

	<b>BQA NCQF QUALIFICATION TEMPLATE</b>	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

SECTION A: QUALIFICATION DETAILS													
<b>QUALIFICATION DEVELOPER (S)</b>		Ministry of Employment, Labour Productivity and Skills Development											
<b>TITLE</b>	Certificate III in Plumbing										<b>NCQF LEVEL</b>	3	
<b>FIELD</b>	Physical Planning and Construction					<b>SUB-FIELD</b>	Plumbing			<b>CREDIT VALUE</b>	40		
New Qualification						√		Review of Existing Qualification					
<b>SUB-FRAMEWORK</b>		General Education				TVET		√		Higher Education			
<b>QUALIFICATION TYPE</b>	Certificate	I		II		III	√	IV		V		Diploma	Bachelor
	Bachelor Honours			Post Graduate Certificate					Post Graduate Diploma				
	Masters							Doctorate/ PhD					
RATIONALE AND PURPOSE OF THE QUALIFICATION													
<p><b>Rationale</b></p> <p>The Botswana Vision 2036 states that development of the human capital and the informal sector, the micro and small enterprises (MSES) are essential in achieving the VISION 2036 pillars, Sustainable Economic Development and Human and Social Development. Although Botswana has been fortunate to experience unprecedented economic growth since independence, this has not generated enough jobs to reduce unemployment. The most severely hit group amongst the unemployed is the youth, who account for about 51.7 % of the total unemployed, with the 15-19 age group most affected.</p> <p>The Botswana Education and Training Sector Strategic Plan (ETSSP 2015-2020) marks a significant milestone in our collective efforts as a nation to bring about a more diversified, knowledge-based economy. Through a planned and careful development of human capital, the ETSSP seeks to refocus our education and training towards fulfillment of social and economic aspirations identified in our Revised National Policy on Education (RNPE)1994, the National Development Plan, Vision 2036 and as well as the Millennium Development Goals. In particular, the ETSSP is intended to strengthen the match between qualifications and labor market requirements, thereby ensuring that education and training outputs are more closely aligned to socio economic development needs of the country. In line with this strategic goal, the Human Resource Development Council</p>													

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(HRDC) report on top occupations in demand of 2016, has identified plumbing as some of the priority skills for the construction sector.

Research in the construction industry cited that plumbing is an essential skill in the country. Properties of Botswana (2017) argue that Plumbing is one of the numerous worries a homeowner or a tenant will face, anywhere in the world and in Botswana as well. From leaking pipes to running toilets, low water pressure, leaking hose bib, clogged or slow drains, sump pump failures and others. Ssegawa – Kaggwa, Ngowi and Ntshwene (2013): Bennett, (2005) posit that there is shortage of skilled workers in the construction industry in Botswana of which plumbing is part of. As such there is a need for specialized training, hence the decision to develop and train citizens in this field.

#### **PURPOSE:**

The purpose of this qualification is to produce artisan assistants with competence to:

- perform a range of functions including business communication and use of ICT.
- Install, repair, and maintain pipes, valves, fittings drainage systems and fixtures in residential structures.
- Perform routine inspections of plumbing and drainage systems.

People holding this qualification should be able to perform routine work under supervision and take some responsibility for own learning and completion of work.

#### **ENTRY REQUIREMENTS (including access and inclusion)**

##### **Minimum entry requirement for this qualification is a:**

NCQF level 2, Certificate II (General Education or TVET) or equivalent

##### **Access through Recognition of Prior Learning (RPL):**

There will be provision for access through Recognition of Prior Learning (RPL) and Credit Accumulation and Transfer System (CATS) in accordance with the RPL and CAT National Policies.

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<b>SECTION B</b>		<b>QUALIFICATION SPECIFICATION</b>
<b>GRADUATE PROFILE (LEARNING OUTCOMES)</b>	<b>ASSESSMENT CRITERIA</b>	
1. Communicate with clients, colleagues and others using appropriate forms of communication techniques.	1.1 Use written, verbal, non-verbal communication appropriate to the target audience. 1.2 Interpret stipulated instructions or requirements. 1.3 Apply information acquired in the performance of tasks or discussions with other people. 1.4 Apply relevant definitions, terminology, abbreviations and language. 1.5 Present information using appropriate language and formats. 1.6 Construct clear sentences to produce a written logical and coherent piece of writing.	
2. Utilise ICT for information retrieval and processing as well as communication and collaboration with others	2.1 Use ICT responsibly and ethically. 2.2 Manage information using ICT. 2.3 Organize and synthesize information using ICT. 2.4 Implement data loss prevention strategies using ICT. 2.5 Present information in a variety of formats using ICT. 2.6 Implement data loss prevention strategies using ICT.	
3. Select, use and maintain common Plumbing hand and power tools in accordance with organizational requirements.	3.1 Apply safe working practices to the given task. 3.2 Examine the nature of work to be done to determine tools to be used. 3.3 Select and use appropriate hand and power tools for specific purpose 3.4 Carry out maintenance of hand and power tools in accordance with manufacturer's instructions and organizational requirements. 3.5 Perform quality checks on work done and make improvements as needed. 3.6 Clean and store hand and power tools after use in accordance with organizational requirements. 3.7 Clean or tidy up the work area in accordance with organizational requirements.	

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4. Carry out basic metal processes in Plumbing operations	<p>4.1 Apply safe working practices to the given task</p> <p>4.2 Examine the composition and properties of ferrous and non-ferrous metals using simple workshop tests.</p> <p>4.3 Select and use appropriate tools and equipment in according to job specification.</p> <p>4.4 Use basic metal processing tools to mark out work pieces.</p> <p>4.5 Carry out soldering process.</p> <p>4.6 Select, assemble and set up welding components and equipment to carry out the task.</p> <p>4.7 Perform routine welding using gas metal welding process</p> <p>4.8 Perform quality checks on work done and make improvements as needed.</p> <p>4.9 Complete work, clean, store and secure tools and equipment inappropriate places after use.</p> <p>4.10 Clean or tidy up the work area in accordance with organizational requirements.</p>
5. Carry out basic plastic jointing processes in Plumbing operations	<p>5.1 Apply safe working practices to the given task.</p> <p>5.2 Examine the composition and properties of thermosetting and thermoplastic using simple workshop tests.</p> <p>5.3 Select and use appropriate tools and equipment in according to job specification.</p> <p>5.4 Use basic plastic processing tools to mark out work pieces.</p> <p>5.5 Use different types of fasteners and joints used in plumbing work</p> <p>5.6 Complete work, clean, store and secure tools and equipment inappropriate places after use.</p> <p>5.7 Clean or tidy up the work area in accordance with organizational requirements.</p>
6. Carry out basic installation of electrical circuits in relation with plumbing works	<p>6.1 Apply safe working practices to the given task.</p> <p>6.2 Examine the job specification to determine what is required.</p> <p>6.3 Select and use electrical wiring tools and equipment in according to job specification.</p>

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	<p>6.4 Identify and use electrical cables in accordance with manufacturer specification.</p> <p>6.5 Terminate cables in accordance with job instruction.</p> <p>6.6 Connect circuits according to job instruction.</p> <p>6.7 Identify and use electrical and electronics components.</p> <p>6.8 Perform quality checks on work done and make improvements as needed.</p> <p>6.9 Complete work, clean, store and secure tools and equipment in appropriate places after use.</p> <p>6.10 Clean or tidy up the work area in accordance with organizational requirements.</p>
7. Implement a maintenance schedule in accordance with the manufacturer's instructions.	<p>7.1 Apply safe working practices to the given task</p> <p>7.2 Examine the maintenance schedule issued to obtain details work to be done</p> <p>7.3 Obtain the required materials, tools and equipment in line with the job requirements.</p> <p>7.4 Prepare and carry out maintenance work in accordance with stipulated specifications.</p> <p>7.5 Perform quality checks on the work done and make improvements as needed.</p> <p>7.6 Complete work, clean, Store and secure tools and equipment in an appropriate place.</p> <p>7.7 Clean or tidy up the work area in accordance with organizational requirements.</p>
8. Produce and interpret Building Drawings with accordance with established codes of practice	<p>8.1 Apply safe working practices to the given task</p> <p>8.2 Examine building drawing to determine type of drawings required, instruments and equipment to be used</p> <p>8.3 Select and use appropriate instruments, equipment and associated materials to produce the required working drawings.</p> <p>8.4 Adhere to established codes of practice in relation to use of scale, symbols and graphical representations including freehand sketches and orthographic projections as well as rules of dimensioning.</p>

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	<p>8.5 Interpret the working drawings and associated information to produce a list of materials</p> <p>8.6 Present working drawings and associated information using appropriate layouts and formats in line with practice standards and organizational requirements.</p> <p>8.7 Perform quality checks on work done and make improvements as needed.</p> <p>8.8 Complete work, clean, Store and secure tools and equipment in an appropriate place.</p> <p>8.9 Clean or tidy up the work area in accordance with organizational requirements.</p>
9. Construct and assemble domestic water tank stands	<p>9.1 Apply safe working practices throughout all the task</p> <p>9.2 Examine the job specification to determine the materials, tools and equipment required for the task.</p> <p>9.3 Obtain the materials, tools and equipment required for the task.</p> <p>9.4 Cut to size and shape the covering materials following the prepared templates in line job speciation</p> <p>9.5 Use appropriate technique and fasteners in constructing the tank stand</p> <p>9.6 Perform quality checks on work done and make improvements as needed.</p> <p>9.7 Complete work, clean, Store and secure tools and equipment in an appropriate place.</p> <p>9.8 Clean or tidy up the work area in accordance with organizational requirements.</p>
10. Install direct and indirect cold water supply	<p>10.1 Apply safe working practices throughout all the task</p> <p>10.2 Examine the job specification to determine the materials, tools and equipment required for the task.</p> <p>10.3 Prepare all excavations required as per job specification</p> <p>10.4 Install water tank</p> <p>10.5 Connect cold water supply to the main</p> <p>10.6 Perform quality checks on work done and make improvements as needed.</p>

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	<p>10.7 Complete work, clean, Store and secure tools and equipment in an appropriate place.</p> <p>10.8 Clean or tidy up the work area in accordance with organizational requirements.</p>
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SECTION C	QUALIFICATION STRUCTURE				
COMPONENT	TITLE	Credits Per Relevant NCQF Level			Total (Per Subject/ Course/ Module/ Units)
		Level [ 3]	Level [ ]	Level [ ]	
<b>FUNDAMENTAL COMPONENT</b> Subjects/ Courses/ Modules/Units	Information and Communication Technology I (ICT I)	3			<b>3</b>
	Communication Skills	3			<b>3</b>
<b>CORE COMPONENT</b> Subjects/Courses/ Modules/Units	Plumbing hand and power tools	3			<b>3</b>
	Plumbing Domestic Works	12			<b>12</b>
	Building Drawing	4			<b>4</b>
	Cold Water Supply Systems	15			<b>15</b>
<b>ELECTIVE/ OPTIONAL COMPONENT</b> Subjects/Courses/ Modules/Units	<b>N/A</b>				

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<b>SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL</b>	
<b>TOTAL CREDITS PER NCQF LEVEL</b>	
<b>NCQF Level</b>	<b>Credit Value</b>
<b>Fundamental components</b>	<b>6</b>
<b>Core components</b>	<b>34</b>
<b>Elective components</b>	<b>0</b>
<b>TOTAL CREDITS</b>	<b>40</b>
<b>Rules of Combination:</b> <b>(Please Indicate combinations for the different constituent components of the qualification)</b>	
Candidates are required to achieve 40 credits for the qualification inclusive of 6 credits for fundamental units, 34 core credits.	

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## ASSESSMENT ARRANGEMENTS

### ASSESSMENT

All assessments formative and summative, leading/contributing to the award of credits or a qualification shall be based on learning outcomes and/or sub-outcomes.

#### **Formative assessment**

Formative assessment or continuous assessment contributing towards the award of credits should be based on course outcomes. The contribution of formative assessment to the final grade shall be **60%**.

#### **Summative assessment**

Learners shall undergo assessment including written and practical and simulated projects. The final examination for each course contributes **40%** of the final mark for that course.

## MODERATION ARRANGEMENTS

Internal and external moderators to be engaged will be BQA accredited subject specialists in relevant fields with relevant industry experience and academic qualifications. Both internal and external moderation shall be done in accordance with applicable policies and regulations.

## RECOGNITION OF PRIOR LEARNING

Candidates may submit evidence of prior learning and current competence and/or undergo appropriate forms of RPL assessment for the award of credits towards the qualification in accordance with applicable RPL policies and relevant national-level policy and legislative framework. Implementation of RPL shall also be consistent with requirements, if any, prescribed for the field or sub-field of study by relevant national, regional or international professional bodies.

## CREDIT ACCUMULATION AND TRANSFER

Candidates may submit evidence of credits accumulated in related qualification in order to be credited for the qualification they are applying for.

## PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

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### ***Learning Pathways***

***Horizontal Articulation*** (related qualifications of similar level that graduates may consider are as follows:

- Certificate III in Bricklaying
- Certificate III in Welding
- Certificate III in Electrical and Maintenance

***Vertical Articulation*** (qualifications to which the holder may progress to are as follows)

- Certificate IV in Plumbing
- Certificate IV in Renewable in Energy

### ***Employment pathways***

***Graduates can be employed in the following:***

- Semi-skilled plumber
- Plumbing assistant
- Assistant in Renewable Energy

## **QUALIFICATION AWARD AND CERTIFICATION**

### ***Minimum standards of achievement for the award of the qualification***

A candidate is required to achieve the stipulated minimum of 40 credits inclusive of 6 credits for fundamental and 34 credits for core components, to be awarded the qualification.

### ***Certification***

Candidates meeting prescribed requirements will be awarded **Certificate III in Plumbing** certificate in accordance with standards prescribed for the award of the certificate and applicable policies.

## **REGIONAL AND INTERNATIONAL COMPARABILITY**

This national vocational qualification has been packaged by benchmarking against comparable qualifications offered within the SADC region and beyond as reported below:

**Tshwane North College, Certificate in Construction Plumbing (NQF Level 3 worth 146 credits)**

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This qualification is intended to develop knowledge, skills and competencies in construction plumbing, basic business principles, maintaining and repairing plumbing systems including the detection of water leaks, and tracing of hidden pipe work, installation and maintenance of solar heating systems, gas piping, fire protection systems and industrial plumbing systems, installation of hospital sanitary ware and gas piping. Candidates are required to achieve a minimum of 146 credits inclusive of fundamental units worth 36 credits; core units weighted 90 credits and electives worth 20 credits. Assessment strategies for this qualification include practical work, integration of assessment of all specific outcomes, knowledge-based tests and practical exams. Candidates are expected to display the ability to integrate practical performance, actions, concepts and theory across unit standards to achieve competence in relation to the purpose of this qualification. Holders of this qualification may pursue other qualifications in cognate areas including but not limited to Intermediate and National certificate in Plumbing. Graduates may progress to Technician Certificate in Construction. Employment Pathways for graduates include working as basic plumber and semi-skilled plumber.

**Mauritius Institute of Training and Development. National Certificate in Plumbing- Level 3 (NQF Level 3 worth 120 credits)**

This certificate recognises competence in the plumbing trade. Holders of this qualification are able to use plumbing tools and equipment and install and maintain plumbing systems and structures. Assessment strategies have not been indicated but, the outcomes point to application both written and practical assessments.

**The city and guilds of London institutes - Skills proficiency awards in basic plumbing NQF Level 3**

emphasises development of knowledge, skills and competencies in health and safety, Safe working, Prevention of hazards, basic tool skills, cutting and bending pipes and construction of pipe joints. Assessment strategies have not been indicated but, the outcomes point to application both written and practical assessments. Candidates may pursue full time and part time courses, apprenticeship programmes, on-the-job training, and government funded programmes.

**Bangladesh Technical Education Board (BTEB) National Skills Certificate - II in Plumbing - TVQF 3.**

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This qualification seeks to develop knowledge, skills and competencies in installation of water supply pipes, wastewater pipes and plumbing fixtures, pipe leakage testing, repair and maintenance works. Assessment strategies include workplace observation, demonstration, oral interview, written examination and Portfolios. Graduates may pursue career as basic skilled workers and semi-skilled workers.

This qualification has been developed for mobility across similar trades within the industry and is intended to allow for further learning towards supervisory and management qualifications within this and other sectors. The qualification builds on other certificates from a range of sub-sectors and will provide articulation with a range of qualifications in both technical and management areas.

#### **REVIEW PERIOD**

This qualification shall be reviewed every five (5) years.

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