductors	Level 2	8
Core	258937	Install, maintain or replace Low Voltage distribution boards, protection devices and components	Level 2	6
Core	258962	Maintain transformers	Level 2	5
Core	9881	Mark off basic regular engineering shapes	Level 2	6
Core	258918	Select, use and care for electrical measuring and testing instruments	Level 2	4
Core	10255	Select, use and care for power tools	Level 2	5
Core	258967	Understand fundamentals of electricity	Level 2	8
Elective	116932	Operate a personal computer system	Level 1	3

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	116938	Use a Graphical User Interface (GUI)-based word processor to create and edit documents	Level 1	4
Elective	258931	Carry out a close inspection and repair defects on a flameproof enclosure	Level 2	2
Elective	258929	Carry out a detailed electrical inspection on an isolated overhead line	Level 2	3
Elective	110387	Carry out a detailed inspection on an overhead trolley line	Level 2	4
Elective	258939	Carry out basic electric arc welding in an electrical environment	Level 2	8
Elective	258920	Carry out basic gas welding, brazing and cutting in an electrical environment	Level 2	8
Elective	258936	Construct, maintain and dismantle Low Voltage overhead networks	Level 2	10
Elective	258928	Demonstrate an understanding of the uses and safety aspect associated with flammable energy sources such as gas	Level 2	3
Elective	12465	Develop a learning plan and a portfolio for assessment	Level 2	6
Elective	258923	Ensure safety at road works in urban areas	Level 2	2
Elective	258938	Handle and care for portable electrical earthing gear and related equipment	Level 2	2
Elective	258922	Identify, handle and assemble Medium or High Voltage line hardware and related materials	Level 2	4
Elective	258941	Inspect and clean Medium or High voltage yards and enclosures	Level 2	2
Elective	258926	Inspect service and maintain a photovoltaic supplied pump	Level 2	3
Elective	258927	Install and commission photovoltaic supplied water pump	Level 2	3
Elective	10234	Install low voltage transformers	Level 2	6
Elective	258917	Maintain batteries, battery rooms or tripping units	Level 2	7
Elective	258934	Maintain servitudes, wayleaves and clearances	Level 2	5
Elective	113859	Repair and service small gas appliances	Level 2	4

LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION
None

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain batteries, battery rooms or tripping units

SAQA US ID	*UNIT STANDARD TITLE*		
258917	Maintain batteries, battery rooms or tripping units		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	7

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
114671	Maintain batteries and battery rooms	Level 2	7	Will occur as soon as 258917 is registered

SPECIFIC OUTCOME 1
Plan work task.

SPECIFIC OUTCOME 2
Prepare work area.

SPECIFIC OUTCOME 3
Inspect, clean and record data of a battery.

SPECIFIC OUTCOME 4
Inspect and clean battery room or tripping unit.

SPECIFIC OUTCOME 5
Completion of work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Select, use and care for electrical measuring and testing instruments

SAQA US ID	*UNIT STANDARD TITLE*		
258918	Select, use and care for electrical measuring and testing instruments		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10237	Select, use and care for electrical measuring instruments	Level 2	4	Will occur as soon as 258918 is registered

SPECIFIC OUTCOME 1
Identify and read fixed electrical measuring instruments.

SPECIFIC OUTCOME 2
Identify and select portable electrical measuring instruments.

SPECIFIC OUTCOME 3
Use and interpret portable electrical measuring instrument readings.

SPECIFIC OUTCOME 4
Care for portable electrical measuring instruments.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2
Elective	63790	National Certificate: Electrical Engineering	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install or replace electrical metering units or measuring instrument

SAQA US ID	*UNIT STANDARD TITLE*		
258919	Install or replace electrical metering units or measuring instrument		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10233	Install or replace electrical metering units or measuring instrument	Level 2	4	Will occur as soon as 258919 is registered

SPECIFIC OUTCOME 1
Plan to Install and/or replace an electrical metering units or measuring instruments.

SPECIFIC OUTCOME 2
Install a metering unit or measuring instrument.

SPECIFIC OUTCOME 3
Replace a metering unit or measuring instrument.

SPECIFIC OUTCOME 4
Complete the Installing and/or replacing of a metering unit or measuring instrument on a panel.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Carry out basic gas welding, brazing and cutting in an electrical environment

SAQA US ID	*UNIT STANDARD TITLE*		
258920	Carry out basic gas welding, brazing and cutting in an electrical environment		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
114616	Carry out basic gas welding, brazing and cutting in an electrical environment	Level 2	8	Will occur as soon as 258920 is registered

SPECIFIC OUTCOME 1
Prepare for gas welding, brazing or cutting.

SPECIFIC OUTCOME 2
Apply basic gas welding techniques.

SPECIFIC OUTCOME 3
Describe and demonstrate the brazing process.

SPECIFIC OUTCOME 4
Apply basic gas cutting process.

SPECIFIC OUTCOME 5
Conclude the task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install, join and terminate Low Voltage cables and conductors

SAQA US ID	*UNIT STANDARD TITLE*		
258921	Install, join and terminate Low Voltage cables and conductors		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
114388	Install, joint and terminate Low Voltage cables and conductors	Level 3	8	Will occur as soon as 258921 is registered

SPECIFIC OUTCOME 1
Plan to install, join and terminate Low Voltage cables and conductors.

SPECIFIC OUTCOME 2
Prepare to install, join and terminate Low Voltage cables and conductors.

SPECIFIC OUTCOME 3
Install electrical cables and conductors.

SPECIFIC OUTCOME 4
Join low voltage cables.

SPECIFIC OUTCOME 5
Terminate electrical cables and conductors.

SPECIFIC OUTCOME 6
Complete the work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Identify, handle and assemble Medium or High Voltage line hardware and related materials

SAQA US ID	*UNIT STANDARD TITLE*		
258922	Identify, handle and assemble Medium or High Voltage line hardware and related materials		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113872	Identify, handle and assemble medium / high voltage line hardware and related materials	Level 2	4	Will occur as soon as 258922 is registered

SPECIFIC OUTCOME 1
Identify and handle the appropriate Medium or High Voltage line hardware.

SPECIFIC OUTCOME 2
Identify and handle the appropriate Medium Voltage equipment.

SPECIFIC OUTCOME 3
Assemble Medium or High Voltage line hardware.

SPECIFIC OUTCOME 4
Identify and handle related materials used during Medium or High Voltage line hardware assembly.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Ensure safety at road works in urban areas

SAQA US ID	*UNIT STANDARD TITLE*		
258923	Ensure safety at road works in urban areas		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	2

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
13622	Ensure safety at road works in urban areas	Level 2	2	Will occur as soon as 258923 is registered

SPECIFIC OUTCOME 1
Plan the work task.

SPECIFIC OUTCOME 2
Ensure the safe loading and offloading of equipment and workers on vehicles for transporting.

SPECIFIC OUTCOME 3
Set-up temporary road signs.

SPECIFIC OUTCOME 4
Completion of the task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Apply and maintain safety in a working environment

SAQA US ID	*UNIT STANDARD TITLE*		
258925	Apply and maintain safety in a working environment		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	5

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
9839	Apply and maintain safety in an electrical environment	Level 1	5	Will occur as soon as 258925 is registered

SPECIFIC OUTCOME 1
Adhere to safety signs, regulations and procedures related to a working environment.

SPECIFIC OUTCOME 2
Care for safety equipment.

SPECIFIC OUTCOME 3
Follow appropriate safety procedures before, during and after job processes.

SPECIFIC OUTCOME 4
Report and record safety anomalies in accordance with worksite procedures.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Inspect service and maintain a photovoltaic supplied pump

SAQA US ID	*UNIT STANDARD TITLE*		
258926	Inspect service and maintain a photovoltaic supplied pump		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	3

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113864	Inspect service and maintain a photovoltaic supplied pump	Level 2	2	Will occur as soon as 258926 is registered

SPECIFIC OUTCOME 1
Plan to service and maintain a photovoltaic supplied pump.

SPECIFIC OUTCOME 2
Prepare to service and maintain a stand-alone photovoltaic supplied pump.

SPECIFIC OUTCOME 3
Service and maintain photovoltaic supplied pump.

SPECIFIC OUTCOME 4
Conclude the maintenance of a photovoltaic supplied pump.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install and commission photovoltaic supplied water pump

SAQA US ID	*UNIT STANDARD TITLE*		
258927	Install and commission photovoltaic supplied water pump		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	3

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113871	Install and commission photovoltaic supplied pump	Level 2	3	Will occur as soon as 258927 is registered

SPECIFIC OUTCOME 1
Plan to install and commission water pump.

SPECIFIC OUTCOME 2
Prepare to install, connect and commission a photovoltaic supplied water pump.

SPECIFIC OUTCOME 3
Install and connect a photovoltaic supplied water pump.

SPECIFIC OUTCOME 4
Connect a photovoltaic supplied water pump.

SPECIFIC OUTCOME 5
Commission a photovoltaic supplied water pump.

SPECIFIC OUTCOME 6
Complete installation, connection and commissioning of a photovoltaic supplied water pump.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of the uses and safety aspect associated with flammable energy sources such as gas

SAQA US ID	*UNIT STANDARD TITLE*		
258928	Demonstrate an understanding of the uses and safety aspect associated with flammable energy sources such as gas		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	3

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

SPECIFIC OUTCOME 1
The correct storage of flammable energy sources.

SPECIFIC OUTCOME 2
The correct procedures are followed concerning safety aspects.

SPECIFIC OUTCOME 3
Flammable energy sources are used safely.

SPECIFIC OUTCOME 4
Maintenance of appliances.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Carry out a detailed electrical inspection on an isolated overhead line

SAQA US ID	*UNIT STANDARD TITLE*		
258929	Carry out a detailed electrical inspection on an isolated overhead line		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	3

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
116644	Carry out a detailed electrical inspection on an isolated overhead line	Level 2	3	Will occur as soon as 258929 is registered

SPECIFIC OUTCOME 1
Explain the requirements pertaining to the detailed inspection on an isolated overhead line.

SPECIFIC OUTCOME 2
Prepare to inspect the isolated overhead line.

SPECIFIC OUTCOME 3
Inspect the overhead line.

SPECIFIC OUTCOME 4
Test the overhead line and prepare for operation and/or production.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Carry out a close inspection and repair defects on a flameproof enclosure

SAQA US ID	*UNIT STANDARD TITLE*		
258931	Carry out a close inspection and repair defects on a flameproof enclosure		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	2

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

SPECIFIC OUTCOME 1
Explain the requirements pertaining to a close inspection on flameproof enclosures.

SPECIFIC OUTCOME 2
Prepare to inspect the enclosure.

SPECIFIC OUTCOME 3
Inspect and repair the enclosure.

SPECIFIC OUTCOME 4
Perform reporting and housekeeping duties.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Apply soldering techniques

SAQA US ID	*UNIT STANDARD TITLE*		
258932	Apply soldering techniques		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	2

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113863	Apply soldering techniques	Level 2	2	Will occur as soon as 258932 is registered

SPECIFIC OUTCOME 1
Plan work task.

SPECIFIC OUTCOME 2
Prepare for soldering.

SPECIFIC OUTCOME 3
Perform soldering.

SPECIFIC OUTCOME 4
Complete the work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain servitudes, wayleaves and clearances

SAQA US ID	*UNIT STANDARD TITLE*		
258934	Maintain servitudes, wayleaves and clearances		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	5

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113861	Maintain servitudes, wayleaves and clearances	Level 2	5	Will occur as soon as 258934 is registered

SPECIFIC OUTCOME 1
Plan and prepare for maintenance of servitudes and wayleaves.

SPECIFIC OUTCOME 2
Maintain servitudes, wayleaves and clearances.

SPECIFIC OUTCOME 3
Maintain access gates, roads and prevent soil erosion.

SPECIFIC OUTCOME 4
Conclude the task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Design and construct a single phase circuit

SAQA US ID	*UNIT STANDARD TITLE*		
258935	Design and construct a single phase circuit		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	5

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
11954	Design and construct a single phase circuit	Level 2	5	Will occur as soon as 258935 is registered

SPECIFIC OUTCOME 1
Identify symbols and components.

SPECIFIC OUTCOME 2
Sketch a basic circuit diagram.

SPECIFIC OUTCOME 3
Construct single-phase circuits.

SPECIFIC OUTCOME 4
Complete task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Construct, maintain and dismantle Low Voltage overhead networks

SAQA US ID	*UNIT STANDARD TITLE*		
258936	Construct, maintain and dismantle Low Voltage overhead networks		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	10

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

SPECIFIC OUTCOME 1
Plan and prepare to construct, maintain and dismantle Low Voltage networks.

SPECIFIC OUTCOME 2
Construct Low Voltage networks.

SPECIFIC OUTCOME 3
Inspect, maintain and repair Low Voltage networks.

SPECIFIC OUTCOME 4
Dismantle Low Voltage networks.

SPECIFIC OUTCOME 5
Complete the work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install, maintain or replace Low Voltage distribution boards, protection devices and components

SAQA US ID	*UNIT STANDARD TITLE*		
258937	Install, maintain or replace Low Voltage distribution boards, protection devices and components		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10248	Replace faulty components in a distribution board	Level 2	3	Will occur as soon as 258937 is registered
10254	Maintain electrical distribution boards, panels and enclosures	Level 2	6	Will occur as soon as 258937 is registered
10605	Inspect and clean a distribution board	Level 2	3	Will occur as soon as 258937 is registered
10607	Install a distribution board	Level 2	2	Will occur as soon as 258937 is registered
10634	Install or replace an earth leakage unit in a low voltage circuit	Level 2	3	Will occur as soon as 258937 is registered

SPECIFIC OUTCOME 1
Plan and prepare to install, maintain or replace Low Voltage distribution boards, protection devices and components.

SPECIFIC OUTCOME 2
Maintain Low Voltage distribution boards, protection devices and components.

SPECIFIC OUTCOME 3
Install or replace Low Voltage distribution boards, protection devices and components.

SPECIFIC OUTCOME 4
Conclude the maintenance of Low Voltage distribution boards, protective devices and components.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Handle and care for portable electrical earthing gear and related equipment

SAQA US ID	*UNIT STANDARD TITLE*		
258938	Handle and care for portable electrical earthing gear and related equipment		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	2

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113868	Handle and care of electrical earthing gear and related equipment	Level 2	2	Will occur as soon as 258938 is registered

SPECIFIC OUTCOME 1
Demonstrate knowledge of portable electrical earthing gear.

SPECIFIC OUTCOME 2
Identify and handle portable electrical earthing gear.

SPECIFIC OUTCOME 3
Inspect and care of portable earthing gear.

SPECIFIC OUTCOME 4
Inspect, handle and care of insulated operating rods.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Carry out basic electric arc welding in an electrical environment

SAQA US ID	*UNIT STANDARD TITLE*		
258939	Carry out basic electric arc welding in an electrical environment		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
114669	Carry out basic electric arc welding in an electrical environment	Level 2	8	Will occur as soon as 258939 is registered

SPECIFIC OUTCOME 1
Prepare the electric arc welding equipment for the task.

SPECIFIC OUTCOME 2
Prepare the metal surfaces for electric arc welding.

SPECIFIC OUTCOME 3
Apply basic electric arc welding techniques.

SPECIFIC OUTCOME 4
Conclude the task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Inspect and clean Medium or High voltage yards and enclosures

SAQA US ID	*UNIT STANDARD TITLE*		
258941	Inspect and clean Medium or High voltage yards and enclosures		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	2

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113887	Inspect and clean medium / high voltage yards and enclosures	Level 2	2	Will occur as soon as 258941 is registered

SPECIFIC OUTCOME 1
Plan to inspect and clean Medium or High Voltage yards and enclosures.

SPECIFIC OUTCOME 2
Inspect Medium or High Voltage yards, enclosures and conduct minor repairs where necessary.

SPECIFIC OUTCOME 3
Clean Medium or High Voltage yards and enclosures.

SPECIFIC OUTCOME 4
Conclude the task of inspecting and cleaning of Medium or High voltage yards and enclosures.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install luminaires

SAQA US ID	*UNIT STANDARD TITLE*		
258942	Install luminaires		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113879	Install luminaires	Level 2	4	Will occur as soon as 258942 is registered

SPECIFIC OUTCOME 1
Explain the requirements pertaining to the selection and methods of installation.

SPECIFIC OUTCOME 2
Prepare to install a luminaire.

SPECIFIC OUTCOME 3
Install the luminaire.

SPECIFIC OUTCOME 4
Prepare and test the luminaire for operation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Identify, inspect, use, maintain and care for engineering hand tools

SAQA US ID	*UNIT STANDARD TITLE*		
258957	Identify, inspect, use, maintain and care for engineering hand tools		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10252	Identify, inspect, use, maintain and care for engineering hand tools	Level 2	6	Will occur as soon as 258957 is registered

SPECIFIC OUTCOME 1
Identify and select engineering hand tools.

SPECIFIC OUTCOME 2
Inspect engineering hand tools for serviceability.

SPECIFIC OUTCOME 3
Use engineering hand tools.

SPECIFIC OUTCOME 4
Maintenance and care of engineering hand tools.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install electric wire ways

SAQA US ID	*UNIT STANDARD TITLE*		
258960	Install electric wire ways		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10253	Install electric wire ways	Level 2	6	Will occur as soon as 258960 is registered

SPECIFIC OUTCOME 1
Plan to install electrical wire ways.

SPECIFIC OUTCOME 2
Prepare to install electrical wire ways.

SPECIFIC OUTCOME 3
Install Electrical Wire Ways.

SPECIFIC OUTCOME 4
Complete the installation of wire ways.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain transformers

SAQA US ID	*UNIT STANDARD TITLE*		
258962	Maintain transformers		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	5

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113858	Maintain transformers	Level 2	5	Will occur as soon as 258962 is registered

SPECIFIC OUTCOME 1
Plan the work task.

SPECIFIC OUTCOME 2
Prepare to maintain transformers.

SPECIFIC OUTCOME 3
Maintain transformers.

SPECIFIC OUTCOME 4
Complete work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Understand fundamentals of electricity

SAQA US ID	*UNIT STANDARD TITLE*		
258967	Understand fundamentals of electricity		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113877	Understand fundamentals of electricity	Level 2	8	Will occur as soon as 258967 is registered

SPECIFIC OUTCOME 1
Explain the basic concepts of electricity.

SPECIFIC OUTCOME 2
Explain magnetic theory.

SPECIFIC OUTCOME 3
Explain the basic fundamentals of power generation and distribution.

SPECIFIC OUTCOME 4
Apply and explain electrical units and symbols.

SPECIFIC OUTCOME 5
Draw and interpret series, parallel and series-parallel DC resistive circuits and calculate variables.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Identify, inspect, clean and maintain electrical rotating machines

SAQA US ID	*UNIT STANDARD TITLE*		
259017	Identify, inspect, clean and maintain electrical rotating machines		
ORIGINATOR		*PROVIDER*	
SGB Electrical Engineering & Construction			
FIELD		*SUBFIELD*	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113876	Identify, inspect and clean electrical machines	Level 2	4	Will occur as soon as 259017 is registered

SPECIFIC OUTCOME 1
Plan task and prepare work area.

SPECIFIC OUTCOME 2
Clean, inspect, test and maintain AC rotating machines.

SPECIFIC OUTCOME 3
Clean, inspect, test and maintain DC rotating machines.

SPECIFIC OUTCOME 4
Complete activity.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2