

City & Guilds Level 3 Certificate of Competence in Utility Arboriculture Basic Electrical Knowledge (0038-30)

Version 1.5 (February 2025)

Qualification Handbook

Qualification at a glance

Subject area	Utility Arboriculture
City & Guilds number	0038-30
Age group approved	16+
Entry requirements	Candidate must meet minimum age requirements Centres must ensure that any pre-requisites stated in the Who is this qualification for? section are met.
Assessment	To gain this qualification, candidates must successfully achieve the following assessments: One to one practical assessment with oral questioning by an NPTC City & Guilds approved assessor.
Grading	Met/Not Met
Approvals	Full Centre approval required
Support materials	Qualification Handbook (candidates). Assessment materials (approved assessment Centres only).
Registration and certification	Consult the Walled Garden/Online Catalogue for last Registration and Certification dates.

Title and level	City & Guilds qualification number	Regulatory reference number	GLH	TQT
City & Guilds Level 3 Certificate of Competence in Utility Arboriculture Basic Electrical Knowledge	0038-30	603/7885/2	16	17

Version and date	Change detail	Section
1.0 December 2021	Initial version	All
1.1 March 2022	Topic 1.1 amended to 'All PPE should conform to latest standards'	4
1.2 April 2023	Age range update	Qualification at a glance Centre requirements
1.3 July 2024	Update of Quality Assurance Statement	Centre Requirements
1.4 August 2024	Formatting throughout	All
1.5 February 2025	Update of 'Delivering the qualification' section	Delivering the qualification
	Formatting throughout	All

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1 Introduction

This document tells you what you need to do to deliver the **City & Guilds Level 3 Certificate of Competence in Utility Arboriculture Basic Electrical Knowledge (0038-30)**.

Area	Description
Who is the qualification for?	Individuals who operate around utility services as part of their work in arboriculture, forestry, or other industries. It will provide the individual with the basic electrical knowledge, understanding required for safe working in the identified Industries.
What does the qualification cover?	This qualification covers hazards, risks, controls, emergency planning, legislation, equipment and resources, tree types and condition, safety documentation, ground clearance and safety zones, tree electrical categories, overhead line components, industry good practice, roles and responsibilities. Please refer to the Qualification Handbook for more detail.
What opportunities for progression are there?	Recommended progression: This qualification will support progression into employment where working around utility services is part of the role. Safe operational skills are key to efficient use, good working practice and preventing accidents, leading to business benefits in terms of less machinery damage and down time. This is a specialist qualification demonstrating the individual is able to safely carry out duties associated with working around utility services to a recognised level of competency. Individuals who successfully complete this qualification could go on to increase their level of proficiency through consolidation practice within a working environment or develop other skills within the Utility Arboriculture suite of qualifications.

Area	Description
Who did we develop the qualification with?	Developed with City & Guilds NPTC Stake holders, associates and industry representatives.
Is it part of an apprenticeship framework or initiative?	No

Assessment Guidance for the Candidate

A list of registered Assessment Centres is available from City & Guilds NPTC.
(www.nptc.org.uk)

Assessment is a process by which it is confirmed that the candidate is competent in the unit(s) within the award to which the assessment relates. It is the process of collecting evidence about the candidates' capabilities and judging whether that evidence is sufficient to attribute competence.

The Candidate must be registered through the City & Guilds approved Assessment Centre for this qualification prior to the assessment.

2 Qualification Structure

To achieve the **City & Guilds Level 3 Certificate of Competence in Utility Arboriculture Basic Electrical Knowledge (0038-30)** learners must achieve:

City & Guilds unit number	Unit title	GLH
Mandatory unit:		
Learners must achieve or must have achieved this mandatory unit.		
301	Utility arboriculture basic electrical knowledge	16

Total Qualification Time (TQT)

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 demonstrate the achievement of the level of attainment necessary for the award of a qualification.

TQT consists of the following two elements:

- the number of hours that an awarding organisation has assigned to a qualification for guided learning
- 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 Certificate of Competence in Utility Arboriculture Basic Electrical Knowledge (0038-30)	16	17

3 Centre requirements

Approval

Full approval

To offer this qualification, new centres will need to gain both centre and qualification approval. Please refer to the document **Centre Approval process: Quality Standards** for further information. Please email qasupport@cityandguilds.com for further information on the approval process.

Centre staffing

Staff delivering these qualifications must be able to demonstrate that they meet the following requirements:

- be technically competent in the areas in which they are delivering
- be able to deliver across the breadth and depth of the content of the qualification being taught
- have recent relevant teaching and assessment experience in the specific area they will be teaching, or be working towards this
- demonstrate continuing CPD.

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

Physical resources

Centres must be able to demonstrate that they have access to the equipment and technical resources required to deliver this qualification and its assessments.

Assessment Guidance for the Assessor

Staff assessing these qualifications must be approved Certificate of Competence City & Guilds NPTC Assessors and must be independent and cannot have been involved with the training of the Candidate. This qualification can only be assessed by an Assessor who is suitably qualified and meets the requirements of the awarding body.

Certificate of Competence City & Guilds NPTC Assessors must meet the following requirements:

- show competence and provide evidence of industry expertise in the qualification/s they wish to assess
- hold the qualification as a candidate and have been technically evaluated as an Assessor
- be up to date with their verification and relevant first aid
- demonstrate continuing technically relevant CPD

Compliance with these requirements is a pre-requisite for Assessors remaining on the list of approved Assessors.

Verification is a process of monitoring assessment; it is an essential check to confirm that the assessment procedures are being carried out in the way City & Guilds has laid down. The overall aim of verification is to establish a system of quality assurance that is acceptable in terms of both credibility and cost effectiveness and approved Assessors will be subject to a regular visit by the Verifier at a time when assessments are being undertaken.

A selection of assessment reports completed by the Assessor will be evaluated by a City & Guilds approved Quality Consultant.

Safe Practice

Appropriate PPE must be worn at all times.

All equipment must be operated in such a way that the Candidate, Assessor, other persons, animals or other equipment are not endangered.

If these conditions are not observed this will result in the Candidate not meeting the required standard.

Validation of Equipment

Any item(s) equipment used for the assessment must comply with current legal requirements.

Additional information may be sought from the relevant manufacturer's instruction book, operators' manual, product label/database or any other Government/Government Agency publication.

Appeals and Equal opportunities

Centres must have their own auditable, appeals procedures. If a Candidate is not satisfied with the examination conditions or a Candidate feels the opportunity for examination is being denied, the Centre Manager should, in the first instance, address the problem. If, however the problem cannot be resolved, City & Guilds will arbitrate and a Principal Verifier may be approached to offer independent advice.

All appeals must be clearly documented by the Centre Manager and made available to the Principal Verifier or City & Guilds if advice is required.

Should occasions arise when Centres are not satisfied with any aspect of the verification process, they should contact the Quality Assurance Manager at City & Guilds NPTC, 5-6 Giltspur Street, London, EC1A 9DE, UK. Access to the qualification is open to all, irrespective of gender, race, creed or special needs. Subject to H&S restrictions the Centre Manager should ensure that no learner is subjected to unfair discrimination on any grounds in relation to access to assessment and to the fairness of the assessment. QCA requires City & Guilds to monitor centres to check whether equal opportunities policies are being adhered to.

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.

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.

External quality assurance for the qualification will be provided by City & Guilds EQA process. EQAs are appointed by City & Guilds to approve centres, and to monitor the assessment and 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.

The role of the EQA is to:

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

Learner entry requirements

Candidates must meet minimum age requirements.

Age restrictions

This qualification is approved for learners aged 16 or above.

Access arrangements and reasonable adjustments

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: **Access arrangements and reasonable adjustments.**

4 Delivering the qualification

Initial assessment and induction

An initial assessment of each learner should be made before the start of their programme to identify:

- if the learner has any specific training needs
- support and guidance they may need when working towards their qualification.
- any units they have already completed or credit they have accumulated which is relevant to the qualification
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme so the learner fully understands the requirements of the qualification, their responsibilities as a learner and the responsibilities of the centre. This information can be recorded on a learning contract.

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](https://www.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](https://www.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

Support materials

The following resources are available for this qualification:

Description	How to access
Candidate Handbook	www.nptc.org.uk
Assessment Pack (available only to assessors)	www.nptc.org.uk

5 Assessment

Assessment of the qualification

Assessment types			
Unit	Title	Assessment method	Where to obtain assessment materials
301	Utility arboriculture basic electrical knowledge	Oral Examination and Practical observation Centres may use the materials provided by City & Guilds.	www.nptc.org.uk

Assessment strategy

City & Guilds has written the practical observations with oral questioning to use with this qualification, live assessment materials can be downloaded by the assessor via the Assessment Pack from the NPTC website.

Time constraints

The following must be applied to the assessment of this qualification:

- Candidates must finish their assessment within 24 months of date of initial registration.
- Assessments should take no longer than 1.5 – 3 hours.
- Qualification registration is valid for two years.

6 Units

Structure of the units

These units each have the following:

- City & Guilds reference number
- title
- level
- guided learning hours (GLH)
- unit aim
- assessment type
- learning outcomes, which are comprised of a number of assessment criteria

Guidance for delivery of the units

This qualification comprises one **unit**. A unit describes what is expected of a competent person in particular aspects of their job.

The **unit** is divided into **learning outcomes** which describe in further detail the skills and knowledge that a candidate should possess.

Each **learning outcome** has a set of **assessment criteria** (performance and knowledge and understanding) which specify the desired criteria that must be satisfied before an individual can be said to have performed to the agreed standard.

Unit 301 Utility arboriculture basic electrical knowledge

Level:	3
GLH:	16
Assessment type:	Practical activities with oral assessment.
Aim:	The aim of this unit is to provide the learner with the basic electrical knowledge and understanding required for working in the utility arboriculture industry.

Learning outcomes

The learner will:

LO1 Understand basic electrical knowledge for utility arboriculture (**Criteria 1.1 – 1.10**)

Assessment criteria

The learner can:

AC1.1 Risk assessment, hazards, risks, controls, emergency planning and personal protective equipment (PPE)

AC1.2 Proximity zones, vicinity zones, live zones

AC1.3 Equipment, designated work area and factors to consider when carrying out ground-based operations

AC1.4 Tree types and condition

AC1.5 Using ladders and ropes

AC1.6 Emergencies in the workplace and rescuing a person

AC1.7 Permit to Work (PTW)/ Permit for Work (PFW)

AC1.8 Safety document and safety points

AC1.9 Ground clearances, trees electrical categories, dangers working in live zones

AC1.10 Overhead line components

Topic 1.1

The risk assessment process may contain the following five steps:

- identify the hazards
- decide who might be harmed and how
- evaluate the risks and decide on precautions

- record the findings and implement them
- review and update the assessment as necessary Identify hazards, risks, and controls relevant to the site and task.

The requirements of risk assessment for safe tree working in proximity to overhead electric lines:

- Generic risk assessments:
 - often repeated tasks and procedures
 - use of chainsaws and machinery eg woodchippers
 - procedures for working at height
 - procedures for live line or deadline working
 - other.
- Site specific risk assessment:
 - details hazards that are specific to the site, tasks, and work
 - safety of public, property and environment
 - details of trainees and supervisory levels
 - other.
- Electrical risk assessment:
 - electrical and tree related hazards clearly separated
 - justification for any live working proposed
 - category of tree works clearly defined
 - other.

Requirements for appropriate site supervision:

- name of operative(s) being supervised- age if relevant
- operations being supervised
- the supervisor(s)
- the level of supervision
- details documented eg within risk assessment
- arrangements agreed with network operator
- other.

Emergency planning relevant to a work site:

- site location
- grid reference
- what three words
- designated meeting place
- nearest access point
- street name/district
- type of access (public road/light vehicles, four-wheel drive)
- suitable helicopter landing area
- phone number of nearest doctors
- location of nearest accident and emergency hospital and phone number
- works manager contact details
- your own contact number/mobile number

- other.

Personal Protective Equipment (PPE) that is required where appropriate:

- high visibility clothing
- head protection
- eye protection
- hand protection
- foot protection
- hearing protection
- specialist equipment as specified by the network operator
- all PPE should conform to latest standards.

Topic 1.2

Proximity zone one:

- includes all the trees that are to be felled that are within two tree lengths of any live equipment.

Proximity zone two:

- includes all the trees that are to be dismantled, pruned, or have other arboricultural work carried out on them that are within:
 - 9m of any live equipment up to and including 66kV
 - 15m of any live equipment greater than 66kV
- only certified and competent operatives may work within proximity zones without appropriate supervision of the network operator.

Factors to consider when applying the proximity zone distance to a task:

When felling:

- network operator must be advised if work is to take place within the proximity zones
- distance is measured horizontally from a point directly beneath the nearest conductor to the base of the tree.

Where machinery is being used:

- stated distances will be measured to the nearest point to the line that any part of the machine or load can reach.

On sloping ground:

- increase the distance to allow for the effect of the slope so that task can still be carried out safely
- the distance must be reassessed on the re-commencement of work.

Definition of the vicinity zone:

- the zone around an exposed live circuit conductor which if maintained will prevent the danger of burn or electric shock.
- the live zone is included within the measurement of the vicinity zone.

The vicinity zone distances for the following range of voltages are:

- LV = 1m
- 11kV = 2m
- 33kV = 2.5m
- 66kV = 3m
- 132 kV = 3.5m
- 275 kV = 4m
- 400 kV = 5m

Factors to consider when applying the vicinity zone distance to a task:

- different measurements for different voltages
- the higher the voltage the greater the distance so always select the greater distance if there is doubt about the voltage
- if the vicinity zone distance is maintained, it will prevent injury
- other.

Definition of the live zone is:

- the zone around an exposed live circuit conductor where there is danger of burn or electric shock if any part of a person's body or non-insulated tools, they are using enters the zone.

The live zone distances for the range of voltages are:

- **LV = 0.3m
- **11kV = 0.8m
- **33kV = 0.8m
- 66kV = 1.0m
- 132kV = 1.4m
- 275kV = 2.4m
- 400kV = 3.1m

Topic 1.3

How to prevent injury to site personnel:

- ensure the work is carried out as defined by the risk assessment/method statement
- maintain safety distances
- always maintain awareness of vicinity zones, particularly when moving and handling timber and branches.
- locate underground cables and protect where necessary (steel plates, blocks of wood)
- locate other utilities (gas, plant water, sewer).

Factors to consider when working in the designated area and when leaving the site safe for others:

- ensure work does not interfere with other parties
- always maintaining the general safe condition of the site during and after work
- ensure logs/brush/chippings are stacked clear of the line
- access points/egress points kept clear

- remove site spoil where appropriate
- fences, ditches, paths, young trees, badger setts etc must be left undamaged
- tools and equipment all removed from site
- any hanging branches removed
- other.

Factors to consider when carrying out ground-based operations:

- do not point chipper discharge shoot towards conductors or equipment
- do not leave long branches on site where there is a possibility of them being handled later and breaching the vicinity zone
- ensure that a clear path is left under conductors to allow access for future patrols and maintenance
- do not stack timber adjacent to substation boundary fences that may allow climbing access
- ensure that hanging branches are not left as a hazard for others
- other.

Topic 1.4

Tree type and condition may change the electrical danger because:

- species – different sap levels eg willow high sap
- spring - rising sap levels
- full leaf/dead tree
- trees with leaves may come into contact with the overhead line
- other.

Topic 1.5

Factors to consider when using ladders adjacent to overhead lines:

- do not use metal ladders
- wet/dirt on wooden ladders increases conductivity
- fibre glass ladders may offer better protection but are not rated as insulated
- always carry in a horizontal position as close to the ground as possible
- never allow ladders to enter the vicinity zone
- ladders must be of a type/construction approved by the network operator and only used in accordance with permitted procedures
- other.

Safety considerations when using ropes adjacent to overhead lines:

- rope material – no ropes are rated as insulated
- wet ropes increase conductivity
- dirty ropes increase conductivity
- other.

Ways to reduce the danger when working with ropes near to overhead lines:

- ropes should only be placed in trees using insulated rods

- never use lines/throw bags
- never throw ropes from the ground
- all ropes in use must be secured so that they do not enter the vicinity zone
- all ropes used in climbing must be used on the side of the tree away from the line
- other.

Topic 1.6

Actions to be taken in the event of an emergency in the workplace:

- stop work
- assess the situation
- do not endanger yourself or other people
- inform first aiders
- follow emergency procedures
- contact emergency services
- contact the network operator/landowner
- informing supervisor
- other.

Emergency equipment required on site:

- telephone (with signal)
- first aid kit
- fire extinguisher
- spill kit
- rescue equipment
- other.

Emergency action required following contact by either machinery, trees, equipment or personnel with live overhead lines or underground cables:

- keep everyone at least five meters away from the scene of the incident
- do not become a victim by going too close or attempting a rescue
- be aware that the high voltage auto re-closer circuit breaker may have switched power back on and there will be a voltage gradient in the ground
- post a watchperson (if applicable)
- do not touch any broken conductors or equipment
- **Contact network operator/owner of overhead line so the line can be made dead
- **Only approach a casualty after the overhead line has been proven dead and earthed by the network operator
- ** Contact supervisor/line manager
- other.

The action to take when rescuing a person from a low voltage line is:

- consider pulling the persons or conductors clear using approved insulated rods – minimum of three 1.2m sections.

The action to take when rescuing a person from a high voltage line is:

- no attempt should be made to rescue the person if they are in contact with a high voltage line
- the circuit may also auto-re-close and there will be a voltage gradient in the ground
- only approach a casualty after the overhead line has been proven dead and earthed by the network operator.

Information that needs to be given to the network operator for the line to be made dead in case of emergency may include:

- your name
- explain what has happened
- ask for the line to be made dead
- give accurate location
- give an accurate grid reference
- give name and or number of overhead line
- give pole numbers/equipment id
- transformer/switch name/number
- describe damage you can see
- other.

Additional information that needs to be given to the emergency services in the event of an injury:

- nature of the incident
- details of casualties
- accurate grid reference/what three words
- access/meeting points
- other.

Reasons why emergency procedures need to be documented:

- emergency services can find casualty quickly
- network operator can de-energise line quickly
- emergency services can be contacted quickly
- minor casualties can be taken to A&E quickly
- all operatives to have access to emergency procedure
- other.

Suitable location where the emergency procedure should be kept:

- kept on site in an easily accessible place
- contained within the risk assessment
- somewhere everybody can access it
- other.

Topic 1.7

What conditions must be met for a Permit to Work (PTW)/ Permit for Work (PFW) to be issued are:

- issued for work on dead, earthed, high voltage equipment.

Key aspects of a Permit to Work maybe:

- issued by a network operator appointed person
- received by a network operator appointed person
- describes the work to be carried out
- describes the limit of the work and safety precautions to be applied
- it describes the equipment (spans etc) Which can be worked on safely
- shows limitations of the work area
- identifies that the overhead line is earthed
- it shows where the high voltage is isolated
- shows the location of the circuit main earth
- when all work is complete, document is cleared, and staff informed.

Topic 1.8

Points to consider when working under the control of a safety document:

- know the limits of the work area identified
- cease work immediately following instruction from the safety document holder
- leave site only after agreement with the holder of the safety document
- report back to safety document holder on returning to the site (the work arrangements may have changed, or the line may have been re-energized)
- everyone on the site working under the safety document needs to understand its contents.
- other.

Safety points when proving the line dead and applying earths:

- demonstrates that the overhead line is dead and safe for work
- must be applied before work starts
- must be seen from the point of work.
- any equipment without an earth must be treated as live
- circuit main earths must not be disturbed during work
- additional earths may be moved to cover the works.

Topic 1.9

Minimum ground clearances for overhead lines are:

- LV = 5.2m
- 11kV = 5.2m
- 33kV = 5.2m
- Roads = 5.8m
- Jumpers = 4.3m.

Tree categories:

- Category A:

- trees within the vicinity zone (including the live zone) at or above the level of conductors or associated equipment.
- Category B:
 - trees outside but capable of breaching the vicinity zone (including the live zone) adjacent to conductors or associated equipment.
- Category C:
 - trees within the vicinity zone (including the live zone) that are beneath the conductors or associated equipment.
- Category D:
 - trees outside the vicinity zone with no potential of breaching the vicinity zone.

Documents for reference may be:

- G55
- Distribution Safety Rules (DSR's)
- Operational Practice Manual (OPM's).

Dangers that must be considered when working on trees where any part is in the live zone:

- trees may be live at ground level
- trees may be weakened by charring or could catch fire
- overhead line conductors maybe damaged
- other.

Reasons for assessing clearance distances accurately:

- maintain and determine safety distances
- accurately categorize trees
- remove cut material to specified lengths
- other.

Distances can be assessed by:

- reference to known distances
- conductor spacing
- length of approved insulated rods
- electronic/surveying devices
- other.

Working on trees where any part is in the live zone can be carried out safely by:

- asking the network operator to make the line dead
- carrying out work under an approved network operator procedure and where a justification process allows the work to be carried out with the line live.

Topic 1.10

High voltage overhead line identified associated risks:

- high voltage conductors between poles
- supporting steelwork at the pole top
- stay wires above the 'in-stay' insulator.

Low voltage overhead line identified associated risk:

- low voltage conductors between poles
- supporting steelwork at the pole top
- stay wires above the 'in-stay' insulator
- street lighting.

Transmission tower lines identified associated risks:

- high-voltage conductors between towers
- damaged insulators at each tower
- jumpers connecting one part of the line to another.

Transformer identified associated risks:

- high voltage bushings on the transformer
- low voltage bushings on the transformer
- connecting jumpers from the high- voltage lines
- connecting jumpers are lower than the minimum overhead line ground clearance
- vicinity zone close to ground.

Cable terminal pole high voltage and low voltage identified associated risks:

- high voltage bushings on the pole box or cable termination
- jumpers connecting the cable to the overhead line
- supporting steelwork at the pole top
- damage to the cable at ground level.

High voltage and low voltage jumpers identified associated risks:

- any jumpers that come down the pole and connect to other equipment.
- all jumpers that connect one line to another.

Air brake switch (pole top mounted or under slung) identified associated risks:

- jumpers that connect the overhead line to the air brake switch
- supporting steelwork at the pole top
- operating handle that comes down the pole to ground level
- open/closed.

Aerial bundled conductor identified associated risks:

- damaged to the conductor insulation
- conductor terminations may be exposed
- must be always treated as live.

High voltage and low voltage fuses identified associated risks:

- fuse unit
- live equipment above or inside the fuse unit even when fuse removed.

Auto reclosers/pole mounted circuit breaker identified associated risks:

- high-voltage bushings
- jumpers connecting the auto recloser /pole mounted circuit breaker to the overhead line.

Primary and grid substation identified associated risks:

- damage to 'un-climbable' fence
- unauthorised access
- live equipment at low level
- ground mounted high voltage equipment.

Substation (transformer) identified associated risks:

- damage to any cable connected to the substation high voltage/low voltage
- damage to substation plant and equipment.

Underground cables identified associated risks:

- shallow cable depth
- any cable damage caused by digging, ground anchors, fencing etc
- cable damage if suitable methods of locating not used (network operator plans, cable locator eg CAT/JENNY).

HV high voltage earths and LV low voltage bonds identified associated risks:

- any equipment without an earth must be treated as live.

The hazards of high voltage earths:

Be aware if either:

- the earth is disconnected at ground level before removal from the overhead line
- the earth is disconnected at the ground level during the period of the work.

Supporting information

Evidence requirements

One to one practical assessment with oral questioning by an NPTC City & Guilds approved assessor.

Unit guidance

Candidates must successfully achieve all assessment activities in this unit.

Safe Practice

Assessors must hold a current 'First Aid at Work' Certificate.

It is strongly recommended that Candidates hold at least a recent, recognised 'Emergency First Aid' Training Certificate.

Candidates should be familiar with the machine that they are going to operate.

Appropriate Personal Protective Equipment (PPE) must be worn at all times.

A First Aid kit meeting current regulations, of the appropriate size for the number of persons on site, must be available.

The Assessor must ensure a Risk Assessment is carried out, and sufficient control measures implemented.

All equipment being used for this assessment must comply with relevant requirements of the Provision and Use of Work Equipment Regulations (PUWER) 1998 and Lifting Operations and Lifting Equipment Regulations (LOLER) 1998.

Information may be sought from the relevant operator manuals or any other appropriate training or safety publication.

Provision must be made to avoid the risk of environmental pollution and adequate control measures must be implemented (a suitable response kit to be available on the machine).

It is the responsibility of the Assessor and the Candidate to ensure that any additional requirements and provisions are met as relevant to this qualification.

Candidates must comply with current regulations when working at heights regulations 2005 amended.

A breach of Health and Safety that puts any person at risk during the assessment process will result in the assessment being terminated and the Candidate not meeting the required standard.

Candidates who undertake this assessment and have met the requirements are reminded of their legal obligation to receive/undertake appropriate additional training in the use of any equipment that differs from that used during the assessment, but which they are nevertheless qualified to use.

Suggested learning resources

May be sought from the relevant manufacturer's manuals or any other appropriate training or safety publication

Appendix 1 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 Handbook: 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, **Contact us**.

About City & Guilds

City & Guilds is the global skills partner, empowering people, organisations and economies to develop the skills they need for growth. With almost 150 years of trusted expertise, we support people into work, help them develop on the job and move into the next job.

We work with Governments, employers, training providers, colleges and industry stakeholders to design and deliver high-quality training, qualifications, assessments and credentials that lead to meaningful career progression. We understand the life changing link between skills development, social mobility and success. Our solutions span critical sectors including construction, engineering, transport, energy and electrical, serving over 1 million learners annually.

Through our comprehensive portfolio of brands and trusted global network, we set industry-wide standards for technical, behavioural and commercial skills to improve performance and productivity. We believe you can achieve your potential - and we're here to help make it happen.

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