City & Guilds Level 3 Electrotechnical Experienced Worker Qualification (2346-03)

Version 1.13 (August 2026)

Qualification Handbook

Qualification at a glance

Subject area	05.2 Building and Construction
City & Guilds number	2346
Age group approved	19+
Entry requirements	Minimum of 5 years' industry experience practising as an electrician. Must hold a relevant Level 2 Technical qualification within Electrotechnical (prior to registration) or have completed an Experienced Worker Entrance Test. A Skills Scan must be completed as part of the initial assessment for learner entry on to this qualification.
Assessment	Portfolio of evidence
Grading	Pass/Fail
Approvals	Full approval required
Support materials	Qualification handbook, SmartScreen, Candidate Logbook, Skills Scan, Learning Assistant
Registration and certification	Consult the Walled Garden/Online Catalogue for last dates

Title and level	City & Guilds number	Regulatory reference number	GLH	TQT
City & Guilds Level 3 Electrotechnical Experienced Worker Qualification	2346-03	603/6294/7	151	230

Version and date	Change detail	Section
Version 1.0	Initial version – pre-launch	All
Version 1.1	Qualification title updated	Throughout
	Updates to 'Qualifications you already hold'	Assessment
Version 1.2	Requirements for Assessors, IQAs, EQAs and other delivery personnel updated	Centre requirements
	Added note to say reflective accounts must be endorsed by an expert witness	Assessment
Version 1.3	Link to information on access arrangements and special consideration added	Appendix 2
	Clarification given on regulations and legislation for learners outside of England	Introduction
	Clarification on qualification structure	Introduction
Version 1.4	Age restrictions updated	Centre requirements
Version 1.5	Number of direct observations clarified	Assessment
Version 1.6	Direct observation assessment requirements updated	Unit 102 – Supporting information
	Contents page numbering corrected	Contents page
Version 1.7	Entry requirements updated	Centre requirements
	Minor range and formatting updates Unit 108 now Unit 118	Units

Version 1.8	Removed text which stated that learners without documented evidence of previous technical qualifications could have their knowledge and understanding confirmed by the Assessor	1. Introduction
	Updated text in *Quality Assurance* section	2. Centre requirements
	Added section on *Access arrangements and reasonable adjustments*	2. Centre requirements
	Updated hyperlinks to Skills Scan document	3. Delivering the qualification
Version 1.9 January 2025	Handbook transferred to latest version of the template. The section on Quality Assurance has been updated and sections on Inclusion and diversity, and Sustainability have been added	All
Version 1.10 February 2026	Amend to learner pre-requisites	Introduction Centre requirements Assessment
Version 1.11 May 2026	Expanded observation requirements for on-site performance units	Assessment
Version 1.12 May 2026	Added updated Portfolio of Evidence guidance	Assessment
Version 1.13 August 2026	Added further information for expanded direct observation requirements.	Assessment

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1 Introduction

This document tells you what you need to do to deliver the qualification:

Area	Description
Who is the qualification for?	This qualification is designed solely for those experienced persons who are, or have been, working in the Electrotechnical industry, practising as an Electrician, for a minimum of 5 years and who can demonstrate their technical knowledge, performance and competence to the industry standards at Level 3 in one of the occupations of this qualification and in line with the current edition of the IET wiring regulations (BS 7671). Learners must hold a relevant Level 2 Technical qualification within Electrotechnical or have passed the City & Guilds Experienced Worker Entrance Test - Installation and Maintenance Electrician (2346-04) or the EAL Electrical Underpinning Knowledge and Understanding Tests (Entry for Experienced Worker Route).
What does the qualification cover?	There are two pathways within this qualification, 'Installation' and 'Maintenance'.
What opportunities for progression are there?	Learners who successfully complete the Experienced Worker Qualification as well as the occupational competence assessment (AM2E), delivered by NET, will be judged to have met the eligibility requirements sufficient to apply for an ECS Card from the JIB in the occupation that they have qualified.
Who did we develop the qualification with?	We are developing this product with our key Electrotechnical stakeholders: Electrical Contractors Association (ECA), Electrotechnical Certification Scheme (ECS), Joint Industry Board (JIB), National Association of Professional Inspectors and Testers (NAPIT), National Electrotechnical Training (NET), Electrotechnical Skills Partnership (TESP), Unite and Certsure.

Important information on delivering of this qualification

This qualification is designed solely for those have been working in the electrotechnical industry as a practicing electrician for a **minimum of 5 years** and who can demonstrate their technical knowledge, performance and competence to the industry standard at Level 3 and in line with the current edition of the IET wiring regulations (BS 7671). It forms part of enabling the experienced worker to apply for an ECS Installation Electrician Gold Card.

This qualification is **not** suitable for new entrants to the electrotechnical industry, apprentices, or other operatives who require any training, or those who have completed an electrotechnical technical certificate with less than five years' relevant industry experience.

To be eligible to apply for the ECS gold card with this route the learner must have achieved:

- This qualification: City & Guilds Level 3 Electrotechnical Experienced Worker Qualification,
- A current industry recognised Level 3 Award in the requirements for electrical installations (BS 7671),
- An industry recognised Level 3 Award in the Initial Verification and Certification of Electrical Installations (which may be achieved as part of a combined Award with periodic inspection and testing),
- The AM2E Occupational Test (from NET).

Learners must work toward units in accordance with relevant health and safety legislation. This is particularly important when working at heights, inspecting and testing, and diagnosing faults.

Where cited legislation and regulations are not applicable (for example, where the qualification is being delivered outside of England) then substitutions applicable to the learner's jurisdiction can be made.

Meeting the assessment requirements of performance outcomes will need initial discussions and assessment planning between the learner and assessor as an essential activity to identify opportunities to assess real working environment evidence, gaps that need to be filled, or opportunities to recognise the prior achievement of the learner.

City & Guilds will monitor and carry out external quality assurance of the assessments conducted at the centre.

Structure

To achieve the City & Guilds Level 3 Electrotechnical Experienced Worker Qualification, learners must achieve:

UAN	City & Guilds unit number	Unit title	Assessment Method	GLH
Mandatory (all)				
A/507/0650	102	Apply Health, Safety and Environmental Considerations	Portfolio	10
R/507/0654	106	Organise and Oversee the Electrical Work Environment	Portfolio	12
n/a	118	Termination and Connection of Conductors	Portfolio	12
K/507/0661	113	Inspect, Test and Commission Electrical Systems	Portfolio	16
T/507/0663	115	Apply Fault Diagnosis and Rectification	Portfolio	10
Specialist unit (1 from)				
H/507/0657	109	Apply Design and Installation Practices and Procedures	Portfolio	20
K/507/0658	110	Apply Practices and Procedures for Maintenance	Portfolio	20

To achieve the City & Guilds Level 3 Electrotechnical Experienced Worker Qualification **(Installation)** learners must achieve all the mandatory units, along with specialist **unit 109 Apply Design and Installation Practices and Procedures.**

To achieve the City & Guilds Level 3 Electrotechnical Experienced Worker Qualification **(Maintenance)** learners must achieve all the mandatory units, along with specialist **unit 110 Apply Practices and Procedures for Maintenance.**

Important:

To achieve the City & Guilds Level 3 Electrotechnical Experienced Worker Qualification (Installation or Maintenance) learners must also complete the following:

- Level 3 Award in the Requirements for Electrical Installations BS 7671: 2018 (35 GLH)
- Level 3 Award in Initial Verification of Electrical Installations (36 GLH)

These may be taken in advance of registering on the 2346-03 or may be taken in tandem with the 2346-03 but these must be completed before claiming certification for the 2346-03. Once achieved these must be claimed as proxy units using unit numbers **2346-801** and **802**. Please see Walled Garden for details.

Total Qualification Time

Total Qualification Time (TQT) is the number of notional hours which represents an estimate of the total amount of time that could reasonably be expected for a learner to achieve and demonstrate the achievement of the level of attainment necessary for the award of a qualification.

TQT is comprised of the following two elements:

1) The number of hours which an awarding organisation has assigned to a qualification for Guided Learning, and
2) An estimate of the number of hours a Learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment, which takes place as directed by - but, unlike Guided Learning, not under the immediate guidance or supervision of - a lecturer, supervisor, tutor or other, appropriate provider of education or training.

Title and level	GLH	TQT
City & Guilds Level 3 Electrotechnical Experienced Worker Qualification	151	230

2 Centre requirements

Approval

If your Centre is approved to offer any of the following qualifications:

- 5357-03 or -23 Level 3 Electrotechnical Qualification (installation) or (maintenance)
- 2356-99 Level 3 in Electrotechnical Services Experienced Worker
- 2357-13 Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment)

you will be automatically approved to offer the 2346-03 City & Guilds Level 3 Electrotechnical Experienced Worker Qualification.

To offer this qualification, new centres will need to gain both centre and qualification approval. Please refer to the document **Quality Assurance Standards: Centre Approval Process** for further information.

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualification before designing a course programme.

Resource requirements

Centre staffing

Staff delivering this qualification must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be occupationally competent or technically knowledgeable in the area for which they are delivering training and/or have experience of providing training. This knowledge must be to at least the same level as the training being delivered
- have recent relevant experience in the specific area they will be assessing • have credible experience of providing training.

Centre staff may undertake more than one role, e.g. tutor and assessor or internal quality assurer, but cannot internally quality assure their own assessments.

Assessors

Assessors **must** be working towards or have achieved a relevant recognised assessor qualification such as a Level 3 Certificate in Assessing Vocational Achievement and continue to practice to that standard. Assessors who hold earlier qualifications (D32 or D33 or TQFE/TQSE) should have CPD evidence to the most current standards.

They must be occupationally competent electricians. Evidence which supports this is by the assessor holding a relevant electrotechnical NVQ L3* and/or having registration with the JIB as 'Approved Electrician' status or Eng-Tech status via the IET.

*Assessors who qualified before NVQs were developed should provide evidence of how they are occupationally competent (such as through a CV together with any relevant references).

Assessors **must** be able to demonstrate evidence of being up to date with the electrical industry. This can be evidenced for example by either accessing trade publications, undertaking updates to wiring regulations or other course of learning, attending networking events relevant to this qualification and/or attending industry events. They must also satisfy any other Awarding Organisation requirements.

Expert Witnesses

Where "Expert Witnesses" are used in the assessment process they must be sector competent individuals who can attest to the learner's performance in the workplace. It is **not** necessary for expert witnesses to hold an assessor qualification, as expert witnesses do **not** formally assess the work of a learner. A qualified assessor must assess the performance evidence endorsed or provided by an expert witness. Evidence from expert witnesses must meet the tests of validity, reliability, authenticity and sufficiency.

Expert witnesses will need to demonstrate:
1. They have relevant current knowledge of industry working practices and techniques
2. That they have no conflict of interest in the outcome of their evidence.

Quality Assurance

Approved centres must have effective quality assurance systems to ensure optimum delivery and assessment of qualifications. Quality assurance includes initial centre approval, qualification approval and the centre's own internal procedures for monitoring quality. Centres are responsible for internal quality assurance and City & Guilds is responsible for external quality assurance. All external quality assurance processes reflect the minimum requirements for verified and moderated assessments, as detailed in the Centre Assessment Standards Scrutiny (CASS), section H2 of Ofqual's General Conditions. For more information on both CASS and City & Guilds Quality Assurance processes visit: the **What is CASS?** and **Quality Assurance Standards** documents on the City & Guilds website.

Standards and rigorous quality assurance are maintained by the use of:
- Internal quality assurance
- City & Guilds external quality assurance.

Internal Quality Assurers

Internal quality assurance is essential to ensuring that the assessment of evidence for units is of a consistent and appropriate quality. Those performing the internal quality assurance role must be occupationally knowledgeable and possess the skills necessary to make quality assurance decisions.

In order to carry out the quality assurance role, Internal Quality Assurers must
- have appropriate teaching and vocational knowledge and expertise

- have experience in quality management/internal quality assurance
- hold or be working towards an appropriate teaching/training/assessing qualification • be familiar with the occupation and technical content covered within the qualification.

Internal quality assurers **must** have a minimum of occupational experience evidenced by having a building services engineering related qualification or proven sector competence/experience plus access to relevant 'occupational expertise' to enable them to conduct their role as an **internal quality assurer**. This evidence and access to 'occupational expertise' is quality assured by the Awarding Organisation.

They must be working towards or have achieved a relevant recognised internal quality assurance qualification such as the Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practice and continue to practice to that standard. Assessors who hold earlier qualifications (D34 or V1) should have CPD evidence to the most current standards.

They **must** be able to demonstrate evidence of being up to date with building services engineering industry. This can be evidenced for example by either accessing trade publications, undertaking courses of learning, attending networking events relevant to this qualification and/or attending industry events.

External Quality Assurers (from the Awarding Organisation)

External quality assurance for the qualification will be provided by City & Guilds external quality assurance process. External quality assurers (EQAs) are appointed by City & Guilds to approve centres and to monitor the assessment/internal quality assurance carried out by centres. External quality assurance is carried out to ensure that assessment is valid and reliable, and that there is good assessment practice in centres.

To carry out their quality assurance role, EQAs must have appropriate occupational and verifying knowledge and expertise. City & Guilds EQAs attend training and development designed to keep them up-to-date, facilitate standardisation between verifiers and share good practice.

The role of the EQA is to:

- provide advice and support to centre staff
- ensure the quality and consistency of assessments within and between centres by the use of systematic sampling
- provide feedback to centres and to City & Guilds.

External quality assurers must be accountable to the Awarding Organisation. They must be working towards or have achieved the L4 Certificate in Leading the External Quality Assurance of Assessment Processes and Practice and continue to practice to that standard.
They must:

- be fully conversant with the assessment process,
- have no connections with the assessment centre, in order to maintain objectivity
- have sufficient and relevant technical/occupational understanding in the qualification(s)/unit(s) being verified
- be fully conversant with the standards and performance criteria in the units to be assessed

- be able to provide centres with advice and guidance on assessment and internal quality assurance procedures.

External Quality Assurers must be occupationally competent electricians. Evidence which supports this is by holding a relevant electrotechnical NVQ L3* and/or having registration with the JIB as 'Approved Electrician' status or Eng-Tech status via the IET.

* External Quality Assurers who qualified before NVQs were developed should provide evidence of how they are occupationally competent (such as through a CV together with any relevant references).

External Quality Assurers be able to demonstrate evidence of being up to date with the electrical industry. This can be evidenced for example by either accessing trade publications, undertaking updates to wiring regulations or other course of learning, attending networking events relevant to this qualification and/or attending industry events.

Continuing professional development (CPD)

Centres are expected to support their staff in ensuring that their knowledge remains current of the occupational area and of best practice in delivery, mentoring, training, assessment and quality assurance, and that it takes account of any national or legislative developments.

Learner entry requirements

This qualification is for learners who are experienced workers, with at least five years' experience working in the electrotechnical industry as a practising electrician. It is not suitable for new entrants into the electrotechnical industry. Learners must hold a relevant Level 2 Technical qualification within Electrotechnical or have passed the City & Guilds Experienced Worker Entrance Test - Installation and Maintenance Electrician (2346-04) or the EAL Electrical Underpinning Knowledge and Understanding Tests (Entry for Experienced Worker Route). Learners who cannot demonstrate sufficient industry experience must register for the 2357 Level 3 NVQ or 5357 Electrotechnical qualification.

Age restrictions

This qualification is approved for learners aged 19 or above, however it is expected due to the five-year industry experience requirements learners will be significantly older.

Access arrangements and reasonable adjustments

City & Guilds has considered the design of this qualification and its assessments in order to best support accessibility and inclusion for all learners. We understand however that individuals have diverse learning needs and may require reasonable adjustments to fully participate. Reasonable adjustments, such as additional time or alternative formats, may be provided to accommodate learners with disabilities and support fair access to assessment. Access arrangements are adjustments that allow candidates with disabilities, special educational needs, and temporary injuries to access the assessment and demonstrate their

skills and knowledge without changing the demands of the assessment. These arrangements must be made before assessment takes place.

The Equality Act 2010 requires City & Guilds to make reasonable adjustments where a disabled person would be at a substantial disadvantage in undertaking an assessment.

It is the responsibility of the centre to ensure at the start of a programme of learning that candidates will be able to access the requirements of the qualification.

Please refer to the JCQ access arrangements and reasonable adjustments and Access arrangements - when and how applications need to be made to City & Guilds for more information. Both are available on the City & Guilds website **Centre document library**.

3 Delivering the qualification

Skills Scan - Initial assessment/induction

This qualification is designed to take into account the existing qualifications and experience of the experienced worker.

However, irrespective of the knowledge evidence presented, the assessment centre must be able to show through auditable evidence that the learner has fully satisfied the requirements of each unit. The learner will also be expected to demonstrate acceptable knowledge of the current industry requirements with respect to the IET Wiring Regulations and Inspection & Testing.

Learners must also be able to provide sufficient valid and authentic evidence from the site of their previous work to demonstrate that they can fully meet the performance requirements within each unit of this qualification.

It is a requirement that **prior** to undertaking this qualification, learners must have their suitability assessed by completing the **Installation and Maintenance Electrician Skills Scan document**. It is therefore the responsibility of the centre to establish through robust initial assessment whether or not a learner is suitable for registration on this qualification. Documentation used to record this process may be subject to audit.

The initial assessment of the learner must be made before registration to the scheme and should identify:

- if the learner has any specific and permitted training needs (e.g. BS 7671)
- the level of support and guidance required when working towards the qualification.

Centres must ensure that the learner fully understands the requirements of this qualification, their responsibilities and the responsibilities of the centre. This information should be recorded on a learning contract.

Support materials

The following resources are available for this qualification:

Description	How to access
Workplace logbook	www.cityandguilds.com
SmartScreen	www.smartscreen.co.uk
Skills Scan	Skills Scan – Experienced Worker Assessment – TESP (electrical-ewa.org.uk)

Inclusion and diversity

City & Guilds is committed to improving inclusion and diversity within the way we work and how we deliver our purpose which is to help people and organisations develop the skills they need for growth.

More information and guidance to support centres in supporting inclusion and diversity through the delivery of City & Guilds qualifications can be found here:

Inclusion and diversity | City & Guilds (cityandguilds.com)

Sustainability

City & Guilds are committed to net zero. Our ambition is to reduce our carbon emissions by at least 50% before 2030 and develop environmentally responsible operations to achieve net zero by 2040 or sooner if we can. City & Guilds is committed to supporting qualifications that support our customers to consider sustainability and their environmental footprint.

More information and guidance to support centres in developing sustainable practices through the delivery of City & Guilds qualifications can be found here:

Our Pathway to Net Zero | City & Guilds (cityandguilds.com)

Centres should consider their own carbon footprint when delivering this qualification and consider reasonable and practical ways of delivering this qualification with sustainability in mind. This could include:

- reviewing purchasing and procurement processes (such as buying in bulk to reduce the amount of travel time and energy, considering and investing in the use of components that can be reused, instead of the use of disposable or single use consumables)
- reusing components wherever possible
- waste procedures (ensuring that waste is minimised, recycling of components is in place wherever possible)
- minimising water use and considering options for reuse/salvage as part of plumbing activities wherever possible.

4 Assessment

Summary of assessment methods

In order to successfully complete this qualification, the learner must satisfy the component parts of the scheme, namely:

1) The assessment of job knowledge as specified within each unit of the qualification.

2) Evidence from the workplace that demonstrates competence against the performance criteria within each unit of the qualification.

Evidence against the performance criteria of each unit must be provided on **two** separate occasions with any evidence requirements (range statements) covered across the two occasions.

Assessment of performance should be carried out holistically using a range of approved assessment methods (e.g. reflective account*, witness testimony, professional discussion**, authenticated and verified photographs).

Additionally, the centre assessor must observe the learner on at least **two** separate occasions as part of the evidence gathering process.

*Reflective accounts must be endorsed by an expert witness (for further information of who can act as a witness please see page 10) **All professional discussions must be recorded.

For learners registered from 1st May 2026, there is an expanded direct observation requirement for the following units:

- Unit 109: Apply Design and Installation Practices and Procedures
- Unit 118: Termination and Connection of Conductors (Learning Outcome 2)
- Unit 113: Inspect, Test and Commission Electrical Systems.

Direct observations must take place in the learner's workplace, either face-to-face or by live-streamed remote assessment. Where practicable, evidence should be gathered holistically alongside the two observations required for unit 102 (Apply Health, Safety and Environmental Considerations); where this is not possible, additional observations will be required.

Each observation should provide meaningful evidence of competence. It does not need to cover every assessment criterion, but assessors must use professional judgement to confirm sufficient depth, range and coverage of the relevant learning outcomes and performance requirements, based on the learner's naturally occurring workplace activities.

Key requirements:

- Observations must be fully documented and available for quality assurance.

- Observed activities should be substantive, valuable and naturally occurring workplace tasks.
- Assessment should avoid narrow, isolated or repetitive tasks as the sole basis for evidence.
- Evidence gathered over time should show sufficient depth, range and breadth across the relevant unit requirements.

Assessors should aim to directly observe a range of assessment criteria across learners over time through ongoing assessment activities, gathering sufficient evidence to be confident that each learner has demonstrated competence. This ensures that collectively, their assessment activity provides appropriate coverage of the unit requirements. This requirement is intended to ensure the validity, reliability, and robustness of the assessment evidence.

A portfolio of evidence will typically include several pieces of evidence – it must contain sufficient evidence to demonstrate the knowledge and skills required for each appropriate unit. Evidence sources may include:
• annotated photographs
• video clips (maximum duration in total = 10 minutes)
• workplace documentation/records, for example job cards/job sheets, equipment check/maintenance/service records, parts order records.

This is not a definitive list; other evidence sources are permitted. The evidence provided must be valid and attributable to the candidate; the portfolio of evidence must contain a statement from the centre confirming this.

Photographs, when used, should show the work in construction and on completion, ideally with videos of the work being carried out or preferably live streaming.
Evidence must not include:
• any methods of self-assessment

Employer contributions should focus on direct observation of evidence (for example witness statements) of competence rather than opinions.

Guidance: It is best practice for Learners to take charge of building their own evidence portfolios (digitally or paper-based).

Important note:

This handbook contains all the assessment information needed to pass all the units within this qualification. However, for the learner to achieve the Experienced Worker Assessment learners also need to successfully complete the AM2E synoptic competence-based assessment.

The AM2E is a practical assessment where you have to carry out a series of tasks covering safe isolation, installation, fault finding and inspection and testing, which are then marked by an assessor. It is identical to the AM2S assessment which is taken by apprentices at the end of their training programme. You can find out full details about each section of the AM2E and the tasks you'll need to carry out on the NET website.

The AM2E is a robust, timed practical and theory assessment requiring candidates to perform a set of common tasks and procedures that a full scope electrical operative might face when working in commercial or industrial premises as well as dwellings. It assesses candidates on installation, inspection and testing and fault-finding; their work must comply with BS 7671, be in line with relevant Health and Safety legislation and conform to current industry practices and procedures.

Qualifications You Already Hold

A pre-requisite to registering on the EWA is having knowledge and understanding that is comparable to the Level 3 Electrotechnical Qualification. Where learners do not hold Level 2 or Level 3 technical certificates, their knowledge and understanding will be probed through the Skills Scan.

The following is a list of accepted qualifications from the EAS Qualifications Guide. You may hold a relevant L2 VRQ qualification. These will partially count towards the knowledge and understanding requirements so please note these on the list.

Qualification Title	Awarding Organisation	Qualification Numbers
Level 3 NVQ Diploma in Installing Electrotechnical systems and equipment (building structures and the environment)	City & Guilds 2357-13/91	501/2232/0
NVQ Level 3 Electrotechnical Services	City & Guilds 2356	100/2854/7
	EAL	500/3526/5
	EAL	100/4720/7
(Installation, Buildings and Structures) Level 3 NVQ/Diploma in Electrotechnical Services	SQA	100/3104/2
Level 3 IVQ Advanced Diploma in Electrical installation	City & Guilds 6161-27	500/6029/6
Level 3 SVQ Electrical Installation	SQA	
Advanced Diploma in Engineering and Technology	EAL	
Level 3 Award/Certificate in Building Services Engineering (Electrical)	ABC Awards	500/3925/8
	ABC Awards	500/5528/8
Electrical Installation Course Work (A and B Certificates)	City & Guilds	n/a
Level 3 Certificate in Electrical Installation Work C Course	City & Guilds	100/1291/6

Certificate in Electrical and Electronic Craft Studies	City & Guilds 236 Part 1 and Part 2	See note*
	City & Guilds 2360 Part 1 and Part 2	See note*
	City & Guilds 2367 and 2368	n/a
	City & Guilds 51A and 51B (A and B Certs)	n/a
Level 3 Certificate in Electrical Installation Theory and Practice Part 2	City & Guilds 2360-08	100/1290/4
NVQ Level 3 Electrical Installation Engineering	City & Guilds 2350	n/a
	City & Guilds 2351-01	100/1292/8
Level 3 Certificate in Knowledge of Electrical Installation Engineering	City & Guilds 2351-03	n/a
NVQ Level 3 in Installation and Commissioning Electrotechnical Systems	City & Guilds 2355	Q1052155
Level 3 Certificate in Electrotechnical Technology Installation (Building and Structures)	City & Guilds 2330-07	100/3602/7
Full Technological Certificate in Telecommunications	City & Guilds 270/271	n/a
SCOTVEC Modules in Electrical Installation (1985-1995)	SCOTVEC	
Scottish Joint Industry Board Electrical Contracting Industry Craftsman Certificate	SJIB	
Level 3 Diploma in Electrical Installation (Buildings and Structures)	City & Guilds 2365-03	600/5499/2
Level 2 Diploma in Electrical Installation (Buildings and Structures) will support some underpinning knowledge	City & Guilds 2365-02	600/5498/0
Level 3 Diploma in Electrical Installation	EAL	600/9331/6
Level 3 Advanced Diploma in Electrical Installation	EAL	601/4563/8
City & Guilds Installation and Maintenance Electrician – Experienced Worker Entrance Test	City & Guilds 2346-04	
Electrical Underpinning Knowledge and Understanding Tests (Entry for Experienced Worker Route)	EAL	

If you hold another equivalent qualification not listed above which you think is relevant to the Knowledge required, please contact TESP for further guidance (info@the-esp.org.uk).

Learners with qualifications gained outside the UK

Learners with qualifications gained outside the UK will need to meet the same requirements as any learner following this assessment route.

This qualification has been designed to take into account the existing qualifications and experience of the learner and therefore they must be able to demonstrate to an assessor their understanding of the industry theory and UK wiring regulations as set out in the performance and knowledge requirements of the units of this qualification.

All non-UK qualifications must have been fully evaluated by UK Naric. However, under no circumstances can any UK Naric evaluation be used against the practical performance requirements of any unit.

Time constraints

In line with TESP requirements for the completion of the EWA route qualifications, qualification registration is valid for 18 months only.

5 Units

Structure of units

These units each have the following:

- City & Guilds reference number
- Title
- UAN
- Level
- Guided learning hours (GLH)
- Unit aim
- Endorsement by sector/regulatory body
- Assessment type
- Learning outcomes, which are comprised of a number of assessment criteria
- Range.

Unit 102 Apply Health, Safety and Environmental Considerations

UAN:	A/507/0650
Level:	Level 3
GLH:	10
Endorsement by a sector or regulatory body:	This unit is endorsed by the electrotechnical apprenticeship employer group
Aim:	This unit is designed to enable learners to develop the skills and apply the relevant knowledge associated with health and safety legislation, practices and procedures when installing and maintaining electrical systems and equipment.
Assessment type:	Portfolio of evidence

Learning outcome

The learner will:

LO1 be able to apply relevant health and safety legislation in the workplace

Assessment criteria

The learner can:

AC1.1 identify which workplace health and safety procedures are relevant to the working environment and comply with their duties and obligations as defined by current legislation and organisational procedures

AC1.2 produce a risk assessment and method statement in accordance with organisational procedures for a given work activity AC1.3 work within the requirements of:

a. risk assessments
b. method statements
c. safe systems of work.

Learning outcome

The learner will:

LO2 be able to assess the work environment for hazards and identify remedial actions in accordance with Health and Safety legislation

Assessment criteria

The learner can:

AC2.1 identify unsafe situations and conditions and take remedial actions

AC2.2 assess the work environment and revise work practices accordingly to take into account hazards which could cause harm, including the handling of potentially hazardous:

a. materials
b. tools
c. equipment.

AC2.3 identify any hazards which may present a high risk and report their presence to relevant persons who have overall responsibility for health and safety in the workplace

AC2.4 apply measures to control health and safety hazards

AC2.5 select and use correct personal protective equipment

Learning outcome

The learner will:

LO3 be able to apply methods and procedures to ensure work on site is in accordance with health and safety legislation

Assessment criteria

The learner can:

AC3.1 demonstrate a level of personal conduct and behaviour within the workplace, to ensure that the health and safety of themselves and others is not endangered

AC3.2 apply procedures to ensure the safe use, maintenance and storage of tools, plant and equipment as stipulated in:

a. workplace policies (company and site)
b. supplier information
c. manufacturer's instructions.

AC3.3 comply with information, warning, mandatory instruction and prohibition notices

AC3.4 apply procedures to ensure the safety of the work location through the correct use of guards barriers and notices

AC3.5 use **access equipment** correctly

Range

Access equipment:

Assess two from the following:

- ladder
- tower scaffold or MEWP • stepladder
- platform.

Learning outcome

LO4 Be able to work in accordance with environmental legislation for electrical services

Assessment criteria

AC1.1 demonstrate appropriate procedures for the safe handling, storage and disposal of hazardous materials and products, in accordance with one of the following:

a. Environmental Protection Act
b. the Hazardous Waste Regulations
c. Pollution Prevention and Control Act
d. Control of Pollution Act
e. the Control of Noise at Work Regulations
f. Environment Act.

Unit 102 Apply Health, Safety and Environmental Considerations

Supporting Information

Evidence requirements Learning Outcomes 1 to 4:
Auditable evidence sourced from a real working environment must be provided to illustrate that the learner has demonstrated on **two** separate occasions they can apply Health and Safety legislation and working practices when Installing and Maintaining Electrical Systems and Equipment in accordance with approved industry practices, statutory and non-statutory regulations and the assessment criteria for each of the learning outcomes.

In this unit the learner is subject to direct observation on at least **two** separate occasions in the workplace by a qualified assessor. Reflective accounts will **not** be accepted as evidence for this unit. Any outstanding performance criteria that are not met through the direct observation must be supplemented by alternate evidence provided by the employer.

As a minimum, **one** of the two direct observations must be physical, Face to Face, site visit with an assessor, the second direct observation may be live streamed online assessment with an assessor.
On both occasions this should be fully documented and made available for quality assurance.

Unit 106 Organise and Oversee the Electrical Work Environment

UAN:	R/507/0654
Level:	Level 3
GLH:	12
Endorsement by a sector or regulatory body:	This unit is endorsed by the electrotechnical apprenticeship employer group
Aim:	This unit is designed to enable learners to develop the skills required, and apply the associated knowledge, so that they can demonstrate that they can implement practices and procedures for overseeing and organising the work environment for the installation of electrical systems and equipment.
Assessment type:	Portfolio of evidence

Learning outcome
The learner will:

LO1 be able to provide relevant people with technical and functional information for work on electrical systems and equipment

Assessment criteria
The learner can:

AC1.1 liaise with relevant people to evaluate the information they require to ensure that systems, equipment or components can be operated safely and effectively

AC1.2 identify appropriate technical and functional information that is required for the work activity

AC1.3 provide information in a timely, courteous, suitable and professional manner in accordance with organisational procedures and engineering standards

Learning outcome
The learner will:

LO2 be able to oversee health and safety during work on electrical systems and equipment

Assessment criteria

The learner can:

AC2.1 produce, or revise generic, risk assessments and method statements, to cover their own work and others working the area (colleagues and other operatives) in accordance with their level of responsibility

AC2.2 implement suitable procedures to confirm that work is being completed in accordance with health and safety legislation and industry standards

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Learning outcome

The learner will:

LO3 be able to co-ordinate liaison with other relevant persons during work activities

Assessment criteria

The learner can:

AC3.1 select effective procedures to ensure co-ordination with other workers/contractors, including steps to resolve issues which are outside the scope of their job role

AC3.2 evaluate and apply communication techniques that are clear, accurate and appropriate to the situation

AC3.3 demonstrate working effectively with colleagues to enhance performance (Such as: undertaking work to the one's best ability, being a good employee/worker. Co-operating with the employer and/or customer during work activities.)

Learning outcome

The learner will:

LO4 be able to organise and oversee work activities and operations

Assessment criteria

The learner can:

AC4.1 organise operatives by allocating duties and responsibilities to make the best use of their competence and skill

AC4.2 monitor the work of operatives to ensure it is in accordance with:

a. industry working practices
b. programme of work
c. health and safety requirements
d. cost effectiveness
e. environmental considerations.

AC4.3 evaluate and apply appropriate procedures to correct issues that arise during work activities

Learning outcome

The learner will:

LO5 be able to organise a programme for working on electrical systems and equipment

Assessment criteria

The learner can:

AC5.1 produce a simple programme of work from the work specification, including requirements for the following:

a. estimate of the amount of time required for completion of the work
b. liaison with other trades where necessary.

AC5.2 communicate with others clearly and concisely

AC5.3 assess situations when it is necessary to liaise with other relevant parties to resolve issues.

Learning outcome

The learner will:

LO6 be able to organise the resource requirements for work on electrical systems and equipment

Assessment criteria

The learner can:

AC6.1 organise provision of **resources**

AC6.2 confirm that materials available are:

a. the right type
b. fit for purpose
c. in the correct quantity
d. suitable for work to be completed cost efficiently.

AC6.3 ensure that resources are undamaged at the point of delivery

AC6.4 demonstrate effective measures which ensure the safe and effective storage of materials, tools and equipment in the work location

Range

Resources:

- Materials
- fixings
- Plant
- Labour
- Tools.

Unit 106 Organise and Oversee the Electrical Work Environment

Supporting Information

Evidence requirements Learning Outcomes 1 to 6:
Auditable evidence sourced from a real working environment must be provided to illustrate that, the learner has demonstrated on **two** separate occasions they can implement practices and procedures for overseeing and organising the work environment for the installation of electrical systems and equipment in accordance with the assessment criteria for each of the learning outcomes.

In the delivery of this unit an emphasis shall be made to the learner on the necessity to keep up to date with the latest standards, technologies and practices which relate to and affect the topics covered in this unit. This is then in keeping with good engineering practice.

Unit 118 Termination and Connection of Conductors

UAN:	n/a
Level:	Level 3
GLH:	12
Endorsement by a sector or regulatory body:	This unit is endorsed by the electrotechnical apprenticeship employer group
Aim:	This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate the competence required to terminate and connect conductors and cables in electrical systems in accordance with approved industry practices, statutory and non-statutory regulations: • The Electricity at Work Regulations (1989) • The current edition of BS 7671 • Health & Safety Act (1974) • Building Regulations (2000)
Assessment type:	Portfolio of evidence

Learning outcome

The learner will:

LO1 prepare to terminate and connect cables and conductors

Assessment criteria

The learner can:

AC1.1 evaluate and apply appropriate procedures to include:

a. Selecting appropriate tools/equipment to enable termination and connection
b. Adopting appropriate PPE
c. Following a safe system of work (eg. risk assessment, method statement, permit to work procedure).

AC1.2 assess and confirm it is safe to complete termination and connection in terms of:

a. Checking for presence of supply/carrying out safe isolation
b. Mechanical soundness of the electrical equipment to be connected to
c. Checking for unsafe situations.

Learning outcome

The learner will:

LO2 terminate and connect conductors and cables

Assessment criteria

The learner can:

AC2.1 terminate and connect cables and conductors in accordance with manufacturers instructions, BS 7671, and any relevant drawing or specification

Assess five from the following:

a. Single core (singles)
b. Multicore insulated
c. PVC - PVC flat profile cable
d. MICC
e. Fire performance
f. SWA cable
g. GSWB galvanised steel wire braid
h. Data / PoE
i. DC Cabling

AC2.2 connect to electrical equipment in accordance with manufacturers instructions, BS 7671, and any relevant drawing or specification

Assess five from the following:

a. Isolators /switches
b. Socket outlets
c. Distribution-boards / consumer control units
d. Luminaires
e. Electric motors / motor control equipment
f. Overcurrent protective devices
g. Earthing terminals
h. Control panels
i. Data socket outlets or data connections
j. Fire detection/alarm components
k. Other appropriate equipment (such as: heating system components, fire detection components, smart camera, smart lighting or heating control) (N.B an individual smart lamp is not sufficient)

AC2.3 terminate and connect conductors, using appropriate methods

Assess two from the following:

a. Screwing
b. Crimping
c. Soldering
d. Non-screw compression
e. Insulation displacement.

AC2.4 ensure that terminations and connections are electrically and mechanically sound (Eg. by simple inspecting and testing terminations)

AC2.5 ensure cables have appropriate identification in accordance with BS 7671

Unit 109 Apply Design and Installation Practices and Procedures

UAN:	H/507/0657
Level:	Level 3
GLH:	20
Endorsement by a sector or regulatory body:	This unit is endorsed by the electrotechnical apprenticeship employer group
Aim:	This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate the competence required to plan, prepare and install wiring systems and associated equipment in buildings, structures and the environment in accordance with approved industry practices, statutory and non-statutory regulations: • The Electricity at Work Regulations (1989) • The current edition of BS 7671 • Health & Safety Act (1974) • Building Regulations (2000)
Assessment type:	Portfolio of evidence

Learning outcome

The learner will:

LO1 prepare to install wiring systems, enclosures and associated equipment

Assessment criteria

The learner can:

AC1.1 assess and apply appropriate procedures to include:

a. Adopting appropriate PPE
b. Following a safe system of work (eg. working in accordance with a risk assessment and method statement)
c. Selecting appropriate tools/equipment for the installation work.

AC1.2 prepare to install wiring systems, enclosures and associated equipment, to include:

a. Confirm secure site storage facilities for tools, equipment, materials and components
b. Select materials (equipment and components) in accordance with the installation specification
c. Report any pre-work damage/defects to existing equipment or building features, to the relevant person (Such as: customer/client, site/line manager
d. Confirm site readiness for installation work to begin

e. Confirm authorisation for the installation work to start.

AC1.3 use documentation to confirm that materials and equipment is of the correct quantity and is free from damage

AC1.4 ensure the planned locations for the wiring system and associated equipment are compatible with other building services (eg. gas, water or other electrical services)

AC1.5 check the planned locations for the wiring system in terms of:

a. Cosmetic appearance
b. External influences.

Learning outcome

The learner will:

LO2 interpret appropriate information for the installation of wiring systems, enclosures and associated equipment

Assessment criteria

The learner can:

AC2.1 use sources of information to enable the installation of wiring systems, enclosures and associated equipment to be carried out including:

a. Specifications
b. Work schedules/programmes
c. Manufacturer instructions
d. Layout Drawings
e. Other appropriate source of information (eg. BS 7671, other plans or diagrams, 'approved documents', building regulations)

Learning outcome

The learner will:

LO3 install wiring systems, and equipment in accordance with current relevant statutory and non-statutory regulations

Assessment criteria

The learner can:

AC3.1 use appropriate measuring and marking out techniques which are appropriate to the wiring system, wiring enclosure and/or associated equipment that is being installed

AC3.2 install cables in accordance with BS 7671, the installation specification and programme of work: Assess five from:

a. Single core (singles)
b. Multicore insulated

c. PVC - PVC flat profile cable
d. MICC
e. Fire performance
f. SWA cable
g. GSWB galvanised steel wire braid
h. Data / PoE
i. DC cabling.

AC3.3 install the following in accordance with the wiring regulations, the installation specification and agreed planned programme of work: PVC: Containment: Minimum of one:

a. PVC Trunking
b. PVC Conduit

And Metallic: Containment: Minimum of one:

a. Metallic Conduit
b. Metallic Trunking)

And Minimum of one from the following:

a. Cable Tray
b. Cable Basket
c. Ladder systems
d. Ducting
e. Modular wiring systems
f. Busbar systems or Powertrack.

AC3.4 install the following types of electrical equipment and accessories, in accordance with, BS 7671, the installation specification, manufacturers' instructions and the programme of work: Assess five from the following:

a. Isolators /switches
b. Socket-outlets
c. Distribution-boards / consumer control units
d. Overcurrent protective devices
e. Luminaires
f. Data socket outlets / WiFi Router
g. electric vehicle charging point
h. Other appropriate equipment (eg. heating system components, control equipment, fire detection components, smart camera, smart lighting or heating control) (N.B an individual smart lamp is not sufficient)

AC3.5 communicate with others professionally and appropriately to aid the effective installation of the wiring system/equipment

AC3.6 dispose of waste materials in accordance with site procedures and statutory requirements

Learning outcome

The learner will:

LO4 confirm the quality of the completed work

Assessment criteria

The learner can:

AC4.1 ensure the installed wiring system/s and enclosure/s meet specified requirements including that they:

a. Are the correct type and fit for purpose
b. Are installed in accordance with BS 7671
c. Meet the installation specification/other relevant plans/instructions
d. Are installed in accordance with any relevant manufacturer instructions.

Unit 110 Apply Practices and Procedures for Maintenance

UAN:	K/507/0658
Level:	Level 3
GLH:	20
Endorsement by a sector or regulatory body:	This unit is endorsed by the electrotechnical apprenticeship employer group
Aim:	This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate the competence required to maintain electrical systems and equipment in accordance with approved industry practices, statutory and non-statutory regulations: • The Electricity at Work Regulations (1989) • The current edition of BS 7671 Wiring Regulations • Health & Safety Act (1974) • Building Regulations (2000)
Assessment type	Portfolio of evidence

Learning outcome

The learner will:

LO1 prepare to carry out electrical maintenance

Assessment criteria

The learner can:

AC1.1 produce a maintenance work plan following best practice procedures to include:

a. analysing the requirements of task, (based on technical and engineering principles and know-how)
b. planned shut downs/isolations
c. health and safety precautions (eg. provision for release of stored and latent energy)
d. permits to work
e. organising tools, equipment and spare parts
f. liaison with/co-ordination of work with other persons will be necessary
g. time/cost effectiveness
h. A method statement (to include the appropriate best practice techniques/procedures/methods to undertake the maintenance activity).

AC1.2 use appropriate methods to communicate the plan/or key aspects of the planned work to relevant people such as: other workers, colleagues and clients

AC1.3 perform maintenance duties effectively as part of a team (such as: with the employer, other workers etc.)

AC1.4 assess and apply appropriate preparation procedures to include:

a. Adopting appropriate PPE
b. Obtaining authorisation to carry out the maintenance work (such as a permit to work)
c. Notifying relevant personnel of the maintenance work (other trades, users of equipment etc.)
d. Following risk assessments.

AC1.5 select appropriate tools and equipment for the maintenance work:

a. Hand tools/power tools:
    i. Access equipment
    ii. Calibrated test instruments together with leads to GS 38 (as appropriate). iii. Positioning/lifting/jacking equipment
    iv. Trolleys/hand operated jacks.
b. Following a safe system of work (eg. working in accordance with a risk assessment and method statement)
c. Secure the work areas (fences, barriers, screens and warning signs). AC1.6 ensure relevant shutdown procedures are followed and safe isolation has been carried out (eg. electrical systems/pressurised systems

(hydraulic/compressed air/water, gas))

AC1.7 assess and confirm secure storage facilities for tools, equipment, materials and components

AC1.8 confirm that all appropriate job information is available for use

Assess five from:

a. Maintenance schedules/specifications
b. Maintenance programmes
c. drawings/diagrams
d. Regulatory documents (eg. current version of BS 7671)
e. Method statements
f. servicing records
g. Manufacturer's instructions
h. Certificates of competency
i. Permits to work
j. Other relevant information.

AC1.9 verify that proposed materials/equipment/components are in accordance with:

a. Industry requirements (best practice)
b. The type of installation, its use, and the environment in which it is installed. AC1.10 ensure permission for the proposed work has been given (eg. from the client)

Learning outcome

The learner will:

LO2 carry out electrical maintenance

Assessment criteria

The learner can:

AC2.1 interpret the maintenance schedule/specification to accurately identify and locate electrical systems and equipment that is to be worked upon

AC2.2 use appropriate tools, equipment and materials for maintenance work

AC2.3 apply best practice work procedures which are appropriate for the type of maintenance activity being undertaken (planned preventative, breakdown, monitored)

AC2.4 apply best practice work procedures which are in accordance with:

a. Manufacturer's instructions
b. Industry approved practices
c. Maintenance schedules and specifications.

AC2.5 complete documented maintenance procedures on electrical circuits/systems

Assess five from the following:

a. Distribution systems
b. Low voltage circuits
c. Extra low voltage circuits
d. Lighting systems
e. Heating and ventilating systems
f. Air conditioning and refrigeration systems
g. Drive systems
h. Security systems
i. Earthing systems
j. Data communication/networking systems
k. Other circuit/system.

AC2.6 complete documented maintenance procedures on electrical equipment:

Assess five from the following:

a. Electrical plant, components and accessories
b. Motors
c. motor control equipment
d. Switchgear/distribution panels
e. Control systems/components
f. Contactors
g. Power transmission mechanisms
h. Luminaires/lamps
i. Other relevant equipment.

AC2.7 monitor the effectiveness of the maintenance activity against current industry best practice and technical principles

AC2.8 evaluate and apply the appropriate inspections, tests/checks to verify the maintenance work has been carried out in accordance with requirements AC2.9 complete maintenance work in a professional manner - assess one:

a. Within the timescale agreed by the person ordering the work
b. Advising the relevant person/s about any anticipated delays or about any further repairs that need to be carried out.

AC2.10 complete maintenance records accurately and submit them to the relevant person/s
AC2.11 evaluate the effectiveness of the maintenance activity against current industry best practice and technical principles
AC2.12 make formal recommendations for the improvement of maintenance activities to the supervisor.

Unit 113 Inspect, Test and Commission Electrical Systems

UAN:	K/507/0661
Level:	Level 3
GLH:	16
Endorsement by a sector or regulatory body:	This unit is endorsed by the electrotechnical apprenticeship employer group
Aim:	This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate the competence required to inspect, test, commission and certify electrical systems and equipment in buildings, structures and the environment in accordance with approved industry practices, statutory and non-statutory regulations: • The Electricity at Work Regulations (1989) • The current edition of BS 7671 • Health & Safety Act (1974) • Building Regulations (2000)
Assessment type	Portfolio of evidence

Learning outcome

The learner will:

LO1 Be able to confirm safety of the system and equipment prior to completion of inspection, testing and commissioning in accordance with statutory and non-statutory regulations

Assessment criteria

The learner can:

AC1.1 carry out safe isolation procedures in accordance with regulatory requirements for electrical installations

AC1.2 ensure the health and safety of themselves and others within the work location during inspection, testing and commissioning

AC1.3 check the safety of electrical systems prior to the commencement of inspection, testing and commissioning

Learning outcome

The learner will:

LO2 be able to inspect electrical systems and equipment

Assessment criteria

The learner can:

AC2.1 assess whether the safe system of work is appropriate to the work activity
AC2.2 carry out a visual inspection in accordance with the requirements of the installation specification, BS 7671 and IET Guidance Note 3
AC2.3 complete a schedule of inspections in accordance with the BS 7671 and IET Guidance Note 3 making technical decisions.

Learning outcome

The learner will:

LO3 be able to test and commission electrical systems and equipment

Assessment criteria

The learner can:

AC3.1 select the correct test instruments and their accessories for tests
AC3.2 carry out **tests** in accordance with the installation specification and BS 7671and manufacturer's instructions
AC3.3 analyse and verify test results reporting all findings to **relevant persons**, as appropriate
AC3.4 complete in accordance with BS 7671 and IET Guidance Note 3:

a. Electrical installation certificates:
   i. Schedules of inspections ii. Schedules of test results
b. Minor electrical installation works certificates

AC3.5 complete the handover of electrical systems and equipment to relevant persons including the provision of accurate and completed documentation regarding the completed inspection, testing, commissioning and customer satisfaction.
AC3.6 demonstrate to the customer/client that the operation of the circuits, equipment and components are in accordance with the installation specification and customer/client requirements

Range

Tests:

- Continuity

- Insulation resistance
- Polarity
- Earth fault loop impedance/earth electrode
- Prospective fault current
- RCD operation
- Functional testing

Relevant persons:

- Representatives of other services/colleagues
- Customers/clients

Unit 113 Inspect, Test and Commission Electrical Systems

Supporting Information

Evidence requirements Learning
Outcome 1:

- Authorised confirmation that the learner has had involvement and experience in safeisolation procedures as relevant on **two** separate occasions.
- Auditable evidence must be provided that the learner has demonstrated that they have competently undertaken a risk assessment on **two** separate occasions.

Learning Outcomes 2 to 3:
Auditable evidence sourced from a real working environment must be provided to illustrate that, the learner has demonstrated on **two** separate occasions they can apply the principles and follow the procedures for the inspecting, testing, commissioning and certifying of electrical systems and equipment in buildings, structures and the environment in accordance with approved industry practices, statutory and non-statutory regulations and the assessment criteria for each of the learning outcomes.

In the delivery of this unit an emphasis shall be made to the learner on the necessity to keep up to date with the latest standards, technologies and practices which relate to and affect the topics covered in this unit. This is then in keeping with good engineering practice.

Unit 115 Apply Fault Diagnosis and Rectification

UAN:	T/507/0663
Level:	Level 3
GLH:	10
Endorsement by a sector or regulatory body:	This unit is endorsed by the electrotechnical apprenticeship employer group
Aim:	This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate the competence required to diagnose and correct electrical faults in electrical systems and equipment in buildings, structures and the environment in accordance with approved industry practices, statutory and non-statutory regulations: • The Electricity at Work Regulations (1989) • The current edition of BS 7671 • Health & Safety Act (1974) • Building Regulations (2000)
Assessment type:	Portfolio of evidence

Learning outcome

The learner will:

LO1 prepare to carry out fault diagnosis

Assessment criteria

The learner can:

AC1.1 check it is safe to carry out fault diagnosis
AC1.2 inform the relevant personnel of the fault diagnosis work (such as personnel on the premises, users of electrical equipment)
AC1.3 carry out the safe isolation procedure
AC1.4 evaluate and apply appropriate methods to ensure the safety of themselves and others when diagnosing and correcting electrical faults

Learning outcome

The learner will:

LO2 carry out fault diagnosis

Assessment criteria

The learner can:

AC2.1 communicate effectively with relevant personnel (eg. customer, premises manager) to ascertain the nature of the fault.

AC2.2 select and interpret appropriate documents (eg. layout drawings, schematic diagrams etc) which relate to the electrical systems and equipment being worked upon

AC2.3 assess and communicate potential disruption that may be a consequence of fault diagnosis and correction work to relevant people, such as:

a. Other workers/colleagues
b. Customers/clients.

AC2.4 carry out relevant inspections of electrical equipment analysing findings

AC2.5 confirm test instruments are fit for purpose, functioning correctly and are correctly calibrated

AC2.6 perform suitable diagnostic tests, based on engineering decision, to identify electrical faults

Assess three from the following:

a. Loss of supply
b. Overload
c. Short-circuit
d. Earth fault
e. Incorrect phase rotation
f. High resistance joints/loose terminations
g. Component, accessory or equipment faults
h. Open circuit
i. Signal faults.

AC2.7 use appropriate methods for locating faults including:

a. Using a logical approach
b. Using safe working practices
c. Interpretation of test readings.

AC2.8 use appropriate instruments correctly to carry out fault diagnosis Assess three of the following:

a. Voltage indicator
b. Low resistance ohm meter
c. Insulation resistance tester
d. EFLI and PFC tester
e. RCD tester
f. Ammeter
g. Phase rotation tester
h. Other appropriate instrument.

Learning outcome

The learner will:

LO3 carry out fault rectification

Assessment criteria

The learner can:

AC3.1 assess the appropriate repairs, removals and replacements and their implications with relevant people including: One of the following:

a. Other workers/colleagues
b. Customers/clients.

AC3.2 perform fault correction procedures correctly and safely using appropriate tools, equipment and material

AC3.3 assess and verify that replacement components and associated equipment maintain:

a. Ease of access to enable future maintenance
b. compliance with relevant regulations
c. compliance with manufacturer's instructions/ organisational procedures.

AC3.4 apply appropriate procedures to ensure electrical equipment and components are left safe, in accordance with industry regulations, if the fault cannot be corrected immediately based on technical assessment.

AC3.5 establish and perform an appropriate inspection and testing procedure to confirm that circuits/equipment/components are functioning correctly after completion of fault correction work

AC3.6 record test results and other appropriate information regarding the fault correction work clearly and accurately and report it to relevant people. Assess one of the following:

a. Other workers/colleagues
b. Customers/clients

Appendix 1 Relationships to other qualifications

Links to other qualifications

This qualification has connections to the following within the electrical suite offered by City & Guilds:

- 2382
- 2391
- 5357

Appendix 2 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centre Document Library** on **www.cityandguilds.com** or click on the links below:

Centre Handbook: Quality Assurance Standards
This document is for all approved centres and provides guidance to support their delivery of our qualifications. It includes information on

- Centre quality assurance criteria and monitoring activities
- Administration and assessment systems
- Centre-facing support teams at City & Guilds / ILM
- Centre quality assurance roles and responsibilities.

The Centre Handbook should be used to ensure compliance with the terms and conditions of the Centre Contract.

Centre Assessment: Quality Assurance Standards

This document sets out the minimum common quality assurance requirements for our regulated and non-regulated qualifications that feature centre assessed components. Specific guidance will also be included in relevant qualification handbooks and/or assessment documentation.

It incorporates our expectations for centre internal quality assurance and the external quality assurance methods we use to ensure that assessment standards are met and upheld. It also details the range of sanctions that may be put in place when centres do not comply with our requirements, or actions that will be taken to align centre marking/assessment to required standards. Additionally, it provides detailed guidance on the secure and valid administration of centre-assessments.

Access arrangements - When and how applications need to be made to City & Guilds provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

The **Centre Document Library** also contains useful information on such things as:

- Conducting examinations
- Registering learners
- Appeals and malpractice

Useful contacts
Please visit the **Contact us** section of the City & Guilds website.

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