

National Vocational Certificate in Air conditioning and Refrigeration (Level 1)
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Level of qualification: 1

Total credits available: 71

Total credits required: 71

	Compulsory	Elective
Level 1 credits available	71	-
Minimum totals required	71	-

Registration date: 28 March 2018

Scheduled review date: 2023

Body responsible for the qualification: Namibia Training Authority through the Mining Quarrying, Construction, Electricity, Gas, Water Supply and Sanitation Industry Skills Committee.

Other bodies whose unit standards are included in the qualification: None

1. Purpose

This qualification recognizes people who have the competencies required for performing basic air conditioning and refrigeration tasks. It is awarded to people who have demonstrated the skills and knowledge required in fundamentals of physics related to Air conditioning and Refrigeration, apply health and safety routines in an air conditioning and refrigeration workplace; plan, organize and complete work in an air conditioning and refrigeration work environment; use and maintain air conditioning and refrigeration tools and equipment; fabricate tubing for air condition and refrigeration systems; replace domestic compressors.

This qualification is designed to be accessible and flexible. There are no entry requirements for this qualification.

The main focus is on the outcomes of this qualification, not the how, when and where learning occurred. Some people applying to do this qualification may currently be competent in one or more of the unit standards and should then be given the opportunity to apply for recognition of prior learning.

This qualification articulates to the National Vocational Certificate in Air conditioning and Refrigeration (Level 2).

2. Regulations for the qualification

2.1 Summary of qualification requirements

This qualification will be awarded to people who are credited with **71** credits and have met the requirements of the compulsory sections.

2.2 Detailed qualification requirements

Compulsory

All the unit standards listed below are required.

FIELD: Communication Studies and Languages
Subfield: Communication Skills
Domain: Foundational Communication Skills

Unit No.	Unit Standard Title	Level	Credits
1150	Apply basic reading skills in a workplace environment	1	3
1151	Interact with others in a workplace environment	1	5
1152	Use workplace documents	1	5

AND

FIELD: Physical, Mathematical and Computer Studies
Subfield: Numeracy
Domain: Foundation Numeracy Skills

Unit No.	Unit Standard Title	Level	Credits
1153	Apply basic numeracy skills in a workplace environment	1	5

AND

FIELD: Health Sciences and Social Services
Subfield: Core Health
Domain: HIV and AIDS awareness

Unit No.	Unit Standard Title	Level	Credits
1155	Demonstrate basic awareness of HIV and AIDS	1	6

AND

FIELD: Computer Studies
Subfield: Numeracy
Domain: Computing Foundation Skills

Unit ID	Unit Standard Title	Level	Credits
1156	Apply fundamental computer literacy skills	1	8

AND

FIELD: Health Sciences and Social Studies
Subfield: Core Health
Domain: First Aid

Unit ID	Unit Standard Title	Level	Credits
843	Provide basic first aid	1	3

AND

FIELD: Building, Commerce and Management Studies
Subfield: Business Development
Domain: Entrepreneurship

Unit ID	Unit Standard Title	Level	Credits
1158	Apply basic entrepreneurship skills	1	5

AND

FIELD: Manufacturing, Engineering and Technology
Subfield: Mechanical Engineering
Domain: Occupational Health and Safety

Unit No.	Unit Standard Title	Level	Credits
1157	Demonstrate basic knowledge of workplace health and safety	1	7

AND

FIELD: Manufacturing, Engineering and Technology
Subfield: Mechanical Engineering
Domain: Air conditioning and Refrigeration

Unit No.	Unit Standard Title	Level	Credits
1706	Demonstrate knowledge on fundamentals of physics related to Air Conditioning and Refrigeration	1	6
567	Apply health and safety routines in an air conditioning and refrigeration workplace	1	2
569	Plan, organize and complete work in an air conditioning and refrigeration work environment	1	2
570	Use and maintain air conditioning and refrigeration tools and equipment	1	5
572	Fabricate tubing for air condition and refrigeration systems	1	6
573	Replace domestic compressors as part of refrigeration operations	1	3

3. Credit recognition and transfer arrangements

Credits for any version of a unit standard of the same identification number will be recognised in the award of this qualification.

4. Special Arrangements

Providers seeking accreditation to deliver this qualification must meet the following special arrangements.

1. Providers involved in the assessment of this qualification and the associated unit standards must comply with the national assessment arrangements for the VET system up to and including level 5 of the Namibia Qualifications Framework. These arrangements apply to all occupations and industries, including Air Conditioning and Refrigeration, which are encompassed in the vocational education and training sector. A copy of the national assessment arrangements is available from:

Namibia Training Authority

Rand Street

Khomasdal

Namibia

Telephone number: 207 8550

Facsimile number: 207 8551

Email info@nta.com.na

2. Providers of this qualification and the associated unit standards must be accredited.
3. Providers of this qualification and the associated unit standards must have access to all equipment and facilities detailed in the Special Notes and / or Range Statements in the unit standards that comprise this qualification.
4. Providers in receipt of funding through the NTA to deliver this qualification must use the national curriculum and training materials developed by the NTA for the National Vocational Certificate in Air conditioning and Refrigeration (Level 1)

5. The national curriculum and training materials for this qualification are available from:

Namibia Training Authority

Rand Street

Khomasdal

Namibia

Telephone number: 207 8550

Facsimile number: 207 8551

Web: www.nta.com.na

5. Transitions arrangements**5.1 Non National Qualifications Framework transition**

None.

5.2 National Qualifications Framework transition

This is the second version of this qualification.

National Vocational Certificate in Air conditioning and Refrigeration (Level 2)
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Level of qualification: 2

Total credits available: 110

Total credits required: 110

	Compulsory	Elective
Level 2 credits available	110	-
Minimum totals required	110	-

Registration date: 28 March 2018

Scheduled review date: 2023

Body responsible for the qualification: Namibia Training Authority through the Mining Quarrying, Construction, Electricity, Gas, Water Supply and Sanitation Industry Skills Committee.

Other bodies whose unit standards are included in the qualification: None

1 Purpose

This qualification recognizes people who have the competencies required for performing air conditioning and refrigeration tasks. It is awarded to people who have demonstrated knowledge of Air Conditioning and Refrigeration related science, introduction to absorption refrigeration system. It is also awarded to people who have demonstrated the skills and knowledge required to evacuate and charge air conditioning and refrigeration systems; communicate in an air conditioning and refrigeration mechanic work environment; apply basic oxy-acetylene welding techniques used in air conditioning and refrigeration mechanics; apply basic manual metal arc welding techniques used in air conditioning and refrigeration; draw and interpret electrical wiring; carry out single circuit wiring; replace refrigeration components; demonstrate knowledge of physics related to air conditioning and refrigeration; service air conditioners; and troubleshoot a domestic refrigerator as well as installation of pipe work for air conditioning and refrigeration systems..

This qualification is designed to be accessible and flexible. The entry requirement is the National Vocational Certificate in Air conditioning and Refrigeration (Level 1) or equivalent.

The main focus is on the outcomes of this qualification, not the how, when and where learning occurred. Some people applying to do this qualification may currently be competent in one or more of the learning outcomes and should then be given the opportunity to apply for recognition of prior learning.

This qualification articulates to the National Vocational Certificate in Air conditioning and Refrigeration (Level 3).

2 Regulations for the qualification

2.1 Summary of qualification requirements

This qualification will be awarded to people who are credited with **110** credits and have met the requirements of the compulsory sections, as well as all requirements for Workplace Integrated Learning (WIL) as laid out in the National Policy On Work-Integrated Learning (WIL) for Technical and Vocational Education and Training (TVET).

2.2 Detailed qualification requirements

Compulsory

All the unit standards listed below are required.

FIELD: Manufacturing, Engineering and Technology
Subfield: Mechanical Engineering
Domain: Air conditioning and Refrigeration

Unit No.	Unit Standard Title	Level	Credits
1707	Demonstrate the knowledge of Air conditioning and Refrigeration related science	2	6
1708	Demonstrate knowledge of absorption Refrigeration System	2	10
568	Communicate in an air conditioning and refrigeration mechanical work environment	2	2
571	Demonstrate knowledge of refrigerants and basic refrigeration cycle	2	6
574	Evacuate and charge Air conditioning and Refrigeration systems	2	4
575	Apply basic oxy-acetylene welding techniques used in air conditioning and refrigeration mechanics	2	5
576	Apply basic manual metal arc welding techniques used in air conditioning and refrigeration mechanics	2	4
577	Draw and interpret electrical wiring as part of air conditioning and refrigeration operations	2	6
578	Carry out domestic circuit wiring in Air-conditioning and Refrigeration.	2	2
579	Replace refrigeration system components	2	10
580	Demonstrate knowledge of physics related to air conditioning and refrigeration	2	6
581	Service air conditioners	2	11
584	Apply knowledge of electrical and electronics principles in air conditioning and refrigeration	2	6
585	Troubleshoot a domestic refrigerator	2	2

586	Install of pipe work for Air - conditioning and Refrigeration systems	2	8
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AND

FIELD: Business, Commerce and Management Studies
Subfield: Business Development
Domain: Entrepreneurship

Unit ID	Unit Standard Title	Level	Credits
732	Demonstrate knowledge of the requirements of entrepreneurs	2	4

AND

FIELD: Engineering and Technology
Subfield: Mechanical Engineering
Domain: Foundational Engineering Science, Pre-basic mathematic and engineering drawing

Unit ID	Unit Standard Title	Level	Credits
890	Apply knowledge of pre-basic mathematics indifferent context	2	6
893	Apply knowledge of basic engineering science in different contexts	2	6
900	Apply basic knowledge of engineering drawing in different contexts	2	6

3 Credit recognition and transfer arrangements

Credits for any version of a unit standard of the same identification number will be recognised in the award of this qualification.

4 Special arrangements

4.1 Providers seeking registration and/or accreditation to deliver this qualification must meet the following special arrangements.

4.1.1 This qualification will be offered to trainees **either** including a 6 months' period of **industrial/job attachment**, **or** as an **apprenticeship scheme** of a duration determined and agreed upon by the employer and the training provider on a ratio of 70/30 (70% at workplace and 30% at Training institution) basis.

Industrial/job attachment is defined as a period in a workplace setting where a trainee obtains structured practical experience in a specific occupation in order to complement competencies acquired during training at a technical vocational training provider (TVTP).

Apprenticeship refers to the system of work integrated learning, where an apprentice is employed by a company on contractual basis, earning a monthly salary, learning and working side-by-side with an experienced mentor.

In this case the employer must be an NTA approved entity (company) to register apprentices and has to identify a suitable training provider to provide the apprentice with the opportunity to gain skills and knowledge from theoretical training.

Employers and training providers are encouraged to consult the **National Policy On Work-Integrated Learning (WIL) for Technical and Vocational Education and Training (TVET) Sector** for further details on WIL implementation.

4.1.2 Providers involved in the assessment of this qualification and the associated unit standards must comply with the national assessment framework for the TVET system up to and including level 5 of the National Qualifications Framework. Assessment will include performance and achievement assessment acquired through work integrated learning periods. Assessment arrangements apply to all occupations and industries which are encompassed in the technical vocational education and training sector.

4.1.3 Providers of this qualification and the associated unit standards must be registered and/or accredited.

4.1.4 Providers of this qualification and their associated unit standards must have access to all equipment and facilities detailed in the tools and equipment list of the relevant training program.

4.2 Competencies covered in this qualification may be assessed through Recognition of Prior Learning (RPL).

4.3 Further relevant information and documentation may be accessed through:

Namibia Training Authority
10 Rand Street
Khomasdal
Namibia
Telephone number: 061 207 8550
Facsimile number: 061 207 8551

5 Transitions arrangements

5.1 Non National Qualifications Framework transition

None.

5.2 National Qualifications Framework transition

Version 2

This qualification was updated and issued as Version 2 in 2018.

Version 1 of this qualification will not be awarded as from 31 December 2020. People currently working towards Version 1 of this qualification are advised to transfer their existing credit awards to this version of the qualification at any time during 2019 and beyond.

People holding the earlier version of this qualification will continue to have their qualification recognised with the Air Conditioning and Refrigeration industry in terms of meeting relevant career and further learning entry and/or progression requirements.

National Vocational Certificate in Air conditioning and Refrigeration (Level 3)
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Level of qualification: 3

Total credits available: 145

Total credits required: 145

	Compulsory	Elective
Level 3 credits available	145	-
Minimum totals required	145	-

Registration date: 28 March 2018

Scheduled review date: 2023

Body responsible for the qualification: Namibia Training Authority through the Mining Quarrying, Construction, Electricity, Gas, Water Supply and Sanitation Industry Skills Committee.

Other bodies whose unit standards are included in the qualification: None

1 Purpose

This qualification recognises people who have the competencies required for performing air conditioning and refrigeration tasks. It is awarded to people who have demonstrated the skills and knowledge required in demonstrate knowledge of Refrigerants management, to install pipe work for air conditioning and refrigeration systems; maintain air conditioning and refrigeration systems; service electrical household appliances; carry out electrical wiring for refrigeration systems; install refrigeration system control devices; carry out repair to commercial refrigeration systems; service gas household appliance; rectify faults in appliance motor ; diagnose and recondition air conditioning and refrigeration systems components; install and assemble commercial air conditioning and refrigeration systems and install and service motor vehicle air-conditioning system

This qualification is designed to be accessible and flexible. The entry requirement is the National Vocational Certificate in Mechanical Engineering (Air conditioning and Refrigeration (Level 2) or equivalent.

The main focus is on the outcomes of this qualification, not the how, when and where learning occurred. Some people applying to do this qualification may currently be competent in one or more of the learning outcomes and should then be given the opportunity to apply for recognition of prior learning.

This qualification articulates to the National Vocational Certificate in Air conditioning and Refrigeration (Level 4).

2 Regulations for the qualification

2.1 Summary of qualification requirements

This qualification will be awarded to people who are credited with **145** credits and have met the requirements of the compulsory sections, as well as all requirements for Workplace Integrated Learning (WIL) as laid out in the National Policy On Work-Integrated Learning (WIL) for Technical and Vocational Education and Training (TVET).

2.2 Detailed qualification requirements

Compulsory

All the unit standards listed below are required.

FIELD: Manufacturing, Engineering and Technology
Subfield: Mechanical Engineering
Domain: Air conditioning and Refrigeration

Unit No.	Unit Standard Title	Level	Credits
1709	Demonstrate knowledge of refrigerant management	3	10
582	Maintain Air - conditioning and Refrigeration systems	3	10
583	Service electrical household appliances as part of Air -conditioning and Refrigeration systems	3	10
587	Carrying out electrical wiring for cold and freezer rooms	3	11
588	Install refrigeration system control devices	3	7
589	Carry out repair to commercial refrigeration systems	3	8
590	Install air conditioning systems	3	10
591	Service gas household appliance as part of air conditioning and refrigeration	3	6
592	Rectify faults in appliance's motors as part of air conditioning and refrigeration	3	6
593	Diagnose and recondition air conditioning and refrigeration systems components	3	5
594	Install and assemble commercial air conditioning and refrigeration systems	3	10

AND

FIELD: Manufacturing, Engineering and Technology
Subfield: Automotive Engineering
Domain: Automotive Electrical and Electronics

Unit No.	Unit Standard Title	Level	Credits
490	Install and service mobile vehicle air-conditioning system	3	10

AND

FIELD: Health Sciences and Social Science
Subfield: Core Health
Domain: First Aid

Unit ID	Unit Standard Title	Level	Credits
844	Provide general First Aid	3	4

AND

FIELD: Health Sciences and Social Services
Subfield: Preventative Health
Domain: Occupational Health and Safety

Unit ID	Unit Standard Title	Level	Credits
846	Ensure own actions reduce risk to health and safety	3	3

AND

FIELD: Business, Commerce and Management Studies
Subfield: Business Development
Domain: Entrepreneurship

Unit ID	Unit Standard Title	Level	Credits
733	Identify, create and select business opportunities	3	5
734	Develop a business plan as part of business start-up activities	3	12

AND

FIELD: Manufacturing Engineering and Technology
Subfield: Mechanical Engineering
Domain: Foundational Engineering, basic mathematic and drawing

Unit ID	Unit Standard Title	Level	Credits
891	Apply knowledge of basic mathematics in different context	3	6
894	Apply knowledge of fundamental engineering science in different contexts	3	6
901	Apply fundamental knowledge of engineering drawing in different contexts	3	6

3 Credit recognition and transfer arrangements

Credits for any version of a unit standard of the same identification number will be recognised in the award of this qualification.

4 Special arrangements

4.1 Providers seeking registration and/or accreditation to deliver this qualification must meet the following special arrangements.

4.1.1 This qualification will be offered to trainees **either** including a 6 months' period of **industrial/job attachment**, **or** as an **apprenticeship scheme** of a duration determined and agreed upon by the employer and the training provider on a ratio of 70/30 (70% at workplace and 30% at Training institution) basis.

Industrial/job attachment is defined as a period in a workplace setting where a trainee obtains structured practical experience in a specific occupation in order to complement competencies acquired during training at a technical vocational training provider (TVTP).

Apprenticeship refers to the system of work integrated learning, where an apprentice is employed by a company on contractual basis, earning a monthly salary, learning and working side-by-side with an experienced mentor.

In this case the employer must be an NTA approved entity (company) to register apprentices and has to identify a suitable training provider to provide the apprentice with the opportunity to gain skills and knowledge from theoretical training.

Employers and training providers are encouraged to consult the **National Policy On Work-Integrated Learning (WIL) for Technical and Vocational Education and Training (TVET) Sector** for further details on WIL implementation.

4.1.2 Providers involved in the assessment of this qualification and the associated unit standards must comply with the national assessment framework for the TVET system up to and including level 5 of the National Qualifications Framework. Assessment will include performance and achievement assessment acquired through work integrated learning periods.

Assessment arrangements apply to all occupations and industries which are encompassed in the technical vocational education and training sector.

- 4.1.3 Providers of this qualification and the associated unit standards must be registered and/or accredited.
- 4.1.4 Providers of this qualification and their associated unit standards must have access to all equipment and facilities detailed in the tools and equipment list of the relevant training program.
- 4.2 Competencies covered in this qualification may be assessed through Recognition of Prior Learning (RPL).
- 4.3 Further relevant information and documentation may be accessed through:

Namibia Training Authority
10 Rand Street
Khomasdal
Namibia
Telephone number: 061 207 8550
Facsimile number: 061 207 8551

5 Transitions arrangements

5.1 Non National Qualifications Framework transition

None.

5.2 National Qualifications Framework transition

Version 2

This qualification was updated and issued as Version 2 in 2018.

Version 1 of this qualification will not be awarded as from 31 December 2020. People currently working towards Version 1 of this qualification are advised to transfer their existing credit awards to this version of the qualification at any time during 2019 and beyond.

People holding the earlier version of this qualification will continue to have their qualification recognised with the Air Conditioning and Refrigeration industry in terms of meeting relevant career and further learning entry and/or progression requirements.

National Vocational Certificate in Air conditioning and Refrigeration (Level 4)
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Level of qualification: 4

Total credits available: 96

Total credits required: 96

	Compulsory	Elective
Level 4 credits available	96	-
Minimum totals required	96	-

Registration date: 28 March 2018

Scheduled review date: 2023

Body responsible for the qualification: Namibia Training Authority through the Mining Quarrying, Construction, Electricity, Gas, Water Supply and Sanitation Industry Skills Committee.

Other bodies whose unit standards are included in the qualification: None

1. Purpose

This qualification recognises people who have the competencies required for performing air conditioning and refrigeration tasks. It is awarded to people who have demonstrated the skills and knowledge required to service evaporative coolers; perform star and delta connections in motors; analyse faults in printed circuit board in air conditioners; solve problems in central plant air conditioning systems; service industrial refrigeration systems; analyse the operation of heating, ventilating air conditioning and refrigeration systems; commission commercial and industrial refrigeration systems; analyse noise and vibration in air conditioning and refrigeration systems; build up cold and freezer room.

This qualification is designed to be accessible and flexible. The entry requirement is the National Vocational Certificate in Air conditioning and Refrigeration (Level 3) or equivalent.

The main focus is on the outcomes of this qualification, not the how, when and where learning occurred. Some people applying to do this qualification may currently be competent in one or more of the learning outcomes and should then be given the opportunity to apply for recognition of prior learning.

2. Regulations for the qualification

2.1 Summary of qualification requirements

This qualification will be awarded to people who are credited with **96** credits and have met the requirements of the compulsory sections, as well as all requirements for Workplace Integrated

Learning (WIL) as laid out in the National Policy On Work-Integrated Learning (WIL) for Technical and Vocational Education and Training (TVET).

2.2 Detailed qualification requirements

Compulsory

All the unit standards listed below are required.

FIELD: Manufacturing, Engineering and Technology
Subfield: Mechanical Engineering
Domain: Air conditioning and Refrigeration

Unit No.	Unit Standard Title	Level	Credits
595	Service evaporative coolers as part of air condition and refrigeration operations	4	4
596	Perform star and delta connections in motors as part of air conditioning and refrigeration operations	4	4
597	Analyse faults in printed circuit board in air conditioners	4	6
598	Repair faults in central plant Air conditioning systems	4	6
599	Service industrial refrigeration systems	4	4
600	Analyse the operation of heating, ventilating air conditioning and refrigeration systems	4	4
601	Commission commercial and industrial refrigeration systems	4	6
602	Analyse noise and vibration in air conditioning and refrigeration systems	4	4
603	Construct cold and freezer rooms	4	11

AND

FIELD: Business, Commerce and Social Studies
Subfield: Business Development
Domain: Entrepreneurship

Unit ID	Unit Standard Title	Level	Credits
735	Establish a business as part of entrepreneurship operations	4	12
736	Implement, control and monitor business operations	4	15

AND

FIELD: Manufacturing, Engineering and Technology
Subfield: Mechanical Engineering
Domain: Foundational Numeracy, Engineering Science and Drawing

Unit ID	Unit Standard Title	Level	Credits
892	Apply knowledge of intermediate mathematics in a different context	4	6
896	Apply advanced knowledge of engineering science in different contexts	4	6

AND

FIELD: Health Science and Social Studies
Subfield: Core Health
Domain: First Aid

Unit ID	Unit Standard Title	Level	Credits
845	Provide advanced First Aid	4	8

3 Credit recognition and transfer arrangements

Credits for any version of a unit standard of the same identification number will be recognised in the award of this qualification.

4 Special arrangements

4.1 Providers seeking registration and/or accreditation to deliver this qualification must meet the following special arrangements.

4.1.1 This qualification will be offered to trainees **either** including a 6 months' period of **industrial/job attachment**, **or** as an **apprenticeship scheme** of a duration determined and agreed upon by the employer and the training provider on a ratio of 70/30 (70% at workplace and 30% at Training institution) basis.

Industrial/job attachment is defined as a period in a workplace setting where a trainee obtains structured practical experience in a specific occupation in order to complement competencies acquired during training at a technical vocational training provider (TVTP).

Apprenticeship refers to the system of work integrated learning, where an apprentice is employed by a company on contractual basis, earning a monthly salary, learning and working side-by-side with an experienced mentor.

In this case the employer must be an NTA approved entity (company) to register apprentices and has to identify a suitable training provider to provide the apprentice with the opportunity to gain skills and knowledge from theoretical training.

Employers and training providers are encouraged to consult the **National Policy On Work-Integrated Learning (WIL) for Technical and Vocational Education and Training (TVET) Sector** for further details on WIL implementation.

4.1.2 Providers involved in the assessment of this qualification and the associated unit standards must comply with the national assessment framework for the TVET system up to and including level 5 of the National Qualifications Framework. Assessment will include performance and achievement assessment acquired through work integrated learning periods. Assessment arrangements apply to all occupations and industries which are encompassed in the technical vocational education and training sector.

4.1.3 Providers of this qualification and the associated unit standards must be registered and/or accredited.

4.1.4 Providers of this qualification and their associated unit standards must have access to all equipment and facilities detailed in the tools and equipment list of the relevant training program.

4.2 Competencies covered in this qualification may be assessed through Recognition of Prior Learning (RPL).

4.3 Further relevant information and documentation may be accessed through:

Namibia Training Authority
10 Rand Street
Khomasdal
Namibia
Telephone number: 061 207 8550
Facsimile number: 061 207 8551

5 Transitions arrangements

5.1 Non National Qualifications Framework transition

None.

5.2 National Qualifications Framework transition

Version 2

This qualification was updated and issued as Version 2 in 2018.

Version 1 of this qualification will not be awarded as from 31 December 2020. People currently working towards Version 1 of this qualification are advised to transfer their existing credit awards to this version of the qualification at any time during 2019 and beyond.

People holding the earlier version of this qualification will continue to have their qualification recognised with the Air Conditioning and Refrigeration industry in terms of meeting relevant career and further learning entry and/or progression requirements.