No. 104 **9 February 2009**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

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

Mining and Minerals

registered by Organising Field 06 – Manufacturing, Engineering and Technology 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 than 9 March 2009.*** All correspondence should be marked **Standards Setting – SGB for Mining and Minerals** and addressed to

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ACTING DIRECTOR: STANDARDS SETTING AND DEVELOPMENT

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:
National Certificate: Mining Technical Support

SAQA QUAL ID	*QUALIFICATION TITLE*		
65549	National Certificate: Mining Technical Support		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
QUALIFICATION TYPE	*FIELD*	*SUBFIELD*	
National Certificate	6 - Manufacturing, Engineering and Technology	Fabrication and Extraction	
ABET BAND	*MINIMUM CREDITS*	*NQF LEVEL*	*QUAL CLASS*
Undefined	138	Level 3	Regular-Unit Stds Based

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

PURPOSE AND RATIONALE OF THE QUALIFICATION
This qualification will provide qualifying learners with the necessary skills, knowledge, understanding and competence, to competently and confidently undertake tasks pertinent to a Surveyor, Geologist and Sampler in their specific fields related to surface and underground mining; as well as provide an opportunity for learners to apply appropriate skills in relation to the workplace.

The Surveying, Geology and Sampling technician is vital to the smooth running of these disciplines of the mining industry which covers a wide variety of fields such as Geological Exploration sampling, GPS surveying as well as structural mapping and hazard identification.

Learners achieving this qualification will be able to understand their role of applying required competencies consistently and effectively in the execution of their duties. They will also contribute to the mining technical services discipline by effectively adhering to quality and occupational safety requirements.

This qualification will have a positive impact on society through assisting in the identification and delineation of potential mineral deposits; as well as improve the health and safety of people in and outside the mining environment through input to hazard identification programmes and helping protect the environment during mine closure procedures.

People credited with this qualification are able to:

> Communicate and solve problems in a variety of ways.
> Demonstrate an understanding of Occupational Health, Safety and Environmental standards in the workplace.
> Demonstrate an understanding of stratigraphic and geological features pertinent to the mining environment.
> Perform map reading and measuring functions within a mining environment.
> Perform basic survey sampling and geological functions pertinent to the mining environment.

Rationale:

Surveying, Geology and Sampling are recognised as generic key competencies in the development of basic skills in the South African mining industry. In particular they impact on the identification and delineation of potential mineral deposits, development of mines and the safe, profitable and optimal exploitation of mining reserves. Further, the need for improved quality standards with maximization of efficiencies within the mining industry coupled with the increasing complexity of many SA mining operations have resulted in greater need for skills in the fields of Survey, Geology and Sampling. Maintenance of such standards has been recognised and emphasis has been placed on providing such technical support training at all levels within these mining disciplines. This is a key component in Technical Support Operations training and serves to extend the life of mines providing employment both within the mining industry and the numerous support industries.

Learners entering this qualification will typically come from mining, survey, geology or sampling operations, working as Technical Support assistants or stope face operators. In some cases learners will come from other industries such as soil science or civil engineering. Learners from other industries would, however, have to become familiar with the mining environment, equipment and processes before they can proceed with this qualification. Qualifying learners will be competent support technicians on NQF Level 3 in the Surveying, Geological and Sampling disciplines in all mining operations; and in particular underground or surface surveying and mapping, geological mapping; and mineral sampling procedures. Learners will obtain the basic theoretical knowledge pertinent to these mining related environments. This qualification has 3 specialisation streams for learners to follow.

A typical learning pathway in this field would start with the NC: Mining Technical Support NQF Level 2 and proceed to the Further Education and Training Certificate (FETC): Minerals Surveying, Minerals Sampling or Mining/Exploration Geology (NQF Level 4). Learners could then progress onto a NQF Level 5 qualification in one of the specialisation areas namely Surveying, Geology or Sampling. The qualification is designed to be flexible and accessible so that learners are able to demonstrate the competencies in Surveying, Geology and Sampling Technical Support across the mining and minerals sectors.

This qualification will be a suitable and justified recognition for the skills and competencies of technical assistants who, to date, have been trained and developed on an informal basis only, with little chance of advancement. The associated status of a nationally recognised qualification will serve as a motivation for learners to further their skills by entering the fields of Surveying, Geology and Sampling. Current Surveying, Geology and Sampling Technical Assistants in particular will benefit from the opportunities of assessment and subsequent recognition presented by RPL (Recognition of Prior Learning).

RECOGNIZE PREVIOUS LEARNING?
Y

LEARNING ASSUMED IN PLACE
Communication and Mathematical Literacy at NQF Level 2.

Recognition of Prior Learning:

This qualification can be achieved wholly or in part through recognition of prior learning in terms of the criteria laid out.

Evidence can be presented in a variety of forms, including international or previous local qualifications, reports, testimonials mentioning functions performed, work records, portfolios, videos of practice and performance records.

Access to the Qualification:

Access is open; however it is preferable that learners have completed the National Certificate: Mining Technical Support: NQF Level 2.

QUALIFICATION RULES
There are 3 specialisation areas possible:

> Specialisation Area A: Sampling.
> Specialisation Area B: Surveying.
> Specialisation Area C: Geology.

A minimum of 138 credits is required to complete the qualification. In this Qualification, credits are allocated as follows:

Fundamental:

> All 36 credits are compulsory.

Core:

> All 51 credits are compulsory.

Electives:

> 51 Elective credits as specified below must be achieved.

Note: The elective credits should be chosen in accordance with the requirements of the selected context and the interests of the learner.

For Specialisation Area A: Sampling.

The following unit standards (28 credits) must be achieved:

Title; NQF Level; Credits:

> Compile a sample sheet and manually calculate the results for mineral evaluation purposes; NQF Level 3; 4 Credits.
> Mark off and map face sampling sections for mineral evaluation purposes; NQF Level 4; 11 Credits.
> Measure and record basic geological information for grade control purposes; NQF Level 3; 5 Credits.
> Compile a grade distribution plan; NQF Level 3; 3 Credits.
> Collate data for grade control and geological interpretation purposes; NQF Level 3; 5 Credits.

Total = 28 Credits.

A further 23 credits are to be chosen from the rest of the electives to make up a minimum of 138 credits for the qualification.

For Specialisation Area B: Surveying.

The following unit standards (28 credits) must be achieved:

Title; NQF Level; Credits:

> Perform distance measurements using a tape and Electronic Distance Measurement (EDM) equipment; NQF Level 4; 2 Credits.
> Produce a survey note; NQF Level 3; 4 Credits.
> Measure, plot and interpret area measurements within an underground workplace; NQF Level 2; 3 Credits.
> Construct a Cartesian co-ordinate grid and plot points; NQF Level 3; 4 Credits.
> Set up a survey instrument to take observations; NQF Level 3; 4 Credits.
> Determine quantities from plotted data; NQF Level 4; 6 Credits.
> Apply calculations of areas, volumes, masses and weights to simple shapes in strata control; NQF Level 3; 3 Credits.
> Reduce basic distance measurements (Tape or EDM) for use in surveying; NQF Level 4; 2 Credits.

Total = 28 Credits.

A further 23 credits are to be chosen from the rest of the electives to make up a minimum of 138 credits for the qualification.

For Specialisation Area C: Geology.

The following unit standards (28 credits) must be achieved:

Title; NQF Level; Credits:

> Demonstrate a basic understanding of South African stratigraphy and associated major economic deposits; NQF Level 3; 6 Credits.
> Demonstrate an understanding of sedimentary rocks; NQF Level 3; 6 Credits.
> Demonstrate an understanding of igneous rocks; NQF Level 3; 6 Credits.
> Demonstrate an understanding of metamorphic rocks; NQF Level 3; 6 Credits.
> Demonstrate an understanding of mineralization processes; NQF Level 3; 4 Credits.

Total = 28 Credits.

A further 23 credits are to be chosen from the rest of the electives to make up a minimum of 138 credits for the qualification.

EXIT LEVEL OUTCOMES

1. Communicate and solve problems in a variety of ways.

2. Demonstrate an understanding of Occupational Health, Safety and Environmental standards in the workplace.

3. Demonstrate an understanding of stratigraphic and geological features pertinent to the mining environment.

4. Perform map reading and measuring functions within a mining environment.

5. Perform basic survey sampling and geological functions pertinent to the mining environment.

The following Exit level outcomes are specific in terms of Geology, Sampling or Survey:

6. Apply a selection of Surveying procedures.

Or

7. Apply a selection of Sampling procedures.

Or

8. Demonstrate an understanding of Geological principles.

Critical Cross Field Outcomes:

Critical Cross-field Outcomes have been addressed by the exit level outcomes as follows:

While providing technical support in mining operations, qualifying learners are able to:

Identify and solve problems in which responses display that responsible decisions using critical thinking have been made, by:

> Responding to non-conformances in a mining technical support environment.
> Responding to emergencies in a mining technical support environment.
> Explaining and applying principles necessary to identify, record and report potentially hazardous geological features.

Work effectively with others as a member of a team, group, organisation or community by:

> Contributing to team goals and achievements by adhering to agreed working methods and processes.
> Contributing to team efficiency by supporting other team members in the technical support environment.
> Adhering to team protocols, codes of conduct and generally promoting a positive team spirit.
> Coordinating work with that of others in the direct surrounding area.

Organise and manage oneself and one's activities responsibly and effectively by:

> Performing map reading and measuring functions within a mining environment.
> Performing basic sampling and geological functions pertinent to the mining environment.
> Conducting self-locating activities surface and underground.
> Constructing a geological cross-section of an un-deformed area.

Collect, analyse, organise and critically evaluate information by:

> Accessing and interpreting information related to work tasks from a range of written and oral sources to ensure that work requirements are understood.
> Measuring directions and distances on a map in accordance with work related standards.
> Calculating quantities using tape measurements in accordance with work related and legal requirements.
> Determining the mineral content of a mining unit by applying elementary evaluation techniques.
> Plotting cartesian coordinates in accordance with requirements.
> Collating data for grade control and geological interpretative purposes.

Communicate effectively by using mathematical and/or language skills in the modes of oral and/or written presentations by:

> Demonstrating oral and written communication effectively while performing the tasks related to conducting mineral technical support in mining operations.
> Communicating and conveying information accurately and in accordance with acceptable timeframes.

> Applying principles and techniques of mathematics while performing the tasks related to mineral technical support.
> Solving mathematical problems in relation to the operational context.
> Calculating quantities from plotted data in accordance with specified work related requirements.

Use science and technology effectively and critically, showing responsibility towards the environment and health of others by:

> Adhering to Occupational Health, Safety and Environmental policies, procedures and requirements at all times as per workplace requirements.
> Conducting activities in a mineral technical support environment in accordance with Occupational Health, Safety and Environmental requirements.
> Understanding and explaining concepts and principles necessary to identify and verify the selected mining horizon in accordance with mine specific requirements.
> Explaining principles necessary to identify, record and report potentially hazardous geological features.
> Demonstrating knowledge of the stratigraphy within a specific mineral deposit in accordance with mine specific requirements.
> Demonstrating an understanding of mineral resource types, their utilisation and exploitation.
> Using hand held electronic distance measuring technology.
> Setting up a GPS receiver.
> Setting up a survey instrument to take observations.
> Sampling a mining face with a scanning device.

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

> Interpreting plans in accordance with work and legal standards and requirements.
> Understanding the impact of upstream, downstream and parallel minerals processing systems upon each other and his/her own role in each context.
> Requesting assistance from other team members and support personnel when required.
> Assisting other team members and work together with support personnel to provide technical support in the mining environment.

ASSOCIATED ASSESSMENT CRITERIA
Associated Assessment Criteria for Exit Level Outcome 1:

> Oral and written communication is demonstrated effectively while performing the tasks related to conducting mineral technical support in mining operations.
> Information related to work tasks is accessed and interpreted from a range of written and oral sources to ensure that work requirements are understood.
> Information communicated is accurate and conveyed in accordance with acceptable timeframes.
> Principles and techniques of Mathematics are applied while performing the tasks related to mineral technical support activities.
> Mathematical problems are solved in relation with the operational context.
> Problems and solutions are recorded and monitored for reoccurrence.

Associated Assessment Criteria for Exit Level Outcome 2:

> Occupational Health, Safety and Environmental policies, procedures and requirements are adhered to at all times as per workplace requirements.
> Technical Support operations are conducted in a mineral technical support environment according to the Occupational Health, Safety and Environmental requirements.

Associated Assessment Criteria for Exit Level Outcome 3:

> Concepts and principles necessary to identify and verify the selected mining horizon are understood and explained in accordance with mine specific requirements.
> Principles necessary to identify, record and report potentially hazardous geological features are explained in accordance with specified work standards and legal requirements.
> Knowledge of the stratigraphy within a specific mineral deposit is demonstrated in accordance with the requirements of mine specific requirements.
> An understanding of mineral resource types, their utilisation and exploitation is demonstrated in accordance with specified requirements.

Associated Assessment Criteria for Exit Level Outcome 4:

> Tape measurements are plotted in accordance with work related requirements.
> Quantities are calculated from plotted data in accordance with specified work requirements.
> Plans are interpreted in accordance with work and legal standards and requirements.
> Directions and distances on a map are measured in accordance with work related standards.
> Quantities are calculated using tape measurements in accordance with work related and legal requirements.

Associated Assessment Criteria for Exit Level Outcome 5:

> Survey drafting is performed in accordance with work requirements.
> The ability to locate oneself on surface and underground is demonstrated in accordance with specified work related requirements.
> The stratigraphic widths of a mineral exposure is measured in accordance with specific mine related requirements.
> The mineral content of a mining unit is determined by applying elementary evaluation techniques in accordance with work related requirements and standards.
> A geological cross-section of an un-deformed area is constructed in accordance with work requirements.

Associated Assessment Criteria for Exit Level Outcome 6:

> Hand held Electronic Distance Measurement (EDM) measurements are performed in accordance with specified requirements and equipment parameters.
> A survey note is produced in accordance with legal and work related requirements and standards.
> A GPS receiver is set up in accordance with specified requirements and manufacturer guidelines.
> Basic coordinate systems are interpreted in accordance with specified requirements.
> Plotted measured data are quantified in accordance with work related standards and requirements.
> Grade chains are calculated and manufactured in accordance with work related requirements and standards.
> A survey instrument is set up to take observations in accordance with work related standards and manufacturer's guidelines.
> Cartesian coordinates are plotted in accordance with requirements.
> The global positioning system is operated in accordance with equipment parameters and work related requirements.

Or

Associated Assessment Criteria for Exit Level Outcome 7:

> A mining face is sampled with a scanning devise for mineral evaluation purposes in accordance with work requirements and manufacturer guidelines.
> A sample sheet is compiled and the results manually calculated for mineral evaluation purposes in accordance with mine related standards and requirements.
> A face is marked off for sampling and mapped for mineral evaluation purposes in accordance with work related standards and requirements.
> The particle size distribution of a sample is determined by means of a sieving technique in accordance with work requirements and manufacturer guidelines.
> A grade distribution plan is compiled in accordance with mine related standards and requirements.
> Data for grade control and geological interpretative purposes are collated in accordance with work requirements and standards.
> Basic geological data are measured and recorded for grade control purposes in accordance with mine related standards and requirements.

Or

Associated Assessment Criteria for Exit Level Outcome 8:

> Knowledge of South African stratigraphy, sedimentary, igneous and metamorphic rocks, and mineralization processes is demonstrated in accordance with specified requirements.

Integrated Assessment:

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

Integrated assessment must evaluate the quality of observable performance as well as the thinking behind the performance, and must be based on a summative assessment guide. The guide will spell out how the assessor will assess different aspects of the performance and will include:

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

In some cases inference will be necessary to determine competence depending on the nature and context within which performance takes place.

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

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

While this is primarily a workplace-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit-level outcomes. The assessment process should cover both the explicit tasks required for the qualification as well as the understanding of the concepts and principles that underpin the activities associated with the plating process.

INTERNATIONAL COMPARABILITY

International qualifications were compared to ensure that the qualification structure and unit standards are comparable in terms of level, scope of qualification and competencies covered.

The following were considered:

> Countries with a formal Qualifications Framework, such as the United Kingdom (NVQ and SVQ), Australia and New Zealand.
> Countries who are reputed to be leaders in this particular field.
> SADEC countries, which are in geographical proximity to South Africa.

Qualifications Frameworks:

Frameworks consulted were those of Australia, New Zealand, United Kingdom (Britain) and Scotland.

While conducting the research in this regard, no evidence could be found of a "technical support" qualification, i.e. a qualification combining geological, surveying and sampling services.

Evidence was however found of qualifications at a higher level, comparable to Diploma or Degree Level (Levels 5 and 6 respectively) for the individual disciplines. These are at a higher level than envisaged by the NC Technical Support Level 3.

Leading Countries:

The fields of geology, surveying and sampling are common across the world, particularly in the mining context. There was no evidence suggesting that any particular country could be considered a leader in this regard.

Courses at undergraduate level were found in various countries, but in the respective disciplines and not as a combination as envisaged with the NC Technical Support Level 3.

Countries included in the search were Canada (British Columbia), United Kingdom, Australia and New Zealand.

SADEC Countries:

No evidence of a relevant qualification was found for any of the SADEC countries.

Consultation with experienced mining engineers who have worked in Africa (SADEC countries) have confirmed that competencies relating to Technical Support (at the level of the proposed qualification) would be acquired informally in the workplace. This would typically occur when workers assist technical or professional people performing these tasks.

People rendering geological or surveying support (i.e. at a professional level) typically have a relevant degree or diploma from a recognised institution (university, technical college).

Qualifications and unit standards (competencies) found:

The following relevant qualifications and/or standards were found:

Canada (British Columbia).

> Online courses are being offered at the University of British Columbia.

Similar elements of competence were found and the outcomes of the courses match closely with the outcomes of the unit standards incorporated in this National Certificate Geology for the training of geological assistants, aides and operators.

The structures of the courses are similar, however, no judgement could be made on the level and depth of the courses as they are delivered on-line according to the pace of the learner.

United Kingdom:

> WJEC (Originally Welsh Joint Education Committee) run certificate courses and shorter professional development courses.

GCE and GCSE Courses are offered in Geology, The various courses are organised into units, which correspond to clusters of individual unit standards of the proposed NC Technical Support:

> UNIT GL1: Foundation Geology.
> UNIT GL2: Investigative Geology.
> UNIT GL3: Geology and the Human Environment.
> Unit GL4: Interpreting the Geological Record.
> Unit GL5: Geological Themes.
> Unit GL6: Geological Investigations.

Australia:

Relevant competencies are packaged into various qualifications e.g.:

> Certificate II in Surface Coal Operations.
> MNCG1000 Conduct Mine Surveying Operations.

New Zealand:

A number of Geology unit standards were found, although not a specific qualification per se:

Level 2:

> 6360: Identify geological features from recorded visual information.
> 6361: Investigate and report on the geology in an area.
> 6362: Demonstrate an understanding of fossils.

Level 3:

> 21614: Describe the geological history of an area in the Southwest Pacific.
> 6364: Use plate tectonics to explain distribution of major NZ and Southwest Pacific geological features.
> 6365: Demonstrate knowledge of geological hazards.
> 8153: Explain factors affecting a water resource and its management, and plot and interpret hydrographs.

Level 4:

> 8140: Investigate, interpret and report on geological features, landforms and active processes of a site.
> 8145: Read geological maps and interpret geological history.
> 8147: Demonstrate a knowledge of the interior of the Earth.
> 8152: Collect water samples for analysis.

Level 5:

> 8137: Collect geophysical data and samples.
> 8138: Collect geotechnical data and samples.
> 8139: Collect geological data and rock samples.
> 8141: Describe and classify soils using soil maps.
> 8142: Identify and classify rock and soil materials.
> 8144: Model subsurface geological features.
> 8146: Read and interpret geophysical maps.
> 8148: Describe biogeochemical cycling of elements.
> 8150: Analyse wastewaters and demonstrate an understanding of wastewater treatment and discharge.

Level 6:

> 12364: Demonstrate knowledge of soil formation and structure.
> 12365: Demonstrate knowledge of soil fertility.
> 14398: Describe, assess and report on a degraded landform.
> 8143: Describe, assess and report on a contaminated site.
> 8149: Perform sedimentological and paleontological analyses.
> 8151: Perform soil chemical analysis.

Surveying: A National Certificate in Surveying (Level 3) with the following relevant standards exists:

> 8762: Confirm reliability of existing survey marks.
> 8774: Set up survey instruments and targets.
> 8775: Undertake and record linear field measurements for survey purposes.
> 8776: Undertake and record angular field measurements for survey purposes.
> 8777: Determine vertical height for survey purposes.
> 8778: Construct control survey marks, bench marks and trigonometrical beacons.
> 8798: Work safely during survey operations.

Conclusions:

International comparison in this instance has not revealed comparable qualifications for one or more of the following reasons:

> Formal qualifications in geology, surveying and sampling (laboratory assistants) are at a higher level than the proposed NC: Technical Support Level 3 (Level 4, 5 or higher).
> The reasons for South African unit standards and qualification representing a learning path starting at lower levels is mainly due to the relatively low educational base of the majority of workers in the mining industry. These standards (and indeed the NC Technical Support Level 3 qualification) seek to address the education gap.
> The courses found e.g. in the UK and Canada, are not necessarily set in a mining context and are therefore not as practically oriented as the NC: Technical Support, which focuses entirely on the mining context.
> The combination of geology, survey and sampling competencies into a single qualification is a unique approach that has not been seen elsewhere.

The competencies covered by the NC: Mining Technical Support (Level 3) are required by workers in the mining industry and it is highly motivated that learners should learn towards and be assessed against the relevant standards.

Despite the lack of directly comparable qualifications internationally, the NC Technical Support (Level 3) is nevertheless deemed a valuable and relevant qualification.

ARTICULATION OPTIONS
This qualification is the ideal platform for horizontal articulation in the Survey, Geology and Sampling disciplines, and other mining industry related sub-fields.

Vertical articulation exists with:

> ID 50082: Further Education and Training Certificate: Minerals Surveying.

MODERATION OPTIONS
> Anyone assessing a learner or moderating the assessment of a learner against this unit standard must be registered as an assessor with the relevant Education, Training, Quality, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.

> Any institution offering learning that will enable the achievement of this unit standard must be accredited as a provider with the relevant Education, Training, Quality, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.

> The relevant Education, Training, Quality, Assurance (ETQA) Body will oversee assessment and moderation of assessment, or by an ETQA that has a Memorandum of Understanding with the relevant ETQA, according to the ETQA's policies and guidelines for assessment and moderation.

> Moderation must include both internal and external moderation of assessments, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described in the Unit Standard.

> Anyone wishing to be assessed against this unit standard 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
Assessors should be in possession of:

> An appropriate qualification above the level of this qualification and preferably relevant workplace practical experience.
> Registration as an assessor with the relevant ETQA.

NOTES
N/A

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	119472	Accommodate audience and context needs in oral/signed communication	Level 3	5
Fundamental	9010	Demonstrate an understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations	Level 3	2
Fundamental	9013	Describe, apply, analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts	Level 3	4
Fundamental	119457	Interpret and use information from texts	Level 3	5
Fundamental	9012	Investigate life and work related problems using data and probabilities	Level 3	5
Fundamental	119467	Use language and communication in occupational learning programmes	Level 3	5

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	7456	Use mathematics to investigate and monitor the financial aspects of personal, business and national issues	Level 3	5
Fundamental	119465	Write/present/sign texts for a range of communicative contexts	Level 3	5
Core	11131	Measure the stratigraphic widths of a mineral exposure	Level 2	6
Core	116669	Conduct an issue-based risk assessment within an underground workplace	Level 3	2
Core	262181	Construct a geological cross-section of an un-deformed area	Level 3	3
Core	11118	Determine the mineral content of a mining unit applying elementary evaluation techniques	Level 3	2
Core	11686	Identify and verify the selected mining horizon	Level 3	3
Core	262217	Identify, record and report on geological features that could result in potentially hazardous conditions in the workplace	Level 3	5
Core	262264	Locate a surface geographical position by employing map-reading techniques	Level 3	3
Core	261817	Locate an underground geographical position by employing plan reading techniques	Level 3	3
Core	9530	Manage work time effectively	Level 3	3
Core	14442	Plot tape and offset measurements on a plan	Level 3	3
Core	253016	Read and understand a mine plan and transfer recorded information onto mine plans	Level 3	4
Core	261818	Demonstrate a basic understanding of mineral resource types, utilisation and exploitation	Level 4	5
Core	262259	Demonstrate a basic understanding of the stratigraphy of the relevant economic deposit	Level 4	3
Core	14461	Determine quantities from plotted data	Level 4	6
Elective	244432	Measure, plot and interpret area measurements within an underground workplace	Level 2	3
Elective	261777	Operate a geophysical measuring instrument to record data for a geophysical survey	Level 2	4
Elective	116937	Use a Graphical User Interface (GUI)-based spreadsheet application to create and edit spreadsheets	Level 2	4
Elective	252554	Apply calculations of areas, volumes, masses and weights to simple shapes in strata control	Level 3	3
Elective	13912	Apply knowledge of self and team in order to develop a plan to enhance team performance	Level 3	5
Elective	11111	Calculate and manufacture grade chains	Level 3	3
Elective	11116	Calculate and plot the position of an underground survey point from traverse measurements by employing first principles	Level 3	7
Elective	257095	Carry out basic surveying and calculations in surface excavations	Level 3	8
Elective	113909	Coach a team member in order to enhance individual performance in work environment	Level 3	5
Elective	262237	Collate data for grade control and geological interpretation purposes	Level 3	5
Elective	262184	Compile a grade distribution plan	Level 3	3
Elective	11114	Compile a sample sheet and manually calculate the results for mineral evaluation purposes	Level 3	4
Elective	230013	Conduct face profiling and blast hole surveys	Level 3	6
Elective	11596	Construct a Cartesian co-ordinate grid and plot points	Level 3	4
Elective	262303	Demonstrate a basic understanding of South African stratigraphy and associated major economic deposits	Level 3	6
Elective	261778	Demonstrate a basic understanding of global tectonic systems	Level 3	3
Elective	261797	Demonstrate an understanding of igneous rocks	Level 3	6
Elective	262179	Demonstrate an understanding of metamorphic rocks	Level 3	6
Elective	262198	Demonstrate an understanding of mineralization processes	Level 3	4
Elective	262160	Demonstrate an understanding of sedimentary rocks	Level 3	6
Elective	262277	Identify geographical and geological features from aerial photographs	Level 3	5
Elective	261801	Manually construct an outcrop plan of a geologically simple area from given data	Level 3	3

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	261758	Manually construct an underground geological plan of a geologically simple area from given data	Level 3	3
Elective	262306	Measure and record basic geological information for grade control purposes	Level 3	5
Elective	262239	Measure and record water levels in boreholes	Level 3	2
Elective	11112	Produce a survey note	Level 3	4
Elective	11043	Sample a mining face with a scanning device for mineral evaluation purposes	Level 3	5
Elective	11637	Set up a survey instrument to take observations	Level 3	4
Elective	114978	Use a word processing package to produce business documents	Level 3	3
Elective	9533	Use communication skills to handle and resolve conflict in the workplace	Level 3	3
Elective	262257	Electronic data capturing for geological interpretation and modelling purposes	Level 4	6
Elective	261757	Identify structural and stratigraphic features on a surface geological map	Level 4	4
Elective	261286	Identify structural and stratigraphic features on an underground geological plan	Level 4	4
Elective	9754	Mark off and map face sampling sections for mineral evaluation purposes	Level 4	11
Elective	14271	Perform distance measurements using a tape and Electronic Distance Measurement (EDM) equipment	Level 4	2
Elective	11713	Reduce basic distance measurements (Tape or EDM) for use in surveying	Level 4	2
Elective	261800	Supervise the rehabilitation of a geological site	Level 4	7

LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION
None

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Identify structural and stratigraphic features on an underground geological plan

SAQA US ID	*UNIT STANDARD TITLE*		
261286	Identify structural and stratigraphic features on an underground geological plan		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
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 the knowledge required on an underground geological plan to identify structural and stratigraphic features.

SPECIFIC OUTCOME 2
Plan and prepare to identify structural and stratigraphic features on an underground geological plan.

SPECIFIC OUTCOME 3
Identify structural and stratigraphic features on an underground geological plan.

SPECIFIC OUTCOME 4
Compile and submit reports.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Identify structural and stratigraphic features on a surface geological map

SAQA US ID	*UNIT STANDARD TITLE*		
261757	Identify structural and stratigraphic features on a surface geological map		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
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 the knowledge required to identify on a surface geological map, structural and stratigraphic features.

SPECIFIC OUTCOME 2
Plan and prepare to identify structural and stratigraphic features on a surface geological map.

SPECIFIC OUTCOME 3
Identify structural and stratigraphic features on a surface geological map.

SPECIFIC OUTCOME 4
Compile and submit reports.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Manually construct an underground geological plan of a geologically simple area from given data

SAQA US ID	*UNIT STANDARD TITLE*		
261758	Manually construct an underground geological plan of a geologically simple area from given data		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	3

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

SPECIFIC OUTCOME 1
Demonstrate the knowledge and understanding required to manually construct an underground geological plan of a geologically simple area (minor deformation) from supplied data.

SPECIFIC OUTCOME 2
Prepare to construct an underground geological plan of a geologically simple area.

SPECIFIC OUTCOME 3
Construct an underground geological plan of a geologically simple area.

SPECIFIC OUTCOME 4
Present an underground geological plan.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Operate a geophysical measuring instrument to record data for a geophysical survey

SAQA US ID	*UNIT STANDARD TITLE*		
261777	Operate a geophysical measuring instrument to record data for a geophysical survey		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	4

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

SPECIFIC OUTCOME 1
Demonstrate the knowledge required to operate a geophysical measuring instrument.

SPECIFIC OUTCOME 2
Prepare to operate a geophysical measuring instrument.

SPECIFIC OUTCOME 3
Operate the geophysical measuring instrument.

SPECIFIC OUTCOME 4
Conduct post survey activities and compile and present reports.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate a basic understanding of global tectonic systems

SAQA US ID	*UNIT STANDARD TITLE*		
261778	Demonstrate a basic understanding of global tectonic systems		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	3

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

SPECIFIC OUTCOME 1
Demonstrate basic knowledge and understanding of the structure of the crust and upper mantle, their composition and operative heat transfer processes.

SPECIFIC OUTCOME 2
Demonstrate basic knowledge and understanding of earthquakes and volcanism.

SPECIFIC OUTCOME 3
Demonstrate basic knowledge and understanding of plate tectonics.

SPECIFIC OUTCOME 4
Demonstrate basic knowledge and understanding of the relationship between plate tectonics and mineralisation.

SPECIFIC OUTCOME 5
Demonstrate basic knowledge and understanding of plate tectonic activity during the geological evolution of South Africa.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of igneous rocks

SAQA US ID	*UNIT STANDARD TITLE*		
261797	Demonstrate an understanding of igneous rocks		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
115705	Demonstrate an understanding of igneous rocks	Level 4	6	Will occur as soon as 261797 is registered

SPECIFIC OUTCOME 1
Demonstrate understanding of the processes that result in the derivation of igneous rocks, their classification and distribution.

SPECIFIC OUTCOME 2
Demonstrate understanding of the principal characteristics of fine grained and glassy igneous rocks.

SPECIFIC OUTCOME 3
Demonstrate understanding of the principal characteristics of medium grained igneous rocks.

SPECIFIC OUTCOME 4
Demonstrate understanding of the principal characteristics of coarse grained igneous rocks.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Supervise the rehabilitation of a geological site

SAQA US ID	*UNIT STANDARD TITLE*		
261800	Supervise the rehabilitation of a geological site		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 4	7

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
11687	Supervise the rehabilitation of a geological exploration site	Level 4	14	Will occur as soon as 261800 is registered

SPECIFIC OUTCOME 1
Demonstrate the knowledge required to rehabilitate a geological exploration site.

SPECIFIC OUTCOME 2
Plan and prepare to supervise the rehabilitation of a geological exploration site.

SPECIFIC OUTCOME 3
Supervise the rehabilitation activity.

SPECIFIC OUTCOME 4
Conduct post-rehabilitation activities and compile and present reports.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Manually construct an outcrop plan of a geologically simple area from given data

SAQA US ID	*UNIT STANDARD TITLE*		
261801	Manually construct an outcrop plan of a geologically simple area from given data		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	3

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
115691	Manually construct an outcrop plan of a geologically simple area from given data	Level 3	3	Will occur as soon as 261801 is registered

SPECIFIC OUTCOME 1
Demonstrate the knowledge and understanding required to manually construct an outcrop plan of a geologically simple area from supplied data.

SPECIFIC OUTCOME 2
Plan and construct an outcrop plan of a geologically simple area.

SPECIFIC OUTCOME 3
Present a geological outcrop plan.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Locate an underground geographical position by employing plan reading techniques

SAQA US ID	*UNIT STANDARD TITLE*		
261817	Locate an underground geographical position by employing plan reading techniques		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	3

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

SPECIFIC OUTCOME 1
Demonstrate the knowledge required for locating an underground position.

SPECIFIC OUTCOME 2
Plan and prepare to locate the underground position.

SPECIFIC OUTCOME 3
Locate the underground position.

SPECIFIC OUTCOME 4
Clean up and compile a report.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate a basic understanding of mineral resource types, utilisation and exploitation

SAQA US ID	*UNIT STANDARD TITLE*		
261818	Demonstrate a basic understanding of mineral resource types, utilisation and exploitation		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 4	5

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

SPECIFIC OUTCOME 1
Demonstrate a basic understanding of mineral resource types.

SPECIFIC OUTCOME 2
Demonstrate a basic understanding of mineral utilisation.

SPECIFIC OUTCOME 3
Demonstrate a basic understanding of mineral exploitation and economic importance of South African mineral deposits to the South African economy.

SPECIFIC OUTCOME 4
Demonstrate basic understanding of the economic importance of South African mineral deposits to the world economy.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of sedimentary rocks

SAQA US ID	*UNIT STANDARD TITLE*		
262160	Demonstrate an understanding of sedimentary rocks		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
115701	Demonstrate an understanding of sedimentary rocks	Level 4	6	Will occur as soon as 262160 is registered

SPECIFIC OUTCOME 1
Demonstrate understanding of the processes that result in the derivation of sedimentary rocks.

SPECIFIC OUTCOME 2
Demonstrate understanding of the principal characteristics of clastic sedimentary rocks.

SPECIFIC OUTCOME 3
Demonstrate understanding of the principal characteristics of chemical sedimentary rocks.

SPECIFIC OUTCOME 4
Demonstrate understanding of the principal characteristics of biological sedimentary rocks.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of metamorphic rocks

SAQA US ID	*UNIT STANDARD TITLE*		
262179	Demonstrate an understanding of metamorphic rocks		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
115708	Demonstrate an understanding of metamorphic rocks	Level 4	6	Will occur as soon as 262179 is registered

SPECIFIC OUTCOME 1
Demonstrate understanding of the processes that result in the derivation of metamorphic rocks, their classification and distribution.

SPECIFIC OUTCOME 2
Demonstrate understanding of the principle characteristics of low grade metamorphic rocks.

SPECIFIC OUTCOME 3
Demonstrate understanding of the principle characteristics of medium grade metamorphic rocks.

SPECIFIC OUTCOME 4
Demonstrate understanding of the principle characteristics of high grade metamorphic rocks.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Construct a geological cross-section of an un-deformed area

SAQA US ID	*UNIT STANDARD TITLE*		
262181	Construct a geological cross-section of an un-deformed area		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	3

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
115677	Construct a geological cross-section of an undeformed area	Level 3	3	Will occur as soon as 262181 is registered

SPECIFIC OUTCOME 1
Demonstrate the knowledge and understanding required to construct a geological cross-section.

SPECIFIC OUTCOME 2
Plan and construct a geological cross section.

SPECIFIC OUTCOME 3
Present a geological cross-section.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Compile a grade distribution plan

SAQA US ID	*UNIT STANDARD TITLE*		
262184	Compile a grade distribution plan		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	3

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

SPECIFIC OUTCOME 1
Demonstrate the knowledge required to compile a grade distribution plan.

SPECIFIC OUTCOME 2
Prepare to construct a grade distribution plan.

SPECIFIC OUTCOME 3
Compile a grade distribution plan.

SPECIFIC OUTCOME 4
Present a grade distribution plan.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of mineralization processes

SAQA US ID	*UNIT STANDARD TITLE*		
262198	Demonstrate an understanding of mineralization processes		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	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 typical mineral deposits.

SPECIFIC OUTCOME 2
Demonstrate an understanding of the mineralization processes within sedimentary rocks.

SPECIFIC OUTCOME 3
Demonstrate an understanding of the mineralization processes within igneous rocks.

SPECIFIC OUTCOME 4
Demonstrate an understanding of the mineralization processes within metamorphic rocks.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Identify, record and report on geological features that could result in potentially hazardous conditions in the workplace

SAQA US ID	*UNIT STANDARD TITLE*		
262217	Identify, record and report on geological features that could result in potentially hazardous conditions in the workplace		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	5

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

SPECIFIC OUTCOME 1
Demonstrate the knowledge required to identify, measure and record geological features in underground and surface mining environments.

SPECIFIC OUTCOME 2
Demonstrate the knowledge required to identify the potential hazards associated with geological features.

SPECIFIC OUTCOME 3
Plan and prepare to measure and record the geological features.

SPECIFIC OUTCOME 4
Measure and record the geological features.

SPECIFIC OUTCOME 5
Compile and submit reports.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Collate data for grade control and geological interpretation purposes

SAQA US ID	*UNIT STANDARD TITLE*		
262237	Collate data for grade control and geological interpretation purposes		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	5

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

SPECIFIC OUTCOME 1
Demonstrate the knowledge required to collate geologically related data for grade control and geological modelling purposes.

SPECIFIC OUTCOME 2
Source and collate raw data.

SPECIFIC OUTCOME 3
Validate raw data.

SPECIFIC OUTCOME 4
Archive the collated data and compile completion reports.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Measure and record water levels in boreholes

SAQA US ID	*UNIT STANDARD TITLE*		
262239	Measure and record water levels in boreholes		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	2

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

SPECIFIC OUTCOME 1
Demonstrate the knowledge required for measuring and recording the level of water in boreholes.

SPECIFIC OUTCOME 2
Prepare to measure water levels in boreholes.

SPECIFIC OUTCOME 3
Measure water levels in boreholes.

SPECIFIC OUTCOME 4
Clean up and compile and submit reports.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Electronic data capturing for geological interpretation and modelling purposes

SAQA US ID	*UNIT STANDARD TITLE*		
262257	Electronic data capturing for geological interpretation and modelling purposes		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 4	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
12187	Electronic data capturing for geological interpretation and modelling purposes	Level 4	6	Will occur as soon as 262257 is registered

SPECIFIC OUTCOME 1
Demonstrate the knowledge required for capturing geological related data for geological interpretation and modelling purposes using Electronic means.

SPECIFIC OUTCOME 2
Prepare raw data for electronic capture.

SPECIFIC OUTCOME 3
Enter and validate collated data.

SPECIFIC OUTCOME 4
Archive the original raw data and compile completion reports.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate a basic understanding of the stratigraphy of the relevant economic deposit

SAQA US ID	*UNIT STANDARD TITLE*		
262259	Demonstrate a basic understanding of the stratigraphy of the relevant economic deposit		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 4	3

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

SPECIFIC OUTCOME 1
Demonstrate basic understanding of the geological characteristics of the relevant economic deposit.

SPECIFIC OUTCOME 2
Demonstrate basic understanding of the stratigraphy of the relevant economic deposit.

SPECIFIC OUTCOME 3
Demonstrate basic understanding of the regional distribution of the principle economic horizons within the relevant economic deposit.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Locate a surface geographical position by employing map-reading techniques

SAQA US ID	*UNIT STANDARD TITLE*		
262264	Locate a surface geographical position by employing map-reading techniques		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	3

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

SPECIFIC OUTCOME 1
Demonstrate the knowledge required for locating a surface geographical position.

SPECIFIC OUTCOME 2
Plan and prepare to locate the surface geographical position.

SPECIFIC OUTCOME 3
Locate the surface geographical position.

SPECIFIC OUTCOME 4
Clean up and compile a report.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Identify geographical and geological features from aerial photographs

SAQA US ID	*UNIT STANDARD TITLE*		
262277	Identify geographical and geological features from aerial photographs		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	5

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

SPECIFIC OUTCOME 1
Demonstrate the knowledge required to examine aerial photographs so as to identify surface geographical and geological features.

SPECIFIC OUTCOME 2
Plan and prepare to identify surface geographical and geological features on an aerial photograph.

SPECIFIC OUTCOME 3
Identify surface geographical and geological features on an aerial photograph.

SPECIFIC OUTCOME 4
Compile and present reports.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate a basic understanding of South African stratigraphy and associated major economic deposits

SAQA US ID	*UNIT STANDARD TITLE*		
262303	Demonstrate a basic understanding of South African stratigraphy and associated major economic deposits		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	6

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

SPECIFIC OUTCOME 1
Demonstrate a basic understanding of the fundamental principles of stratigraphy.

SPECIFIC OUTCOME 2
Demonstrate a basic understanding of the fundamental crustal components of South Africa.

SPECIFIC OUTCOME 3
Demonstrate a basic understanding of the principle lithostratigraphic series within South Africa.

SPECIFIC OUTCOME 4
Demonstrate a basic understanding of the major economic deposits associated with the principle lithostratigraphic series within South Africa.

SPECIFIC OUTCOME 5
Demonstrate a basic understanding of the relationship between global geological evolution, South Africa and surrounding African countries.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Measure and record basic geological information for grade control purposes

SAQA US ID	*UNIT STANDARD TITLE*		
262306	Measure and record basic geological information for grade control purposes		
ORIGINATOR		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 3	5

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

SPECIFIC OUTCOME 1
Demonstrate the knowledge required to acquire basic geological data for grade control purposes.

SPECIFIC OUTCOME 2
Plan and prepare to measure and record basic geological data for grade control purposes.

SPECIFIC OUTCOME 3
Measure and record basic geological data for grade control purposes.

SPECIFIC OUTCOME 4
Compile and present reports.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	65549	National Certificate: Mining Technical Support	Level 3