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LEVEL 3 CERTIFICATE OF COMPETENCE IN UTILITY ARBORICULTURE

Units UA1, UA2.1, UA2.2 and UA2.3

ASSESSMENT SCHEDULES

February 2010

Contents page

NPTC Level 3 Certificate of Competence in Utility Arboriculture – Unit UA1 Basic Electrical Knowledge

Candidate Information

This Unit covers the requirements for safe working nearing proximity to overhead conductors which may be live.

Introduction
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NPTC will:
- Publish -Scheme regulations
  -Assessment schedule
  -Assessment material
- Approve centres to co-ordinate and administer the scheme
- Set standards for the training of Verifiers and Assessors
- Recruit, train and deploy Verifiers
- Manage verification
- Issue certificates to successful Candidates

The Certificate of Competence
Certificates of competence will be awarded to Candidates who achieve the required level of competence in the Units to which their Certificate relates.

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The minimum age limit for Candidates taking certificates of competence is 16 years. There is no upper age limit.

Assessment
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The candidate must be registered through an NPTC approved Assessment Centre for this qualification prior to assessment.

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- Observation of practical performance
- Assessment of knowledge and understanding

Performance Evaluation
The result of each assessment activity is evaluated against the following criteria:

4 = Meets or exceeds the assessment criteria by displaying a level of practical performance and/or underpinning knowledge, with no 'minor' or 'critical' faults. (Competent).

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Verification is a process of monitoring assessment; it is an essential check to confirm that the assessment procedures are being carried out in the way that NPTC has laid down. The overall aim of verification is to establish a system of quality assurance that is acceptable in terms of both credibility and cost effectiveness.

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Learning Outcomes
The candidate will be able to:
- Understand the basic principles of working safely in proximity to overhead and underground utility services
- Understand their responsibilities whilst on site
- Identify electrical equipment
- Electrically categorise trees
- Identify zones

Guidance Notes for Candidates and Assessors
The assessment contains 2 compulsory parts:
Part 1.1 Site Work Safety
Part 1.2 System components, Tree Categories and Zones

The following should be available: A range of good quality photographs, or pictures of electrical plant and circuit components.

Certificate endorsement:
A **Level 3 Certificate of Competence in Utility Arboriculture – Ground Worker** will be issued to candidates who successfully achieve Unit UA1 Basic Electrical Knowledge (Parts 1.1 - Site Work Safety and 1.2 - System components, Tree Categories and Zones).

Safe Practice

Where assessment is conducted in a classroom:

1. Assessors must follow NPTC guidance issued to Assessment Centres relating to Child Protection in that particular environment.

Where assessments are conducted outside, in addition to the above:

2. The Assessor must carry out an appropriate Risk Assessment for the site, document the findings and then apply the appropriate control measures before any assessments are started.
3. Emergency Procedures must be included as part of the RA. In particular, the location of the site, weather conditions, details of access, etc., which may be required by emergency services must be assessed and the nearest Accident and Emergency Hospital Unit identified. The means of contacting the emergency services must be established.
4. Any manual handling must be carried out to so that it complies with current legislation.
5. Warning signs must be erected as appropriate to Risk Assessment.
6. Any necessary permissions must have been granted, and notifications made as appropriate: (e.g. Regional Electrical Companies/ Distribution Network Operators, Local Planning Authority, forestry authority, Forestry Commission, Highways Authority, Private owners, Statutory undertakers, Police, etc.).
7. A current, recognised, 'Emergency First Aid' Training Certificate which includes treatment for shock is strongly recommended and may be a requirement of some Network Operators.
8. The assessments are carried out in accordance with safety guidelines in the Electricity Act 1989 (Schedule 4 Para. 9), Electricity at Work Regulations, HSE Guidance Notes GS6, HS (G) 47, HS (G) 85 Electricity at Work Safe Working Practices, Electricity Supply Industry (ESI) Model Distribution Safety Rules, EA Engineering recommendation G55/2, BS EN 50110-1, local Network Operators (NO) Distribution Safety Rules and other relevant Safety Guides and current legislation, e.g. the Provision and Use of Work Equipment Regulations (PUWER) 1998.
9. It is the responsibility of the Assessment Centre, Assessor and Candidate to ensure that the additional requirements and provisions are met as relevant to the units
10. Additional information may be sought from the relevant operator manuals or any other safety publications.

UA1 Basic Electrical Knowledge	
Part 1 Site work safety/Network Identification	
Assessment Activity	**Assessment Criteria**
1. Demonstrate knowledge of the principals of risk assessment	- Hazard identified : has the potential to cause harm (injury) - Risk evaluated: the likelihood of the injury occurring, to whom and its severity - Control Measures required: action to be taken to reduce (minimise) the risk of injury occurring - Risk assessment is properly documented (i.e you can understand it and it is relevant to the task and the site) - Monitoring: to ensure controls are still in place; or that if further hazards arise, controls are put in place to minimise risk; or if required stop works - Contents of risk assessment agreed and explained to all staff, prior to work - Emergency procedures
2. Demonstrate knowledge of the requirements of risk assessment, for safe tree working in proximity to overhead electric lines: Generic risk assessments; Site specific risk assessment: Electrical risk assessment:	**Generic risk assessments:** - Often repeated tasks and procedures - Use of chainsaws and machinery eg.wood chippers - Procedures for working at height - Procedures for live or dead line working **Site specific risk assessment:** - Details hazards that are specific to the site, tasks and work - Safety of public, property and environment - Details of trainees and supervisory levels **Electrical risk assessment:** - Electrical and tree related hazards clearly separated - Justification for any live working proposed - Category of tree works clearly defined
3. Demonstrate knowledge of the requirements for appropriate site supervision.	- Name of operative(s) being supervised- age if relevant - Operations being supervised - The supervisor(s) - The level of supervision - Details documented e.g. within risk assessment - Arrangements agreed with Network Operator
4. Demonstrate knowledge of personal protective equipment requirements whilst on the work site in order to comply with instructions and associated legislation.	PPE is required where appropriate: - High visibility clothing - Head protection - Eye protection - Hand protection - Foot protection - Hearing protection - Specialised clothing (e.g. flame retardant) and equipment as specified by the Network Operator
5. Demonstrate knowledge of how to prevent injury to self/others and damage to apparatus	- Ensure the work is carried out as defined by the risk assessment/ method statement - Maintain safety distances - Maintain awareness of vicinity zones at all times, particularly when moving and handling timber and branches. - Locate underground cables and protect where necessary (steel plates, blocks of wood) - Locate other utilities (gas, plant water, sewer)

UA1 Basic Electrical Knowledge	
Part 1 Site work safety/Network Identification	
Assessment Activity	**Assessment Criteria**
6. Demonstrate knowledge of the factors to consider when working in the designated area and when leaving the site safe for others (e.g. public)	- Ensure work does not interfere with other parties - Maintaining the general safe condition of the site at all times during and after work - Ensure Logs/brash/chippings stacked clear of the line Ensure equipment/machinery does not impede: - Work - Access points/Egress points - Remove site 'spoil' where appropriate - Fences, ditches, paths, young trees, badger setts etc. left undamaged - Tools and equipment all removed from site - Any hanging branches removed
7. Demonstrate knowledge of the factors to consider when carrying out tidy up operations	- Do not point chipper discharge shoot towards conductors or equipment - Do not leave 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 - Ensure that a clear path is left under conductors to allow access for future patrols and maintenance - Do not stack timber adjacent to substation boundary fences that may allow climbing access - Ensure that hanging branches are not left as a hazard for others
8. Demonstrate knowledge of the factors that may change the electrical danger of a tree: Atmospheric conditions Tree type and condition	 - Temperature (changes ground clearance) - Rain (increases conductivity) - Dust (increases risk of 'flash over') - Fog/mist (increases conductivity) - Snow/ice (changes ground clearance/may change category of tree) - Electrical storm (very high voltages transmitted) - Wind (blows trees/branches nearer to line) - Species – different sap levels e.g. Willow high sap - Spring - rising sap levels - Full leaf/Dead tree - Trees with leaves may come into contact with the overhead line
9. Demonstrate knowledge of: Ways in which fires can increase the danger from overhead lines And How to reduce the electrical danger from fires adjacent to a line	- Increase the likelihood of a flash over – carbon particles - Heat can cause conductors to sag – reduces ground clearance and brings OHL (Vicinity Zone) closer to operator - Poles could catch fire - Conductors could melt and break - Chip arisings away from line - Stack arisings away from line - Cart arisings away - Avoid fires adjacent to lines if possible - Build fires away from line - Ensure smoke blows away from line - Do not leave long branches that are capable of breaching the Vicinity Zone

UA1 Basic Electrical Knowledge	
Part 1 Site work safety/Network Identification	
Assessment Activity	**Assessment Criteria**
10. Demonstrate knowledge of the dangers of: Using Ladders adjacent to overhead lines **And** The dangers when using ropes adjacent to overhead lines	- 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 - Fibre glass ladders may offer better protection but are not rated as insulated - Always carry in a horizontal position as close to the ground as possible - Never allow ladders to enter the Vicinity Zone - 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 use throw bags - All ropes in use must be secured so that they do not enter the Vicinity Zone - All ropes used in climbing must be used on the side of the tree away from the line
11. Demonstrate knowledge of: The emergency action required following contact by either machinery, trees, equipment or personnel with live overhead lines or underground cables The action to take when rescuing a person from an : LV Line HV Line	- Keep everyone at least 5 metres away from the scene of the incident (HV auto re-closer circuit breaker may have switched power back on and there will be a voltage gradient in the ground) - Do not become a victim by going too close or attempting a rescue - If necessary post a watchman - Do not touch any broken conductors or equipment - Contact owner of overhead line (NO) for line to be made dead** - Only approach a casualty after the OHL has been earthed by the NO. - Contact supervisor/line manager ** - **LV line:** Consider pulling the persons or conductors clear using approved insulated rods – minimum of three 1.2m sections ****** - **HV Line**: No attempt should be made to rescue the person (if they are in contact with an HV line.- the circuit may also auto-re-close and there will be a voltage gradient in the ground)** - Only approach a casualty after the OHL has been earthed by the NO - ** Must be stated, also note*, If considered and discussed on the risk assessment then in an emergency situation a grounds man could use approved insulated rods to effect a rescue.*
The information that needs to be given to the NO for the line to be made dead in case of emergency The additional information that needs to be given to the emergency services in the event of an injury	- Give your name - Explain what has happened - Ask for the line to the made dead - Give accurate location - Give an accurate Grid Reference - Give name &/or number of OHL - Give Pole numbers/Equipment ID - Describe damage you can see - Give details of casualties - Give accurate Grid reference - Agree arrangements – may require to meet at a specific location - Describe casualties/injuries

UA1 Basic Electrical Knowledge	
Part 1 Site work safety/Network Identification	
Assessment Activity	**Assessment Criteria**
11. Continued Why Emergency Procedures (EP) needs documenting and where it should be kept	- Emergency services (e.g. air Ambulance) can find casualty quickly - NO can de-energise line quickly - Emergency Services can be contacted quickly - Minor casualties can be taken to A&E quickly - All operatives to have access to EP - Kept on site in an easily accessible place - Contained within the risk assessment
12. Identify a range of High Voltage (HV)/Low Voltage (LV) overhead line components and explain the risks when working adjacent to each:	
a) Wood pole Overhead Lines HV to cover voltages 11 kV 33kV	- HV Overhead Line identified Associated risks: - High voltage conductors between poles - Supporting steelwork at the pole top - Stay wires above the 'in-stay' insulator
b) Overhead Lines LV	- LV Overhead Line identified Associated risk - Low voltage conductors between poles - Supporting steelwork at the pole top - Stay wires above the 'in-stay' insulator - Street lighting
c) Transformers (associated with 11kV and 33kV OHL's)	- Transformer identified Associated risks: - High voltage bushings on the transformer - Low voltage bushings on the transformer - Connecting jumpers from the high-voltage lines - Connecting jumpers are lower than the minimum OHL ground clearance - Vicinity Zone close to ground -
d) Cable Terminal Pole HV and LV	- Cable Terminal Pole HV and LV identified Associated risks: - High voltage bushings on the pole box or cable termination - Jumpers connecting the cable to the overhead line - Supporting steelwork at the pole top - Damage to the cable at ground level -
e) Jumpers HV and LV	- HV and LV Jumpers identified Associated risks: - Any jumpers that come down the pole and connect to other equipment. - All jumpers that connect one line to another -
f) Air Break Switch (Pole top mounted and under slung)	- Air Break Switch (Pole top mounted and under slung) identified Associated risks: - Jumpers that connect the overhead line to the airbreak switch. - Supporting steelwork at the pole top - Operating handle that comes down the pole to ground level - Open/closed
g) Aerial Bundled Conductor	- Aerial Bundled Conductor identified Associated risks: - Damaged to the conductor insulation - Conductor terminations may be exposed - Must be treated as live at all times -

UA1 Basic Electrical Knowledge	
Part 1 Site work safety/Network Identification	
Assessment Activity	**Assessment Criteria**
h) Fuses HV and LV	- HV and LV Fuses identified Associated risks: - Fuse unit - Live equipment above or inside the fuse unit even when fuse removed
i) Auto reclosers/ Pole Mounted Circuit Breaker	- Auto reclosers/ Pole Mounted Circuit Breaker identified Associated risks: - High-voltage bushings - Jumpers connecting the Auto recloser / Pole Mounted Circuit Breaker to the overhead line
j) Transmission Tower Lines	- Transmission Tower Lines identified Associated risks: - High-voltage conductors between towers - Damaged insulators at each tower - Jumpers connecting one part of the line to another
k) Grid and Primary Substations	- Primary and Grid substation identified Associated risks: - Damage to 'un-climbable' fence - Unauthorised access - Live equipment at low level
l) Secondary Distribution Substation	- Ground Mounted Secondary Distribution Substation (Transformer) identified Associated risks: - Damage to any cable connected to the substation HV/LV - Damage to sub station plant and equipment
m) Underground Cables	- Underground Cables identified Associated risks: - Shallow cable depth - Any cable damage caused by digging, ground anchors, fencing etc - Cable damage if suitable methods of locating not used (NO plans, cable locator e.g. CAT/JENNY)
13 Identify and demonstrate knowledge of: HV Earth and LV Bonds	- HV Earth and LV Bonds identified - Demonstrates that the OHL 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

UA1 Basic Electrical Knowledge		
Part 2 Tree Categories and Zones/Safety Documents		
	Assessment Activity	**Assessment Criteria**
1	Demonstrate knowledge of how trees are electrically categorised when located in proximity to an overhead line	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
2	Demonstrate knowledge of the relevant safety rules, codes of practice and safety documents which underpin how tasks on site are undertaken safely	Awareness of: - Electricity Company Safety Rules - Electricity Company codes of practice Safety documents issued: - Permit to Work/Permit for Work
3	Demonstrate knowledge of: Permit to Work (PTW)/ Permit for work (PFW)	 - Issued for work on dead, earthed, HV equipment
4	Demonstrate knowledge of the key aspects of a PTW/PFW	- Issued by a NO appointed person - received by a NO appointed person - Describes the work to be carried out - Describes the limit of the work and safety precautions to be applied, (where applicable) - It describes the equipment (spans etc.) which can be worked on safely - Identifies that the OHL is Earthed - When all work is complete, document is cleared and staff informed - It shows where the HV is isolated
5	Demonstrate knowledge of Earths and associated risks: HV Earth and LV Bonds	- Demonstrates that the OHL 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 The hazards of HV Earths: - Be aware if either; the earth is disconnected at ground level before removal from the overhead line- - **or** - the earth is disconnected at the ground level during the period of the work LV Bonds: - Be aware if either; the bonds are connected to phase conductors before connection to neutral/earth conductor - **or** - they are disconnected from neutral/earth conductor before disconnection from phases

UA1 Basic Electrical Knowledge		
Part 2 Tree Categories and Zones/Safety Documents (continued)		
	Assessment Activity	**Assessment Criteria**
6	Demonstrate knowledge of safety points to consider when working under the control of a Safety Document	- Know the limits of the work area identified - Cease work immediately following instruction from the Safety Document holder - Leave site only after agreement with the holder of the Safety Document - Report back to Safety Document holder on returning to the site (The work arrangements may have changed or the line may have been re-energised) - Everyone on the site working under the Safety Document needs to understand its contents.
7	Demonstrate knowledge of: The minimum ground clearances (over normal ground) for the following type of lines: a) LV b) 11kV c) 33kV d) Roads e) Jumpers, (droppers to transformers, airbreaks etc)	 - LV = 5.2m - 11kV = 5.2m - 33kV = 5.2m - Roads = 5.8m - Jumpers = 4.3m
8	The link between increasing line voltage above 33kV and change in ground clearance	- The higher the line voltage the greater the ground clearance
9	Demonstrate knowledge of the Live Zone	Live zone: - The zone around an exposed live circuit conductor or supporting insulators where there is danger of burn or electric shock if any part of a persons body or non insulated tool they are using enters the zone. - **LV = 0.3m - **11kV = 0.8m - **33kV = 0.8m - 66kV = 1.0m - 132kV = 1.4m - 275kV = 2.4m - 400kV = 3.1m **must be stated
10	Demonstrate knowledge of the dangers and safety factors that must be considered when working on trees where any part is in the Live Zone	Sources of Danger: - Trees may be live at ground level - Trees may be weakened by charring or could catch fire - Overhead line conductors maybe damaged Safety factors: - Ask the NO to make the line dead - Carry out work under an approved NO procedure and where a justification process allows the work to be carried out with the line live

UA1 Basic Electrical Knowledge	
Part 2 Tree Categories and Zones/Safety Documents (continued)	
Assessment Activity	**Assessment Criteria**
11 Demonstrate knowledge of: the Vicinity Zone the Vicinity Zones distances for the following range of voltages LV 11kV 33kV 66kV 132kV 275kV 400kV the factors to consider when applying the Vicinity Zone distance to a task	Vicinity Zone: - The zone around an exposed live circuit conductor which if maintained will prevent the danger of burn or electric shock. - The Live Zone is included within the measurement of the Vicinity Zone - **LV = 1m - **11kV = 2m - **33kV = 2.5m - 66kV = 3m - 132 kV = 3.5m - 275 kV = 4m - 400 kV = 5m **must be stated - Different measurements for different voltages - The higher the voltage the greater the distance so always select the greater distance if there is doubt about the voltage - If the Vicinity Zone distance is maintained it will prevent injury
12 Demonstrate knowledge of the reasons for: assessing clearance distances accurately and how this can be achieved.	Distances need to be accurately assessed to: - Maintain and determine safety distances - Accurately categorise trees - Remove cut material to specified lengths - Distances can be assessed by: - Reference to known distances including: - Conductor spacing - Length of approved insulated rods - Electronic / Surveying devices
13 Demonstrate knowledge of Proximity Zones 1 and 2. Demonstrate knowledge of the factors to consider when applying the proximity zone distance to a task.	Proximity Zone 1: - Includes all the trees that are to be felled that are within two tree lengths of any live equipment. Proximity Zone 2: - Includes all the tree that are to be dismantled, pruned or have other arboricultural work carried out on them that are within: • 9m of any live equipment up to and including 66kV • 15m of any live equipment greater than 66kV - (When felling) Distance is measured horizontally from a point directly beneath the nearest conductor to the base of the tree - Where mechanical plant is being used (e.g. harvesters or forwarders), then the stated distances will be measured to the nearest point to the line that any part of the machine or load can reach - On sloping ground increase the distance to allow for the effect of the slope so that task can still be carried out safely - The distance must be reassessed on the re-commencement of work - DNO must be advised if work is to take place within the Proximity Zone

NPTC Level 3 Certificate of Competence Utility Arboriculture
Unit UA2 – Prune Trees (Ground/Aerial)
Part 2.1 - Tree Species Recognition, Growth Characteristics and Associated Hazards

Candidate Information

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Learning Outcomes
The candidate will be able to:

- Identify common species of tree by leaf or twig
- Identify growth characteristics
- Identify hazard trees and branches

Guidance Notes for Candidates and Assessors

The following should be available:

A site with at least eight common broadleaved species, and four coniferous species.
If not all available then acceptable to supplement with branches, cones, leaves, twigs, pictures or diagrams.
Tree(s) with potential hazards and defects, and at least two examples of dangerous overhang.

Pre-requisites:
Prior to being certificated for this unit, the candidate must have achieved **Unit UA1** from the Certificate of Competence in Utility Arboriculture

Certificate endorsements:
A **Level 3 Certificate of Competence in Utility Arboriculture – Prune and Fell Trees (Ground)** will be issued to candidates who successfully achieve Unit UA2, parts **2.1 and 2.2**

Alternatively

A **Level 3 Certificate of Competence in Utility Arboriculture Prune Trees (Aerial)** will be issued to candidates who successfully achieve Unit UA2, parts **2.1, 2.2 and 2.3**

Note: This unit is assessed by one assessor with arboricultural knowledge. The letter 'A' on the right hand side of the table, confirms it must be assessed by an NPTC approved Arboricultural Assessor.

Safe Practice

11. Assessors must hold a current 'First Aid at Work' Certificate.
12. It is strongly recommended that Candidates hold at least a recent, recognised 'Emergency First Aid' Training Certificate and may be a requirement of some Electricity Companies
13. Correct procedures following the relevant REC guidelines must be implemented and where relevant a simulated network must be used..
14. The Assessor must ensure a Risk Assessment has been carried out, and sufficient control measures implemented. In particular, the location of the site and weather conditions should be assessed, details of access, etc, which may be required by emergency services must be noted, as well as the nearest Accident and Emergency Hospital Unit. The means of contacting the emergency services must be established.
15. All Personal Protective Equipment (PPE) used in the assessments must comply with Arboriculture and Forestry Advisory Group (AFAG) Safety Guide 301, 401, 801, Health and Safety Executive publications and current legal requirements in terms of specification and use.
16. A First Aid Kit complying with current Regulations, of the appropriate size for the number of persons on site, must be available on site and a personal first aid kit must be provided to individuals.
17. Warning signs must be erected as appropriate to Risk Assessment
18. Current Industry Best Practice Guidelines (e.g. AFAG Safety Guides 301,401,403, 804) for each task carried out need to be followed.
19. Any necessary permissions must have been granted, and notifications made as appropriate: (e.g. Regional Electrical Companies, Local Planning Authority, Forestry Authority, Forestry Commission, Highways Authority, Private owners, Statutory undertakers, Police, etc.). Long hair to be tied back and jewellery removed

20. A current, recognised ‘Emergency First Aid’ Training Certificate which includes treatment for shock is strongly recommended and may be a requirement of some Electricity Companies.
21. The assessments are carried out in accordance with safety guidelines in the Electricity Act 1989 (Schedule 4 Para. 9), Electricity at Work Regulations, HSE Guidance Notes GS6 & HS (G) 47, HS (G) 85 Electricity at Work Safe Working Practices, Electricity Supply Industry (ESI) Model Distribution Safety Rules, ESI Engineering Recommendation G55/2, BS EN 50110-1, local Regional Electricity Company’s Distribution Safety Rules (“REC DSR’s”) and other relevant Safety Guides and current legislation e.g. the Provision and Use of Work Equipment Regulations (PUWER) 1998,
22. It is the responsibility of the Assessment Centre, Assessor and the Candidate to ensure that the additional requirements and provisions are met as relevant to the units
23. Additional information may be sought from the relevant operator manuals or any other appropriate training or safety publication.

UA2.1Tree species recognition, growth characteristics and associated hazards	
Assessment Activity	**Assessment Criteria**
1. Identify: Common species of broadleaved tree species	- Oak - Beech - Ash - Birch - Sycamore - Willow - Lime - Hawthorn - Cherry - Apple - Alder - Horse Chestnut - Sweet Chestnut - Hazel - Rowan - Holly - Other.
And Identify common species of coniferous tree species	- Cypress - Pine - Larch - Fir - Spruce - Cedar - Hemlock - Yew - Other.
2. Demonstrate knowledge of: Typically slow -growing species and explain their significance in relation to growth in proximity to overhead lines	- Oak - Beech - Laburnum - Box - Yew - Holly - Other Significance: - Growth increments are smaller per annum so will not require cutting so often or so drastically as other species
And Typically fast -growing species and explain their significance in relation to growth in proximity to overhead lines	- Ash - Sycamore - Sweet Chestnut - Willow - Birch - Alder - Leyland Cypress - Other. Significance: - High growth rates means more frequent cutting required, or remove species from the proximity of the lines altogether
Demonstrate knowledge of other factors that influence the growth of trees	- Age - Soil - Site - Climate

UA2.1 Tree species recognition, growth characteristics and associated hazards (continued)	
Assessment Activity	**Assessment Criteria**
3. Demonstrate knowledge of species that easily produce sprout growth and explain their significance in relation to growth in proximity to overhead lines	- Ash - Sycamore - Sweet Chestnut - Willow - Poplar - Lime - Oak - Pruning, even when carried out to BS3998 can result in very rapid growth of multiple new shoots, especially when exposed to full light.
4. Demonstrate knowledge of trees with brittle stems and branches and explain their significance in relation to growth in proximity to overhead lines	- Horse Chestnut - Douglas Fir - Sycamore - Larch - Willow - Birch - Poplar - Cedar Significance: - Weight of branches from growth, wind, snow etc. can cause them to snap easily. They can also break off early when cutting, especially if too large a piece is pruned.
5. Demonstrate knowledge of hazards associated with climbing plants.	- Vegetation obscuring electrical equipment - Vegetation could be live - Vegetation obscuring tree/network defects - Climbing plants
6. Identify and comment on potential hazards and defects, and their significance in relation to overhead conductors	- Fungal fruiting bodies - Cankers - Dead wood - Included bark - Very thin crown, - Peeling and dead bark - Tight or weak forks - Decay cavities - basal and crown - Old pollards/topped and lopped trees - Damaged roots and/or ground heave - Cracks in branches - Grey Squirrel damage
7. Demonstrate knowledge of the signs of ill-health in trees	- Leaf discoloration - Crown die back - Peeling and dead bark - Very thin crown - Fungal fruiting bodies
8. Identify and comment on trees with dangerous overhang	- Long or heavy lateral branches likely to give way over conductors - Any defective branch that is overhanging conductors e.g. dead, cracked, split etc. - Weakened branches from cavities, fungi, included bark, acute forks etc. - Hanging or blown-off branches - Partly uprooted wind-blown trees
9. Demonstrate knowledge of why “topping” (or “lopping”) trees is considered bad practice	- Rapid sprout growth occurs, back into the lines - It leaves the tree unsightly - Unstable branch unions result - Rot can set into stem causing tree to become a hazard

UA2.1 Tree species recognition, growth characteristics and associated hazards (continued)	
Assessment Activity	**Assessment Criteria**
10. Demonstrate knowledge of: The reasons for 1-2-3 sequence of cuts when undertaking pruning operations The reasons for target pruning	- To control the cut section - To prevent tearing or ripping of the bark - To ensure the final (target) pruning cut can be carried out precisely - Preserves the branch bark collar and trees' defences against decay - Stubs and flush cuts allow decay to enter - Stubs and flush cuts encourage sprout growth - Stubs and flush cuts leave tree looking unsightly
11. Implications of trees in poor health	- Windblow - Branch drop - Exacerbation of any defects - Loss of amenity - Spread of disease
12. Implications of: Over pruning Good pruning	 - Production of dense re-growth - Poor crown architecture - Long whippy stems, end loading - Extensive long lone laterals - Open crowns, over pruning allowing too much movement - Arching branches - Tree death - Good crown architecture - Secondary thickening because of wind/sway - Even distribution of main branches and leaf cover - Typical branch and leaf growth for the species
13. Demonstrate knowledge of different methods of pruning near lines and their applications	Through pruning: - LV overhead lines in residential areas - Allows conductors to pass through the canopy allows sufficient clearance between the tree and conductor. Under pruning: - Amenity considerations in residential areas - Removal of some branches overhanging, but retaining the general shape of the tree Side pruning: - Woodland or forest locations - All branches on the line side of the tree removed by a pruning cut at the trunk or back to a specified clearance Crown reduction: - For trees directly under the line - Growth directed away from conductors - Alternative to removal where tree has to be retained

NPTC Level 3 Certificate of Competence In Utility Arboriculture
Unit UA2 – Prune Trees (Ground/Aerial)
Part 2.2 – Prune and Fell Trees (Ground)

Candidate Information

Introduction
The scheme will be administered by NPTC.

NPTC will:
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Learning Outcomes
The candidate will be able to:
- Prune trees from the ground safely in proximity to a overhead power line

Guidance Notes for Candidates and Assessors
The following should be available:

Pruning from the ground
- An overhead line made dead or a simulated line
- A site which incorporates a range of trees with branches that approach and overhang an OHL or simulated OHL so that the trees can be pruned from the ground using both pruning (lopping) head and a pruning saw attachment.
- A set of insulated rods of at least 4 sections in good condition with at least the following attachments:
- A pruning (lopping) head with appropriate insulator(s) fitted into the pull cord
- A pruning saw recommended blade maximum length 45cm.
- A pruning hook if required

Felling the tree
- An overhead line made dead or a simulated line
- A tree within one tree length of overhead line with an effective diameter at felling height of between 200mm (8") and 380mm (15"), either conifer or broad-leaved
- Rear handled chain saw in good condition complying with AFAG 301 in terms of safety features, and be a model and size suited to the task(s) required, maximum recommended guide bar length: 380mm (15")]
- Sufficient fuel and oil for the assessment, appropriate to saw model
- Appropriate felling aids (e.g. felling lever, wedges, etc)
- An Anchor Rope of adequate length and breaking strain to direct the fall of the tree
- An adequate anchor point for both ends of the rope
- A pruning hook (or lopper head) and insulated rods

NOTE:
A simulated overhead line comprising ropes, spacers, etc may be used, to the following specification:
LV : Vertical arrangement, minimum 3 lines, maximum 22.5 cm.
HV: Horizontal arrangement, minimum 2 lines, maximum 2 m. between lines
Minimum height of lines 5.2 metres from the ground
20 – 30 m. "spans" need to be available per candidate (2 candidates working can then be visible)

Pre-requisites:
Prior to being certificated for this unit, the candidate must have achieved **Unit UA1** and **UA2 part 2.1** from the Certificate of Competence in Utility Arboriculture and units **CS30** and **CS31** from the NPTC Level 2 Certificate of Competence in Chainsaw and Related Operations

Certificate endorsements:
A **Level 3 Certificate of Competence in Utility Arboriculture – Prune and Fell Trees (Ground)** will be issued to candidates who successfully achieve Unit **UA2 parts 2.1 and 2.2**

Alternatively

A **Level 3 Certificate of Competence in Utility Arboriculture - Prune Trees (Aerial) will** be issued to candidates who successfully achieve Unit **UA2 parts 2.1, 2.2 and 2.3**

Note: Under normal circumstances this unit will be assessed by one assessor with electrical and arboricultural knowledge. However, in exceptional circumstances the unit may be assessed by two assessors; one with arboricultural knowledge; the other with electrical knowledge.

Safe Practice

1. Assessors must hold a current 'First Aid at Work' Certificate.
2. It is strongly recommended that Candidates hold at least a recent, recognised 'Emergency First Aid' Training Certificate and may be a requirement of some Electricity Companies.
3. Any overhead line(s) will be made dead (but will be treated as live).
4. Correct procedures following the relevant REC guidelines must be implemented to ensure that the line is dead.
5. All chain saws used in the assessments must comply with Arboriculture and Forestry Advisory Group (AFAG) Safety Guide 301 in terms of safety features, and be a model and size suited to the task(s) required.
6. Recommended guide bar lengths should be observed, although variations may be accepted at the discretion of the Assessor where this is appropriate to the task.
7. Candidates should be familiar with the saw that they are going to use.
8. A spare working chainsaw must be available.
9. The Assessor must ensure a Risk Assessment has been carried out, and sufficient control measures implemented. In particular, the location of the site and weather conditions should be assessed, details of access, etc, which may be required by emergency services must be noted, as well as the nearest Accident and Emergency Hospital Unit. The means of contacting the emergency services must be established.
10. Manual handling techniques must comply with current legislation.
11. All Personal Protective Equipment (PPE) used in the assessments must comply with Arboriculture and Forestry Advisory Group (AFAG) Safety Guide 301, 401, 801, Health and Safety Executive publications and current legal requirements in terms of specification and use.
12. The current Regulations for transport, handling and storage of fuel and oils must be complied with.
13. Provision must be made to avoid the risk of Environmental Pollution.
14. A First Aid Kit complying with current Regulations, of the appropriate size for the number of persons on site, must be available on site
15. Warning signs must be erected as appropriate to Risk Assessment
16. Current Industry Best Practice Guidelines (e.g. AFAG Safety Guides 301,401,403, 804) for each task carried out need to be followed.
17. All insulated rods used in the assessment must comply with the safety requirements of the Electricity Company
18. Any necessary permissions must have been granted, and notifications made as appropriate: (e.g. Regional Electrical Companies, Local Planning Authority, Forestry Authority, Forestry Commission, Highways Authority, Private owners, Statutory undertakers, Police, etc.).
19. Long hair to be tied back and jewellery removed
20. The assessments are carried out in accordance with safety guidelines in the Electricity Act 1989 (Schedule 4 Para. 9), Electricity at Work Regulations, HSE Guidance Notes GS6 & HS (G) 47, HS (G) 85 Electricity at Work Safe Working Practices, Electricity Supply Industry (ESI) Model Distribution Safety Rules, ESI Engineering Recommendation G55/2, BS EN 50110-1, local Regional Electricity Company's Distribution Safety Rules ("REC DSR's") and other relevant Safety Guides and current legislation e.g. the Provision and Use of Work Equipment Regulations (PUWER) 1998,
21. If ladders are used then they must be insulated (fibreglass) and meet the local REC standards.
22. It is the responsibility of the Assessment Centre, Assessor and the Candidate to ensure that the additional requirements and provisions are met as relevant to the units
23. Additional information may be sought from the relevant operator manuals or any other appropriate training or safety publication.

UA2.2 Prune and Fell Trees (Ground)	
Assessment Activity	**Assessment Criteria**
1. Assess the site-specific hazards that may need to be controlled to reduce the risks before and during a job	- Identification of location of emergency procedure and site plans - Confirmation of Ordinance Survey Grid Reference - Location other Utilities overhead plant – BT, Electricity, Gas, Water - Awareness of need for traffic signs / control (holder of "Chapter 8" Competency (Safety at Roadwork's and Street works COP) on site) - Awareness of other services apart from the overhead line - Control of environmental pollution - Disposal of arisings: - Awareness of responsibilities towards other workers, public and self - Overhead line inspected for defects - Branches to be pruned identified - Overhead line inspected for defects (broken conductor strands – if conductors are damaged get advice from DNO) - Plan of work agreed with co-worker(s)
2. Assess the <u>additional</u> site-specific electrical hazards that may need to be controlled to reduce the risks before and during a job	- Awareness of danger from equipment coming into contact with the live line (winch vehicles and cables chippers, loaders, tipping trailers etc.) - Timber removal ("goal-posts" and warning barriers in line with GS6 if machinery and vehicles pass under or along adjacent to overhead lines)
3. Demonstrate knowledge of changes that may have occurred to justify amending the risk assessment or re-categorising trees	- Additional tree growth - Changed land conditions - Weather conditions on the day- wet, wind sun etc - Access arrangements altered - Livestock moved into work area - Changes in conductor height
4. Identify Category A,B,C and D trees on site	Category A: - Trees within the Vicinity Zone including the Live Zone at or above the level of Conductors or equipment Category B: - Trees Outside but capable of breaching the Vicinity Zone including the Live zone adjacent to conductors or equipment. Category C: - Trees Within the Vicinity Zone including the Live Zone that are beneath the conductors or equipment. Category D: - Trees outside the Vicinity Zone with no potential of breaching the Vicinity Zone
5. Identify when a dedicated look-out groundsman is required	- Reference to criteria at activity 6 below

UA2.2 Prune and Fell Trees (Ground) (continued)	
Assessment Activity	**Assessment Criteria**
6. Demonstrate knowledge of the Electrical Method of Work required prior to and during the pruning, felling and removing of trees (Ground based) **Procedures for category A trees:**	**Procedures for category A trees:** - 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** . - With the line live the method of work should be established by incorporating the following control measures: 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 flash over, then the length of cut section must be determined by risk assessment and recorded: particularly taking in to account distances between phases - A dedicated lookout groundsman 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.
Procedure for category B trees:	**Procedure for category B trees:** - With the line live the method of work should be established by incorporating the following control measures: - 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 hand held 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 cart-wheeling 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 groundsman 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.
Procedure for category C trees: **Procedure for category D trees:**	**Procedure for category C trees:** - With the line live the method of work should be established by incorporating the following control measures: - 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 groundsman capable of stopping work should be used in this instance. **Procedure for category D trees:** - With the line live the method of work should be established by incorporating the following control measures: - 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.
7. Identify condition of the Over Head Line	- Overhead line inspected for defects - Broken or damaged conductors - Irregular spacing of conductors - Ground clearance - Damaged or rotten poles - Condition of stays
8. Assemble, inspect insulated rods Demonstrate knowledge of the minimum number rods required for working up to 11kV and up to 33 kV	Insulated rods: - Checked, inspected and assembled - Approved by DNO for work to be carried out - Joints fit securely - Voltage rating, unique identification numbers and date of inspection checked - (if no rating marked reference to be made to manufacturers schedule) - Understand and ensure the effectiveness of insulated inserts is maintained - Number of rods appropriate for the task - 3 rods (LV and 11kV) - 4 rods (33kV)

UA2.2 Prune and Fell Trees (Ground) (continued)	
Assessment Activity	**Assessment Criteria**
8. Continued Demonstrate knowledge of factors to consider for the use care and maintenance of insulated rods	- Insulated rods are only approved for voltages up to 33KV - Dirty rods cleaned externally and internally with warm soapy water - Damaged or defective rods to be withdrawn from service labelled as defective or scrapped - Only carry out repairs to minor scratches using polish recommended by manufacturer to – ensures that water beads and runs off - Rods to be examined and tested as per manufacturers recommendations at regular intervals by a suitably authorised person - Results to be recorded and tools marked with most recent test date or next test date - Tools to be stored in a dry, clean environment and in a position which will prevent scratching or damage
9. Demonstrate knowledge of the reason various pruning tools are used.	- Pruning (lopping) head is used on twigs and branches less than about an inch in diameter - Pruning saw is used on branches over about an inch in diameter - Control hook is used by an assistant to steady, lift or pull branches being pruned, or is used to place a pull-rope over a branch - Ensure saw head is not used in the Live Zone.
10. Select and wear Personal Protective Equipment (PPE, Safety clothing)	- Safety boots - Safety helmet - Eye protection - Gloves - Non-snag outer clothing - Personal First Aid Kit - Whistle - Hi-viz. jacket (adjacent to roads or other work operations)
11. Use pruning (lopping) head with insulated rods in close proximity to electrical apparatus Pruning head to be positioned such that it will not cause a flashover	- Insulated rods assembled - Insulated insert positioned in the pulling cord in relation to the OHL - Plan of work agreed with a co-worker to pull cord if required - Pruning head positioned to avoid risk of conductor clashing or flash over - Ensure that there is good positive communication during pruning operations - Co-worker instructed during pruning - Twigs and branches cut at pre-determined lengths to avoid the risk of a flash over - Control hook can be used with a second set of insulated rods by an assistant to steady, lift or pull branches being pruned. They can also be used to place a pull-rope over a branch - Longer lengths of branches can be cut provided that they will not either hang up on the line or cause a flashover - Selected branches pruned to give the specified clearance from the overhead line - Awareness of requirement to undertake risk assessment to ensure no damage to overhead line where branches go through a line - Permission for the removal of any branches hung up on the line must be obtained from the NO - Awareness of need to clean rods to ensure all contamination is removed if laid on ground during operations - Rods inspected for damage on completion of operation

UA2.2 Prune and Fell Trees (Ground) (continued)	
Assessment Activity	**Assessment Criteria**
12. Use pruning saw with insulated rods in relation to electrical apparatus	- Insulated rods assembled - Plan of work agreed with a co-worker if pruning hook or pull rope is used - Co-worker instructed to use insulated rods to attach pulling ropes or use pruning hook to ensure the branch falls outside the vicinity zone, if appropriate - Saw position near to the base of the branch to prevent bouncing / whipping - Side/Under cut made - Release cut made - Final pruning cut made - Branches pruned to intersections for directional pruning - Branches cut in sections to avoid risk of flash over, damage to conductors or apparatus or clashing of conductors - Pruning saw positioned to avoid risk of conductor clashing or flash over - Selected branches pruned to give the specified clearance from the overhead line - Cut sections prevented from being caught on the overhead line. - Ensure the saw head is not used in the Live Zone - Ensure the saw head is not used on branches less than 25mm into the Live Zone.
13. Demonstrate knowledge of: The reasons for 1-2-3 sequence of cuts when undertaking pruning operations	- To control the cut section - To prevent tearing or ripping of the bark - To ensure the final (target) pruning cut can be carried out precisely
The reasons for target pruning	- Preserves the branch bark collar and trees' defences against decay - Stubs and flush cuts allow decay to enter - Stubs and flush cuts encourage sprout growth - Stubs and flush cuts leave tree looking unsightly.
The procedures to clean, transport and store pruning tools	- Clean off sap, resin etc. - Dry and apply suitable rust preventative / lubricant - Cover tool heads to transport or store - Store in a dry, safe place
14. Use approved insulated rods to attach pulling rope(s) to a tree to be felled and prepare for felling	- Signals/commands agreed with party - Pruning hook used (or lopper head etc) to place rope over a suitable branch - Position and secure rope in tree to ensure no contact with conductor - An appropriate anchor point chosen (either at least 2 tree lengths away or 'offset') - Rope attached firmly to ground based anchor point e.g. using a suitable hitch - Rope tensioned (e.g. with a butterfly knot or hand winch) - Offset pulley used if e.g. pulling directly down a slope - Additional ropes to be used if necessary

UA2.2 Prune and Fell Trees (Ground) (continued)	
Assessment Activity	**Assessment Criteria**
15. Carry out an assisted fell of a tree adjacent to an overhead line Rope attached to anchor point through 'fail safe' braking system to allow assisted felling with no danger of tree falling back onto conductors	- Signals/commands agreed with party - Pruning hook used (or Pruning head etc) to place rope around the stem - Position and secure rope in tree to ensure no contact with conductor - An appropriate anchor point chosen (either at least 2 tree lengths away or 'offset') - Rope attached firmly to anchor point - Assistant instructed to apply pressure to rope as appropriate - Awareness of risk if tree/debris fall onto conductors - Awareness of risk if adjacent trees fall onto conductors - Awareness of risk if tree which becomes hung up rolling into conductors - Tree felled where agreed with assessor - Escape route entered as tree begins to fall - Tree stabilised and site made safe - Rope removed - Awareness of risk of over tensioning ropes
16. Demonstrate knowledge of alternative techniques used to deal with trees of varying size and condition	- Small trees leaning away or weighted away from the line can be felled with e.g. reducing V cut - Larger trees, when appropriate, can be felled with the aid of a winch, with the line dead - Use wedges when necessary to prevent a tree "sitting back" even when a pulling device used - If the tree is unsuitable for felling away from the line use an appropriate dismantling technique with the line dead - Assess wind load etc and then judge if the task can be completed safely - Do not fell if an electrical storm is likely

NPTC Level 3 Certificate of Competence In Utility Arboriculture
Unit UA2 – Prune Trees (Ground/Aerial)
Part 2.3 – Prune Trees (Aerial)

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Learning Outcomes
The candidate will be able to:

- Prune branches safely from within the tree in proximity to overhead power line

Guidance Notes for Candidates and Assessors
The following should be available:

- An overhead line made dead or a simulated line
- A site incorporating trees with branches that approach and overhang an OHL or simulated OHL so that the trees can be pruned.
- into the pull cord
- A pruning saw recommended blade maximum length 45cm.
- A pruning hook if required
- Authorisation from landowner

Range of trees in proximity to an overhead line suitable for carrying out pruning work
LV : Vertical arrangement, minimum 3 lines, maximum 22.5 cm.
or
HV: Horizontal arrangement, minimum 2 lines, maximum 2 m. between lines
Minimum height of lines 5.2 metres from the ground
20 – 30 m. "spans" need to be available per candidate (2 candidates working can then be visible)

A simulated overhead line comprising ropes, spacers, etc may be used, to the above specification

Pre-requisites:
Prior to being certificated in this unit, candidates must have achieved **Unit UA1**, **and UA2 parts 2.1** and **2.2** from the Level 3 Certificate of Competence in Utility Arboriculture; and units **CS30**, **CS31**, **CS38**, **CS39** and **CS40** from the NPTC Level 2 Certificate of Competence in Chainsaw and Related Operations

Certificate endorsement:

A **Level 3 Certificate of Competence in Utility Arboriculture - Prune Trees (Aerial)** will be issued to candidates who successfully achieve Unit **UA2 parts 2.1, 2.2 and 2.3**

Note: Under normal circumstances this unit will be assessed by one assessor with electrical and arboricultural knowledge. However, in exceptional circumstances the unit may be assessed by two assessors; one with arboricultural knowledge; the other with electrical knowledge

Safe Practice

1. Assessors must hold a current 'First Aid at Work' Certificate.
2. It is strongly recommended that Candidates hold at least a recent, recognised 'Emergency First Aid' Training Certificate and may be a requirement of some Electricity Companies.
3. Any overhead line(s) will be made dead (but will be treated as live).
4. Correct procedures following the relevant REC guidelines must be implemented to ensure that the line is dead.
5. All chain saws used in the assessments must comply with Arboriculture and Forestry Advisory Group (AFAG) Safety Guide 301 in terms of safety features, and be a model and size suited to the task(s) required.
6. Recommended guide bar lengths should be observed, although variations may be accepted at the discretion of the Assessor where this is appropriate to the task.
7. Candidates should be familiar with the saw that they are going to use.
8. A spare working chainsaw must be available.
9. The Assessor must ensure a Risk Assessment has been carried out, and sufficient control measures implemented. In particular, the location of the site and weather conditions should be assessed, details of access, etc, which may be required by emergency services must be noted, as well as the nearest Accident and Emergency Hospital Unit. The means of contacting the emergency services must be established.
10. Manual handling techniques must comply with current legislation.
11. All Personal Protective Equipment (PPE) used in the assessments must comply with Arboriculture and Forestry Advisory Group (AFAG) Safety Guide 301, 401, 801, Health and Safety Executive publications and current legal requirements in terms of specification and use.
12. The current Regulations for transport, handling and storage of fuel and oils must be complied with.
13. Provision must be made to prevent any Environmental Pollution.
14. All equipment used must be safely transported and stored.
15. A First Aid Kit complying with current Regulations, of the appropriate size for the number of persons on site, must be available on site
16. Warning signs must be erected as appropriate to Risk Assessment
17. Current Industry Best Practice Guidelines (e.g. AFAG Safety Guides 301,401,403, 804) for each task carried out need to be followed.
18. All insulated rods used in the assessment must be consistent with the safety and other requirements of the Electricity Companies
19. Any necessary permissions must have been granted, and notifications made as appropriate: (e.g. Regional Electrical Companies, Local Planning Authority, Forestry Authority, Forestry Commission, Highways Authority, Private owners, Statutory undertakers, Police, etc.).
20. Long hair to be tied back and jewellery removed
21. A current, recognised 'Emergency First Aid' Training Certificate which includes treatment for electric shock is strongly recommended and may be a requirement of some Electricity Companies.
22. The assessments are carried out in accordance with safety guidelines in the Electricity Act 1989 (Schedule 4 Para. 9), Electricity at Work Regulations, HSE Guidance Notes GS6 & HS (G) 47, HS (G) 85 Electricity at Work Safe Working Practices, Electricity Supply Industry (ESI) Model Distribution Safety Rules, ESI Engineering Recommendation G55/2, BS EN 50110-1, local Regional Electricity Company's Distribution Safety Rules ("REC DSR's") and other relevant Safety Guides and current legislation e.g. the Provision and Use of Work Equipment Regulations (PUWER) 1998
23. The current best arboricultural practice should be followed to ensure safe climbing methods. (e.g. AFAG Guide to Good Climbing Practice). The use of climbing irons is prohibited unless the tree is being dismantled or felled.
24. The Climbing Candidate is responsible for supervising all operations on the ground, except as otherwise agreed with ground staff.
25. The Assessor must arrange a suitable site and for someone to be on site during the aerial work who is equipped and can carry out aerial tree rescue
26. If ladders are used then they must be insulated (fibreglass) and meet the local REC standards.
27. It is the responsibility of the Assessment Centre, Assessor and the Candidate to ensure that the additional requirements and provisions are met as relevant to the units
28. May be sought from the relevant operator manuals or any other appropriate training or safety publication.

UA2.3 Prune Trees (Aerial)	
Assessment Activity	**Assessment Criteria**
1. Demonstrate knowledge of the Electrical Method of Work required prior to and during the pruning, felling and removing of trees (Aerial works). Candidate to undertake utility pruning operation chosen by assessor.	- Work site hazards, risks and controls - Where dead works are to be undertaken ,Permit To Work is issued /held (for HV works). Relevant permissions for LV. - Confirm Earths are visible to the climber at all times from the working area for "shutdown" work Plan of work agreed as appropriate with: - Other operators on the ground - Other operators off the ground - LIVE AND Vicinity Zone agreed in relation to the tree(s) to be climbed
Identify Category A,B,C and D trees on site	**Trees are accurately categorised and suitable working procedures agreed:** Category A: - Trees within the Vicinity Zone including the Live Zone at or above the level of Conductors or equipment Category B: - Trees Outside but capable of breaching the Vicinity Zone including the Live zone adjacent to conductors or equipment. Category C: - Trees Within the Vicinity Zone including the Live Zone that are beneath the conductors or equipment. Category D: - Trees outside the Vicinity Zone with no potential of breaching the Vicinity Zone
Identify procedures for category A trees	**Procedures for category A trees:** - 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** . - With the line live the method of work should be established by incorporating the following control measures: 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 flash over, then the length of cut section must be determined by risk assessment and recorded: particularly taking in to account distances between phases - A dedicated lookout groundsman 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.

UA2.3 Prune Trees (Aerial) cont	
Assessment Activity	**Assessment Criteria**
1. Continued Identify procedures for category B trees	**Procedure for category B trees:** - With the line live the method of work should be established by incorporating the following control measures: - 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 hand held 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 cart-wheeling 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 groundsman 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.
Identify procedures for category C trees	**Procedure for category C trees:** - With the line live the method of work should be established by incorporating the following control measures: - 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 groundsman capable of stopping work should be used in this instance. -

UA2.3 Prune Trees (Aerial) cont	
Assessment Activity	**Assessment Criteria**
1. Continued Identify procedures for category D trees	**Procedure for category D trees:** - With the line live the method of work should be established by incorporating the following control measures: - 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.
2. Demonstrate knowledge of the points that the climber must discuss when briefing the ground staff.	- The contents of the Electrical Risk Assessment - The contents of the Site Specific Risk Assessment. - Work at height regulations - Aerial Rescue provision - Changes to the Risk Assessment e.g. the site conditions during the course of the work - The tree hazard evaluation. - The planned method and sequence of work. - Individual responsibilities. - Means of communication established. - Emergency procedures - Second climber has climbing equipment on site.
3. Demonstrate knowledge of effective communication systems which can be used when working within a team	- Agreed hand signals - Two way radio - Clear and concise verbal communication
4. Carry out a pre-climb inspection of the tree	The pre-climb inspection should look for: - Evidence of cavities, decay or decay fungi - Deadwood and broken branches - Dead or flaking bark - V shaped unions - Cracks - Nesting insects - Timber characteristics of the tree species should be commented on - The presence of power lines or telephone wires - Targets and obstacles underneath the tree -
5. Prepare to climb tree	- Insulated rods used to position ropes (or to position throw bag) - Ropes or throw-bags are not thrown in proximity to Overhead Line - Anchor point positioned so that climber will swing away from conductors in event of a fall
6. Establish anchor point in tree	- Suitability of the technique used - Rope organisation - Safety and position of the anchor point - Testing of the anchor point by thorough loading prior to ascent
7. Set up climbing system to be used	- Knots and friction hitches tied and set correctly - Karabiners locked and aligned correctly - Stopper knots used where appropriate - Correct attachment to the harness - The system is tested prior to ascent

UA2.3 Prune Trees (Aerial) cont	
Assessment Activity	**Assessment Criteria**
8. Climb the tree to work position	- Signals agreed (hand/radio) - Tree climbed on opposite side to conductors - Ropes routed away from the conductors - Work position established with secondary anchor point - Ensure climber or any equipment does not infringe the vicinity zone - Ensure climber or any equipment cannot infringe vicinity zone in the event of a fall - Ensure that the climber does not work directly above any conductor - Ensure a dedicated look-out groundsman capable of stopping work if the climber works directly above any conductor. -
9. Carry out pruning work	- Ensure clear and concise communication - Sections cut small enough for ease of handling Cut sections cast away from the conductors to prevent breach of Vicinity Zone - All pruning operations carried out to prevent the climber and un-insulated equipment breaching the Vicinity Zone.
10. The types of cuts that can be used when undertaking pruning operations The reasons for target pruning	- Step cut free fall. - Sink cut free fall. - Step cut, hand held, hand cast. - Sink cut, hand held, hand cast. - Final pruning cut. - Preserves tree defenses against decay - Stubs and flush cuts are detrimental to tree health - Stubs and flush cuts encourage sprout growth
11. Carry out target pruning	- Under cut, released cut, final pruning cut - Sections cut small enough to prevent breach of vicinity zone - Pieces cast away from the conductors - Cut section controlled to prevent tearing or ripping of the bark - Branch bark collar preserved - If appropriate mirror the branch bark ridge -
12. Carry out directional pruning	- Safe/correct pruning methods applied - Stated clearance achieved the from the line - Prune to encourage any new growth to grow away from the line - Ensure ratio of diameters of main stem to remaining branch not greater than 3:1 -
13. Descend from the tree	- Tree descended on opposite side to conductors - Ropes removed ensuring no breach of Vicinity Zone