




Draft Curriculum Document			
Curriculum Code	Qualification Title	NQF Level	Logo
862927-000-00-00	National Occupational Certificate: Borehole Pump Operator	4	
Name	Email:	Telephone:	Logo
Development Quality Partner (DQP)	leshas@ewseta.org.za	011-2744 700	
Assessment Quality Partner (AQP)	leshas@ewseta.org.za	011-2744 700	

Learner QDF Signature

Date

QDF Signature

Date

DQP Representative Signature

Date

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SECTION 1: CURRICULUM SUMMARY

1. Occupational Information

1.1 Associated Occupation

862927: National Occupational Certificate: Borehole Pump Operator

1.2 Occupation or Specialisation Addressed by this Curriculum

862927000: National Occupational Certificate: Borehole Pump Operator

1.3 Alternative Titles used by Industry

- None

2. Curriculum Information

2.1 Curriculum Structure

The curriculum is comprised of the following Knowledge, Practical Skills and Workplace Experience Modules:

List of Knowledge Modules Specifications:

- 862927-000-00-KM-01, Workplace Fundamentals, NQF Level 3, 2 Credits
- 862927-000-00-KM-02, Legislation, regulations and Safety standards, NQF Level 4, 2 Credits
- 862927-000-00-KM-03, Communication and Administration, NQF Level 4, 9 Credits
- 862927-000-00-KM-04, Water Cycle, NQF Level 4, 5 Credits
- 862927-000-00-KM-05, Groundwater abstraction data collection, NQF Level 4, 5 Credits
- 862927-000-00-KM-06, Operation and Maintenance of groundwater abstraction system, NQF Level 5, 20 Credits
- 862927-000-00-KM-07, Groundwater Monitoring System, NQF Level 4, 3 Credits
- 862927-000-00-KM-08, Environment, Energy Efficiency and Environmental Ethics, NQF Level 4, 2 Credits
- 862927-000-00-KM-09, Stakeholder Engagement, NQF Level 4, 2 Credits

Total number of credits for Knowledge Modules: 50

List of Practical Skill Module Specifications:

- 862927-000-00-PM-01, Prepare for and operate groundwater abstraction system, NQF Level 4, 10 Credits
- 862927-000-00-PM-02, Monitor, control and measure water levels, abstraction, power usage, water quality and quantity, NQF Level 4, 15 Credits
- 862927-000-00-PM-03, Conduct groundwater quality monitoring, sampling and on-site testing, NQF Level 3, 5 Credits
- 862927-000-00-PM-04, Perform routine inspection on groundwater abstraction system performance, NQF Level 4, 5 Credits
- 862927-000-00-PM-05, Perform basic groundwater abstraction system maintenance, fault-finding and troubleshooting, NQF Level 4, 15 Credits
- 862927-000-00-PM-06, Participate in relevant stakeholder forums meetings, NQF Level 4, 3 Credits

Total number of credits for Practical Skill Modules: 53

List of Workplace Experience Modules:

- 862927-000-00-00-WM-01, Groundwater abstraction operation and maintenance processes, NQF Level 4, 20 Credits
- 862927-000-00-00-WM-02, Groundwater abstraction system perform monitoring and reporting processes, NQF Level 4, 20 Credits
- 862927-000-00-00-WM-03, Processes of groundwater water quality monitoring, sampling and on-site testing, NQF Level 3, 8 Credits
- 862927-000-00-00-WM-04, Processes of monitoring and evaluation of the groundwater abstraction system performance and its related equipment, NQF Level 4, 10 Credits
- 862927-000-00-00-WM-05, Groundwater abstraction maintenance, fault-finding and troubleshooting processes, NQF Level 4, 15 Credits
- 862927-000-00-00-WM-01, Processes of stakeholder engagement on groundwater supply, NQF Level 4, 4 Credits

Total number of credits for Workplace Experience Modules: 77

SECTION 2: OCCUPATIONAL PROFILE

1. Occupational Purpose

The purpose of this qualification is to prepare a learner to operate as a Borehole Pump Operator.

A Borehole Pump Operator prepares, operates, inspects, measures, samples, tests, installs, adjusts, monitors, records and maintains a borehole pump to transfer groundwater to treatment plant or reservoir to residential, commercial, and industrial establishments for safe drinking and other uses in accordance with safe working instructions, principles and best practice.

2. Occupational Tasks

- Operate and maintain groundwater abstraction system/borehole pump
- Monitor and evaluate groundwater abstraction system performance and its related equipment
- Perform fault-finding and troubleshooting
- Build and maintain relationships with stakeholders

3. Occupational Task Details

3.1. Operate and assist in the maintenance of groundwater abstraction system, NQF Level 4

Unique Products/Services

- Functional groundwater abstraction system for optimal performance
- Safe, reliable, quality and continued supply of groundwater to residential, commercial, and industrial establishments

Occupational Responsibilities

- Prepare and operate groundwater abstraction system, NQF Level 4
- Monitor and control different types of pumps, flow meter, valves and gauges, NQF Level 4
- Assist in maintenance of groundwater abstraction system, NQF Level 4
- Record and report operating data, equipment, water output and utilisation, NQF Level 3

Occupational Contexts

- Groundwater abstraction operation and maintenance processes, NQF Level 4

2. Monitor and evaluate the performance of a groundwater abstraction system its related equipment, NQF Level 4

Unique Products/Services

- Correctly completed record of groundwater abstraction, aquifer levels and water quality
- Safe and reliable groundwater supply

Occupational Responsibilities

- Monitor, control and measure water levels, abstraction, power usage, water quality and quantity, NQF Level 4
- Collect water samples for testing and perform basic on-site analysis, NQF Level 3
- Gather, record, and report groundwater extraction, NQF Level 4

Occupational Contexts

- Groundwater abstraction system perform monitoring and reporting processes, NQF Level 4
- Groundwater sampling and basic testing processes, NQF Level 3

3.3 Perform basic fault-finding and troubleshooting on a groundwater abstraction system, NQF Level 3

Unique Products/Service

- Fault-finding report on groundwater abstraction system operation

Occupational Responsibilities

- Perform routine inspection on groundwater abstraction system performance, NQF Level 3
- Locate and troubleshooting faults on groundwater abstraction system, NQF Level 3
- Perform basic groundwater abstraction system maintenance, NQF Level 3

Occupational Contexts

- Groundwater abstraction fault-finding and troubleshooting processes, NQF Level 3

3.4 Build and maintain productive relationships with stakeholders, NQF Level 4

Unique Product or Service:

Participatory and coordinated relationship with stakeholders, NQF Level 4

Occupational Responsibilities:

- Participate in relevant stakeholder forums meetings, NQF Level 4
- Provide information and stakeholder education regarding water supply, NQF Level 4

Occupational Contexts:

- Stakeholder engagement processes, NQF Level 4

SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS

SECTION 3A: KNOWLEDGE MODULE SPECIFICATIONS

List of Knowledge Modules for which Specifications are included:

- 862927-000-00-KM-01, Workplace Fundamentals, NQF Level 3, 2 Credits
- 862927-000-00-KM-02, Legislation, regulations and Safety standards, NQF Level 4,2 Credits
- 862927-000-00-KM-03, Communication and Administration, NQF Level 4, 9 Credits
- 862927-000-00-KM-04, Water Cycle, NQF Level 4, 5 Credits
- 862927-000-00-KM-05, Groundwater abstraction data collection, NQF Level 4, 5 Credits
- 862927-000-00-KM-06, Operation and Maintenance of groundwater abstraction system, NQF Level 5, 20 Credits
- 862927-000-00-KM-07, Groundwater Monitoring System, NQF Level 4, 3 Credits
- 862927-000-00-KM-08, Environment, Energy Efficiency and Environmental Ethics, NQF Level 4, 2 Credits
- 862927-000-00-KM-09, Stakeholder Engagement, NQF Level 4, 2 Credits

Total number of credits for Knowledge Modules: 50

1. 862927-000-00-KM-01, Workplace Fundamentals, NQF Level 3, 2 Credits

1.1 Purpose of the Knowledge Module

The main focus of this knowledge module is to provide learners with an understanding of the work environment within which a Borehole Pump Operator operates to acclimatise to the organisation.

The learning will enable learners to demonstrate an understanding of:

- KM-01-KT01: Introduction to groundwater abstraction the world of work (100%)

1.2 Guidelines for Topics

1.2.1. KM-01-KT01: Introduction to the world of work

Topic elements to be covered include:

- KT0101 Concepts, terminologies and definitions
- KT0102 Different organisational structures, roles and responsibilities
- KT0103 Employer-employee relations
- KT0104 Norms, values and work ethic
- KT0105 Career and employment opportunities in water sector

Internal Assessment Criteria and Weight:

- IAC0101 Identify and define the concepts and terminologies in the work environment applicable to groundwater abstraction
- IAC0102 Identify and explain the different structures within which a Borehole Pump Operator operates in an organisation with reference to internal and external work environments, and their respective roles and responsibilities
- IAC0103 Analyse and explain the roles and responsibilities of a Borehole Pump Operator in an organisation
- IAC0104 Identify and describe financial arrangements and process for the provision of groundwater
- IAC0105 Explain the concept of supply-chain in terms of its roles and responsibilities, including and asset management
- IAC0106 Explain how to maintain mutual respect and work ethic, norms and values to achieve organisational goals and objectives
- IAC0107 Explain the channels communication in the workplace
- IAC0108 Explain the role of teams and how to become an effective team member

- IAC0109 Describe the procedures to be followed for recording and reporting information in an organisation
- IAC0110 Explain the importance of fulfilling all duties allocated to individuals within an organisation
- AC0111 Identify and describe career opportunities and corresponding learning pathways in the water sector

(Weight: 100%)

1.3 Programme Accreditation Criteria for all Knowledge Module

Physical Requirements:

- Classroom furniture (chairs and tables, audio equipment and all other equipment conducive to a learning environment)
- Learning materials
- Applicable virtual/online resources (screens, cameras, microphones, etc)

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

1.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

1.5 Exemptions

- None

2. 862927-000-00-KM-02, Legislation, regulations and safety standards, NQF Level 4, 2 Credits

2.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge module is to build an understanding of legal, regulatory and policy frameworks applicable in the workplace including institutional arrangements for groundwater abstraction from the local, provincial, national and regional perspectives.

The learning will enable learners to demonstrate an understanding of:

- KM-02-KT01: Legislation, regulations, policy, standards and guidelines applicable to groundwater abstraction (30%)
- KM-02-KT02: Safety, Health and Environmental (SHEQ) operating requirements (30%)
- KM-02-KT03: Occupational Health and Safety(OHS) compliance requirements (30%)
- KM-02-KT04: Incident and Accident Reporting Procedure (10%)

2.2 Guidelines for Topics

2.2.1. KM-02-KT01: Legislation, regulations, policy, standards and guidelines applicable to groundwater abstraction (30%)

Topic Elements

- KT0101 Different laws and municipal by-laws
- KT0102 Requirements applicable to Water Use Licence

Internal Assessment Criteria and Weight

- IAC0101 List and explain various laws including municipal by-laws given extracts applicable to groundwater abstraction
- IAC0102 List and explain water uses as defined in the National Water Act
- IAC0103 Identify and describe the regulatory framework applicable to groundwater abstraction
- IAC0104 Describe drinking water standards (SANS 241) in accordance with applicable national guidelines
- IAC0105 Identify the various licences for water use in terms of the applicable legislation

(Weight: 30%)

2.2.2 KM-02-KT02: Safety, Health and Environmental (SHE) operating requirements (30%)

Topic elements to be covered include:

- KT0201 Safety, Health and Environmental (SHE) operating requirements
- KT0202 Safety aspects of groundwater abstraction scheme

- KT0203 Environmental considerations

Internal Assessment Criteria and Weight:

- IAC0201 Explain the purpose of health and safety policy in the workplace including safety of enclosures of the groundwater abstraction site
- IAC0202 Identify and explain factors that could lead to poor health and safety associated with groundwater abstraction
- IAC0203 Explain how a permit-to-work system applies and why is it important to obtain a permit-to-work in the workplace
- IAC0204 Explain why is it important to attend a health and safety briefing session in the workplace
- IAC0205 Identify and explain the information commonly shared relating to health, safety and environmental-related issues in a briefing session and how it applies to groundwater abstraction work environment

(Weight 30%)

2.2.3 KM-02-KT03: Occupational Health and Safety in the workplace (30%)

Topic Elements

- KT0301 Occupational health and safe working practices
- KT0302 Working in Confined Spaces
- KT0303 Working at Heights
- KT0304 Work-related illnesses and injuries in the workplace
- KT0303 Incident and accident reporting procedure

Internal Assessment Criteria and Weight:

- IAC0301 Explain an employee's duties and responsibilities under the Occupational Health and Safety Act
- IAC0302 Explain the role of the Occupational Health Safety Officer/Representative in the workplace
- IAC0303 Identify and describe work-related illnesses and injuries that are reportable under the Compensation for Occupational Injuries and Diseases Act (COIDA) requirements
- IAC0304 Explain the importance of using Personal Protective Equipment and other pandemic related equipment at personal and organisational levels
- IAC0305 Identify the hazards and control measures for confined spaces
- IAC0306 Explain the requirements of and procedures for working safely in confined spaces
- IAC0307 Explain reasons why employees should keep records of occupational ill-health

(Weight 30%)

2.2.4 KM-02-KT04: Incident and Accident Reporting Procedure (10%)

Topic elements to be covered include:

- KT0401 Different types of risks and basic risk assessment
- KT0402 Types of incidents and accidents in the groundwater abstraction work environment
- KT0403 Incident and Accident recording and reporting procedures

Internal Assessment Criteria and Weight:

- IAC0401 Identify and describe the different types of risks including personal, environmental and work-related risks, and the steps to be followed to conduct basic assessment in a groundwater abstraction site
- IAC0402 Identify and describe risk control/preventative measures to mitigate the identified risks according to company-specific policy and procedures
- IAC0403 Differentiate between the terms 'incident' and 'accident' with examples within the groundwater abstraction work environment
- IAC0404 Identify and explain the various types of incidents and accidents that may occur in a groundwater abstraction enclosures and sites and actions to be taken to mitigate them
- IAC0405 Identify and describe the various types of emergencies that may arise in the groundwater abstraction enclosures and site, and ways to respond to emergencies in accordance with company-specific standards operating procedures and protocols
- IAC0406 Explain the purpose and steps of reporting incidents and accidents that may occur in the workplace in accordance with standard health and safety reporting procedures

(Weight: 10%)

2.3 Programme Accreditation Criteria for the Knowledge Module

Physical Requirements:

- Classroom furniture (chairs and tables, audio equipment and all other equipment conducive to a learning environment)
- Learning materials
- Applicable virtual/online resources (screens, cameras, microphones, etc)

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)

- Qualified Assessor
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

2.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

2.5 Exemptions

- None

3. 862927-000-00-KM-03, Communication and Administration, NQF Level 4, 9 Credits

3.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge module is to build an understanding of the theory and basic principles of communication and administration.

The learning will enable learners to demonstrate an understanding of:

- KM-03-KT01: Fundamentals of communication theory (50%)
- KM-03-KT02: Teams and Teamwork (10%)
- 3.2.3 KM-03-KT03: Problem-solving techniques (20%)
- KM-03-KT03: Administration procedure relating to groundwater abstraction (20%)

3.2 Guidelines for Topics

3.2.1. KM-03-KT01: Fundamentals of communication theory (50%)

Topic elements to be covered include:

- KT0101 Concepts and definitions
- KT0102 Principles, channels, methods and process of communication
- KT0103 Types and sources of information and information-sharing methods
- KT0104 Barriers to effective communication
- KT0105 Principles of risk communication
- KT0106 Ethical conduct

Internal Assessment Criteria and Weight:

- IAC0101 Define to concepts 'chain of command', accountability' and 'ethics'
- IAC0102 Describe various channels, methods and principles of effective communication
- IAC0103 Explain the communication process for effective transmission of a messages
- IAC0104 Identify most common barriers of communication in the workplace and ways to overcome them
- IAC0105 Explain the problem of unresponsive co-workers and how it impacts to workflow in the workplace
- IAC0106 Explain the importance of and adherence to the correct channels of communication, protocols and chain of command when communicating with both internal and external stakeholders and the consequences of non-compliance

- IAC0107 State the role of teams and how effective teamwork benefits both individual employees and the organisation
- IAC0108 Analyse, identify various stakeholders (internal and external), and explain stakeholder communication requirements
- IAC0109 Identify and describe key messages and/or information to be communicated or shared with external stakeholders including the municipality, traditional authorities and the local community
- IAC0110 Explain the importance of awareness creation in communities regarding groundwater, its importance, benefits and how it should be protected
- IAC0111 Identify and discuss stress and conflict resolution techniques and how they apply to avoid/reduce/prevent stress and conflict in the workplace
- IAC0112 Explain the principles of risk communication in terms of their application during stakeholders' forum meetings
- IAC0113 Differentiate between responsibility and accountability, and identify the requirements for accountability, and the importance to taking ownership of actions in the workplace
- IAC0114 Define the concept of 'teamwork' and the importance of collaborating with others in the workplace to achieve organisational goals and objectives

(Weight 30%)

3.2.2 KM-03-KT02: Teams and Teamwork (10%)

Topic elements to be covered include:

- KT0201 The concept and benefits of teamwork
- KT0202 Roles and responsibilities of team members
- KT0203 Organising and managing oneself within a team

Internal Assessment Criteria and Weight:

- IAC0201 Define the concept of 'teamwork' and the importance of collaborating with others in the workplace to achieve organisational goals and objective and promote effective customer service
- IAC0202 Identify and describe the roles and responsibilities of members of a team
- IAC0203 Explain the principles of self-management

(Weight: 10%)

3.2.3 KM-03-KT03: Problem-solving techniques (20%)

Topic elements to be covered include:

- KT0301 Causes of problems and problem-solving process

- KT0302 Problem-solving strategies

Internal Assessment Criteria and Weight:

- IAC0301 Explain the importance of problem-solving in the workplace with particular reference to groundwater abstraction system fault diagnosis and optimising options
- IAC0302 Explain the strategies of problem-solving in terms of their application in groundwater abstraction work environment
- IAC0304 Explain how problem-solving techniques can be applied to identify faults in groundwater abstraction system and optimisation of options to resolve possible problems

3.2.4. KM-03-KT04: Administration procedure relating to groundwater abstraction (20%)

Topic elements to be covered include:

- KT0401 Types of records
- KT0402 Reporting procedures and formats

Internal Assessment Criteria and Weight:

- IAC0401 Identify and describe the various types of records to be kept including maintenance and logbooks in terms of their uses
- IAC0402 Describe the responsibilities and obligations of a Borehole Pump Operator in record-keeping in accordance with organisational policies and standard operating procedures
- IAC0403 Identify and describe the different types of documentation used in groundwater abstraction operation
- IAC0404 Describe the reporting procedures within the groundwater abstraction work environment

(Weight 30%)

3.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Classroom furniture (chairs and tables, audio equipment and all other equipment conducive to a learning environment)
- Learning materials
- Applicable virtual/online resources (screens, cameras, microphones, etc)

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction

- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

3.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

3.5 Exemptions

- None

4. 862927-000-00-KM-04, Water Cycle, NQF Level 4, 5 Credits

4.1 Purpose of the Knowledge Module

The main focus of this knowledge module is to equip learners with an understanding of the water cycle and basic groundwater abstraction and management.

The learning will enable learners to demonstrate an understanding of:

- KM-04-KT01 Introduction to groundwater (100%)

4.2 Guidelines for Topics

4.2.1. KM-04-KT01: Introduction to groundwater (100%)

Topic elements to be covered include:

- KT0101 Aquifer system
- KT0102 Groundwater flow processes
- KT0103 Groundwater water quality and quantity
- KT0104 Groundwater assessment techniques
- KT0105 Groundwater source points and management

Internal Assessment Criteria and Weight

- IAC0101 Identify and explain the various types aquifers
- IAC0102 Explain the groundwater system and how it functions
- IAC0103 Explain the drilling process and borehole construction
- IAC0104 Define groundwater quality and quantity
- IAC0105 Identify and explain the causes, effects and impact groundwater quality and quantity
- IAC0106 Identify and explain the techniques applicable to assess groundwater
- IAC0107 Explain the interaction between groundwater and surface water including how the recharging and discharging of aquifer system works
- IAC0108 Explain how groundwater is managed to ensure optimal abstraction of water

(Weight:100%)

3.3 Programme Accreditation Criteria for the Knowledge Module

Physical Requirements:

- Classroom furniture (chairs and tables, audio equipment and all other equipment conducive to a learning environment)
- Learning materials
- Applicable virtual/online resources (screens, cameras, microphones, etc)

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

4.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

4.5 Exemptions

- None

5. 862927-000-00-KM-05, Groundwater abstraction data collection, NQF Level 4, 5 Credits

5.1 Purpose of the Knowledge Module

The main focus of this knowledge module is to equip learners with an understanding of groundwater parameters, sampling and on-site testing and data collection in groundwater work environment.

The learning will enable learners to demonstrate an understanding of:

- KM-05-KT01 Groundwater levels, abstraction and quality data (30%)
- KM-05-KT02 Groundwater sampling and sample handling (30%)
- KM-05-KT03 Data and measurements (10%)
- KM-05-KT04 Data analysis methodologies (30%)

5.2 Guidelines for Topics

5.2.1. KM-05-KT01: Groundwater levels, abstraction and quality data (30%)

Topic elements to be covered include:

- KT0101 Groundwater levels and measurement techniques
- KT0102 Groundwater abstraction and monitoring abstraction flow rate and volumes
- KT0103 Groundwater quality assessment methods

Internal Assessment Criteria and Weight:

- IAC0101 Identify and describe groundwater parameters
- IAC0102 Analyse and explain various techniques to measure groundwater levels, abstraction rate and volumes
- IAC0103 Explain the significance and reasons why groundwater levels, flow rate and volumes should be monitored
- IAC0104 Explain the process and importance of plotting data on a graph and comparison with the relevant standards

(Weight: 30%)

5.2.2. KM-05-KT02: Groundwater sampling and sample handling (30%)

Topic elements to be covered include:

- KT0201 Types, principles and methods of groundwater sampling
- KT0202 Fundamentals of microbiological and chemical sampling for groundwater
- KT0203 Groundwater sample handling and processing

(Weight: 30%)

Internal Assessment Criteria and Weight:

- IAC0201 Identify and describe the various sampling and containment equipment required for groundwater sampling purposes
- IAC0202 Explain the difference between representative and non-representative samples
- IAC0203 Explain the various types of samples and describe the methods of collection
- IAC0204 Describe the precautionary measures to be taken when taking samples with reference to the applicable requirements for sampling, handling and processing
- IAC0205 Identify and describe the types of on-site field measurements to be conducted during water sample collection
- IAC0206 Describe the methods of sample preservation, storage and transportation in terms of laboratory requirements
- IAC0207 Explain the test results interpretation and recording methods
- IAC0208 Explain the importance of labelling, condition and traceability of samples and recording data relevant to particular sample

(Weight 30%)

5.2.2 KM-05-KT03: Data and measurements (10%)

Topic elements to be covered include:

- KT0301 Basic formulae, conversions and calculations
- KT0302 Test results, interpretation and data records

Internal Assessment Criteria and Weight:

- IAC301 Explain the objectives and methods of calculations
- IAC302 Explain the metric system and give a range of metric examples
- IAC303 Describe the methods of recording the various laboratory tests and identify the typical data and measurements to be recorded including pH, alkalinity, turbidity, chlorine residual, water hardness, temperature, conductivity and other related tests
- IAC304 Explain the formulae or conversion table used to convert imperial measurements to metric measurements and explain ways to convert the available data to metric system

(Weight:10%)

5.2.3 KM-05-KT04 Data analysis methodologies (20%)

Topic elements to be covered include:

- KT0401 Types and format of data collection and capturing
- KT0402 Types and methods of data analysis and basic interpretation and visualisation
- KT0403 Data recording and reporting

Internal Assessment Criteria and Weight:

- IAC0401 Identify and describe various types and formats for data collection and capturing
- IAC0402 Analyse and explain the methods of data collection in terms of their suitability and application
- IAC0403 Analyse and interpret data collected and explain the corrective actions to be taken for amendments to meet the requirements
- IAC0404 Explain the role of interpretation and visualisation in interpreting groundwater data
- IAC0405 Explain the importance of and purpose for groundwater data recording and capturing taking into account frequency, time series and spatial scale at which data is collected

(Weight: 30%)

5.3 Programme Accreditation Criteria for all Knowledge Module

Physical Requirements:

- Classroom furniture (chairs and tables, audio equipment and all other equipment conducive to a learning environment)
- Learning materials
- Applicable virtual/online resources (screens, cameras, microphones, etc)

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO

- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

5.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

5.5 Exemptions

- None

6. 862927-000-00-KM-06, Operation and Maintenance of groundwater abstraction system, NQF Level 5, 20 Credits

6.1 Purpose of the Knowledge Module

The main focus of this knowledge module is to equip learners with an understanding of borehole construction process, its operation and maintenance including related infrastructure.

The learning will enable learners to demonstrate an understanding of:

- KM-06-KT01 Borehole drilling and construction process (20%)
- KM-06-KT02 Types of pumps, specifications and related infrastructure (10%)
- KM-06-KT03 Borehole infrastructure operation and maintenance (70%)

(Weight 100%)

6.2 Guidelines for Topics

6.2.1. KM-06-KT01: Borehole drilling and construction process (20%)

Topic elements to be covered include:

- KT0101 Basic elements and borehole drilling methods
- KT0102 Introduction to borehole design, construction, development and completion
- KT0103 Guidelines for borehole drilling, construction and equipping

Internal Assessment Criteria and Weight:

- IAC0101 Identify and describe the basic elements and methods to be considered for borehole drilling
- IAC0102 Recognise aquifers system and geological formation prior boreholes construction
- IAC0103 Analyse and explain measures to protect the borehole to safeguard quality and quantity for drinking water and other uses
- IAC0104 Analyse and explain borehole design, construction, development and completion including casing types and installation of casing
- IAC0105 Identify and explain well-head protection measures

(Weight:20%)

6.2.2 KM-06-KT02 Types of pumps, specifications and related infrastructure (10%)

Topic elements to be covered include:

- KT0201 Introduction to test pumping
- KT0202 Types, sizes, uses, care of borehole pumps and motor
- KT0203 Pump selection and pump installation

Internal Assessment Criteria and Weight:

- IAC0201 Explain the process, procedure and outcome of test pumping recommendations
- IAC0202 Identify and describe various borehole pumps types in terms of their sizes and uses
- IAC0203 Explain how to specify the components and correct size of borehole application
- IAC0204 Analyse and explain the need to follow the recommended specifications on how to install, operate and maintain a borehole pump in accordance with the manufacturer's instructions, and consequences of deviation
- IAC0205 Explain the importance and reasons of capturing details of the installed borehole pump

(Weight:10%)

6.2.3 KM-06-KT03 Borehole infrastructure operation and maintenance (70%)

Topic elements to be covered include:

- KT0301 Procedure of operating a borehole pump
- KT0302 Borehole pump operating rules and requirements
- KT0303 Borehole pump and associated infrastructure maintenance requirements

Internal Assessment Criteria and Weight

- IAC0301 Identify and explain the procedures to be followed including start-up and shutdown procedures as well as safety practices prior borehole pump operation
- IAC0302 Explain borehole operating rules and requirements and reasons for adherence to these meet site-specific conditions and organisational standard operating procedures
- IAC0303 Identify and describe the different types of borehole maintenance to be carried out to ensure safety, functionality, durability and security
- IAC0304 Identify and explain specific procedures to be followed to maintain borehole infrastructure including enclosures on site in accordance with organisational standard operating procedures
- IAC0305 Identify and explain the types, causes and effects of borehole infrastructure breakdowns, and procedures to troubleshoot, repairs and betterment of the infrastructure
- IAC0306 Explain the importance of and methods of recording and reporting faults identified and corrective action taken in accordance with organisational standard operating procedures

(Weight:70%)

6.3 Programme Accreditation Criteria for the Knowledge Module

Physical Requirements:

- Classroom furniture (chairs and tables, audio equipment and all other equipment conducive to a learning environment)
- Learning materials
- Applicable virtual/online resources (screens, cameras, microphones, etc)

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

6.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

6.5 Exemptions

- None

7. 862927-000-00-KM-07, Groundwater Monitoring System, NQF Level 4, 3 Credits

7.1 Purpose of the Knowledge Module

The main focus of this knowledge module is to equip learners with an understanding of the principles of evaluating and monitoring the performance of groundwater abstraction system.

The learning will enable learners to demonstrate an understanding of:

- KM-07-KT01 Groundwater abstraction system monitoring and evaluation (100%)

7.2 Guidelines for Topics

7.2.1. KM-07-KT01: Groundwater abstraction system monitoring and evaluation network

Topic Elements to be covered included:

- KT0101 Types and purpose of groundwater abstraction monitoring
- KT0102 Measurement of groundwater quality and quantity
- KT0103 Monitoring the performance of groundwater infrastructure
- KT0104 Recording and reporting procedures

Internal Assessment Criteria and Weight:

- IAC0101 Identify and describe the different types and processes of groundwater monitoring
- IAC0102 Identify and describe the elements to monitor and measure quality and quantity including groundwater levels, abstraction volumes and rates
- IAC0103 Identify and describe elements to monitor performance of groundwater system and related infrastructure
- IAC0104 Identify and describe the equipment used to evaluate and monitor groundwater abstraction system and related infrastructure performance
- IAC0105 Evaluate the performance of the groundwater abstraction system and related infrastructure
- IAC0106 Assess and identify performance deficiencies and take corrective action to mitigate the condition for optimal performance
- IAC0107 Identify and describe types of documentation to be used for recording data
- IAC0108 Explain the importance of and procedure to record results of system performance and corrective action taken for reporting purposes

- IAC0109 Explain and describe the use, care and storage of monitoring equipment in accordance with organisational standard operating procedures

(Weight: 100%)

7.3 Programme Accreditation Criteria for all Knowledge Modules

Physical Requirements:

- Classroom furniture (chairs and tables, audio equipment and all other equipment conducive to a learning environment)
- Learning materials
- Applicable virtual/online resources (screens, cameras, microphones, etc)

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

7.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

7.5 Exemptions

- None

8. 862927-000-00-KM-08, Environment, Energy Efficiency and Environmental Ethics, NQF Level 4, 2 Credits

8.2 Purpose of the Knowledge Module

The main focus of the learning in this knowledge module is to build an understanding of the importance of environment, its sustainability and energy efficiency factors and the importance of carrying out operations in an environmentally sustainable and responsible manner.

The learning will enable learners to demonstrate an understanding of:

- KM-08-KT01: Concept of environment and the principles of environmental sustainability and energy efficiency (100%)

8.2 Guidelines for Topics

8.2.1 KM-08-KT01: Concepts and principles of environmental sustainability (100%)

Topic elements to be covered include:

- KT0101 Concepts, terms, definitions and their meaning
- KT0102 Environmental factors, issues and principles of environmental sustainability
- KT0105 Types of pollution and their impact in the environment
- KT0106 Energy Efficiency and energy saving techniques
- KT0107 Environmental Ethics

Internal Assessment Criteria and Weight:

- IAC0101 Define the concept and importance of the 'environment and 'environmental sustainability'.
- IAC0102 Identify and explain factors of the environment and interrelationships by means of a diagram
- IAC0103 Identify and explain the environmental issues and challenges/problems
- IAC0104 List and explain the types of pollution and their impact on the environment
- IAC0105 Explain the principles of environmental sustainability
- IAC0106 Identify and explain the effects of groundwater abstraction on the environment
- IAC0107 Discuss energy saving techniques applicable to groundwater abstraction operation
- IAC0108 Explain environmental ethics and personal conduct with respect to the environment.

(Weight: 100%)

8.3 Provider Accreditation Requirements for the Knowledge Module

Physical Requirements:

- Classroom furniture (chairs and tables, audio equipment and all other equipment conducive to a learning environment)
- Learning materials
- Applicable virtual/online resources (screens, cameras, microphones, etc)

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

8.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

8.5 Exemptions

- None

9. 862927-000-00-KM-09, Stakeholder Engagement, NQF Level 4, 2 Credits

9.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge module is to build an understanding of principles of stakeholder engagement to build and maintain relationships with various stakeholders at local and community level for effective awareness creation, information-sharing and liaison between the employer and the communities.

The learning will enable learners to demonstrate an understanding of:

- KM-09-KT01: Establishing stakeholder relationships and participation (100%)

9.2 Guidelines for Topics

9.2.1. KM-09-KT01: Establishing and sustaining stakeholder relationships and participation

Topic elements to be covered include:

- KT0101 Concepts and principles of stakeholder engagement
- KT0102 Participatory methods of engagement, risks and benefits
- KT0103 Roles and responsibilities of stakeholders
- KT0104 Effective communication methods and information-sharing
- KT0105 Principles of ethical behaviour and professionalism

Internal Assessment Criteria and Weight:

- IAC0101 Define concepts of 'stakeholder', 'stakeholder engagement' and 'stakeholder participation'
- IAC0102 Explain the process and methods of meaningful stakeholder engagement
- IAC0103 List various stakeholders at local and community level for purposes of engagement and information-sharing
- IAC0104 Identify and explain type of information to be communicated stakeholders for effective engagement and relationship building
- IAC0105 Explain the principles for establishing and maintaining relationships with stakeholders at local and community levels
- IAC0106 Identify and explain the risks and benefits of stakeholder engagement and information-sharing and strategies to mitigate the identified risks

9.3 Programme Accreditation Criteria for all Knowledge Modules

Physical Requirements:

- Classroom furniture (chairs and tables, audio equipment and all other equipment conducive to a learning environment)
- Learning materials
- Applicable virtual/online resources (screens, cameras, microphones, etc)

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

9.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

9.5 Exemptions

- None

SECTION 3B: PRACTICAL SKILL MODULES SPECIFICATIONS

List of Practical Skill Module Specifications

- 862927-000-00-PM-01, Prepare for and operate groundwater abstraction system, NQF Level 4, 10 Credits
- 862927-000-00-PM-02, Monitor, control and measure water levels, abstraction, power usage, water quality and quantity, NQF Level 4, 15 Credits
- 862927-000-00-PM-03, Conduct groundwater quality monitoring, sampling and on-site testing, NQF Level 3, 5 Credits
- 862927-000-00-PM-04, Perform routine inspection on groundwater abstraction system performance, NQF Level 4, 5 Credits
- 862927-000-00-PM-05, Perform basic groundwater abstraction system maintenance, fault-finding and troubleshooting, NQF Level 4, 15 Credits
- 862927-000-00-PM-06, Participate in relevant stakeholder forums meetings, NQF Level 4, 3 Credits

Total number of credits for Practical Skill Modules: 53

1. 862927-000-00-PM-01, Prepare for and operate groundwater abstraction system, NQF Level 4, 10 Credits

1.1 Purpose of the Practical Skills Module

The focus of the learning in this module is on providing the learner an opportunity to practise skills to plan, prepare, operate and report on groundwater abstraction system.

The learner will be required to:

- PM-01-PS01: Undertake preliminary risk assessment on the job site
- PM-01-PS02: Monitor and control different types of pumps, flow meter, valves and gauges
- PM-01-PS03: Record and report operating data, equipment, water levels, water output and utilisation

1.2 Guidelines for Practical Skills

1.2.1 PM-01-PS01: Undertake preliminary risk assessment on the job site

Scope of Practical Skills

Given task instructions, checklist, pen, clipboard, measurement tape, groundwater abstraction system work area, relevant documents, PPE, (photographs, scenarios) safe working principles and standard operating procedures, the learner must be able to:

- PA0101 Confirm the work area
- PA0102 Identify and select risk assessment tools and documentation
- PA0103 Inspect and identify potential hazards
- PA0104 Relate risks to the identified hazards
- PA0104 Implement mitigation plan
- PA0105 Apply safe working practices

Applied Knowledge

- AK0101 Risk assessment procedures and methods
- AK0102 Types of hazards and risks

- AK0103 Occupational health and safety practices

Internal Assessment Criteria

- IAC0101 Groundwater abstraction work site was identified and confirmed with the relevant person
- IAC0102 Risk assessment documentation such as standard operating procedures are read and interpreted correctly to conduct hazard and risk assessment
- IAC0103 Relevant tools enquired to conduct hazards and risk assessment are identified and selected correctly and checked for serviceability
- IAC0104 Physical and environmental conditions at the work area are assessed and potential hazards and risks are identified and recorded using the using checklist
- IAC0105 Preventative corrective action was taken and recorded to mitigate the identified hazards and risks or non-conformances to ensure safe working environment
- IAC0106 Deviations observed on site are recorded and reported to the relevant person/department for further corrective action

1.2.2 PM-01-PS02: Monitor and control different types of pumps, flow meter, valves and gauges on groundwater abstraction system

Scope of Practical Skills

Given task instructions, PPE (overall, pair of pants, safety boots, rain suit), equipment (dust mask, safety goggles, ear muffs, investigation stick, first aid kit, fire-fighting equipment (in the vehicle), the learner must be able to:

- PA0101 Check and record the system equipment status
- PA0102 Observe and record the current values of the equipment (valve, pumps and flow meter)
- PA0103 Determine the need to open or close/on or off the equipment (according to standard operating rules or procedures)
- PA0104 Determine and record equipment performance
- PA0105 Control, monitor and amend the opening and closing of the equipment, where applicable

Applied Knowledge

- AK0101 Different types of groundwater abstraction system equipment
- AK0102 Standard operating procedures
- AK0103 Analytical and problem-solving techniques

Internal Assessment Criteria

- IAC0101 The required operational status of the groundwater abstraction system equipment was observed/checked and interpreted correctly in line with required standards
- IAC0102 Current values of the flow meter, pump rates/volume were read, interpreted and measured correctly in line with the applicable operational standards
- IAC0103 The performance of the equipment was compared with the standard operating standards to determine corrective action to be taken
- IAC0104 The opening and closing of equipment is controlled, monitored and adjusted for optimal performance, where applicable

1.2.3 PM-01-PS03: Record and report operating data, equipment, water levels, water output and utilisation

Scope of Practical Skills

Given task instructions, groundwater abstraction system, operating sheet, logbook, ruler, dip-meter, pen, tape measure and other relevant documentation, the learner must be able to:

- PA0101 Read and interpret the contents of the operating sheet
- PA0102 Observe and read the status of the equipment
- PA0103 Read and interpret the status of the water levels
- PA0104 Measure the yield of the pump
- PA0105 Measure the volume of water utilisation
- PA0106 Observe and read the status of utilisation equipment
- PA0107 Record operating data in the logbook

Applied Knowledge

- AK0101 Operating data requirements
- AK0102 Recording and reporting formats

Internal Assessment Criteria

- IAC0101 The operating or recording sheet requirements/specifications were read and interpreted correctly in order to record the operating data
- IAC0102 The groundwater abstraction system equipment were checked and verified to ensure that the required operating status (level indicators, flow meter results, status of the pumps, etc) was within the applicable standards
- IAC0103 The flow meter was used correctly and the yield of the pump was determined and recorded in accordance with standard operating procedures
- IAC0104 The yield of the pump was read, interpreted and measured correctly, and the data was compared with operating parameters

- IAC0105 The utilisation equipment was observed, read and recorded correctly, and the amount/volume of water utilised was determined or measured in accordance with standard operating procedures
- IAC0106 Observed operating data was recorded correct using the relevant format

1.3 Provider Accreditation Requirements for the Practical Skills Module

Physical Requirements

Access to the following:

- Groundwater abstraction system
- Personal Protective Equipment (PPE) such as an overall, pair of pants, safety boots, rain suit), equipment (dust mask, safety goggles and ear muffs
- Relevant documentation such as safe working principles and standard operating procedures
- An investigation stick
- First aid kit and fire-fighting equipment in the vehicle
- Operating sheet
- A Logbook and a checklist
- A ruler
- A dip-meter
- A pen and clipboard
- A tape measure

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

1.4 Critical Topics to be Assessed Externally for the Practical Skills Module

- None

1.5 Exemptions

- None

2. 862927-000-00-PM-02, Monitor, control and measure water levels, abstraction, power usage, water quality and quantity, NQF Level 4, 15 Credits

2.1 Purpose of the Practical Skills Module

The focus of the learning in this module is on providing the learner an opportunity to practice skills in a simulated work environment to monitor, measure and record water levels, volume of water pumped.

The learner will be required to:

- PM-02-PS01: Perform water levels measurement
- PM-02-PS02: Perform water abstraction measurement
- PM-02-PS03: Perform power usage measurement
- PM-02-PS04: Perform water quality and quantity measurement

2.2 Guidelines for Practical Skills

2.2.1 PM-02-PS01: Perform water levels measurement

Scope of Practical Skills

Given task instructions, groundwater abstraction system, logbook, ruler, dip-meter, pen, tape measure, the learner must be able to:

- PA0101 Confirm the site with the relevant person
- PA0102 Monitor the water levels according to the operating/monitoring schedule
- PA0103 Read and interpret the operating rules and procedures for water level measurements
- PA0104 Identify, select and clean the equipment required to measure the water levels
- PA0105 Test the required equipment for functionality/serviceability
- PA0106 Switch the pump off applying the operating rules
- PA0107 Switch on or test the dip meter
- PA0108 Verify the water measuring point
- PA0109 Lower the dip meter cable to measure water levels into dipper tube/conduit pipe
- PA0110 Read and interpret the gauge
- PA0111 Record water level data in the logbook
- PA0112 Retract and clean the dip meter

- PA0113 Carry out first-level captured data analysis
- PA0114 Plot data on a graph and compare with the set standards
- PA0115 Prepare and submit data to the relevant person for capturing

Applied Knowledge

- AK0101 Types of data
- AK0102 Data analysis methods
- AK0103 Water levels measurement techniques
- AK0104 Recording template/formats
- AK0105 Analytical skills

Internal Assessment Criteria

- IAC0101 The groundwater site was identified and the monitoring schedule was read and confirmed with the relevant person
- IAC0102 Correct equipment for measuring water levels were identified, selected, tested and cleaned in accordance with standard operating procedures
- IAC0103 Operating rules are read and understood in relation to switching on/off of the pump while measuring the water level
- IAC0104 A dip meter was cleaned before and after use according to the operating rules and procedures
- IAC0105 The water measuring point was identified and verified according to the operating rules
- IAC0106 The dip meter cable to measure water levels was lowered and retracted correctly into dipper tube/conduit pipe applying the correct techniques in line with the operating procedure as contained in the operating manual
- IAC0107 The dip meter was cleaned correctly according to the operating procedures and/or process in line with the manufacturer's requirements/operating manual
- IAC0108 The gauge was read and interpreted correctly, and the water levels were measured using the correct equipment
- IAC0109 The water levels data was captured correctly in the logbook in line with the standard operating procedures
- IAC0110 First-line data analysis relating to water levels was conducted and data was recorded correctly in the logbook
- IAC0111 Data findings was compared with the available standards in line with the operating rules
- IAC0112 Water levels data was plotted correctly in the logbook/logsheets
- IAC0113 Water level data was prepared and submitted to the relevant person for capturing
- IAC0114 All equipment was stored according to the manufacturer's requirements

2.2.2 PM-02-PS02: Perform water abstraction and quantity measurements

Scope of Practical Skills

Given task instructions, groundwater abstraction system, logbook, stopwatch, the learner must be able to:

- PA0201 Confirm the site with the relevant person
- PA0202 Verify the water measuring point
- PA0203 Monitor the water abstraction according to the operating/monitoring schedule
- PA0204 Read and interpret the operating rules and procedures for water abstraction measurement
- PA0205 Read, interpret and capture the flow meter reading volume
- PA0206 Calculate the volume abstracted and water rate according to standard operating procedures
- PA0207 Perform an in-field check to ascertain the recommended rates
- PA0208 Compare the current water rate with the previous rates
- PA0209 Read and interpret the volume of the abstracted water
- PA0210 Record water abstraction data in the logbook
- PA0211 Plot data on a graph and compare with the critical levels/recommended abstraction volumes and rate
- PA0212 Carry out first-level captured data analysis
- PA0213 Prepare and submit data to the relevant person for capturing

Internal Assessment Criteria

- IAC0201 The groundwater site for water abstraction was identified and the monitoring schedule was read and confirmed with the relevant person
- IAC0202 The water measuring point where the water must be abstracted was identified and verified according to the operating rules
- IAC0203 Water abstraction is monitored according to the operating/monitoring schedule
- IAC0204 Operating rules and procedures were correctly read and interpreted for water abstraction measurement
- IAC0205 The reading of the flow meter was taken and calculating the volume over time abstracted
- IAC0206 The flow rate was calculated correctly and interpreted

- IAC0207 In-field check was performed to ascertain the actual rates in comparison with the recommended rates and a follow-up action was carried out, where applicable
- IAC0208 Water abstraction data was recorded (manually or electronically) in the logbook in accordance with standard operating procedures for reporting purposes
- IAC0209 First-line data analysis was conducted, recorded and plotted in a graph in the logbook for capturing in the relevant format (manually or electronically)

2.2.3 PM-02-PS03: Perform power usage measurement

Scope of Practical Skills

Given task instructions, groundwater abstraction system, logbook, the learner must be able to:

- PA0301 Confirm the site with the relevant person
- PA0302 Verify the water measuring point
- PA0303 Monitor power usage according to the operating/monitoring schedule
- PA0304 Read and interpret the operating rules and procedures for power usage measurement
- PA0305 Read, interpret and capture the electricity meter readings
- PA0306 Prepare and submit data to the relevant person for capturing

Internal Assessment Criteria

- IAC0301 The groundwater site for water abstraction was identified and the monitoring schedule was read and confirmed with the relevant person
- IAC0302 The water measuring point where the water must be abstracted was identified and verified according to the operating rules
- IAC0303 Water abstraction is monitored according to the operating/monitoring schedule
- IAC0304 Operating rules and procedures were correctly read and interpreted for water abstraction measurement
- IAC0305 The electricity consumption and estimated power usage was captured correctly in the logbook and submitted to the relevant office for further interpretation and action to be taken

2.3 Provider Accreditation Requirements for the Practical Skills Module

Physical Requirements:

Access to the following:

- Groundwater abstraction system
- A Logbook,
- Stopwatch

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

2.4 Critical Topics to be Assessed Externally for the Practical Skills Module

- None

2.5 Exemptions

- None

3. 862927-000-00-PM-03, Conduct groundwater quality monitoring, sampling and on-site testing, NQF Level 3, 5 Credits

3.1 Purpose of the Practical Skills Module

The focus of the learning in this module is on providing the learner an opportunity to practice skills within a simulated work environment to conduct groundwater quality data collection and monitor water quality through sampling and on-site tests included in the water quality monitoring programme, depending on the operational procedures to be followed.

The learner will be required to:

- PM-03-PS01: Perform groundwater sampling and on-site for testing

3.2 Guidelines for Practical Skills

3.2.1 PM-03-PS01: Perform groundwater sampling and on-site for testing and analysis

Scope of Practical Skills

Given sampling point, equipment (sample bottles, sample bags, gloves, goggles, labels, marker pen, cooler bags, ice packs, the learner must be able to:

- PA0101 Obtain and read water quality monitoring schedule
- PA0102 Read and interpret the procedures and reporting requirements
- PA0103 Read and confirm the sampling and on-site testing methods
- PA0104 Confirm the volume of water to be sampled
- PA0105 Select and prepare containers for sampling and storing water samples
- PA0106 Collect and label the water samples
- PA0107 Apply sample handling techniques
- PA0108 Perform and record on-site field measurements
- PA0109 Perform on-site sample testing and data analysis
- PA0110 Record and submit sampling results to the relevant person
- PA0111 Transport and store samples

Applied Knowledge

- AK0101 Sampling methods/techniques
- AK0102 Sample handling and storage procedures
- AK0103 Health and safety procedures

Internal Assessment Criteria and Weight:

- IAC0101 Intervals at which water quality must be monitored are read and interpreted using the water quality monitoring schedule
- IAC0102 Sampling methods are read and understood in terms of the sampling procedures
- IAC0103 Sampling points was confirmed with the relevant person, and equipment are selected in accordance with sampling methods
- IAC0104 A sample plan is developed/adopted and it contains information on where, what, and how to sample
- IAC0105 Testing equipment is calibrated, if required, and on-site tests are carried out in accordance with organisational procedures
- IAC0106 Sampling methods are applied during sampling and the sample taken is representative, reliable and repeatable
- IAC0107 Basic sample analysis is conducted to test various parameters as per organisational requirements, if applicable
- IAC0108 Sample collection procedures are carried out in accordance with organisational procedures
- IAC0109 Samples are labelled in accordance with organisational procedures including date, time, location, source, purpose and sampler.
- IAC0110 Samples are handled and transported in accordance with organisational procedures
- IAC0111 On-site testing results are recorded in accordance with organisational procedures
- IAC0112 Samples are handled and stored according to the requirements of the analysing laboratory and organisational procedures
- IAC0113 Appropriate action is taken in accordance with organisational procedures on sample results that are outside operating guidelines

3.3 Provider Accreditation Requirements for the Practical Skills Module

Physical Requirements:

Access to the following:

- A sampling point
- Sampling equipment such as sample bottles, sample bags, gloves, goggles, labels, marker pen, cooler bags and ice packs

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10

- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

3.4 Critical Topics to be Assessed Externally for the Practical Skills Module

- None

3.5 Exemptions

- None

4. 862927-000-00-PM-04, Perform routine inspection on groundwater abstraction system performance, NQF Level 4, 5 Credits

4.1 Purpose of the Practical Skills Module

The focus of the learning in this module is on providing the learner an opportunity to practise skills in a simulated environment to inspect and report on groundwater abstraction system performance on a routine basis.

- PM-04-PS01: Monitor and evaluate groundwater abstraction system performance

4.2 Guidelines for Practical Skills

4.2.1 PM-04-PS01: Monitor and evaluate groundwater abstraction system performance on a routine basis

Scope of Practical Skills

Given, task instructions, groundwater abstraction system, relevant documentation, a pen, and a clipboard, the learner must be able to:

- PA0101 Read and interpret the system operating procedure
- PA0102 Read and interpret the groundwater parameters
- PA0103 Observe and assess the system operational status according to the operating procedures
- PA0104 Record and report any problems observed, non-conformances or malfunctioning of the system
- PA0105 Observe and record external factors surrounding the groundwater abstraction system site

Applied Knowledge

- AK0101 Different types of groundwater abstraction systems
- AK0102 Groundwater abstraction system operating procedures
- AK0103 Different environmental factors
- AK0104 Health and safety practices

- AK0105 Recording and reporting format/checklists
- AK0106 Different types of inspection methods and equipment

Internal Assessment Criteria

- IAC0101 Groundwater abstraction operating procedures and parameters are read and interpreted correctly
- IAC0102 The system is observed and assessed to determine conformance with the operating performance status
- IAC0103 Any problems or non-conformances, malfunctioning are recorded in accordance with standard operating procedures
- IAC0104 External factors such as environmental concerns such as pollution, contamination as well as safety issues, operational features, infrastructure performance are evaluated and recorded using the checklist

4.3 Provider Accreditation Requirements for the Practical Skills Module

Physical Requirements:

Access to the following:

- Groundwater abstraction system,
- A pen and a clipboard

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

4.4 Critical Topics to be Assessed Externally for the Practical Skill Module

- None

4.5 Exemptions

- None

5. 862927-000-00-PM-05, Perform basic groundwater abstraction system maintenance, fault-finding and troubleshooting, NQF Level 4, 15 Credits

5.1 Purpose of the Practical Skill Module

The focus of the learning in this module is on providing the learner an opportunity to practise skills within a simulated work environment to conduct basic maintenance and assist the maintenance team to do the actual maintenance of the system as well as diagnose, locate and troubleshoot faults on groundwater abstraction system.

The learner will be required to:

- PM-05-PS01: Assist in the maintenance of groundwater abstraction system
- PM-05-PS02: Diagnose, locate and troubleshoot faults on groundwater abstraction system

6.2 Guidelines for Practical Skills

6.2.1 PM-06-PS01: Assist in the maintenance of groundwater abstraction system

Scope of Practical Skills

Given task instructions, logbook/sheet, PPE such as leather or rubber gloves, cap and hard hat, the learner must be able to:

- PA0101 Obtain and confirm the checklist for maintenance
- PA0102 Assist in the identification and selection of maintenance equipment
- PA0103 Participate in the monitoring of system operation status
- PA0104 Check and record oil levels
- PA0105 Oil the chain
- PA0106 Perform lubrication of the equipment
- PA0107 Fasten loose components
- PA0108 Clean system equipment
- PA0109 Assist in the testing of all equipment serviced/maintained
- PA0110 Record and report basic maintenance activities

Internal Assessment Criteria

- IAC0101 Maintenance schedule for basic maintenance was obtained and confirmed with the relevant organisational department/section
- IAC0102 Basic maintenance such lubrication of equipment, fastening of loose components and the cleaning of system equipment was performed as per the required instructions
- IAC0103 Any problems or non-conformances with the system operating procedures and corrective action taken are recorded and reported in accordance with organisational standard operating procedures
- IAC0104 Basic maintenance activities performed are recorded in the maintenance logbook/logsheets correctly

Applied Knowledge

- AK0101 Different types of maintenance
- AK0102 Maintenance procedures
- AK0103 Manufacturer's specifications

5.2.1 PM-05-PS02: Diagnose, locate and troubleshoot faults on groundwater abstraction system

Scope of Practical Skills

Given task instructions, groundwater abstraction system, test instruments/equipment, and standard operating procedures, the learner must be able to:

- PA0201 Perform visual inspection on the groundwater abstraction system
- PA0202 Test groundwater abstraction system for functionality/operability
- PA0203 Diagnose and locate faults
- PA0204 Rectify/repair the identified faults
- PA0205 Record and report faults/deviations and rectification

Applied Knowledge

- AK0201 Diagnostics methods/approaches
- AK0202 Different types of groundwater equipment
- AK0203 Standard operating procedures
- AK0204 Company-specific fault recording and reporting procedures

Internal Assessment Criteria

- IAC0201 Visual inspection was conducted to identify potential faults, deterioration or damage on the groundwater abstraction system in accordance with the routine inspection

- IAC0202 Appropriate test instruments were used correctly and potential faults on the groundwater abstraction system/equipment were identified and recorded in line with standard operating procedures
- IAC0203 Identified faults were rectified in accordance with the equipment operation manual using the correct tools applying health and safety working practices
- IAC0204 Groundwater abstraction system/equipment were tested for functionality and meet the applicable operating requirements

5.3 Provider Accreditation Requirements for the Practical Skills Module

Physical Requirements:

Access to the following:

- Groundwater abstraction system
- Test instruments/equipment, and standard operating procedures

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

5.4 Critical Topics to be Assessed Externally for the Practical Skill Module

- None

5.5 Exemptions

- None

6. 862927-000-00-PM-06, Participate in relevant stakeholder forums meetings, NQF Level 4, 3 Credits

6.1 Purpose of the Practical Skill Module

The focus of the learning in this module is on providing the learner an opportunity to practise skills for groundwater-related information-sharing and education for ongoing awareness creation and building and maintaining good relations with groundwater resource users and communities.

The learner will be required to:

- PM-06-PS01: Provide information and stakeholder education regarding groundwater supply

6.2 Guidelines for Practical Skills

6.2.1 PM-06-PS01: Provide information and stakeholder education regarding groundwater supply

Scope of Practical Skills

Given task instructions, relevant groundwater information and documents, standard operating procedures, the learner must be able to:

- PA0101 Confirm the purpose of the meeting and channels to follow to engage with stakeholders
- PA0102 Plan and prepare groundwater information to be shared
- PA0103 Attend and participate actively during forum meeting
- PA0104 Apply the principles of risk communication
- PA0105 Provide feedback regarding groundwater abstraction system
- PA0106 Maintain a positive and safe atmosphere with stakeholders
- PA0107 Take meeting notes
- PA0109 Report on meeting outcomes and any concerns or information raised by the stakeholders

Internal Assessment Criteria

- IAC0101 The purpose of the meeting was confirmed with the relevant person, and channels to use to engage stakeholders were followed in accordance with organisational stakeholder engagement procedures
- IAC0102 Relevant information to be shared with the community regarding groundwater abstraction was gathered, carefully planned, prepared and verified with the immediate supervisor

- IAC0103 Feedback on groundwater abstraction system was provided clearly, honestly and transparently, and was based on credible sources of information with a view to educate the community on water conservation
- IAC0104 Community concerns and interests were understood, acknowledged and considered at every stage of discussions and/or feedback given
- IAC0105 Principles of risk communication were applied correctly during forum discussions, stakeholders' concerns were actively listened to
- IAC0106 Safe and positive environment during discussions were maintained to build relationships with the stakeholders
- IAC0107 Feedback given was recorded and reported to the immediate supervisor
- IAC0108 Any community concerns raised and suggestions/recommendations made by the stakeholders for consideration by the organisation were reported for further action
- IAC0109 Stakeholders are motivated to participate in future groundwater information-sharing meetings to ensure improvements in groundwater-related issues/supply

6.3 Provider Accreditation Requirements for the Practical Skills Module

Physical Requirements:

Access to the following:

- Relevant groundwater information and documents,
- Standard operating procedures

Human Resource Requirements:

- Facilitator/learner ratio 1 to 10
- Relevant qualification at NQF Level 6 in water-related or related qualification in the field and a minimum of 8 years' experience in groundwater abstraction
- Qualified or experienced Facilitator (Train-the-Trainer)
- Qualified Assessor
- Qualified Moderator
- Qualified Moderator

Legal Requirements:

- Accredited with QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Occupational Health and Safety requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

6.4 Critical Topics to be Assessed Externally for the Practical Skill Module

- None

6.5 Exemptions

- None

SECTION 3C: WORKPLACE EXPERIENCE MODULES SPECIFICATIONS

This qualification is made up of the following compulsory Workplace Experience Modules:

Workplace Experience Modules:

- 862927-000-00-00-WM-01, Groundwater abstraction operation and maintenance processes, NQF Level 4, 20 Credits
- 862927-000-00-WM-02, Groundwater abstraction system perform monitoring and reporting processes, NQF Level 4, 20 Credits
- 862927-000-00-WM-03, Processes of groundwater water quality monitoring, sampling and on-site testing, NQF Level 3, 8 Credits
- 862927-000-00-WM-04, Processes of monitoring and evaluation of the groundwater abstraction system performance and its related equipment, NQF Level 4, 10 Credits
- 862927-000-00-WM-05, Groundwater abstraction maintenance, fault-finding and troubleshooting processes, NQF Level 4, 15 Credits
- 862927-000-00-WM-01, Processes of stakeholder engagement on groundwater supply, NQF Level 4, 4 Credits

Total number of credits for Workplace Experience Modules: 77

1. 862927-000-00-WM-01, Groundwater abstraction operation and maintenance processes, NQF Level 4, 20 Credits

1.1 Purpose of the Work Experience Module

The focus of the work experience is on providing the learner an opportunity to:

Gain exposure to work as part of a team in the processes of conducting preliminary risk assessment, groundwater abstraction operation and maintenance in a real-life groundwater abstraction work environment. The learner will be required to successfully complete each Work Experience in the specified work experiences at least twice three-weekly within a period of 2 months.

The learner will be required to:

- WM-01-WE01: Observe and assist a qualified borehole pump operator conducting preliminary risk assessment at least once
- WM-01-WE02: Conduct preliminary risk assessment under direct supervision at least once
- WM-01-WE03: Conduct preliminary risk assessment independently but under supervision at least once
- WM-01-WE04: Observe and assist a qualified borehole pump operator operate groundwater abstraction system at least twice three weekly
- WM-01-WE05: Operator operate groundwater abstraction system under direct supervision at least twice
- WM-01-WE06: Operator operate groundwater abstraction system independently but under supervision at least twice
- WM-01-WE07: Observe and assist a qualified borehole pump operator performing first-line maintenance of groundwater abstraction system and equipment at least twice (2 times)
- WM-01-WE08: Perform first-line maintenance of groundwater abstraction system and equipment directly under supervision at least twice
- WM-01-WE09: Perform first-line maintenance of groundwater abstraction system independently but under supervision at least twice at least twice

1.2 Guidelines for Work Experiences

1.2.1 WM-01-WE01: Observe and assist a qualified borehole pump operator conduct preliminary risk assessment at least once

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0101 Attend and participate in an induction programme
- WA0102 Confirm the groundwater abstraction work area
- WA0103 Identify, obtain and select risk assessment tools and documentation
- WA0104 Inspect and identify potential hazards
- WA0105 Relate risks to the identified hazards
- WA0106 Implement mitigation plan
- WA0107 Apply safe working practices

Supporting Evidence

- SE0101 A copy of Attendance Register for the Induction Programme
- SE0102 A copy of questionnaire/test (written or oral) relating to an Induction Programme
- SE0103 Induction Programme Evaluation sheet

1.2.2 WM-01-WE02: Conduct preliminary risk assessment under direct supervision at least once

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0201 Attend and participate in an induction programme
- WA0202 Confirm the groundwater abstraction work area
- WA0203 Identify, obtain and select risk assessment tools and documentation
- WA0204 Inspect and identify potential hazards
- WA0205 Relate risks to the identified hazards
- WA0206 Implement mitigation plan
- WA0207 Apply safe working practices

Supporting Evidence

- SE0201 A copy of Attendance Register for the Induction Programme
- SE0202 A copy of questionnaire/test (written or oral) relating to an Induction Programme
- SE0203 Induction Programme Evaluation sheet

1.2.3 WM-01-WE03: Conduct preliminary risk assessment independently but under supervision at least once

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0301 Attend and participate in an induction programme
- WA0302 Confirm the groundwater abstraction work area
- WA0302 Identify, obtain and select risk assessment tools and documentation
- WA0303 Inspect and identify potential hazards
- WA0304 Relate risks to the identified hazards
- WA0305 Implement mitigation plan
- WA0306 Apply safe working practices

Supporting Evidence

- SE0301 A copy of Attendance Register for the Induction Programme
- SE0302 A copy of questionnaire/test (written or oral) relating to an Induction Programme
- SE0303 Induction Programme Evaluation sheet

1.2.4 WM-01-WE04: Observe and assist a qualified borehole pump operator operate groundwater abstraction system and equipment at least twice three weekly within a period of 2 months

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0401 Check and record the system equipment status
- WA0402 Monitor and control different types of pumps, flow meter, valves and gauges on groundwater abstraction system
- WA0403 Observe and record the current values of the equipment (valve, pumps and flow meter)
- WA0404 Perform power usage, water abstraction and quantity measurements
- WA0405 Determine the need to open or close/on or off the equipment according to standard operating rules or procedures
- WA0406 Determine and record equipment performance
- WA0407 Control, monitor and amend the opening and closing of the equipment, where applicable

Supporting Evidence

- SE0401 Completed Activity-Logbook detailing the process and procedures followed during the operation of the groundwater abstraction system signed and dated by both the learner and the supervisor
- SE0402 Performance Evaluation Report signed and dated by both the qualified borehole Pump Operator and the Supervisor

1.2.5 WM-01-WE05: Operate groundwater abstraction system and equipment under direct supervision at least twice

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0501 Check and record the system equipment status
- WA0502 Monitor and control different types of pumps, flow meter, valves and gauges on groundwater abstraction system
- WA0503 Observe and record the current values of the equipment (valve, pumps and flow meter)
- WA0504 Perform power usage, water abstraction and quantity measurements
- WA0505 Determine the need to open or close/on or off the equipment according to standard operating rules or procedures
- WA0506 Determine and record equipment performance
- WA0507 Control, monitor and amend the opening and closing of the equipment, where applicable

Supporting Evidence

- SE0501 Completed Activity-Logbook detailing the process and procedures followed during the operation of the groundwater abstraction system signed and dated by both the learner and the supervisor
- SE0502 Performance Evaluation Report signed and dated by both the qualified borehole Pump Operator and the Supervisor

1.2.6 WM-01-WE06: Operate groundwater abstraction system and equipment under direct supervision at least twice

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0601 Check and record the system equipment status
- WA0602 Monitor and control different types of pumps, flow meter, valves and gauges on groundwater abstraction system
- WA0603 Observe and record the current values of the equipment (valve, pumps and flow meter)
- WA0604 Perform power usage, water abstraction and quantity measurements
- WA0605 Determine the need to open or close/on or off the equipment according to standard operating rules or procedures
- WA0606 Determine and record equipment performance
- WA0607 Control, monitor and amend the opening and closing of the equipment, where applicable

Supporting Evidence

- SE0601 Completed Activity-Logbook detailing the process and procedures followed during the operation of the groundwater abstraction system signed and dated by both the learner and the supervisor
- SE0602 Performance Evaluation Report signed and dated by both the qualified borehole Pump Operator and the Supervisor

1.2.7 WM-01-WE07: Assist in the maintenance of groundwater abstraction system and equipment at least twice

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0701 Identify and select the relevant equipment
- WA0702 Test the pump or motor for functionality
- WA0703 Test the water meter for functionality
- WA0704 Measure the pumping level
- WA0705 Measure the depth of the borehole to determine pumping performance
- WA0706 Monitor and record data
- WA0707 Mark the datum point
- WA0708 Record the replacement of any components, oil changes
- WA0709 Record and report on faults and corrective action
- WA0710 Record service information in the service or maintenance logbook
- WA0711 Report any discrepancies and implement the recommended changes

Scope of Work Experience

The person will be expected to perform the following work activities:

Supporting Evidence

- SE0701 Completed Activity-Logbook
- SE0702 Completed Maintenance Checklist signed and dated by both the learner and the supervisor

1.2.8 WM-01-WE08: Maintain groundwater abstraction system and equipment at least twice

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0801 Identify and select the relevant equipment

- WA0802 Test the pump or motor for functionality
- WA0803 Test the water meter for functionality
- WA0804 Measure the pumping level
- WA0805 Measure the depth of the borehole to determine pumping performance
- WA0806 Monitor and record data
- WA0807 Mark the datum point
- WA0808 Record the replacement of any components, oil changes
- WA0809 Record and report on faults and corrective action
- WA0810 Record service information in the service or maintenance logbook
- WA0811 Report any discrepancies and implement the recommended changes

Supporting Evidence

- SE0801 Completed Activity-Logbook
- SE0802 Completed Maintenance Checklist signed and dated by both the learner and the supervisor

1.2.9 WM-01-WE09: Perform maintenance of groundwater abstraction system independently but under supervision at least twice

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0901 Identify and select the relevant equipment
- WA0902 Test the pump or motor for functionality
- WA0903 Test the water meter for functionality
- WA0904 Measure the pumping level
- WA0905 Measure the depth of the borehole to determine pumping performance
- WA0906 Monitor and record data
- WA0907 Mark the datum point
- WA0908 Record the replacement of any components, oil changes
- WA0909 Record and report on faults and corrective action
- WA0910 Record service information in the service or maintenance logbook
- WA0911 Report any discrepancies and implement the recommended changes

Supporting Evidence

- SE0901 Completed Activity-Logbook
- SE0902 Completed Maintenance Checklist signed and dated by both the learner and the supervisor

1.3 Contextualised Workplace Knowledge

- Work instructions, checklists, specifications and standards
- Organisational policies and procedures
- Manufacturer's manuals and specifications
- Company-specific quality system requirements

1.4 Criteria for Workplace Approval

Physical Requirements:

Access to the following:

- Groundwater abstraction system, checklist, pen, clipboard, measurement tape, groundwater abstraction system work area, relevant documents, safe working principles and standard operating procedures, PPE (overall, pair of pants, safety boots, rain suit), equipment (dust mask, safety goggles, ear muffs, investigation stick, first aid kit, fire-fighting equipment (in the vehicle),
- Measurement: checklist, pen, clipboard, measurement tape, groundwater abstraction system work area, relevant documents, PPE, safe working principles and logbook, stopwatch
- Maintenance: logbook/sheet, PPE such as leather or rubber gloves, cap and hard hat

Human Resource Requirements:

- A suitably qualified person with the minimum of 8 years workplace experience in or related industry experience in groundwater abstraction
- Supervisor/Mentor to learner ratio of 1:4

Legal Requirements:

- Workplace approved with the QCTO
- Compliant with Safety, Health, Environmental, Risk and Quality (SHERQ) requirements
- Compliant with Compensation for Occupational Injuries and Diseases Act (COIDA) requirements

1.5 Additional Assignments to be assessed externally

- None

2. 862927-000-00-WM-02, Groundwater abstraction system perform monitoring and reporting processes, NQF Level 4, 20 Credits

2.1 Purpose of the Work Experience Module

The focus of the work experience is on providing the learner an opportunity to:

Gain exposure to work as part of a team in the processes of monitoring and reporting on groundwater abstraction operation in a real-life work environment. The learner will be required to successfully complete each Work Experience in the specified work experiences within a period of 1 month.

The learner will be required to:

- WM-01-WE01: Observe and assist a groundwater abstraction operator performing the monitoring and evaluation groundwater abstraction system performance on a routine basis
- WM-01-WE02: Monitor and evaluate groundwater abstraction system performance on a routine basis under direct supervision
- WM-01-WE03: Monitor and evaluate groundwater abstraction system performance on a routine basis independently but under supervision

2.2 Guidelines for Work Experiences

2.2.1 WM-02-WE01: Monitor and evaluate groundwater abstraction system performance on a routine basis under direct supervision

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0101 Confirm the site with the relevant person
- WA0102 Monitor the water levels according to the operating/monitoring schedule
- WA0103 Read and interpret the operating rules and procedures for water level measurements
- WA0104 Identify, select and clean the equipment required to measure the water levels
- WA0105 Test the required equipment for functionality/serviceability
- WA0106 Switch-off the pump applying the operating rules
- WA0107 Switch-on the pump and test the dip meter
- WA0108 Verify the water measuring point
- WA0109 Lower the dip meter cable to measure water levels into dipper tube/conduit pipe
- WA0110 Read and interpret the gauge
- WA0111 Record water level data in the logbook
- WA0112 Retract and clean the dip meter

- WA0113 Carry out first-level captured data analysis
- WA0114 Plot data on a graph and compare with the set standards
- WA0115 Prepare and submit data to the relevant person for capturing

Supporting Evidence

- SE0101 Completed Monitoring Logbook dated and signed by both the learner and the supervisor
- SE0102 Completed Activity Logbook dated and signed by both the learner and the supervisor

2.2.2 WM-02-WE02: Monitor and evaluate groundwater abstraction system performance on a routine basis under direct supervision

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0201 Confirm the site with the relevant person
- WA0202 Verify the water measuring point
- WA0203 Monitor the water abstraction according to the operating/monitoring schedule
- WA0204 Read and interpret the operating rules and procedures for water abstraction measurement
- WA0205 Read, interpret and capture the flow meter reading volume
- WA0206 Calculate the volume abstracted and water rate according to standard operating procedures
- WA0207 Perform an in-field check to ascertain the recommended rates
- WA0208 Compare the current water rate with the previous rates
- WA0209 Read and interpret the volume of the abstracted water
- WA0210 Record water abstraction data in the logbook
- WA0211 Plot data on a graph and compare with the critical levels/recommended abstraction volumes and rate
- WA0212 Carry out first-level captured data analysis
- WA0213 Prepare and submit data to the relevant person for capturing

Supporting Evidence

- SE0201 Completed Monitoring Logbook dated and signed by both the learner and the supervisor
- SE0202 Completed Activity Logbook dated and signed by both the learner and the supervisor

2.2.3 WM-02-WE03: Monitor and evaluate groundwater abstraction system performance on a routine basis independently but under supervision

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0301 Confirm the site with the relevant person
- WA0302 Verify the water measuring point
- WA0303 Monitor power usage according to the operating/monitoring schedule
- WA0304 Read and interpret the operating rules and procedures for power usage measurement
- WA0305 Read, interpret and capture the electricity meter readings
- WA0306 Prepare and submit data to the relevant person for capturing

Supporting Evidence

- SE0301 Completed Monitoring Logbook dated and signed by both the learner and the supervisor
- SE0302 Completed Activity Logbook dated and signed by both the learner and the supervisor

2.3 Contextualised Workplace Knowledge

- Work instructions, checklists, specifications and standards
- Organisational policies and procedures
- Manufacturer's manuals and specifications
- Company-specific quality system requirements

2.4 Criteria for Workplace Approval

Physical Requirements:

Access to:

- Groundwater abstraction system
- Workplace facilities and resources such as a pen, and a clipboard

Human Resource Requirements:

- A suitably qualified person with the minimum of 8 years workplace experience in or related industry
- Maximum supervisor learner ratio of 1:4
- Registered workplace assessor with EWSETA AQP

Legal Requirements:

- Compliance with all legislative and regulatory requirements

- Facilities conform to all operational and legal requirements
- Approved workplace by the QCTO

2.5 Additional Assignments to be Assessed Externally

- None

3. 862927-000-00-WM-03, Processes of groundwater water quality monitoring, sampling and on-site testing, NQF Level 3, 8 Credits

3.1 Purpose of the Work Experience Module

The focus of the work experience is on providing the learner an opportunity to:

Gain exposure to work as part of a team in the processes of conducting sampling and water quality tests of abstracted groundwater in a real-life groundwater abstraction work environment. The learner will be required to successfully complete each Work Experience in the specified work experiences at least twice.

The learner will be required to:

- WM-01-WE01: Observe and assist a qualified person conduct groundwater quality monitoring, sampling and on-site testing at least twice
- WM-01-WE02: Conduct groundwater quality monitoring, sampling and on-site testing at least twice under direct supervision
- WM-01-WE03: Conduct groundwater quality monitoring, sampling and on-site testing independently at least twice but under supervision

3.2 Guidelines for Work Experiences

3.2.1 WM-03-WE01: Conduct groundwater quality monitoring, sampling and on-site testing at least twice under direct supervision

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0101 Obtain and read water quality monitoring schedule
- WA0102 Read and interpret the procedures and reporting requirements
- WA0103 Read and confirm the sampling and on-site testing methods
- WA0104 Confirm the volume of water to be sampled
- WA0105 Select and prepare containers for sampling and storing water samples
- WA0106 Collect and label the water samples
- WA0107 Apply sample handling techniques
- WA0108 Perform and record on-site field measurements
- WA0109 Perform on-site sample testing and data analysis
- WA0110 Record and submit sampling results to the relevant person
- WA0111 Transport and store samples

Supporting Evidence

- SE0101 Completed Logbook dated and signed by both the learner and the supervisor
- SE0102 A copy of on-site test results signed and dated by both the learner and the supervisor

3.2.2 WM-03-WE02: Conduct groundwater quality monitoring, sampling and on-site testing at least twice under direct supervision

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0201 Obtain and read water quality monitoring schedule
- WA0202 Read and interpret the procedures and reporting requirements
- WA0203 Read and confirm the sampling and on-site testing methods
- WA0204 Confirm the volume of water to be sampled
- WA0205 Select and prepare containers for sampling and storing water samples
- WA0206 Collect and label the water samples
- WA0207 Apply sample handling techniques
- WA0208 Perform and record on-site field measurements
- WA0209 Perform on-site sample testing and data analysis
- WA0210 Record and submit sampling results to the relevant person
- WA0211 Transport and store samples

Supporting Evidence

- SE0101 Completed Logbook dated and signed by both the learner and the supervisor
- SE0102 A copy of on-site test results signed and dated by both the learner and the supervisor

3.2.3 WM-03-WE03: Conduct groundwater quality monitoring, sampling and on-site testing independently at least twice but under supervision

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0301 Obtain and read water quality monitoring schedule
- WA0302 Read and interpret the procedures and reporting requirements

- WA0303 Read and confirm the sampling and on-site testing methods
- WA0304 Confirm the volume of water to be sampled
- WA0305 Select and prepare containers for sampling and storing water samples
- WA0306 Collect and label the water samples
- WA0307 Apply sample handling techniques
- WA0308 Perform and record on-site field measurements
- WA0309 Perform on-site sample testing and data analysis
- WA0310 Record and submit sampling results to the relevant person
- WA0311 Transport and store samples

Supporting Evidence

- SE0101 Completed Logbook dated and signed by both the learner and the supervisor
- SE0102 A copy of on-site test results signed and dated by both the learner and the supervisor

3.3 Contextualised Workplace Knowledge

- Work instructions, checklists, specifications and standards
- Organisational policies and procedures
- Manufacturer's manuals and specifications
- Company-specific quality system requirements

3.4 Criteria for Workplace Approval

Physical Requirements:

Access to the following:

- Sampling point
- Sampling equipment (sample bottles, sample bags, gloves, goggles, labels, marker pen, cooler bags, ice packs)

Human Resource Requirements:

- A suitably qualified person with the minimum of 8 years' workplace experience in or related industry
- Maximum supervisor learner ratio of 1:4
- Registered workplace assessor with EWSETA AQP

Legal Requirements:

- Compliance with all legislative and regulatory requirements
- Facilities conform to all operational and legal requirements
- Approved workplace by the QCTO

3.5 Additional Assignments to be Assessed Externally

- None

4. 862927-000-00-WM-04, Processes of monitoring and evaluation of the groundwater abstraction system performance and its related equipment, NQF Level 4, 10 Credits

4.1 Purpose of the Work Experience Module

The focus of the work experience is on providing the learner an opportunity to:

Gain exposure to work as part of a team in the processes of inspect and report on groundwater abstraction system performance on a routine basis in a real-life groundwater abstraction work environment. The learner will be required to successfully complete each Work Experience in the specified work experiences at least twice.

The learner will be required to:

- WM-04-WE01: Monitor and evaluate groundwater abstraction system performance

4.2 Guidelines for Work Experiences

4.2.1 WM-04-WE01: Monitor and evaluate groundwater abstraction system performance

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0101 Read and interpret the system operating procedure
- WA0102 Monitor the system operation and performance of the system
- WA0103 Read and interpret the groundwater parameters
- WA0104 Observe and assess the operational status according to the operating procedures
- WA0105 Record and report any problems observed or non-conformances or malfunctioning of the system
- WA0106 Observe and record external factors surrounding the groundwater system site

Supporting Evidence

- SE0101 Completed Checklist signed and dated by both the learner and the supervisor
- SE0102 Completed Activity Logbook detailing the activities performed during system performance monitoring and evaluation signed and dated by both the learner and the qualified borehole pump operator

4.3 Contextualised Workplace Knowledge

- Work instructions, checklists, specifications and standards
- Organisational policies and procedures
- Manufacturer's manuals and specifications

- Company-specific quality system requirements

4.4 Criteria for Workplace Approval

Physical Requirements:

- Groundwater abstraction system
- Workplace facilities and resources such as a pen, and a clipboard

Human Resource Requirements:

- A suitably qualified person with the minimum of 8 years workplace experience in or related industry
- Maximum supervisor learner ratio of 1:4
- Registered workplace assessor with EWSETA AQP

Legal Requirements:

- Compliance with all legislative and regulatory requirements
- Facilities conform to all operational and legal requirements
- Approved workplace by the QCTO

4.5 Additional Assignments to be Assessed Externally

- None

5. 862927-000-00-WM-05, Groundwater abstraction maintenance, fault-finding and troubleshooting processes, NQF Level 4, 15 Credits

5.1 Purpose of the Work Experience Module

The focus of the work experience is on providing the learner an opportunity to:

Gain exposure to work as part of a team in the processes of conducting basic maintenance and assisting the maintenance team performing maintenance of the groundwater abstraction system as well as diagnose, locate and troubleshoot faults on groundwater abstraction system in a real-life groundwater abstraction work environment. The learner will be required to successfully complete each Work Experience in the specified work experiences at least twice.

The learner will be required to:

- WM-05-WE01: Assist in the maintenance of groundwater abstraction system
- WM-05-WE02: Diagnose, locate and troubleshoot faults on groundwater abstraction system

5.2 Guidelines for Work Experiences

5.2.1 WM-05-WE01: Assist in the maintenance of groundwater abstraction system

- WA0101 Obtain and confirm the location of the groundwater abstraction system for maintenance
- WA0102 Read and interpret the checklist for maintenance
- WA0103 Assist in the identification and selection of maintenance equipment
- WA0104 Participate in the monitoring of system operation status
- WA0105 Check and record oil levels
- WA0106 Oil the chain
- WA0107 Perform lubrication of the equipment
- WA0108 Fasten loose components
- WA0109 Clean system equipment
- WA0110 Assist in the testing of all equipment serviced/maintained
- WA0111 Record and report basic maintenance activities

Supporting Evidence

- SE0101 Completed Activity-Logbook
- SE0102 Completed Maintenance Checklist signed and dated by both the learner and the supervisor

5.2.2 WM-05-WE02: Diagnose, locate and troubleshoot faults on groundwater abstraction system

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0201 Perform visual inspection
- WA0202 Test groundwater abstraction system for functionality/operability
- WA0203 Diagnose and locate faults
- WA0204 Rectify/repair the identified faults
- WA0205 Record and report faults/deviations and rectification

Supporting Evidence

- SE0201 Completed Activity-Logbook
- SE0202 Completed Maintenance Checklist signed and dated by both the learner and the supervisor
- SE0203 Fault-finding report on groundwater abstraction system operation (if applicable) signed and dated by both the learner and the supervisor

5.3 Contextualised Workplace Knowledge

- Work instructions, checklists, specifications and standards
- Organisational policies and procedures
- Manufacturer's manuals and specifications
- Company-specific quality system requirements

5.4 Criteria for Workplace Approval

Physical Requirements:

- Groundwater abstraction system
- Logbook/sheet, PPE such as leather or rubber gloves, cap and hard hat

Human Resource Requirements:

- A suitably qualified person with the minimum of 8 years' workplace experience in or related industry
- Maximum supervisor learner ratio of 1:4
- Registered workplace assessor with EWSETA AQP

Legal Requirements:

- Compliance with all legislative and regulatory requirements
- Facilities conform to all operational and legal requirements
- Approved workplace by the QCTO

5.5 Additional Assignments to be Assessed Externally

- None

6. 862927-000-00-WM-06, Processes of stakeholder engagement on groundwater supply, NQF Level 4, 4 Credits

6.1 Purpose of the Work Experience Module

The focus of the work experience is on providing the learner an opportunity to:

Gain exposure in a real-life groundwater abstraction work environment to participate in stakeholder engagement event sharing and obtaining information related to groundwater abstraction. The learner is expected to participate in at least 3-5 stakeholder engagement events over a period of six (6) months.

The learner will be required to:

- WM-06-WE01: Participate and provide information and stakeholder education regarding groundwater supply

6.2 Guidelines for Work Experiences

6.2.1 WM-06-WE01: Participate and provide information and stakeholder education regarding groundwater supply

Scope of Work Experience

The person will be expected to perform the following work activities:

- WA0101 Confirm the procedure to engage with stakeholders with the supervisor
- WA0102 Plan and prepare groundwater information to be shared
- WA0103 Attend and participate actively during forum meeting
- WA0104 Apply the principles of risk communication
- WA0105 Provide feedback regarding groundwater abstraction system
- WA0106 Maintain a positive and safe atmosphere with stakeholders
- WA0107 Take meeting notes
- WA0108 Report on meeting outcomes and any concerns or information raised by the stakeholders

Supporting Evidence

- SE0101 Attendance Register
- SE0102 Stakeholder Engagement Report

6.3 Contextualised Workplace Knowledge

- Work instructions, checklists, specifications and standards

- Organisational policies and procedures
- Manufacturer's manuals and specifications
- Company-specific quality system requirements

6.4 Criteria for Workplace Approval

Physical Requirements:

- Workplace facilities and resources
- Stakeholder engagement events

Human Resource Requirements:

- A suitably qualified person with the minimum of 8 years' workplace experience in or related industry
- Maximum supervisor learner ratio of 1:4
- Registered workplace assessor with EWSETA AQP

Legal Requirements:

- Compliance with all legislative and regulatory requirements
- Facilities conform to all operational and legal requirements
- Approved workplace by the QCTO

5.6 Additional Assignments to be Assessed Externally

- None

SECTION 4: STATEMENT OF WORK EXPERIENCE

Curriculum Number:	862927-000-00-00
Curriculum Title:	National Occupational Certificate: Borehole Pump Operator

Learner Details	
Name:	
ID Number:	

Employer Details	
Company Name:	
Address:	
Supervisor Name:	
Work Telephone:	
E-Mail:	

1. 862927-000-00-WM-01, Groundwater abstraction operation and maintenance processes, NQF Level 4, 20 Credits

WM-01-WE01	Observe and assist a qualified borehole pump operator conduct preliminary risk assessment at least once		
	Scope Work Experience	Date	Signature
WA0101	Attend and participate in an induction programme		
WA0102	Confirm the groundwater abstraction work area		
WA0103	Identify, obtain and select risk assessment tools and documentation		
WA0104	Inspect and identify potential hazards		
WA0105	Relate risks to the identified hazards		
WA0106	Implement mitigation plan		
WA0107	Apply safe working practices		
	Supporting Evidence	Date	Signature
SE0101	A copy of Attendance Register for the Induction Programme		
SE0102	A copy of questionnaire/test (written or oral) relating to an Induction Programme		
SE0103	Induction Programme Evaluation sheet		
WM-01- WE02	Conduct preliminary risk assessment under direct supervision at least once		
	Scope Work Experience	Date	Signature
WA0201	Attend and participate in an induction programme		
WA0202	Confirm the groundwater abstraction work area		
WA0203	Identify, obtain and select risk assessment tools and documentation		

WA0204	Inspect and identify potential hazards		
WA0205	Relate risks to the identified hazards		
WA0206	Implement mitigation plan		
WA0207	Apply safe working practices		
	Supporting Evidence	Date	Signature
SE0201	A copy of Attendance Register for the Induction Programme		
SE0202	A copy of questionnaire/test (written or oral) relating to an Induction Programme		
SE0203	Induction Programme Evaluation sheet		
WM-01-WE03	Conduct preliminary risk assessment independently but under supervision at least once		
	Scope Work Experience	Date	Signature
WA0301	Attend and participate in an induction programme		
WA0302	Confirm the groundwater abstraction work area		
WA0303	Identify, obtain and select risk assessment tools and documentation		
WA0304	Inspect and identify potential hazards		
WA0305	Relate risks to the identified hazards		
WA0306	Implement mitigation plan		
WA0307	Apply safe working practices		
	Supporting Evidence	Date	Signature
SE0301	A copy of Attendance Register for the Induction Programme		
SE0302	A copy of questionnaire/test (written or oral) relating to an Induction Programme		
SE0303	Induction Programme Evaluation sheet		
WM-01-WE04	Observe and assist a qualified borehole pump operator operate groundwater abstraction system and equipment at least twice three weekly within a period of 2 months		

	Scope Work Experience	Date	Signature
WA0401	Check and record the system equipment status		
WA0402	Monitor and control different types of pumps, flow meter, valves and gauges on groundwater abstraction system		
WA0403	Observe and record the current values of the equipment (valve, pumps and flow meter)		
WA0404	Perform power usage, water abstraction and quantity measurements		
WA0405	Determine the need to open or close/on or off the equipment according to standard operating rules or procedures		
WA0406	Determine and record equipment performance		
WA0407	Control, monitor and amend the opening and closing of the equipment, where applicable		
	Supporting Evidence	Date	Signature
SE0401	Completed Activity-Logbook detailing the process and procedures followed during the operation of the groundwater abstraction system signed and dated by both the learner and the supervisor		
SE0402	Performance Evaluation Report signed and dated by both the qualified borehole Pump Operator and the Supervisor		
WM-01-WE05	Operate groundwater abstraction system and equipment under direct supervision at least twice		
	Scope Work Experience	Date	Signature
WA0501	Check and record the system equipment status		
WA0502	Monitor and control different types of pumps, flow meter, valves and gauges on groundwater abstraction system		
WA0503	Observe and record the current values of the equipment (valve, pumps and flow meter)		
WA0504	Perform power usage, water abstraction and quantity measurements		
WA0505	Determine the need to open or close/on or off the equipment according to standard operating rules or procedures		

WA0506	Determine and record equipment performance		
WA0507	Control, monitor and amend the opening and closing of the equipment, where applicable		
	Supporting Evidence	Date	Signature
SE0501	Completed Activity-Logbook detailing the process and procedures followed during the operation of the groundwater abstraction system signed and dated by both the learner and the supervisor		
SE0502	Performance Evaluation Report signed and dated by both the qualified borehole Pump Operator and the Supervisor		
WM-01-WE06	Operate groundwater abstraction system and equipment under direct supervision at least twice		
	Scope Work Experience	Date	Signature
WA0601	Check and record the system equipment status		
WA0602	Monitor and control different types of pumps, flow meter, valves and gauges on groundwater abstraction system		
WA0603	Observe and record the current values of the equipment (valve, pumps and flow meter)		
WA0604	Perform power usage, water abstraction and quantity measurements		
WA0605	Determine the need to open or close/on or off the equipment according to standard operating rules or procedures		
WA0606	Determine and record equipment performance		
WA0607	Control, monitor and amend the opening and closing of the equipment, where applicable		
	Supporting Evidence	Date	Signature
SE0601	Completed Activity-Logbook detailing the process and procedures followed during the operation of the groundwater abstraction system signed and dated by both the learner and the supervisor		
SE0602	Performance Evaluation Report signed and dated by both the qualified borehole Pump Operator and the Supervisor		

WM-01-WE07	Assist in the maintenance of groundwater abstraction system and equipment at least twice		
	Scope Work Experience	Date	Signature
WA0701	Identify and select the relevant equipment		
WA0702	Test the pump or motor for functionality		
WA0703	Test the water meter for functionality		
WA0704	Measure the pumping level		
WA0705	Measure the depth of the borehole to determine pumping performance		
WA0706	Monitor and record data		
WA0707	Mark the datum point		
WA0708	Record the replacement of any components, oil changes		
WA0709	Record and report on faults and corrective action		
WA0710	Record service information in the service or maintenance logbook		
WA0711	Report any discrepancies and implement the recommended changes		
	Supporting Evidence	Date	Signature
SE0701	Completed Activity-Logbook		
SE0702	Completed Maintenance Checklist signed and dated by both the learner and the supervisor		
WM-01-WE08	Maintain groundwater abstraction system and equipment at least twice		
	Scope Work Experience	Date	Signature
WA0801	Identify and select the relevant equipment		
WA0802	Test the pump or motor for functionality		
WA0803	Test the water meter for functionality		
WA0804	Measure the pumping level		
WA0805	Measure the depth of the borehole to determine		

	pumping performance		
WA0806	Monitor and record data		
WA0807	Mark the datum point		
WA0808	Record the replacement of any components, oil changes		
WA0809	Record and report on faults and corrective action		
WA0810	Record service information in the service or maintenance logbook		
WA0811	Report any discrepancies and implement the recommended changes		
	Supporting Evidence	Date	Signature
SE0801	Completed Activity-Logbook		
SE0802	Completed Maintenance Checklist signed and dated by both the learner and the supervisor		
WM-01-WE09	Perform maintenance of groundwater abstraction system independently but under supervision at least twice		
	Scope Work Experience	Date	Signature
WA0901	Identify and select the relevant equipment		
WA0902	Test the pump or motor for functionality		
WA0903	Test the water meter for functionality		
WA0904	Measure the pumping level		
WA0905	Measure the depth of the borehole to determine pumping performance		
WA0906	Monitor and record data		
WA0907	Mark the datum point		
WA0908	Record the replacement of any components, oil changes		
WA0909	Record and report on faults and corrective action		
WA0910	Record service information in the service or maintenance logbook		

WA0911	Report any discrepancies and implement the recommended changes		
	Supporting Evidence	Date	Signature
SE0901	Completed Activity-Logbook		
SE0902	Completed Maintenance Checklist signed and dated by both the learner and the supervisor		

	Contextualised Workplace Knowledge	Date	Signature
1	Work instructions, checklists, specifications and standards		
2	Organisational policies and procedures		
3	Manufacturer's manuals and specifications		
4	Company-specific quality system requirements		

	Additional Assignments to be Assessed Externally	Date	Signature

2. 862927-000-00-WM-02, Groundwater abstraction system perform monitoring and reporting processes, NQF Level 4, 20 Credits

WM-02- WE01	Monitor and evaluate groundwater abstraction system performance on a routine basis under direct supervision		
	Scope Work Experience	Date	Signature
WA0101	Confirm the site with the relevant person		
WA0102	Monitor the water levels according to the operating/monitoring schedule		
WA0103	Read and interpret the operating rules and procedures for water level measurements		
WA0104	Identify, select and clean the equipment required to measure the water levels		
WA0105	Test the required equipment for functionality/serviceability		
WA0106	Switch-off the pump applying the operating rules		
WA0107	Switch-on the pump and test the dip meter		
WA0108	Verify the water measuring point		
WA0109	Lower the dip meter cable to measure water levels into dipper tube/conduit pipe		
WA0110	Read and interpret the gauge		
WA0111	Record water level data in the logbook		
WA0112	Retract and clean the dip meter		
WA0113	Carry out first-level captured data analysis		
WA0114	Plot data on a graph and compare with the set standards		
WA0115	Prepare and submit data to the relevant person for capturing		
	Supporting Evidence	Date	Signature
SE0101	Completed Monitoring Logbook dated and signed by		

	both the learner and the supervisor		
SE0102	Completed Activity Logbook dated and signed by both the learner and the supervisor		
WM-02- WE02	Monitor and evaluate groundwater abstraction system performance on a routine basis under direct supervision		
	Scope Work Experience	Date	Signature
WA0201	Confirm the site with the relevant person		
WA0202	Verify the water measuring point		
WA0203	Monitor the water abstraction according to the operating/monitoring schedule		
WA0204	Read and interpret the operating rules and procedures for water abstraction measurement		
WA0205	Read, interpret and capture the flow meter reading volume		
WA0206	Calculate the volume abstracted and water rate according to standard operating procedures		
WA0207	Perform an in-field check to ascertain the recommended rates		
WA0208	Compare the current water rate with the previous rates		
WA0209	Read and interpret the volume of the abstracted water		
WA0210	Record water abstraction data in the logbook		
WA0211	Plot data on a graph and compare with the critical levels/recommended abstraction volumes and rate		
WA0212	Carry out first-level captured data analysis		
WA0213	Prepare and submit data to the relevant person for capturing		
	Supporting Evidence	Date	Signature
SE0201	Completed Monitoring Logbook dated and signed by both the learner and the supervisor		

SE0202	Completed Activity Logbook dated and signed by both the learner and the supervisor		
WM-02- WE03	Monitor and evaluate groundwater abstraction system performance on a routine basis independently but under supervision		
	Scope Work Experience	Date	Signature
WA0301	Confirm the site with the relevant person		
WA0302	Verify the water measuring point		
WA0303	Monitor power usage according to the operating/monitoring schedule		
WA0304	Read and interpret the operating rules and procedures for power usage measurement		
WA0305	Read, interpret and capture the electricity meter readings		
WA0306	Prepare and submit data to the relevant person for capturing		
	Supporting Evidence	Date	Signature
SE0301	Completed Monitoring Logbook dated and signed by both the learner and the supervisor		
SE0302	Completed Activity Logbook dated and signed by both the learner and the supervisor		

	Contextualised Workplace Knowledge	Date	Signature
1	Work instructions, checklists, specifications and standards		
2	Organisational policies and procedures		
3	Manufacturer's manuals and specifications		
4	Company-specific quality system requirements		

	Additional Assignments to be Assessed Externally	Date	Signature
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3. 862927-000-00-WM-03, Processes of groundwater water quality monitoring, sampling and on-site testing, NQF Level 3, 8 Credits

WM-03- WE01	Conduct groundwater quality monitoring, sampling and on-site testing at least twice under direct supervision		
	Scope Work Experience	Date	Signature
WA0101	Obtain and read water quality monitoring schedule		
WA0102	Read and interpret the procedures and reporting requirements		
WA0103	Read and confirm the sampling and on-site testing methods		
WA0104	Confirm the volume of water to be sampled		
WA0105	Select and prepare containers for sampling and storing water samples		
WA0106	Collect and label the water samples		
WA0107	Apply sample handling techniques		
WA0108	Perform and record on-site field measurements		
WA0109	Perform on-site sample testing and data analysis		
WA0110	Record and submit sampling results to the relevant person		
WA0111	Transport and store samples		
	Supporting Evidence	Date	Signature
SE0101	Completed Logbook dated and signed by both the learner and the supervisor		
SE0102	A copy of on-site test results signed and dated by both the learner and the supervisor		
WM-03- WE02	Conduct groundwater quality monitoring, sampling and on-site testing at least twice under direct supervision		

	Scope Work Experience	Date	Signature
WA0201	Obtain and read water quality monitoring schedule		
WA0202	Read and interpret the procedures and reporting requirements		
WA0203	Read and confirm the sampling and on-site testing methods		
WA0204	Confirm the volume of water to be sampled		
WA0205	Select and prepare containers for sampling and storing water samples		
WA0206	Collect and label the water samples		
WA0207	Apply sample handling techniques		
WA0208	Perform and record on-site field measurements		
WA0209	Perform on-site sample testing and data analysis		
WA0210	Record and submit sampling results to the relevant person		
WA0211	Transport and store samples		
	Supporting Evidence	Date	Signature
SE0201	Completed Logbook dated and signed by both the learner and the supervisor		
SE0202	A copy of on-site test results signed and dated by both the learner and the supervisor		
WM-03- WE03	Conduct groundwater quality monitoring, sampling and on-site testing independently at least twice but under supervision		
	Scope Work Experience	Date	Signature
WA0301	Obtain and read water quality monitoring schedule		
WA0302	Read and interpret the procedures and reporting requirements		

WA0303	Read and confirm the sampling and on-site testing methods		
WA0304	Confirm the volume of water to be sampled		
WA0305	Select and prepare containers for sampling and storing water samples		
WA0306	Collect and label the water samples		
WA0307	Apply sample handling techniques		
WA0308	Perform and record on-site field measurements		
WA0309	Perform on-site sample testing and data analysis		
WA0310	Record and submit sampling results to the relevant person		
WA0311	Transport and store samples		
	Supporting Evidence	Date	Signature
SE0301	Completed Logbook dated and signed by both the learner and the supervisor		
SE0302	A copy of on-site test results signed and dated by both the learner and the supervisor		

	Contextualised Workplace Knowledge	Date	Signature
1	Work instructions, checklists, specifications and standards		
2	Organisational policies and procedures		
3	Manufacturer's manuals and specifications		
4	Company-specific quality system requirements		

	Additional Assignments to be Assessed Externally	Date	Signature
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4. 862927-000-00-WM-04, Processes of monitoring and evaluation of the groundwater abstraction system performance and its related equipment, NQF Level 4, 10 Credits

WM-04- WE01	Monitor and evaluate groundwater abstraction system performance		
	Scope Work Experience	Date	Signature
WA0101	Read and interpret the system operating procedure		
WA0102	Monitor the system operation and performance of the system		
WA0103	Read and interpret the groundwater parameters		
WA0104	Observe and assess the operational status according to the operating procedures		
WA0105	Record and report any problems observed or non-conformances or malfunctioning of the system		
WA0106	Observe and record external factors surrounding the groundwater system site		
	Supporting Evidence	Date	Signature
SE0101	Completed Checklist signed and dated by both the learner and the supervisor		
SE0102	Completed Activity Logbook detailing the activities performed during system performance monitoring and evaluation signed and dated by both the learner and the qualified borehole pump operator		

	Contextualised Workplace Knowledge	Date	Signature
1	Work instructions, checklists, specifications and standards		
2	Organisational policies and procedures		
3	Manufacturer's manuals and specifications		
4	Company-specific quality system requirements		

	Additional Assignments to be Assessed Externally	Date	Signature

5. 862927-000-00-WM-05, Groundwater abstraction maintenance, fault-finding and troubleshooting processes, NQF Level 4, 15 Credits

WM-05- WE01	Assist in the maintenance of groundwater abstraction system		
	Scope Work Experience	Date	Signature
WA0101	Obtain and confirm the location of the groundwater abstraction system for maintenance		
WA0102	Read and interpret the checklist for maintenance		
WA0103	Assist in the identification and selection of maintenance equipment		
WA0104	Participate in the monitoring of system operation status		
WA0105	Check and record oil levels		
WA0106	Oil the chain		
WA0107	Perform lubrication of the equipment		
WA0108	Fasten loose components		
WA0109	Clean system equipment		
WA0110	Assist in the testing of all equipment serviced/maintained		
WA0111	Record and report basic maintenance activities		
	Supporting Evidence	Date	Signature
SE0101	Completed Activity-Logbook		
SE0102	Completed Maintenance Checklist signed and dated by both the learner and the supervisor		

WM-05- WE02	Diagnose, locate and troubleshoot faults on groundwater abstraction system		
	Scope Work Experience	Date	Signature
WA0201	Perform visual inspection		
WA0202	Test groundwater abstraction system for functionality/operability		
WA0203	Diagnose and locate faults		
WA0204	Rectify/repair the identified faults		
WA0205	Record and report faults/deviations and rectification		
	Supporting Evidence	Date	Signature
SE0201	Completed Activity-Logbook		
SE0202	Completed Maintenance Checklist signed and dated by both the learner and the supervisor		
SE0203	Fault-finding report on groundwater abstraction system operation (if applicable) signed and dated by both the learner and the supervisor		

	Contextualised Workplace Knowledge	Date	Signature
1	Work instructions, checklists, specifications and standards		
2	Organisational policies and procedures		

3	Manufacturer's manuals and specifications		
4	Company-specific quality system requirements		

	Additional Assignments to be Assessed Externally	Date	Signature
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6. 862927-000-00-WM-06, Processes of stakeholder engagement on groundwater supply, NQF Level 4, 4 Credits

WM-06- WE01	Participate and provide information and stakeholder education regarding groundwater supply		
	Scope Work Experience	Date	Signature
WA0101	Confirm the procedure to engage with stakeholders with the supervisor		
WA0102	Plan and prepare groundwater information to be shared		
WA0103	Attend and participate actively during forum meeting		
WA0104	Apply the principles of risk communication		
WA0105	Provide feedback regarding groundwater abstraction system		
WA0106	Maintain a positive and safe atmosphere with stakeholders		
WA0107	Take meeting notes		
WA0108	Fasten loose components		
WA0109	Report on meeting outcomes and any concerns or information raised by the stakeholders		
	Supporting Evidence	Date	Signature
SE0101	Attendance Register		
SE0102	Stakeholder Engagement Report		

	Contextualised Workplace Knowledge	Date	Signature
1	Work instructions, checklists, specifications and standards		
2	Organisational policies and procedures		
3	Manufacturer's manuals and specifications		
4	Company-specific quality system requirements		

	Additional Assignments to be Assessed Externally	Date	Signature