SECTION A:	QUALIFICATION DETAILS																	
QUALIFICATION DEVELOPER (S)	Ministry of Employment, Labour Productivity and Skills Development																	
TITLE	Certificate III in Electrical Installation and Maintenance														**NCQF LEVEL**	3		
FIELD	Manufacturing, Engineering and Technology		**SUB-FIELD**	Electrical installation and Maintenance											**CREDIT VALUE**	40		
New Qualification		√	Review of Existing Qualification															
SUB-FRAMEWORK	General Education		TVET		√	Higher Education												
QUALIFICATION TYPE	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

RATIONALE

The Botswana Vision 2036 states that development of the human capital and the informal sector and the micro and small enterprises (MSES) are essential in achieving the VISION 2036 pillars, in particular 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 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 education and training on fulfilment of social and economic aspirations identified in our Revised National Policy on Education (RNPE) 2004, the National Development Plan 11, Vision

2036 (www.gov.bw/en/Mistries and as well as the Millennium Development Goals. In particular, the ETSSP is intended to strengthen the match between qualifications and labour 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 (HRDC 2016,page7 derived from statistics Botswana, classification of occupations) report on top occupations in demand has identified Electrician Technician as one of the priority skills for the Engineering and Manufacturing Sector, therefore it is important to develop this qualifications at this level it will be easier to upgrade to technician hence to address shortage skilled manpower in the country

PURPOSE:

The purpose of the qualification is to produce semi-skilled craftsmen with knowledge, skills and competence to perform wide range of functions including,

- use of hand tools and equipment to carry out basic electrical installations and maintenance,
- perform basic tubing, wiring and termination in accordance with established codes,
- apply basic communication skills, use of ICT, numeracy, Safety Health and Environmental Risks (SHER) in their work.

The holders of this qualification perform routine work under supervision and take some responsibility for own learning and completion of work.

ENTRY REQUIREMENTS (including access and inclusion)

Entry of this qualifications is through the following

- Any relevant part qualification at NCQF Levels 3 may render the candidate eligible for exemptions or credit transfer in accordance with applicable policies.
- Candidates with relevant unaccredited prior learning may be considered for admission and / or exemption through Recognition of Prior Learning (RPL) Assessment in line national RPL policy.

SECTION B	QUALIFICATION SPECIFICATION
GRADUATE PROFILE (LEARNING OUTCOMES)	**ASSESSMENT CRITERIA**
LO1. 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. **1.7** Use appropriate presentation formats and styles of writing to produce error free business documents.
LO2. Demonstrate fundamental knowledge and understanding of ICT	2.1 Demonstrate responsible and ethical use of ICT 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 Apply basic internet knowledge and skill for information 2.6 Present information in a variety of formats using ICT.
LO 3.Perform basic mechanical workshop operations using suitable tools and equipment.	3.1 Examine the job specification to determine tools and equipment to be used in relation to occupational safety code. 3.2 Select appropriate tools and equipment to be used in line with the job requirements. 3.3 Carry out processes as per the job specification, adhering to health, safety and quality standard.

	3.4 Maintain tools and equipment in accordance with Original 3.5 Manufacturers Specification (OMS) where applicable. 3.6 Perform quality checks on work done and make improvements where needed. 3.7 Clean tools and equipment and store them in an appropriate place after use.
LO 4 .Apply basic mathematical problem solving techniques to perform work related calculations.	4.1 Use number operations to carry out work related calculations. 4.2. Determine ratios, proportions and percentages as needed for specific purposes. 4.3. Apply measurement techniques for length, area, perimeter, volume and mass when performing work related calculations. 4.4. Determine the cost of production in relation to labour, materials and overheads in project undertakings. 4.5. Identify the main features of work related data and use suitable summary statistics (mean, mode and median) to interpret the data. 4.6. Solve work related mathematical problems through simple algebraic expressions.
LO 5. Build basic electronic circuit in accordance with job specification.	5.1 Obtain the right tools and materials to be used for the job 5.2. Prepare the workstation for the work. 5.3. Build the circuit according to the designed specifications. 5.4. Check work being done and ensure conformity to job specifications 5.5. Test run the circuit to ascertain functionality 5.6. Adhere to health and safety 5.7. Clean tools and equipment and store them in an appropriate place after use.

	5.8. Clean or tidy up the work area in accordance with organizational requirements.
LO 6.Read and draw Engineering drawings for specific purpose	6.1 Read drawings to determine appropriate drawing tools and equipment to be used. 6.2. Select the appropriate drawing tools and equipment in accordance with job specification. 6.3. Produce drawings according to task specification adhering to health, safety and quality standard. 6.4. Perform quality checks on the job done for adherence to quality standard. 6.5. Clean tools and equipment and store them in appropriate places after use.
LO 7. Perform basic Inspection and testing techniques.	7.1 Examine job specification to determine the tools and equipment to be used 7.2. Assemble and set up all electrical components and test dead circuits and live circuits accordingly as per prescribe circuits to required standard. 7.3. Carry out repairs as per Institute of Electrical Engineers (IEE) regulations and standards; adhere to health and safety in line with job. 7.4. Perform quality checks on work done and make improvements where needed 7.5. Adhere to health and safety in line with job specification in relation to SHE regulations 7.6. Clean, store and secure tools and equipment in an appropriate place.

LO 8. Install and maintain of electrical circuits in accordance with electrical regulations.	8.1 Obtain the right tools and materials to be used for the job. 8.2 Prepare workstation 8.3. Assemble the enclosures according to the job specifications. 8.4. Lay out components on the circuit board according to the circuit diagram 8.5. Visually check circuit for faults in accordance with circuit-and-layout diagrams 8.6. Test circuit for functionality to ensure conformity to job specifications 8.7. Adhere to SHER regulations 8.8. Clean tools and equipment and store them in an appropriate place after use. 8.9. Clean or tidy up the work area in accordance with organizational requirements.

SECTION C	QUALIFICATION STRUCTURE				
COMPONENT	**TITLE**	**Credits Per Relevant NCQF Level**			**Total** (**Per** Subject/ Course/ Module/ Units)
		Level [ ]	**Level [3]**	**Level [ ]**	
FUNDAMENTAL COMPONENT Subjects/ Courses/ Modules/Units	Communicate Skills		**3**		**3**
	Information and Communications Technology (ICT)		**3**		**3**
CORE COMPONENT Subjects/Courses/ Modules/Units	Workshop Practice		**10**		**10**
	Engineering Drawing		**5**		**5**
	Electrical Principles		**7**		**7**
	Basic Electrical Installation		**9**		**9**
	Engineering mathematics		**3**		3
ELECTIVE/ OPTIONAL COMPONENT Subjects/Courses/ Modules/Units					

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

ASSESSMENT ARRANGEMENTS

Assessments, formative and summative, leading/contributing to the award of credits or a qualification should 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. This can include tests, assignments and projects as well as simulated and real work practice. The contribution of formative assessment to the final grade shall be 60%.

Summative assessment

Candidates shall undergo assessment including written, practical, and simulated projects. The final examination for each course contributes 40 % of the final mark for that course. To pass a course, a candidate must achieve a minimum of 60%. A candidate who scores between 50 and 59% shall be eligible for one re-assessment. A candidate, who is not eligible for re-assessment or does not meet the minimum requirements on re-assessment, may apply for a re-take.

All summative practical assessments must be conducted in simulated or real work settings.

A candidate who does not meet the minimum requirements after one re-take or has not met the minimum assessment requirements for a specified number of courses in a given semester shall be withdrawn and advised to apply for re-admission after a minimum of two semesters or one year

MODERATION ARRANGEMENTS

The following shall apply for both internal and external moderation.

Internal Moderation

The internal moderation process shall be conducted by assessors at institutional level who are accredited with BQA in their specialist areas as assessors and moderators

External Moderation

Registered moderators should undertake external moderation.

Documentation

All necessary documents including: qualification document, alignment matrices, assessment instruments and Assessment criteria/rubrics should be available.

Sampling Procedure for Moderation

The total number of scripts to be sampled depends on the total number of candidates. If the number of candidates is 20 or less, the moderator should go through all the papers. For more than 20 candidates, the sample shall be 20 candidates plus 25% of the remaining total number of Scripts.

Moderation reports

A moderation report shall capture, but not limited to the following:

- Sample size and sampling procedures.
- Observations about the performance of candidates.
- Consistency of assessment judgments and decisions.
- Assessment instruments and alignment to learning outcomes.
- Recommendations for improvement.

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 the ETP's RPL policy, BQA RPL policy 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.

Candidates with relevant prior learning, through formal, informal and non-formal education may be considered for award and / or exemption through Recognition of Prior Learning (RPL) Assessment will involve assessment such as; Pre and post interviews, Portfolio development evidence and proficiency tests.

CREDIT ACCUMULATION AND TRANSFER

Any relevant part qualification at NCQF level 3 may render the candidate eligible for exemptions or credit transfer in accordance with applicable policies.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Horizontal Articulation (related qualifications of similar level that graduates may consider)

- Certificate in Renewable Energy NCQF Level 3 or equivalent.
- Certificate in Instrumentation NCQF Level 3 or equivalent.
- Certificate in Electronics NCQF Level 3 or equivalent.

Vertical Articulation (qualifications to which the holder may progress to)

- Certificate in Control and Instrumentation NCQF Level 4 or equivalent.
- Certificate in Renewable Energy NCQF Level 4 or equivalent.
- Certificate in Electronics NCQF Level 4 or equivalent

EMPLOYMENT PATHWAYS

- Instrumentation Assistant.
- Electronics Assistant.
- Semi Skill Electrician.
- Domestic Appliance Repair

QUALIFICATION AWARD AND CERTIFICATION

Minimum standards of achievement for the award of the qualification

A candidate is required to achieve a total of 40 credits for the qualification inclusive of 6 credits for Fundamental units and 34 credits for Core units, to be awarded the qualification.

Certification

Candidates meeting prescribed requirements will be awarded the qualification in accordance with standards prescribed for the award of the qualification and applicable policies.

REGIONAL AND INTERNATIONAL COMPARABILITY

South Africa Qualifications Authority Institutions (SAQA) Occupational-electrician NQF Level 2 and117 Credits

This qualification is intended to develop knowledge, skills and competence in language and maths Introductory concepts of Science and Technology related to electrical engineering, materials and tools used in installation processes. Installation of electrical equipment and circuits, Occupational health, safety and environmental practices within the electrical environment as well as procedures related to workplace relationships, roles and responsibilities.

Assessment strategies include integrated summative assessment conducted by relevant QCTO Assessment Quality partner. The summative assessment focuses on exit Level outcomes and associated assessment criteria. Candidates are required to achieve a minimum of 117 credits inclusive of 20 credits for fundamental units, 77 credits for core and 20 credits for elective units. The candidates are also required to complete a work experience/industrial attachment. Holders of this qualification may pursue other qualifications at NQF Level 3 in cognate areas such as Engineering, Energy Sector, Mining, chemical, Transport. They may also pursue qualifications at NQF level 4 for upgrading purposes. Employment pathways for the qualification holders include working as electricians and domestic Appliance repair.

Nelson Marlborough Institute of Technology (New Zealand) New Zealand Qualification Authority National Certificate-Electrical Engineering. NQF Level 3, 90 Credits.

This qualification is intended to develop knowledge, skills and competence in interpretation and installation of safe electrical systems in accordance with legislative and customer requirements, create electrical drawings using CAD and carry out fault diagnosis. Assessment strategies employed for this qualification include theory and Practice for candidates to attain a New Zealand Certificate in Electrical Engineering.

Candidates are required to achieve a minimum of 90 credits inclusive of 10 credits for fundamental units, 60 credits for core and 20 credits for elective units. The candidates are also required to complete a work experience and or industrial attachment. Holders of this qualification may pursue other qualifications at NQF Level 3, in areas such as electronics, instrumentation, metrology, refrigeration and air-conditioning for multi-skilling or re-tooling purposes. On completion of this qualification graduates may progress to higher level qualifications within the electrical industry such as the New Zealand Certificate in Electrical Engineering (Level 4) or the New Zealand Diploma in Engineering for upgrading purposes. Employment pathways for the qualification holders include working as Electricity Supply Electrician, Domestic/Commercial Electrician, or Industrial Electrician.

New Zealand NQF framework differs from the South African NQF with levels. All qualifications require the learners to master skills of a specific nature. However while the unit standards from New Zealand are much more specific, the South African unit standards are generic (fundamentals, core and electives). The applied competence in the South African qualifications focuses on achieving a specific level of competence by a person working in a real-world context, in which a particular specialisation, experience and problem-solving ability is required.

The qualification designed for Botswana compares very well with the foreign qualifications examined above in that it covers or emphasizes the same or similar competencies and attributes and it follows the structure typical of similar types of qualifications

REVIEW PERIOD
The qualification shall be reviewed every (5) years, however, a review may be taken earlier as needed.