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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

**Civil Engineering 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.saqg.org.za](http://www.saqg.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 23 May 2008**. All correspondence should be marked **Standards Setting – SGB for Civil Engineering Construction** and addressed to

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## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

**QUALIFICATION:****Further Education and Training Certificate: Railway Construction and Maintenance**

SAQA QUAL ID		QUALIFICATION TITLE	
61670		Further Education and Training Certificate: Railway Construction and Maintenance	
ORIGINATOR		PROVIDER	
SGB Civil Engineering Construction			
QUALIFICATION TYPE	FIELD	SUBFIELD	
Further Ed and Training Cert	12 - Physical Planning and Construction	Civil Engineering Construction	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	136	Level 4	Regular-Unit Stds Based

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

**PURPOSE AND RATIONALE OF THE QUALIFICATION****Purpose:**

Qualifying learners will be able to execute the required knowledge and skills necessary for the safe and effective supervision of railway maintenance and construction processes and procedures. It will enable the learners to gain valuable knowledge and skill to address productivity issues on site with railway maintenance and construction workers as well as to understand issues related to occupational health and safety and the practice of industry codes.

A learner acquiring this Qualification will be able to:

- > Apply management techniques.
- > Ensure track conditions are maintained in line with laid down standards.
- > Utilise on track maintenance machines.
- > Maintain and support procedures to ensure implementation of occupational health and safety practices.

Qualifying learners will be able to show responsibility, and independently and effectively manage themselves in the railway maintenance and construction environment and they will therefore ensure the effective delivery of the relevant and appropriate railway maintenance and construction services within the framework of all legal and safety requirements. This will in turn lead to the creation of a workforce that is more employable and promotable.

**Rationale:**

This Qualification is for learners who are pursuing supervisory careers within the railway maintenance and construction environment and indicates a clear learning pathway from lower levels which can be followed. It provides learners with opportunities for professional development and career advancement.

This qualification reflects the needs and demands within the railway maintenance and construction environment for people who are or will be able to perform leadership roles within surroundings which are more complex and demand more advanced knowledge, skills and

attributes. This Qualification will provide a vehicle through which to develop competent people whom can stay abreast with the changing and dynamic environment of railway maintenance and construction as well as create an atmosphere for life-long learning opportunities.

This qualification allows for the further development of learners in the railway maintenance and construction environment through vertical mobility to higher-level qualifications and horizontally to qualifications on the same level but in a different discipline. The qualification assists learners in critically evaluating information and exercising appropriate professional judgement.

Learners credited with this Qualification and who apply the acquired knowledge and skills can help address the critical shortage of qualified personnel in this industry. For the learner, this Qualification and its competence standards, which are instrumental to the development and recognition of the foundational, practical and reflective competence is needed to be a productive person in a structured workplace.

#### **RECOGNIZE PREVIOUS LEARNING?**

N

#### **LEARNING ASSUMED IN PLACE**

- > Mathematical literacy at NQF Level 3.
- > Communication at NQF Level 3.
- > ID 49795: National Certificate: Rail Construction and Maintenance at NQF Level 3.

Access to the Qualification:

Access to this qualification is open to all learners bearing in mind learning assumed to be in place.

#### **QUALIFICATION RULES**

The Qualification consists of a Fundamental, a Core and an Elective Component.

To be awarded the Qualification learners are required to obtain a minimum of 136 credits as detailed below.

Fundamental Component:

The Fundamental Component consists of Unit Standards in:

- > Mathematical Literacy at NQF Level 4 to the value of 16 credits.
- > Communication at NQF Level 4 in a First South African Language to the value of 20 credits.
- > Communication in a Second South African Language at NQF Level 3 to the value of 20 credits.

It is compulsory therefore for learners to do Communication in two different South African languages, one at NQF Level 4 and the other at NQF Level 3

All Unit Standards in the Fundamental Component are compulsory.

Core Component:

The Core Component consists of Unit Standards to the value of 68 credits all of which are compulsory.

Elective Component:

The elective component consists of individual unit standards from which the learner must choose unit standards based on the area in which they work or in which they are interested. Learners are required to choose unit standards totalling a minimum of 12 credits.

**EXIT LEVEL OUTCOMES**

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

1. Apply management techniques.
2. Ensure track conditions are maintained in line with laid down standards.
3. Utilise on track maintenance machines.
4. Maintain and support procedures to ensure occupational health and safety practices are implemented.

**ASSOCIATED ASSESSMENT CRITERIA**

Associated Assessment Criteria for Exit Level Outcome 1:

- 1.1 Communication is conducted effectively with roleplayers to promote effective interaction in the work context.
- 1.2 Management functions are applied and tasks are performed in the workplace.
- 1.3 Track maintenance teams are motivated in order to build team work.
- 1.4 Resources are organised in accordance with plan.
- 1.5 Decisions are made based on a code of ethics and good working practice.

Associated Assessment Criteria for Exit Level Outcome 2:

- 2.1 Track standards are understood in accordance with laid down specifications.
- 2.2 Track conditions are monitored according to laid down intervals utilising information.
- 2.3 Maintenance plan is compiled and executed in order to maintain track conditions.
- 2.4 Consultation with all roleplayers on track conditions is effected in order to comply with strategy, policies and objectives.

Associated Assessment Criteria for Exit Level Outcome 3:

- 3.1 Types of on track maintenance machines are explained in terms of their uses and contract specification.
- 3.2 Logistical arrangements are effected in terms of contract requirements.
- 3.3 On track time is maximised without interference with train schedules.
- 3.4 Quality of output of on track machines is monitored and measured in order to maintain standards.

Associated Assessment Criteria for Exit Level Outcome 4:

- 4.1 A safe, healthy workplace environment is established in accordance with legislation and organisational requirements.
- 4.2 Conduct of all roleplayers is monitored in accordance with legislation and organisational requirements.
- 4.3 Equipment, materials and tools on site are assessed for compliance to safety regulations.
- 4.4 Roleplayers are notified of occupational health, safety and environmental requirements.

Integrated Assessment:

The Qualification will be awarded to learners who are able to successfully demonstrate competence, in a practical context, against all the specific outcomes contained in all unit standards and their associated assessment criteria, embedded knowledge (theory) and critical cross-field outcomes (generic abilities).

Integrated assessment practices are achieved through the design and development of assessment activities that make use of a variety of assessment methods and tools that measure not only the learner's knowledge and ability to perform practical tasks and activities within a familiar context, but which also challenge learners to demonstrate their ability to deal with problem situations that might or can arise in the workplace from time and which require learners to demonstrate their ability to adapt their performance to meet the requirements of changed circumstances and to reflect on what they are doing and why.

Summative assessment consists of knowledge tests combined with assignments, case studies and practical demonstrations.

The assessment methods and instruments used to assess learners in the context of this Qualification can be applied to the assessment process for Recognition of Prior Learning. A holistic approach is applied when RPL assessments are conducted and include methods and tools that allow for evidence to be gathered from sources located within the broader context where the learner's knowledge and skills have been acquired over a period of time. These assessment methods and tools include assessments of the learner conducted by peers or superiors, certificates of attendance for short courses or panel assessments.

#### **INTERNATIONAL COMPARABILITY**

The purpose of this International Comparability study is to facilitate the development of a meaningful learning path and its associated curriculum incorporating both theoretical and practical vocational skills which will ensure compatibility, comparability and compliance with existing international qualification specifications and regulations.

This International Comparability study was conducted via an extensive Internet search as well as data provided by the task team and subject matter experts, which was used to compare the Qualification with international best practice in the railway construction and maintenance environment.

The leaders or places where best practice is carried out are: The United States of America, United Kingdom, Canada, France, Japan, Australia, Germany and New Zealand. From these countries the following were selected to conduct the actual comparability study as it was felt that they were the leaders in the development of people in the railway construction and maintenance industry and the availability of comparative material in English.

Argentina was selected so that an international comparison could be made with a developing country.

Below are the training qualifications and courses referred for the comparability study:

United States of America:

Three different providers were selected so as to gain a more overall perspective of the type and level of training offered here.

GKC Consulting Company: Railway Engineering and Maintenance of Way Training:

Courses and Contents:

Track Design and Material Specifications:

- > Track design for industrial and mainline railroads.
- > Design non-standard turnouts.
- > Geometry used in track layout work.
- > Material selection for specific type of service of track.

#### Track Inspection and Evaluation:

- > How perform inspections.
- > Performing inspections.
- > Create a bill of materials.
- > Develop Scope of work for remedial work.
- > Create preventative maintenance plan.
- > Keeping track with FRA regulations.

#### Neutral Rail Temperature: Adjusting and Maintaining:

- > How to determine neutral rail temperature (NRT).
- > Methods for measuring existing NRT.
- > How to adjust track to obtain desired NRT.

#### Switch Maintenance, Adjustment and Inspection:

- > How to install, adjust and maintain turnouts.
- > Common turnout problems.
- > Solutions to turnout problems.

#### Derailment Investigation:

- > Derailment factors.
- > Inspection of rail cars and track structure.
- > Evaluation of operations of the track.

#### Track Quality Assurance:

- > Maintaining track quality structure.
- > Creating a Quality Assurance Manual.

#### Track and Frog Welding:

- > Understanding alloys.
- > Special welding procedures.
- > Safety procedures in cutting and welding track materials.

#### Intrack Welding:

- > The two methods of welding track together.
- > How to handle thermal forces in the track structure.

The above courses do not address all those competences found in the South African NQF Level 4 Qualification. In terms of the Track design, the South African Qualification only deals with track geometry used in track layout work and the material selection for specific type of service track. These are found within the Specific Outcomes and the Assessment Criteria. The items of Track Design and Design of non-standard turnouts will be covered by a higher level Qualification. Also in addition it covers the creation of a bill of materials which is not covered in our Qualification. In

addition, the dealing with Neutral Rail Temperature is not covered as it will also be dealt with at a higher level.

As the South African Qualification deals with construction and maintenance, it does not cover the area of Derailment Investigation. In South Africa this is the work of specialists. Our Qualification however has additional subjects which are not handled in these USA courses. These are Ultrasonic testing, Occupational Health and Safety, Management Functions and the management of the on-track maintenance machines.

The Railway Educational Bureau: Railway Worksite Training:

Courses:

- > Introduction to FRA and AAR.
- > AAR Inspection and Maintenance Rules.
- > Basic Track Inspection.
- > Basic Principles of Track Maintenance.
- > Advanced Principles of Track Maintenance.
- > AAR and FRA Inspection, Repair Billing and Repair Records.

The above courses are very similar to the Unit Standards contained in the South African Qualification, in that they cover track inspection and maintenance. They do however have the subjects of the rules and regulations which are included in the Level 3 Qualification. They too have added in the subject of billing, which is not covered.

The University of Tennessee: Railroad Education and Training:

Courses:

- > Railroad Track Inspection and Safety Standards.
- > Railroad Track Inspection and Safety Standards for High Speed Rail.
- > Track Inspection and Safety Standards for Rail Transit Systems.
- > Basic Railroad Track Maintenance.
- > Railroad Track Design.
- > Advance Railroad Track Geometry.
- > Railroad Timber Bridge Inspection and Maintenance.
- > Railroad Steel Bridge Inspection and Maintenance.

The above course contains a number of additional subjects which are not applicable to the South African rail situation, like High Speed Rail and Timber and Steel Bridge Inspection and Maintenance. The other subjects are similar and therefore can be used as a comparison.

United Kingdom:

Network Rail: Training Maintenance Workers:

Course and Contents:

Safety Requirements:

- > Work safety.
- > Stay safe from trains and electrification equipment on the tracks.
- > Manage other peoples safety.

Skills Training:

- > Inspecting the track.
- > Checking height, width and level of rail.
- > Repair faults and replace components.

The above two skills programmes only cover a portion of the whole South African Qualification and therefore only those portions that are offered have been compared. The safety issues are dealt with in depth at Level 3 and are covered within the Level 4 Specific Outcomes and Assessment Criteria. The section on Repair Faults and Replace components are included in a Level 2 Unit Standard dealing with Operating On-track Maintenance Machines.

Argentina:

National Railway Training Centre:

Course and Contents:

Track:

- > Track machines and its maintenance.
- > Rail gang foreman.
- > Welded long rail track conservation.
- > Mechanised track conservation.
- > Methodical track conservation.
- > Track inspector.
- > Materials classification methodology and nomenclature use.
- > Levelling and alignment of the track.

The above course compares very well with the South African one and only additional subjects are those of Methodical Track Conversion and Welded Long Rail Track Conversion.

Australia:

Monash: Institute of Railway Technology:

Course and Contents:

Monitoring Rail Track Conditions:

- > Overall Track Performance.
- > Local rail/track defects.
- > Dynamic effect on bridges.
- > Vehicle performance and stability.
- > Train operation and control.
- > Trending and projection analysis.
- > Assessment of maintenance operations.
- > Driver Training.
- > Maintenance programming.
- > Condition monitoring.
- > Operational planning.
- > Defect mitigation and preventative maintenance schemes.

The above course is once again a very good comparison and the only major differences are that Driver Training is not part of our Qualification and that Vehicle Performance and Stability and Train Operation and Control are included in the NQF Level 3 South African Qualification.



In conclusion, this Level 4 South African Qualification compares well with its international counterparts, in fact it has in essence more subjects, specifically in the area of team leadership and supervision and many of their contents are addressed in our Level 3 Qualification.

### **ARTICULATION OPTIONS**

Horizontal articulation is possible with:

- > ID 49774: Further Education and Training Certificate: Construction and Maintenance of Overhead Track Equipment.
- > ID 57712: Further Education and Training Certificate: Generic Management.
- > ID 49053: National Certificate: Supervision of Construction Processes.

Vertical articulation is possible with:

- > ID 59201: National Certificate: Generic Management.

### **MODERATION OPTIONS**

> Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor with the relevant ETQA.

> Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant ETQA.

> Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQA's policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQA's (including professional bodies); and in terms of moderation guideline detailed in "Qualification Assessor Criteria.

> Moderation must include both internal and external moderation of assessments at exit points of the Qualification, unless ETQA policies specifies otherwise. Moderation should also encompass achievement of the competence described both in individual Unit Standards, Exit Level Outcomes as well as the integrated competence described in the Qualification.

> 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.

### **CRITERIA FOR THE REGISTRATION OF ASSESSORS**

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

- > Be registered as an assessor with the relevant ETQA or an ETQA that has a memorandum of understanding with the relevant ETQA.
- > Be in possession of a relevant Qualification at NQF Level 5 or higher.

### **NOTES**

N/A

### **UNIT STANDARDS**

	<b>ID</b>	<b>UNIT STANDARD TITLE</b>	<b>LEVEL</b>	<b>CREDITS</b>
Fundamental	119472	Accommodate audience and context needs in oral/signed communication	Level 3	5
Fundamental	119457	Interpret and use information from texts	Level 3	5
Fundamental	119467	Use language and communication in occupational learning programmes	Level 3	5
Fundamental	119465	Write/present/sign texts for a range of communicative contexts	Level 3	5

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	9015	Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	Level 4	6
Fundamental	119462	Engage in sustained oral/signed communication and evaluate spoken/signed texts	Level 4	5
Fundamental	119469	Read/view, analyse and respond to a variety of texts	Level 4	5
Fundamental	9016	Represent analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts	Level 4	4
Fundamental	119471	Use language and communication in occupational learning programmes	Level 4	5
Fundamental	7468	Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues	Level 4	6
Fundamental	119459	Write/present/sign for a wide range of contexts	Level 4	5
Core	113852	Apply occupational health, safety and environmental principles	Level 3	10
Core	255936	Assess rail track conditions	Level 4	10
Core	255956	Demonstrate an understanding of rail technology	Level 4	4
Core	255934	Demonstrate an understanding of ultrasonic testing of rail tracks	Level 4	6
Core	14667	Describe and apply the management functions of an organization	Level 4	10
Core	255955	Evaluate and apply electronically measured track geometry	Level 4	10
Core	242821	Identify responsibilities of a team leader in ensuring that organisational standards are met	Level 4	6
Core	255954	Manage the operation of railway on track maintenance machines	Level 4	12
Elective	119985	Build an advanced rail turnout	Level 3	6
Elective	251960	Identify and describe disaster related risks and threatening situations utilizing basic disaster management concepts and indigenous knowledge	Level 3	5
Elective	120385	Apply a range of project management tools and techniques	Level 4	7
Elective	242824	Apply leadership concepts in a work context	Level 4	12
Elective	242810	Manage Expenditure against a budget	Level 4	6
Elective	243301	Manage safety and emergency incidences	Level 4	6
Elective	109999	Manage service providers in a selected organisation	Level 4	5
Elective	242817	Solve problems, make decisions and implement solutions	Level 4	8
Elective	255935	Manage contracts and contractors	Level 5	6

**LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION****None**



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

**UNIT STANDARD:*****Demonstrate an understanding of ultrasonic testing of rail tracks***

SAQA US ID		UNIT STANDARD TITLE	
255934		Demonstrate an understanding of ultrasonic testing of rail tracks	
ORIGINATOR		PROVIDER	
SGB Civil Engineering Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Civil Engineering Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

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

**SPECIFIC OUTCOME 1**

Demonstrate an understanding of the principles of ultrasonic testing.

**SPECIFIC OUTCOME 2**

Gather field data on the rail.

**SPECIFIC OUTCOME 3**

Read ultrasonic reports.

**SPECIFIC OUTCOME 4**

Take appropriate remedial action.

**QUALIFICATIONS UTILISING THIS UNIT STANDARD**

	ID	QUALIFICATION TITLE	LEVEL
Core	61670	Further Education and Training Certificate: Railway Construction and Maintenance	Level 4



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

**UNIT STANDARD:*****Manage contracts and contractors***

<b>SAQA US ID</b>		<b>UNIT STANDARD TITLE</b>	
255935		Manage contracts and contractors	
<b>ORIGINATOR</b>		<b>PROVIDER</b>	
SGB Civil Engineering Construction			
<b>FIELD</b>		<b>SUBFIELD</b>	
12 - Physical Planning and Construction		Civil Engineering Construction	
<b>ABET BAND</b>	<b>UNIT STANDARD TYPE</b>	<b>NQF LEVEL</b>	<b>CREDITS</b>
Undefined	Regular	Level 5	6

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

**SPECIFIC OUTCOME 1**

Demonstrate an understanding of contract requirements.

**SPECIFIC OUTCOME 2**

Conduct safety inductions for contractors.

**SPECIFIC OUTCOME 3**

Monitor the work and safety practices of contractors and provide feedback.

**SPECIFIC OUTCOME 4**

Resolve issues of non-compliance and poor performance by the contractors.

**SPECIFIC OUTCOME 5**

Compile progress reports and verify completion of contract.

**QUALIFICATIONS UTILISING THIS UNIT STANDARD**

	<b>ID</b>	<b>QUALIFICATION TITLE</b>	<b>LEVEL</b>
Elective	61670	Further Education and Training Certificate: Railway Construction and Maintenance	Level 4



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

**UNIT STANDARD:****Assess rail track conditions**

SAQA US ID		UNIT STANDARD TITLE	
255936		Assess rail track conditions	
ORIGINATOR		PROVIDER	
SGB Civil Engineering Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Civil Engineering Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	10

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

**SPECIFIC OUTCOME 1**

Carry out rail track inspections.

**SPECIFIC OUTCOME 2**

Perform rail track surveys.

**SPECIFIC OUTCOME 3**

Evaluate rail track data.

**SPECIFIC OUTCOME 4**

Determine resources required for rectification of rail track conditions.

**SPECIFIC OUTCOME 5**

Control rail track rectification and production quality.

**QUALIFICATIONS UTILISING THIS UNIT STANDARD**

	ID	QUALIFICATION TITLE	LEVEL
Core	61670	Further Education and Training Certificate: Railway Construction and Maintenance	Level 4



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

## UNIT STANDARD:

***Manage the operation of railway on track maintenance machines***

SAQA US ID	UNIT STANDARD TITLE		
255954	Manage the operation of railway on track maintenance machines		
ORIGINATOR	PROVIDER		
SGB Civil Engineering Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Civil Engineering Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	12

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

**SPECIFIC OUTCOME 1**

Demonstrate an understanding of railway on track maintenance machines.

**SPECIFIC OUTCOME 2**

Explain the duties and responsibilities of the person in charge of railway on track maintenance machines.

**SPECIFIC OUTCOME 3**

Explain the cost and production implications when using on track maintenance machines.

**SPECIFIC OUTCOME 4**

Explain safety pertaining to on track maintenance machines.

**QUALIFICATIONS UTILISING THIS UNIT STANDARD**

	ID	QUALIFICATION TITLE	LEVEL
Core	61670	Further Education and Training Certificate: Railway Construction and Maintenance	Level 4



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

**UNIT STANDARD:*****Evaluate and apply electronically measured track geometry***

SAQA US ID	UNIT STANDARD TITLE		
255955	Evaluate and apply electronically measured track geometry		
ORIGINATOR	PROVIDER		
SGB Civil Engineering Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Civil Engineering Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	10

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

**SPECIFIC OUTCOME 1**

Demonstrate an understanding of the terminology of track geometry reports.

**SPECIFIC OUTCOME 2**

Assess track conditions from reports in order to determine the extent and location of immediate priorities.

**SPECIFIC OUTCOME 3**

Locate immediate priority/ies on track.

**SPECIFIC OUTCOME 4**

Determine the resource requirements to rectify deviations.

**QUALIFICATIONS UTILISING THIS UNIT STANDARD**

	ID	QUALIFICATION TITLE	LEVEL
Core	61670	Further Education and Training Certificate: Railway Construction and Maintenance	Level 4



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

## UNIT STANDARD:

*Demonstrate an understanding of rail technology*

SAQA US ID		UNIT STANDARD TITLE	
255956		Demonstrate an understanding of rail technology	
ORIGINATOR		PROVIDER	
SGB Civil Engineering Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Civil Engineering Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	4

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

**SPECIFIC OUTCOME 1**

Demonstrate an understanding of composition of rail.

**SPECIFIC OUTCOME 2**

Explain rail-wheel interaction on life of the rail and wheel.

**SPECIFIC OUTCOME 3**

Monitor and control the condition of Continuously Welded Rail (CWR).

**QUALIFICATIONS UTILISING THIS UNIT STANDARD**

	ID	QUALIFICATION TITLE	LEVEL
Core	61670	Further Education and Training Certificate: Railway Construction and Maintenance	Level 4