

Qualification Specification

Lantra Awards Level 2 and 3 Awards in Utility Arboriculture

Contents

1	Why has this qualification been developed?	4
2	Who is the qualification for?	5
3	What does this qualification cover?.....	7
4	Qualification overview	9
5	Content of the qualifications.....	14
6	Level descriptors	82
7	How is this qualification delivered?	83
8	What does a provider need to do?	92
9	Administration and other important information.....	94
	Appendix 1 – Glossary of terms	97
	Appendix 2 – Census ethnic group classifications (2011)	99

Two Rope Training Requirement

All operators **must** be attached to the tree with a minimum of 2 independently acting fall protection systems. This includes the point at which change-over procedures are undertaken where 3 systems will be necessary.

The preferred system is to use 2 climbing lines plus a lanyard ideally hosted on 2 independent anchor points. However, varying tree structures and scenarios may require alternative solutions and/or combinations as detailed below.

NB Initial Practice Climbs: Where the risks have been assessed and managed appropriately, it may be permissible for the learner to practice their initial ascents and descents utilising 1 fall protection system to a height not exceeding 5 metres (As per the Tree Climbing Monitoring Form).

Acceptable Climbing Methods

Belayed Climb: It is acceptable for the learner to be belayed for the duration of their climb whilst they develop their skills, undertaking changeovers with their fall protection systems.

Independent Climb: A system of 2 climbing lines plus 1 lanyard or 1 climbing line plus 2 lanyards may be used as the learner develops their skills. They may continue using either of these combinations whilst independent of a belay system. A minimum of 2 installed, independently acting fall protection systems must be maintained for the duration of the climb.

Changeover and Ascent to Final Load Bearing Anchor: A minimum of 2 installed, independently acting fall protection systems must be maintained whilst undertaking changeover procedures, preferably hosted on independent anchors. This includes the point at which change overs are undertaken where 3 systems are therefore required. This may be achieved using a combination of climbing line/lanyard systems where 2 installed, independently acting systems are of sufficient length to descend to the ground in a single manoeuvre.

NB: In accordance with current industry guidance, climbers must ensure that they do not climb more than 250mm above their loadbearing anchor point(s) and should not exceed 500mm of slack in their system(s).

Branch Walking – A minimum of 2 installed fall protection systems must be maintained whilst undertaking branch walking, preferably hosted on independent anchors. 2 installed, independently acting fall protecting systems should be of sufficient length to descend to the ground in a single manoeuvre.

Supplementary Anchor – Non-load bearing or load bearing supplementary anchor points may be used to maintain work position for example, during branch walking or working in the

upper canopy.

Descent – During descent, 2 installed, independently acting fall protection systems, preferably hosted on independent anchors, **must** be utilised. 2 systems should be of sufficient length to descend to the ground in a single manoeuvre when the learner intends to make their final descent.

Rescue – Prior to undertaking aerial rescue, the climber and casualty **must** comply with the above methods. Following the establishment of harness to harness attachment between the climber and casualty, the rescue can be undertaken in accordance with current industry guidance.

Ascending, Work Positioning and Descending on a Pole – A minimum of 2 installed, independently acting fall protection systems **must** be maintained with at least one system configured to ensure sufficient fall protection is maintained. This includes the point at which change overs are undertaken where 3 systems are therefore required. 2 systems should be of sufficient length to descend to the ground in a single manoeuvre.

Two personal fall protection systems installed over independent load bearing anchors must always be the preferred method of working .

If point one is not achievable, then both fall protection systems **should** be installed over a substantial, single load bearing anchor point.

1 Why has this qualification been developed?

The Lantra Awards Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge and the Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities have been developed in direct response to a request from the Arboricultural Association’s Utility Arboriculture Group. This followed amendments to the National Occupational Standards (NOS). It was identified that it would be desirable to have regulated qualifications for this aspect of tree work to replace the non-regulated assessed training that was previously available.

The Lantra Awards Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge and the Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities are based on the NOS and take into account the requirements of the Electricity Networks Association’s (ENA) Engineering Recommendations G55.

Learners may undertake training from a variety of sources. However, to achieve these qualifications, they must be assessed against all of the learning outcomes and assessment criteria set out within this specification.

This qualification specification provides information for approved Lantra-provider employees and freelance assessors involved in the planning, delivery and assessment of the Lantra Awards Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge and the Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities.

2 Who is the qualification for?

These qualifications have been developed for individuals carrying out roles in controlling vegetation in proximity to powerlines, particularly in the utility arboricultural sector. They provide the opportunity to achieve a recognised national qualification which reflects the national standards for the role(s) they perform. These qualifications are suitable for those entering work as well as those who have established themselves in the arboricultural sector and are seeking to develop their careers to include working in proximity to powerlines.

The qualification is designed to enable learners to develop their knowledge, understanding and skills to support their role(s) and develop their career in the management of vegetation in proximity to powerlines. It also provides an opportunity for learners to obtain recognised certification, enabling them to work within the utility arboriculture sector of the industry. The qualifications will enhance the ability of personnel to work safely, effectively and efficiently in the workplace, reducing unnecessary risks to themselves and others.

This qualification is available for learners aged 16 and over.

2.1 Prerequisites

Entry for the Lantra Awards Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge and the Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities is available to any individual who is capable of achieving the required standard.

Provider staff should understand the demands of these qualifications and match learners based on their individual capabilities and future progression requirements.

These qualifications have been developed to promote equal opportunities by eliminating any avoidable barriers which have the potential to restrict access or progression.

There are no formal requirements for entry to the Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge.

Those seeking to take the Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities will be required to have the Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge qualification, or a comparable certification, depending on the pathway they wish to follow.

Qualifications		
Qualification title	Entry code	Purpose
Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge	603/2048/5	This is a prerequisite for the Level 3 Award in Utility Arboriculture – Arboricultural Activities, as it establishes a knowledge of electrical networks.
Level 2 Award in Chainsaw Maintenance and Cross-Cutting	600/5701/4	This qualification is a prerequisite for the Level 2 Award in Felling and Processing Trees up to 380mm.
Level 2 Award in Felling and Processing Trees up to 380mm	600/5703/8	This will be required by those seeking to take the pathway for carrying out rope-assisted felling of a tree up to 380mm in diameter, in proximity to overhead powerlines, using a

		chainsaw, as it establishes basic felling techniques and safety considerations.
Level 2 Award in Accessing a Tree Using a Rope and Harness	600/5710/5	This will be required by those seeking to take the pathway for aerial pruning of trees in proximity to overhead lines from a rope and harness, as it evidences basic training in rope access and work-positioning techniques.
Level 3 Award in Aerial Tree Rescue Operations	600/5711/7	This will be required by those seeking to take the pathway for aerial pruning of trees in proximity to overhead lines from a rope and harness, as it underpins safe working within climbing teams.
Level 3 Award in Aerial Cutting of Trees with a Chainsaw Using Free-Fall Techniques	600/5713/0	This will only be required if a chainsaw is to be used by those seeking to take the pathway for aerial pruning of trees in proximity to overhead lines from a rope and harness.
Level 3 Award in Use of a Chainsaw from a Mobile Elevated Work Platform (MEWP)	600/6732/9	This will only be required if a chainsaw is to be used by those seeking to take the pathway for aerial pruning of trees in proximity to overhead lines from a mobile elevated work platform (MEWP)
IPAF MEWP Operator's Licence (or similar)		This evidences basic skills and knowledge in setting up and using an MEWP for those seeking to take the pathway for aerial pruning of trees in proximity to overhead lines from a mobile elevated work platform (MEWP)

3 What does this qualification cover?

Learners undertaking these qualifications will be able to demonstrate their knowledge of safe working in proximity to powerlines, specifically regarding tree work.

The qualification aims to assess the learner's knowledge and understanding of:

- the regulations and industry codes of practice for working in proximity to powerlines
- features of electrical networks
- hazards and risks associated with working in proximity to powerlines
- personal safety
- safe working practices in proximity to powerlines
- factors to consider when using specialist safety equipment
- how to deal with incidents.

Following regulatory requirements for qualifications to have a distinct purpose, this qualification is identified and approved with Ofqual to have the following function:

- Prepare for employment
- Confirm occupational competence and/or licence to practice.

These qualifications prepare learners for employment within the utility arboriculture sector. The Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge meets the requirements set by the industry for all those seeking to work on a utility site, and proves the basis for learners to progress to the Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities.

The Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities confirms occupational competence for those seeking to apply arboricultural skills in the utility sector.

3.1 Progression routes

These qualifications form part of a wider Lantra Awards offer. The table below indicates where there are opportunities for learners to progress via accredited training and, where applicable, regulated qualifications.

Training		
Training title	Entry code	Purpose
Arboricultural Dismantling Operations	CLMC57X	This training course deals with tree dismantling and rigging, or the controlled lowering of cut sections.
Felling and Processing Trees over 380mm	2543	This training course extends the skill level for the felling of trees and enables the learner to use techniques for felling and processing larger trees.

Basic Tree Survey and Inspection	CLMC57X	This is an introductory course in tree inspection and establishes the basic principles.
Professional Tree Inspection	ATID002	This is an assessed course which enables those who are already undertaking tree inspections to further develop their skills.

Qualifications		
Qualification title	Entry code	Purpose
Level 3 Award in Felling and Processing Trees over 380mm	600/5704/X	This qualification extends the learner's skill level to include the felling and processing of larger trees.
Level 3 Award in Aerial Tree Rigging	600/5714/2	This qualification deals with tree dismantling and the controlled lowering of cut sections.
Lantra Awards Level 3 Award in Utility Arboriculture – Surveyor	TBA	This qualification is currently being developed for those undertaking tree safety surveys along linear utilities, including in proximity to powerlines.
Lantra Awards Level 3 Award in Supervision – Utility Arboriculture	TBA	This qualification is currently being developed for those employed in, or progressing to, a role where they will have site supervisory responsibilities. In addition to the general elements of supervisory management, a utility arboriculture specific module will be added.

4 Qualification overview

Where to look for further details

Qualification title	Lantra Awards Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge			Ofqual's Register of Regulatory Qualifications: http://register.ofqual.gov.uk/
Qualification number	603/2048/5			
Qualification aim	The aim of this qualification is to ensure that the learner has the knowledge and understanding to carry out arboricultural work safely in proximity to overhead powerlines.			
Qualification purpose	This qualification will be a licence to practice for those wishing to undertake vegetation management and work in proximity to overhead powerlines. The qualification will ensure that learners have sufficient knowledge and understanding of the hazards associated with this working environment.			
Qualification start date	1 Aug 2017			
Level	2			
Credits	3			
GLH	14 hours			
TQT	34 hours			
Quartz ID numbers	10674 – Electrical hazard awareness for utility tree work 10673 – Prepare to work safely on a utility tree work site 10675 – Specialised electrical knowledge for utility tree work Programme – 5709 Qualification – 291			
Unit numbers and titles	J/615/9793 – Electrical hazard awareness for utility tree work L/615/9777 – Prepare to work safely on a utility tree work site R/615/9781 – Specialised electrical knowledge for utility tree work			Page 12
Qualification structure	This qualification consists of three mandatory units.			
Age group	Pre-16	16–18	18+	19+
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Entry requirements	Learners must be able to read and interpret information that is provided in English. It is recommended that			

	learners have a valid Emergency First Aid at Work certificate.	
Prerequisites	None	
Recognition of prior learning	N/A	
Assessment methodologies	<ul style="list-style-type: none"> • Practical observation of assessment activities • Verbal questioning 	
Assessment model	These qualifications are externally assessed by a Lantra Awards assessor. An EQA will quality assure the assessor and the assessment decision to validate the outcome.	
Grading	Pass/fail	
Is there a skills card available?	Yes	Guidance Handbook for Providers
Fees	Registration and certification fees can be found in the product directory. Prices are subject to review on an annual basis, so please contact the sales team if you do not have an up-to-date copy at sales@lantra.co.uk .	Product Directory and/or sales team
Related documents	An assessment guidance handbook is available for providers and assessors, which can be found on the Lantra Awards website. Other assessment-related paperwork can be located within Quartzweb.	http://www.lantra.co.uk
How do I register learners?	Via Quartzweb: https://ordering.lantra.co.uk/Login.aspx	Quartzweb User Guide

Qualification title	Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities	Ofqual's Register of Regulatory Qualifications: http://register.ofqual.gov.uk/
Qualification number	603/2106/4	
Qualification aim	The aim of this qualification is to ensure that the learner has the skills, knowledge and understanding to carry out arboricultural work safely in proximity to overhead powerlines.	
Qualification purpose	This qualification will be a licence to practice for those wishing to undertake arboricultural work in proximity to overhead powerlines.	
Qualification start date	1 Aug 2017	
Level	3	
Credits	3	
GLH	18	
TQT	30 hours	
Quartz ID numbers	<p>10681 – Operate and maintain insulated rods and associated tools</p> <p>10686 – Tree species recognition, growth characteristics and associated hazards</p> <p>10689 – Carry out rope assisted felling of a tree up to 380mm diameter, in proximity to overhead powerlines, using a chainsaw</p> <p>2452 – Carry out aerial pruning of a tree</p> <p>10694 – Aerial pruning of trees, in proximity to overhead lines, from a mobile elevated work platform (MEWP)</p> <p>10694 – Aerial pruning of trees in proximity to overhead lines from a rope and harness</p> <p>Programme – 5710 Ground Based Felling 5904 Pruning from a Rope and Harness 5905 Pruning from a MEWP</p> <p>Qualification - 292 Ground Based Felling 311 Pruning from a Rope and Harness 312 Pruning from a MEWP</p>	
Unit numbers and titles	<p>H/615/9798 – Operate and maintain insulated rods and associated tools</p> <p>K/616/1911 – Tree species recognition, growth characteristics and associated hazards</p>	Page 11

	<p>T/616/1913 – Carry out rope assisted felling of a tree up to 380mm diameter, in proximity to overhead powerlines, using a chainsaw</p> <p>K/504/0317 – Carry out aerial pruning of a tree</p> <p>A/616/1914 – Aerial pruning of trees, in proximity to overhead lines, from a mobile elevated work platform (MEWP)</p> <p>Y/615/9832 – Aerial pruning of trees in proximity to overhead lines from a rope and harness</p>			
Qualification structure	<p>This qualification comprises:</p> <ul style="list-style-type: none"> • 2 mandatory units • 4 optional units. <p>Learners must complete the mandatory group requirements and the correct combination of optional units.</p>			
Age group	Pre-16	16–18	18+	19+
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Entry requirements	<p>Learners must be able to read and interpret information that is provided in English. It is recommended that learners have a valid Emergency First Aid at Work certificate.</p>			
Prerequisites	<ul style="list-style-type: none"> • Lantra Awards Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge or other comparable certification from other awarding organisations • Level 2 Award in Felling and Processing Trees up to 380mm <p>In addition, those undertaking the aerial pruning from a rope and harness pathway must have completed:</p> <ul style="list-style-type: none"> • Level 2 Award in Accessing a Tree Using a Rope and Harness • Level 3 Award in Aerial Tree Rescue Operations. <p>Those learners undertaking the aerial pruning from an MEWP pathway must hold the appropriate and current license to practice for the MEWP type being operated.</p> <p>Where a chainsaw is to be used in the assessment, the learner must hold the appropriate and current license to practice i.e. Level 3 Award in Aerial Cutting of Trees with a Chainsaw Using Free-Fall Techniques or Level 3 Award in Use of a Chainsaw from a Mobile Elevated Work Platform (MEWP).</p>			

Recognition of prior learning	For learners following the pathways in aerial pruning from a rope and harness or aerial pruning from a MEWP, where they can evidence* completion of the Level 3 Award in Aerial Tree Pruning, they may only need to complete the mandatory units, felling unit and appropriate aerial unit. *This should be via a copy of the certificate from the awarding organisation.	
Assessment methodologies	<ul style="list-style-type: none"> • Practical observation of assessment activities • Verbal questioning 	
Assessment model	This qualification is externally assessed by a Lantra Awards assessor. An EQA will quality assure the assessor and the assessment decision to validate the outcome.	
Grading	Pass/fail	
Is there a skills card available?	Yes	Guidance Handbook for Providers
Fees	Registration and certification fees can be found in the product directory. Prices are subject to review on an annual basis, so please contact the sales team if you do not have an up-to-date copy at sales@lantra.co.uk .	Product directory and/or sales team
Related documents	An assessment guidance handbook is available for providers and assessors, which can be found on the Lantra Awards website. Other assessment related paperwork can be located within Quartzweb.	http://www.lantra.co.uk
How do I register learners?	Via Quartzweb: https://ordering.lantra.co.uk/Login.aspx	Quartzweb User Guide

5 Content of the qualifications

The Level 2 Award is made up of THREE mandatory units, which must all be achieved in order to obtain the qualification.

The Level 3 Award has TWO mandatory unit and FOUR optional units to give three distinct pathways within the qualification.

Pathway 1– will include the two mandatory modules, plus:

- Carrying out rope-assisted felling of a tree near to overhead power lines using a chainsaw.

Pathway 2 – will include the two mandatory modules, plus:

- Carry out rope assisted felling of a tree near to overhead power lines using a chainsaw
- Carry out aerial pruning of a tree
- Working from rope and harness in proximity to powerlines.

Pathway 3 – will include the two mandatory modules, plus:

- Carry out rope assisted felling of a tree near to overhead power lines using a chainsaw
- Carry out aerial pruning of a tree
- Working from a MEWP in proximity to powerlines.

Lantra Awards Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge			
Unit title	M/O*	GLH	Credits
Prepare to work safely on a utility tree work site	M	4	1
Electrical hazard awareness for utility tree work	M	6	1
Specialised electrical knowledge for utility tree work	M	4	1

* Mandatory or optional

Unit title:	Electrical hazard awareness for utility tree work
Unit level:	2
Unit credit value:	1
Unit reference number:	J/615/9793
Unit purpose and aim(s):	<p>The aim of the unit is to establish the learner's level of knowledge and understanding of electrical hazard awareness and prevention, when working in proximity to network operators' equipment.</p> <p>Learners should be aware of the dangers of electricity in the context of utility tree work operations, as well as having an understanding of the health and safety obligations of concerned stakeholders.</p>

Learning outcome The learner will:	Assessment criteria The learner can:
1 Be able to identify high- and low-voltage overhead powerline components and associated hazards and risks.	<p>1.1 Identify overhead line voltages and associated hazards and risks.</p> <p>1.2 Identify aerial bundled conductors and associated hazards and risks.</p> <p>1.3 Identify transformers associated with 11kV and 33kV overhead lines and associated hazards and risks.</p> <p>1.4 Identify high-voltage and low-voltage cable terminal poles and associated hazards and risks.</p> <p>1.5 Identify high-voltage and low-voltage jumpers and associated hazards and risks.</p> <p>1.6 Identify air break switches and associated hazards and risks.</p> <p>1.7 Identify high-voltage and low-voltage fuses and associated hazards and risks.</p> <p>1.8 Identify circuit breakers and associated hazards and risks.</p> <p>1.9 Identify transmission tower lines and associated hazards and risks.</p> <p>1.10 Identify grid and primary substations and associated hazards and risks.</p>

Learning outcome The learner will:	Assessment criteria The learner can:
	1.11 Identify secondary distribution substation and associated hazards and risks. 1.12 Identify underground cables and associated hazards and risks. 1.13 Identify a high voltage earth and associated hazards and risks.
2 Understand the purpose of earths.	2.1 Identify a low-voltage bond earth. 2.2 Describe the use of earths. 2.3 Describe the key safety points to consider when working adjacent to earthed equipment. 2.4 Specify the documents issued to enable safe work on site in designated work areas.
3 Understand when documents relevant to work safety in designated work areas are issued.	3.1 Describe when safety documents would be issued.
4 Understand the purpose of safety documents.	4.1 Describe key aspects of the work permits. 4.2 Describe the safety points to consider when working under the control of a Safety Document. 4.3 Specify the minimum ground clearances for cables and jumpers.
5 Understand minimum ground clearance and distances for the various line voltages.	5.1 Explain the link between increasing line voltage and change in conductor to ground clearance. 5.2 Explain the link between increasing line voltage and the impact upon safety distances. 5.3 Explain how distances can be assessed on site.

Learning outcome 1 – Be able to identify high- and low-voltage overhead powerline components and associated hazards and risks

The learner must be able to identify high-voltage and low-voltage(LV) overhead line components and, in each case, explain the risks when working in proximity to them.

Powerlines at each of the voltages below should be identified:

- Low-voltage (LV)
- 11kV
- 33kV
- 66kV
- 132kV
- 400kV

Overhead line components	Hazards and risks
Overhead lines (by voltage)	<ul style="list-style-type: none"> • Supporting structure • Supporting steelwork • Spacing of conductors between poles • Supporting steelwork at the pole top • Stay wires above the 'in-stay' insulator
Aerial bundled conductors	<ul style="list-style-type: none"> • Damage to the conductor insulation • Conductor terminations may be exposed • Must, at all times, be treated as live
Transformers associated with 11kv and 33kv overhead lines	<ul style="list-style-type: none"> • 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 lines ground clearance • Vicinity zone close to ground • Leaking, damage
High-voltage and low-voltage cable terminal poles	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Any jumpers that come down the pole and connect to other equipment • All jumpers that connect one line to another • Reduced distances
Air break switch	<ul style="list-style-type: none"> • Jumpers that connect the overhead line to the air break switch • Supporting steelwork at the pole top • Operating handle that comes down the pole to ground level • Open/closed positions
High-voltage and low-voltage fuses	<ul style="list-style-type: none"> • Fuse unit • Live equipment above or inside the fuse unit, even when the fuse is removed
Circuit breakers/auto-reclosers	<ul style="list-style-type: none"> • High-voltage bushings • Jumpers connecting the auto-recloser/pole-mounted circuit breaker to the overhead line
Transmission tower lines	<ul style="list-style-type: none"> • High-voltage conductors between towers • Damaged insulators at each tower • Jumpers connecting one part of the line to another
Grid and primary substations	<ul style="list-style-type: none"> • Damage to 'unclimbable' fence • Unauthorised access • Live equipment at low level
Secondary distribution substations	<ul style="list-style-type: none"> • Damage to any cable connected to the substation (high- or low-voltage) • Damage to substation plant and equipment
Underground cables	<ul style="list-style-type: none"> • Shallow cable depth • Any cable damage caused by digging, ground anchors, fencing etc.

	<ul style="list-style-type: none"> • Cable damage, if suitable methods of locating not used (network operator plans, cable locator e.g. CAT & GENNY)
High-voltage earth	<ul style="list-style-type: none"> • Must be applied before work starts • Must be visible from the point of work

Learning outcome 2 – Understand the purpose of earths

The learner must be able to identify a low-voltage bond earth and to state the purpose or application of earths, such as these key points:

- Provides protection from induced voltages and inadvertent energisation
- 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.

The learner must be able to describe the key safety points to consider when working adjacent to earthed equipment, such as being aware of any unintentional damage, disturbance or disconnection.

Points of which to be aware	
High-voltage earths	Be aware if either: <ul style="list-style-type: none"> • the earth is disconnected at ground level before removal from the overhead line Or: <ul style="list-style-type: none"> • the earth is disconnected at ground level during the period of the work.
Low-voltage bonds	Be aware if either: <ul style="list-style-type: none"> • the bonds are connected to phase conductors before connection to neutral/earth conductor Or: <ul style="list-style-type: none"> • The bonds are disconnected from phase conductors before disconnection of neutral/earth conductor.

The learner must be able to give examples of the documents issued to enable safe work on site, in designated work areas (DWA), including examples of network operator's manuals and documents issued to enable tasks on site to be undertaken safely in the DWA. For example:

- Electricity company safety rules
- Electricity company codes of practice
- Safety documents
- Permit to work (PTW) or permit for work (PFW)
- Limitations of access/limited work certificate
- Method statements and risk assessments.

Learning outcome 3 – Understand when documents relevant to work safety in designated work areas are issued

The learner should be able to give examples of circumstances in which safety documents, such as Permit to Work (PTW)/ Permit for work (PFW), would be issued, such as for work on:

- Dead equipment
- **Isolated earthed**, high-voltage equipment.

Learning outcome 4 – Understand the purpose of safety documents

The learner should be aware of the key aspects of work permits. For example, they should:

- Be issued by a network-operator-appointed person
- Be received by a network-operator-appointed person
- Describe the work to be carried out
- Describe the limit of the work and safety precautions to be applied, where applicable
- Describe the equipment (spans etc.) which can be worked on safely
- Identify that the overhead line is earthed.

When all work is complete, the document should be cleared and staff should be informed.

The learner should describe the safety points to consider when working under the control of a safety document, such as:

- Knowing the limits of the work area identified
- Ceasing work immediately following instruction from the safety document holder
- Leaving site only after agreement with the safety document holder
- Reporting back to the safety document holder on returning to the site because the work arrangements may have changed or the line may have been re-energised
- Being aware that everyone on the site working under the safety document needs to understand its contents.

The learner should be able to specify that the minimum clearances (over normal ground and roads) for cables and jumpers are:

- Low-voltage = 5.2m
- 11kV = 5.2m
- 33kV = 5.2m
- Roads = 5.8m
- Jumpers = 4.3m

Learning outcome 5 – Understand minimum ground clearance and distances for the various line voltages

The learner should be able to explain the relationship, i.e. that the higher the line voltage, the greater the ground clearance and the greater the required safety distances.

The learner should be aware that the distances on site can be assessed on site by reference to known measurements (e.g. insulated rods) and by using electronic/surveying devices.

Unit title:	Prepare to work safely on a utility tree work site
Unit level:	2
Unit credit value:	1
Unit reference number:	L/615/9777
Unit purpose and aim(s):	<p>The aim of the unit is to establish the learner's level of knowledge and understanding of electrical hazard awareness and prevention, when undertaking tree work in proximity to network operators' equipment.</p> <p>Learners should be aware of the dangers of electricity in the context of utility arboriculture operations, as well as having an understanding of the health and safety obligations of concerned stakeholders.</p>

Learning outcome The learner will:	Assessment criteria The learner can:
1. Understand the principles of risk assessment for utility tree work operations.	1.1 Compare generic and site-specific risk assessments. 1.2 Describe the types of electrical consideration which will be shown on risk assessment documentation. 1.3 Specify the principle consideration for managing risk associated with working in proximity to live electrical equipment. 1.4 Describe the causes of direct and indirect electrical shocks. 1.5 Identify personal protective equipment (PPE) and specialised clothing which may be used by utility tree workers. 1.6 Identify features at risk of damage from utility tree work operations. 1.7 Identify stakeholders at risk of injury from utility tree work operations.
2. Understand the requirements for site supervision.	2.1 Describe the requirements for site supervision.
3. Understand the principal working practices to prevent injury and damage to people and equipment.	3.1 Describe the principal considerations for planning safe working practices. 3.2 Describe how to maintain the safety of workers and others during works in a designated area. 3.3 Describe how to maintain the safety of workers and others after completing works in a designated area. 3.4 Describe the safety considerations when using a ladder adjacent to an overhead line. 3.5 Describe the safety considerations when using ropes adjacent to an overhead line.

Learning outcome The learner will:	Assessment criteria The learner can:
4. Understand the safety factors to consider when carrying out tidy-up operations.	4.1 Describe the safety factors to consider when carrying out tidy-up operations.
5. Understand how fires and smoke can increase hazards from overhead lines.	5.1 Describe how fires and smoke can increase hazards from overhead lines.
6. Understand emergency procedures and contingencies.	6.1 Describe emergency actions to take, following contact by personnel with live overhead lines or underground cables. 6.2 Describe emergency actions to take, following contact by trees or vehicles with live overhead lines or underground cables. 6.3 Describe the information that needs to be given to the network operator for the line to be made dead in case of emergency. 6.4 Outline the information to give to emergency services in the event of an injury. 6.5 Describe the criteria for where the emergency procedure should be kept. 6.6 Explain the reasons why emergency procedures need to be documented.

Learning outcome 1 – Understand the principles of risk assessment for utility tree work operations

The learner should be able to differentiate between the content of generic and site-specific risk assessments, understanding that:

Generic risk assessments usually apply to tasks and procedures that are frequently repeated, such as procedures for working at height and for live- or dead-line working, or for use of equipment and machinery such as chainsaws and wood chippers.

Site-specific risk assessments (SSRA) detail hazards which are specific to the given site, task or work and cover risks to the operators, public, property and environment. The SSRA will include information, such as:

- Site details, such as address or Ordnance Survey grid reference
- Details of the working team, such as supervisory levels and the presence of trainees or apprentices
- Location of emergency procedure and site plans
- Control of environmental pollution planning
- **Awareness of the location of services, other than the overhead line, such as telecom cables, gas and water**
- Requirements for traffic control or roadside warning signage.

The electrical and tree-related hazards will also be included in the SSRA, but clearly separated into:

- Specific tree hazards
- **Electrical hazards, including anything identified from an inspection of the line for defects. In inspecting for electrical hazards, consideration will be given to:**
 - Categorisation of trees
 - Provisions/justification for live working
 - Dead working
 - Condition of network.

In managing risks associated with working in proximity to live electrical equipment, the learner should understand that the principal consideration will be whether the electricity can be switched off (i.e. 'made dead') when carrying out work, as this is the safest option.

The learner should understand that the difference between direct and indirect electrical shocks is that direct electrical shock is caused by direct contact with something that would ordinarily be expected to be live (e.g. touching an exposed cable), whereas indirect electrical shock is caused by contact with something that would not ordinarily be expected to be live (e.g. a stay or part of a tree).

Regarding the potential damage to property, the learner should be able to state examples of features at risk of damage from utility tree work operations, such as:

- Infrastructure, including fences, walls, buildings etc.
- Electrical apparatus and equipment
- Contractor's equipment and plant.

There should also be an awareness of the potential damage to the environment, including to habitats, wildlife and protected species etc.

The learner should also be aware of the stakeholders at risk of potential injury from utility tree work operations including:

- The general public
- Clients
- Landowners
- Utility tree workers.

Learning outcome 2 – Understand the requirements for site supervision

For a given site, the learner should be able to describe the necessary provisions of site supervision. These might include:

- The name of person under supervision
- The supervisor's name
- The operations being supervised
- The level of supervision necessary
- Details documented e.g. within the risk assessment
- Any arrangements agreed with the network operator.

Learning outcome 3 – Understand the principal working practices to prevent injury and damage to people and equipment

The learner should be able to describe the principal considerations for planning safe working practices through the various phases of the work, including planning, operation and post-completion, to prevent injury and damage to people, apparatus and machinery, such as ensuring that:

- Work is carried out as agreed with network operators and defined by the risk assessment/method statement
- Site extents are identified and appropriately designated
- Safety distances are identified and maintained
- Awareness of safety zones is maintained at all times, particularly when moving and handling timber and branches
- locate underground cables avoid and protect them, in accordance with procedures agreed with the network operator
- locate other utilities (gas, plant water, sewers) avoid and protect them in accordance with procedures agreed with the network operator
- Vehicles and plant are appropriate for tasks, including height and safety features, as well as approved by the network operator.

The learner should be able to suggest ways to maintain the safety of workers and others during works in a designated area, such as ensuring that:

- Work does not interfere with other parties
- Work proceeds to the agreed plan and methods
- Supervision and monitoring are in place
- Signage and guarding are in place
- maintaining the general safe condition of the site at all times during and after work
- Logs, brash and chippings are stacked clear of the line
- Equipment and machinery are used appropriately and do not impede other works or access/egress points.

The learner should be able to describe how to maintain the safety of workers and others after works in the designated area have been completed, such as:

- Leaving the site in a tidy and safe manner, according to the landowner's instructions
- Removing the site 'spoil' where appropriate
- Leaving the timber arisings secure and safe, according to the landowner's instructions
- Leaving fences, ditches, paths, young trees, badger sets etc. undamaged
- Removing all tools and equipment from site
- Removing hanging branches.

Learners must have an understanding that ropes and ladders can cause danger if used incorrectly in proximity to overhead powerlines.

Safety considerations when using a ladder adjacent to an overhead line might include:

- Ladders must be of a type/construction approved by the network operator and only used in accordance with procedures

- Do not use metal ladders or wood ladders with metal reinforcing in the styles as they conduct electricity
- Wet/dirt on wooden ladders increases conductivity
- Fibreglass ladders may offer better protection, but are not rated as insulated
- Always carry ladders in a horizontal position, as close to the ground as possible
- Never allow ladders to enter the vicinity zone.

Safety considerations when using ropes adjacent to an overhead line might include:

- Ropes must only be used in accordance with network-operator-approved procedures
- Rope material (no ropes are rated as insulated)
- Wet increases the conductivity
- Dirt increases the conductivity
- Ropes should only be placed in trees using rods
- Never hand-throw or catapult bags and lines (a bag could be placed in a tree using insulated rods, subject to the network operator's approval)
- All ropes in use must be secured so that they do not enter the vicinity zone
- All ropes used in climbing and rigging must be used on the side of the tree away from the line.

Learning outcome 4 – Understand the safety factors to consider when carrying out tidy-up operations

Learners should be able to explain the safety factors to be considered when carrying out tidy-up operations, such as:

- Not pointing the chipper discharge shoot towards conductors or equipment (i.e. chip away from lines)
- Not leaving long branches on site for tidy up by others where there is a possibility of them being handled at a later date and breaching the vicinity zone
- Ensuring that a clear path is left under conductors to allow access for future patrols and maintenance
- Not stacking timber adjacent to substation boundary fences that may allow climbing access
- Ensuring that hanging branches are not left as a hazard for others
- Stacking arisings away from the line.

Learning outcome 5 – Understand how fires and smoke can increase hazards from overhead lines

Learners should understand how fires and smoke can increase hazards from overhead lines. For example:

- An increased likelihood of a flashover due to the carbon particles contained in smoke

- Heat causing conductors to sag, reducing ground clearance and bringing overhead line (and therefore safety zones) closer to the operator
- Conductors could melt and break
- Poles could catch fire.

Learning outcome 6 – Understand emergency procedures and contingencies

Learners should describe emergency actions to take, following contact with live overhead lines or underground cables.

In the case of contact by personnel, this will include:

- Stop work
- Keep everyone at least five metres away from the scene of the incident
- Not becoming a victim by going too close to the line or attempting a rescue
- If necessary, posting a watchman
- Do not touch any broken conductors or equipment
- Contacting the owner of the overhead line (i.e. the network operator) for the line to be made dead
- Only approaching a casualty after the line is proved dead by the network operator in accordance with approved procedures
- Contacting the supervisor or line manager
- For a low-voltage line, considering pulling the person or conductors clear, using approved insulated rods, with a minimum of three 1.2m sections (only a person authorised to use rods could do this)

For a high-voltage line, no attempt should be made to rescue the person (if they are in contact with an HV line, the circuit may also auto-reclose and there may be a voltage gradient/step potential in the ground)

In the case of contact by trees, where branches of trees remain in contact with cables, this will include:

- Not attempting to remove them
- Proceeding as per the network operator's instruction.

In the case of contact by vehicles, this will include:

- Remaining in the vehicle if safe to do so
- Only exiting in a manner approved by the network operator.

Learners should be aware of the information that needs to be given to the network operator for the line to be made dead in case of emergency, such as:

- Their name
- An explanation of what has happened
- A description of any damage they can see
- Asking for the line to be made dead
- Accurate location (e.g. Ordnance Survey grid reference)

- Name and/or number of the overhead line
- Pole numbers/equipment identification
- Details of casualties.

Learners should be aware of the information to give to emergency services in the event of an injury, such as:

- Accurate address or an Ordnance Survey grid reference
- Access arrangements (may be required to meet at a specific location)
- Description of casualties and their injuries.

Learners should be aware that the emergency procedure should be kept on site and be easily accessible, with the location known to all.

Learners should be able to explain why emergency procedures need to be documented, such as:

- To enable a rapid, clear and unambiguous response to an emergency
- To ease the implementation of emergency procedures
- To help emergency services (e.g. air ambulance) to find the casualty quickly
- So the network operator can de-energise the line quickly
- So emergency services can be contacted quickly
- So minor casualties can be taken to accident and emergency quickly
- To allow all people on site to have access
- To meet good practice obligations.

Unit title:	Specialised electrical knowledge for utility tree work
Unit level:	2
Unit credit value:	1
Unit reference number:	R/615/9781
Unit purpose and aim(s):	<p>The aim of the unit is to establish the learner's level of knowledge and understanding of network operator guidance for establishing safety distances and zones when working in proximity to network operators' equipment.</p> <p>Learners should be aware of the dangers of electricity in the context of utility tree work operations, as well as having an understanding of the health and safety obligations of concerned stakeholders.</p>

Learning outcome The learner will:	Assessment criteria The learner can:
1. Understand the principles for establishing safety zones and distances when working in proximity to network operators' equipment.	<p>1.1 Describe what is meant by proximity zone 1 and proximity zone 2.</p> <p>1.2 Describe how trees are categorised in relation to overhead powerlines.</p> <p>1.3 Describe what is meant by the live zone.</p> <p>1.4 Specify the live zone for a range of voltages.</p> <p>1.5 Describe how to reduce the risk of danger when any part of a tree is in the live zone.</p> <p>1.6 Describe what is meant by the vicinity zone.</p> <p>1.7 Specify the vicinity zone for a range of voltages.</p> <p>1.8 Explain how to assess the distance of live zones and vicinity zones.</p>

Learning outcome 1 – Understand the principles for establishing safety zones and distances when working in proximity to network operators' equipment

The learner should be able to explain that:

Proximity zone 1 includes all trees within two tree heights/lengths of any live equipment

Proximity zone 2 includes all 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 and within 15m of any live equipment greater than 66kV.

Note that the distance is measured horizontally, from a point directly beneath the nearest conductor to the base of the tree. When working on sloping sites, the distance must be increased to allow for the effect of the slope.

Where mechanical plant is being used (e.g. harvesters or forwarders), then the stated distances will be measured to the nearest point to the powerline that any part of the machine or load can reach.

The learner should be able to correctly specify the different categories of tree, as detailed in ENA Engineering Recommendations G55.

Category	Definition
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 to breach the vicinity zone.

The learner should be able to explain that the live zone is the zone around an exposed live circuit conductor or the supporting insulators, and that there is danger of burn or electric shock if any part of a person's body or a non-insulated tool they are using enters the zone. They should also be able to specify the live zone distances.

System voltage	Live zone
Up to and including 1kV	0.3m
Up to and including 11kV	0.8m
Up to and including 33 kV	0.8m
Up to and including 66 kV	1.0m
Up to and including 132 kV	1.4m
Up to and including 275 kV	2.4m
Up to and including 400 kV	3.1m

The learner should be able to describe potential sources of danger when working on trees, where any part of the tree is in the live zone, and provide any risk mitigation to be considered. Potential sources of dangers may include:

- Trees being live at/or around ground level
- Trees/branches catching fire
- Overhead powerline conductors being damaged.

In each case, the mitigation would be to shut down the powerline or work safely under live powerline justification (regulation 14).

The learner should be able to explain that the vicinity zone is the zone around an exposed live circuit conductor which, if maintained, will prevent the danger of burn or electric shock, and that the key purpose of applying and maintaining vicinity zones is to provide a safety zone to prevent electrical injury. Learners must be aware that the live zone is included within the measurement of the vicinity zone.

The learner should be able to specify the vicinity zone for a range of voltages.

System voltage	Vicinity zone
Up to and including 1kV	1m
Up to and including 11kV	2m
Up to and including 33 kV	2.5m
Up to and including 66 kV	3m
Up to and including 132 kV	3.5m
Up to and including 275 kV	4m
Up to and including 400 kV	5m

The learner should understand how to estimate live zones and vicinity zones using reference to known distances, such as:

- Conductor spacing
- The length of approved insulated rods.

They should also be aware that more precise measurements may be produced using electronic/surveying devices.

Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities

Unit title	M/O*	GLH	Credits
Operate and maintain insulated rods and associated tools	M	6	1
Tree species recognition, growth characteristics and associated hazards	M	6	1
Carry out rope assisted felling of a tree up to 380mm diameter, in proximity to overhead lines, using a chainsaw	O	6	1
Carry out aerial pruning of a tree	O	19	2
Aerial pruning of trees, in proximity to overhead lines from a mobile elevated work platform (MEWP)	O	4	1
Aerial pruning of trees in proximity to overhead lines from a rope and harness	O	3	1

* Mandatory or optional

Unit title:	Tree species recognition, growth characteristics and associated hazards
Unit level:	3
Unit credit value:	1
Unit reference number:	K/616/1911
Unit purpose and aim(s):	This unit provides the learner with the knowledge and skills to identify a number of tree species, growth characteristics and associated hazards. It represents the outcomes necessary to demonstrate knowledge.

Learning outcome The learner will:	Assessment criteria The learner can:
1 Understand the significance of botanical nomenclature.	1.1 Explain the significance of taxonomic terminology.
2 Be able to identify broadleaf tree species.	2.1 Identify broadleaf trees.
3 Be able to identify coniferous tree species.	3.1 Identify coniferous species.
4 Be able to identify a range of shrubs.	4.1 Identify a range of shrubs.
5 Understand the significance of the differing characteristics of species in relation to overhead line clearance.	5.1 Explain the different characteristics of tree species.
	5.2 Explain the impact on overhead line clearance of fast-growing tree species.

Learning outcome The learner will:	Assessment criteria The learner can:
	5.3 Explain the impact on overhead line clearance of slow-growing tree species. 5.4 Explain the significance, in relation to proximity of overhead lines, of pruning tree species that readily produce sprout growths. 5.5 Explain the significance, in relation to the proximity of overhead lines, of tree species that are considered to be brittle. 5.6 Explain factors which can influence the growth of trees.
6 Understand hazards associated with climbing plants.	6.1 Explain the hazards associated with climbing plants in proximity to overhead lines.
7 Understand hazards and defects related to trees.	7.1 Explain hazards and defects that may be present on trees. 7.2 Explain how overhang of trees in proximity to overhead lines can be dangerous.
8 Understand ill health in trees.	8.1 Explain symptoms of ill health in trees. 8.2 Explain implications of ill health in trees.
9 Be able to identify decay fungi and its significance.	9.1 Identify decay fungi. 9.2 Explain the significance of fungi identified. 9.3 Identify significant insect pests. 9.4 Explain what is meant by biosecurity.

Learning outcome 1 – Understand the significance of botanical nomenclature

The learner should understand that botanical names are often used in preference to common names because they are definitive, whereas one plant may be known by several different common names and the same common name may be used for several different plants.

The learner should know the role of the different parts of a botanical name and the order in which they are used. This should include:

- Genus
- Species
- Variety
- Cultivar.

Learning outcome 2 – Be able to identify broadleaf tree species

From the list in the table below, the learner should be able to correctly identify the trees marked with an asterisk using common and botanical names, along with a range of others. A field guide may be used as necessary.

Learning outcome 3 – Be able to identify coniferous tree species

From the list in the table below, the learner should be able to correctly identify the trees marked with an asterisk using common and botanical names, along with a range of others. A field guide may be used as necessary.

Learning outcome 4 – Be able to identify a range of shrubs

The learner should be able to correctly identify a range of shrubs using common and botanical names. A field guide may be used as necessary. Those included in the table below are given as recommendations.

Learning outcome 5 – Understand the significance of the differing characteristics of species in relation to overhead line clearance

The learner must be able to describe different characteristics of tree species and provide examples in each case. For the trees included in the table below, their rate of growth is noted, as well as the brittleness of their timber and their tendency to produce epicormic or 'twiggy' regrowth after pruning.

Learners should be aware that fast-growing species will require more frequent pruning and may need to be removed from close proximity to the utility. However, although slow-growing species require less frequent attention, they may have been overlooked when planning works.

They should also understand that, where pruning opens out areas and lets more light into sites, very rapid regrowth can result in those species that readily produce sprout growths. Consequently, these species are likely to require more frequent cutting. It can be beneficial, or indeed necessary, to remove these species from close proximity to the utility, especially in the case of overhead powerlines.

In the case of trees species with brittle timber, they are more likely to fail under the increased load resulting from rapid growth, wind, snow etc. There can also be a tendency for branches to break off early when being cut.

Learners need to understand that there are several other factors that will affect the rate of growth, including:

- **Age — a younger tree will tend to be more vigorous in its growth than a more mature tree.**
- **Condition — trees in poor health or under stress will tend to grow more slowly than those in good health.**
- **Soil — the fertility, pH and moisture availability of a soil can directly influence the rate of growth, as will the depth of top soil and its texture, structure and degree of compaction.**
- **Climate — temperature range, as well as the extremes of heat and cold, can have both direct and indirect effects. In addition to scorch and frost damage, the temperatures will influence the rate of plant metabolic processes.**

- **Location** — the site and position of a tree will also affect the rate of growth, as it influences the microclimate. A tree in a sheltered site has the potential to grow more rapidly than one in a more exposed position. The site can also affect light levels, exposure to wind and availability of water.

Common name	Botanical name	Rate of growth	Brittle timber	Prone to epicormic regrowth
Broad leaves				
Alder	<i>Alnus glutinosa</i>	Fast	No	Yes
Apple (crab)	<i>Malus sylvestris</i>	Slow	No	No
Apple (common)	<i>Malus domestica</i>	Slow	No	No
Ash*	<i>Fraxinus excelsior</i>	Fast	No	Yes
Aspen	<i>Populus tremula</i>	Fast	Yes	Yes
Beech*	<i>Fagus sylvatica</i>	Slow	No	No
Blackthorn	<i>Punus spinosa</i>	Slow	No	Yes
Black walnut	<i>Juglan nigra</i>	Slow	No	No
Box	<i>Buxus sempervirens</i>	Slow	No	No
Cherry (bird)	<i>Prunus padus</i>	Slow	No	Yes
Cherry (wild)	<i>Prunus avium</i>	Slow	No	Yes
Elm (wych)	<i>Ulmus glabra</i>	Slow	No	Yes
Eucalyptus	<i>Eucalyptus gunnii</i>	Fast	No	No
European lime*	<i>Tilia x europaea</i>	Slow	No	Yes
Hawthorn*	<i>Crataegus monogyna</i>	Slow	No	Yes
Hazel*	<i>Corylus avellana</i>	Fast	No	Yes
Holly	<i>Ilex aquifolium</i>	Slow	No	No
Hornbeam	<i>Carpinus betulus</i>	Slow	No	No
Horse chestnut	<i>Aesculus hippocastanum</i>	Fast	Yes	Yes
Laburnum	<i>Laburnum anagyroides</i>	Slow	No	No
London plane	<i>Platanus x hispanica</i>	Slow	No	No
Maple (Norway)	<i>Acer platanoides</i>	Fast	Yes	Yes
Maple (field)	<i>Acer campestre</i>	Slow	No	Yes
Oak English*	<i>Quercus robur</i>	Slow	No	Yes
Poplar (hybrid black)*	<i>Populus canadensis</i>	Fast	Yes	Yes
Poplar (Lombardy)	<i>Populus nigra 'Italica'</i>	Fast	Yes	Yes
Rowan	<i>Sorbus aucuparia</i>	Slow	No	No
Silver birch*	<i>Betula pendula</i>	Fast	Yes	No
Sweet chestnut	<i>Castanea sativa</i>	Fast	No	Yes
Sycamore*	<i>Acer pseudoplatanus</i>	Fast	Yes	Yes
Whitebeam	<i>Sorbus aria</i>	Slow	No	Yes
Willow (crack)*	<i>Salix fragilis</i>	Fast	Yes	Yes
Willow (goat)	<i>Salix caprea</i>	Fast	Yes	Yes
Conifers				
Fir (Douglas)	<i>Pseudotsuga menziesii</i>	Fast	No	No
Fir (grand)	<i>Abies grandis</i>	Fast	Yes	Yes
Fir (noble)	<i>Abies procera</i>	Fast	Yes	Yes
Juniper	<i>Juniperus communis</i>	Slow	No	No
Larch*	<i>Larix decidua</i>	Fast	Yes	No
Lawson's cypress	<i>Chamaecyparis lawsoniana</i>	Fast	No	No
Leyland cypress*	<i>XCuprocyparis leylandii</i>	Fast	No	No
Pine (Corsican)	<i>Pinus nigra var. maritima</i>	Fast	No	No
Pine (lodgepole)	<i>Pinus contorta var. latifolia</i>	Fast	No	No

Pine (Scots)*	<i>Pinus sylvestris</i>	Fast	No	No
Spruce (Norway)	<i>Picea abies</i>	Fast	No	No
Spruce(Sitka)	<i>Picea sitchensis</i>	Fast	No	No
Yew	<i>Taxus baccata</i>	Slow	No	Yes
Shrubs				
Box	<i>Buxus sempervirens</i>			
Cotoneaster	<i>Cotoneaster dammeri</i>			
Dogwood	<i>Cornus alba</i>			
Gorse	<i>Ulex europaeus</i>			
Laurel	<i>Prunus laurocerasus</i>			
Rhododendron	<i>Rhododendron ponticum</i>			
Wayfaring tree	<i>Viburnum lantana</i>			

Learning outcome 6 – Understand hazards associated with climbing plants

It is not uncommon to find climbing plants growing on trees. These can cause problems, in that they may mask the condition of the tree, making inspection more difficult. They will also increase the weight, and hence the stresses on the trunk and branch work.

Where climbers are growing in proximity to electrical equipment, it is possible for the vegetation to become 'live' or obscure electrical equipment, making it difficult to identify network defects.

Learning outcome 7 – Understand hazards and defects related to trees

Learners will need to be able to describe a range of hazards and defects that may be present on trees, which may indicate possible structural problems.

These may include:

Hazard/defect	Explanation
Fungal fruiting bodies	The development of fungal fruiting bodies can indicate that the decay fungus has developed to a point where it has sufficient energy to produce spores. Fruiting bodies appearing around the circumference of the tree would suggest that the decay is well advanced within the tree. It is essential to correctly identify and understand the nature of the specific decaying fungus, as the way that the timber of the host tree is affected will differ in each case.
Lifted roots, damaged roots and/or ground heave	Lifting of the root plate, or the tree being partly windthrown, indicates that the anchorage system of the tree is no longer functioning. This may not always be obvious from looking at the tree, but indicators, such as cracking in the soil or soil shear around the root plate, may be symptomatic of this. It should be recognised, however, that partly windblown trees can regain stability through re-rooting.
Included bark	This forms where two or more branches grow closely together (at weak branch angles) and the bark grows between the branches inside the branch union. The result is that the wood of the branches cannot and does not bind together, resulting in a very weak union. Over time, as the included bark thickens, it forces the two branches apart, resulting in the failure of one of the branches.

Compression fork	These are inherently weak forks, with a V-shaped union, the limbs meeting at an acute angle and therefore likely to be pulled apart more easily than normal. This issue can occur in branch unions and where two or more leaders develop in the tree. The development of co-dominant leaders often happens at an early stage in the growth of the tree and may be due to browsing, frost damage or other physical damage. If not corrected through good formative pruning, it results in the loss of apical dominance.
Cavities	These are hollows or voids where wood has been lost, either because of the growth pattern of the tree or, more usually, due to the action of a biotic agent decaying the wood. The number, size and position of any cavities will influence the likelihood of failure.
Dog-legs	These are the abrupt bends which can develop when a side shoot replaces a pruned, broken or dead branch end. If the timber is not healthy, as the shoot grows and thickens, stress is exerted on the branch resulting in branch failure.
Bottle butt	'Bottle butt' usually refers to the swelling or increased girth sometimes seen at the base of a tree that has internal decay. It is caused by the laying down of reaction wood as a part of the tree's growth to provide adequate support for the crown. The term can be applied to swellings on other parts of the tree, when bulges are similarly indicative of internal decay.
Hazard beams	This is an engineering term that is applied to upwardly curving stems and branches that develop longitudinal splits due to internal lateral stresses. Ribs of new wood may develop along the length of the crack. However, they do not close the wound. Hazard beams do not often result in total failure of the branch or stem, but are worthy of note as they can be a point of access for pathogens and may also become bat roosts.
Horizontal ribs/cracking	The presence of horizontal bulges, creases or ribs can be indicative of a response to internal fibre buckling as a result of compression forces. On grafted trees, it may also result from an incompatible graft between stock and scion.
Vertical ribs and open cracks	Ribs are an indicator of internal cracking within the tree. Where the rib is 'sharp', it suggests that the crack is still allowing movement, whereas if the rib is rounded, the crack has been overlaid by annual rings. Vertical cracks are not necessarily an indicator of impeding failure and can heal over. There can be a number of factors leading to their development, including lightning, frost (i.e. where, following a frost, one side of the stem is in sun and so thawing, whilst the other is shaded and still freezing) and shear forces (e.g. when tension and compression is exerted on the stem by the wind).

Other hazards or defects that might be referred to are:

- Cankers
- Deadwood
- Splits in the bark
- Peeling bark
- Animal damage
- Mechanical damage
- A very thin crown

- Old pollards or topped and looped trees.

Learners will need to be able to define a dangerous overhang as either a defective branch, part of a tree or a whole tree that is overhanging conductors and could cause damage to the conductor or disrupt the supply.

Dangerous overhangs may include: long or heavy lateral branches; branches weakened due to pest, disease or mechanical damage, weak or brittle sections or overloaded unions; hanging branches that may be blown off; trees with a defect; and partially windblown or uprooted trees.

The learner should also be aware of the possibility of creating a dangerous overhang by using poor practices such as over-pruning.

Learning outcome 8 – Understand ill health in trees

Learners should be able to identify symptoms of ill health in trees that suggest further inspection may be required. These may include:

- Lead discolouration
- Crown die back
- Peeling and dead bark
- A very thin crown
- Fungal fruiting bodies.

The learner should be able to explain that ill health in trees may increase the potential for other problems to develop. For example:

- An increased likelihood of wind blow
- Greater potential for branch drop
- Exacerbation of any defects.

Ill health will also reduce the amenity value of the tree and may be a source of infection from which disease can spread to other trees.

Learning outcome 9 – Be able to identify decay fungi and its significance

The learner should be able to identify a range of species of decay fungi from the list below and be aware of their significance. It will be necessary for the learner to be able to identify the fungi on site where the sample may not be in 'perfect' condition. Identification by common name is acceptable. A field guide may be used as necessary.

Common name	Botanical name	Host and position on host	Infection strategy	Rot type	Damage caused
Honey fungus	<i>Armillaria mellea</i>	Most broadleaves and <i>Taxus</i> : roots and lower stem	Active pathogenesis	Selective white rot	Aggressive can be primary infection and result in windblow by ductile fractures of the root or (rarely) stem fracture
Tinder bracket	<i>Fomes fomentarius</i>	Range of broadleaves, especially <i>Fagus</i> and <i>Betula</i> : stem and large branches	Sapwood exposed	Simultaneous white rot	Can result in brittle branch and stem snap
Southern bracket	<i>Ganoderma adspersum</i>	Range of broadleaves: lower stem, although can track up damage	Heartwood	Selective white rot	Results in ductile fractures of the stem and occasionally wind blow
Artist fungus	<i>Ganoderma applanatum</i>	Range of broadleaves: lower stem, although can track up damage	Heartwood	Selective white rot	Results in ductile fractures of the stem and occasionally windblow
Hen of the woods	<i>Grifola frondosa</i>	<i>Quercus</i> and <i>Castanea</i> : base of stem	Heartwood	Selective white rot	Can result in dieback and (occasionally) ductile fractures of the stem
Root rot fungus	<i>Heterobasidion annosum</i>	<i>Picea</i> , <i>Larix</i> , <i>Pinus</i> etc.: root rot	Active pathogenesis	Selective white rot	Rarely results in the failure of the tree
	<i>Inonotus dryadeus</i>	<i>Quercus</i> : root rot	Heartwood	Selective white rot	Results in ductile fractures or wind blow
Shaggy bracket	<i>Inonotus hispidus</i>	<i>Fraxinus</i> , <i>Platanus</i> and <i>Juglans</i> : stem and branches	Heartwood	Simultaneous white rot	Brittle fractures especially problematic on <i>Fraxinus</i> , less so on <i>Platanus</i>
Chicken of the woods	<i>Laetiporus sulphureus</i>	<i>Quercus</i> , <i>Castanea</i> and <i>Prunus</i> : stem	Heartwood	Brown rot	Causes brittle fractures
Giant polypore	<i>Meripilus giganteus</i>	<i>Fagus</i> and some other broadleaves: root plate and lower stem	Heartwood	Soft or simultaneous white rot	Windblow, from brittle fracture of the roots
	<i>Perenniporia fraxinea</i>	<i>Fraxinus</i> , <i>Fagus</i> , <i>Populus</i> and other broadleaves: stem	Heartwood	Simultaneous white rot	Ductile and brittle fractures

Dyer's mazegill	<i>Phaeolus schweinitzii</i>	<i>Pseudotsuga</i> , <i>Picea</i> and <i>Pinus</i> etc.: base of stem and roots, rarely higher on stem	Heartwood	Brown rot	Wood smell of turpentine, causes brittle fractures
Razor strop fungus or birch polypore	<i>Piptoporus betulinus</i>	<i>Betula</i> : stem and branches	Sapwood intact (stress)	Brown rot	Usually brought on by stress causing brittle fractures
Dryad's saddle	<i>Polyporus squamosus</i>	<i>Fagus</i> , <i>Tilia</i> , <i>Acer</i> and other broadleaves: stem and branches	Sapwood exposed	Simultaneous white rot	Can result in fractures, but more commonly is compartmentalised, unless severe pruning or topping has occurred
Wood cauliflower or cauliflower fungus	<i>Sparassis crispa</i>	<i>Pseudotsuga</i> , <i>Picea</i> and <i>Pinus</i> : base of stem	Heartwood	Brown rot	Results in wind blow or brittle fracture at base
Brittle cinder	<i>Kretzschmaria deusta</i> (syn. <i>Ustulina deusta</i>)	<i>Acer</i> , <i>Tilia</i> and <i>Fagus</i> etc.: base of stem	Heartwood	Soft or simultaneous white rot	Has both anamorph and teleomorph stage. Causes brittle fractures

The learner should be aware of the potential significance of the presence of the fungus in relation to:

- Climbing safety
- Biosecurity
- Security of the utility
- Structural integrity of the tree.

The learner should be able to identify a range of insect pests (from images or on site) such as:

- Elm bark beetle
- Oak processionary moth
- Spruce bark beetle
- Leopard moth.

These may include invasive, non-native species that have, as yet, not established in the UK, but pose a significant threat, such as:

- Asian long horn beetle
- Emerald ash borer.

The learner should understand that biosecurity is a range of procedures or measures designed to stop the introduction or spread of harmful organisms or biochemical substances. They should be aware of the importance of biosecurity in not spreading harmful organisms or invasive species between sites, or pathogens between trees on a site.

Unit title:	Operate and maintain insulated rods and associated tools
Unit level:	2
Unit credit value:	1
Unit reference number:	H/615/9798
Unit purpose and aim(s):	This unit provides the learner with the opportunity to demonstrate their knowledge and skills in operating insulated rods and other tools when undertaking vegetation management in proximity to overhead powerlines. In doing so, it considers the operation and maintenance of the equipment as well as the practical considerations of the pruning activity and represents the outcomes necessary to demonstrate safe working practice.

Learning outcome The learner will:	Assessment criteria The learner can:
1 Understand how to confirm preliminary site arrangements.	1.1 Explain the nature of the information required regarding site arrangements to check prior to commencing work.
2 Be able to undertake a site-specific risk assessment.	2.1 Perform a risk assessment of the site and activity Perform a risk assessment relevant to electrical apparatus. 2.2 Explain the details of an overhead line inspection to identify defects. 2.3 Perform a risk assessment relevant to the tree. 2.4 Explain the changes that may occur to justify amending the risk assessment. 2.5 Explain the emergency planning procedures relevant to the work area.
3 Be able to categorise trees adjacent to overhead power lines.	3.1 Correctly identify each tree category. 3.2 Categorise trees adjacent to overhead power lines.
4 Understand the safe working procedures when using insulated rods.	4.1 Explain safe working procedures for using insulated rods. 4.2 Explain limitations of use and number of insulated rods in relation to voltages. 4.3 Designate suitable tools and equipment to undertake tree pruning in the vicinity of an overhead line. 4.4 Designate the required personal protective equipment (PPE) and personal emergency equipment to undertake tree pruning in the vicinity of an overhead line.

Learning outcome The learner will:	Assessment criteria The learner can:
5 Understand how to inspect, maintain, use and store insulated rods and associated tools.	5.1 Explain how insulated rods are inspected. 5.2 Explain how the tool head attachments for the insulated rods are inspected. 5.3 Explain what insulated rod maintenance should be undertaken. 5.4 Explain what tool head attachment maintenance should be undertaken. 5.5 Explain the use and limitations of various pruning tools. 5.6 Explain the procedures to clean, transport and store insulated rods and pruning tools.
6 Be able to safely use insulated rods and pruning equipment in close proximity to electrical apparatus.	6.1 Demonstrate the safe use of the pruning (lopping) head with insulated rods to clear the vicinity zone. 6.2 Demonstrate the safe use of a saw head in the vicinity zone.
7 Understand environmental and arboriculture good practice.	7.1 Explain the importance of good pruning on trees. 7.2 Explain the implications of over-pruning on trees. 7.3 Explain the implications of topping and lopping trees. 7.4 Explain the importance of the 1-2-3 sequence of cuts. 7.5 Explain the reasons for target pruning and the reasons for avoiding stubs and flush cuts. 7.6 Explain the importance of correct waste disposal. 7.7 Explain the importance of a tidy work area.
8 Understand different pruning methods undertaken near overhead lines.	8.1 Describe different pruning methods.

Learning outcome 1 – Understand how to confirm preliminary site arrangements

The learner should be aware that before commencing work, a number of preliminary checks are undertaken regarding site arrangements. These will include ensuring that the works team is at the correct network location or site, that the required consent and permissions are in place for planned works and that the work is authorised. It will also be necessary to ensure that the procedures for updating the organisation’s daily planner system are followed, so that the whereabouts of the work team is known.

Learning outcome 2 – Be able to undertake a site-specific risk assessment

The learner will need to be able to produce a risk assessment for the site and planned activity, identifying hazards, evaluating risks and recommending controls. This risk assessment must include an assessment of the tree (or trees) to be worked on and the relevant electrical apparatus.

To undertake this, they will need to understand the principles of risk assessment, differentiating between hazard and risk, and how they are applied to the work site.

- Hazard – some thing (or activity) that could potentially cause injury or damage
- Risk – the likelihood of injury or damage being caused, to whom and to what extent
- Control measures – actions required to be taken to remove or minimise the risk of injury or damage occurring.

The learner will need to be able to complete an overhead powerline inspection to identify defects, including:

- Broken or damaged conductors
- Irregularly spaced conductors
- Ground clearance
- Damaged or rotten poles
- The condition of stays.

The learner should be aware that risk assessment is a dynamic process and be able to explain that monitoring is required to ensure controls are still in place or, where conditions have changed and new hazards arise, new controls are put in place to minimise risk.

The learner must understand the requirements of emergency planning for the work site and be able to explain relevant emergency planning procedures, including how to:

- Contact the emergency control room
- Identify the powerline ID name/number
- Locate the span/tower/pole equipment ID.

The learner should also be aware of the necessity of briefing all staff to ensure that they are aware of what to do in the event of an emergency, as well as any other relevant procedures.

The learner should be able to specify items of general emergency information that should be included in the site risk assessment and/or team briefing, such as:

- Site location name/address and/or Ordnance Survey grid reference
- Designated meeting place
- Nearest access/egress point
- Type of access
- Nearest area suitable for a helicopter landing
- Location and phone number of nearest accident and emergency hospital
- Works manager contact details
- Their own mobile contact number
- Location of the emergency procedure and site plans
- Location of first aid kit and nominated first aider(s).

Learning outcome 3 – Be able to categorise trees adjacent to overhead powerlines

The learner should be able to correctly specify the different categories of tree as detailed in ENA Engineering Recommendations G55 and identify trees in each of these categories on work sites.

Category	Definition
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.

Learning outcome 4 – Understand the safe working procedures when using insulated rods

For each category of tree specified in the ENA Engineering Recommendations G55, the learner should be able to describe safe working methods for using insulated rods, including identifying the limitations of live and dead works and the need for dedicated observers.

Category	Procedures
Category A	<p>Where the voltage is greater than 33kV, then the works will be carried out dead. The only exception to this will be where no branches breach the live zone and there is further supervision and a method statement approved by the network operator that ensures there is no breach of the live zone.</p> <p>With the powerline live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • Branches can be reduced by using approved insulated tools. Approved insulated tools may only be allowed to be used in the live zone where a procedure approved by the network operator is in place. • Trees with branches in the live zone must not be climbed. • Trees with branches in the vicinity zone but not in the live zone should only be climbed where a procedure approved by the network operator is in place. • If branches protrude through the vicinity zone and up above the height of the vicinity zone, overhanging the extent of the live zone, the works will be carried out dead. • Where approved insulated tools or any cut materials have the potential to cause a phase-to-phase or phase-to-earth flashover, the length of the cut section must be determined by risk assessment and recorded, particularly taking into account distances between phases. • A dedicated lookout/ground person capable of stopping work will be required to ensure that the required control measures are being adhered to • Works must be planned such that contact with electrical equipment is avoided. The saw head should not be used in the live zone or on thin branches less than 25mm in diameter that protrude into the live zone;

	<p>this prevents excessive movement and unintentional contact of branches with conductors.</p>
Category B	<p>With the powerline live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • In the particular circumstance where there is extensive overhang (which cannot be removed using an approved method) over the live zone, then works shall be carried out dead. The only exception to this rule will be where there is further supervision and a method statement approved by the network operator. This must incorporate further controls that ensure no breach of the live zone and may incorporate the use of handheld sections, lowering equipment or rope-assisted felling. Full account of the weather conditions must be taken. Control measures should, where necessary, include preparatory work to remove branches in a logical manner to avoid the risk of small branches cut higher up in the crown outside the vicinity zone bouncing or cartwheeling onto the powerline. • If branches have the potential to breach the vicinity zone, then approved insulated tools must be used. If branches have the potential to breach the live zone, only small sections should be removed to avoid a phase-to-phase contact or damage to the network. The maximum length of a cut section should be recorded on the risk assessment. • These trees can be climbed and dismantled with suitable control measures. It must be ensured that, in the event of a fall or swing, there is no possibility of a climber breaching the vicinity zone. • A dedicated ground person capable of stopping work must be used to maintain clearances if a climber or MEWP is above the level of conductors. • Straight fell trees away with appropriate control measures (such as the use of two ropes) to ensure no breach of the vicinity zone. The suitability of any such procedures must be approved by the network operator.
Category C	<p>With the powerline live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • Remove branches in the live zone with approved insulated tools. • If the trees are below the level of the live zone, with no possibility of breaching the live zone, then they may be felled or pruned with non-insulated tools such as a chainsaw. • If the tree to be felled is below the level of the live zone with a possibility of breaching the live zone, then remove the branches with approved insulated tools prior to felling. • If the trees are below the level of the live zone, then they may be climbed, ensuring that no part of the climber's body, tools or equipment can breach the vicinity zone and that branches are not caused to breach the live zone. A dedicated lookout/ground person capable of stopping work should be used in this instance.
Category D	<p>With the powerline live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • Use non-insulated tools and avoid any breach of the vicinity zone by operatives, tools or equipment. • Wherever possible, trees should be felled away from conductors. Trees must be felled into a cleared area to avoid the risk of a domino effect with other trees.

The learner will need to understand the limitations of using insulated rods, in that they can only be used with a voltage up to a maximum of 33kV, and generally cannot be used where excessive/extensive branch overhang above or through conductors exists.

The learner must be able to state that a minimum of three rods is required for working up to 11kV (two rods remaining untouched whilst in use), and a minimum of four rods for working up to 33kV (where three rods must remain untouched whilst in use).

The learner should be able to designate tools and equipment that are suitable to undertake pruning activities in proximity to overhead powerlines, including:

- Insulated rods
- An appropriate saw head
- A pruning head with suitable pull cord and insulated inserts
- A pulling hook
- PPE that will provide appropriate head, eye and foot protection
- Personal emergency equipment including a personal first aid kit.

Learning outcome 5 – Understand how to inspect, maintain, use and store insulated rods and associated tools

The learner should be able to inspect the insulated rods and explain items for consideration during the inspection. These may include:

- The rods must be of a type approved by the network operator for work to be carried out
- The rods must be stored in a protective bag or case
- The rods must be tested and in date
- The joints of the rods must fit securely
- The rods must be clean and defect-free
- The rods must have a sufficient voltage rating
- The rods must have unique identification numbers.

The learner should be able to inspect tool head attachments and explain items for consideration, such as:

Head attachment	Considerations
Pruner head	<ul style="list-style-type: none"> • sharpness of cutting blade • adequate tension exerted by return spring • positive attachment to insulated rod • no sign of bending or distortion of rigid components • pull cord of suitable strength, condition and length <p>Note that there must be a minimum of two in-line insulated inserts, one of which must be between the operator and any energised element of the electrical network</p>
Saw head	<ul style="list-style-type: none"> • sharpness of blade • straightness of blade • all cutting teeth present

	<ul style="list-style-type: none"> • positive attachment to insulated rod • scabbard in undamaged condition
Hook	<ul style="list-style-type: none"> • positive attachment to insulated rod • signs of cracking or excessive bending or distortion

The learner should be able to describe the maintenance of insulated rods and attachments, knowing that dirty rods should be cleaned externally and internally, according to the manufacturer's instructions. Rods must be examined and tested at regular intervals by a suitably competent person, as per manufacturer's recommendations. Repairs must only be carried out to minor scratches using polish recommended by manufacturers, to ensure that water beads and runs off. Damaged or defective rods should be withdrawn from service, labelled as defective or scrapped. The results of inspections must be recorded and tools marked with the most recent test date or next test date.

Tool head attachments should be cleaned to remove any sap, resin etc. Lubricating oil should be applied to moving parts and any blades or cutting edges sharpened.

The learner should be able to explain the use and limitations of pruning tools, including:

- Pruning (lopping) head – used on twigs and branches less than 25mm in diameter
- Pruning saw – used on branches over 25mm in diameter
- Hook – used, by an assistant, to steady, lift or pull branches being pruned, or to place a pull-rope over a branch.

The learner should note that the saw head is not to be used in the live zone and that non-insulated tools have the potential to span close phases with the associated risk of flashover, so must not enter the vicinity zone. There must also be an awareness of the need to clean rods if they are laid on the ground during operations, to ensure all contamination is removed, and the need to inspect rods for damage on completion of work activities.

The learner should be aware of the requirements for cleaning, transporting and storing pruning tools. This will include cleaning them to remove tree sap, resin etc. and the application of biosecurity and hygiene measures, such as the use of disinfectants. Tools should then be allowed to dry before a suitable rust preventative/lubricant is applied to parts which might corrode.

Before being transported or placed into storage, tool heads should be covered. They can then be transported (secured so that they cannot be damaged) or placed into a dry, secure store. Insulated rods should likewise be stored in a dry, clean environment, in a position which will prevent scratching or damage.

Learning outcome 6 – Be able to safely use insulated rods and pruning equipment in close proximity to electrical apparatus

The learner will need to demonstrate the use of a pruning (lopping) head with insulated rods. This will include:

- The operation is discussed and planned with co-worker
- A dedicated lookout is posted as necessary

- Awareness and avoidance is shown at all time of any nearby live trees
- An appropriate number of insulated rods for the task, assembled in a 'safe' site position, avoiding contamination from ground
- An insulated insert positioned in the pulling cord in relation to the overhead powerline (between the lowest live point and hand)
- A plan of work agreed with a co-worker to pull the cord if required
- The pruning head is positioned to avoid risk of conductor clashing or flashover
- The pruner head and pull cord are positioned to draw away from the conductors in use
- Good positive communication is established with the co-worker during pruning operations
- Where the cut material could fall towards the conductors and breach the live zone, the cut material must be shorter than the distance between conductors
- As the potential for material to breach the live zone and vicinity zone decreases, the length of cut material may increase
- Awareness of the requirement to undertake risk assessment to ensure no damage is caused to overhead powerlines where branches go through them.

The learner will need to demonstrate the safe use of a saw head to prune material in and around the vicinity zone of a powerline. This will include

- The insulated rods are assembled and saw head attached avoiding contamination from the ground, using an assistant where necessary
- The saw head must not enter the live zone
- The saw head must not be used on material less than 25mm in diameter if it may enter the live zone on category A trees
- Under the direct instruction of the learner, the assistant may use the pulling hook to move or steady branches
- Ensure that trees to be retained are pruned correctly to minimise decay, reduce potential for regrowth, future hazard and maintain acceptable appearances
- Maintenance of a tidy site and work area.

Learning outcome 7 – Understand environmental and arboriculture good practice

The learner should be able to explain that good pruning can result in the formation of a good crown architecture with an even distribution of main branches and leaf cover that is typical for the species. It also encourages secondary thickening because of wind sway. Correct target pruning encourages the healing of pruning wounds and discourages disease and decay.

The learner should be aware that over-pruning trees can result in a poor crown architecture with excessively open crowns, allowing too much movement in the branch work. Depending on the tree species, there can be the production of dense regrowth or long, whippy, arching branches with growth at the end (known as lion tailing), which can increase the risk of branch failure. Very excessive pruning can result in tree death.

Learners should be able to explain that topping and lopping is the indiscriminate reduction of branches. Topping relates to the reduction of tree height, usually leaving an incorrect pruning

cut. Lopping relates to the lateral branches. These techniques are considered as poor pruning practices because they can, depend on the tree species:

- Render the tree unsightly
- Form unstable branch unions
- Increase the stress to the tree
- Lead to ill health, encouraging disease and decay, causing the tree to become a hazard
- Cause accelerated growth rates, resulting in reduced clearance between the tree and the overhead powerlines
- Cause tree death, if severe enough. The result of these practices will be dependent on tree species.

Learners should be able to explain the importance of the 1-2-3 sequence of cuts to control the cut section and to prevent tearing or ripping of the bark when pruning.

The first two cuts are made far enough along the branch to be removed, ensuring that the cut section does not hit the remaining section of the tree as it drops, and close enough that the final cut does not tear. Typically, this is about 300mm, but the distance can vary depending on diameter of the branch.

The first cut is an undercut made to about one third of the diameter of the branch. The second cut is downward, through the branch, about 25mm beyond the undercut, which allows the weight of the branch to fall, whilst any tearing is arrested by the undercut.

Having removed the weight of the branch to be pruned off, the third cut, an example of natural target pruning, can be made accurately at the branch collar.

Where the 1-2-3 sequence of cuts is not used, pruning can result in tearing or ripping back of the bark, exposing the vascular connection between the trunk and branch tissues, which is then an entry point for disease.

Learners should understand that natural target pruning makes use of the branch collar to identify the proper location to remove a branch. In doing so, target pruning preserves the branch bark collar and therefore the trees' defences against decay, whereas making flush cuts or leaving stubs when pruning can allow decay to enter.

Stub cuts (i.e. those cuts where a stump or stub of the branch tissue is left protruding from the trunk tissue) can lead to problems in fast-growing tree species in which regrowth sprouts from stubs and can quickly grow back into the powerlines, thereby reducing the clearance cycle.

Flush cuts, where a side branch is removed too close to the trunk, removing part or all of the branch collar, can also encourage the development of epicormic sprouts from around the wound.

In both cases the cuts adversely affect the appearance of the trees, leaving it looking unsightly.

Learners should understand that waste from work operations must be dealt with in line with the work specification and the landowners' consent, as failure to do so may constitute a breach of contract and adversely affect future work.

Where green waste is to be removed from a site, the Waste (England and Wales) Regulations 2011 sets requirements for the collection, transport, recovery and disposal of waste. It establishes a two-tier system, with the upper tier covering controlled wastes including commercial, industrial, household and hazardous waste, and the lower tier covering animal by-products, waste from mines or quarries and waste from agricultural premises.

Tree surgeons are required to register on the lower tier for green waste, unless they are taking construction debris away from a site. Although there is a fee for upper tier registration, the lower tier registration is free and lasts indefinitely, unless the registration is revoked or withdrawn.

Learners should be aware that it is important to maintain a clean and tidy work area throughout the work operations. The reasons for this include:

- Safety – the risk of slips and trips will be greatly increased where there is brash, debris, tools and equipment left untidily on the site. They pose a risk to the operator and others. There is an additional risk in that potential hazards may become obscured, covered up by the brash etc. on site.
- Loss or damage – where tools and equipment are covered over by brash and debris, they can be easily lost or damaged.
- Customer care – the first impression of the landowner or person authorising the work is based on the appearance of the work site, which can influence their decisions regarding approving future work.

Learning outcome 8 – Understand different pruning methods undertaken near overhead lines

The learner should be able to explain each of the following pruning techniques

Technique	Explanation
Through pruning	A technique undertaken on low-voltage overhead powerlines in residential areas. It allows conductors to pass through the canopy of a tree, creating sufficient clearance between the tree and conductor. The clearance is specified as a distance from the nearest part of the network and all tree material is removed within that clearance distance is removed.
Under pruning/crown raising	The technique is used in amenity considerations in residential areas. It consists of the removal of overhanging branches, but leaving some higher branches, retaining the general shape of the tree. This technique is specified as a distance from the network and is usually used when the network is to one side of the tree.
Side pruning	All branches on the powerline side of the tree are removed by a pruning cut at the trunk or back to a specified clearance. The technique is used in woodland or forest locations, particularly conifer forests, where the wind firm edge should be kept.

Crown reduction	This is used for trees directly under the powerline, as an alternative to removal, where the tree must be retained. The height or spread of the canopy is reduced and reshaped to keep it as near to the tree's natural form as possible. When specifying a crown reduction, this will usually be in terms of the remaining tree height or spread. However, it may also be in terms of a stated clearance from a specified object.
Directional pruning	In each of the pruning techniques above, the pruning cuts should be made so as to direct regrowth away from the overhead line. This is referred to as directional pruning.

Unit title:	Carry out rope assisted felling of a tree up to 380mm diameter, in proximity to overhead powerlines, using a chainsaw
Unit level:	3
Unit credit value:	1
Unit reference number:	T/616/1913
Unit purpose and aim(s):	This unit provides the learner with the opportunity to demonstrate the knowledge and skills to carry out rope-assisted tree felling operations in proximity to overhead powerlines. It represents the outcomes necessary to demonstrate safe working practice.

Learning outcome The learner will:	Assessment criteria The learner can:
1. Understand the requirements of health and safety legislation, guidance and industry good practice relating to tree felling operations in proximity to overhead powerlines.	1.1 Summarise the relevant health and safety legislation and industry good practice in relation to tree felling operations in proximity to overhead powerlines.
2. Be able to undertake a site-specific risk assessment.	2.1 Perform a site inspection to determine the safety and environmental suitability of any proposed felling. 2.2 Perform a risk assessment of the site and activity relevant to rope-assisted felling a tree in proximity to overhead powerlines. 2.3 Explain controls which should be in place to ensure the safety of the operator, fellow work colleagues, visitors and the general public. 2.4 Explain the emergency planning procedures relevant to the work area.
3. Understand the safe working procedures for each category of tree.	3.1 Explain safe working procedures for each category of tree. 3.2 Define live and dead work situations for each category of tree.
4. Be able to perform a pre-work inspection.	4.1 Perform a pre-work inspection of the work area.
5. Understand the application of equipment for tree felling operations.	5.1 Explain the use of common felling aids used during felling operations.
6. Understand need for accurate felling direction and importance of using appropriate techniques.	6.1 Explain the need for accurate felling direction. 6.2 Explain the importance of employing the correct felling techniques/cuts.

Learning outcome The learner will:	Assessment criteria The learner can:
	6.3 Prepare the work area to allow safe felling of the tree. 6.4 Explain how to recognise defects in any of the pull system components.
7. Be able to set up an assisted fell system.	7.1 Install adequate attachment point(s) within the tree to be felled to give sufficient security and adequate leverage for the pulling system. 7.2 Set up an assisted fell system.
8. Be able to perform an assisted fell.	8.2 Select suitable equipment and techniques to carry out the proposed felling operation. 8.3 Fell the tree effectively and safely. 8.4 Demonstrate appropriate techniques in the event of a hung-up tree. 8.5 Restore the site following an assisted fell.

Learning outcome 1 – Understand the requirements of health and safety legislation, guidance and industry good practice relating to tree felling operations in proximity to overhead powerlines

The learner should be able to summarise the relevant health and safety legislation and industry good practice in relation to tree felling operations in proximity to overhead powerlines.

The Health and Safety at Work Act, etc. 1974

This places general duties upon employers and the self-employed to those other than employees, and states:

'It shall be the duty of every employer to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that persons not in his employment who may be affected thereby are not exposed to risks to their health and safety.'

It places general duties upon employees

- to take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions at work; and
- as regards any duty or requirement imposed on his employer or any other person by or under any of the relevant statutory provisions, to co-operate with him so far as is necessary to enable that duty or requirement to be performed or complied with.

Management of Health and Safety at Work Regulations 1999

These regulations state that every employer and self-employed person has an obligation to regularly carry out a risk assessment relating to the health and safety of employees. If any risks found cannot be avoided or adequately reduced, employers must use a safety sign on the premises, even if it is a temporary risk or hazard.

The Provision and Use of Work Equipment Regulations 1998 (PUWER 98)

The regulations state that the risks to people's health and safety from equipment they use at work, must be assessed, prevented or controlled.

Consideration must be given to all work equipment in arboriculture including its'

- application
- suitability
- maintenance
- Instruction, training and supervision for use of the same.

Any person working with a chainsaw on or in trees must hold a certificate of competence relevant to the task they are undertaking.

ENA Engineering Recommendations G55 *Safe Tree Working in Proximity to Overhead Electric Lines*

These provide a common basis for safe working practices for tree work in Proximity to any Network Operator's equipment and set out to differentiate between works carried out by or on behalf of Network Operators and works carried out by third parties not in their employ.

British Standard 3998:2010

Trees should be felled only if their removal or coppicing is assessed as providing the best solution in the circumstances. In making this assessment, account should be taken of:

- the potential impact of exposing retained trees
- the potential for indirect damage, e.g. to underground services, or to built structures including archaeological features
- destabilization of slopes due to the removal of support from tree roots
- the potential for direct damage caused by either tree felling or stump removal
- the potential for tree failure.

A tree should be felled in one piece only when there is no significant risk of damage to people, property or protected species. Where restrictions (e.g. lack of space, buildings, other features, land ownership or use, or other trees which are to be retained) cannot be overcome, trees should be dismantled in sections. This also applies where a tall stump is being retained but where branches are to be removed/pruned. Extensively decayed trees can be unpredictable when they are being felled, and special precautions should therefore be taken, such as the use of a winch to guide the direction of fall.

FISA Safety Guide 302 *Basic chainsaw felling and manual takedown*

It is important to remember that felling is a one-person operation. A safe method of operation must be agreed to ensure that a safe working distance can be maintained between workers (at least two tree lengths) and between workers and machinery (outside the risk zone of the machines being used).

When felling adjacent to overhead electric lines, a clearance of not less than twice the height of the tree must be maintained. Felling should be directed away from the electric line. Where

felling is within two tree lengths, the advice of the owner of the overhead electric lines must be sought. Specific details are given in FISA leaflet 804, *Electricity at work: Forestry*.

FISA Safety Guide 307 Chainsaw felling of large trees

The leaflet covers the felling and crown breakdown of large trees in plantations or of single large trees. It does not cover exceptional situations where the risk assessment shows advanced or alternative felling techniques, beyond those normally applied to large trees, are required. In such circumstances, seek specialist advice and agree safe methods of working.

Learning outcome 2 – Be able to undertake a site-specific risk assessment

The learner should be able to perform a site inspection and determine the safety and environmental suitability of any proposed felling activity. From this inspection, the learner will be able to produce a site assessment including:

- The extent of the vicinity zone and its effect on planned work
- The tree category
- The tree condition and health, and their effect on planned felling activities
- The weighting, leaning and structure of the tree
- The surrounding canopy and the likely effects of the planned felling
- Environmental considerations (TPOs, wildlife habitats including nesting birds, bats, badgers).

The learner should be able to produce a risk assessment for the site and activity, identifying hazards and evaluating risks including:

- The confined nature of the site
- Slopes and gradients
- An estimation of load
- The vicinity zone (subject to the voltage(s) on site).

The risk assessment will include controls that should be in place to ensure the safety of the operator, fellow work colleagues, visitors and the general public, such as:

- Agreed team communication methods, signs and signals
- Signage to alert third parties
- Tapes and cones as required
- Lookouts
- Use of a non-return system
- Use of PPE.

The learner needs to understand that the controls needed will be dependent on the site and tree requirements.

The learner should be able to explain the emergency planning procedures relevant to the work area, including:

- How to contact the emergency control room
- How to identify the powerline ID name/number

- How to locate the span/tower/pole equipment ID
- The need to brief all staff so that they are aware of what to do in the event of an emergency.

The learner should be able to specify items of general emergency information that should be included in the emergency plan, such as:

- Site location name/address and/or Ordnance Survey grid reference
- Designated meeting place
- Nearest access/egress point
- Type of access
- Nearest area suitable for a helicopter landing
- Location and phone number of nearest accident and emergency hospital
- Works manager contact details
- Their own mobile contact number
- Location of the emergency procedure and site plans
- Location of first aid kit and nominated first aider(s).

Learning outcome 3 – Understand the safe working procedures for each category of tree

For each category of tree specified in the ENA Engineering Recommendations G55, the learner should be able to describe safe working procedures, identifying the limitations of live and dead works and the need for dedicated observers.

Category	Procedures
Category A	<p>Where the voltage is greater than 33kV, then the works will be carried out dead. The only exception to this will be where no branches breach the live zone and there is further supervision and a method statement approved by the network operator that ensures there is no breach of the live zone.</p> <p>With the line live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • Branches can be reduced by using approved insulated tools. Approved insulated tools may only be allowed to be used in the live zone where a procedure approved by the network operator is in place. • Trees with branches in the live zone must not be climbed. • Trees with branches in the vicinity zone but not in the live zone should only be climbed where a procedure approved by the network operator is in place. • If branches protrude through the vicinity zone and up above the height of the vicinity zone, and overhang the extent of the live zone, then the works will be carried out dead. • Where approved insulated tools or any cut materials have the potential to cause a phase-to-phase or phase-to-earth flashover, then the length of cut section must be determined by risk

	<p>assessment and recorded, particularly taking into account distances between phases.</p> <ul style="list-style-type: none"> • A dedicated lookout/ground person capable of stopping work will be required to ensure that the required control measures are being adhered toWorks must be planned such that contact with electrical equipment is avoided. The saw head should not be used in the live zone or on thin branches less than 25mm diameter that protrude into the live zone; this prevents excessive movement and unintentional contact of branches with conductors.
Category B	<p>With the line live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • In the particular circumstance where there is extensive overhang (which cannot be removed using an approved method) over the live zone, then works shall be carried out dead. The only exception to this will be where there is further supervision and a method statement approved by the network operator. This must incorporate further controls that ensure no breach of the live zone and may incorporate the use of handheld sections, lowering equipment or rope-assisted felling. Full account of the weather conditions must be taken. Control measures should, where necessary, include preparatory work to remove branches in a logical manner to avoid the risk of small branches cut higher up in the crown outside the vicinity zone bouncing or cartwheeling onto the line. • If branches have the potential to breach the vicinity zone, then approved insulated tools must be used. If branches have the potential to breach the live zone, then only small sections should be removed to avoid a phase-to-phase contact or damage to the network. The maximum length of cut section should be recorded on the risk assessment. • These trees can be climbed and dismantled with suitable control measures. It must be ensured that, in the event of a fall or swing, there is no possibility of a climber breaching the vicinity zone. • A dedicated ground person capable of stopping work must be used to maintain clearances if a climber or MEWP is above the level of conductors. • Straight fell trees away with appropriate control measures (such as the use of two ropes) to ensure no breach of the vicinity zone. The suitability of any such procedures must be approved by the network operator.
Category C	<p>With the line live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • Remove branches in the Live Zone with approved insulated tools. • If the trees are below the level of the live zone, with no possibility of breaching the live, they may be felled or pruned with non-insulated tools such as a chainsaw.

	<ul style="list-style-type: none"> • If the tree to be felled is below the level of the live zone with a possibility of breaching the live zone, then remove the branches with approved insulated tools prior to felling. • If the trees are below the level of the live zone, then they may be climbed ensuring that no part of the climber's body, tools or equipment can breach the vicinity zone and that branches are not caused to breach the live zone. A dedicated lookout/ground person capable of stopping work should be used in this instance.
Category D	<p>With the line live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • Use non-insulated tools and avoid any breach of the vicinity zone by operatives, tools or equipment. • Wherever possible, trees should be felled away from conductors. Trees must be felled into a cleared area to avoid the risk of a domino effect with other trees.

The learner should be able to define live and dead working situations for each category of tree identified on the work site.

Learning outcome 4 – Be able to perform a pre-work inspection

The learner should conduct a pre-felling inspection of the work area, including:

- A hazard inspection of the tree
- Checking the overhead powerline condition
- Confirming the correct location
- Confirming the vicinity and live zone distances.

Learning outcome 5 – Understand the application of equipment for tree felling operations

The learner should be able to describe the use of common felling aids used during felling operations, including:

- Wedges
- Felling Levers
- Network operator, main contractor and employer approved and inspected connectors, strops and ropes.

Learners must be aware that the felling aids used will depend on the tree being felled.

Learning outcome 6 – Understand need for accurate felling direction and importance of using appropriate techniques

The learner should be able to explain that accurate felling is necessary to:

- Ensure the tree is felled in the correct direction
- Protect against hitting the line
- Protect against hitting other targets
- Aid disposal.

The learner should understand that recognised and appropriate felling cuts and techniques should be employed to:

- Maintain control of the fell
- Maintain the condition of the tree
- Ensure that the techniques are appropriate to the size of the tree
- Properly control the fell of leaning trees.

The learner should prepare the work area, removing hazards as appropriate, such as:

- Clearing the base of the tree and escape routes
- Removing obstacles
- Brushing stems.

The learner should be able to describe how to recognise defects in the system, including:

- Damaged rope
- Damaged pulleys
- Incorrect equipment.

Learning outcome 7 – Be able to set up an assisted fell system

The learner should be able to select suitable attachment point(s) to install the rope(s) using insulated rods following industry good practice. This must be between one third to two thirds of the height of the tree.

The learner should be able to set up an assisted fell system, to include:

- Selecting appropriate system components
- Selecting suitable anchor point(s)
- Using a non-return system for the tree being felled
- Maintaining two tree lengths of safety distance for the working party (or offset where necessary)
- Pre-tensioning the pull system, ensuring all parts are correctly configured and functional.

Learning outcome 8 – Be able to perform an assisted fell

The learner should be able to select equipment and techniques to carry out the proposed felling operation appropriate to the tree and conditions. These should take into account:

- Limitations of different types of pulling equipment

- Necessity for offset pulling when working in confined sites
- Importance of using appropriate felling cuts
- Hinge dimensions in relation to the tree species and condition
- Use of a 'hold-back' on the felling cut.

The learner should be able to demonstrate the safe and effective felling of the tree, within two metres' tolerance of the specified direction of fell, taking account of:

- Selection of suitable anchor points, given the anticipated load
- Installation of suitable attachment points to give security and adequate leverage
- Establishment of clear communication, and system of working, as per industry good practice
- Pull initiated from a safe location.

The learner should be able to demonstrate techniques to deal with a hung-up tree that are appropriate to the tree size and situation, including:

- Selecting and configuring restraining equipment effectively
- Removing a portion of or all the hinge, as appropriate to the tree size and condition.

The learner should be able to restore the site, in accordance with agreed specifications, following assisted fell operations, including:

- Processing the tree in accordance with agreed specifications
- Removing, inspecting and storing assisted fell equipment.

Unit title:	Carry out aerial pruning of a tree
Unit level:	3
Unit credit value:	3
Unit reference number:	K/504/0317
Unit purpose and aim(s):	The aim and purpose of this unit is to provide the learner with the knowledge, skills and understanding to carry out aerial pruning of a tree.

Learning outcome The learner will:	Assessment criteria The learner can:
1. Be able to promote health and safety and industry good practice.	<p>1.1. Identify the hazards and risks associated with the working area and the proposed work.</p> <p>1.2. Work in a way which promotes health and safety, is consistent with relevant legislation and industry good practice.</p> <p>1.3. Use and maintain tools, equipment and personal protective equipment (PPE).</p> <p>1.4. Carry out work to minimise environmental damage.</p> <p>1.5. Dispose of waste safely, in line with legislation.</p>
2. Be able to carry out aerial pruning of a tree.	<p>2.1. Perform a hazard evaluation and work at height assessment prior to carrying out the work.</p> <p>2.2. Use access and positioning methods appropriate to the assessed risk(s).</p> <p>2.3. Inspect all access equipment to ensure it is safe and fit for use under manufacturer's instructions and relevant legislation.</p> <p>2.4. Select an appropriate anchor point if climbing or appropriate position of Mobile Elevated Work Platform (MEWP) according to the work situation.</p> <p>2.5. Reassess the anchor point for climbing or positioning of Mobile Elevated Work Platform (MEWP) throughout the work.</p> <p>2.6. Apply pruning specification.</p> <p>2.7. Carry out pruning operations in accordance with industry good practice.</p>

Learning outcome The learner will:	Assessment criteria The learner can:
	2.8. Check all arisings are dropped or thrown into a planned drop zone without compromising the access equipment or damage to the infrastructure.
3. Understand relevant health and safety legislation and industry good practice.	3.1. Explain the importance of risk assessment. 3.2. Outline the emergency planning procedures relevant to the work area. 3.3. Summarise current health and safety legislation and industry good practice. 3.4. Explain the importance of maintaining tools, equipment and personal protective equipment. 3.5. Describe the potential environmental damage that could occur and how to respond appropriately. 3.6. Explain the correct and appropriate methods for disposing of waste.
4. Understand how to carry out aerial pruning of a tree.	4.1. Explain control measures to be implemented relevant to the working area and proposed works. 4.2. Explain how to evaluate the tree for hazards and the implications of the hazards when identified. 4.3. Explain the importance of accurate and appropriate cuts when removing branch material. 4.4. Explain how tree species, their condition and the time of year affect the work. 4.5. Evaluate the advantages and disadvantages of pruning tools to the selected pruning operations. 4.6. Explain the additional precautions that may be taken during re-pollarding of trees. 4.7. Define pruning prescriptive terms and measurements. 4.8. Explain measurement terms and how to apply them. 4.9. Explain the basic principles of target pruning and the effect on tree pruning operations.

Learning outcome 1 – Be able to promote health and safety and industry good practice

Throughout the pruning activities, the learner is expected to work in a way which promotes health and safety, and is consistent with relevant legislation and industry good practice.

The learner will need to be able to produce a risk assessment for the site and planned pruning activity, identifying hazards, evaluating risks and recommending controls. This risk assessment must include an assessment of the tree (or trees) to be worked on and the relevant electrical apparatus.

To undertake this, they will need to understand the principles of risk assessment, differentiating between hazard and risk, and how they are applied to the work site.

- Hazard – some thing (or activity) that could potentially cause injury or damage
- Risk – the likelihood of injury or damage being caused, to whom and to what extent
- Control measures – actions required to be taken to remove or minimise the risk of injury or damage occurring.

The learner should be able to explain control measures to be implemented, relevant to the working area and proposed works. (Assessment criteria 4.1)

The learner should use and maintain tools, equipment and PPE in accordance with manufacturer’s recommendations and industry good practice. For example:

Tools and equipment	Guidance
Petrol-driven chainsaws	<ul style="list-style-type: none"> • INDG317(rev2) <i>Chainsaws at work</i> • FISA 301 <i>Using petrol-driven chainsaws</i> They should: <ul style="list-style-type: none"> • Be an appropriate size • Be suitable for the task • Have appropriate safety features.
Top-handled chainsaws	<ul style="list-style-type: none"> • HSE Contract Research Report 402/2001 <i>Safe working methods with top-handled chainsaws</i> • AFAG308 <i>Top-handled chainsaws</i> They should: <ul style="list-style-type: none"> • Be of an appropriate size • Be suitable for the task • Have appropriate safety features. An appropriate chainsaw lanyard should be used.
PPE	This should include: <ul style="list-style-type: none"> • A helmet with chinstrap, ear and eye protection • A personal first aid kit • A knife with retractable blade or handsaw • Chainsaw foot protection with good grip and ankle support (if appropriate) • Non-snag clothing • Chainsaw leg protection (if appropriate).
Climbing equipment	This should include: <ul style="list-style-type: none"> • An approved work-positioning harness (as per AFAG and Arboricultural Association guides)

	<ul style="list-style-type: none"> • Rope systems of suitable diameter, length and strength for the climbing line and for the friction hitches • Triple action auto-locking karabiners for main attachments • Adjustable strops or a system using both ends of the rope. <p>All equipment must be LOLER inspected.</p>
Hand tools	<p>They should be:</p> <ul style="list-style-type: none"> • Suitable for the task • Of an appropriate size • Guarded as appropriate • Kept sharp (cutting tools).

The learner should be able to carry out work to minimise environmental damage, including:

- Inspecting the working area for potential (negative) environmental damage
- Recording finding(s) and reporting as appropriate
- Implementing any required control measure(s).

Learning outcome 2 – Be able to carry out aerial pruning of a tree

The learner should be able to perform a hazard evaluation of the tree and a work at height assessment prior to carrying out the work, in accordance with industry good practice, and state whether the tree is safe to climb, suggesting an appropriate course of action when it is not safe.

If working from a rope and harness, the learner must use access and positioning methods appropriate to the assessed risk(s).

They will need to establish their initial anchor point, taking into account:

- The suitability of the technique used
- Rope organisation
- The safety and position of the anchor point.

They should also test the anchor point using thorough loading.

In accessing the tree, the learner will take account of:

- Efficient use of access technique chosen
- Appropriate selection of anchor points
- Appropriate route taken up the tree
- Correct use of adjustable strop or alternative system when changing anchor points
- Loading new anchor points before the previous anchor point is removed
- Slack rope within a system less than 500mm
- Not climbing more than 250mm above the anchor point
- Correct use of equipment.

Final anchor point selection should take into consideration:

- Size, strength and structure
- Position in relation to the parts of the tree to be accessed
- Use of equipment to minimise damage to the tree, if appropriate.

Note that the learner must be attached to the tree at all times.

The learner must inspect all access equipment to ensure it is safe and fit for use under manufacturer's instructions and relevant legislation. This includes ensuring that:

- **Ropes and cord for friction hitches are checked for cuts, frays, correct end terminations**, burns and glazing, contamination and excessive wear
- The candidate has the ability to tie, dress and set hitches used
- Karabiners are checked for visible damage, corrosion and to ensure that the locking mechanism works correctly
- Harnesses are checked for damage to stitching, security of the anchor point(s), cuts and frays and general wear.

If working from an MEWP, the learner must select an appropriate position for the MEWP, according to the work situation, ensuring that it is:

- Appropriate in terms of position relative to the works being undertaken
- Positioned to ensure it cannot be compromised by the work to be done.

The positioning of the MEWP, or anchor point if working from a rope and harness, will need to be reassessed throughout the work.

The learner should be able to apply pruning specification, and carry out pruning operations, in accordance with industry good practice, including:

- Crown reduction
- Crown lifting
- Crown thinning.

During pruning activities, all arisings should be dropped or thrown into a planned drop zone without compromising the access equipment or damaging the infrastructure.

Learning outcome 3 – Understand relevant health and safety legislation and industry good practice

The learner should be able to explain that 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.

The learner should be able to specify items of general emergency information that should be included in the site risk assessment and/or team briefing, such as:

- Site location name/address and/or Ordnance Survey grid reference
- Designated meeting place
- Nearest access/egress point
- Type of access
- Nearest area suitable for a helicopter landing
- Location and phone number of nearest accident and emergency hospital
- Works manager contact details
- Their own mobile contact number
- Location of the emergency procedure and site plans
- Location of first aid kit and nominated first aider(s).

The learner should be able to summarise current health and safety legislation and industry good practice.

Legislation or source of good practice	Comment
Arboriculture and Forestry Advisory Group (AFAG) and Forestry Industry Safety Accord (FISA) safety guides	These provide examples of industrial good practice.
BS3998:2010: <i>Recommendations for tree work</i>	This provides guidance to all parties whose activities may affect trees.
Health and Safety at Work etc. Act 1974 (HASAW)	This outlines: <ul style="list-style-type: none"> • General duties for employers • Information about how to maintain safe places of work.
Provision and Use of Work Equipment Regulations 1998 (PUWER), Regulation 9	This states: <ul style="list-style-type: none"> • That operators should be adequately trained • What training should comprise of; i.e. precautions to be taken during the use of work equipment.
Work at Height Regulations 2005	This requires that: <ul style="list-style-type: none"> • All work at height to be properly planned and organised • Those involved in work at height to be competent • Work at height risks to be assessed and appropriate work equipment to be selected and used • Equipment for work at height to be properly inspected.
Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)	This requires that: <ul style="list-style-type: none"> • Equipment should be pre-use checked by the operator • A written recorded interim inspection • A thorough examination every six months • Equipment should be marked for unique identification.

The learner should explain that it is important to maintain tools, equipment and PPE in order to:

- Ensure operator safety
- Ensure equipment works when required
- Reduce downtime
- Reduce emissions from machines and possible environmental damage.

The learner should be able to describe the potential environmental damage that could occur from the work activity, and how to respond appropriately. For example:

Potential damage	Potential response
Damage to retained trees	Work sequence chosen to minimise subsequent damage to retained trees
Contamination of watercourses	Good housekeeping, use of spill mats etc.
Wildlife disturbance	Wildlife assessments completed prior to work

The learner should be able to explain the correct and appropriate methods for disposing of waste from workplace activities. This might include ensuring that:

- Designated waste and recycle bins are used
- Empty containers are removed from site e.g. oil
- Litter is taken home with operators.

Note that all waste produced from activities must be disposed of in line with legislation, good practice and/or site requirements (Assessment criteria 1.5).

Learning outcome 4 – Understand how to carry out aerial pruning of a tree

The learner should explain that the tree may be evaluated for hazards using:

- Visual observation
- A hazard evaluation report
- Decay detection tools.

They should also be able to explain that the implications of the hazards include:

- Physical injury
- Damage to equipment
- Damage to the retained part of the tree
- Disruption to wildlife.

The learner should be able to explain that accurate and appropriate cuts are important when removing branch material, in order to:

- Ensure control
- Prevent splitting
- Prevent tearing
- Ensure job specification and good practice requirements (BS3998) are met.

The learner must understand the effect of the tree species, condition and time of year on pruning activities.

Tree species – Some species are best pruned in midsummer after flowering (July–August), including *Prunus* species, pear, apple and laburnum. This time is when the natural processes in the tree are most active and provide the best defence against wound-related diseases.

Pruning *Acer*, *Betula* and *Juglans* species when they are in full leaf (or just after leaf fall) reduces the unsightly bleeding of the tree. A number of tree species will naturally produce a second flush of growth in midsummer.

Condition – Trees in poor condition may have two related effects: first, they are more likely to require maintenance pruning due to poor health or dieback etc. as a result of stress; second, the tree’s ability to recover following pruning may be compromised due to its condition.

In considering the condition of the tree, some consideration must also be given to its relative age. Younger trees tend to grow more vigorously and are better able to heal following wounding than older or veteran trees.

Time of year – The effects of both seasonal factors and weather conditions on the tree should be taken into account before pruning is undertaken. For example:

- Pruning should be timed so as to avoid the exposure of tissues to severe seasonal or weather conditions
- Trees should not be pruned during periods of water stress
- Previously shaded bark (and underlying sapwood) may be damaged by sudden exposure to direct sunlight, particularly on thin-barked trees (e.g. rowan, beech and maple) and on old trees of most species.

The learner should be able to state the relative merits of tools used in pruning operations, such as:

Tools	Advantages	Disadvantages
Secateurs	<ul style="list-style-type: none"> • Quick and clean pruning cuts (if kept sharp) 	<ul style="list-style-type: none"> • Only cut small shoots, up to 25mm in diameter • Not easy to use in the tree • Can get stuck into larger branches
Hand loppers	<ul style="list-style-type: none"> • Quick and clean pruning cuts (if kept sharp) • Can be designed with mechanical advantage for operator ease 	<ul style="list-style-type: none"> • Needs two-handed operation
Handsaw	<ul style="list-style-type: none"> • Accurate and neater cuts achieved 	<ul style="list-style-type: none"> • Can be hard work in large branches
Pole saw/pruner	<ul style="list-style-type: none"> • Light work can be carried out from the ground 	<ul style="list-style-type: none"> • May be hard to maintain the right angle for correct target pruning

The learner should be able to identify additional precautions that may be taken during re-pollarding of trees.

Re-pollarding involves pruning back the tree crown to previous pruning points located on its main stem, damaging the pollard heads. Several additional precautions should be taken during re-pollarding operations, due to the restricted space for movement within the tree and its condition, such as the use of:

- Supplementary anchor points, due to the possibility of weak branch unions
- Alternative cutting techniques, because of the potentially excessive tension and compression in timber (i.e. V-cut, holding cut)
- A false anchor to facilitate movement.

The learner should be able to define the pruning terms and explain measurement terms used in tree pruning, and how to apply them.

Crown thinning is the removal of a proportion of secondary and small live branch growth throughout the crown to produce an even density of foliage around a well-spaced and balanced branch structure. It maintains the overall size and shape of the tree. Material is removed systematically throughout the tree, but the amount of material removed should not exceed a stated percentage and should not be more than 30% overall.

Crown reduction, or shaping, is the shortening of peripheral branches by cutting back to a suitable fork, to leave a flowing line free from stumps or snags, in order to decrease the height or spread of a tree's crown area without spoiling the shape of the tree. Where possible, it should be specified by actual measurements and reflect the desired finished result. A specification may also refer to lengths of parts to be removed to aid clarity, e.g. 'reduce crown in height by 2.0m and lateral spread by 1.0m, all round, to finished crown dimensions of 18m in height by 11m in spread (all measurements approximate)'.

Crown lifting is the selective reduction and removal of the lower branches up to a specified height. It should be restricted to less than 15% of the live crown height and leave the crown at least two thirds of the total height of the tree. Crown lifting should be specified regarding a fixed point, e.g. 'crown lift to give 5.5m clearance above ground level'.

Learners should be able to explain that the key to natural target pruning is correct identification of the position of the branch collar. The pruning cut to remove the branch should be made just outside the collar, but not far enough so as to leave a stub of the branch. The branch collar is more evident on some species than others, but is found at the point where the natural branch taper begins to flare out as it connects to the tree limb or trunk. Natural target pruning to the collar ensures that the cut is as small as possible (without leaving a stub) and encourages the resulting wound to heal quickly.

Measurements should be in accordance with industry good practice (see BS3998:2010: *Recommendations for tree work*).

Unit title:	Aerial pruning of trees in proximity to overhead lines from a rope and harness
Unit level:	3
Unit credit value:	1
Unit reference number:	Y/615/9832
Unit purpose and aim(s):	This unit provides the learner with the opportunity to demonstrate the knowledge and skills to carry out tree pruning operations from a rope and harness, in proximity to overhead powerlines. It represents the outcomes necessary to demonstrate safe working practice.

Learning outcome The learner will:	Assessment criteria The learner can:
1 Be able to undertake the preparation for work activities in proximity to overhead powerlines.	1.1 Undertake a site-specific risk assessment. 1.2 Specify the information specific to working in proximity to overhead powerlines to be recorded for the work area. 1.3 Carry out a pre-work inspection.
2 Be able to understand the requirements of live and dead working on a work site.	2.1 Identify live/dead work situations for tree categories. 2.2 Describe basic dead working arrangements.
3 Be able to communicate appropriately with ground staff.	3.1 Explain points on which ground staff must be briefed prior to the start of work activities. 3.2 Explain the merits of different methods of communication that can be used once work has commenced.
4 Understand the specific requirements to be observed when carrying out aerial pruning in proximity to overhead powerlines.	4.1 Describe a range of pruning types used in utility arboriculture. 4.2 Describe the additional considerations to be observed when carrying out aerial pruning in proximity to overhead powerlines. 4.3 Describe the different safe working procedures for aerial pruning of each category of trees in G55.
5 Be able to carry out aerial tree pruning adjacent to powerlines.	5.1 Carry out pruning operations, following the pruning specification, and in accordance with industry good practice. 5.2 Work safely adjacent to powerlines. 5.3 Drop arisings into the designated drop zone. 5.4 Explain the importance of planned drop zones.

Learning outcome 1 – Be able to undertake the preparation for work activities in proximity to overhead powerlines

The learner will need to be able to produce a risk assessment for the site and planned pruning activity, identifying hazards, evaluating risks and recommending controls. This risk assessment must include an assessment of the tree (or trees) to be worked on and the relevant electrical apparatus.

To undertake this, they will need to understand the principles of risk assessment, differentiating between hazard and risk, and how they are applied to the work site.

- Hazard – some thing (or activity) that could potentially cause injury or damage
- Risk – the likelihood of injury or damage being caused, to whom and to what extent
- Control measures – actions required to be taken to remove or minimise the risk of injury or damage occurring.

- The learner must include information for the work area, specific to working in proximity to overhead powerlines, such as:
 - Emergency control room number
 - Powerline ID name/number
 - Span/tower/pole equipment ID
 - The requirement to brief all staff so that they are aware of what to do in the event of an emergency.

The learner will need to carry out a pre-work inspection to:

- Check overhead powerline condition and location
- Confirm the vicinity and live zone distances
- Confirm tree category
- Conduct a pre-climb hazard inspection of the tree.

Learning outcome 2 – Be able to understand the requirements of live and dead working on a work site

The learner must be able to state live and dead working situations for different tree categories on site, to include:

- Where the whole tree should be regarded as live and not approached
- Where further work with approved insulated rods may be necessary to clear live and or vicinity zones
- Where the network operator will need to be approached to arrange works on a shutdown.

The learner should be aware of the basic arrangements for dead working, including:

- Working to network operators' approved procedures
- Safety documents issued where appropriate

- Earths applied and visible to the climber.

Learning outcome 3 – Be able to communicate appropriately with ground staff

The learner should be aware of the points on which ground staff must be briefed prior to the start of work activities, including:

- The contents of the electrical risk assessment
- The contents of the site-specific risk assessment
- The planned method(s) of work
- Aerial rescue provision
- Emergency procedures
- Individual responsibilities
- Tree hazard evaluation.

The learner should be able to explain the relative merits and limitations of methods of communication that can be used once work has commenced. Forms of communication could include:

- Two-way radio
- Hand signals
- Verbal communication.

Learning outcome 4 – Understand the specific requirements to be observed when carrying out aerial pruning in proximity to overhead powerlines

The learner should be able to describe a range of pruning methods used in utility arboriculture, including:

- Under pruning
- Side pruning
- Through pruning
- Reduction pruning.

The learner must be aware of the additional considerations to be observed when carrying out aerial pruning in proximity to overhead powerlines, including:

- An awareness, and avoidance, of the vicinity zone at all times
- The use of approved insulated tools.

For each category of tree specified in the ENA Engineering Recommendations G55, the learner should be able to describe safe working methods for aerial pruning, including identifying the limitations of live and dead works and the need for dedicated observers.

Category	Procedures
Category A	<p>Where the voltage is greater than 33kV, then the works will be carried out dead. The only exception to this will be where no branches breach the live zone and there is further supervision and a method statement approved by the network operator that ensures there is no breach of the live zone.</p> <p>With the line live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • Branches can be reduced by using approved insulated tools. Approved insulated tools may only be allowed to be used in the live zone where a procedure approved by the network operator is in place. • Trees with branches in the live zone must not be climbed. • Trees with branches in the vicinity zone but not in the live zone should only be climbed where a procedure approved by the network operator is in place. • If branches protrude through the vicinity zone and up above the height of the vicinity zone, overhanging the extent of the live zone, the works will be carried out dead. • Where approved insulated tools or any cut materials have the potential to cause a phase-to-phase or phase-to-earth flashover, the length of the cut section must be determined by risk assessment and recorded, particularly taking into account distances between phases. • A dedicated lookout/ground person capable of stopping work will be required to ensure that the required control measures are being adhered to. • Works must be planned such that contact with electrical equipment is avoided. The saw head should not be used in the live zone or on thin branches less than 25mm in diameter that protrude into the live zone; this prevents excessive movement and unintentional contact of branches with conductors.
Category B	<p>With the line live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • In the particular circumstance where there is extensive overhang (which cannot be removed using an approved method) over the live zone, then works shall be carried out dead. The only exception to this will be where there is further supervision and a method statement approved by the network operator. This must incorporate further controls that ensure no breach of the live zone and may incorporate the use of handheld sections, lowering equipment or rope-assisted felling. Full account of the weather conditions must be taken. Control measures should, where necessary, include preparatory work to remove branches in a logical manner to avoid the risk of small branches cut higher up in the crown outside the vicinity zone bouncing or cartwheeling onto the line. • If branches have the potential to breach the vicinity zone, then approved insulated tools must be used. If branches have the potential to breach the live zone, then only small sections should be removed to avoid a phase-to-phase contact or damage to the network. The maximum length of a cut section should be recorded on the risk assessment. • These trees can be climbed and dismantled with suitable control measures. It must be ensured that, in the event of a fall or swing, there is no possibility of a climber breaching the vicinity zone.

	<ul style="list-style-type: none"> • A dedicated ground person capable of stopping work must be used to maintain clearances if a climber or MEWP is above the level of conductors. • Straight fell trees away with appropriate control measures (such as the use of two ropes) to ensure no breach of the vicinity zone. The suitability of any such procedures must be approved by the network operator.
Category C	<p>With the line live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • Remove branches in the live zone with approved insulated tools. • If the trees are below the level of the live zone, with no possibility of breaching the live zone, they may be felled or pruned with non-insulated tools such as a chainsaw. • If the tree to be felled is below the level of the live zone with a possibility of breaching the live zone, then remove the branches with approved insulated tools prior to felling. • If the trees are below the level of the live zone, then they may be climbed ensuring that no part of the climber's body, tools or equipment can breach the vicinity zone and that branches are not caused to breach the live zone. A dedicated lookout/ground person capable of stopping work should be used in this instance.
Category D	<p>With the line live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • Use non-insulated tools and avoid any breach of the vicinity zone by operatives, tools or equipment. • Wherever possible, trees should be felled away from conductors. Trees must be felled into a cleared area to avoid the risk of a domino effect with other trees.

Learning outcome 5 – Be able to carry out aerial tree pruning adjacent to powerlines

The learner must carry out aerial pruning operations, following the pruning specification, in accordance with industry good practice. Where additional control measures are identified as being required, they must be fully explained.

The learner must work safely adjacent to powerlines, including the following points of technique:

- Insulated rods are used to position ropes
- Where possible, the anchor point is positioned so the climber will swing away from conductors in the event of a fall
- Ropes are positioned and secured to ensure no breach of the vicinity zone
- The climber's body and non-insulated equipment are positioned to ensure that there is no breach of the vicinity zone
- The climber returns to the ground in a controlled manner when pruning operations have finished, on the opposite side of the tree to the conductors
- The rope system is removed from the tree without the rope breaching the vicinity zone.

Whilst undertaking aerial pruning activities, the learner must ensure that all arisings are dropped into planned drop zone without compromising the access equipment or damaging the infrastructure.

The learner should be aware of the importance of using planned drop zones, as they reduce the risk of:

- Damage to infrastructure
- Contact with electrical equipment
- **Injuries to other team members.**

Unit title:	Aerial pruning of trees, in proximity to overhead lines, from a mobile elevated work platform (MEWP)
Unit level:	3
Unit credit value:	1
Unit reference number:	A/616/1914
Unit purpose and aim(s):	This unit provides the learner with the opportunity to demonstrate the knowledge and skills to carry out tree pruning operations from an MEWP in proximity to overhead powerlines. It represents the outcomes necessary to demonstrate safe working practice.

Learning outcome The learner will:	Assessment criteria The learner can:
1 Be able to undertake the preparation for work activities in proximity to overhead powerlines.	1.1 Undertake a site-specific risk assessment. 1.2 Specify the information, specific to working in proximity to overhead powerlines, to be recorded for the work area. 1.3 Carry out a pre-work inspection.
2 Be able to understand the requirements of live and dead working on a work site.	2.1 Identify live/dead work situations for tree categories. 2.2 Describe basic dead working arrangements.
3 Be able to communicate appropriately with ground staff.	3.1 Explain points on which ground staff must be briefed prior to the start of work activities. 3.2 Explain the merits of different methods of communication that can be used once work has commenced.
4 Understand the specific requirements to be observed when carrying out aerial pruning in proximity to overhead powerlines.	4.1 Describe a range of pruning types used in utility arboriculture. 4.2 Describe the additional details to consider when carrying out aerial pruning in proximity to overhead powerlines. 4.3 Describe the different safe working procedures for aerial pruning of each category of trees in G55.
5 Be able to carry out aerial tree pruning adjacent to powerlines.	5.1 Carry out pruning operations, following the pruning specification, in accordance with industry good practice. 5.2 Describe the process for dealing with vegetation that cannot be cut with a chainsaw. 5.3 Safely remove vegetation that cannot be cut with a chainsaw using approved insulated tools. 5.4 Drop arisings into the designated drop zones. 5.5 Explain the importance of planned drop zones.

Learning outcome The learner will:	Assessment criteria The learner can:
6 Be able to Understand the factors affecting the use of MEWPs in proximity to overhead powerlines.	6.1 Explain issues relevant to the network operator that affect the use of MEWPs in proximity to powerlines. 6.2 Explain when it would not be appropriate to set up an MEWP in proximity to an overhead powerline.
7 Understand how to deal with emergency situations affecting operators working with a MEWP.	7.1 Describe the emergency action required where there is a line strike or suspected contact with a live overhead powerline. 7.2 Describe the process required to approach an MEWP that is in contact with (or is suspected to be in contact with) a high-voltage overhead powerline. 7.3 Describe the process which the operator must follow where part of the MEWP is in contact with (or is suspected to be in contact with) a live overhead powerline. 7.4 Describe how to deal with emergency situations affecting operators working from a MEWP.

Learning outcome 1 – Be able to undertake the preparation for work activities in proximity to overhead powerlines

The learner will need to be able to produce a risk assessment for the site and planned pruning activity, identifying hazards, evaluating risks and recommending controls. This risk assessment must include an assessment of the tree (or trees) to be worked on and the relevant electrical apparatus.

To undertake this, they will need to understand the principles of risk assessment, differentiating between hazard and risk, and how they are applied to the work site.

- Hazard – some thing (or activity) that could potentially cause injury or damage.
- Risk – the likelihood of injury or damage being caused, to whom and to what extent
- Control measures – actions required to be taken to remove or minimise the risk of injury or damage occurring.

The learner must include information for the work area, specific to working in proximity to overhead powerlines, such as:

- Emergency control room number
- Powerline ID name/number
- Span/tower/pole equipment ID
- The requirement to brief all staff so that they are aware of what to do in the event of an emergency.

The learner will need to carry out a pre-work inspection to:

- Check overhead powerline condition and location
- Confirm the vicinity and live zone distances

- Confirm tree category
- Conduct a pre-climb hazard inspection of the tree.

Learning outcome 2 – Be able to understand the requirements of live and dead working on a work site

The learner must be able to state live and dead working situations for different tree categories on site, including:

- Where the whole tree should be regarded as live and not approached
- Where further work with approved insulated rods may be necessary to clear live and/or vicinity zones
- Where the network operator will need to be approached to arrange works on a shutdown.

The learner should be aware of the basic arrangements for dead working, including:

- Working to network operators' approved procedures
- Safety documents issued where appropriate
- Earths applied and visible to the climber.

Learning outcome 3 – Be able to communicate appropriately with ground staff

The learner should be aware of the points on which ground staff must be briefed prior to the start of work activities, including:

- The contents of the electrical risk assessment
- The contents of the site-specific risk assessment
- The planned method(s) of work
- Aerial rescue provision
- Emergency procedures
- Individual responsibilities
- Tree hazard evaluation.

The learner should be able to explain the relative merits and limitations of methods of communication which can be used once work has commenced. Forms of communication could include:

- Two-way radio
- Hand signals
- Verbal communication.

Learning outcome 4 – Understand the specific requirements to be observed when carrying out aerial pruning in proximity to overhead powerlines

The learner should be able to describe a range of pruning types used in utility arboriculture, including:

- Under pruning
- Side pruning
- Through pruning
- Reduction pruning.

The learner must be aware of the additional considerations to be observed when carrying out aerial pruning in proximity to overhead powerlines, including:

- An awareness, and avoidance, of the vicinity zone at all times
- The use of approved insulated tools.

For each category of tree specified in the ENA Engineering Recommendations G55, the learner should be able to describe safe working methods for aerial pruning, including identifying the limitations of live and dead works and the need for dedicated observers.

Category	Procedures
Category A	<p>Where the voltage is greater than 33kV then the works will be carried out dead. The only exception to this will be where no branches breach the Live Zone and there is further supervision and a method statement approved by the Network Operator that ensures there is no breach of the live zone.</p> <p>With the line live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • Branches can be reduced by using approved insulated tools. Approved insulated tools may only be allowed to be used in the live zone where a procedure approved by the network operator is in place. • Trees with branches in the live zone must not be climbed. • Trees with branches in the vicinity zone but not in the live zone should only be climbed where a procedure approved by the network operator is in place. • If branches protrude through the vicinity zone and up above the height of the vicinity zone, and overhang the extent of the live zone, then the works will be carried out dead. • Where approved insulated tools or any cut materials have the potential to cause a phase-to-phase or phase-to-earth flashover, then the length of cut section must be determined by risk assessment and recorded, particularly taking into account distances between phases. • A dedicated lookout/ground person capable of stopping work will be required to ensure that the required control measures are being adhered to. • Works must be planned such that contact with electrical equipment is avoided. The saw head should not be used in the live zone or on thin branches less than 25mm diameter that protrude into the live zone; this prevents excessive movement and unintentional contact of branches with conductors.
Category B	<p>With the line live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • In the particular circumstance where there is extensive overhang (which cannot be removed using an *approved method) over the live zone, then works shall be carried out dead. *The only exception to this will be where there is further supervision and a method statement

	<p>approved by the network operator. This must incorporate further controls that ensure no breach of the live zone and may incorporate the use of handheld sections, lowering equipment or rope-assisted felling. Full account of the weather conditions must be taken. Control measures should, where necessary, include preparatory work to remove branches in a logical manner to avoid the risk of small branches cut higher up in the crown outside the vicinity zone bouncing or cartwheeling onto the line.</p> <ul style="list-style-type: none"> • If branches have the potential to breach the vicinity zone, then approved insulated tools must be used. If branches have the potential to breach the live zone, then only small sections should be removed to avoid a phase-to-phase contact or damage to the network. The maximum length of cut section should be recorded on the risk assessment. • These trees can be climbed and dismantled with suitable control measures. It must be ensured that, in the event of a fall or swing, there is no possibility of a climber breaching the vicinity zone. • A dedicated ground person capable of stopping work must be used to maintain clearances if a climber or MEWP is above the level of conductors. • Straight fell trees away with appropriate control measures (such as the use of two ropes) to ensure no breach of the vicinity zone. The suitability of any such procedures must be approved by the network operator.
Category C	<p>With the line live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • Remove branches in the live zone with approved insulated tools. • If the trees are below the level of the live zone, with no possibility of breaching the live zone, then they may be felled or pruned with non-insulated tools such as a chainsaw. • If the tree to be felled is below the level of the live zone with a possibility of breaching the live zone, then remove the branches with approved insulated tools prior to felling. • If the trees are below the level of the live zone, then they may be climbed ensuring that no part of the climber's body, tools or equipment can breach the vicinity zone and that branches are not caused to breach the live zone. A dedicated lookout/ground person capable of stopping work should be used in this instance.
Category D	<p>With the line live, the method of work should be established by incorporating the following control measures:</p> <ul style="list-style-type: none"> • Use non-insulated tools and avoid any breach of the vicinity zone by operatives, tools or equipment. • Wherever possible, trees should be felled away from conductors. Trees must be felled into a cleared area to avoid the risk of a 'domino' effect with other trees.

Learning outcome 5 – Be able to carry out aerial tree pruning adjacent to powerlines

The learner must carry out aerial pruning operations, following the pruning specification, in accordance with industry good practice. Where additional control measures are identified as being required, they must be fully explained.

The learner should be able to describe the process for dealing with vegetation that cannot be cut with a chainsaw, which applies to all vegetation on category A trees and vegetation on category C trees that are in the live zone. For example:

- Material must be cut using approved insulated tools
- The operator and all non-insulated equipment must remain outside the vicinity zone.

The learner must demonstrate the safe removal of vegetation that cannot be cut with a chainsaw using approved insulated tools, carrying out both pruning head cuts and saw head cuts, ensuring that:

- Non-approved tools or equipment do not enter the vicinity zone
- No part of the learner enters the vicinity zone
- The correct minimum number of rods is selected
- The saw head and lopper head are used where appropriate
- The length of cut material is appropriate
- Appropriate pruning points are identified
- A dedicated lookout/groundsman is in place, as appropriate.

Whilst undertaking aerial pruning activities, the learner must ensure that all arisings are dropped into a planned drop zone without compromising the access equipment or damaging the infrastructure.

The learner should be aware of the importance of using planned drop zones, as they reduce the risk of:

- Damage to infrastructure
- Contact with electrical equipment
- Injuries to other team members.

Learning outcome 6 – Be able to understand the factors affecting the use of MEWPs in proximity to overhead powerlines

The learner should be able to explain issues relevant to the network operator that affect the use of MEWPs in proximity to powerlines, including:

- MEWPs may only be used if approved by the network operator
- MEWPs may only be used by operators competent and authorised by the network operator
- Competency and authorisations are specific to the machine type
- MEWPs may only be used in accordance with network operator guidance, including the limitations of live and dead working and recommended voltages levels.

The learner should be able to explain when it would not be appropriate to set up a MEWP in the proximity of an overhead powerline, such as:

- Where it would be impractical to use the machine without parts of it encroaching the vicinity zone
- In proximity to a powerline where MEWP use is not authorised/approved

- Where there is imminent likelihood of electrical storm
- Where the operator is not authorised by the utility company
- Where a second person trained and equipped to undertake a rescue is not immediately available.

Learning outcome 7 – Understand how to deal with emergency situations affecting operators working with a MEWP

The learner must produce an emergency plan for dealing with a line strike or suspected contact between a MEWP and an overhead powerline, including:

- Stopping all work
- Informing the MEWP operator, if necessary
- Informing the supervisor
- Ensuring no one touches or approaches the MEWP or attempts to use ground controls
- Moving away from the immediate area of the machine (shuffling/bunny hopping where necessary)
- Ensuring that no one is directly beneath conductors
- Keeping all personnel away from the machine
- Contacting emergency control room to request emergency disconnection of power
- Following other network operator specific guidance.

The learner should describe the steps that are required before approaching a MEWP which is in contact with an overhead powerline. They will include:

- Ensuring that the power is disconnected (shutdown) and isolated
- Ensuring that the line is proved dead
- Checking that earth cables are applied
- Checking that the appropriate safety document is issued.

The learner should describe the steps that the operator is required to follow when the MEWP is in contact with an overhead powerline, including:

- Making sure that all ground workers are aware that the MEWP is in contact with (or suspected of being in contact with) an overhead powerline
- Implementing the emergency plan
- Following the approved method statement
- Contacting the emergency control room (directly if possible) to make them aware of the situation and request an emergency disconnection of power, if required
- Dealing with the aftermath.

The learner should be able to describe ways of dealing with an injured operator who is unable to bring themselves down, such as:

- Initiating a manual override (ground controls) as per the manufacturer's instructions
- Rescuing the operator with a second MEWP, if available.

6 Level descriptors

These qualifications have been accredited at Level 2 and Level 3 respectively, which means that upon achieving the qualifications, it can be relied upon that the learner possesses skills or knowledge appropriate to the following descriptors.

Level	Knowledge descriptor: The learner...	Skills descriptor: The learner can...
2	<p>Has knowledge and understanding of facts, procedures and ideas in an area of study or field of work to complete well-defined tasks and address straightforward problems.</p> <p>Can interpret relevant information and ideas.</p> <p>Is aware of a range of information that is relevant to the area of study or work.</p>	<p>Select and use relevant cognitive and practical skills to complete well-defined, generally routine tasks and address straightforward problems.</p> <p>Identify, gather and use relevant information to inform actions.</p> <p>Identify how effective actions have been.</p>
3	<p>Has factual, procedural and theoretical knowledge and understanding of a subject or field of work to complete tasks and address problems that, whilst well defined, may be complex and non-routine.</p> <p>Can interpret and evaluate relevant information and ideas.</p> <p>Is aware of the nature of the area of study or work.</p> <p>Is aware of different perspectives or approaches within the area of study or work.</p>	<p>Identify, select and use appropriate cognitive and practical skills, methods and procedures to address problems that, whilst well defined, may be complex and non-routine.</p> <p>Use appropriate investigation to inform actions.</p> <p>Review how effective methods and actions have been.</p>

7 How is this qualification delivered?

In order to deliver this qualification, you will need to be a Lantra-approved provider. Details of how to become an approved provider are available from our sales team. Please contact them at sales@lantra.co.uk.

Learners must be registered via Quartzweb. Details of this process are available in the Quartzweb user guide. Providers must submit the required information for learner registration. Learners should be registered for the qualification once they have been enrolled with the provider. Failure to register learners may result in assessments not taking place. Sanctions may be imposed on providers if learners are not registered before the assessment takes place.

Learners will complete the necessary elements of the assessment and be assessed by a Lantra assessor. Providers are required to compile and send the assessment paperwork (assessment report form, certificate claim form, learner registration and assessment report form) to Lantra.

Providers are not required to send learner evidence to Lantra; it should be retained by the provider. However, Lantra reserves the right to request to see learner work as part of the quality assurance process, so this should be retained and filed so that it can be easily located.

7.1 Delivery in the UK

The specification for these qualifications are approved for delivery in the United Kingdom. Ofqual regulates the Qualifications in England, and they are accredited qualifications on the Regulated Qualifications Framework (RQF). They have been accredited with the following Qualification Accreditation Numbers (QAN)

- Lantra Awards Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge, 603/2048/5
- Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities, 603/2106/4.

Regulated qualifications are subject to regular reviews to ensure their ongoing regulatory compliance and also to ensure that throughout the life cycle of the qualification, the content remains relevant and current.

When the qualification is deemed to be no longer suitable — for example, technology has moved on and working practices are no longer relevant — Lantra will advise providers of a qualification end date. The end date is for the end of registrations. Any learners registered before this date will be allowed time to complete the qualification. For this qualification, that period will stand as six months.

Although RQF qualifications are not regulated in Scotland, they are available to anyone who wishes to take them. Lantra makes no distinction between providers and learners in Scotland and those elsewhere.

7.2 Who can deliver this qualification?

Only approved Lantra providers can deliver this qualification. For information on becoming an approved provider, please contact Lantra at sales@lantra.co.uk or on 024 7669 6996.

7.3 Key safety critical and technically critical aspects

The assessment requirements for the Lantra Awards Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge and the Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities require that the learner can undertake work in the proximity to overhead powerlines without risk to themselves or others. There are therefore hazards from both the nature the work activities and the proximity to the powerline.

Key safety and technically critical aspects of the learning outcomes and assessment criteria have been identified (see below) to assist the assessor with assessment decisions during the observation of practical activities. If the learner is assessed to be at risk of not performing the activity to the required standard or endangering animal welfare, or the health and safety of themselves or others, the assessor may stop the assessment and use their professional judgement to either:

- restart the assessment with the agreement of the learner, or
- state that the assessment has not been achieved and advise the learner that they will need to apply to be assessed at a later date following training.

Where safety is breached, the assessor must record the use, reasons and subsequent decision of the key safety and/or technically critical aspects to stop an assessment on the assessment report form.

Lantra Awards Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge	
Learning outcome The learner will:	Assessment criteria The learner can:
Electrical hazard awareness for utility tree work	
1. Understand the purpose of earths.	1.1 Identify a low-voltage bond earth. 1.2 Describe the use of earths. 1.3 Describe the key safety points to consider when working adjacent to earthed equipment. 1.4 Specify the documents issued to enable safe work on site in designated work areas.
4. Understand the purpose of safety documents.	4.1 Describe key aspects of work permits. 4.2 Describe the safety points to consider when working under the control of a safety document.

Lantra Awards Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge	
Learning outcome The learner will:	Assessment criteria The learner can:
	4.3 Specify the minimum ground clearances for cables and jumpers.
Prepare to work safely on a utility tree work site	
6. Understand emergency procedures and contingencies.	<p>6.1 Describe emergency actions to take following contact by personnel with live overhead lines or underground cables.</p> <p>6.2 Describe emergency actions to take following contact by trees or vehicles with live overhead lines or underground cables.</p> <p>6.3 Describe the information that needs to be given to the network operator for the line to be made dead in case of emergency.</p> <p>6.4 Outline the information to give to emergency services in the event of an injury.</p> <p>6.5 Describe the criteria for where the emergency procedure should be kept.</p> <p>6.6 Explain the reasons why emergency procedures need to be documented.</p>
Specialised electrical knowledge for utility tree work	
1 Understand the principles for establishing safety zones and distances when working in proximity to Network Operators' equipment.	<p>1.1 Describe what is meant by proximity zone 1 and proximity zone 2.</p> <p>1.2 Describe how trees are categorised in relation to overhead powerlines.</p> <p>1.3 Describe what is meant by the live zone.</p> <p>1.4 Specify the live zone for a range of voltages.</p> <p>1.5 Describe how to reduce the risk of danger when any part of a tree is in the live zone.</p> <p>1.6 Describe what is meant by the vicinity zone.</p> <p>1.7 Specify the vicinity zone for a range of voltages.</p> <p>1.8 Explain how to assess the distance of live zones and vicinity zones.</p>

Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities	
Learning outcome The learner will:	Assessment criteria The learner can:
Operate and maintain insulated rods and associated tools	
4 Understand the safe working procedures when using insulated rods.	<p>4.1 Explain safe working procedures for using insulated rods.</p> <p>4.2 Explain limitations of use and number of insulated rods in relation to voltages.</p>

Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities	
Learning outcome The learner will:	Assessment criteria The learner can:
	<p>4.3 Designate suitable tools and equipment to undertake tree pruning in the vicinity of an overhead line.</p> <p>4.4 Designate the required personal protective equipment (PPE) and personal emergency equipment to undertake tree pruning in the vicinity of an overhead line.</p>
5 Understand how to inspect, maintain, use and store insulated rods and associated tools.	<p>5.1 Explain how insulated rods are inspected</p> <p>5.2 Explain how the ‘tool’ head attachments for the insulated rods are inspected</p> <p>5.3 Explain what maintenance should be undertaken on insulated rods</p> <p>5.4 Explain what maintenance should be undertaken on tool head attachments</p> <p>5.5 Explain the use and limitations of various pruning tools</p> <p>5.6 Explain the procedures to clean, transport and store insulated rods and pruning tools.</p>
6 Be able to safely use insulated rods and pruning equipment in close proximity to electrical apparatus	<p>6.1 Demonstrate the safe use of the pruning (lopping) head with insulated rods to clear the vicinity zone.</p> <p>6.2 Demonstrate the safe use of a saw head in the vicinity zone.</p>
Carry out rope assisted felling of a tree up to 380mm diameter, in proximity to overhead powerlines, using a chainsaw	
3. Understand the safe working procedures for each category of tree.	<p>3.1 Explain safe working procedures for each category of tree.</p> <p>3.2 Define live and dead work situations for each category of tree.</p>
Aerial pruning of trees in proximity to overhead lines from a rope and harness	
2 Be able to understand the requirements of live and dead working on a work site.	<p>2.1 Identify live/dead work situations for tree categories.</p> <p>2.2 Describe basic dead working arrangements.</p>
4 Understand the specific requirements to be observed when carrying out aerial pruning in proximity to overhead powerlines	<p>4.1 Describe a range of pruning types used in utility arboriculture</p> <p>4.2 Describe the additional considerations to be observed when carrying out aerial pruning in proximity to overhead powerlines.</p> <p>4.3 Describe the different safe working procedures for aerial pruning of each category of trees in G55.</p>

Lantra Awards Level 3 Award in Utility Arboriculture – Arboricultural Activities	
Learning outcome The learner will:	Assessment criteria The learner can:
Aerial pruning of trees, in proximity to overhead lines, from a mobile elevated work platform (MEWP)	
2 Be able to understand the requirements of live and dead working on a work site.	2.1 Identify live/dead work situations for tree categories. 2.2 Describe basic dead working arrangements.
4 Understand the specific requirements to be observed when carrying out aerial pruning in proximity to overhead powerlines.	4.1 Describe a range of pruning types used in utility arboriculture. 4.2 Describe the additional considerations to be observed when carrying out aerial pruning in proximity to overhead powerlines. 4.3 Describe the different safe working procedures for aerial pruning of each category of trees in G55.
6 Be able to Understand the factors affecting the use of MEWPs in proximity to overhead powerlines.	6.1 Explain issues relevant to the network operator that affect the use of MEWPs in proximity to powerlines. 6.2 Explain when it would not be appropriate to set up a MEWP in proximity to an overhead powerline.
7 Understand how to deal with emergency situations affecting operators working with a MEWP.	7.1 Describe the emergency action required where there is a line strike or suspected contact with a live overhead powerline. 7.2 Describe the process required to approach a MEWP that is in contact with (or is suspected to be in contact with) a high-voltage overhead powerline. 7.3 Describe the process that the operator must follow where part of the MEWP is in contact with (or is suspected to be in contact with) a live overhead powerline. 7.4 Describe how to deal with emergency situations affecting operators working from a MEWP.

In order to achieve the qualification, learners will be assessed on **all** learning outcomes and they must achieve **all** learning outcomes to be certificated.

7.4 Provider resources

Whilst the Lantra Awards Level 2 Award in Utility Arboriculture – Basic Electrical Knowledge is predominately a knowledge-based assessment, the Level 3 Award in Utility Arboriculture – Arboricultural Activities requires significant practical assessment. Providers will need to ensure that, at the assessment venue, there is an area of powerline made dead for the period of the assessment, sufficient tree cover to enable the pruning activities to be completed and the requisite permissions for the planned work to be completed.

It would be helpful for the provider to have a range of suitable insulated rods, tools and other equipment, or to negotiate with the assessor to ensure that the appropriate equipment is

available for the assessment. Whilst it is common to assume that the learner may have their own equipment, this may not be approved for use or in suitable condition to be used for the assessment.

7.5 Quality assurance and certification

7.5.1 Quality assurance of assessment decisions

This qualification is externally assessed and externally quality assured. This means that Lantra will provide an assessor to the provider to assess learners and complete assessment paperwork. Lantra will be responsible for ensuring that assessors are standardised and will carry out monitoring of the assessor's assessment decisions.

Occasionally, as part of Lantra's ongoing quality assurance strategy, an EQA may accompany the assessor to observe the assessment processes followed by the assessor. The EQA may further be accompanied by either Lantra staff or another EQA, to ensure that the EQA is following the correct processes.

7.5.2 Claiming certification

As part of the assessment documentation that is submitted, providers will need to complete a certificate claim form and submit it to Lantra to process certificates following quality assurance approval. Where DCS is in place, the certificates will be issued prior to quality assurance taking place.

Once a learner has completed the assessment requirements and quality assurance has taken place, certificates will be issued by Lantra for providers to distribute to individual learners.

7.5.3 Skills identity card

If the learner requires a skills identity card, they must supply the provider with one passport-style photograph. The provider must verify that the photograph is of the learner being assessed by signing the back of it. Alternatively, suitable photographs can be taken by the provider using a digital camera and emailed to qualifications@lantra.co.uk. Please note, a high-resolution image must be used and cannot be cropped or cut out from a larger image.

The submission of the photograph must contain a declaration, either on the back or within the email, confirming that the image is of the learner, using these words: '*I certify that this is a true likeness of [learner's full name]*'. Where a digital image is provided, the email should also include the provider name, qualification title, order ID and date of assessment.

Lantra requires the file name of the photograph to be the learner's name and date of assessment, so that it can be easily reconciled with other assessment paperwork e.g. joe_bloggs_010117. Images which do not conform to this convention may result in a delay in the card being issued.

7.5.4 Replacement certification and skills ID card

If a learner loses the original certificate or skills ID card, Lantra can issue a replacement. The learner will need to provide proof of identity (for example, a passport or driving licence) and the details of the provider with which they were registered. Lantra will check all claims for replacement certificates against the original certificate claim form. The provider may be contacted for authentication. The certificate will be marked as a replacement. A fee is payable for replacement certificates and skills ID cards. Please contact Lantra for the current fee.

7.6 Enquiries about results and appeals

Lantra has a policy for enquiries about results and an appeals procedure which can be used under circumstances where a learner or provider has reason to believe that there has been an error in either the administrative processes leading to an incorrect qualification award or there has been an issue in the assessment of the learner. Fees payable for enquiries about results will be refunded in full if the enquiry is upheld or if a learner's results are changed as a result of an enquiry.

Appeals can be made following the outcome of an enquiry about results if the learner/provider remains unhappy with the outcome or has further grounds to query the decision. Please note that appeals will not be accepted without a paid result enquiry being submitted first.

Providers must ensure that learner consent is obtained prior to an enquiry about a result being submitted. Learners must be informed that assessment outcomes can change both positively and negatively.

Please refer to the provider handbook for further details.

7.7 Malpractice and maladministration

Where malpractice is suspected, especially where there is doubt about the integrity of the assessment process, Lantra will immediately suspend further certification claims whilst an investigation is carried out. The regulatory authorities will be notified of any investigations and their outcome.

The claimant will be required to provide information about the suspected malpractice and the circumstances surrounding the matter. Malpractice, if found, may result in sanctions being imposed on the provider, certificates being revoked or even providers being barred from Lantra membership and reported to regulatory authorities.

Maladministration is linked to malpractice and can result in a malpractice investigation being launched, where the maladministration could impact on the credibility of the assessment taking place or the outcomes achieved — for example, the failure to investigate suspected malpractice when asked to do so by Lantra.

Please refer to the Lantra malpractice and maladministration policy for further details.

7.8 Recognition of prior learning

Recognition of prior learning (RPL) is defined as ‘a method of assessment that considers whether a learner can demonstrate that they can meet the assessment requirements for a qualification through knowledge, understanding or skills they already possess and do not need to develop through a course of learning’.

It is important that providers make it clear to learners that the RPL process is associated with how the learner has acquired the knowledge, understanding or skills; it does not mean that the learner will be exempt from the assessment.

It is the responsibility of the assessor to decide whether evidence provided by the learner is valid, reliable and current, and also meets the relevant assessment criteria. Where the assessor decides that the RPL does meet the assessment criteria, this must be clearly signposted in the tracking documentation.

It is recommended that providers refer to the provider handbook for further information on the implementation of RPL.

Where learners already hold the Level 2 Award in Aerial Tree Pruning, they will not need to complete the Carrying out aerial pruning of a tree unit. Evidence is to be provided to Lantra when claiming certificates.

7.9 Safeguarding – young people and vulnerable adults

This qualification can be offered to learners in the 16–19 age group, as well as learners aged 19+. The Health and Safety at Work Act 1974 requires employers to ensure the health, safety and welfare at work of their employees and for providers to safeguard learners. Young people under the age of 18, and vulnerable adults, can be exposed to risk when using work equipment due to immaturity, lack of experience or lack of awareness of existing or potential risks. Therefore, young people and vulnerable adults may need closer supervision.

For more information about young people at work, see the Management of Health and Safety at Work Regulations 1999.

7.10 Additional requirements and reasonable adjustments

Providers are expected to make appropriate arrangements, including reasonable adjustments, as detailed in the equality and diversity policy within the provider handbook, to ensure that learners with additional needs can access assessment wherever possible. The equality and diversity policy covers alternative assessment arrangements that can be made for learners.

Reasonable adjustments must not, however, result in a change to the learning outcomes and assessment criteria.

A provider must apply for reasonable adjustments to Lantra using the **reasonable adjustments request form**. Lantra recommends that reasonable adjustment requests are submitted no later than six weeks prior to the assessment taking place, to allow a decision about their suitability to be made before the assessment. However, Lantra recognises that this may not always be possible, and we will do our best to process requests received after this point. Please note that no reasonable adjustment should be implemented without the prior approval of Lantra.

8 What does a provider need to do?

8.1 Management support

Experience has shown that qualification programmes run more effectively when given support by senior management. This can be achieved by appointing a person from the senior management team, or a designated qualification manager, and ensuring they are given the authority to monitor the quality management systems for the programme and to implement any required changes. This role is separate from the required role of IQA.

Management support can be demonstrated by ensuring that appropriate team members are allocated to the programme and given sufficient time and resources to carry out their role(s) effectively.

8.2 Provider records

Providers are required to retain learner records, which include the details listed below. Providers may already have their own systems that could be used to store records. Provided that the information is accessible and conforms to the requirements below, no new record systems will be needed. Lantra does not prescribe the format in which records are kept.

Provider records must include:

- data about individual learners, including any reasonable adjustments
- learner registration
- achievement of units
- feedback given to learners by assessors.

All records must be stored securely to avoid being falsified or fraudulent claims being made. All assessment records must be retained at the provider for at least **three years** after the learner has completed the assessment. If the programme is subject to an EQA quality assurance visit or approval sign-off, the records should be retained for three years after this date. It is the responsibility of the provider to ensure that data is cleansed at the appropriate time.

There is no prescribed format for these records and providers may wish to incorporate them into documentation they already maintain within their own organisation. If the provider already works to quality management systems such as the SQMS, the ISO9001 series or is required to maintain records for government-funded training schemes, that documentation will almost certainly provide an adequate basis for assessor records.

Providers may also need to adhere to separate requirements, where appropriate, with regard to the retention of records, such as those for funding applications. Please refer to the specific requirements of the funding agency.

8.3 Support for learners

Learners will need to follow an induction programme when enrolled on the qualification. This should be designed around a particular element or unit of the qualification, so that they become familiar with the way the qualification operates.

Many learners, particularly if they are mature adults, will already have pre-existing skills and knowledge. A system will need to be introduced to identify these skills and how evidence from prior achievements can be recorded — see Section 7.8 Recognition of prior learning.

Throughout the programme, tutors and/or instructors should aim to provide feedback to learners on how they are progressing through the qualification, to ensure that on the day of the assessment they are ready for the requirements of the question paper and the practical assessment. Feedback should be positive, constructive and used to inform future planning.

Some providers will have staff working in education support; in others, assessors may offer this support. It is important each learner has appropriate guidance and is directed towards additional information as required. Guidance on career opportunities may also be appropriate.

Learners with particular characteristics may need additional support from the provider/instructor. Refer to Lantra's equality and diversity policy for further information relating to reasonable adjustments and special considerations. Learners with certain protected characteristics should not be discriminated against or prohibited from assessment where adjustments can be made to the assessment evidence requirements that would allow them to demonstrate competence or knowledge in different ways.

Learners must be informed when they have been registered on a qualification. It is also a regulatory requirement that Lantra are informed if a learner withdraws from the qualification after they have started. In addition, providers must ensure that learners are informed when they have been withdrawn from a qualification for any reason and retain evidence of this decision.

Learners will not be recognised by Lantra until they have been registered and Lantra will have no obligation to the learners if there is a problem with them completing the qualification, such as the provider ceasing to operate.

If for any reason a provider is not intending to renew their membership whilst they still have uncertified learners registered on a qualification, regulatory requirements stipulate that learner interests must be maintained. The provider may choose to transfer learners to another awarding organisation or the provider will still be required to complete the assessment of learners with Lantra and pay any fees which are due for quality assurance or certification.

9 Administration and other important information

9.1 Administration process for registration and certification

The Quartzweb user guide contains instructions on how to register learners.

Learners may transfer registration from one unit/qualification to another, provided they are both offered by Lantra. This will incur an administrative fee. If the registration fee is higher for the subsequent qualification, providers will be invoiced for the difference. No refunds will be made if the registration fee for the subsequent qualification is lower. Learners transferring to a different provider must re-register with the new provider. Lantra may need to charge an administration fee to the learner's new provider.

Learners must be informed when they have been registered onto the qualification.

9.1.1 Registering the learner

Learners **must** be registered for the qualification prior to an assessment taking place. Please refer to the Quartzweb user guide for details on how to register learners.

For each learner, the surname/family name, first name, date of birth and postcode are mandatory. The date of birth is important to distinguish between learners with the same name. Awarding organisations are required to provide data to the regulatory bodies about learner characteristics, which is why we ask you to provide details of their gender, ethnic origin and whether they have requested any reasonable adjustments. This is so that achievements can be monitored for equal opportunities purposes and to ensure fair access to training and qualifications is achieved.

9.1.2 Certificate claims

Certificates can only be claimed for learners who are registered on Quartzweb. All certificate claims are checked against provider approval records and learner registration records, (unless DCS is in place). Certificates will not be issued for learners who are not registered prior to the assessment taking place.

The learner name entered on Quartzweb is how it will appear on the certificate.

9.1.3 Regulatory authorities

Occasionally Ofqual (the qualification regulator) may visit providers and require access to premises, meetings, learner assessment records, internal verification records, documents, data, learners and staff. If providers refuse access, Lantra will be required to suspend all future certificate claims until the requirements of the regulatory visit have been satisfied.

9.2 Assessment strategy

For these qualifications, an assessment guidance document is available. Full details of the assessment requirements are contained within. Below is a summary of the assessment strategy which supports these qualifications. The assessment guidance contains details on:

- Methods of assessment
- Types of evidence which may be suitable
- Key safety and technically critical aspects.

Providers and assessors must ensure that they are familiar with the specifications and requirements of the qualification.

Unit and qualification assessment requirements set out the scope of evidence required in terms of equipment, services, statutory regulations and industry standards and systems.

Methods of assessment:

- Observation of practical activities
- Verbal questioning.

Assessment requirements:

- For practical observations, competence must be demonstrated and evidenced.
- The assessor may decide that further observations are required to ensure that all assessment criteria have been met.
- Assessors must be capable of identifying when competence has been demonstrated by the learner, based on their own professional judgement.
- The evidence is sufficient when the assessor judges the requirements of the qualification have been met and competence has been demonstrated by the learner.
- Although there are no formal limits set on the time taken to complete the qualification, or the number of assessment opportunities provided, providers may wish to set guidelines for the length of time or amount of tuition offered to learners for financial or logistical reasons, taking into account the stated key safety and technically critical aspects of the assessment. It is estimated that the practical assessment would take approximately two hours, depending on the learner.

Access to assessment:

- Learners should not be put forward for an assessment until they are deemed ready to be assessed.
- This can be evidenced by conducting an evaluation of the learner's previous training and experience.
- This underpins the assumption that the learner has sufficient technical expertise, knowledge, skill and maturity to meet the assessment requirements.

- Key considerations for evaluation of the learner's previous training and experience include:
 - Health and safety considerations
 - Knowledge of arboricultural and utilities legislation.

9.3 Funding

Approved qualifications may be eligible for funding from either the Education and Skills Funding Agency (ESFA) or the Skills Funding Agency (SFA), or equivalent bodies in Wales and Northern Ireland. The qualification is listed on the Ofqual Register of Regulated Qualifications and the Learning Records Service. Funding may be available to organisations that meet the requirements of the relevant agency.

In order that the funding may be linked to the learner, a unique learner number (ULN) must be provided. The ULN should be entered in the ULN field when registering the learner on Quartzweb. For information on how to obtain ULNs for your learners, please refer to the Learning Records Service guidance: <https://www.gov.uk/government/publications/lrs-unique-learner-numbers>

9.4 Feedback, compliments and complaints

Lantra recognises that, from time to time, providers, learners, assessors and other personnel may have reason to provide feedback on a process or have grounds for a complaint. We also welcome compliments when aspects of our courses have been well received, so that we can seek to implement best practice across our suite of products. The Lantra feedback, compliments and complaints procedure is published on the Lantra Awards website.

Appendix 1 – Glossary of terms

Knowledge	Factual information that can be recalled as required. The individual can identify and/or describe key information that is relevant to the subject area, for example.
Understanding	The application and extension of knowledge allowing organised thought, the generation of original ideas and critical thinking. The individual can explain, analyse and/or evaluate, for example.
Skill	The application of knowledge and/or understanding in a practical context demonstrating practical competency. The individual can operate, use and/or carry out, for example.
Learning outcome	How the learner will be changed by the learning and assessment process — that which the learner will, due to learning experiences, newly know, understand or be able to do.
Assessment criteria	Discreet criteria which holistically deliver on the promised objective of the qualification and which must all be evidenced to a unified (and/or graded) standard.
Breadth (exemplification)	Presents the provider with exemplar teaching content which helps define the minimum required breadth of learning. It guides, but does not prescribe: learning should always be broader than any potential assessment.
Depth (amplification)	Presents the provider with the required minimum teaching content and defines the depth of understanding required for the level and objective of the qualification.
Qualification objective	A succinct summation of the overarching development of the learner in terms of tangible work or further developmental opportunities available as a result of achieving this qualification.
Qualification aim	A succinct summation of why this qualification is of value to the learner (without reference to assessment).
Transferable	Knowledge, understanding or skills that can be applied beyond the context in which they were taught to benefit the learner in different job roles, industries, contexts and/or personal situations.
Assessment guidance	Guidance used to advise centres on a general level of expectation, rather than to prescribe a definitive list of evidence.
Delivery guidance	Guidance that, without reference to assessment, illustrates opportunities for evidence which might: <ul style="list-style-type: none"> • Be naturally generated through the learning process • Offer innovative examples of delivery gathered through centre/learner consultation • Minimise the burden of assessment on centres and learners.
Guided learning hours (GLH)	Approximate number of hours under immediate guidance or supervision of a lecturer, supervisor, tutor or teacher.
Directed study	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.
Total qualification time (TQT)	Guided learning hours + directed study Total Qualification Time is the number of notional hours which represents an estimate of the total amount of time that could reasonably be expected to be required in order for a Learner to achieve and demonstrate the achievement of the level of attainment necessary for the award of a qualification.
Arrangements for reasonable adjustments	Adjustments made to the assessment for a qualification so as to enable a learner with additional requirements to demonstrate his/her attainment to the level required.

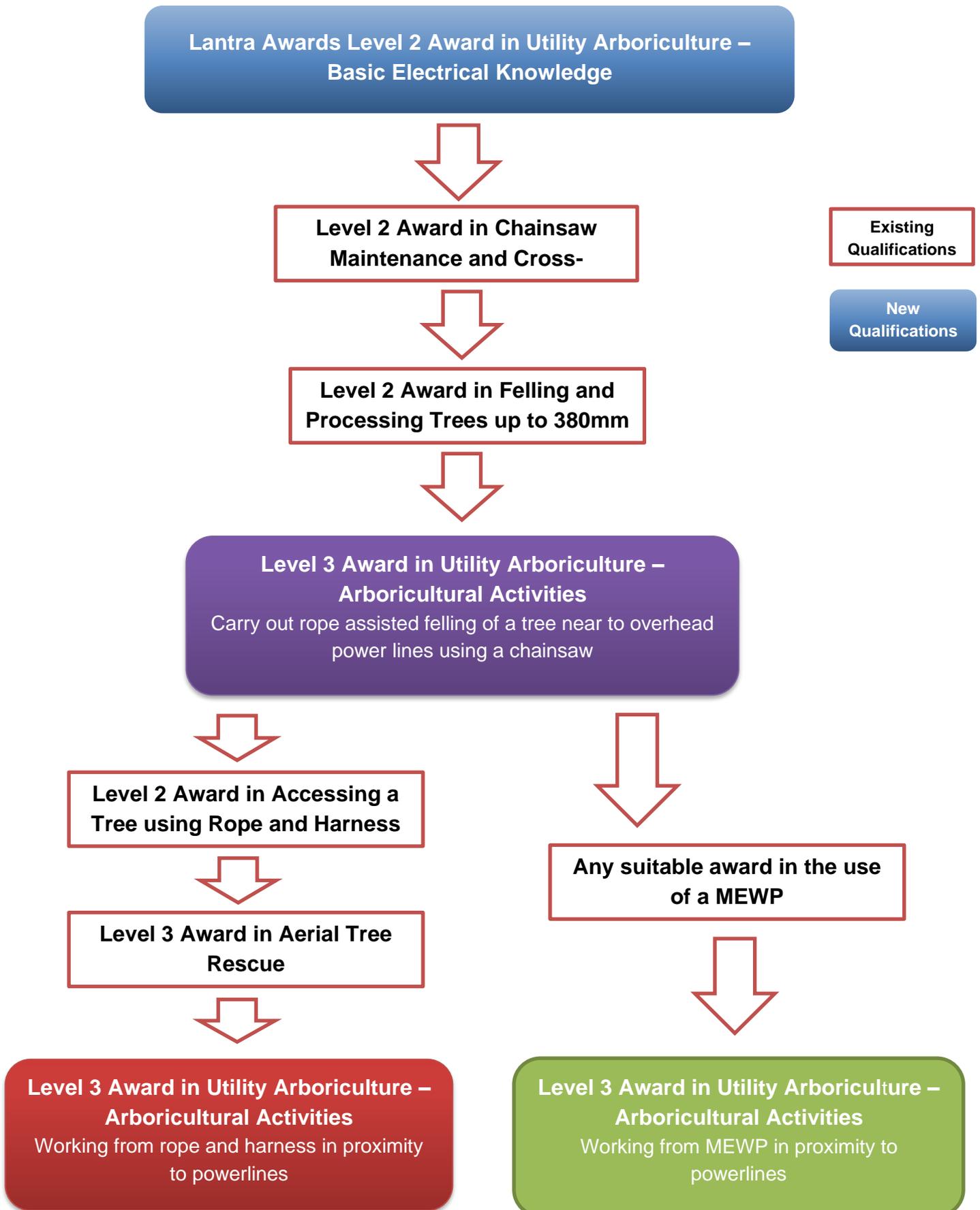
Arrangements for special consideration	Special consideration might be given to a learner who has temporarily experienced an illness or injury, or some other event outside of the learners' control, which has had a material effect on the learner's ability to take an assessment or demonstrate their attainment.
Recognition of prior learning	A method of assessment that considers whether a learner can demonstrate that they can meet the assessment requirements for a unit through knowledge, understanding or skills they already possess and do not need to develop through a course of learning.

Appendix 2 – Census Ethnic Group Classifications (2011)

Please use the following code(s) to indicate ethnicity when completing the learner registration.

England and Wales		Northern Ireland		Scotland	
01	White: English/Welsh/Scottish/ Northern Irish/British	19	White: White	30	White: Scottish
02	Irish	20	Irish Traveller	31	British
03	Gypsy or Irish Traveller	21	Asian/Asian British: Indian	32	Irish
04	Any other White background	22	Pakistani	33	Any other White background
	Mixed/multiple ethnic groups	23	Bangladeshi	34	Mixed: Any mixed/multiple Ethnic background
05	White and Black Caribbean	24	Chinese		Asian, Asian Scottish or Asian British:
06	White and Black African		Black, Black Irish or Black British:	35	Indian
07	White and Asian	25	Black Caribbean	36	Pakistani
08	Any other Mixed/multiple ethnic background	26	Black African	37	Bangladeshi
	Asian/Asian British:	27	Black other	38	Chinese
09	Indian	28	Mixed: Mixed ethnic group	39	Any other Asian background
10	Pakistani		Other ethnic group:		Black, Black Scottish or Black British:
11	Bangladeshi	29	Any other ethnic group	40	Caribbean
12	Chinese			41	African
13	Any other Asian background			42	Any other Black background
	Black/African/Caribbean/				Other ethnic group:
	Black British:			43	Any other ethnic group
14	African				
15	Caribbean				
16	Any other Black/African/ Caribbean background				
	Other ethnic group:				
17	Arab				
18	Any other ethnic group				

Appendix 3 – Qualification progression



This page has been intentionally left blank

This page has been intentionally left blank