Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

MINERAL EXPLORATION

NTQF Level II and III

Ministry of Education
January 2014

Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopian Occupational Standards (EOS) are - a core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF).They are national Ethiopian standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopian Occupational Standard comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title, NTQF level
- Unit code
- Unit title
- Unit descriptor
- Elements and Performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the respective occupation with all the key components of a Unit of Competence:

- the chart with an overview of all Units of Competence for the respective occupation (Unit of Competence Chart) including the Unit Codes and the Unit of Competence titles
- the contents of each Unit of Competence – this includes further directions on the contents and format of the unit of competence
- occupational map providing the Technical and Vocational Education and Training (TVET) providers with information and important requirements to consider when designing training programs for this standards, and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Mineral Exploration

Occupational Code: MIN MEO

NTQF Level II

MIN MEO2 01 0114 Work Safely and Follow OHS Policies and Procedures	**MIN MEO2 02 0114** Operate in Isolated and Remote Situations	**MIN MEO2 03 0114** Conduct Field Work
MIN MEO2 04 0114 Conduct Local Risk Control	**MIN MEO2 05 0114** Collect Routine Site Samples	**MIN MEO2 06 0114** Operate and Maintain a Four Wheel Drive Vehicle
MIN MEO2 07 0114 Carryout Operational Maintenance	**MIN MEO2 08 0114** Participate in Environmentally Sustainable Work Practices	**MIN MEO2 09 0114** Provide Field Support Services
MIN MEO2 10 0114 Participate in Workplace Communication	**MIN MEO2 11 0114** Work in Team Environment	**MIN MEO2 12 0114** Develop Business Practice
MIN MEO2 13 0114 Standardize and Sustain 3S		

NTQF Level III

MIN MEO3 01 0114 Identify and Assess Environmental and Heritage Concerns	**MIN MEO3 02 0114** Apply First Aid	**MIN MEO3 03 0114** Plan and Undertake Field Trip
MIN MEO3 04 0114 Rehabilitate Exploration Site	**MIN MEO3 05 0114** Operate and Maintain Instruments and Field Equipment	**MIN MEO3 06 0114** Prepare Drill Site
MIN MEO3 07 0114 Provide Geological Field Assistance	**MIN MEO3 08 0114** Process Data and Maintain Accurate Records	**MIN MEO3 09 0114** Mobilise Equipment and Materials
MIN MEO3 10 0114 Implement and Monitor Environmentally Sustainable Work Practices	**MIN MEO3 11 0114** Monitor Implementation of Work Plan/Activities	**MIN MEO3 12 0114** Apply Quality Control
MIN MEO3 13 0114 Lead Workplace Communication	**MIN MEO3 14 0114** Lead Small Teams	**MIN MEO3 15 0114** Improve Business Practice
MIN MEO3 16 0114 Prevent and Eliminate MUDA		

Occupational Standard: Mineral Exploration Level II	
Unit Title	**Work Safely and Follow OHS Policies and Procedures**
Unit Code	**MIN MEO2 01 0114**
Unit Descriptor	This unit covers working safely and follow OHS policies and procedures in mining industries. It includes accessing and apply site safety procedures; applying personal safety measures and operational safety measures; maintaining personal wellbeing for job; and identifying and reporting incidents

Elements	Performance Criteria
1. Access and apply site safety procedures	1.1. ***Compliance documentation*** relevant to working safely and follow OHS policies and procedures is accessed, interpreted and applied. 1.2. Isolation of energy sources and immobilization of potential energy sources, including tagging are carried out according to required procedures. 1.3. Destinations are located within the site by interpreting and applying maps, site plans, transport rules and signage. 1.4. Breaches in site safety are identified and acted on or reported in accordance with required procedures.
2. Apply personal safety measures	2.1. ***Personal protective equipment*** is used in accordance with required procedures. 2.2. A clean and tidy safe working area is established and maintained in accordance with required procedures. 2.3. ***Permits and clearances*** are obtained in accordance with required procedures, before specialized work is carried out. 2.4. Safe ***manual handling*** procedures are applied in accordance with guidance and/or procedures. 2.5. Site procedures are identified and applied for conducting high-risk activities.
3. Apply operational safety measures	3.1. Alarms are recognized and given response in accordance with required procedures. 3.2. Own responsibility is identified and clarified in regard to emergency situation procedures and ***emergency situations*** are responded and reported in accordance required procedures. 3.3. Basic fire fighting techniques are applied in accordance with requirements. 3.4. ***Emergency escape route***(***s***) and procedures are identified in accordance with requirements.
4. Maintain personal	4.1. ***Risks to personal wellbeing*** is identified and preventative strategies are recognized to minimize impact on site.

wellbeing for job	4.2. Situations which may endanger the individual or others are identified, acted on and reported. 4.3. Site requirements are accessed and explained for ***fitness for duty***. 4.4. Site policies are adhered to in relation to smoking, alcohol and drug use.
5. Identify and report incidents	5.1. Site incident and injury statistics are understood in accordance with required procedures. 5.2. Incidents and injuries are reported and recorded in accordance with required procedures. 5.3. Incident investigations are made contributory and participatory in accordance with the responsibilities and protection under the relevant legislation.

Variable	Range
Relevant compliance documentation	May include but not limited to: • legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • industry standards • code of practice • management plans • safe working procedures (or equivalent) • tagging and lockout procedures • toxic substances procedures • gas monitoring procedures • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Personal protective equipment	May include but not limited to: • hard hats • first aid kit • survival kit • hearing protection • eye protection • safety boots • respiratory masks • other prescribed clothing and equipment related to tasks • self rescuers which may include filter or self contained types
Permits and clearances	May include but not limited to: • access to areas • welding and cutting • power line clearances • start-up procedures • blasting/shot firing • working at height • confined spaces

	• vertical openings • digs, tunnels and penetrations
Manual handling	May include but not limited to: • the use of mechanical handling aids which are present at the workplace place and included in the relevant standards and code of practice • team lifting
Emergency situations	May include but not limited to: • emergency evacuation • fire • incident or injury • electrical shock • falls • dehydration • entrapment • inrush/flooding • fumes • explosions • storm • other extreme weather condition • working in remote locations
Emergency escape route(s)	May include but not limited to: • those identified at the workplace and may include the primary and secondary escape route(s)
Risks to personal wellbeing	May include but not limited to: • non adherence to safety procedures and policies • stress • communicable diseases • adverse personal hygiene • horseplay
Fitness for duty	May include but not limited to: • smoking restrictions • alcohol impairment • improper use of drugs • fatigue management • physiological and psychological stress • medication • illness

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills of: • the requirements, procedures and instructions for working safely and follow OHS policies and procedures • implementation of requirements, procedures and techniques for working safely and follow OHS policies and procedures • working with others to work safely and follow OHS policies and procedures • consistent timely completion of work that is safe and follows

	OHS policies and procedures
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • equipment safety requirements • personal protective equipment • hazardous substances procedures and handling techniques • Material Safety Data Sheets (MSDS) information and its application • isolation procedures • lifting techniques, including for both manual and automated lifting • OHS procedures • primary and secondary ventilation • site safety requirements and procedures • participative procedures for workplace management of others (e.g. consultation, safety representatives, committees, dispute resolution) • potential biological effects (e.g. circadian rhythms, sleep, alertness, fatigue, stress, effects of heat stress and hypothermia) • drug and alcohol policy • use of emergency equipment • basic fire fighting techniques
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures for working safely • source, interpret and apply safety information • use and care of personal protective equipment • apply safe lifting and handling techniques • implement workplace reporting procedures • communicate clearly and directly, listening carefully to instructions and information, responding to and clarifying directions • apply teamwork to a range of situations, particularly in a safety context • solve problems, particularly in teams and in dealing practically with safety issues such as recognising and responding to alarms • show initiative in adapting to changing work conditions or contexts particularly when working across a variety of work areas and in choosing appropriate personal protective equipment for each context • manage time, particularly in organising priorities and planning work • take responsibility for self organisation of work priorities to follow site safe work procedures • apply a range of mediums to learn • apply and use appropriate technology in a safety context
Resources	Access is required to real or appropriately simulated situations,

Implication	including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level II	
Unit Title	**Operate in Isolated and Remote Situations**
Unit Code	**MIN MEO2 02 0114**
Unit Descriptor	This unit covers operation in isolated and remote situations in the exploration/mining industry. It includes planning and preparing for operating in remote environments, preparing for emergency situations, and operating in remote environments.

Elements	Performance Criteria
1. Plan for operating in remote environments	1.1. ***Compliance documentation*** relevant to the work activity is accessed, interpreted and applied. 1.2. Information relating to operating in the ***remote environment*** is collated and recorded. 1.3. Detailed operating and travel plans, including a disaster plan and fallback position, are established in consultation with supervising staff. 1.4. ***Appropriate authorities*** of the action plans and time schedules are notified according to enterprise policy. 1.5. Relevant maps are identified and sourced.
2. Prepare for operating in remote environments	2.1. ***Personal needs*** are prepared for activities or travel in remote areas. 2.2. Transportation and equipment are prepared for use in prescribed work location or along prescribed routes. 2.3. Relevant maps are obtained and studied prior to departure. 2.4. Planned activities and itinerary are reported and recorded accurately prior to departure.
3. Prepare for emergency situations	3.1. Provisioning meets are checked expected operational and possible ***emergency needs***. 3.2. Initial ***planning*** and regular monitoring are checked to ensure ***structured use of available provisions*** and resources. 3.3. Operating plan is structured to include ***training in remote area survival techniques*** prior to operating in remote situations. 3.4. Emergency management procedures are included as an integral part of operating plans and enterprise policy.
4. Operate in remote environments	4.1. Activities are completed according to instructions and established time schedules. 4.2. All activities are carried out in remote situations in accordance with prescribed procedures. 4.3. ***Emergency situations*** are handled in accordance with prescribed procedures and enterprise policy.

	4.4. Established reporting procedures are followed on completion of planned activities and on return to base.

Variable	Range
Relevant compliance documentation	May include but not limited to: • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Industry standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation • guidelines and reporting procedures for personnel operating in remote environments • personal diary records as well as property records
Remote environment	May include but not limited to: • any workplace where the ability to get help because of distance is such that personal safety may be at risk
Appropriate authorities	May include but not limited to: • the property manager, other staff or recognised regulatory authorities (e.g., Police, Local Administration, State Emergency Service, and Civil Aviation Authority)
Personal needs	May include but not limited to: • water generating and shade generating gear • non-perishable survival rations • mosquito net and repellent • clothing to provide for the worst case scenario
Emergency needs	May include but not limited to: • First Aid supplies • spare parts • telephones • two way radios • repair tools for the selected form of transportation • retrieval, communications, prescribed emergency equipment for water travel • emergency beacons and other position location devices • emergency planning including establishment of contingency plans ("fallback position")
Planning	May include but not limited to: • establishment of time schedules and intended outcomes in consultation with managers and supervising staff • provisioning for extreme circumstances, including worst case scenario • identification of alternative routes, available water supplies and travel conditions such as checks of actual and forecast weather conditions • consideration of any unplanned deviation from the planned route, itinerary or timing including the work processes involved establishment of rescue plans and the consideration of what

	circumstances might require such an operation to be mounted
Structured usage of provisions	May include but not limited to: • available provisions and resources used at a rate that sustains the individual or party and will last if possible until the end of any possible delays or emergency situations
Training in remote area survival techniques	May include but not limited to: • managing emergencies • location and/or distilling of water • provision and erection of shelter • conservation of energy • the identification and use of wild food (bush tucker) • GPS position locating • setting out beacons and distress signalling • staying put or remaining with transport • communicating with rescue teams
Emergency situations	May include but not limited to: • vehicle or equipment breakdown • lack of food, water or protective clothing • flood, fire or storm
Types of working situations	• working alone or in teams
Operational strategies	• Operational strategies
Personnel briefings	• provision of advice on intended routes, work locations, maps and direction finding equipment
Communication	• 2-way radio, satellite radio/phone, marine radio or mobile telephone
Distress signalling	• EPIRBs(Emergency position-indicating radio beacons), signaling mirrors, fire or signals scratched on the ground
Licensing	• operating vehicles on roads, heritage reserves or public reserves, radio communications equipment

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • the requirements, procedures and instructions for operation in isolated and remote situations • implementation of requirements, procedures and techniques for the safe, effective and efficient operation in isolated and remote situations • working with others to operate in isolated and remote situations that meets all of the required outcomes • consistent timely completion of operation in isolated and remote situations that safely, effectively and efficiently meets the required outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • map reading and navigation skills including direction finding (e.g., GPS, use of compass, stars or watch) • local topography, nearby inhabitants and locations within that

	area • survival techniques and human needs relating to survival situations • clothing requirements for sun or heat protection, rain, etc. • personal protective equipment (eye glass, appropriate footwear and clothing, glove, helmet, etc.) • basic First Aid • bush craft including making a fire, cooking and wild food gathering • water supplies, sources and generation methods • emergency vehicle and mechanical equipment repair • the operation of communication equipment (e.g., field communications by two-way, satellite telephony and HF radio), and distress signalling including use of signalling mirrors • weather and weather indicators • basic rope skills including useful knots (reef, clove hitch, truckie's hitch, bowline); simple lashings and tying down loads
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures for operation in isolated and remote situations • plan for operating in remote environments • prepare for operating in remote environments • prepare for emergency situations • operate in remote environments
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level II	
Unit Title	**Conduct Field Work**
Unit Code	**MIN MEO2 03 0114**
Unit Descriptor	This unit covers conducting field work in the exploration/mining industry. It includes carrying out survey and plot results; designing, plotting and laying out grids; reading and using maps; and locating tenement marks. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states and industry sectors. Relevant information must be sourced prior to application of the unit

Elements	Performance Criteria
1. Carry out survey and plot results	1.1. ***Compliance documentation*** relevant to the work activity is accessed, interpreted and applied. 1.2. Surveys are carried out using relevant ***survey equipment***. 1.3. ***Reconnaissance*** survey of the field is conducted. 1.4. Reference pegs are located where available.
2. Design, plot and lay out a grid	2.1. A ***grid*** is designed from ***supplied information***. 2.2. Grid is plotted to scale. 2.3. Baseline and grid datum are marked-up pegs mark with easting's and northings. 2.4. Grid is laid out using ***plotting*** techniques.
3. Read and use maps	3.1. The sources of ***maps*** are identified. 3.2. The types and features of maps used for mineral exploration fieldwork are identified. 3.3. Map storage system is maintained. 3.4. Scales and distances between points are calculated. 3.5. Bearings relative to true, magnetic, grid and local north are calculated.
4. Locate mining tenement marks	4.1. State and federal agencies are referred for information relevant to mining tenements to determine the types of mining tenements and their purpose. 4.2. Scale maps of mining tenement are drawn to statutory regulations. 4.3. Forms required to obtain mining tenements are obtained and completed to statutory requirements for lodging, and lodge with relevant agencies/authorities. 4.4. Mining tenement marks are marked out, or located and maintained to statutory requirements, using ***Global Positioning System (GPS)***.

Variable	Range
Relevant compliance documentation	May include but not limited to: • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Industry standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Surveying equipment	May include but not limited to: • tape • compass • optical square • staff and bubbles • Theodolite/Total Station • GPS
Reconnaissance	May include but not limited to: • checking access • collecting soil and rock samples • grid-layout • magnetic bearings • geophysical surveys • Global Positioning System (GPS) • travel times • type of terrain • vegetation types
Field information	May include but not limited to: • air photos • topographical maps • satellite imagery
Field site grid	May include but not limited to: • rock outcrops • streams and rivers • road cuttings • potential ore deposits
Supplied information	May include but not limited to: • strike of rocks • line spacing • sample spacing • environmental issues • budget constraints
Plotting	May include but not limited to: • plotting to scale drawn to local grid North • calculating and drawing true North • calculating and drawing magnetic North • calculating and drawing grid North • assigning easting and northing
Maps	May include but not limited to:

	• topographical • aerial photographs • geological (geo-hazard, hydrogeology, etc) • cadastral • mining tenement • geomagnetic maps • mineral field and district boundary maps
Global Positioning System (GPS)	May include but not limited to: • 'a system which is able to show a person's exact position on Earth at anytime, anywhere, and in any weather. It is operated by GPS satellites orbiting the Earth; being monitored continuously at ground stations located around the world. The satellites transmit signals that can be detected by anyone with a GPS receiver'

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • knowledge of the requirements, procedures and instructions for the conduct of field work • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the conduct of field work • working with others to undertake and complete the conduct of field work that meets all of the required outcomes • consistent timely completion of the conduct of field work that safely, effectively and efficiently meets the required outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • field surveying methods • types and features of maps • use and reading of maps • calculation of scales, distances and bearings • laying out of grids • plotting techniques • mining tenement legislation and requirements • marking out of mining tenements • Global Positioning Systems (GPS) • types of GPS and DGPS/operation of GPS and functions • satellite coverage • waypoint generation • datum conversion • UTM and latitude/longitude • track logging
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures • draft and sketch/use surveying instruments • solve problems • use PC software for data collection and analysis

	• use field testing and measurement instruments/equipment
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level II	
Unit Title	**Conduct Local Risk Control**
Unit Code	**MIN MEO2 04 0114**
Unit Descriptor	This unit covers conducting local risk control in exploration/mining industries. It includes identifying hazards; assessing risk and identifying unacceptable risk; identifying, assessing and implementing risk treatments; and completing records and reports.

Elements	Performance Criteria
1. Identify hazards	1.1. ***Compliance documentation*** relevant to conducting local ***risk*** control is accessed, interpreted and applied. 1.2. Work area conditions are inspected to identify potential ***hazards*** in the workplace. 1.3. Existing procedures are applied to deal with recognized hazards. 1.4. The type and scope of unresolved hazards and their likely impact are recognized.
2. Assess risk and identify unacceptable risk	2.1. ***Consequence*** is assessed and determined if the event should occur. 2.2. ***Likelihood*** of the event is considered and determined. 2.3. Criteria are identified for the acceptability/unacceptability of the risk or source from the appropriate party. 2.4. Risk is assessed against criteria to identify if it warrants '***unacceptable risk'*** status and either action or referred to the appropriate party.
3. Identify, assess and implement risk treatments	3.1. All possible ***risk treatment options*** are identified and considered. 3.2. Options are identified by preliminary analysis and consideration of possible options. 3.3. Options, including the identification of resource requirements are analyzed. 3.4. Most appropriate action is selected for dealing with the situation. 3.5. The course of action is planed and prepared in detail and required resources are acquired/obtained. 3.6. The risk treatment is implemented. 3.7. Risk management processes are reviewed.
4. Complete records and reports	4.1. Information on the course of action and implementation is communicated. 4.2. ***Records and reports*** for hazards and actions from personal risk assessment are completed as specified by legislation and site requirements.

Variable	Range
Relevant compliance documentation	May include but not limited to: • legislative, organisation and site requirements and procedures • Industry standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Risk	May include but not limited to: • The chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood
Risk treatment	May include but not limited to: • selection and implementation of appropriate options for dealing with risk
Hazard	May include but not limited to: • equipment • stored energy • methods • plans • people • the work environment
Consequence	May include but not limited to: • the outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain
Likelihood	May include but not limited to: • a qualitative description of probability and frequency
Criteria for the acceptability/ unacceptability of the risk	May include but not limited to: • the organization's internal policy, goals and/ or objectives in reference to relevant legislation
Risk treatment options	May include but not limited to: • eliminating the hazard • substitution • engineering controls • administrative controls (procedures, etc) • personal protective equipment
Records and reports	• hazard reporting forms • supervisor/deputy/OCE reports • incident reports • near miss reports • shift reports • JSAs • Take 5S • Step Back
Frequency	May include but not limited to: • a measure of likelihood expressed as the number of occurrences of an event in a given time

Probability	May include but not limited to: • the measure of the chance of occurrence expressed as a number between 0 and 1

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • the requirements, procedures and instructions to conduct local risk control • implementation of requirements, procedures and techniques for the safe, effective and efficient conduct of local risk control • working with others to undertake and conduct of local risk control that meets all of the required outcomes • consistent timely completion of conducting local risk control that safely, effectively and efficiently meets the required outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • risk management processes and methods, including: identifying hazards, assessing risks, determining acceptability of risks, identifying controls • specific worksite risk management procedures • specific worksite safety systems information • specific worksite communication, reporting and recording procedures
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures • speak clearly and directly, listen carefully to instructions and information, respond to and clarify directions • collect, analyse and organise information • access, interpret and apply site information • work with other team members • apply teamwork to a range of situations • apply problems solving skills • apply decision making skills • show initiative in adapting to changing work conditions or contexts • apply time management • take responsibility for self organisation of work priorities • apply mathematical skills to perform a basic risk ranking of hazards • interpret and apply Material Safety Data Sheets (MSDS)
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level II	
Unit Title	**Collect Routine Site Samples**
Unit Code	**MIN MEO2 05 0114**
Unit Descriptor	This unit covers the collection of routine site samples in exploration/ mining industries. It includes the requirements for the preparation for sampling, conducting sample collection; preparing samples, dispatching samples and maintaining the sampling environment.

Elements	Performance Criteria
1. Prepare for sampling	1.1. ***Compliance documentation*** relevant to the collection of routine site samples is accessed, interpreted and applied. 1.2. The purpose, priority and scope of the ***sample*** request or plan are confirmed. 1.3. Liaise is done with relevant personnel to arrange site access and all necessary clearances/permits. 1.4. ***Site hazards*** are identified and enterprise ***safety procedures*** reviewed. 1.5. Procedures are used and documented to ensure ***representative sampling***. 1.6. Quantity, location (including sampling depth), sample fraction, and time of sampling and types ***of samples*** to be collected are confirmed. 1.7. Required ***sampling tools and equipment*** are assembled.
2. Conduct sample collection	2.1. Samples are collected as specified in sample request or plan 2.2. Sample integrity is preserved throughout collection. 2.3. Samples are placed in suitable containers and labeled accurately. 2.4. Samples are stored and transported. 2.5. Characteristics of sampling environment, in particular any non-standard aspects are identified and recorded. 2.6. Sampling equipment is maintained in a clean and safe working condition.
3. Prepare samples	3.1. Sample is verified, documentation and required equipment are checked for preparation. 3.2. ***Sample preparation*** is performed according to plan using recommended procedures. 3.3. Loss of material is contained and sample protected against contamination. 3.4. Samples are recovered and cleaned using techniques and equipment specified for the particular sample.

	3.5. Residues and samples are stored or disposed of following OHS and environmental guidelines.
4. Prepare samples for dispatch	4.1. Samples are labeled, stored and transported to ***maintain integrity of sample***. 4.2. Appropriate reference materials, standards and controls are used. 4.3. Loss of material is contained and sample protected against contamination. 4.4. Any change to preparation methods is documented. 4.5. Samples are forwarded for analysis to external laboratories. 4.6. Samples are stored, tested and disposed of.
5. Maintain a safe work environment	5.1. Established work practices and personal protective equipment are used to ensure personal safety and that of others. 5.2. Environmental impacts of sampling and generation of waste are ***minimized***. 5.3. All wastes are disposed of in accordance with enterprise procedures.

Variable	**Range**
Compliance documentation	May include but not limited to: • legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Industry standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Samples	May include but not limited to: • soils • rocks • stream sediment • minerals • fossils • hydrocarbons • drill core • mine samples • gas or air samples • water, wastewater, storm water, sewage, sludge • construction raw materials • solid wastes • final products • hazardous materials and/or dangerous goods • atmospheric or airborne contaminants

Site hazards	May include but not limited to: • solar radiation, dust and noise • wildlife, such as snakes, spiders, domestic animals • biohazards, such as micro-organisms and agents associated with soil, air, water • chemicals, such as acids and hydrocarbons • sharps, broken glassware • manual/handling of heavy sample bags and containers • crushing, entanglement, cuts associated with moving machinery and hand tools • falling objects, uneven surfaces, heights, slopes, wet surfaces, trenches, confined spaces • vehicle handling in rough terrain, boat handling in rough or flowing water
Safety procedures	May include but not limited to: • use of Material Safety Data Sheets (MSDS) • use of personal protective equipment, such as hard hats, heavy protection, gloves, safety glasses, goggles, faceguards, coveralls, gown, body suits, respirators, safety boots • correct labelling of hazardous materials • handling and storing hazardous material and equipment in accordance with labels, MSDS, manufacturer's instructions, enterprise procedures and regulations • regular cleaning and/or decontamination of equipment • machinery guards • signage, barriers, service isolation tags, traffic control, flashing lights • lockout and tag out procedures
Representative sampling	May include but not limited to: • quantity • location (including sampling depth) • sample fraction • time of sampling
Types of samples	May include but not limited to: • soil • stream sediment • water • steam, gas/oil • rock or mineral hand specimen • pit/trench samples • drill core/drill chips/drill sludge • oriented sample • disturbed or undisturbed materials • quality control samples, such as controls, background, duplicate, blanks
Sampling tools and equipment	May include but not limited to: • hand tools • carrying devices

	• portable power tools • front-end loader, backhoe, excavator, drill rig • shovels, augers, bucket • sampling frames, sampling tubes, dip tubes, spears, flexible bladders, syringes • sample thief • weighted sample bottles, bottles, plastic/metal containers and disposable buckets • sterile containers, pipettes, inoculating loops, disposable spoons • pumps, stainless steel bailers • mechanical gravity separator • high specific gravity liquids • hand magnet • isodynamic magnetic separator • electrostatic separator • crusher • ultrasonic cleaner • panning and hand jigging • hydraulic rock splitter • diamond saw • sledge hammer • crushers • screens
Sample preparation	May include but not limited to: • marking up • splitting • sub-sampling • sealing • size reduction • cleaning • specific gravity • magnetic suspension • core-cutting • crushing/grinding • sample drying • sieving • riffling • blending • homogenisation • coning • quartering • preparing sub-sample including: stain/polish • petro logical and electron microscope/electron microprobes
Maintenance of integrity of samples	May include but not limited to: • appropriate containers and lids (for example, glass, plastic, amber, opaque)

	• sealing of sample containers • purging of sample lines and bores • decontamination of sampling tools between collection of consecutive samples • use of appropriate preservatives (for example, sodium azide, toluene or antibiotics) • wrapping container in foil, wet newspaper, wax, etc. • temperature control, which may involve prevention of direct contact between the sample and coolant • transfer of sterile sample into sterile container • monitoring of storage conditions • enterprise/legal traceability through appropriate sample labeling and records
Minimising environmental impacts	May include to: • replacement of soils and vegetation • driving to minimise soil erosion and damage to fauna and vegetation • disposal of surplus, spent or purged materials • recycling of non-hazardous wastes • appropriate disposal of hazardous waste • cleaning of vehicles to prevent transfer of pests and contaminants

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • knowledge of the requirements, procedures and instructions for the collection of routine site samples • implementation of requirements, procedures and techniques for the safe, effective and efficient collection of routine site samples • working with others to undertake and complete the collection of routine site samples that meets all of the required outcomes • consistent timely completion of the collection of routine site samples that safely, effectively and efficiently meets the required outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • key terminology and concepts, such as: ➢ sample, contamination, traceability, integrity, chain of custody ➢ purpose for which the samples have been collected ➢ the function of key sampling equipment/materials and principles of operation ➢ hazards, risks and enterprise safety procedures associated with routine sampling is undertaken • enterprise procedures dealing with: ➢ sampling ➢ waste management, clean up and spillage • handling, transport and storage of dangerous goods • health, safety and environment requirements

Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures • apply established work practices • wear personal protective equipment • apply plan, report, map, specification interpretation skills • apply record maintenance and operations monitoring procedures • apply worksite communication procedures
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level I	
Unit Title	**Operate and Maintain a Four Wheel Drive Vehicle**
Unit Code	**MIN MEO2 06 0114**
Unit Descriptor	This unit covers the operation and maintenance of four-wheel drive vehicles in the exploration/mining industries. It includes identifying four-wheel drive specific terms, terminology and techniques, planning for minimal environmental impact, performing pre-departure checks, using the features of a four-wheel drive vehicle to drive in a variety of terrain types, and performing maintenance and minor repairs on four-wheel drive vehicles.

Elements	Performance Criteria
1. Identify four-wheel drive specific terms, terminology and techniques	1.1. ***Compliance documentation*** relevant to the work activity is accessed, interpreted and applied. 1.2. The structural and handling differences between a conventional two wheel drive and a four-wheel drive vehicle are identified. 1.3. The purpose and use of front wheel hubs are identified and demonstrated. 1.4. Factors affecting tyre size, fitment, rating, and pressure are identified. 1.5. Recovery hooks and mounting features are correctly identified. 1.6. Hazards associated with incorrect use of vehicle features or equipment is identified.
2. Plan for minimal environmental impact	2.1. ***Types of impact*** are determined likely to occur during four-wheel driving and associated activities. 2.2. Compliance with land management principles and policies is demonstrated when planning exploration activities. 2.3. Policies and management plans relevant to the activity area are complied. 2.4. Activities are planned and conducted in a manner which minimises environmental impact. 2.5. Procedures are adopted and implemented to ensure minimisation of harm to the environment from four-wheel drive activities. 2.6. Cooperation and consideration are demonstrated towards other land users.
3. Perform pre-departure checks	3.1. Routine pre-departure checks are performed under the bonnet, under the body, and on external and internal items and accessories.

	3.2. Action is taken to correct any deficiency. 3.3. Food and water requirements are determined for journey. 3.4. Suitable navigation equipment is selected where necessary. 3.5. Weather conditions are interpreted to determine suitability for driving. 3.6. Safe vehicle loading practices are applied. 3.7. Items are secured of personal luggage safely. 3.8. Passengers are advised of any special safety precautions to be taken when traversing rough terrain.
4. Use the features of a four-wheel drive vehicle to drive in a variety of terrain types	4.1. Four-wheel drive vehicles are operated correctly and safely both on and off road, in accordance with road rules, principles of four-wheel driving and OHS regulations. 4.2. Smooth accelerator control strategies are applied over a range of terrain types. 4.3. Recommended braking techniques are demonstrated for hard top surfaces and off road conditions. 4.4. Situations are correctly identified where the engagement of four-wheel drive is required. 4.5. Front hubs or centre differential lock (constant four-wheel drive vehicles) are/is engaged correctly, where fitted. 4.6. Track is surveyed to identify hazards, risk assessed and a best route selected. 4.7. Routes are selected to minimise damage to the environment. 4.8. Appropriate range, gear, speed, driving and braking technique are used to negotiate a ***range of terrain types*** and whilst maintaining control of vehicle at all times, being aware of ***contextual issues***. 4.9. A stop stall key start recovery procedure on a moderate incline is performed. 4.10. Brakes and undercarriage are checked after negotiating varying terrain. 4.11. Repairs are performed to damage tracks if necessary. 4.12. Standardised operating procedures are used when travelling in company with other vehicles. 4.13. Appropriate hand positioning on steering wheel is maintained.
5. Use a single snatch strap to recover a vehicle	5.1. Risks associated with vehicle recovery are identified and strategies are developed and implemented to minimise risks. 5.2. Recovery hooks are identified. 5.3. Use of recommended mounting strategy on the four-wheel

	drive vehicle and use of rated recovery equipment are confirmed when practicable. 5.4. Procedures are demonstrated for preparing vehicles for recovery. 5.5. Techniques are demonstrated to minimise impact on the environment during vehicle recovery. 5.6. Techniques are demonstrated for joining two snatch straps. 5.7. Safe recovery of a four-wheel drive vehicle is coordinated using a single snatch strap. 5.8. Post recovery checks and repairs are correctly performed.
6. Perform maintenance and minor repairs on four-wheel drive vehicles	6.1. Maintenance equipment is selected/accessed correctly, including spares and fluids, prior to departure after consideration of contextual issues. 6.2. Vehicles are checked regularly prior to and during trip and correctly perform ***routine maintenance***/repair tasks. 6.3. Vehicle performance reports are made to the designated person. 6.4. Safe use of a jack is demonstrated to support a four-wheel drive vehicle on uneven ground.

Variable	**Range**
Compliance documentation	May include but not limited to: • legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Ethiopian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Types of impact	May include but not limited to: • pollution with foreign matter (human waste, rubbish, soap, detergent) • vegetation tramping and breakage • breakage and dislodgment of rock and other formations • compaction of soil and other deposits • disturbance of fauna • introduction of new flora and fauna • chemical alteration of environments • crop land • damage to, or inappropriate behaviour in, cultural sites • graffiti • reduction in decomposing timber • campfire scars • noise • intrusion into private lives and culture • development of facilities and signs

Range of terrain types	May include but not limited to: • moderate inclines (up and down) • sloping terrain • very soft ground • rocky areas • sand • axle deep water crossings • mud/black soil/snow/ice
Contextual issues	May include but not limited to: • duration of trip • type of terrain to be covered • remoteness of area to be visited
Routine maintenance	May include but not limited to: • changing wheels in uneven terrain • fluid top-up

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • knowledge of the requirements, procedures and instructions for operating and maintenance of a four-wheel drive vehicle • implementation of requirements, procedures and techniques for the safe, effective and efficient operation and maintenance of a four-wheel drive vehicle • working with others to undertake and complete the operating and maintenance of a four-wheel drive vehicle that meets all of the required outcomes • consistent timely maintenance and operation of a four-wheel drive vehicle that safely, effectively and efficiently meets the required outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • features driving techniques and handling characteristics of four-wheel drives in different terrain • terms used to describe four-wheel drive capabilities including: ➢ approach departure angles ➢ ramp over angle ➢ ground clearance ➢ suspension travel • differences between optional four-wheel drive and constant four-wheel drive vehicles and their impacts on vehicle operation and capability • tyre management principles • environmental impact of four-wheel driving • OHS legislation relevant to the use of four-wheel drive vehicles • use of single snatch straps to recover vehicles and hazards associated with vehicle recovery • techniques for travelling in convoy • minimum impact codes • legal and statutory requirements (of land management

	agencies) • specific problems of fragile environments or threatened species • area restrictions • natural processes and interrelationships occurring within natural environments and the manner in which interrelationships between natural processes can be affected • cultural protocols for making contact and communicating with indigenous people and organisations • practices which may be implemented to minimise impact (e.g. avoidance of sensitive areas, appropriate site and route selection, limited party size, keeping to marked tracks or routes, campfire management and rehabilitation) • practices and procedures used by land management authorities to reduce impact including: ➢ restricting access/limiting group size ➢ seasonal restrictions ➢ use of permits • enforcing code of ethics and conduct
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures for operating and maintaining a four-wheel drive vehicle • apply four-wheel driving techniques in different terrain • reduce environmental impact • research and evaluation of impact through observation and questioning • solve problems and apply solution focused strategies • apply communication and recording skills • perform basic manual and mechanical maintenance skills • acquire required licences and permits • apply diagnostic and troubleshooting procedures
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level II	
Unit Title	**Carryout Operational Maintenance**
Unit Code	**MIN MEO2 07 0114**
Unit Descriptor	This unit covers the carrying out of operational maintenance in exploration/mining industries. It includes planning and preparing for carrying out of operational maintenance; performing pre-start checks, maintenance and equipment checks; maintaining tools, components and consumables; carrying out hot work; and perform equipment maintenance and field repairs

Elements	Performance Criteria
1. Plan and prepare for carrying out of operational maintenance	1.1. ***Compliance documentation*** relevant to carrying out of operational maintenance is accessed, interpreted and applied. 1.2. ***Work instructions*** for the allocated task are obtained, confirmed and applied. 1.3. All potential ***hazards*** are identified, managed and reported. 1.4. ***Coordination requirements*** are resolved with others at the site prior to commencing and during work activities. 1.5. Appropriate personal ***protective equipment*** is selected and worn.
2. Perform pre-start checks and maintenance	2.1. Pre-start checks on ***equipment*** are inspected and carried out. 2.2. Site and/or company checklist sheet is completed. 2.3. All systems are lubricated according to requirements. 2.4. Fluid levels and bleed are checked and top up where necessary. 2.5. Filters are checked and cleaned or replaced if necessary. 2.6. Security of all circulation systems is checked, as required. 2.7. Safety appliances are fitted and checked in serviceable condition. 2.8. Cabin, seat belts and windscreen clean and windscreen washer functioning is kept.
3. Perform equipment checks	3.1. Policies, procedures, safety rules and site specific instructions are observed. 3.2. Timed and regular ***equipment checks***, servicing and lubrication are carried out in accordance with procedures, and record details. 3.3. ***Faults or potential faults*** are identified and reported immediately.

	3.4. Isolation is observed, and ***procedures*** are tagged out and locked out. 3.5. Requirement is identified, recorded and/or reported for repair or maintenance and critical time line for rectification. 3.6. Effectiveness of maintenance performed is monitored.
4. Maintain tools, components and consumables	4.1. Procedures are followed for tool and component maintenance, and carried out safely according to instructions. 4.2. Site procedures are followed for maintaining and storing tools and consumables in good condition.
5. Carry out hot work	5.1. Area around the worksite of flammable material is cleared. 5.2. Fire extinguishers are positioned at company recommended locations. 5.3. ***Hot work*** is undertaken in compliance with district fire controls. 5.4. Liaise is done with ***spotter*** during hot work operations. 5.5. The area is inspected prior to leaving to ensure that no potential exists for later combustion.
6. Perform equipment maintenance	6.1. Equipment breakdown is minimized by regular servicing and ***maintenance*** and performance of overhauls to specifications. 6.2. Tag out and/or lock out is used when servicing. 6.3. Minor servicing of equipment avoiding disruption to production is carried out. 6.4. Routine inspection, servicing, lubrication and housekeeping tasks to requirements are carried out. 6.5. Instructions on maintenance procedures, lubrication, filter change/service are read and followed accurately. 6.6. Worn parts are identified and changed, and relative frequency of replacement is recorded. 6.7. Operational faults are identified and hydraulic, pneumatic and drive systems maintained. 6.8. Service and repair requirements are ***reported*** and action is taken according to procedures. 6.9. ***Diagnostic and troubleshooting procedures*** and techniques are used and action is taken.
7. Perform field repairs	7.1. Equipment faults are isolated and rectified. 7.2. Extent of repair needed is identified and spare parts are obtained. 7.3. Tools required for maintenance and repairs are identified, selected and used correctly.

	7.4. Re-usable components or accessories are returned in accordance with requirements. 7.5. Equipment and re-set in response to variations in production needs are reviewed. 7.6. System faults are recognised and appropriate responses formulated within agreed time lines. 7.7. Records of action taken are maintained in accordance with site requirements. 7.8. A given component is dismantled, assessed, serviced, repaired, reassembled and tested in a safe manner.

Variable	Range
Relevant compliance documentation	May include but not limited to: • legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • industry standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions	May include but not limited to: • briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include: ➢ nature and scope of tasks ➢ specifications ➢ quality of finished works ➢ achievement targets ➢ operational conditions ➢ obtaining of permits required ➢ site layout ➢ out of bounds areas ➢ worksite inspection requirements ➢ lighting conditions ➢ plant or equipment defects ➢ hazards and potential hazards ➢ coordination requirements or issues ➢ contamination control requirements ➢ environmental control requirements • barricade and signage requirements
Hazards	May include but not limited to: • equipment • stored energy • work methods • human error • the work environment
Coordination requirements	May include but not limited to: • other operators

	• other maintenance personnel, • supervisors • other worksite personnel
Personal protective equipment	May include but not limited to: • steel-capped boots and hardhat • gloves • dust mask • eye and hearing protection • general protective and reflective clothing
Equipment	May include but not limited to: • drilling equipment • camping equipment • geophysical equipment • water pump • generator • navigational aids • mobile laboratory • emergency aids • First Aid pack • communications devices • surveying equipment • sampling devices and storage • 4WD vehicles • mobile computers and associated devices
Equipment checks	May include but not limited to: • regular visual inspection including pre-start neutral for all control levers • check on correct operation • observation of display instruments and gauges function • observation of recording instruments and gauges • hydraulic system (including filters, strainers, hose, hose fitting and oils) • air systems and filters • vehicles (including wheels, tyres, clutch, brakes and fluid levels) • batteries
Symptoms of faults	May include but not limited to: • indications on instruments or gauges • noises • vibrations • smells • overheated hydraulic motors or lines • visual indicators (e.g. smoke)
Procedures	May include but not limited to: • effective storage • use of desiccants • store chemicals (cement, bentonite, and so on) in safe dry conditions secure from livestock

Hot work	May include to : • welding • grinding • fuel transfer
Spotters	May include to : • ensure that no fires develop from slag or hot metal generated during hot work
Maintenance	May include to: • operating checks • daily checks • programmed maintenance • breakdown maintenance • prescribed lubrication
Reporting	May include to: • tool records • service and maintenance • metres drilled • operating hours since last service
Diagnostic and troubleshooting procedures	May include to: • diagnostics built into equipment • diagnostics applying externally • troubleshooting procedures recommended by manufacturers • troubleshooting procedures developed by organisation • knowledge of sources of help for more complex problems

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills of: • the requirements, procedures and instructions for carrying out of operational maintenance • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of operational maintenance • working with others to undertake and complete operational maintenance that meets all of the required outcomes • consistent timely completion of operational maintenance that safely, effectively and efficiently meets the required outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • manufacturer's handbooks requirements and procedures • characteristics, technical capabilities and limitations of equipment • environmental requirements and procedures • hot work procedures and techniques • fire prevention and control techniques and equipment • mechanical/electrical/hydraulic systems and power tools requirements and procedures • isolation and tag out procedures • lubricants and their uses • purpose of equipment electric and hydraulic indicators and

	gauges • characteristics of transmission and drive systems • recording and reporting requirements and procedures
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures for carrying out of operational maintenance • apply in service functions and procedures • apply diagnostic and troubleshooting procedures • interpret manufacturers' maintenance and operations manuals • use hand tools • solve problems • use PC software
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level II	
Unit Title	**Participate in Environmentally Sustainable Work Practices**
Unit Code	**MIN MEO2 08 0114**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to effectively measure current resource use and to carry out improvements including reducing the negative environmental impact of work practices. This unit requires the ability to access industry information, and applicable legislative and Occupational Health and Safety (OHS) guidelines.

Elements	Performance Criteria
1. Identify current resource use	1.1. Workplace ***environmental and resource efficiency issues*** are identified. 1.2. Resources used in own work role are identified. 1.3. Current usage of resources is documented and measured using ***appropriate techniques***. 1.4. Documentation measuring current usage and using technology (such as software systems) is recorded and filed where applicable. 1.5. Workplace environmental hazards are identified and reported to appropriate personnel.
2. Comply with environmental regulations	2.1. Workplace procedures are followed to ensure ***compliance***. 2.2. Breaches or potential breaches are reported to appropriate personnel.
3. Seek opportunities to improve resource efficiency	3.1. ***Organizational plans*** are followed to improve environmental practices and resource efficiency. 3.2. Work is done as part of a team, where relevant, to identify possible areas for improvements to work practices in own work area. 3.3. ***Suggestions*** are made for improvements to workplace practices in own work area.

Variable	Range
Environmental and resource efficiency issues	May include but not limited to: • maximising opportunities to improve business environmental performance • minimising environmental risks • promoting more efficient production and consumption of natural resources, for example minimising waste by participating in or using a waste management system • using resources efficiently such as material usage, energy usage (seeking alternative sources of energy or energy conservation) or efficient water usage

Appropriate techniques	May include but not limited to: • examining and documenting resources in work area • examining invoices from suppliers • examining relevant information and data • measuring resource usage under different conditions • reports from other parties involved in the process of identifying and implementing improvements
Compliance	May include but not limited to: • meeting relevant laws, by-laws and regulations or best practice to support compliance in environmental performance and sustainability at each level as required (such as Environmental Protection or Biodiversity Conservation Act): ➢ international ➢ national ➢ local ➢ industry ➢ organisation
Organisational plans	May include but not limited to: • documented policies and procedures • work plans to minimise waste or to increase efficiency of resources such as a green office, supply chain program for purchasing sustainable products or an environmental management framework
Suggestions	May include but not limited to: • improve energy efficiency • increase use of renewable, recyclable, reusable and recoverable resources • maximise opportunities such as use of solar power or other alternative forms of energy, where appropriate • prevent and minimise risks • reduce emissions of greenhouse gases • reduce use of non-renewable resources

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • accessing, interpreting and complying with a range of environment/sustainability legislation and procedural requirements relevant to daily responsibilities • accurately following organisational information to participate in and support an improved resource efficiency process and reporting as required • developing and/or using tools such as inspection checklists, to collect and measure relevant information on organisation resource consumption, within work role • identifying organisational improvements by applying efficient resource use to daily activities • knowledge of environmental and resource hazards/risks.
Underpinning Knowledge and	Demonstrate knowledge of: • environmental and resource hazards/risks

Attitudes	• environmental or sustainability legislation, regulations and codes of practice applicable to own work role • OHS issues and requirements • organisational structure, and reporting channels and procedures • relevant environmental and resource efficiency systems and procedures • sustainability in the workplace • terms and conditions of employment including policies and procedures, such as daily tasks, employee and employer rights, equal opportunity
Underpinning Skills	Demonstrate skills of: • analytical skills to comply with all relevant legislation associated with job specifications and procedures • communication and problem-solving skills to question, seek clarification and make suggestions relating to work requirements and efficiency • communication and teamwork skills to recognise procedures; to follow instructions; to respond to change, such as current workplace environmental/sustainability frameworks; and to support team work and participation in a sustainable organisation • literacy, numeracy and technology skills to interpret workplace information in relation to work role, and to document and measure resource use • technology skills to select and use technology appropriate for a task
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level II	
Unit Title	**Provide Field Support Services**
Unit Code	**MIN MEO2 09 0114**
Unit Descriptor	This unit of competency specifies the outcomes required to provide field support services. It requires the ability to work with others on site to perform key organisational requirements within a spatial information services framework, working from site plans/maps and specifications. Functions would be carried out under supervision, often in a team environment, and within organisational guidelines.

Elements	Performance Criteria
1. Plan and prepare for support task.	1.1 Requirements of the job are clarified with ***relevant personnel*** according to ***organisational guidelines***. 1.2 Tools, ***equipment and supplies*** appropriate to the environment are selected and prepared according to ***specifications***. 1.3 Safety requirements for the protection of site personnel, the public and the environment are determined. 1.4 Plans are examined to determine the location of services. 1.5 ***Personal protective equipment*** is used according to ***OHS*** guidelines. 1.6 Skills and knowledge are updated to accommodate
2. Execute support tasks.	2.1 Barricades, protective works and signs are erected, when required according to organisational guidelines. 2.2 Surface positions are determined and marked according to ***accepted standards*** using information available from site drawings and references, and relevant personnel. 2.3 ***Support tasks*** are carried out under direction and according to specifications. 2.4 Skills and knowledge are updated to accommodate changes in equipment and operating procedures
3. Finalise the task.	3.1 Site is restored as near as practicable to original condition. 3.2 Tools and equipment are cleaned and stored in a secure location. 3.3 Repair work is organised for unsafe or faulty tools and equipment. 3.4 All required ***spatial business documentations*** are completed accurately and promptly according to organisational guidelines.

Variable	Range

Relevant personnel	May include but not limited to: • colleagues • staff or employee representatives • supervisors or line managers • suppliers • users
Organisational guidelines	May include but not limited to: • code of ethics • company guidelines • legislation relevant to the work or service function, including Equal Employment Opportunity (EEO) • manuals • OHS policies and procedures • personnel practices and guidelines outlining work roles and responsibilities
Equipment and supplies	May include but not limited to: • data recording equipment • measuring instruments • scanner, printer, plotter • personal computer • tools • vehicles
Specifications	May include but not limited to: • budget • data capture methods • personnel required • project deliverables • resources needed • timelines
Personal protective equipment	May include but not limited to: • breathing apparatus • gloves • helmets • overalls • masks and respirators • safety boots • safety glasses • safety vests • sun protection equipment
OHS	May include but not limited to: • Ethiopian standards • development of site safety plan • identification of potential hazards • inspection of work sites • training staff in OHS requirements • use of equipment and signage.
Accepted standards	May include but not limited to:

	• Environment Protection Authority (EPA) recommendations • state and federal legislative requirements • manufacturer instructions and specifications • OHS standards • organisational guidelines • relevant industry codes of practice
Support tasks	May include but not limited to: • equipment maintenance • identifying, determining and marking positions • obtaining supplies • recording data • driving
Spatial business documentation	May include but not limited to: • detailed technical description of the spatial data and its qualifiers • e-mails and faxes • quotations and estimates • standard letters • tax invoices • statements

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills of: • carrying out task instructions • demonstrating critical aspects of working safely • managing basic risk • providing support in determining and marking positions • understanding the nature of spatial projects
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • industry ethics and practices • legislation as it applies to the spatial information services industry sector (basic) • OHS requirements • safe work practices • spatial data measuring and recording • work allocation procedures
Underpinning Skills	Demonstrate skills of: • ability to relate to people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities • ability to select and use tools appropriately • communication skills to: ➢ discuss vocational issues effectively with colleagues ➢ impart knowledge and ideas through oral, written and visual means • computer skills • first aid (basic) • interpersonal skills e.g. cooperation and flexibility

	• literacy skills to:
	  ➢ assess and use workplace information
	  ➢ interpret and understand legal, financial and procedural requirements
	  ➢ process workplace documentation
	  ➢ read and record data
	• numeracy skills to:
	  ➢ accurately record and collate
	  ➢ undertake basic computations
	• organisational skills to prioritise daily activities
	• spatial skills to apply understanding of height, depth, breadth, dimension and position to actual operational activity and virtual representation
	• technological skills (basic)
	• time management skills

Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level II	
Unit Title	**Participate in Workplace Communication**
Unit Code	**MIN MEO2 10 0114**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements.

Elements	Performance Criteria
1. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from ***appropriate sources***. 1.2 Effective questioning, active listening and speaking skills are used to gather and convey information. 1.3 Appropriate ***medium*** is used to transfer information and ideas. 1.4 Appropriate non- verbal communication is used. 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed. 1.6 Defined workplace procedures for the location and ***storage*** of information are used. 1.7 Personal interaction is carried out clearly and concisely.
2. Participate in workplace meetings and discussions	2.1 Team meetings are attended on time. 2.2 Own opinions are clearly expressed and those of others are listened to without interruption. 2.3 Meeting inputs are consistent with the meeting purpose and established ***protocols***. 2.4 ***Workplace interactions*** are conducted in a courteous manner. 2.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are asked and responded to 2.6 Meetings outcomes are interpreted and implemented.
3. Complete relevant work related documents	3.1 Range of ***forms*** relating to conditions of employment is completed accurately and legibly. 3.2 Workplace data is recorded on standard workplace forms and documents. 3.3 Basic mathematical processes are used for routine calculations. 3.4 Errors in recording information on forms/ documents are identified and properly acted upon. 3.5 Reporting requirements to supervisor are completed

	according to organizational guidelines.

Variable	Range
Appropriate sources	May include but not limited to: • Team members • Suppliers • Trade personnel • Local government • Industry bodies
Medium	May include but not limited to: • Memorandum • Circular • Notice • Information discussion • Follow-up or verbal instructions • Face to face communication
Storage	May include but not limited to: • Manual filing system • Computer-based filing system
Protocols	May include but not limited to: • Observing meeting • Compliance with meeting decisions • Obeying meeting instructions
Workplace interactions	May include but not limited to: • Face to face • Telephone • Electronic and two way radio • Written including electronic, memos, instruction and forms, non-verbal including gestures, signals, signs and diagrams
Forms	May include but not limited to: • Personnel forms, telephone message forms, safety reports

Evidence Guide	
Critical Aspects of Competency	Demonstrates skills and knowledge to: • Prepare written communication following standard format of the organization • Access information using communication equipment • Make use of relevant terms as an aid to transfer information effectively • Convey information effectively adopting the formal or informal communication
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Effective communication • Different modes of communication • Written communication • Organizational policies • Communication procedures and systems • Technology relevant to the enterprise and the individual's

	work responsibilities
Underpinning Skills	Demonstrate skills to: • Follow simple spoken language • Perform routine workplace duties following simple written notices • Participate in workplace meetings and discussions • Complete work related documents • Estimate, calculate and record routine workplace measures • Do basic mathematical processes of addition, subtraction, division and multiplication • relate to people of social range in the workplace • Gather and provide information in response to workplace Requirements
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level II	
Unit Title	**Work in Team Environment**
Unit Code	**MIN MEO2 11 0114**
Unit Descriptor	This unit covers the skills, knowledge and attitudes to identify role and responsibility as a member of a team.

Elements	Performance Criteria
1. Describe team role and scope	1.1 The ***role and objective of the team*** are identified from available ***sources of information***. 1.2 Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources.
2. Identify own role and responsibility within team	2.1 Individual role and responsibilities within the team environment are identified. 2.2 Roles and responsibility of other team members are identified and recognized. 2.3 Reporting relationships within team and external to team are identified.
3. Work as a team member	3.1 Effective and appropriate forms of communications used and interactions undertaken with team members who contribute to known team activities and objectives. 3.2 Effective and appropriate contributions are made to complement team activities and objectives, based on individual skills and competencies and ***workplace context***. 3.3 Protocols are observed in reporting using standard operating procedures. 3.4 Contribute to the development of team work plans based on an understanding of team's role and objectives and individual competencies of the members.

Variable	Range
Role and objective of team	May include but not limited to: • Work activities in a team environment with enterprise or specific sector • Limited discretion, initiative and judgment maybe demonstrated on the job, either individually or in a team environment
Sources of information	May include but not limited to: • Standard operating and/or other workplace procedures • Job procedures • Machine/equipment manufacturer's specifications and instructions • Organizational or external personnel • Client/supplier instructions

	• Quality standards • OHS and environmental standards
Workplace context	May include but not limited to: • Work procedures and practices • Conditions of work environments • Legislation and industrial agreements • Standard work practice including the storage, safe handling and disposal of chemicals • Safety, environmental, housekeeping and quality guidelines

Evidence Guide	
Critical aspects of competence	Demonstrates skills and knowledge to: • Operate in a team to complete workplace activity • Work effectively with others • Convey information in written or oral form • Select and use appropriate workplace language • Follow designated work plan for the job • Report outcomes
Underpinning Knowledge and Attitude	Demonstrate knowledge of: • Communication process • Team structure • Team roles • Group planning and decision making
Underpinning Skills	Demonstrate skills to: • Communicate appropriately, consistent with the culture of the workplace
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level II	
Unit Title	**Develop Business Practice**
Unit Code	**MIN MEO2 12 0114**
Unit Descriptor	This unit specifies the outcomes required to establish a business operation from a planned concept. It includes researching the feasibility of establishing a business operation, planning the setting up of the business, implementing the plan and reviewing operations once commenced.

Elements	Performance Criteria
1. Identify business opportunity	1.1 ***Business opportunities*** are investigated and identified. 1.2 Feasibility study is undertaken to determine likely ***business viability***. 1.3 Market research on product or service is undertaken. 1.4 Assistance with feasibility study of ***specialist and relevant parties*** is sought as required. 1.5 Impact of emerging or changing technology including e-commerce, on business operations is evaluated. 1.6 Practicability of business opportunity is assessed in line with perceived risks, returns sought and resources available. 1.7 Business plan is completed for operation.
2. Identify personal business skills	2.1 Financial and business skills available are identified and taken into account when business opportunities are researched. 2.2 ***Personal skills/attributes*** are assessed and matched against those perceived as necessary for a particular business opportunity. 2.3 ***Business risks*** are identified and assessed according to resources available and personal preferences.
3. Plan for establishment of business operation	3.1 Business structure and operations are determined and documented. 3.2 Procedures are developed and documented to guide operations. 3.3 Financial backing is secured for business operation. 3.4 Business legal and regulatory requirements are identified and complied. 3.5 ***Human and physical resources*** required to commence business operation are determined. 3.6 Recruitment strategies are developed and implemented.
4. Implement establishment plan	4.1 Marketing of business operation is undertaken. 4.2 Physical and human resources are obtained to implement

	business operation. 4.3 ***Operational unit*** is established to support and coordinate business operation. 4.4 Monitoring process is developed and implemented for managing operation. 4.5 ***Legal documents*** are carefully maintained and relevant records are kept and updated to ensure validity and accessibility. 4.6 Contractual procurement rights for goods and services including ***contracts with relevant people****,* negotiated and secured as required in accordance with the business plan. 4.7 Options for leasing/ownership of business premises identified and contractual arrangements are completed in accordance with the business plan.
5. Review implementation process	5.1 Review process for implementation of business operation is developed and implemented. 5.2 Improvements in business operation and associated management process are identified. 5.3 Identified improvements are implemented and monitored for effectiveness.

Variable	**Range**
Business opportunities	May include but not limited to: • expected financial viability • skills of operator • amount and types of finance available • returns expected or required by owners • likely return on investment • finance required • lifestyle issues
Business viability	May include but not limited to: • opportunities available • market competition • timing/ cyclical considerations • skills available • resources available • location and/ or premises available • risk related to a particular business opportunity, especially • in regard to Occupational Health and Safety and • environmental considerations
Specialist and relevant parties	May include but not limited to: • Chamber of commerce • Financial planners and financial institution representatives, business planning specialists and marketing specialists • accountants

	• lawyers and providers of legal advice • government agencies • industry/trade associations • online gateways • business brokers/business consultants
Personal skills/attributes	May include but not limited to: • technical and/ or specialist skills • business knowledge and skills • entrepreneurship • willingness to take risks
Business risks	May include but not limited to: • occupational health and safety and environmental • considerations • relevant legislative requirements • security of investment • market competition • security of premises/ location • supply and demand • resources available
Human and physical resources	May include but not limited to: • software and hardware • office premises • communications equipment • specialist services through outsourcing, contracting and • consultancy • staff • vehicles
Operational unit	May include but not limited to: • office location staffed with required personnel and equipped to service and support business • home-based site or other location such as leased or owned property
Legal documents	May include but not limited to: • partnership agreements, constitution documents, statutory books for companies (Register of Members, Register of Directors and Minute Books), Certificate of Incorporation, Franchise Agreements and financial documentation, appropriate software for financial records • recordkeeping including personnel, financial, taxation, OHS and environmental
Contracts with relevant people	May include but not limited to: • owners, suppliers, employees, landlords, agents, distributors, customers or any person with whom the business has, or seeks to have, a performance-based relationship

Evidence Guide	
Critical Aspects of	Demonstrates skills and knowledge in:

Competence	• that a business operation has been planned and implemented from initial research into feasibility of the business and completion of the plan, through to implementing the plan and commencing operations • the ability to evaluate the results of research and assess the likely viability and practicability of a business opportunity, taking into account the current business/market climate and resources available
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Federal and regional government legislative requirements affecting business operations, especially in regard to Occupational Health and Safety (OHS), Equal Employment Opportunity (EEO), industrial relations and anti-discrimination • Technical or specialist skills relevant to the business operation • Financing options • Business systems and operations • Relevant marketing, management, sales and financial concepts • Methods for researching business opportunities • Principles of risk management relevant to the business • Methods of identifying relevant specialist services to complement the business • Forms and administrative systems • Services available and charges • Planning and control systems (sales, • Advertising and promotion, distribution and logistics • Financial recording systems • Legal rights and responsibilities • Record keeping duties • Operational factors relating to the business (provision of professional services, products)
Underpinning Skills	Demonstrate skills of: • Literacy skills to interpret legal requirements, company policies and procedures and immediate, day-to-day demands • Marketing skills • Business planning skills • Entrepreneurial skills • Problem-solving skills • OHS skills • Time management skills • Belief in services and products offered by the business • Communication skills including questioning, clarifying, reporting, and giving and receiving constructive feedback • Technical and analytical skills to interpret business documents, reports and financial statements and projections • Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities • Problem solving skills to develop contingency plans

	• Using computers and software packages to record and manage data and to produce reports • Literacy skills to enable interpretation of business information, numeracy skills for data analysis to aid research • Research skills to identify a business opportunity and to conduct a feasibility study • Analytical skills to assess personal attributes and to identify business risks • Observation skills for identifying appropriate people, resources and to monitor work
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level II	
Unit Title	**Standardize and Sustain 3S**
Unit Code	**MIN MEO2 13 0114**
Unit Descriptor	This unit of competence covers the knowledge, skills and attitudes required by worker to standardize and sustain 3S to his/her workplace. It covers responsibility for the day- to-day operations of the workplace and ensuring that continuous improvements of Kaizen elements are initiated and institutionalized.

Elements	Performance Criteria
1. Prepare for work.	1.1 Work instructions are used to determine job requirements, including method, material and equipment. 1.2 Job specifications are read and interpreted following working manual. 1.3 ***OHS requirements***, including dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work. 1.4 ***Safety equipment and tools*** are identified and checked for safe and effective operation. 1.5 ***Tools and equipment*** are prepared and used to implement 3S.
2. Standardize 3S.	2.1 Plan is prepared and used to standardize 3S activities. 2.2 ***Tools and techniques*** to standardize 3S are prepared and implemented based on ***relevant procedures***. 2.3 Checklists are followed for standardize activities and ***reported*** to ***relevant personnel***. 2.4 The workplace is kept to the specified standard. 2.5 Problems are avoided by standardizing activities.
3. Sustain 3S.	3.1 Plan is prepared and followed to standardize 3S activities. 3.2 ***Tools and techniques*** to sustain 3S are discussed, prepared and implemented based on relevant procedures. 3.3 Workplace is inspected regularly for compliance to specified standard and sustainability of 3S techniques. 3.4 Workplace is cleaned up after completion of job and before commencing next job or end of shift. 3.5 Situations are identified where compliance to standards is unlikely and actions specified in procedures are taken. 3.6 Improvements are recommended to lift the level of compliance in the workplace.

	3.7 Checklists are followed to sustain activities and reported to relevant personnel. 3.8 Problems are avoided by sustaining activities.

Variable	Range
OHS requirements	May include but not limited to: • Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances. • Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices. • Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with workplace organization. • Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.
Safety equipment and tools	May include but not limited to: • dust masks / goggles • glove • working cloth • first aid • safety shoes
Tools and equipment	May include but not limited to: • paint • hook • sticker • signboard • nails • shelves • chip wood • sponge • broom • pencil • shadow board/ tools board
Tools and techniques	May include but not limited to: • 5S Job Cycle Charts • Visual 5S • The Five Minute 5S • Standardization level checklist • 5S checklist

	• The five Whys and one How approach(5W1H) • Suspension • Incorporation • Use Elimination
Relevant procedures	May include but not limited to: • Assign 3S responsibilities • Integrate 3S duties into regular work duties • Check on 3S maintenance level • OHS measures such as signage, symbols / coding and labeling of workplace and equipment • Creating conditions to sustain your plans • Roles in implementation
Reporting	May include but not limited to: • verbal responses • data entry into enterprise database • brief written reports using enterprise report formats
Relevant personnel	May include but not limited to: • supervisors, managers and quality managers • administrative, laboratory and production personnel • internal/external contractors, customers and suppliers
Tools and techniques	May include but not limited to: • 5S slogans • 5S posters • 5S photo exhibits and storyboards • 5S newsletter • 5S maps • 5S pocket manuals • 5S department/benchmarking tours • 5S months • 5S audit • Awarding system • Big cleaning day • Patrolling system may include: ➢ Top management Patrol ➢ 5S Committee members and Promotion office Patrol ➢ Mutual patrol ➢ Self-patrol ➢ Checklist patrol ➢ Camera patrol

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: • Discuss the relationship between Kaizen elements. • Standardize and sustain 3S activities by applying appropriate tools and techniques.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Elements of Kaizen • Ways to improve Kaizen elements

	• Benefits of improving kaizen elements • Relationship between Kaizen elements • The fourth pillar of 5S • Benefits of standardizing and sustaining 3S • Procedures for standardizing and sustaining 3S activities • Tools and techniques to sustain 3S • Relevant Occupational Health and Safety (OHS) and environment requirements • Plan and report • Method of communication
Underpinning Skills	Demonstrates skills of: • improving Kaizen elements by applying 5S • standardizing and sustaining procedures and techniques to avoid problems • technical drawing • procedures to standardizing 3S activities • analyzing and preparing shop layout of the workplace • standardizing and sustaining checklists • preparing and implementing tools and techniques to sustain 3S • working with others • reading and interpreting documents • observing situations • solving problems by applying 5S • communication skills • preparing labels, slogans, etc. • gathering evidence by using different means • using Kaizen board properly in accordance the procedure • reporting activities and results using report formats
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

NTQF Level III

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Identify and Assess Environmental and Heritage Concerns**
Unit Code	**MIN MEO3 01 0114**
Unit Descriptor	This unit covers identifying and assessing environmental and heritage concerns in exploration/mining industries. It includes identifying site specific environmental and heritage concerns; assessing and responding to environmental and heritage concerns; working within environmental and heritage guidelines.

Elements	Performance Criteria
1. Identify site specific environmental and heritage concerns	1.1. ***Compliance documentation*** relevant to ***environmental and heritage issues*** is accessed, interpreted and applied. 1.2. Environmental and heritage issues are identified and reported to ***relevant authority*** according to site procedures, regulations and other compliance requirements. 1.3. The nature of environment and/or heritage concerns is accurately identified from site information. 1.4. Emergency plan is enacted. 1.5. Relevant isolation procedures are enacted according to relevant requirements. 1.6. ***Contaminants*** upon identification are removed and/or contained.
2. Assess and respond to environmental and heritage concerns	2.1. Site on receipt of relevant clearances is inspected to confirm environment and/or heritage issues. 2.2. All required records and documentation are completed accurately and promptly.
3. Work within environmental and heritage guidelines	3.1. Environment and heritage issues are adhered. 3.2. Environmental and heritage guidelines are conformed in the organization of work activities. 3.3. Appropriate authorities of environmental and/or heritage issues are contacted and informed.

Variable	Range
Relevant Compliance documentation	May include but not limited to: • industry standards • environmental agencies regulations • Environmental Protection Act • isolation procedures • manufacturer's specifications and recommendations • mine safety and health legislation and regulations • OHS legislation • site regulations, requirements and procedures

Environmental and heritage issues	May include but not limited to: • ancient fossils • culturally-sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • historical site (homestead) • noise • possible Indigenous site • runoff • spills • water quality
Relevant authorities	May include but not limited to: • environmental authorities • experts (scientific, historic, biological) • local leaders
Contaminants	May include but not limited to: • diseased vegetation • leakage into ground water • oil spill • saline water

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • the requirements, procedures and instructions for identifying and assessing environmental and heritage concerns • implementation of requirements, procedures and techniques for the safe, effective and efficient identification and assessment of environmental and heritage concerns • working with others to undertake and complete the identification and assessment of environmental and heritage concerns that meet all of the required outcomes • consistent timely completion of the identification and assessment of environmental and heritage concerns that safely, effectively and efficiently meets the required outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • contamination principles • emergency procedures • environmental and heritage procedures • equipment safety requirements • fire management strategies • future land use principles • hazardous goods procedures and consequences of spills • isolation procedures • mine operational system

	• night and day working procedures • OHS procedures • open cut procedures • operational procedures and checks • site procedures • site safety requirements
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures for identifying and assessing environmental and heritage concerns • apply diagnostic techniques • make decisions • apply procedures for operating, maintaining and cleaning equipment • identify hazards • apply hazardous goods handling techniques • interpret plans, reports, maps, specifications • apply records maintenances requirements and procedures • organise work tasks • apply safe work practices • work in a team • use communications equipment
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Apply First Aid**
Unit Code	**MIN MEO3 02 0114**
Unit Descriptor	This unit of competency describes the skills and knowledge required to provide first aid response, life support, management of casualty(s), the incident and other first aiders, until the arrival of medical or other assistance.

Elements	Performance Criteria
1. Assess the situation	1.1 ***Hazards*** in the situation that may pose a risk of injury or illness to self and others are identified, assessed and minimised. 1.2 Immediate ***risk*** to self and casualty's health and safety minimised by controlling any hazard in accordance with work health and safety requirements. 1.3 Casualty is assessed and injuries, illnesses and conditions are identified.
2. Apply first aid procedures	2.1 A communication style is adopted to match the casualty's level of consciousness. 2.2 Available ***resources and equipment*** are used to make the casualty as comfortable as possible. 2.3 The casualty is responded in a culturally aware, sensitive and respectful manner. 2.4 Relevant first aid procedures are determined and explained to provide comfort. 2.5 Consent is sought from casualty prior to applying first aid management. 2.6 ***First aid management*** is provided in accordance with ***established first aid principles and procedures***. 2.7 First aid assistance is sought from others in a timely manner and as appropriate. 2.8 First aid equipment is correctly operated for first aid management according to manufacturer/supplier's instructions and procedures. 2.9 Safe manual handling techniques are used. 2.10 ***Casualty's condition*** is monitored and responded in accordance with established first aid principles and procedures. 2.11 Casualty management is finalised according to casualty's needs and first aid principles.
3. Communicate details of the	3.1 Ambulance support and/or appropriate medical assistance are/is requested according to relevant circumstance. 3.2 Observation of casualty's condition and management activities

incident	is accurately conveyed to ambulance services / relieving personnel. 3.3 ***Details*** of casualty's physical condition, changes in conditions, management and response to management are accurately assessed and ***reported*** in line with established procedures. 3.4 Confidentiality of records and information is maintained in line with privacy principles and statutory and/or organisation policies.
4. Evaluate own performance	4.1 Feedback is sought from ***appropriate clinical expert***. 4.2 The possible psychological impacts on rescuers involved in critical incidents are recognised. 4.3 Debriefing/evaluation is made participatory in to improve future response and individual needs are addressed.

Variable	**Range**
Contextualisation to address specific requirements	May include but not limited to: • First aid provision under specific constraints or circumstances (e.g. in confined spaces, in work environment involving identified risks/hazards) • Focus on first aid management of specific types of injury
Established first aid principles and procedures	May include but not limited to: • Guidelines of Ethiopian Ministry of Health • Primary First Aid Principles to: ➢ Preserve life ➢ Prevent illness, injury and condition(s) becoming worse ➢ Promote recovery ➢ Protect the unconscious casualty • State legislation and regulations
Hazards	May include but not limited to: • A source or situation with the potential for harm in terms of human injury or ill-health, damage to property, the environment, or a combination of these • Relevant hazards may be classified under the headings: ➢ Biological hazards ➢ Chemical hazards • Hazards associated with manual handling Physical hazards
Risks	May include but not limited to: • Environmental risks • Exposure to blood and other body substances • Risks associated with the proximity of other workers and bystanders • Risks from body position • Risks from equipment, machinery and substances • Risks from vehicles • Risks from first aid equipment • Risk of further injury to the casualty
Casualty's condition is	May include but not limited to: • Abdominal injuries

managed	• Airway obstruction • Allergic reactions • Altered and loss of consciousness • Bleeding • Body position • Burns – thermal, chemical, friction, electrical • Cardiac arrest • Chest pain • Choking/airway obstruction • Drowning • Envenomation – snake, spider, insect and marine bites and stings • Environmental impact such as hypothermia, hyperthermia, dehydration, heat stroke • Injuries: cold and crush injuries; eye and ear injuries; head, neck and spinal injuries; minor skin injuries; needle stick injuries; soft tissue injuries including sprains, strains, dislocations, fractures • Medical conditions, including cardiac conditions, epilepsy, diabetes, asthma and other respiratory conditions • Poisoning and toxic substances (including chemical contamination) • Respiratory distress • Seizures • Shock • Stroke • Substance misuse – common drugs and alcohol, including illicit drugs • Unconsciousness, not breathing or not breathing normally
First aid management must take	May include but not limited to: • Infection control • Legal and social responsibilities of first aider • The setting in which first aid is provided, including: ➢ industry/ site specific regulations, codes etc. ➢ location and nature of the incident ➢ location of emergency services personnel situational risks associated with, for example, electrical and biological hazards, weather, motor vehicle accidents ➢ State work health and safety legislative requirements ➢ workplace policies and procedures ➢ WHO requirements • The use and availability of first aid equipment and resources
Resources and equipment	May include but not limited to: • AED • Auto-injector • Bronchodilator and spacer device • First aid kit • Puffer/inhaler • Resuscitation mask or barrier
Appropriate clinical expert	May include but not limited to: • Ambulance officer/paramedic

	• Appropriately qualified health care professional
Report details should	May include but not limited to: • Time • Description of injury/illness • First aid management • Incident details • Location • Vital signs
Report details	May include to: • Administration of medication including: ➢ date ➢ dose ➢ person administering ➢ time • Fluid intake/output, including fluid loss via: ➢ blood ➢ faeces ➢ urine ➢ vomit ➢ Injury report forms • Workplace documents as per organization requirements

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • The individual being assessed must provide evidence of essential knowledge and essential skills • Competence should be demonstrated working individually and as part of a first aid team • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace or community setting • Currency of first aid knowledge and skills is to be demonstrated in line with Ethiopian Ministry of Health and State legislation and regulations
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Awareness of stress management techniques and available support • First aid management, based on a risk assessment relevant to the workplace or community setting of: ➢ abdominal injuries ➢ allergic reactions ➢ altered and loss of consciousness ➢ asthma ➢ anaphylaxis ➢ bleeding ➢ burns – thermal, chemical, friction, electrical ➢ cardiac arrest ➢ chest pain ➢ choking/airway obstruction

	➢ drowning ➢ envenomation – snake, spider, insect and marine bites and stings ➢ environmental impact such as hypothermia, hyperthermia, dehydration, heat stroke ➢ injuries- cold and crush injuries; eye and ear injuries; head, neck and spinal injuries; minor skin injuries; needle stick injuries; soft tissue injuries including sprains, strains, dislocations, fractures ➢ medical conditions, including cardiac conditions, epilepsy, diabetes, asthma and other respiratory conditions ➢ poisoning and toxic substances (including chemical contamination) ➢ respiratory distress ➢ seizures ➢ shock ➢ stroke ➢ substance misuse – common drugs and alcohol, including illicit drugs ➢ unconsciousness, not breathing or not breathing normally • Guidelines for provision of first aid as outlined in Ethiopian Ministry of Health and State legislation and regulations • Social / legal issues including: ➢ duty of care ➢ confidentiality ➢ importance of debriefing ➢ need to be culturally aware, sensitive and respectful ➢ own skills and limitations • Understanding of: ➢ basic work health and safety requirements in the provision of first aid ➢ basic principles and concepts underlying the practice of first aid ➢ chain of survival ➢ infection control principles and procedures, including use of standard precautions ➢ priorities of management in first aid when dealing with life threatening conditions ➢ procedures for dealing with major and minor injury and illness • Understanding of the use of an Automated External Defibrillator (AED), including when to use and when not to • Understanding the causes of asphyxia due to body position
Underpinning Skills	Demonstrate skills of: • Apply first aid principles • Call an ambulance and/or medical assistance according to relevant circumstances and report casualty(s) condition • Communicate effectively and assertively in an incident • Conduct an initial casualty assessment • Management of: ➢ Anaphylaxis using adrenalin auto-injector

	➢ Avoiding asphyxia due to body position ➢ Bronchospasm using bronchodilator and spacer device ➢ Cardiac arrest using single rescuer procedure, including the demonstration of a seamless changeover between operators ➢ External hemorrhage ➢ Fractures, sprains and strains using arm slings, roller bandages and other appropriate immobilisation techniques ➢ Unconscious casualty including using a recovery position • Demonstrate: ➢ ability to call an ambulance ➢ consideration of the welfare of the casualty ➢ safe manual handling ➢ site management to prevent further injury ➢ understanding of causes contributing to asphyxia due to body position • Demonstrate correct procedures for performing CPR using a manikin, including standard precautions (i.e. as per unit HLTCPR211A Perform CPR) • Demonstrate infection control, including use of standard precautions • Evaluate own response and identify appropriate improvements where required • Follow State and Territory work health and safety legislative requirements • Make prompt and appropriate decisions relating to managing an incident in the workplace • Plan an appropriate first aid response in line with established first aid principles, Ethiopian Ministry of Health, industry standards and State legislation and regulations and respond to contingencies in line with own skills • Prepare a written incident report or provide information to enable preparation of an incident report • Provide assistance with self-medication as per subject's own medication regime and/or administer medication in line with State legislation and regulations, organisation policies and any available medical/pharmaceutical instructions • Unpack, activate and follow prompts of an AED
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Plan and Undertake Field Trip**
Unit Code	**MIN MEO3 03 011**
Unit Descriptor	This unit covers the planning and undertaking of field trips in the exploration/mining industry. It includes organising field trips, establishing and maintaining field camps, working as part of a team in remote locations, and applying remote safety and survival skills.

Elements	Performance Criteria
1. Organise field trips	1.1. ***Compliance documentation*** relevant to the work activity is accessed, interpreted and applied. 1.2. Access to field site is arranged with relevant stakeholders. 1.3. Restrictions, agreements and customs are adhered to when accessing field site. 1.4. Available and efficient ***communication systems*** are identified. 1.5. Maps, photos, satellite images and existing exploration data are used to plan ***access***, traverses and camp site(s). 1.6. ***Supplies*** are planned to support the location, duration and size of the field trip. 1.7. Supplies are obtained according to inventory and securely stow for field trip. 1.8. Duty rosters are established for field trip activities in consultation with other team members.
2. Establish and maintain field camp	2.1. Appropriate size field camp is set up for number of team members in accordance with safety and environmental procedures. 2.2. Catering, hygiene and security activities are monitored and made participatory in as allocated. 2.3. Use of supplies is obtained and monitored as necessary to maintain health and safety. 2.4. Gas and electrical appliances and generators are set up and operated safely.
3. Work as part of a team in remote locations	3.1. Contribute effectively to the achievement of shared goals and objectives. 3.2. Cooperate with co-workers in a manner that promotes a safe working environment and creates good working relationships. 3.3. Co-workers and supervisors are communicated clearly. 3.4. Work effectively and harmoniously with other team members to achieve team objectives.

	3.5. Acceptable level of personal hygiene is maintained.
4. Apply remote safety and survival skills	4.1. Safety procedures are followed whenever helicopters are in the vicinity. 4.2. Communication is done effectively using standard protocols. 4.3. Conventional signalling codes and symbols are adopted in emergency situations. 4.4. The priorities are recognised and managed for survival.

Variable	Range
Relevant compliance documentation	May include but not limited to: • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • industry standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Communications systems	May include but not limited to: • satellite phone • mobile network phone • 2-way radio • land line
Access	May include but not limited to: • privately owned land • defined heritage areas • inhospitable terrain and climate
Field trip supplies	May include but not limited to: • food • water • shelter • camping equipment and utensils • hygiene facilities • fuel • transport • communications • vehicle and equipment spares • First Aid and health
Regulations	May include but not limited to: • industry standards • environmental agencies regulations • Environmental Protection Act • isolation procedures • manufacturer's specifications and recommendations • Mine Regulations Act (Duty of Care) • OHS Legislation • site regulation and procedures

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • knowledge of the requirements, procedures and instructions for planning and undertaking field trips • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of field trip planning and undertaking • working with others to undertake and complete the planning and undertaking field trips that meets all of the required outcomes • consistent timely completion of field trip planning and undertaking that safely, effectively and efficiently meets the required outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • land-use permits • relevant regulations, licences and permits • communications systems • historical mining data of field site • trip planning and logistics • supply sources, costs and availability • remote hazards, risks and survival techniques
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures for planning and undertaking field trips • erect shelters • collect food and water • light fires • navigate with maps and stars • use vehicle for survival • plan and schedule • apply interpersonal communication skills • apply basic vehicle maintenance techniques • use portable gas and electricity equipment
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Rehabilitate Exploration Site**
Unit Code	**MIN MEO3 04 0114**
Unit Descriptor	This unit covers the rehabilitation of an exploration sites in the exploration/mining industry. It includes: preparing for and rehabilitating exploration sites; capping drill holes; and rehabilitating access tracks.

Elements	Performance Criteria
1. Prepare for site rehabilitation	1.1. ***Compliance documentation*** relevant to the rehabilitation of an exploration sites is accessed, interpreted and applied. 1.2. The rehabilitation plan and Environmental Work Procedures (EWP) are accessed, interpreted and applied. 1.3. ***Potential hazards*** and risks are identified, addressed and reported. 1.4. Appropriate ***personal protective equipment*** is selected and worn. 1.5. Map of area is obtained and location of sites to be rehabilitated identified. 1.6. Communication system and protocols are established. 1.7. Rehabilitation plant and equipment are carried out pre-start checks.
2. Rehabilitate exploration site	2.1. ***Hydrocarbon*** spills are assessed at drill site and dealt with according to legislation, environmental policies and procedures and company requirements. 2.2. Saline or contaminated water sumps are ensured completely. 2.3. Rehablitate exploration workings (pits, trenches, etc), push waste materials resulting from exploration operations into sumps, and back fill, compact and cover with topsoil. 2.4. ***Plant and machinery***, following EWPs, are operated to scarify all cleared areas. 2.5. Cleared vegetation is retrieved and put back onto rehabilitated site. 2.6. All rubbishes are removed and disposed. 2.7. Area is ***re-vegetated*** if required under the rehabilitation plan. 2.8. Rehabilitation details are recorded. 2.9. Rehabilitated site is ***inspected*** for compliance with environmental and legislative requirements and safe entry.

3. Cap drill holes	3.1. Hole collar is excavated to suitable depth. 3.2. Excess drill chips are poured into drill hole. 3.3. Appropriate hole plug is selected and inserted firmly into hole opening or collar, such that water ingress and future erosion is prevented. 3.4. Backfill excavated soil onto plug and compact firmly ensuring that sufficient compacted soil is left on hole to allow for subsidence and encourage run off. 3.5. Hole site is pegged and marked with ID number.
4. Rehabilitate access tracks	4.1. All windrows are removed. 4.2. Tracks are scarified. 4.3. Possible cleared vegetation is retrieved and restored to access track. 4.4. The entrance to the track is blocked or disguised with any available ***materials***.

Variable	**Range**
Relevant compliance documentation	May include but not limited to: • legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • industry standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Potential hazards	May include but not limited to: • disturbance or interruption of services • solar radiation • dust • noise • air- and soil-borne micro-organisms • chemicals and hazardous substances • sharp hand tools and equipment • manual handling • moving machinery and machinery parts • slippery and uneven surfaces • dehydration • stings
Personal protective equipment	May include but not limited to: • hat • boots • overalls • gloves • goggles • respirator or face mask

	• face guard • hearing protection • drinking water • sunscreen lotion • hard hat
Hydrocarbons	May include but not limited to: • diesel/petrol • hydraulic fluid
Plant and machinery	May include but not limited to: • hydraulic excavators • wheel loaders • crawler dozers • crawler loaders • motor graders and scrapers • dump trucks • backhoes • log skidders
Re-vegetation	May include but not limited to: • hand sowing • direct seeding • tube planting • hand or machine assisted planting of seedlings • planting of divisions • transplanting • assisted regeneration • natural regeneration
Inspections	May include but not limited to: • checking that access paths are clear of debris, waste material, tools, equipment and machinery • ensuring that equipment and machinery is disabled after use • ensuring that signage and safety barriers are removed • removing debris and waste from the work area swiftly and efficiently
Materials	May include but not limited to: • cleared vegetation • dead logs • boulders

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • the requirements, procedures and instructions for rehabilitating exploration sites • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the rehabilitation of exploration sites • working with others to undertake and complete the rehabilitation of exploration sites that meet all of the required outcomes • consistent timely completion of the rehabilitation of exploration

	sites that safely, effectively and efficiently meets the required outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • provisions of the Workplace Health and Safety Acts, their regulations and code of practice • particular State regulations relating to rehabilitation • relevant OHS requirements associated with rehabilitation activities • rehabilitation principles and practices • rehabilitation planning • environmental work procedures • hazards associated with rehabilitation work • types and operational characteristics of plant/equipment used in rehabilitation operations • basic maintenance • environmental principles and practices • re-vegetation methods and types • hole-capping methods • recording and reporting
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures • apply communication and recording skills • apply manual and mechanical handling techniques • apply maintenance requirements and procedures • apply procedures to acquire required licences and permits • apply diagnostic and troubleshooting procedures • use hand tools • apply problem solving techniques
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Operate and Maintain Instruments and Field Equipment**
Unit Code	**MIN MEO3 05 0114**
Unit Descriptor	This unit covers the operation and maintenance of instruments and field equipment in the exploration/mining industry. It includes planning and preparing for the use of instruments and field equipment, testing instruments and field equipment, calibrating instruments and field equipment, operating instruments and field equipment, mainlining instruments and field equipment, identifying faults in instruments and field equipment, and commissioning new instruments and equipment.

Elements	Performance Criteria
1. Plan and prepare for use of instruments and field equipment	1.1. ***Compliance documentation*** relevant to the work activity is accessed, interpreted and applied. 1.2. Work is planned and prepared. 1.3. Communication is done with other personnel using approved communication methods. 1.4. Personal protective equipment appropriate for work activities is selected. 1.5. Appropriate type of auxiliary equipment is selected for work activities. 1.6. Equipment pre-start checks are performed to ensure ***equipment*** is ready for operation. 1.7. ***Potential risks and hazards*** are identified, addressed and reported. 1.8. ***Environmental issues*** are identified, addressed and reported. 1.9. Emergency procedures are adhered to ensure safety of personnel and plant.
2. Test instrument/field equipment	2.1. Safety checks are performed. 2.2. Potential faults and/or malfunctions of instruments/field equipment are identified. 2.3. Damaged or unsafe instruments/field equipment is labeled and reported and removed from service. 2.4. Ensure operational log books are up dated.
3. Calibrate instruments/field equipment	3.1. Calibration schedules are closely followed. 3.2. Calibration instruments/equipment is labeled out and other operatives are advised promptly. 3.3. Cause/s of incorrect calibration is identified.

	3.4. New base calibration is performed. 3.5. Recommission instrument/equipment. 3.6. Compliance and calibration report is prepared as required.
4. Operate instruments/field equipment	4.1. Instrument/equipment settings are optimized for the particular measurement or analysis. 4.2. Measurements are performed with the optimum precision given field and technical constraints. 4.3. Time and materials are used efficiently and measurements performed in priority order. 4.4. Data is assessed against quality control information, known standards and references for accuracy and precision. 4.5. Measurements are repeated where non-standard results are obtained.
5. Maintain instruments/field equipment	5.1. Preventative ***maintenance*** is performed. 5.2. Equipment and faults are identified and reported. 5.3. Minor repairs are performed within limits of authorization. 5.4. Defective parts are replaced and adjustments made. 5.5. Expert help is sought where difficulties are encountered. 5.6. Maintenance and calibration records are updated.
6. Identify faults in instruments/field equipment	6.1. The nature of the fault is identified and clarified. 6.2. Likely causes of fault are determined and ranked. 6.3. Simple checks and tests are applied. 6.4. Suitable tools and equipment are obtained to test faults. 6.5. Fault finding methodology is applied.
7. Commission new instruments and equipment	7.1. Commissioning procedures are arranged with manufacturer's agent as required. 7.2. Instruments/equipment is unpacked, checked and assembled according to manufacturer's warranty requirements. 7.3. Instrument/equipment is calibrated to meet manufacturer's specifications. 7.4. Instrument/equipment performance is checked against specifications prior to acceptance of item. 7.5. Operating instructions available are prepared and made.

Variable	**Range**
Relevant compliance documentation	May include but not limited to: • legislative, organisational and site requirements and procedures • instrument/equipment manual

	• manufacturer's guidelines and specifications • industry standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Instruments and field equipment	May include but not limited to: • motors • generators • hand and power tools • two way radios • mobile communications equipment • surveying equipment (e.g. theodolite/Total station) • satellite navigation system • memory magnetometer • gravity meter • Resistivity meter • IP transmitter and receiver • tem transmitter and receiver • gamma spectrometer • seismograph • well logger • data logger • portable PC
Potential risks and hazards	May include but not limited to: • abandoned equipment • adverse weather conditions (electrical storms, floods, fires, extreme heat) • chemicals • contaminants (dust, noise, etc) • equipment • fences • materials • personnel • pot holes • unsafe ground • vehicles • old workings
Environmental issues	May include but not limited to: • drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • run-off • spills • waste management and disposal

	• water quality
Maintenance	May include but not limited to: • replacing 'remove and replace' components • lubrication • working adjustments to tolerances • cleaning and storing • completing usage records
Legislation	May include but not limited to: • mining safety and health • mine inspection • OHS • explosives
Operating conditions	May include but not limited to: • day and night • laboratory • field environment • dry and wet • stable ground • broken ground • various natural landscapes • working over old underground workings and voids

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • the requirements, procedures and instructions for operating and maintaining instruments and field equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of instrument and field equipment operation and maintenance • working with others to undertake and complete the operation and maintenance of instruments and field equipment that meets all of the required outcomes • consistent timely completion of instrument and field equipments operation and maintenance that safely, effectively and efficiently meets the required outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • manufacturer's operating requirements for instruments and equipment • manufacturer's calibration procedures • company and site policy and procedures regarding instrument and equipment use • instrument and equipment test methods
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures for operating and maintaining instruments and field equipment • use hand and power tools • use calibration equipment

	• use test equipment • employ fault finding procedures
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Prepare Drill Site**
Unit Code	**MIN MEO3 06 0114**
Unit Descriptor	This unit covers the preparation of a drill site in the exploration/mining industry. It includes planning for drill site preparation, creating access to the drill site, preparing the drill site, minimising impact of contaminated groundwater, and managing rare flora.

Elements	Performance Criteria
1. Plan for drill site preparation	1.1. ***Compliance documentation*** relevant to the work activity is accessed, interpreted and applied. 1.2. The drill site layout plan is accessed to confirm the location, size and configuration of the proposed drill site. 1.3. ***Potential hazards*** and risks are identified, addressed and reported. 1.4. Appropriate ***personal protective equipment*** is selected and worn. 1.5. Communication system and protocols are established. 1.6. ***Plant and equipment*** pre-start checks are carried out.
2. Create access to drill site	2.1. Existing tracks and use for entry are identified to drill site. 2.2. If necessary, new tracks which minimises water flows and erosion are created by following the natural contours of the land. 2.3. New tracks are created to drill site which minimise the clearing of vegetation by avoiding large trees and preserving root stocks. 2.4. Blades are raised to a minimum of 150mm when using machinery to prepare access blade. 2.5. Larger trees are cut or trimmed if unavoidable. 2.6. Cleared vegetation is stockpiled or windrowed for use during site rehabilitation.
3. Prepare drill site	3.1. Drill site removing minimum vegetation is cleared. 3.2. Permission is sought from appropriate person to move hole location if vegetation significantly impedes access to the proposed drill site. 3.3. ***Ground cover*** is manually cleared to prevent fire hazards to drill rig. 3.4. Mature trees are left undisturbed. 3.5. Sumps and bunds on the downside of the hole collar location

	are built. 3.6 Sufficiently large and safe flat working area is prepared for drilling operation.
4. Minimise impact of contaminated groundwater	4.1. The possible presence of groundwater which may be a threat to vegetation is identified during drilling operations. 4.2. If groundwater is discovered, appropriate number of ***sumps*** is constructed to recommended configuration and distances from the drill rig location. 4.3. Topsoil removed from sump construction is stored separately to facilitate more effective rehabilitation.
5. Manage rare flora	5.1. The presence and type of rare flora are determined before clearing vegetation. 5.2. Advice on the ***action to be taken*** is sought where rare flora are identified.

Variable	**Range**
Relevant compliance documentation	May include but not limited to: • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • industry standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Potential hazards	May include but not limited to: • disturbance or interruption of services • solar radiation • dust • noise • air- and soil-borne micro-organisms • chemicals and hazardous substances • sharp hand tools and equipment • manual handling • moving machinery and machinery parts • slippery and uneven surfaces • dehydration • stings • contaminated groundwater
Personal Protective Equipment	May include but not limited to: • hat • boots • overalls • gloves • goggles • respirator or face mask • face guard

	• hearing protection • drinking water • sunscreen lotion • hard hat
Plant and equipment	May include but not limited to: • hydraulic excavators • wheel loaders • crawler dozers • crawler loaders • motor graders and scrapers • backhoes • chainsaw
Ground cover	May include but not limited to: • grass • spinifex • undergrowth
Sumps	May include but not limited to: • be located away from any significant vegetation to minimise disturbance to roots and to prevent horizontal transmission of saline water and potentially hostile material coming into contact with vegetation • have one side that is ramped at approximately 45^{o} to allow animals that may fall into the sump to escape
Action to be taken	May include but not limited to: • if a single or small number of plants are found: ➢ note location • if work activity is planned for the area, relocate work activity ➢ report to regulator • if a large community of plants is located: ➢ note location • if work activity is planned for the area, contact regulator and determine course of action • if sustained communities of plants are located: ➢ note location • if work activity is planned for the area, contact regulator and obtain concurrence to continue work program

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • the requirements, procedures and instructions for preparation of a drill site • implementation of requirements, procedures and techniques for the safe, effective and efficient preparation of a drill site • working with others to undertake and complete the preparation of a drill site that meets all of the required outcomes • consistent timely preparation of a drill site that safely, effectively and efficiently meets the required outcomes

Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • provisions of the Workplace Health and Safety Acts, their regulations and code of practice • particular state regulations relating to vegetation clearing • drill site layout plans • environmental work procedures • hazards associated with drill site preparation work • types and operational characteristics of plant/equipment used in creating access tracks and for drill site preparation operations • basic maintenance • fire control methods • environmental principles and practices • types and identification of rare flora • type and identification of contaminated groundwater • re-vegetation methods • recording and reporting
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures for preparation of a drill site • apply communication and recording skills • perform manual and mechanical handling • perform basic maintenance skills • acquire required licences and permits • apply diagnostic and troubleshooting procedures • use hand tools • solve problems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Provide Geological Field Assistance**
Unit Code	**MIN MEO3 07 0114**
Unit Descriptor	This unit covers the provision of geological field assistance in the exploration/ mining industry. It includes assistance in planning and preparing for geological field work, placer exploration/evaluation, collecting and classifying common rocks, soil, stream sediment, water, ores and minerals, using geological maps and sections.

Elements	Performance Criteria
1. Plan and prepare for geological field assistance	1.1. ***Compliance documentation*** relevant to the work activity is accessed, interpreted and applied. 1.2. Work is planned and prepared according to compliance documentation and ***operating conditions***. 1.3. Roster change is received, interpreted and clarified over details. 1.4. ***Communications*** method and protocols are arranged with field team members. 1.5. Personal protective equipment that is appropriate for work activities selected. 1.6. Relevant ***geological instruments and field equipment*** for work activities are selected and obtained. 1.7. Geological instrument and field equipment checks are performed to ensure instruments and equipment that are ready for operation. 1.8. ***Potential risks and hazards*** are identified, addressed and reported. 1.9. ***Environmental issues*** are identified, addressed and reported. 1.10. Emergency procedures are adhered to ensure safety of personnel and equipment.
2. Explore and evaluate placer deposits	2.1. Potential ***placer environments*** are identified. 2.2. ***Placer exploration*** is planned and conducted. 2.4. ***Reserve estimation*** is conducted.
3. Collect and classify common rocks, soil, stream sediment, water, gas/oil, ores and minerals	3.1. ***Rock***, ***soil, stream sediment, water, ore and mineral samples*** are taken according to site procedures and geologists requirements. 2.2. Field activities and results are communicated to relevant personnel. 2.3. Specimens or outcrops are examined to identify the

	properties and classify specimens into geological types. 2.4. ***Records*** of all sampling results are compiled.
3. Use geological maps and sections	3.1. ***Symbols*** are interpreted to read geological maps and sections. 3.2. Geological features and structures are identified. 3.3. Geographical features are interpreted and recorded from landforms and maps. 3.4. Weathered outcrop, simple features are identified as signs of the fresh rock type. 4.5. Basic geological surveying techniques are carried out.

Variable	**Range**
Relevant compliance documentation	May include but not limited to: • legislative, organisational and site requirements and procedures • operating conditions • manufacturer's guidelines and specifications • industry standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Operating conditions	May include but not limited to: • day and night • laboratory • field environment • dry and wet • stable ground • broken ground • various landscapes • working over old under-ground workings and voids
Communications	May include but not limited to: • verbal (face-to-face or radio) • e-mail • facsimile • memorandum • shift hand over documents
Geological instruments and field equipment	May include but not limited to: • hand lens • magnifying glass • wide mouth bottle • horse shoe magnet • digital scale, pocket scale, etc. • spring balance • compass • GPS • geological pick hammer • two way radios

	• surveying equipment (e.g. theodolite) • clinometer • tape measure • portable PC • protractor • scale rule • balance • stereoscope • sample splitter • sieve • pan, gold screw • crow bar • shovel • mattock • soil pail • shelby sampling tubes • manual crusher (mortar and pestle, sledge hammer, etc) • Ph-meter • Electric conductivity meter • Water dip meter • communication radio • geophones • electrodes • multi-meter (electrical) • Portable handheld XRF • Schmidt hammer • DCP hammer (Dynamic Cone Penetration) • SPT hammer (Standard Penetration Test) • core cutter • specific gravity measuring equipment • susceptibility meter
Potential risks and hazards	May include but not limited to: • abandoned equipment • adjoining pit walls • adverse weather conditions (electrical storms, floods, fires) • chemicals • contaminants • equipment • fences • holes • materials • over-hanging rocks • personnel • pot holes • unsafe ground/unstable faces • vehicles
Environmental	May include but not limited to:

issues	• culturally-sensitive sites and artefacts • drainage • dust • emissions • flora and fauna • hazardous chemicals • heritage legislation • noise • runoff • spills • water quality • erosion • rehabilitation
Placer environments	May include but not limited to: • elluvial • colluvial • alluvial
Placer exploration	May include but not limited to: • grid setup • geophysics • excavation (pitting, trenching, hand augering, etc.) • sampling • panning • logging and data recording (gold count, weighing concentrates, payable horizon thickness, volume of excavated material, etc)
Reserve estimation	May include but not limited to: • data processing • calculating grade using appropriate methods
Rock, soil, water, ore and mineral	May include but not limited to: • rock includes: ➢ sedimentary rock (mudstone, sandstone, conglomerate, etc) ➢ igneous rock (gabbro, granite, basalt, rhyolite, etc) ➢ metamorphic rock (slate, phyllite, schist, gneiss, marble, etc) • soil includes: ➢ weathered products of rocks (insitu and transported)resting above bedrock ➢ disturbed/undisturbed • stream sediment ➢ clay, silt, sand, gravel (alluvial sediments) • water includes: ➢ spring, stream, lake, groundwater • ore and mineral include: ➢ metallic ore (source of metals such as gold, tantalum, iron nickel, copper, zinc, etc.) ➢ non-metallic minerals and rocks such as chemical

	industrial minerals, energy minerals, ceramic materials, construction raw materials, gemstones, etc
Sample	May include : • soil • stream sediment • water • steam, gas/oil • rock or mineral hand specimen • pit/trench samples • drill core/drill chips/drill sludge • Quality Assurance Quality Control (QAQC) samples • Bulk metallurgical sample • oriented sample
Records	May include but not limited to: • field note book entries • filling in forms/templates and logs • memorandums • log (horizon characteristics) • grain count • concentrates weight • facsimiles/photographs • sketches • map sections • formal reports • audio recorded messages
Symbols	May include to : • contacts • faults • dip and strike • scale bars • north points • legends • geological age

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • the requirements, procedures and instructions for providing geological field assistance • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of providing geological field assistance • working with others to undertake and complete the provision of geological field assistance that meets all of the required outcomes • consistent timely completion of providing geological field assistance that safely, effectively and efficiently meets the required outcomes
Underpinning	Demonstrate knowledge of:

Knowledge and Attitudes	• methods of sampling and sample identification • geology of rock, ore and mineral deposits • placer exploration/evaluation • classification of rock, ore and minerals • geometry of geological structures on maps and in field • company and site policy and procedures regarding geological field work • types and functions of geological instruments and field equipment • safe and correct use of instruments and equipment in the field • sampling procedures and requirements • communications methods and protocols • recording and reporting systems
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures for the provision of geological field assistance • drive all-terrain vehicles • access, interpret and apply technical and safety information • communicate and coordinate activities with others • keep plant and equipment records • apply diagnostic/faultfinding techniques • comply with environmental requirements • work in a team environment
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Process Data and Maintain Accurate Records**
Unit Code	**MIN MEO3 08 0114**
Unit Descriptor	This unit covers processing data and maintaining accurate records in exploration/mining industry. It includes using and maintaining data, analysing and presenting data, and maintaining accurate records

Elements	Performance Criteria
1. Use and maintain data	1.1. ***Compliance documentation*** relevant to processing data and maintaining accurate records is accessed, interpreted and applied. 1.2. Available computer technologies are used according to organization licensing, manufacturers' specifications and local procedures. 1.3. ***Data*** suitable for database system is identified and coded. 1.4. Computer output is checked and verified. 1.5. Suitable and appropriate ***software*** is utilized to store and retrieve data. 1.6. Data is transferred effectively.
2. Analyse and present data	2.1. Accurate and relevant observations are recorded in a form accessible to others. 2.2. Appropriate ***conventions and symbols*** are used. 2.3. Instrument readouts are converted into a form suitable for interpretation. 2.4. Computer technology is used to analyze data. 2.5. Results are presented in format that meets organizational standards.
3. Maintain accurate records	3.1. ***Records***, procedures and techniques are documented and updated. 3.2. Information is filed and stored.

Variable	Range
Relevant compliance documentation	May include but not limited to: • legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • industry standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Data	May include but not limited to:

	• results of tests • measurements and analyses • computer database information • manual notes • maps • sketches • diagrams
Software	May include but not limited to: • database software • spreadsheet software • statistical analysis software • GIS softwares
Conventions and symbols	May include but not limited to: • overlays • maps • reports • scientific notation • terminology • references
Records	May include but not limited to: • equipment • materials • safety • budgets • test results • product/process testing • calibrations of equipment • maintenance history of equipment • warranty information • manufacturer's manuals • OHS events • expenditure • file and sample locations

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • the requirements, procedures and instructions for processing data and maintaining accurate records • implementation of requirements, procedures and techniques for the safe, effective and efficient processing of data and maintenance of accurate records • working with others to process data and maintain accurate records that meet all of the required outcomes • consistent timely completion of processing data and maintaining of accurate records that safely, effectively and efficiently meets the required outcomes
Underpinning Knowledge and	Demonstrate knowledge of: • requirements and procedures

Attitudes	• computer software (database, spreadsheet, word processing, GIS) • data presentation modes • filing systems • storage methods
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures • apply procedures for entering data into computer software • apply data analysis techniques • apply report writing requirements and procedures • apply computer software report prepare requirements and procedures
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Mobilise Equipment and Materials**
Unit Code	**MIN MEO3 09 0114**
Unit Descriptor	This unit covers the mobilisation of materials and equipment in the exploration/ mining industry. It includes preparing for mobilisation to site, carrying out pre-start and routine checks, proceeding to the exploration site, and carrying out basic operator maintenance.

Elements	Performance Criteria
1. Prepare for mobilisation to site	1.1. ***Compliance documentation*** relevant to the work activity is accessed, interpreted and applied. 1.2. Safety ***rules and regulations*** including site rules safety plans and site specific instructions are observed. 1.3. Operational safety is checked by carrying out pre-start inspection procedures according to manufacturer's specifications, company and/or site requirements. 1.4. Briefing details are received, interpreted and clarified in accordance with requirements. 1.5. ***Vehicle***, vehicle kit, camping equipment, First Aid kit, survival kit and personal equipment are prepared for remote assignment.
2. Carry out pre-start and routine checks	2.1. Pre-start, daily engine, fuel and fluid level checks are carried out according to manufacturer/supplier instructions. 2.2. Safety procedures are observed while checking hydraulic systems, high-pressure air, electrical circuits and batteries.
3. Proceed to exploration site	3.1. Vehicle is driven in accordance with policies and procedures and State regulation. 3.2. Safe driving techniques are applied to all vehicles. 3.3. ***Loads*** are positioned/arranged so they will be carried in a safe manner to prevent loss/damage to vehicle or cargo. 3.4. A ***range of load restraints***/***lashings*** are used to secure various loads to a vehicle. 3.5. Ground conditions are identified and assessed before driving vehicle across country. 3.6. Vehicle is driven ***off road*** in a range of ***terrains*** 3.7. Stall recovery is demonstrates. 3.8. ***Maps***, ***communication and navigation aids***/***equipment*** are used. 3.9. Potential/actual hazards on the route are identified and avoided. 3.10. Emergency procedures are carried out in accordance with manufacturer's and/or company requirements.

	3.11. ***Basic survival techniques*** are recognized and demonstrated for a range of situations. 3.12. ***Information is communicated*** to base or other vehicles. 3.13. Move to site and all required documentation is completed.
4. Carry out basic operator maintenance	4.1. Hazards, and methods of minimizing are identified, in conducting maintenance, particularly in the field. 4.2. Minor repairs/replacements are carried out as required in accordance with manufacturer's specifications. 4.3. Minor breakdowns/bogging are/is overcome using ***recovery techniques***. 4.4. Vehicle washing and housekeeping are carried out regularly according to site requirements.

Variable	Range
Relevant compliance documentation	May include but not limited to: • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • industry standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Rules and regulations	May include but not limited to: • industrial safety regulations and legislation/organisation policy/procedures covering same • driving manuals • safety code of practice, signs and hazard codes • Material Safety Data Sheets (MSDS), container labels • manufacturer's specifications • employer's procedure manual/work instruction/safety analysis/directive • company instructions • maps and plans • vehicle log books • accident investigation forms
Vehicles	May include but not limited to: • any two-wheel drive passenger vehicle • all-wheel drive sedan/utility/station wagon • light trucks (usually table tops) • heavy support vehicles • heavy vehicles (such as drill rigs) • towed vehicle/trailer
Loads	May include but not limited to: • materials for exploration operations • spares for all equipment • fuels for all equipment, including oils and other lubricants

	• other hazardous substances and equipment • water tanks • ancillary equipment (e.g. pumps, generators, lighting plant) • compressors, caravans and/or vehicles • pallets • fluids • bulk materials • decontamination (cleaning) chemicals • safety equipment including personal protective equipment • towed load
Terrain	May include but not limited to: • state and federal roads, sealed and unsealed • tracks or trails (e.g. mining and forestry access roads, fire trails) • off-road, where surface may vary in type, condition, gradient • barriers such as streams, gullies, sand dunes, banks
Hazards	May include but not limited to: • power lines • fences, gates • natural disasters (e.g. floods) • LPG appliances/canisters • other transported gas cylinders • portable and fixed winches • road transport hazards (e.g. braking with loads, camber, hills, rough surfaces) • serviceability of slings, tow ropes, shackles, snatch blocks lashings, vehicle restraining structures, decks, steps and jacks
Range of load restraint/lashings	May include but not limited to: • direct lashings • indirect lashings • combination of direct and indirect lashings • knots (securing loads on vehicles)
Driving a vehicle off-road	May include but not limited to: • driving on rocky trails • steep gradients • driving in mud • crossing sand dunes/crossing rivers • stall recovery - ascent and descent
Maps, communications and navigation aids	May include but not limited to: • compass • Global Positioning System (GPS) • range of maps and diagrams • topographical information
Basic survival techniques	May include: • coping with breakdowns in the bush or isolated areas • physical and emotional requirements in an emergency and in isolated areas • methods of self protection to enhance survival

	• sources of water • making fire/protecting the environment • signalling search parties/aircraft • search party assistance • determining directions/locations • remaining in control/assisting other team members • coping with accidents and illness/First Aid within limits of competency • reading and interpreting maps
Information communicated	May include: • use of two way radio • SAT phones, mobile phones • reporting defects, necessary detours, work hazards, changes in environmental patterns (e.g. storm, flood) • phonetic alphabet • call signs and radio protocols
Documentation	May include: • log books/service records • pre-drive checks
Minor repairs/ replacements	May include: • wheel changing/rotation • using jumper leads • charging/servicing batteries • bleeding brakes • bleeding hydraulic system • adjusting clutch • bleeding fuel system • servicing air cleaners • changing oil and oil filters • greasing/lubrication • basic pre-drive operational checks of a vehicle
Recovery techniques	May include: • jacking • winching • rigging • towing

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • the requirements, procedures and instructions for mobilising equipment and materials • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of equipment and materials mobilisation • working with others to undertake and complete the mobilisation of materials and equipment that meets all of the required outcomes • consistent timely completion of equipment and materials mobilisation that safely, effectively and efficiently meets the

	required outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • provisions of the Workplace Health and Safety Acts, their regulations and code of practice • particular state regulations relating to operations • reasons of loads shift and methods of preventing shifting • number and types of lashings to apply, fixing points and basic knots • safe carrying of loads • a range of acquired safety and survival skills • driving with the minimum of damage to vehicles, equipment and structures • relevant OHS requirements for transport and storage of materials and equipment • operational and maintenance procedures • a basic knowledge of hydraulic systems, components and cleanliness requirements • a basic knowledge of internal combustion motors and the major components • a basic knowledge of electricity and in particular, the associated hazards • use, transport and storage of LPG and LPG appliances • recording and reporting
Underpinning Skills	Demonstrate skills of: • apply legislative, organisation and site requirements and procedures for the mobilisation of equipment and materials • apply communication and recording skills • perform manual and mechanical handling • drive laden vehicles (on and off road) • perform basic maintenance skills • apply knots, load securing devices and attachment points for loaded vehicles • apply recovery techniques for bogged plant/vehicles • acquire required licences and permits • apply diagnostic and troubleshooting procedures • use hand tools • solve problems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Implement and Monitor Environmentally Sustainable Work Practices**
Unit Code	**MIN MEO3 10 0114**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to effectively analyse the workplace in relation to environmentally sustainable work practices and to implement improvements and monitor their effectiveness. This unit requires the ability to access industry information, applicable legislative and Occupational Health and Safety (OHS) guidelines.

Elements	Performance Criteria
1. Investigate current practices in relation to resource usage	1.1. Environmental regulations applying to the enterprise are identified. 1.2. Procedures are analyzing for assessing ***compliance*** with environmental/sustainability regulations. 1.3. Information on environmental and resource efficiency systems and procedures is collected, and provided to the work group where appropriate. 1.4. Information from a range of ***sources*** is collected, analyzed and organized to provide information/advice and tools/resources for improvement opportunities. 1.5. Current resource usage of members of the work group is measured and documented. 1.6. Current ***purchasing strategies*** are analyzed and documented. 1.7. Current work processes are analyzed to access information and data to assist in identifying areas for improvement.
2. Set targets for improvements	2.1. Input is sought from ***stakeholders***, ***key personnel and specialists***. 2.2. External sources of information and data are accessed as required. 2.3. Alternative solutions are evaluated to workplace environmental issues. 2.4. Efficiency targets are set.
3. Implement performance improvement strategies	3.1. Appropriate ***techniques and tools*** are sourced and used to assist in achieving efficiency targets. 3.2. Continuous improvement strategies are applied to own work area of responsibility, including ideas and possible solutions to communicate to the work group and management. 3.3. ***Environmental and resource efficiency improvement***

	plans are implemented and integrated for own work group with other operational activities. 3.4. Team members are supervised and supported to identify possible areas for improved practices and resource efficiency in work area. 3.5. ***Suggestions*** and ideas about environmental and resource efficiency management are sought from stakeholders and acted upon where appropriate. 3.6. Costing strategies are implemented to fully value environmental assets.
4. Monitor performance	4.1. Evaluation and monitoring, tools and technology are used and/or developed. 4.2. Outcomes to report on efficiency targets are documented and communicated to key personnel and stakeholders. 4.3. Strategies and improvement plans are evaluated. 4.4. New efficiency targets are set, and new tools and strategies are investigated and applied. 4.5. Successful strategies and reward participants are promoted where possible.

Variable	**Range**
Compliance	May include but not limited to: • meeting relevant laws, by-laws and regulations or best practice or codes of practice to support compliance in environmental performance and sustainability at each level as required (such as Environmental Protection or Biodiversity Conservation Act): ➢ international ➢ national ➢ local ➢ industry ➢ organisation.
Sources	May include but not limited to: • organisation specifications • regulatory sources • relevant stakeholders • resource use.
Purchasing strategies	May include but not limited to: • influencing suppliers to take up environmental sustainability approaches • researching and participating in programs such as a supply chain program to purchase sustainable products
Stakeholders, key personnel and specialists	May include but not limited to: • individuals and groups both inside and outside the organisation who have direct or indirect interest in the organisation's conduct, actions, products and services, including: ➢ customers

	➢ employees at all levels of the organization ➢ government ➢ investors ➢ local community ➢ other organizations ➢ suppliers • key personnel within the organisation, and specialists outside the organisation who may have particular technical expertise.
Techniques and tools	May include but not limited to: • examination of invoices from suppliers • examination of relevant information and data • measurements made under different conditions • others as appropriate to the specific industry context
Environmental and resource efficiency improvement plans	May include but not limited to: • addressing environmental and resource sustainability initiatives such as environmental management systems, action plans, green office, surveys and audits • applying the waste management hierarchy in the workplace • determining organisation's most appropriate waste treatment including waste to landfill, recycling, re-use, recoverable resources and wastewater treatment • initiating and/or maintaining appropriate organisational procedures for operational energy consumption, including stationary energy and non-stationary (transport) • preventing and minimising risks, and maximising opportunities such as: ➢ improving resource/energy efficiency ➢ reducing emissions of greenhouse gases • reducing use of non-renewable resources • referencing standards, guidelines and approaches such as: ➢ ecological footprinting ➢ Global Reporting Initiative ➢ green office program - a cultural change program ➢ green purchasing ➢ ISO 14001:1996 Environmental management systems life cycle analyses ➢ product stewardship ➢ supply chain management ➢ sustainability covenants/compacts • triple bottom line reporting
Suggestions	May include but not limited to: • prevent and minimise risks and maximise opportunities such as: ➢ usage of solar or renewable energies where appropriate ➢ reducing emissions of greenhouse gases ➢ reducing use of non-renewable resources ➢ making more efficient use of resources, energy and water • maximising opportunities to re-use, recycle and reclaim materials • identifying strategies to offset or mitigate environmental

	impacts: ➢ purchasing carbon credits ➢ energy conservation ➢ reducing chemical use ➢ reducing material consumption • expressing purchasing power through the selection of suppliers with improved environmental performance e.g. purchasing renewable energy • eliminating the use of hazardous and toxic materials

Evidence Guide	
Critical aspects of Competence	Demonstrate knowledge and skills to: • relevant compliance requirements within work area • developing plans to make improvements • planning and organising work group activities in relation to measuring current use and devising strategies to improve usage • monitoring resource use and improvements for environmental performance relative to work area and supervision • ensuring appropriate action is taken within work area in relation to environmental/sustainability compliance and potential hazards • implementing new approaches to work area in an effort to resolve and improve environmental and resource efficiency issues and reporting as required
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • best practice approaches relevant to own area of responsibility and industry • compliance requirements within work area for all relevant environmental/sustainability legislation, regulations and codes of practice including resource hazards/risks associated with work area, job specifications and procedures • environmental and energy efficiency issues, systems and procedures specific to industry practice • external benchmarks and support for particular benchmarks to be used within organisation, including approaches to improving resource use for work area and expected outcomes • OHS issues and requirements • organisational structure and reporting channels and procedures • quality assurance systems relevant to own work area • strategies to maximise opportunities and to minimise impact relevant to own work area • supply chain procedures • terms and conditions of employment including policies and procedures, such as daily tasks, work area responsibilities, employee, supervisor and employer rights, equal opportunity
Underpinning Skills	Demonstrate skills of: • analytical skills to analyse problems, to devise solutions and to

	reflect on approaches taken • change management skills • communication skills to answer questions, clarify and acknowledge suggestions relating to work requirements and efficiency • communication/consultation skills to support information flow from stakeholders to the work group • innovation skills to identify improvements, to apply knowledge about resource use to organisational activities and to develop tools • literacy skills to comprehend documentation, to interpret environmental and energy efficiency requirements, to create tools to measure and monitor improvements and to report outcomes • numeracy skills to analyse data on organisational resource consumption and waste product volumes • planning and organising skills to implement environmental and energy efficiency management polices and procedures relevant to own work area • problem-solving skills to devise approaches to improved environmental sustainability and to develop alternative approaches as required • technology skills to operate and shut down equipment; where relevant, to use software systems for recording and filing documentation to measure current usage; and to use word processing and other basic software for interpreting charts, flowcharts, graphs and other visual data and information • supervisory skills to work effectively with a team
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Monitor Implementation of Work Plan/Activities**
Unit Code	**MIN MEO3 11 0114**
Unit Descriptor	This unit covers competence required to oversee and monitor the quality of work operations within an enterprise. This unit may be carried out by team leaders or supervisors.

Elements	Performance Criteria
1. Monitor and improve workplace operations	1.1 Efficiency and service levels are monitored on an ongoing basis. 1.2 Operations in the workplace support overall enterprise goals and quality assurance initiatives. 1.3 Quality ***problems*** and issues are promptly identified and adjustments are made accordingly. 1.4 Procedures and systems are changed in consultation with colleagues to improve efficiency and effectiveness. 1.5 Colleagues are consulted about ways to improve efficiency and service levels.
2. Plan and organise workflow	2.1 Current workload of colleagues is accurately assessed. 2.2 Work is scheduled in a manner which enhances efficiency and customer service quality. 2.3 Work is delegated to appropriate people in accordance with principles of delegation. 2.4 Workflow is assessed against agreed objectives and timelines and colleagues are assisted in prioritisation of workload. 2.5 Input is provided to appropriate management regarding staffing needs.
3. Maintain workplace records	3.1 ***Workplace records*** are accurately completed and submitted within required timeframes. 3.2 Where appropriate completion of records is delegated and monitored prior to submission.
4. Solve problems and make decisions	4.1 Workplace problems are promptly identified and considered from an operational and customer service perspective. 4.2 Short term action is initiated to resolve the immediate problem where appropriate. 4.3 Problems are analysed for any long term impact and potential solutions are assessed and actioned in consultation with relevant colleagues. 4.4 Where problem is raised by a team member, they are encouraged to participate in solving the problem.

	4.5 Follow up action is taken to monitor the effectiveness of solutions in the workplace.

Variables	**Range**
Problems	May include but not limited to: • difficult customer service situations • equipment breakdown/technical failure • delays and time difficulties • competence
Workplace records	May include but is not limited to: • staff records and regular performance reports

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • ability to effectively monitor and respond to a range of common operational and service issues in the workplace • understanding of the role of staff involved in workplace monitoring • knowledge of quality assurance, principles of workflow planning, delegation and problem solving
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • roles and responsibilities in monitoring work operations • overview of leadership and management responsibilities • principles of work planning and principles of delegation • typical work organization methods appropriate to the sector • quality assurance principles and time management • problem solving and decision making processes • industrial and/or legislative issues which affect short term work organization as appropriate to industry sector
Underpinning Skills	Demonstrate skills to: • monitor and improve workplace operations • plan and organize workflow • maintain workplace records
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Apply Quality Control**
Unit Code	**MIN MEO3 12 0114**
Unit Descriptor	This unit covers the knowledge, attitudes and skills required in applying quality control in the workplace.

Elements	Performance Criteria
1. Implement quality standards	1.1 Agreed quality standard and procedures are acquired and confirmed. 1.2 Standard procedures are introduced to organizational staff/personnel. 1.3 Quality standard and procedures documents are provided to employees in accordance with the organization policy. 1.4 Standard procedures are revised / updated when necessary.
2. Assess quality of service delivered	2.1 Services delivered are ***quality checked*** against organization ***quality standards*** and specifications. 2.2 Service delivered are evaluated using the appropriate evaluation ***quality parameters*** and in accordance with organization standards. 2.3 Causes of any identified faults are identified and corrective actions are taken in accordance with organization policies and procedures.
3. Record information	3.1 Basic information on the quality performance is recorded in accordance with organization procedures. 3.2 Records of work quality are maintained according to the requirements of the organization.
4. Study causes of quality deviations	4.1 Causes of deviations from final outputs or services are investigated and reported in accordance with organization procedures. 4.2 Suitable preventive action is recommended based on organization quality standards and identified causes of deviation from specified quality standards of final service or output.
5. Complete documentation	5.1 Information on quality and other indicators of service performance is recorded. 5.2 All service processes and outcomes are recorded.

Variable	Range
Quality check	May include but not limited to: • Check against design / specifications • Visual inspection and Physical inspection

Quality standards	May include but not limited to: • Materials • Components • Process • Procedures
Quality parameters	May include but not limited to: • Standard Design / Specifications • Material Specification

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: • Check completed work continuously against organization standard • Identify and isolate faulty or poor service • Check service delivered against organization standards • Identify and apply corrective actions on the causes of identified faults or error • Record basic information regarding quality performance • Investigate causes of deviations of services against standard • Recommend suitable preventive actions
Underpinning Knowledge	Demonstrates knowledge of: • Relevant quality standards, policies and procedures • Characteristics of services • Safety environment aspects of service processes • Evaluation techniques and quality checking procedures • Workplace procedures and reporting procedures
Underpinning Skills	Demonstrates skills to: • interpret work instructions, specifications and standards appropriate to the required work or service • carry out relevant performance evaluation • maintain accurate work records • meet work specifications and requirements • communicate effectively within defined workplace procedures
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Lead Workplace Communication**
Unit Code	**MIN MEO3 13 0114**
Unit Descriptor	This unit covers the knowledge, attitudes and skills needed to lead in the dissemination and discussion of information and issues in the workplace.

Elements	Performance Criteria
1. Communicate information about workplace processes	1.1 Appropriate ***communication method*** is selected. 1.2 Multiple operations involving several topics areas are communicated accordingly. 1.3 Questions are used to gain extra information. 1.4 Correct sources of information are identified. 1.5 Information is selected and organized correctly. 1.6 Verbal and written reporting is undertaken when required. 1.7 Communication skills are maintained in all situations.
2. Lead workplace discussion	2.1 Response to workplace issues is sought. 2.2 Response to workplace issues are provided immediately. 2.3 Constructive contributions are made to workplace discussions on such issues as production, quality and safety. 2.4 Goals/objectives and action plan undertaken in the workplace are communicated.
3. Identify and communicate issues arising in the workplace	3.1 Issues and problems are identified as they arise. 3.2 Information regarding problems and issues are organized coherently to ensure clear and effective communication. 3.3 Dialogue is initiated with appropriate staff/personnel. 3.4 Communication problems and issues are raised as they arise.

Variable	Range
Methods of communication	May include but not limited to: • Non-verbal gestures • Verbal • Face to face • Two-way radio • Speaking to groups • Using telephone • Written • Using Internet

	• Cell phone

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: • Deal with a range of communication/information at one time • Make constructive contributions in workplace issues • Seek workplace issues effectively • Respond to workplace issues promptly • Present information clearly and effectively written form • Use appropriate sources of information • Ask appropriate questions • Provide accurate information
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Organization requirements for written and electronic communication methods • Effective verbal communication methods
Underpinning Skills	Demonstrates skills to: • Organize information • Understand and convey intended meaning • Participate in variety of workplace discussions • Comply with organization requirements for the use of written and electronic communication methods
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Lead Small Teams**
Unit Code	**MIN MEO3 14 0114**
Unit Descriptor	This unit covers the skills, knowledge and attitudes required to determine individual and team development needs and facilitate the development of the work group.

Elements	Performance Criteria
1. Provide team leadership	1.1 ***Learning and development needs*** are systematically identified and implemented in line with ***organizational requirements***. 1.2 Learning plan to meet individual and group training and developmental needs is collaboratively developed and implemented. 1.3 Individuals are encouraged to self-evaluate performance and identify areas for improvement. 1.4 ***Feedback on performance*** of team members is collected from relevant sources and compared with established team learning process.
2. Foster individual and organizational growth	2.1 Learning and development program goals and objectives are identified to match the specific knowledge and skills requirements of Competence standards. 2.2 ***Learning delivery methods*** are appropriate to the learning goals, the learning style of participants and availability of equipment and resources. 2.3 Workplace learning opportunities and coaching/ mentoring assistance are provided to facilitate individual and team achievement of competencies. 2.4 Resources and timelines required for learning activities are identified and approved in accordance with organizational requirements.
3. Monitor and evaluate workplace learning	3.1 Feedback from individuals or teams is used to identify and implement improvements in future learning arrangements. 3.2 Outcomes and performance of individuals/teams are assessed and recorded to determine the effectiveness of development programs and the extent of additional support. 3.3 Modifications to learning plans are negotiated to improve the efficiency and effectiveness of learning. 3.4 Records and reports of competence are maintained within organizational requirement.

4. Develop team commitment and cooperation	4.1 Open communication processes to obtain and share information is used by team. 4.2 Decisions are reached by the team in accordance with its agreed roles and responsibilities. 4.3 Mutual concern and camaraderie are developed in the team.
5. Facilitate accomplishment of organizational goals	5.1 Team members actively participated in team activities and communication processes. 5.2 Teams members developed individual and joint responsibility for their actions. 5.3 Collaborative efforts are sustained to attain organizational goals.

Variable	**Range**
Learning and development needs	May include but not limited to: • Coaching, mentoring and/or supervision • Formal/informal learning program • Internal/external training provision • Work experience/exchange/opportunities • Personal study • Career planning/development • Performance appraisals • Workplace skills assessment • Recognition of prior learning
Organizational requirements	May include but not limited to: • Quality assurance and/or procedures manuals • Goals, objectives, plans, systems and processes • Legal and organizational policy/guidelines and requirements • Safety policies, procedures and programs • Confidentiality and security requirements • Business and performance plans • Ethical standards • Quality and continuous improvement processes and standards
Feedback on performance	May include but not limited to: • Formal/informal performance appraisals • Obtaining feedback from supervisors and colleagues • Obtaining feedback from clients • Personal and reflective behavior strategies • Routine and organizational methods for monitoring service delivery
Learning delivery methods	May include but not limited to: • On the job coaching or mentoring • Problem solving • Presentation/demonstration • Formal course participation • Work experience and Involvement in professional networks • Conference/seminar attendance and induction

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: • identify and implement learning opportunities for others • give and receive feedback constructively • facilitate participation of individuals in the work of the team • negotiate learning plans to improve the effectiveness of learning • prepare learning plans to match skill needs • access and designate learning opportunities
Underpinning Knowledge and Attitude	Demonstrates knowledge of: • coaching and mentoring principles • understanding how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective • understanding how to facilitate team development and improvement • understanding methods and techniques for eliciting and interpreting feedback • understanding methods for identifying and prioritizing personal development opportunities and options • knowledge of career paths and competence standards in the industry
Underpinning Skills	Demonstrates skills to: • read and understand a variety of texts, prepare general information and documents according to target audience; spell with accuracy; use grammar and punctuation effective relationships and conflict management • receive feedback and report, maintain effective relationships and conflict management • organize required resources and equipment to meet learning needs • provide support to colleagues • organize information; assess information for relevance and accuracy; identify and elaborate on learning outcomes • facilitation skills to conduct small group training sessions • relate to people from a range of social, cultural, physical and mental backgrounds
Resource Implications	Access to relevant workplace or appropriately simulated environment where assessment can take place
Methods of Assessment	Competence may be assessed through: • Interview / Written exam • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the workplace or in a simulated workplace setting

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Improve Business Practice**
Unit Code	**MIN MEO3 15 0114**
Unit Descriptor	This unit covers the skills, knowledge and attitudes required in promoting, improving and growing business operations.

Elements	Performance Criteria
1. Diagnose the business	1.1 ***Data required*** for diagnosis is determined and acquired. 1.2 ***Competitive advantage*** of the business is determined from the data. 1.3 ***SWOT analysis*** of the data is undertaken.
2. Benchmark the business	2.1 Sources of relevant benchmarking data are identified. 2.2 ***Key indicators*** for benchmarking are selected in consultation with key stakeholders. 2.3 Like indicators of own practice are compared with benchmark indicators. 2.4 Areas for improvement are identified.
3. Develop plans to improve business performance	3.1 A consolidated list of required improvements is developed. 3.2 Cost-benefit ratios for required improvements are determined. 3.3 Work flow changes resulting from proposed improvements are determined. 3.4 Proposed improvements are ranked according to agreed criteria. 3.5 An action plan is developed and agreed to implement the top ranked improvements. 3.6 ***Organizational structures*** are checked to ensure they are suitable.
4. Develop marketing and promotional plans	4.1 The practice vision statement is reviewed. 4.2 Practice ***objectives*** are developed/ reviewed. 4.3 Target markets are identified/ refined. 4.4 ***Market research data*** is obtained. 4.5 ***Competitor analysis*** is obtained. 4.6 ***Market position*** is developed/ reviewed. 4.7 ***Practice brand*** is developed. 4.8 ***Benefits*** of practice/practice products/services are identified. 4.9 ***Promotion tools*** are selected/ developed.

5. Develop business growth plans	5.1 Plans are developed to increase ***yield per existing client***. 5.2 Plans are developed to add new clients. 5.3 Proposed plans are ranked according to agreed criteria. 5.4 An action plan is developed and agreed to implement the top ranked plans. 5.5 Practice work practices are reviewed to ensure they support growth plans.
6. Implement and monitor plans	6.1 Implementation plan is developed in consultation with all relevant stakeholders. 6.2 Indicators of success of the plan are agreed. 6.3 Implementation is monitored against agreed indicators. 6.4 Implementation is adjusted as required.

Variable	Range
Data required includes:	May include but not limited to: • organization capability • appropriate business structure • level of client service which can be provided • internal policies, procedures and practices • staff levels, capabilities and structure • market, market definition • market changes/market segmentation • market consolidation/fragmentation • revenue • level of commercial activity • expected revenue levels, short and long term • revenue growth rate • break even data • pricing policy • revenue assumptions • business environment • economic conditions • social factors • demographic factors • technological impacts • political/legislative/regulative impacts • competitors, competitor pricing and response to pricing • competitor marketing/branding • competitor products
Competitive advantage	May include but not limited to: • services/products • fees • location • timeframe

SWOT analysis	May include but not limited to: • internal strengths such as staff capability, recognized • quality • internal weaknesses such as poor morale, • under-capitalization, poor technology • external opportunities such as changing market and • economic conditions • external threats such as industry fee structures, strategic • alliances, competitor marketing
Key indicators	May include but not limited to: • salary cost and staffing • personnel productivity (particularly of principals) • profitability • fee structure • client base • size staff/principal • overhead/overhead control
Organizational structures	May include but not limited to: • Legal structure (partnership, Limited Liability Company, etc.) • organizational structure/hierarchy • reward schemes
Objectives should be 'SMART'	May include but not limited to: • S: Specific • M: Measurable • A: Achievable • R: Realistic • T: Time defined
Market research data	May include but not limited to: • data about existing clients • data about possible new clients • data from internal sources • data from external sources such as: ➢ trade associations/journals ➢ Yellow Pages small business surveys ➢ libraries ➢ Internet ➢ Chamber of Commerce ➢ client surveys ➢ industry reports ➢ secondary market research • primary market research such as: ➢ telephone surveys ➢ personal interviews ➢ mail surveys
Competitor analysis	May include but not limited to: • competitor offerings • competitor promotion strategies and activities • competitor profile in the market place

Market position should include data on:	May include but not limited to: • product • the good or service provided • product mix • the core product - what is bought • the tangible product - what is perceived • the augmented product - total package of consumer • features/benefits • product differentiation from competitive products • new/changed products • Price and pricing strategies (cost plus, supply/demand, ability to pay, etc.) • Pricing objectives (profit, market penetration, etc.) • cost components • market position • distribution strategies • marketing channels • promotion • promotional strategies • target audience • communication • promotion budget
Practice brand	May include but not limited to: • practice image • practice logo/letter head/signage • phone answering protocol • facility decor • slogans • templates for communication/invoicing • style guide • writing style • AIDA (attention, interest, desire, action)
Benefits	May include but not limited to: • features as perceived by the client • benefits as perceived by the client
Promotion tools	May include but not limited to: • networking and referrals • seminars • advertising • press releases • publicity and sponsorship • brochures • newsletters (print and/or electronic) • websites • direct mail • telemarketing/cold calling
Yield per existing	May include but not limited to:

client	• raising charge out rates/fees • packaging fees • reduce discounts • sell more services to existing clients

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • ability to identify the key indicators of business performance • ability to identify the key market data for the business • knowledge of a wide range of available information sources • ability to acquire information not readily available within a business • ability to analyze data and determine areas of improvement • ability to negotiate required improvements to ensure implementation • ability to evaluate systems against practice requirements • and form recommendations and/or make recommendations • ability to assess the accuracy and relevance of information
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • data analysis • communication skills • computer skills to manipulate data and present information • negotiation skills • problem solving • planning skills • marketing principles • ability to acquire and interpret relevant data • current product and marketing mix • use of market intelligence • development and implementation strategies of promotion and growth plans
Underpinning Skills	Demonstrates skill in: • data analysis and manipulation • ability to acquire and interpret required data, current practice systems and structures and sources of relevant benchmarking data • applying methods of selecting relevant key benchmarking indicators • communication skills • working and consulting with others when developing plans for the business • planning skills, negotiation skills and problem solving • using computers to manipulate, present and distribute information
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of	Competence may be assessed through:

Assessment	• Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Mineral Exploration Level III	
Unit Title	**Prevent and Eliminate MUDA**
Unit Code	**MIN MEO3 16 0114**
Unit Descriptor	This unit of competence covers the knowledge, skills and attitude required by a worker to prevent and eliminate MUDA/wastes in his/her their workplace. It covers responsibility for the day-to-day operation of the work and ensures Kaizen elements are continuously improved and institutionalized.

Elements	Performance Criteria
1. Prepare for work.	1.1 Work instructions are used to determine job requirements, including method, material and equipment. 1.2 Job specifications are read and interpreted following working manual. 1.3 ***OHS requirements***, including dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work. 1.4 Appropriate material is selected for work. 1.5 ***Safety equipment and tools*** are identified and checked for safe and effective operation.
2. Identify MUDA.	2.1 Plan of MUDA identification is prepared and implemented. 2.2 Causes and effects of MUDA are discussed. 2.3 ***Tools and techniques*** are used to draw and analyze current situation of the work place. 2.4 Wastes/MUDA are identified and measured based on ***relevant procedures***. 2.5 Identified and measured wastes are reported to relevant personnel.
3. Eliminate wastes/MUDA.	3. 1. Plan of MUDA elimination is prepared and implemented. 3. 2. Necessary attitude and ***the ten basic principles for improvement*** are adopted to eliminate waste/MUDA. 3. 3. Tools and techniques are used to eliminate wastes/MUDA based on the procedures and OHS. 3. 4. Wastes/MUDA are reduced and eliminated in accordance with OHS and organizational requirements. 3. 5. Improvements gained by elimination of waste/MUDA are reported to relevant bodies.
4. Prevent occurrence of wastes/MUDA.	4.1 Plan of MUDA prevention is prepared and implemented. 4.2 Standards required for machines, operations, defining normal and abnormal conditions, clerical procedures and

	procurement are discussed and prepared. 4.3 Occurrences of wastes/MUDA are prevented by using ***visual and auditory control methods***. 4.4 Waste-free workplace is created using ***5W and 1H*** sheet. 4.5 The completion of required operation is done in accordance with standard procedures and practices. 4.6 The updating of standard procedures and practices is facilitated. 4.7 The capability of the work team that aligns with the requirements of the procedure is ensured.

Variable	**Range**
OHS requirements	May include but not limited to: • Are to be in accordance with legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances. • Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices. • Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with workplace organization. • Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.
Safety equipment and tools	May include but not limited to: • dust masks / goggles • glove • working cloth • first aid • safety shoes
Tools and techniques	May include but not limited to: • Plant Layout • Process flow • Other Analysis tools • Do time study by work element • Measure Travel distance • Take a photo of workplace • Measure Total steps • Make list of items/products, who produces them and who uses them & those in warehouses, storages etc. • Focal points to Check and find out existing problems • 5S

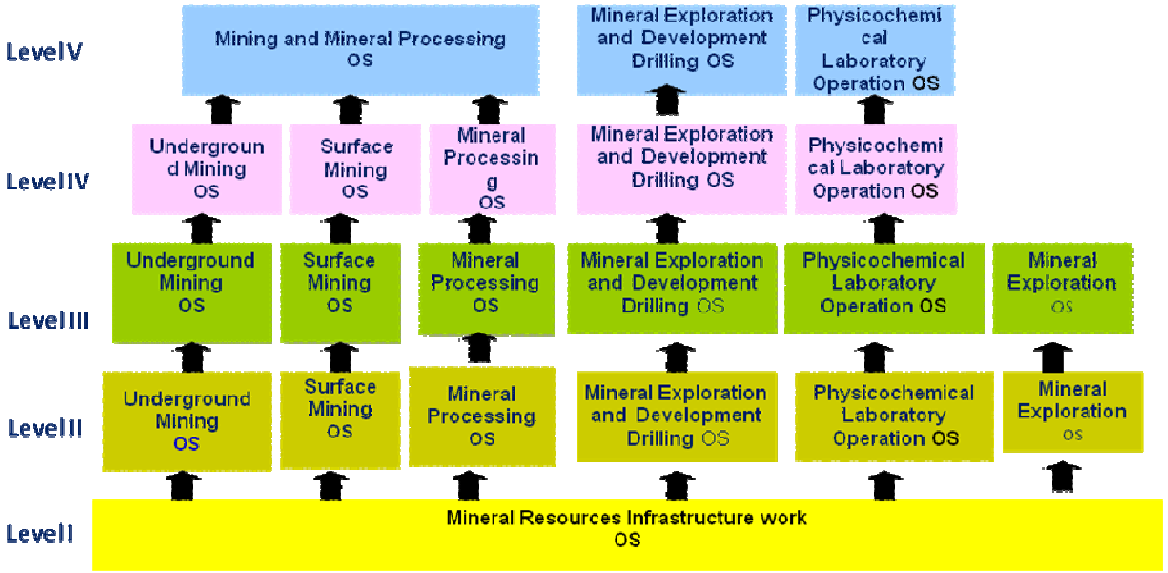
	• Layout improvement • Brainstorming • Andon • U-line • In-lining • Unification • Multi-process handling & Multi-skilled operators • A.B. control (Two point control) • Cell production line • TPM (Total Productive Maintenance)
Relevant procedures	May include but not limited to: • Make waste visible • Be conscious of the waste • Be accountable for the waste. • Measure the waste.
The ten basic principles for improvement	May include but not limited to: • Throw out all of your fixed ideas about how to do things. • Think of how the new method will work- not how it won. • Don't accept excuses. Totally deny the status quo. • Don't seek perfection. A 5o percent implementation rate is fine as long as it's done on the spot. • Correct mistakes the moment they are found. • Don't spend a lot of money on improvements. • Problems give you a chance to use your brain. • Ask "why?" at least five times until you find the ultimate cause. • Ten people's ideas are better than one person's. • Improvement knows no limits.
Visual and auditory control methods	May include but not limited to: • Red Tagging • Sign boards • Outlining • Andons • Kanban, etc.
5W and 1H	May include but not limited to: • Who • What • Where • When • Why • How

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: • discuss why wastes occur in the workplace • discuss causes and effects of wastes/MUDA in the workplace • analyze the current situation of the workplace by using appropriate tools and techniques

	• identify, measure, eliminate and prevent occurrence of wastes by using appropriate tools and techniques • use 5W and 1H sheet to prevent
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Targets of customers and manufacturer/service provider • Traditional and kaizen thinking of price setting • Kaizen thinking in relation to targets of manufacturer/service provider and customer • value • The three categories of operations • the 3“MU” • waste/MUDA • wastes occur in the workplace • The 7 types of MUDA • The Benefits of identifying and eliminating waste • Causes and effects of 7 MUDA • Procedures to identify MUDA • Necessary attitude and the ten basic principles for improvement • Procedures to eliminate MUDA • Prevention of wastes • Methods of waste prevention • Definition and purpose of standardization • Standards required for machines, operations, defining normal and abnormal conditions, clerical procedures and procurement • Methods of visual and auditory control • TPM concept and its pillars. • Relevant Occupational Health and Safety (OHS) and environment requirements • Plan and report • Method of communication
Underpinning Skills	Demonstrates skills to: • draw & analyze current situation of the work place • use measurement apparatus (stop watch, tape, etc.) • calculate volume and area • use and follow checklists to identify, measure and eliminate wastes/MUDA • identify and measure wastes/MUDA in accordance with OHS and procedures • use tools and techniques to eliminate wastes/MUDA in accordance with OHS procedure • apply 5W and 1H sheet • update and use standard procedures for completion of required operation • work with others • read and interpret documents • observe situations

	• solve problems • communicate • gather evidence by using different means • report activities and results using report formats
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

MINERAL EXPLORATION, MINING AND MINERAL PROCESSING



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This occupational standard was developed in January 2014 at Addis Ababa, Ethiopia.

COMMENT TEMPLATE

The Federal TVET Agency values your feedback of the document.
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