



REPUBLIC OF KENYA

**NATIONAL OCCUPATIONAL STANDARDS
FOR
ELECTRICAL TECHNICIAN
LEVEL 3**



**TVET CDACC
P.O. BOX 15745-00100
NAIROBI**

First published 2018
Copyright TVET CDACC

All rights reserved. No part of these occupational standards may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods without the prior written permission of the TVET CDACC, except in the case of brief quotations embodied in critical reviews and certain other non-commercial uses permitted by copyright law. For permission requests, write to the Council Secretary/CEO, at the address below:

Council Secretary/CEO
TVET Curriculum Development, Assessment and
Certification Council
P.O. Box 15745–00100
Nairobi, Kenya
Email: cdacc.tvet@gmail.com

FOREWORD

The provision of quality education and training is fundamental to the Government's overall strategy for social economic development. Quality education and training will contribute to achievement Kenya's development blue print and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution and this resulted to the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No. 4 of 2016). A key feature of this policy is the radical change in the design and delivery of the TVET training. The policy document requires that training in TVET shall be competency based, curriculum development shall be industry led, certification shall be based on demonstration of competence and mode of delivery shall allow for multiple entry and exit in TVET programmes.

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these Occupational Standards were developed for the purpose of developing a competency based curriculum for Electrical Technician level 3. These Occupational Standards will also be the bases for assessment of an individual for competence certification.

It is my conviction that these Occupational Standards will play a great role towards development of competent human resource for the Electrical sector's growth and sustainable development.

**PRINCIPAL SECRETARY
VOCATIONAL AND TECHNICAL TRAINING
MINISTRY OF EDUCATION**

PREFACE

The provision of quality education and training is fundamental to the Government's overall strategy for social economic development. Quality education and training will contribute to achievement Kenya's development blue print and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution and this resulted to the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No. 4 of 2016). A key feature of this policy is the radical change in the design and delivery of the TVET training. The policy document requires that training in TVET shall be competency based, curriculum development shall be industry led, certification shall be based on demonstration of competence and mode of delivery shall allow for multiple entry and exit in TVET programmes.

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these Occupational Standards were developed for the purpose of developing a competency based curriculum for Electrical Technician level 3. These Occupational Standards will also be

the bases for assessment of an individual for competence certification.

It is my conviction that these Occupational Standards will play a great role towards development of competent human resource for the Electrical sector's growth and sustainable development.

**PROF. CHARLES M. M. ONDIEKI, PhD, FIET (K), CON.
ENG TECH.
CHAIRMAN, TVET CDACC**

ACKNOWLEDGMENT

These Occupational Standards were developed through combined effort of various stakeholders from private and public organizations. I am sincerely thankful to the management of these organizations for allowing their staff to participate in this course. I wish to acknowledge the invaluable contribution of industry players who provided inputs towards the development of these Standards.

I thank TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) for providing guidance on the development of these Standards. My gratitude goes to the Electrical Engineering Sector Skills Advisory Committee (SSAC) members for their contribution to the development of these Standards. I thank all the individuals and organizations who participated in the validation of these Standards.

My gratitude also goes to CAP Youth Empowerment Institute who cooperated with TVET CDACC in financing the development of these Standards.

I acknowledge any other institution which in one way or another contributed to the success of development of these Standards but has not been mentioned.

**CHAIRMAN
ELECTRICAL ENGINEERING SECTOR SKILLS
ADVISORY COMMITTEE**

Table of Contents

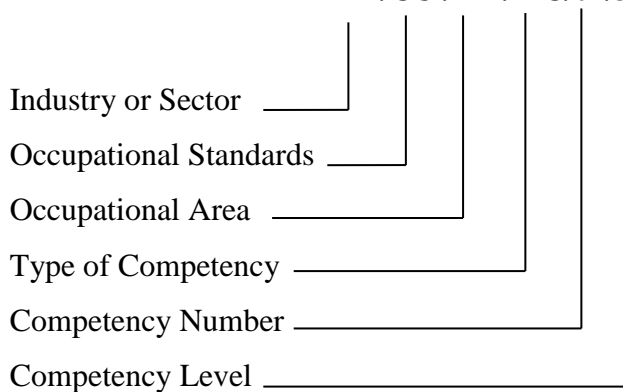
Foreword	i
Preface.....	iii
Acknowledgment	v
Table of Contents	vi
Acronyms	vii
Key to Unit Code	viii
Overview	ix
BASIC UNITS OF COMPETENCY	1
Demonstrate Communication Skills	2
Demonstrate Numeracy Skills	9
Demonstrate Digital Literacy	17
Demonstrate Entrepreneurial Skills.....	23
Demonstrate Employability Skills.....	32
Demonstrate Environmental Literacy.....	46
Demonstrate Occupational Safety and Health Practices	51
CORE UNITS OF COMPETENCY	58
Perform Pvc Sheathed Cabling, Conduiting, Trunking and Cable Trays Laying.....	59
Perform Single Phase Electrical Installation and Maintenance	68
Perform Fixing and Maintenance of Light Fittings, Power Outlets and Basic Appliances	77
Maintain Plumbing Systems	86

ACRONYMS

BC	Basic Competency
IEE	Institute of Electrical Engineers
EE	Electrical Engineering
PC	Personal Computer
CDACC	Curriculum Development, Assessment and Certification Council
CPU	Central Processing Unit
CR	Core Competency
NCA	National Construction Authority
PVC	Polyvinyl Chloride
ICT	Information Communication Technology
KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of secondary Education
KNQA	Kenya National Qualifications Authority
NEMA	National Environmental Management Authority
OS	Occupational Standards
OSHA	Occupation Safety and Health Act
OSHS	Occupation Safety and Health Standards
PPE	Personal Protective Equipment
SOPs	Standard Operating Procedures
SSAC	Sector Skills Advisory Committee
TVET	Technical and Vocational Education and Training

KEY TO UNIT CODE

EE/CU / ET/ BC/01/3



OVERVIEW

Electrical Installation Certificate Level 3 qualification consists of competencies that an individual must achieve to enable the individual install and maintain electrical wiring, lighting, power circuits and related equipment in domestic premises.

The units of competency comprising Electrical Installation Certificate Level 3 Qualification include the following:

Basic Units of Competency

Unit of Competency Code	Unit of Competency Title
EE/OS/ET/BC/01/3	Demonstrate Communication Skills
EE/OS/ET/BC/02/3	Demonstrate numeracy skills
EE/OS/ET/BC/03/3	Demonstrate Digital Literacy
EE/OS/ET/BC/04/3	Demonstrate Entrepreneurial Skills
EE/OS/ET/BC/05/3	Demonstrate Employability Skills
EE/OS/ET/BC/06/3	Demonstrate Environmental Literacy
EE/OS/ET/BC/07/3	Demonstrate Occupational Safety and Health Practices

Core Units Competency

Unit of Competency Code	Unit of Competency Title
EE/OS/ET/CR/01/3	Perform PVC sheathed cabling, conduiting, trunking and cable trays laying
EE/OS/ET/CR/02/3	Perform single phase electrical installation and maintenance

Unit of Competency Code	Unit of Competency Title
EE/OS/ET/CR/03/3	Perform fixing and maintenance of light fittings, power outlets, and basic appliances
EE/OS/ET/CR/04/3	Maintain Plumbing Systems

BASIC UNITS OF COMPETENCY

DEMONSTRATE COMMUNICATION SKILLS
UNIT CODE: EE/OS/ET/BC/01/3

Unit Description

This unit covers the competencies required to gather, interpret and convey information in response to workplace requirements.

ELEMENTS AND PERFORMANCE CRITERIA

<p>Element <i>These describe the key outcomes which make up workplace function</i></p>	<p>Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements.</i> <i>Bold and italicized terms are elaborated in the Range</i></p>
<p>1. Obtain and convey workplace information</p>	<p>1.1 Specific and relevant information is accessed from appropriate sources.</p> <p>1.2 Effective questioning, active listening and speaking skills are used to gather and convey information.</p> <p>1.3 Appropriate medium is used to transfer information and ideas</p> <p>1.4 Appropriate non- verbal communication is used.</p> <p>1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed.</p>

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements.</i> <i>Bold and italicized terms are elaborated in the Range</i>
	1.6 Defined workplace procedures for the location and <i>storage</i> of information are used. 1.7 Personal interaction is carried out clearly and concisely.
2. Speak English at a basic operational level	2.1 Specific and relevant information is accessed from appropriate sources . 2.2 Effective questioning, active listening and speaking skills are used to gather and convey information. 2.3 Appropriate <i>medium</i> is used to transfer information and ideas. 2.4 Appropriate non- verbal communication is used. 2.5 Appropriate lines of communication with supervisors and colleagues are identified and followed. 2.6 Defined workplace procedures for the location and <i>storage</i> of information are used. 2.7 Personal interaction is carried out clearly and concisely.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements.</i> <i>Bold and italicized terms are elaborated in the Range</i>
3. Participate in workplace meetings and discussions	3.1 Team meetings are attended on time. 3.2 Own opinions are clearly expressed and those of others are listened to without interruption. 3.3 Meeting inputs are consistent with the meeting purpose and established <i>protocols.</i> 3.4 <i>Workplace interactions</i> are conducted in a courteous manner. 3.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are asked and responded to. 3.6 Meetings outcomes are interpreted and implemented.
4. Complete relevant work related documents	4.1 Range of forms relating to conditions of employment are completed accurately and legibly. 4.2 Workplace data is recorded on standard workplace forms and documents.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements.</i> <i>Bold and italicized terms are elaborated in the Range</i>
	4.3 Basic mathematical processes are used for routine calculations. 4.4 Errors in recording information on forms/ documents are identified and properly acted upon. 4.5 Reporting requirements to supervisor are completed according to organizational guidelines.

RANGE

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

Variable	Range <i>May include but not limited to:</i>
1. Appropriate Sources	1.1 Various department heads 1.2 Organization documents
2. Medium	Method of communication 2.1 Physical media 2.2 Mechanical media (everything that is not No. 1)
3. Routine procedures	Day to day activities

Variable	Range <i>May include but not limited to:</i>
4. Protocols	Procedures for doing a task
5. Workplace interactions	Official inter relations

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Analytical
- Listening
- Communication
- Report writing
- Interpretation
- Basic Information Technology (IT)

Required Knowledge

The individual needs to demonstrate knowledge of:

- Report writing in templates
- Sources of information
- Lines of communication
- Self-expression
- Information storage

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Prepared written communication following standard format of the organization. 1.2 Accessed information using communication equipment. 1.3 Spoken English at a basic operational level. 1.4 Made use of relevant terms as an aid to transfer information effectively. 1.5 Conveyed information effectively adopting the formal or informal communication.
2. Resource Implications	2.1 Telephone 2.2 Writing materials 2.3 Internet
3. Methods of Assessment	1.1 Direct Observation 1.2 Oral interview and written test
4. Context of Assessment	Competency may be assessed individually in the actual workplace or through accredited institution.

5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.
--	--

DEMONSTRATE NUMERACY SKILLS

UNIT CODE: EE/OS/ET/BC/02/3

Unit Description

This unit covers the competencies required to identify and undertake simple numerical processes. The person who is competent in this unit shall be able to use / work with whole numbers and money up to one hundred thousand; Locate, compare and use highly familiar measurement; use highly familiar maps and diagrams; Identify and use some common 2D shapes and locate specific information in highly familiar tables, graphs and charts for work.

ELEMENTS AND PERFORMANCE CRITERIA

Element <i>Elements describe the essential outcomes</i>	Performance Criteria <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i> <i>Bold and italicized terms are elaborated in the Range</i>
1. Use whole numbers for work	1.1 Whole numbers are used in familiar workplace documents and tasks are named and read. 1.2 Understanding of place value and the role of zero is demonstrate. 1.3 Halves are recognised and understood in workplace. 1.4 Whole numbers are organised in size order and are compared.

Element <i>Elements describe the essential outcomes</i>	Performance Criteria <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i> <i>Bold and italicized terms are elaborated in the Range</i>
	<p>1.5 Counting is done in number groups.</p> <p>1.6 Addition and subtraction of whole numbers are done in accordance with workplace requirement.</p> <p>1.7 Links between operations of addition and subtraction are clearly described.</p> <p>1.8 Reasonableness of outcome with prompting and support is checked.</p> <p>1.9 Numerical information is recorded and the result of the task is communicated using informal language and symbolism.</p>
<p>2. Locate, compare and use highly familiar measurement for work</p>	<p>2.1 Measurements in highly familiar workplace documents and tasks are located.</p> <p>2.2 Different units of measurements and their uses are identified.</p> <p>2.3 The comparative relationship between the units of measurement identified.</p>

Element <i>Elements describe the essential outcomes</i>	Performance Criteria <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i> <i>Bold and italicized terms are elaborated in the Range</i>
	2.4 Understanding of conservation of amounts is demonstrated. 2.5 Informal language is used to compare measurements. 2.6 Digital time is well read and am and pm used in reference to time. 2.7 Calendar used appropriately to record information. 2.8 Basic measurement information is well read and recorded. 2.9 Additions and subtraction of simple quantities done in workplace.
3. Use highly familiar maps and diagrams for work	3.1 Familiar items or places are located in highly familiar maps and diagrams. 3.2 Simple symbols and pictorial representations are identified in highly familiar maps and diagrams. 3.3 Simple oral directions are given to locate objects. 3.4 Simple oral directions followed to locate objects.

Element <i>Elements describe the essential outcomes</i>	Performance Criteria <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i> <i>Bold and italicized terms are elaborated in the Range</i>
	3.5 Understanding of informal directional language is demonstrated.
4. Identify and use some common 2D shapes for work	4.1 Familiar two dimensional shapes are identified and named. 4.2 Common objects are describe in terms of size and shape. 4.3 Common, every day, informal language is used to compare objects. 4.4 Common objects are grouped based on shape, size, colour and features.
5. Locate specific Information in highly familiar tables, graphs and charts for work	5.1 Features of simple tables identified. 5.2 Specific numerical information located in highly familiar tables using grid movement (up and down columns and across rows) and key. 5.3 Numerical information and data in highly familiar tables compared using appropriate informal language.

Element <i>Elements describe the essential outcomes</i>	Performance Criteria <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i> <i>Bold and italicized terms are elaborated in the Range</i>
	5.4 Information related to relevant workplace tasks. 5.5 Features of simple graphs and charts identified. 5.6 Specific numerical information located in highly familiar graphs and charts. 5.7 Numerical information and data compared using appropriate informal language

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range <i>May include but not limited to:</i>
1. Measuring instruments	1.1 Rulers 1.2 Watches/clocks 1.3 Scales 1.4 Thermometers 1.5 AVO meter

Variable	Range <i>May include but not limited to:</i>
2. Common two - dimensional shapes	2.1 Round/circle 2.2 Square 2.3 Rectangular 2.4 Triangle

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Addition
- Subtraction
- Division
- Multiplication
- Conversion

Required knowledge

The individual needs to demonstrate knowledge of:

- Use of measuring tools
- Use of calculator
- Fundamental operations
- Common shapes
- Dimensional shapes / objects
- Calculating area and volume
- Measuring instruments

- Units of measurement and abbreviations
- Rounding techniques
- Fractions
- Tables and graphs

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical aspects of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Measured objects or materials as per job requirements 1.2 Used calculator to perform the four fundamental operations 1.3 Performed calculations involving money up to one hundred thousand 1.4 Performed conversions between hours, minutes and seconds 1.5 Calculated area and volume of regular shapes 1.6 Created tables and graphs to represent and interpret information
2. Resource Implications	<ul style="list-style-type: none"> 2.1 Calculator 2.2 Basic measuring instruments

3. Methods of Assessment	Competency may be assessed through: 3.1 Written tests 3.2 Interview/oral questioning 3.3 Demonstration
4. Context of Assessment	Competency may be assessed in an off the job setting.
5. Guidance context of assessment information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE DIGITAL LITERACY

UNIT CODE: EE/OS/ET/BC/03/3

Unit Description

This unit covers the competencies required to effectively demonstrate digital literacy in a working environment. It entails identifying and using digital devices such as smartphones, tablets, laptops and desktop PCs for purposes of communication and performing work related tasks at the work place.

ELEMENTS AND PERFORMANCE CRITERIA

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
1. Apply security measures to data, hardware, software	1.1 Data security and privacy are classified in accordance with the technological situation. 1.2 Security and control measures are applied in accordance with laws governing protection of ICT 1.3 Computer threats and crimes are detected. 1.4 Protection against computer crimes is undertaken in accordance with laws governing protection of ICT.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
2. Apply computer software in solving tasks	2.1 Basic <i>word processing concepts</i> are applied in resolving workplace tasks 2.2 <i>Word processing utilities</i> are applied in accordance with workplace procedures 2.3 Data is manipulated on worksheet in accordance with office procedures
3. Apply internet and email in communication at workplace	3.1 Electronic mail is applied in workplace communication in accordance with office procedures 3.2 Office internet functions are defined and executed in accordance with office procedures 3.3 <i>Network configuration</i> and uses are determined in accordance with office operations procedures

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range <i>May include but not limited to:</i>
1. Computer software	1.1 A collection of instructions that enable the user to interact with a computer , its hardware, or perform tasks. 1.2 Computer tools that will help computer users interact with the hardware in a computer .
2. Computer hardware	2.1 Collection of physical parts of a computer system. This includes the computer case, monitor, keyboard, and mouse and all the parts inside the computer case, such as the hard disk drive, motherboard, video card,
3. Data security and privacy	3.1 Confidentiality 3.2 Cloud computing 3.3 Confidentiality 3.4 Cyber terrorism 3.5 Integrity -but-curious data serving
4. Security and control measures	4.1 Counter measures and risk reduction 4.2 Cyber threat issues 4.3 Risk management
5. Word processing concepts	Using a special program to create, edit, and print documents

Variable	Range <i>May include but not limited to:</i>
6. Network configuration	Organizing and maintaining information on the components of a computer network.

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Analytical skills
- Interpretation
- Typing
- Communication
- Computing

Required Knowledge

The individual needs to demonstrate knowledge of:

- Using a calculator
- Input and output devices
- Central processing Unit (CPU)
- Peripherals
- Storage Media
- Software concept
- Types of computer
- Computer software
- Data security and privacy

- Security threats and control measures
- Computer crimes
- Detection and protection of computer crimes
- Laws governing protection of ICT
- Word processing
- Spread sheet

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

<p>1. Critical aspects of competency</p>	<p>1.1 Identified and controlled security threats</p> <p>1.2 Detected and protected computer crimes</p> <p>1.3 Applied word processing in office tasks</p> <p>1.4 Designed, prepared work sheet and applied data to the cells in accordance to workplace procedures</p> <p>1.5 Opened electronic mail for office communication as per workplace procedure</p> <p>1.6 Installed internet and World Wide Web for office tasks in accordance with office procedures</p> <p>1.7 Integrated emerging issues in computer ICT applications</p>
--	---

	1.8 Applied laws governing protection of ICT
2. Resource Implications	2.1 Tablets 2.2 Laptops and 2.3 Desktop PCs 2.4 Desktop computer 2.5 Lap top 2.6 Calculator 2.7 Internet 2.8 Smart phone 2.9 Operations Manuals
3. Methods of Assessment	Competency may be assessed through: 3.1 Written test 3.2 Demonstration 3.3 Practical assignment 3.4 Interview/oral questioning 3.5 Demonstration
4. Context of Assessment	Competency may be assessed in an off and on the job setting.
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE ENTREPRENEURIAL SKILLS
UNIT CODE: EE/OS/ET/BC/04/3

Unit Description

This unit covers the competencies required to start, operate and grow a micro/small-scale enterprise.

ELEMENTS AND PERFORMANCE CRITERIA

<p>Element <i>These describe the key outcomes which make up workplace function</i></p>	<p>Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i></p>
<p>1. Develop entrepreneurial culture</p>	<p>1.1 Entrepreneurship terminologies are defined following established procedures.</p> <p>1.2 Contribution of entrepreneurship towards national development is identified in accordance to national development goals.</p> <p>1.3 Self-employment benefit are identified and emphasized to help create a positive attitude.</p> <p>1.4 Cultural factors that promote or inhibit entrepreneurial development are <i>identified and emphasis made on entrepreneurial promotion.</i></p>

<p>Element <i>These describe the key outcomes which make up workplace function</i></p>	<p>Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements.</i> <i>Bold and italicized terms are elaborated in the Range</i></p>
	<p>1.5 Ways of managing factors that inhibit development of entrepreneurial culture are identified in accordance with cultural background and national social economic situation.</p>
<p>2. Identify entrepreneurial opportunities</p>	<p>2.1 Myths associated with entrepreneurship, types of entrepreneurs and characteristics of entrepreneurship are determine in accordance with the set procedures</p> <p>2.2 Identification of sources of business ideas, generation of business ideas is undertaken in accordance with the existing procedure</p> <p>2.3 Evaluation of business opportunities is undertaken according to prevailing office procedures</p> <p>2.4 Competencies are matched with business opportunities in accordance with business practices.</p>

<p>Element <i>These describe the key outcomes which make up workplace function</i></p>	<p>Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i></p>
<p>3. Start a small business</p>	<p>3.1 Factors to consider when starting a small business are identified according to business sector.</p> <p>3.2 Forms of business ownership are identified and procedure of starting a small business stipulated according to relevant legal requirements.</p> <p>3.3 Procedure of starting a small business is identified as per the legal requirements.</p> <p>3.4 Challenges faced when starting a small business are identified and mitigating factors provided for in accordance prevailing legal and regulatory requirement.</p> <p>3.5 Resource requirement for a small business are specified according to nature of business.</p> <p>3.6 Business life cycle is projected as per the nature of business and national social economic situation.</p>

<p>Element <i>These describe the key outcomes which make up workplace function</i></p>	<p>Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i></p>
<p>4. Operate a small business</p>	<p>4.1 Relevant terms are defined in accordance with the set rules.</p> <p>4.2 Small business record is maintained in accordance with office procedure.s</p> <p>4.3 Business support services are set up in accordance with the nature and size of business.</p> <p>4.4 Marketing activities are effected according to the nature and size of business.</p> <p>4.5 Small enterprise business plan is prepared depending on the size and nature of business and the client specification.</p> <p>4.6 Small business resources are run for efficiency and profitability.</p> <p>4.7 Small business records are kept for decision making purposes.</p>
<p>5. Grow a small business</p>	<p>5.1 Methods of growing/expanding a small business are identified and implemented in accordance with growth schedule.</p>

<p>Element <i>These describe the key outcomes which make up workplace function</i></p>	<p>Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements.</i> <i>Bold and italicized terms are elaborated in the Range</i></p>
	<p>5.2 Resources for growing small business are identified and implementing.</p> <p>5.3 Small business growth plans are prepare according to growth schedule.</p> <p>5.4 Use of computers and technology is incorporated in small scale business growth schedule in accordance with technological trends.</p> <p>5.5 Social media is used for business growth and profitability.</p> <p>5.6 Emerging issues and trends are considered in accordance with business growth schedule and activities.</p> <p>5.7 Community interest is built in product/service according to growth plan.</p> <p>5.8 Business communication is enhanced according to business communication plan and profitability.</p>

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	5.9 Basic business growth strategies are identified and implemented for increased profitability.

RANGE

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

Variable	Range <i>May include but not limited to:</i>
1. Entrepreneurship terminologies	1.1 Intra-preneurship 1.2 Enterprise 1.3 Business vision. mission, core values, objectives
2. Sources of business ideas	2.1 Brainstorming 2.2 Personal hobbies 2.3 Newspapers, magazines, 2.4 Friends and relatives 2.5 Accounting/Administrative work 2.6 Modern trends and concerns
3. Forms of business ownership	3.1 Sole proprietorship 3.2 Partnership 3.3 Limited Company

Variable	Range <i>May include but not limited to:</i>
	3.4 Unlimited Company
4. Resource requirement	4.1 Human 4.2 Equipment 4.3 Finance
5. Business life cycle	5.1 Start-up 5.2 Growth 5.3 Expansion 5.4 Decline of a business
6. Relevant terms	6.1 Seed capital 6.2 Business startup
7. Marketing activities	7.1 Digital marketing 7.2 Social media marketing

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Marketing skills
- Advertising
- Basic bookkeeping
- Communication skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Public relations
- Advertising
- Marketing
- Business ethics
- Businesses types
- Business controls
- Local legislation and regulations
- Quality control
- Competition

EVIDENCE GUIDE

This section describes the required skills which supports performance. These skills will need to be considered in the learning and assessment process.

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Demonstrated basic entrepreneurial skills. 1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise. 1.3 Demonstrated ability to manage/operate a micro/small-scale business. 1.4 Demonstrated basic marketing skills.
-----------------------------------	--

2. Resource Implications	<p>The following resources should be provided:</p> <p>2.1 Case problems on micro/small-scale enterprises.</p> <p>2.2 Materials and location relevant to the proposed activity and tasks.</p>
3. Methods of Assessment	<p>Competency in this unit may be assessed through:</p> <p>3.1 Case problems</p> <p>3.2 Oral Questioning</p> <p>3.3 Portfolio</p>
4. Context of Assessment	<p>4.1 Competency may be assessed in workplace or in a simulated workplace setting</p> <p>4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group</p>
5. Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>

DEMONSTRATE EMPLOYABILITY SKILLS

UNIT CODE: EE/OS/ET/BC/05/3

Unit Description

This unit covers competencies required to demonstrate employability skills. It involves competencies for exuding self-awareness and dealing with everyday life challenges; applying critical safe work habits and working harmoniously in a team; participating in planning and organizing work activities; applying learning, creativity and innovativeness in workplace functions; pursuing professional growth and managing time effectively in the workplace.

ELEMENTS AND PERFORMANCE CRITERIA

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
1. Develop self-awareness and ability to deal with life challenges	1.1 Personal goals and objectives are written based on potential and in relation to organization objectives. 1.2 Emotions are handled as per workplace requirement. 1.3 Thoughts, feelings and beliefs are shared with superiors in direct and honest ways in line with organization policy.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	<p>1.4 Assertiveness is developed and maintained based on the requirements of the job.</p> <p>1.5 Individual performance is recorded and monitored according to the agreed targets.</p> <p>1.6 Ideas that generate excitement, interest and commitment are shared with immediate supervisors in line with workplace policy.</p> <p>1.7 Self-esteem and a positive self-image are developed and demonstrated based on job requirements.</p>
<p>2. Demonstrate critical safe work habits for employees</p>	<p>2.1 Stress is handled at the workplace in accordance with standard procedures.</p> <p>2.2 Punctuality and time consciousness is demonstrated in line with organization policy.</p>

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	<p>2.3 <i>Personal objectives</i> are integrated with organization objectives in accordance with organization's policy.</p> <p>2.4 Resources are effectively and efficiently utilized in accordance with workplace policy.</p> <p>2.5 Work activities are prioritized based on standard operating procedures.</p> <p>2.6 Task objectives are met in according to workplace procedures.</p> <p>2.7 Individual performance targets are set in line with organization objectives.</p> <p>2.8 Assertiveness is demonstrated based on the requirements of the job.</p> <p>2.9 Leisure time is used positively and productively in line with workplace policy.</p>

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	2.10 Abstinence from <i>drug and substance abuse</i> is demonstrated as per workplace policy. 2.11 Awareness of HIV and AIDS is demonstrated in line with workplace policy and requirements of the job.
3. Demonstrate workplace teamwork	3.1 Roles and objectives of the team are identified in accordance organization policy. 3.2 Team parameters and relationships are identified according to workplace policy. 3.3 Individual activities are identified and followed through in line with job requirements. 3.4 Effective and appropriate forms of communication in a team are used according to workplace policy. 3.5 Resolution of conflicts between team members is sought promptly in line with organization.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	<p>3.6 Respect for team members' human rights is demonstrated in accordance with existing protocol.</p> <p>3.7 Healthy <i>relationships</i> are established and maintained for harmonious co-existence in line with workplace policy.</p>
<p>4. Plan and organize work</p>	<p>4.1 Work schedules for given tasks are adhered to within the set time lines and based on workplace policy.</p> <p>4.2 Punctuality and time consciousness are demonstrated based on workplace policy.</p> <p>4.3 Assignment goals/objectives and deliverables are identified and achieved based on instructions from superiors and organizations' policy.</p> <p>4.4 Resources are identified and utilized to meet assignment goals and deliverables as per workplace policy.</p>

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	<p>4.5 Work records are kept and maintained in line with workplace policy.</p> <p>4.6 Situations that require consultation with superiors are identified and consultations made in accordance with workplace policy.</p> <p>4.7 Operational decisions are made and applied based on the requirements of the job.</p>
<p>5. Demonstrate learning, creativity and innovativeness in the workplace</p>	<p>5.1 Personal training needs are assessed and outlined based on requirements of the job.</p> <p>5.2 Sponsorship for training for career progression is sought based on organization policy.</p> <p>5.3 Licensees and certifications relevant to job and career are obtained and renewed based on standard operating procedures.</p>

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	<p>5.4 Personal growth is pursued towards improving the qualifications set for the profession in line with organization policy.</p> <p>5.5 Mentorship and coaching programs are attended regularly based on availability and workplace policy.</p> <p>5.6 Application of Occupational Health and Safety procedures in use of technology is demonstrated in the workplace.</p> <p>5.7 Recognition and support of innovative and creative ideas is demonstrated in the workplace.</p>

RANGE

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

Variables	Range <i>May include but not limited to:</i>
1. Drug and substance abuse	1.1 Alcohol 1.2 Tobacco 1.3 Miraa 1.4 Over-the-counter drugs 1.5 Cocaine 1.6 Bhang 1.7 Glue
2. Feedback	2.1 Verbal 2.2 Written 2.3 Informal 2.4 Formal
3. Clients	3.1 New clients 3.2 Existing clients 3.3 Internal clients 3.4 External clients
4. Relationships	4.1 Man/Woman 4.2 Trainer/trainee 4.3 Employee/employer 4.4 Client/service provider 4.5 Husband/wife 4.6 Boy/girl 4.7 Parent/child 4.8 Sibling relationships
5. Communication methods	5.1 Written 5.2 Talk/presentation 5.3 Video 5.4 Audio

Variables	Range <i>May include but not limited to:</i>
	5.5 Graphical 5.6 Modelling
6. Team	6.1 Small work group 6.2 Staff in a section/department 6.3 Inter-agency group
7. Personal Growth	7.1 Growth in the job 7.2 Career mobility 7.3 Gains and exposure the job gives 7.4 Net workings 7.5 Benefits that accrue to the individual as a result of noteworthy performance
8. Personal Objectives	8.1 Long term 8.2 Short term 8.3 Broad 8.4 Specific
9. Trainings and Career Opportunities	9.1 Participation in training programs <ul style="list-style-type: none"> • Technical • Supervisory • Managerial • Continuing Education 9.2 Serving as Resource Persons in conferences and workshops
10. Resource	10.1 Human 10.2 Financial 10.3 Technology

Variables	Range <i>May include but not limited to:</i>
	<ul style="list-style-type: none"> • Hardware • Software
11. Innovation	11.1 New ideas 11.2 Original ideals 11.3 Different ideas 11.4 Methods/procedures 11.5 Processes 11.6 New tools
12. Emerging Issues	12.1 Terrorism 12.2 Social media 12.3 National cohesion 12.4 Open offices

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Intra and Interpersonal skills
- Communication skills
- Critical thinking skills
- Observation skills
- Organizing skills
- Record keeping skills
- Negotiation skills

- Problem solving skills
- Decision Making skills
- Time management skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Personal hygiene
- Values and ethics
- Fundamental rights
- Communication
- Time management
- Relationships
- Decision making process
- Resources
- Planning
- Record keeping
- Negotiation
- Assertiveness
- Team building
- Gender
- HIV and AIDS
- Drug and substance abuse
- Leadership
- Professional growth and development
- Technology in the workplace
- Creativity and Innovation
- Emerging issues

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ol style="list-style-type: none">1.1 Attained job targets within key result areas.1.2 Maintained punctuality and time consciousness.1.3 Maintained intra- and inter-personal relationship in the course of managing oneself.1.4 Completed trainings and career progression opportunities within time limits.1.5 Acquired and maintained licenses and/or certifications required for the job.1.6 Planned and organized resources to achieve assigned goals and objectives.1.7 Identified and solved a problem in a particular problem situation.1.8 Displayed critical safe work habits in carrying out work functions.
--	--

	<p>1.9 Innovatively made work processes and procedures more effective and efficient.</p> <p>1.10 Worked harmoniously with people of diverse gender in the workplace.</p> <p>1.11 Participated effectively in team activities.</p> <p>1.12 Demonstrated awareness of HIV and AIDS.</p> <p>1.13 Abstained from drug and substance abuse.</p> <p>1.14 Participated in mentorship and coaching programs.</p> <p>1.15 Demonstrated safety consciousness.</p> <p>1.16 Maintained work records.</p> <p>1.17 Demonstrated ability to cope with emerging issues</p>
2. Resource Implications	<p>The following resources should be provided:</p> <p>2.1 Workplace or assessment location</p> <p>2.2 Case studies/scenarios</p>
3. Methods of Assessment	<p>Competency in this unit may be assessed through:</p> <p>3.1 Oral interview</p> <p>3.2 Observation</p> <p>3.3 Third party reports</p> <p>3.4 Written</p>

4. Context of Assessment	<p>4.1 Competency may be assessed in workplace or in a simulated workplace setting.</p> <p>4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group.</p>
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE ENVIRONMENTAL LITERACY
UNIT CODE: EE/OS/ET/BC/06/3

Unit Description

This unit specifies the competencies required to follow procedures for environmental hazard control, follow procedures for environmental pollution control and comply with workplace sustainable resource use.

ELEMENTS AND PERFORMANCE CRITERIA

<p>Element <i>These describe the key outcomes which make up workplace function</i></p>	<p>Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i></p>
<p>1. Control environmental waste</p>	<p>1.1 <i>Storage and handling methods</i> for environmentally <i>hazardous</i> materials are strictly followed according to environmental laws and regulations.</p> <p>1.2 <i>Disposal methods</i> of hazardous wastes are followed at all times according to environmental laws and regulations.</p> <p>1.3 <i>PPE</i> is used according to environmental laws and regulations.</p>
<p>2. Control environmental pollution</p>	<p>2.1 <i>Environmental pollution control measures</i> are complied with following standard protocol.</p>

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	2.2 Procedures for solid waste management are observed according Environmental Management and Coordination Act 1999. 2.3 Methods for minimizing <i>noise pollution</i> complied with following environmental regulations.
3. Demonstrate sustainable resource use	3.1 Methods for minimizing wastage are complied with in line with environmental laws and regulations. 3.2 <i>Waste management procedures</i> are employed following principles of 3Rs (Reduce, Reuse, Recycle). 3.3 Methods for economizing or reducing <i>resource</i> consumption are practiced.

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range <i>May include but not limited to:</i>
1. PPE	1.1 Mask 1.2 Gloves 1.3 Goggles 1.4 Safety hat 1.5 Overall 1.6 Hearing protector
2. Environmental pollution control measures	2.1 Methods for minimizing or stopping spread and ingestion of airborne particles 2.2 Methods for minimizing or stopping spread and ingestion of gases and fumes 2.3 Methods for minimizing or stopping spread and ingestion of liquid wastes
3. Waste management procedures	3.1 Sorting 3.2 Storing of items 3.3 Recycling of items 3.4 Disposal of items
4. Resources	4.1 Electric 4.2 Water 4.3 Fuel 4.4 Telecommunications 4.5 Supplies 4.6 Materials

Variable	Range <i>May include but not limited to:</i>
5. Workplace environmental hazards	5.1 Biological hazards 5.2 Chemical and dust hazards 5.3 Physical hazards

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Waste management skill
- Analytical
- Communication
- Environmental management skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Environmental laws and regulations
- Waste and waste management
- Pollution
- Methods of minimizing noise pollution
- Principle of 3Rs

EVIDENCE GUIDE

This section describes the skills and knowledge required for this unit of competency.

1. Critical aspects of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Controlled environmental hazard 1.2 Controlled environmental pollution 1.3 Demonstrated sustainable resource use
2. Resource Implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Workplace with storage facilities 2.2 Tools, materials and equipment relevant to the tasks (ex. cleaning tools, cleaning materials, trash bags, etc.) 2.3 PPE 2.4 Manuals and references
3. Methods of Assessment	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Demonstration 3.2 Oral questioning 3.3 Written examination
4. Context of Assessment	<p>Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment.</p>
5. Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>

DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES

UNIT CODE: EE/OS/ET/BC/07/3

Unit Description

This unit specifies the competencies required to practice and promote safety and health at work.

ELEMENTS AND PERFORMANCE CRITERIA

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
1. Practice safety and health at work	<p>1.1 Awareness of legislation that outlines the minimum standards for occupational safety and health requirements/ regulations are emphasized.</p> <p>1.2 Benefits of implementing an occupational safety and health program are identified.</p> <p>1.3 Safety requirements/ regulations of own work and of other workers are familiarized.</p> <p>1.4 Workplace standards and procedures for incidents and emergencies are determined.</p>

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	1.5 <i>Prevention and control measures</i> , including use of <i>safety gears/PPE</i> (Personal Protective Equipment) to avoid accident, injuries and sickness are identified.
2. Compliance to organization's occupational safety and health instructions and requirements	2.1 Safety instructions and safety signs are followed and disseminated to co-workers 2.2 Safe handling of tools, equipment and materials is learned and shared with co-workers 2.3 Execution of own work and of co-workers is monitored in according to safe work procedures 2.4 Use of safe guards and safety devices is monitored 2.5 Hazards, incidents, injuries and sickness in the workplace are reported properly following standards and procedures

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range <i>May include but are not limited to:</i>
1. Safety requirements / regulations	1.1 Occupational Safety and Health Standards 1.2 Statutory regulations
2. Incidents and emergencies	2.1 Chemical spills 2.2 Equipment/vehicle accidents 2.3 Explosion 2.4 Fire 2.5 Gas leak 2.6 Injury to personnel 2.7 Structural collapse 2.8 Toxic and/or flammable vapour emission
3. Prevention and control measures	3.1 Eliminate the hazard 3.2 Isolate the hazard 3.3 Substitute the hazard with a safer alternative 3.4 Use administrative controls to reduce the risk 3.5 Use engineering controls to reduce the risk 3.6 Use personal protective equipment

Variable	Range <i>May include but are not limited to:</i>
	3.7 Safety, health and work environment evaluation 3.8 Periodic and/or special medical examinations of workers
4. Safety devices/ PPEs (Personal Protective Equipment)	4.1 Arm/Hand guard, gloves 4.2 Eye protection (goggles, shield) 4.3 Hearing protection (ear muffs, ear plugs) 4.4 Hair Net/cap/bonnet 4.5 Hard hat 4.6 Face protection (mask, shield) 4.7 Apron/Gown/coverall/jump suit 4.8 Anti-static suits 4.9 High-visibility reflective vest

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Communication skills
- Interpersonal skills
- Troubleshooting skills
- Critical thinking skills
- Observation skills
- Monitoring skills

- Reporting skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Occupational safety and health act
- Standard emergency plan and procedures in the workplace
- Safe handling procedures of tools, equipment and materials
- Standard accident and illness reporting procedures in the workplace
- Monitoring system on compliance to work safety and health

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Emphasizes awareness of OSH legislations</p> <p>1.2 Identifies benefits of implementing OSH program</p> <p>1.3 Identifies safety requirements of own work and of co-workers</p>
--	--

	<p>1.4 Identifies and shares with co-workers OSH control measures and emergency plan in the workplace</p> <p>1.5 Identifies and shares with co-workers the control measures to prevent accident, injuries and sickness</p> <p>1.6 Follows and disseminate to co-workers the safety instructions and safety signs at work</p> <p>1.7 Learns and shares with co-workers the learnings on safe handling of tools, equipment and materials</p> <p>1.8 Monitors safe execution of own work and of co-workers</p> <p>1.9 Monitors compliance to safety measures</p> <p>1.10 Reports hazards, incidents, injuries and sickness following workplace procedures</p>
<p>2. Context of Assessment</p>	<p>The following resources should be provided:</p> <p>2.1 Facilities, materials tools and equipment necessary for the activity</p>
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <p>3.1 Observation/demonstration with oral questioning</p> <p>3.2 Third party report</p>

4. Context of Assessment	Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment.
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

CORE UNITS OF COMPETENCY

PERFORM PVC SHEATHED CABLING, CONDUITING, TRUNKING AND CABLE TRAYS LAYING

UNIT CODE: EE/OS/ET/CR/01/3

Unit Description

This unit covers the competencies on the performance of basic metal works, installation of PVC sheathed cables, PVC conduits, metallic conduits, wire ways, mounting of trunking and laying of cable trays. It also involves competencies to install consumer units, distribution boards and auxiliary components frames.

ELEMENTS AND PERFORMANCE CRITERIA

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
1. Perform basic metal works	1.1 Correct PPE are identified and selected in line with safety requirements. 1.2 Tools and equipment are selected as per job requirements. 1.3 Perform measuring, marking, cutting, filling, drilling, threading, cutting and folding of metals as per the required standards.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
2. Install PVC Sheathed cables	2.1 Correct PPE are identified and selected in line with safety requirements. 2.2 Tools and equipment are selected as per job requirements. 2.3 Perform the installation of lighting and power using PVC sheathed cable in line with the IEE regulations.
3. Install PVC and metallic conduits	3.1 Correct PPE are identified and selected in line with safety requirements. 3.2 Drawings are interpreted based on job requirements. 3.3 Sizes and quantities of conduits, fittings and accessories are determined as per job requirements. 3.4 Tools and equipment are selected as per job requirements. 3.5 Conduit is assembled ensuring that fittings are fully inserted and tightened as per job requirements.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	3.6 Conduit is bent as per job requirements and IEE regulations. 3.7 Conduit couplings and elbows are installed as per job requirements and IEE regulations. 3.8 Conduit is threaded in line with job requirements and IEE regulations. 3.9 Conduit is terminated to the fitting in line with job requirements and IEE regulations. 3.10 Safety procedures are followed in line with standard operating procedures (SOPs).
4. Install wire ways, trunking and cable trays	4.1 Drawings are interpreted based on job requirements. 4.2 Sizes and quantities of materials are selected as per job requirements. 4.3 Tools and equipment are selected as per job requirements. 4.4 Wire ways, trunkings and cable trays are installed as per job requirements.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	4.5 Safety procedures are followed in line with SOPs.
5. Install distribution board, consumer control unit and auxiliary components	5.1 Drawings are interpreted as per job requirements. 5.2 Correct quantities of materials are selected as per job requirements. 5.3 Tools and equipment are selected as per job requirements. 5.4 Distribution board, consumer control unit and <i>auxiliary components</i> are installed as per job requirements. 5.5 Safety procedures are followed in line with SOPs.
6. Complete performance of conduiting, trunking and cable tray works	6.1 Final checks are made to ensure that work conforms with instructions and job requirements. 6.2 Supervisor is notified upon completion of work. 6.3 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	6.4 Wire ways are secured with draw wires and against blockage, moisture and water. 6.5 Work area is cleaned up and made safe according to OSH regulations. 6.6 Reports are prepared in accordance with work place procedures.

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variables	Range <i>May include but not limited to:</i>
1. Personal Protective Equipment (PPE)	1.1 Working gloves 1.2 Overalls 1.3 Safety shoes 1.4 Helmet 1.5 Safety harness
2 Metallic conduits/non-metallic conduits	2.5 Metallic Heavy and light gauge 2.6 Polyvinyl Chloride Pipe (PVC) Heavy and light gauge 2.7 Flexible

Variables	Range <i>May include but not limited to:</i>
3 Fittings	3.5 Couplers 3.6 Lock nut and bushing 3.7 Bends 3.8 Saddles and clips
4 Accessories	4.5 Boxes <ul style="list-style-type: none"> • Utility Box • Junction Box • Adapter box
5 Tools and equipment	5.5 Spirit level, hack saw, plumb bob and line, steel files, stock and die, metal pipe bender, bending springs, electric drill, chisels, mason's hammer 5.6 Electrical power tools <ul style="list-style-type: none"> - Power drills 5.7 Portable grinder
6 Auxiliary components	6.5 Draw boxes 6.6 Inspection boxes 6.7 Cable glands

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Reading skills required to interpret work drawing and instructions

- Preparation, handling and storage of materials, tools and equipment
- Laying out of conduits, trunkings and cable trays
- Bending of conduits
- Cutting skills
- Effective communication skills
- Effective use of measuring devices
- Installing different types of distribution boards
- Report writing and record keeping

Required Knowledge

The individual needs to demonstrate knowledge of:

- Interpretation of electrical installation diagrams and architectural drawings
- Types of electrical conduits
- Proper uses and installation of conduits
- Techniques in installing and bending of conduits and fittings
- Proper Installation for maintenance accessibility
- Safe use of adhesives
- Proper use of safety harness(PPE)
- Use of materials, tools and equipment
- Proper uses and installation of wire ways and cable trays
- Proper procedure in installation of distribution boards and auxiliary components
- Good housekeeping

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Observed safety precautions Interpreted drawings. 1.2 Prepared list of materials, tools and equipment. 1.3 Installed electrical metallic/ non-metallic (PVC conduit). 1.4 Installed wire ways and cable trays. 1.5 Installed distribution boards and auxiliary components. 1.6 Secured wire ways. 1.7 Prepared work report and kept records.
2. Resource Implications	The following resources MUST be provided: 2.1 Workplace location 2.2 Tools and equipment appropriate to conduiting, trunking and cable tray laying 2.3 Materials relevant to the proposed activity 2.4 Drawings and specifications relevant to the task

3. Methods of Assessment	Competency may be assessed through: 3.1 Direct observation of application to tasks 3.2 Oral questioning 3.3 Written test
4. Context of Assessment	4.1 Competency may be assessed in the workplace or in a simulated workplace setting. 4.2 Assessment shall be done while the tasks are being undertaken either individually or as part of a team under limited supervision.
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and current technology, workplace and job role is recommended.

PERFORM SINGLE PHASE ELECTRICAL INSTALLATION AND MAINTENANCE

UNIT CODE: EE/OS/ET/CR/02/3

Unit Description

This unit covers the competencies for selecting correct types and sizes of cables, perform cable jointing and termination, installing lighting, power points, consumer's control unit and power intake point and then repair and maintenance.

ELEMENTS AND PERFORMANCE CRITERIA

Element <i>These describe the key outcomes which make up workplace function</i>	<i>These are assessable statements which specify the required level of performance for each of the elements.</i> <i>Bold and italicized terms are elaborated in the Range</i>
1. Select correct types and sizes of cables	1.1 Drawings are read and interpreted to determine job requirements. 1.2 Correct type, size and quantity of cables and related <i>consumables</i> are determined in line with job requirements. 1.3 <i>Tools and equipment</i> are selected in line with job requirements. 1.4 Correct <i>PPE</i> are identified and selected in line with safety requirements.

<p>Element <i>These describe the key outcomes which make up workplace function</i></p>	<p><i>These are assessable statements which specify the required level of performance for each of the elements.</i> <i>Bold and italicized terms are elaborated in the Range</i></p>
<p>2. Perform cable jointing and termination</p>	<p>2.1 Correct PPE are identified and selected in line with safety requirements. 2.2 Tools and equipment are selected in line with job requirements. 2.3 IEE regulations are adhered to. 2.4 Perform various types of cable joints Conduct various types of cable termination.</p>
<p>3. Install cables for lighting and power points</p>	<p>3.1 <i>Safety procedures</i> are followed based on safety regulations 3.2 Wiring of <i>lighting and power points</i> are performed according to job requirements and IEE regulations 3.3 Lighting and power points are grounded in accordance with IEE regulations 3.4 Schedule of work is followed based on agreed time, quality standard and minimum wastage 3.5 Further instructions are sought and recorded if unplanned events or conditions occur</p>

<p>Element <i>These describe the key outcomes which make up workplace function</i></p>	<p><i>These are assessable statements which specify the required level of performance for each of the elements.</i> <i>Bold and italicized terms are elaborated in the Range</i></p>
	<p>3.6 On-going checking of quality of work is done in accordance with instructions and requirements</p>
<p>4. Install power intake point</p>	<p>4.1 <i>Safety procedures</i> are followed based on safety regulations 4.2 <i>Tools, equipment</i> and materials are selected in line with job requirements 4.3 Correct <i>PPE</i> are identified and selected in line with safety requirements 4.4 Wiring of <i>meter box components</i> is performed according to job requirements 4.5 Lead-in pipe is installed as per job requirements and IEE requirements 4.6 Consumer main earthing terminal bonding is performed according to IEE regulations Work area is cleaned up and made safe according to OSH regulations</p>

<p>Element <i>These describe the key outcomes which make up workplace function</i></p>	<p><i>These are assessable statements which specify the required level of performance for each of the elements.</i> <i>Bold and italicized terms are elaborated in the Range</i></p>
<p>5. Install consumer's control unit</p>	<p>5.1 <i>Safety procedures</i> are followed based on safety regulations 5.2 <i>Tools, equipment</i> and materials are selected in line with job requirements 5.3 Correct <i>PPE</i> are identified and selected in line with safety requirements 5.4 Consumer's control unit is identified according to job requirements 5.5 Wiring of consumer's control unit is performed according to job requirements and IEE regulations 5.6 Work area is cleaned up and made safe according to OSH regulations</p>
<p>6. Complete the installation</p>	<p>6.1 Final checks and tests are made to ensure that installation conforms with instructions, requirements and IEE regulations 6.2 Supervisor is notified upon completion of installation</p>

<p>Element <i>These describe the key outcomes which make up workplace function</i></p>	<p><i>These are assessable statements which specify the required level of performance for each of the elements.</i> <i>Bold and italicized terms are elaborated in the Range</i></p>
	<p>6.3 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures</p> <p>6.4 Work area is cleaned up and made safe according to OSH regulations</p>
<p>7. Repair and maintain the installation</p>	<p>7.1 <i>Safety procedures</i> are followed based on safety regulations</p> <p>7.2 Tools, equipment and materials are selected in line with job requirements</p> <p>7.3 Correct PPE are identified and selected in line with safety requirements</p> <p>7.4 Faulty components are identified and replaced</p> <p>7.5 Routine checks are carried out and acted upon according to IEE regulations</p> <p>7.6 <i>Waste</i> is disposed in accordance with environmental regulations</p>

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variables	Range <i>May include but not limited to:</i>
1. Consumables	1.1 Insulating tapes 1.2 Strip connectors 1.3 Sleeves
2. Tools and equipment	2.1 Pliers 2.2 Screwdrivers 2.3 Electrician knives 2.4 Steel tapes 2.5 Measuring tapes 2.6 Hack saw and blades
3. Personal Protective Equipment (PPE)	3.1 Working gloves 3.2 Overalls 3.3 Safety shoes 3.4 Helmet 3.5 Safety harness
4. Safety procedures	4.1 IEE regulations 4.2 Building Code 4.3 Safety standards
5. Lighting and power points	Connections to switches, sockets, light fittings

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Observation of safety requirements
- Interpreting architectural plans and electrical drawings
- Identification of lighting and power points
- Identification and handling of materials, tools and equipment
- Drawing in cables for lighting and power points
- Communication
- Report writing and record keeping

Required knowledge

The individual needs to demonstrate knowledge of:

- Interpretation of drawings
- Materials specifications
- Types and uses of tools and equipment
- Proper PPEs
- Installation procedures
- Storage of tools
- Maintenance of tools
- Report writing and record keeping
- Good housekeeping

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical aspects of competency	Assessment requires evidence that the candidate: 3.1 Correctly interpreted work instructions and drawings 3.2 Followed safety procedures 3.3 Selected appropriate tools, equipment and materials 3.4 Selected and used correct PPE 3.5 Carried out installation of lighting and power points 3.6 Cleaned worksite, tools and equipment 3.7 Stored surplus materials 3.8 Prepared reports and kept records
2. Resource Implications	The following resources should be provided: 2.1 Workplace location 2.2 PPEs 2.3 Tools and equipment appropriate for installation of lighting and power points 2.4 Materials relevant to the proposed activity 2.5 Drawings relevant to the task

<p>3. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <p>3.1 Direct observation of application of tasks</p> <p>3.2 Oral questioning</p> <p>3.3 Demonstration/practical activity</p> <p>3.4 Written test</p>
<p>4. Context of Assessment</p>	<p>4.1 Competency may be assessed in the workplace or in a simulated workplace setting</p> <p>4.2 Assessment shall be observed while the tasks are being undertaken either individually or as part of a team under limited supervision</p>
<p>5. Guidance information for assessment</p>	<p>Holistic assessment with other units relevant to the industry sector and current technology, workplace and job role is recommended.</p>

PERFORM FIXING AND MAINTENANCE OF LIGHT FITTINGS, POWER OUTLETS AND BASIC APPLIANCES

UNIT CODE: EE/OS/ET/CR/03/3

Unit Description

This unit covers the competencies on fitting, mounting and installing wiring devices, installing lighting fixtures/switches, notifying completion of work, mounted outlets, auxiliary outlets and maintenance.

ELEMENTS AND PERFORMANCE CRITERIA

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
1. Select wiring devices and basic appliances	1.1 Drawings are read and interpreted to determine job requirements. 1.2 Correct type and quantity of wiring devices and consumable items are identified in line with job requirements. 1.3 Tools and equipment are selected in line with job requirements 1.4 Correct PPE are identified and selected in line with safety requirements.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
2. Install wiring devices and basic appliances	2.1 Safety procedures are followed based on safety regulations 2.2 Installation of wiring devices and basic appliances are performed in line with job requirements 2.3 Wiring devices and basic appliances are grounded in accordance with IEEE regulations 2.4 Schedule of work is followed based on agreed time, quality standard and minimum wastage 2.5 Further instructions are sought in case of unplanned events or conditions. 2.6 Changes are recorded according to work place procedures. 2.7 Identification and labeling of circuits is carried out. 2.8 On-going checking of quality of work is done in accordance with instructions and requirements 2.9 Reports are prepared in accordance with work place procedures

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
3. Install lighting fixtures	3.1 Safety procedures are followed. 3.2 Installation of light fixtures are performed in line with job requirements. 3.3 Schedule of work is followed to ensure work is completed in an agreed time, to a quality standard and with a minimum waste. 3.4 Further instructions are sought from a supervisor if unplanned events or conditions occur. 3.5 Changes are recorded according to work place procedures. 3.6 On-going checks of quality of work are undertaken in accordance with instructions and requirements. 3.7 Reports are prepared in accordance with work place procedures.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
4. Complete installation of wiring devices, basic appliances and lighting fixtures	4.1 Final checks are made to ensure that work conforms with instructions and to requirements 4.2 Supervisor is notified upon completion of work 4.3 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures Work area is cleaned and made safe
5. Perform basic repair and maintenance of installation and appliances	5.1 Tools and equipment are selected in line with job requirements. 5.2 Correct PPE are identified and selected in line with safety requirements. 5.3 Identify the fault and perform the repair in line with the IEE regulations. 5.4 Perform repair on the appliance in line with the manufacture's manual.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	5.5 Maintain the installation and appliances in line with the set standards

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variables	Range <i>May include but not limited to:</i>
1. Wiring devices	1.1 Socket outlets 1.2 Cooker units 1.3 Double pole switches 1.4 Circuit breakers
2. Light fixtures	2.1 Light fittings 2.2 Light switches
3. Consumables	3.1 Insulating tapes 3.2 Strip connectors 3.3 Sleeves
4. Basic appliances	4.1 Cookers 4.2 Instant water heaters 4.3 Water pumps 4.4 Hand dryers

Variables	Range <i>May include but not limited to:</i>
	4.5 Fans 4.6 Air conditioners
5. Tools and equipment	5.1 Pliers 5.2 Screwdrivers 5.3 Electrician knives 5.4 Clipping tools 5.5 Spirit levels 5.6 Spanners 5.7 Drills 5.8 Wrenches 5.9 Tape measures
6. Personal protective equipment (PPE)	6.1 Working gloves 6.2 Safety shoes 6.3 Helmet 6.4 Overalls and aprons 6.5 Safety harness 6.6 Goggles 6.7 Nose masks
7. Safety procedures	7.1 IEEE regulations 7.3 Building Code 7.3 Safety standards

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Interpreting plans and drawings
- Handling and storage of materials, tools and equipment
- Observing safety standards
- Installing wiring devices, lighting fixtures and basic appliances
- Communication
- Report writing and record keeping

Required Knowledge

The individual needs to demonstrate knowledge of:

- Interpretation of drawings
- Materials specification
- Types and uses of electrical wiring devices, tools and equipment
- Proper PPEs
- Types of lighting fixtures and installation techniques
- Installation procedures of various wiring devices, lighting fixtures and basic appliances
- Ratings of lighting fixtures
- Maintenance of tools
- Storage of tools
- Report writing and record keeping
- Good housekeeping

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Observed safety standards 1.2 Correctly interpreted drawings and work instructions 1.3 Selected appropriate tools, equipment and materials for installing wiring devices, lighting fixtures and basic appliances 1.4 Selected and used correct PPE 1.5 Demonstrated correct procedures for installation of wiring devices and lighting fixtures and basic appliances 1.6 Cleaned worksite, tools and equipment 1.7 Stored surplus materials 1.8 Prepared reports and kept records.
2. Resource Implications	The following resources should be provided: 2.1 Workplace location 2.2 Tools and equipment appropriate for installation of wiring devices, lighting fixtures and basic appliances

	<p>2.3 Materials relevant to the proposed activity</p> <p>2.4 Drawings and specifications relevant to the task</p>
3. Methods of Assessment	<p>Competency may be assessed through:</p> <p>3.1 Direct observation of application of tasks</p> <p>3.2 Oral questioning</p> <p>3.3 Demonstration/practical activity</p> <p>3.4 Written test</p>
4. Context of Assessment	<p>4.1 Competency may be assessed in the workplace or in a simulated workplace setting.</p> <p>4.2 Assessment shall be observed while the tasks are being undertaken either individually or as part of a team under limited supervisions.</p>
5. Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector and current technology, workplace and job role is recommended.</p>

MAINTAIN PLUMBING SYSTEMS

UNIT CODE: CON/OS/PL/CR/04/3

Unit Description

This unit specifies the competencies required to maintain plumbing systems. It involves preventive and corrective actions on the plumbing systems. It applies in the construction industry.

ELEMENTS AND PERFORMANCE CRITERIA

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
1. Troubleshoot plumbing systems faults	1.1 History of the plumbing faults in taken as per workplace policy. 1.2 Possible causes of the plumbing faults are listed. 1.3 Most likely cause of the plumbing fault is identified by elimination. 1.4 Solution for the fault is identified based on best practice.
2. Quantify requirements for repair	2.1 Materials required for plumbing fault repair are identified based on requirements of the job. 2.2 Supplies required for plumbing fault repair are identified based on requirements of the job.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range</i>
	2.3 Appliances that need replacement are identified based on the requirements of the job. 2.4 Tools and equipment are identified based on job requirements.
3. Fix plumbing system faults	3.1 Notice for maintenance operation are issued as per standard operating procedure. 3.2 Fluid flow is stopped as per standard operating procedure. 3.3 Tools and equipment are used as per manufacturer's instructions. 3.4 Faulty area is dis-assembled as per standard operating procedure. 3.5 Fault is repaired based on building's pre-existing standards. 3.6 Work area is cleared as per standard operating procedure or best practice. 3.7 Personal Protective Equipment is used in line with occupational safety and health regulations.

Element <i>These describe the key outcomes which make up workplace function</i>	Performance Criteria <i>These are assessable statements which specify the required level of performance for each of the elements.</i> <i>Bold and italicized terms are elaborated in the Range</i>
4. Test functionality of plumbing system	4.1 Fluid flow is reinstated as per the design. 4.2 Functionality of the plumbing system is tested based on expected outcome. 4.3 Repair work area is returned to initial condition as per workplace policy.

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variables	Range <i>May include but not limited to:</i>
1. Materials	1.1 Screws 1.2 Adhesives 1.3 Cement 1.4 Sand 1.5 Pipes 1.6 Traps 1.7 Electric cables 1.8 Cloaking material

Variables	Range <i>May include but not limited to:</i>
	1.9 Fittings
2. Appliances	2.1 Wash hand basin 2.2 Water closet 2.3 Bath tub 2.4 Urinal 2.5 Bidet 2.6 Kitchen sink 2.7 Jacuzzi 2.8 Shower head 2.9 Solar water heaters 2.10 Rain water harvester 2.11 Strainers 2.12 Storage systems 2.13 Pumping systems 2.14 Instant Showers 2.15 Water Filters
3. Personal Protective Equipment (PPE)	3.1 Hardhat 3.2 Gloves 3.3 Dustcoat/overall 3.4 Dust mask 3.5 Safety shoes/boots
4. Tools and equipment	4.1 Pipe wrench 4.2 Pipe cutter 4.3 Hacksaw 4.4 Pipe threading equipment 4.5 Vise - Bench 4.6 Tap and Punch

Variables	Range <i>May include but not limited to:</i>
	4.7 Files 4.8 Screwdrivers 4.9 Drill with various sizes of bits 4.10 Mallet 4.11 Ball hammer 4.12 Masonry chisel 4.13 PPR machine/heat fusion equipment 4.14 Pipe bender 4.15 Trowel 4.16 De-clogging wire/de-clogging machine 4.17 Toilet pump
5. Fluid	1.5 Liquids 1.6 Gases

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Analytical skills
- Drawing skills
- Problem-solving skills
- Critical thinking skills
- Organizing skills

- Measuring skills
- Numeracy skills
- Cutting skills
- Threading skills
- Fusion skills
- Bending skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Trouble shooting process
- Preventive maintenance of all systems
- Corrective maintenance of all systems
- Plumbing systems
- Types of fitting and appliances
- Maintenance of each type of fitting and appliance

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical aspects of competency	Assessment requires evidence that the candidate: <ul style="list-style-type: none"> 1.1 Troubleshoot plumbing systems faults correctly. 1.2 Quantified requirements for repair accurately. 1.3 Fixed plumbing faults correctly
-----------------------------------	---

	1.4 Tested functionality of plumbing systems according to standards.
2. Resource Implications	The following resources must be provided: The following resources must be provided: 2.1 A functional workshop with basic tools, equipment and sanitary appliances. 2.2 Reference and maintenance manuals 2.3 Personal protective equipment
3. Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Oral 3.3 Written 3.4 Third party report 3.5 Portfolio
4. Context of Assessment	Assessment may be done: 4.1 On-the-job, 4.2 Off-the-job or 4.3 work placement
5. Guidance information for assessment	The unit may be assessed alone or together with other related units.