SECTION A:	QUALIFICATION DETAILS																	
QUALIFICATION DEVELOPER (S)	Construction Industry Trust Fund																	
TITLE	Certificate IV in Welding and Fabrication														NCQF LEVEL	4		
FIELD	Manufacturing, Engineering and Technology			SUB-FIELD	Welding and Fabrication										CREDIT VALUE	66		
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

Government has identified high unemployment and poverty amongst youth as a national security risk, hence the need to train this section of the population in productive and income generating skills.

Despite the country continuing to receive investments, these investments are biased towards capital-intensive ventures. This situation has the inherent risk of unemployment continuing to surge. The government, through its vital development policy paper, National Development Plan 11 (NDP 11), has identified areas of potential high employment uptake such as manufacturing, agriculture and services, and has made a commitment to give these sectors extensive support with a view to making meaningful contribution the growth of the economy.

Another policy document that make mention of skills development as a vehicle towards inclusivity and provision of opportunities for all, is the Vision 2036. The document, under the heading of Human and Social Development (Pillar 2) which states “Botswana society will be knowledgeable with relevant quality education that is outcome based, with emphasis on technical and vocational skills as well as academic competencies.”

According to the National Water Master Plan, there is need to construct pipelines from the northern part of Botswana to the southern part. With the projected mining activities anticipated throughout the country, there is need for the training of coded welders to undertake work in the mega projects that include the construction of bridges, such as the Kazungula and Mohembo Bridge Projects.

The study conducted by the Human Resource Development Council in 2016 has identified Welding as a priority trade that is in high demand. The purpose of this qualification is to produce artisans with competencies in fillet, plate and pipe welding.

PURPOSE:

The purpose of this qualification is to produce graduates who have skills and competencies to:

- Apply fundamentals of welding and welding technology.
- Perform bench work to produce various work pieces.
- Cut Metal using oxy-acetylene, plasma and shearing equipment.
- Fabricate component to produce finished products from drawings.
- Weld metals using various welding processes in all positions.

ENTRY REQUIREMENTS (including access and inclusion)

- Certificate III in Welding and Fabrication (NCQF Level III) or equivalent
- Certificate III in Basic Education
- There will be accesses through recognition of prior learning (RPL) and Credit Accumulation and Transfer (CAT) through institutional policies.

SECTION B	***QUALIFICATION SPECIFICATION***
GRADUATE PROFILE (LEARNING OUTCOMES)	***ASSESSMENT CRITERIA***
At the end of six months, learners graduating from this qualification should be able to do the Learning Outcomes below and been declared competent in their associated Assessment Criteria	
1.Join metals using various Welding Processes.	1.1Weld metal pieces of varying types, thicknesses, and types, together in different welding positions that include flat, horizontal, vertical and overhead according to industry standards. 1.2 Perform fillets welds using the shielded metal arc welding process according to industry standards. 1.3 Operate various metal arc welding equipment according to industry standards. 1.4 Weld pipe using the shielded metal arc welding process according to industry standards. 1.5 Use different types of heat treatment and hardness tests on metals.
2.Perform Gas welding, braze and brazing.	2.1Weld metals using Braze welding, hard soldering and silver soldering techniques on metals. 2.2 Use oxy-acetylene welding process in all positions of welding. 2.3 Weld different joints using the gas welding process according to industry standards. 2.4 use gas welding process according to industry standards.
3.Weld metals using Metal Inert Gas (MIG) Welding process.	3.1 Set up Metal Inert Gas (MIG) welding equipment. 3.2 use the Gas Tungsten Arc Welding process for fillet joint. 3.3 Weld butt Plates using Metal Inert Gas (MIG) welding according to industry standards. 3.4 use the Metal Inert Gas (MIG) for welding pipes according to industry standards.
4.Demonstrate knowledge of Entrepreneurial principles in the workplace	4.1 Adhere to scheduled activities in the workplace. 4..2 Use problem solving skills problems to address issues in the organisation 4.3 Mobilise people and resources to execute tasks.

SECTION C	***QUALIFICATION STRUCTURE***				
COMPONENT	***TITLE***	***Credits Per Relevant NCQF Level***			***Total*** ***(Per** Subject/ Course/ Module/ Units)*
		Level [3]	***Level [4]***	***Level [ ]***	
FUNDAMENTAL COMPONENT *Subjects/ Courses/ Modules/Units*	Safety, Health And Environmental Protection	***3***			***3***
	Fundamental Entrepreneurial Principles	***3***			***3***
	Working At Heights	***3***			***3***
	Communication Skills	***3***			***3***
	TOTAL	***12***			***12***
CORE COMPONENT *Subjects/Courses/ Modules/Units*	Welding Fundamentals		***3***		***3***
	Principles Of Fabrication And Welding		***3***		***3***
	Read, Interpret, and Produce Drawings And Specifications.		***4***		***4***
	Gas Welding Process		***4***		***4***
	Flux-Cored Arc Welding Process		***4***		***4***
	Engineering Materials And Treatments		***4***		***4***

	Shielded Metal Arc Welding		***5***		***5***
	MIG Welding		***5***		***5***
	TIG Welding		***5***		***5***
	Pattern Development For Fabrication		***5***		***5***
	Fabrication of Workpieces		***5***		***5***
	Brazing		***2***		***2***
	Oxy-Acetylene Metal Cutting		***3***		***3***
	Use, Care And Maintenance Tools And Equipment.	***2***			***2***
	Erect, Assemble And Repair Metal Structures		***4***		***4***
	TOTAL		***52***		***54***
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***
3	***14***
4	***52***
TOTAL CREDITS	***66***

Rules of Combination:

(Please Indicate combinations for the different constituent components of the qualification)

The qualification consists of a Fundamental, Core and Elective Components.
To be awarded the Qualification learners are required to obtain a minimum of **66** credits as detailed below.

Fundamental Components:
The Fundamental components consist of modules in communication, safety, and entrepreneurship to the value of **12** credits all of which are compulsory

Core Components:
The core components consists of modules to a value of **54** credits which are compulsory.

Elective Components:

There are no Elective modules for this qualification.

ASSESSMENT ARRANGEMENTS

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

1. Formative assessment:

Formative or continuous assessment would be conducted to inform teaching and learning and establish the learner's level of readiness for progression to the next learning unit or module.

Formative assessment shall constitute 60% of the Final Mark

2. Summative assessment:

Internal summative assessments shall be carried out in accordance all applicable examination rules, and the weighting of the assessment shall constitute 40% of the Final Mark

All assessment shall be carried out by BQA registered and accredited Assessors.

MODERATION ARRANGEMENTS

There shall be internal and external moderation carried out by BQA registered and accredited Moderators

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.

CREDIT ACCUMULATION AND TRANSFER

Candidates would be allowed to accumulate enough credits that would warrant them the award of the qualification. This would include transfers of credits from previous learnings.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Articulation and Education Pathways

Horizontal Articulation:

Graduates of this qualification may consider pursuing to other qualifications of the same levels in the same line of Music such as

- Certificate IV in Rigging
- Certificate IV in Coded Welding

Vertical Articulation:

Learners may progress to higher level of the same Qualification such as

- Certificate V in Welding and Fabrication
- Certificate V in Mechanical Engineering

Employment Pathways

Learners who achieve the units in this qualification will have competencies and attributes to work as:

- Welder
- Boilermaker

QUALIFICATION AWARD AND CERTIFICATION

To be awarded this qualification, the candidate must have met the following requirements:

- All exit level outcomes
- Minimum 66 credit requirements

Certification

Upon completion of the qualification the candidate will be awarded

CERTIFICATE IV IN WELDING AND FABRICATION

REGIONAL AND INTERNATIONAL COMPARABILITY

Benchmarking has been done against qualifications offered by reputable entities within the region and beyond to appreciate what is typical of this level and type of qualification out there, in relation to graduate profiling, scope and depth of content, to ascertain regional and international comparability and articulation of the proposed qualification. The outcomes of this process are highlighted below.

The following Similarities and Differences of the qualifications examined were observed.

Similarities

The exit level outcomes of the 4 qualifications examined are similar and their scope all the welding of carbon steels and other non-ferrous metals using a variety of welding processes. The cutting of steel using an oxy-acetylene plant is also covered.

Since the qualification is skills based, assessment is integrated, and competencies are achieved through the design and development of assessment activities that make use of a variety of assessment methods and tools that measure not only the learner's knowledge and ability to perform practical tasks and activities within a familiar context, but which also challenge learners to demonstrate their ability to deal with problem situations that might or can arise in the workplace from time and which require learners' to demonstrate their ability to adapt their performance to meet the requirements of changed circumstances and to reflect on what they are doing and why.

Differences

While all the four qualifications contain similar welding and fabrication modules and outcomes, there are slight variations when it comes to the peripheral outcomes. The Zambian qualification from the Lusaka Vocational Training Centre has included welding codes used in industry, while the Indian one from the Naukri has incorporated the preparation and fitting of structural sections and pressure parts.

The other noticeable difference between the qualifications studied is the disparity with regards to credit weighting and duration. The South African qualification from Ekhurhuleni Artisan and Skills training Centre is pegged at 148 credits, while the one from New Zealand has only 60 credits. Credits for the other two qualifications have not been stated, but the duration for the Indian qualification from Naukri is 12 months, whilst the Zambian qualification runs for three years.

REVIEW PERIOD

This qualification shall be reviewed after 5 years from the date of registration.