



**LEVEL 2 CERTIFICATE
IN
ARBORICULTURE**

QUALIFICATION GUIDANCE

[50114116]

About ABC Awards

ABC Awards (ABC) is one of the largest vocational awarding bodies in the United Kingdom with an established reputation for quality and customer service. ABC is recognised by the regulatory authorities. ABC is a Component Awarding Body (CAB) for 14-19 Diplomas.

The ABC portfolio of qualifications includes National Vocational Qualifications (NVQs) and Vocationally Related Qualifications (VRQs).

ABC's VRQs may also be

- Technical Certificates
- Additional and/or Specialist Learning for the 14-19 Diplomas
- Included within Foundation Learning

ABC's national operation is supported through its regional offices which provide support to centres and a full range of assessment services. ABC has a team of dedicated staff who can offer advice and guidance on the full Portfolio, Examination and Moderation services including e-Assessment offered by ABC, as well as the full range of ABC training events and conferences. The team is committed to helping you in the way that suits your requirements and is available to visit you at your convenience.

ABC encourages centres to use its on-line registration service. Registration facilities are available through our web site – <http://www.abcawards.co.uk/secure/register.php>

Sources of Additional Information

The ABC web site www.abcawards.co.uk provides access to a wide variety of information.

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Information in this publication is correct at time of going to press but may be subject to change. Any amendments will be published on our web site and centres are encouraged to check this site regularly.

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Qualification Summary

ABC Awards Level 2 Certificate in Arboriculture

Qualification	
Level 2 Certificate in Arboriculture	
Assessment	Internal assessment, internal and external moderation
Grading	Pass
Progression	Centres should be aware that reasonable Adjustments which may be permitted for assessment may in some instances limit a learner's progression into the sector. Centres must, therefore, inform learners of any limits their learning difficulty may impose on future progression
Operational Start Date	01/09/2010
Review Date	31/08/2017
ABC Sector	Land Based/Environmental
Ofqual SSA Sector	03.2 Horticulture and Forestry
Stakeholder Support	This qualification is supported by Lantra, the Sector Skills Council for environmental and land-based industries
Contact	See ABC website for the Centre Support Officer responsible for this qualification

Level 2 Certificate in Arboriculture

Rules of Combination: Learners must achieve a minimum of 21 credits. This will be made up of 18 credits from the Mandatory units and a minimum of 3 credits from the Optional units.

Unit	Level	Credit Value	GLH	Page No.
Mandatory Units				
The interaction of soil environments and woody plants [T/602/3921]	2	4	30	4
Woody plant physiology [A/602/3922]	2	5	37	10
The supply, planting and aftercare of woody plants [A/602/3936]	2	3	22	16
Principles of tree surgery operations [L/602/3956]	2	3	22	20
Tree inspections and statute and common law applied to trees [Y/602/3958]	2	3	22	24
Optional Units				
The principles of aerial tree surgery and ground based arboricultural operations [R/602/3960]	2	3	22	29
Principles of woodlands, forestry and ecology [H/602/3963]	2	3	22	33
The principles of managing special trees [T/602/3966]	2	3	22	37
Principles of tree surgery equipment use and maintenance [A/602/3967]	2	3	22	42

Numbers in box brackets indicate QCF unit Number

If learners achieve credits from units of the same title (or linked titles) at more than one level, they cannot count credits achieved from both units towards the credit target of a qualification

Qualification Purpose	B. Prepare for further learning or training and/or develop knowledge and/or skills in a subject area B1. Prepare for further learning or training, B2. Develop knowledge and/or skills in a subject area					
Entry Requirements	Post 16					
Age Range	Pre 16		16 – 18	✓	19 +	✓
LARS Reference	50114116					
Recommended GLH	155					
Type of Funding Available	See LARS (Learning Aim Rates Service)					
Minimum Qualification Fee	See ABC web site for current fees and charges					
Unit Fee	Unit fees are based upon a unit's individual credit value. Please see the ABC web site for the current fee charged per credit.					
Additional Information	See ABC website for resources available for this qualification					

Introduction

The Certificate in Arboriculture is designed for those people working in arboriculture, in both the public and private sectors, to complement their training and experience, and to provide evidence of their knowledge of arboriculture.

This qualification will be put forward for inclusion on the ASL catalogue. Please check the ABC Awards website for the current status of this qualification.

Aims

The ABC Level 2 Certificate in Arboriculture aims to

- provide learners with the opportunity to acquire the essential skills, knowledge and understanding required for employment in arboriculture and related industries, and to enable them to progress to advanced study
- provide a stimulating and supportive learning environment for learners to develop their potential contribution to arboriculture and associated industries
- develop underpinning knowledge within the subject area, by promoting and encouraging the development of new techniques and learning activities

Target Group

This qualification is designed for those learners working in arboriculture, in both the public and private sectors, who have identified it necessary to complement their training and experience and to provide evidence of their competence.

ABC expects approved centres to recruit with integrity on the basis of a learner's ability to contribute to and successfully complete all the requirements of a unit/s or the full qualification.

Progression Opportunities

This qualification provides access to continued Further Education, enhanced employability and/or an opportunity for employed learners to up-date existing skills.

Centres should be aware that reasonable Adjustments which may be permitted for assessment may in some instances limit a learner's progression into the sector. Centres must, therefore, inform learners of any limits their learning difficulty may impose on future progression

Unit Details

Unit Title	T/602/3921 The interaction of soil environments and woody plants
Level	2
Credit Value	4
Guided Learning Hours	30
Unit Summary	In this unit, learners will explore how soils are formed, soil structure and it's physical characteristics. They will look at the importance of water, nutrients and organisms in the soil. Learners will explore conditions required for plant growth, the causes of poor quality soil and how to improve conditions for woody plant growth
Learning Outcomes (1 to 7) <i>The learner will</i>	Assessment Criteria (1.1 to 7.3) <i>The learner can</i>
1. Understand how soil is formed	1.1 Identify one of the three main rock constituents of soil 1.2 Describe how rocks are broken down 1.3 Describe how a soil is formed 1.4 Identify the role of organic matter in soil formation 1.5 Describe the properties of a minimum of three main constituents of soil 1.6 Describe the effects on the soil of these main constituents 1.7 Identify why aggregates are important to soil structure 1.8 Define the terms soil texture and structure 1.9 Identify a commonly found horizon of a soil profile
2. Understand the importance of the differing quantities of water in a soil	2.1 Describe how water moves within the soil 2.2 Define two of the eight terms applied to the different quantities of water found in the soil 2.3 Identify how pore size affects water retention in a soil

<p>3. Understand the role played in woody plants by the principal macro and micro nutrients</p>	<p>3.1 Identify a macro and a micro nutrient found in soils</p> <p>3.2 Describe two ways in which soil type affects nutrient availability</p> <p>3.3 Describe the role played in plant growth by two macro and one micro nutrients</p> <p>3.4 Distinguish two symptoms of nutrient deficiency found in woody vegetation</p> <p>3.5 Outline the nitrogen cycle</p>
<p>4. Understand the role of the beneficial organisms found in the soil</p>	<p>4.1 Identify a minimum of three beneficial soil organisms</p> <p>4.2 Describe two benefits that soil organisms can bring to the soil</p> <p>4.3 Describe two benefits that soil organisms can bring to the woody plant</p>
<p>5. Understand soil pH and the ranges found in soil</p>	<p>5.1 Define the term pH</p> <p>5.2 Identify a value as recognised on a pH scale for each of the following</p> <ul style="list-style-type: none"> • neutral • high • low <p>5.3 Identify how pH values may be changed artificially</p> <p>5.4 Identify two implications for woody plants of low or high values of pH</p>
<p>6. Understand optimum soil conditions required for woody plant growth</p>	<p>6.1 Identify optimum soil conditions required for growth</p> <p>6.2 Identify a minimum of three causes of poor soil conditions</p> <p>6.3 Identify signs and symptoms in woody plants of poor soil conditions</p> <p>6.4 Identify a minimum of two methods of improving soil conditions for woody plant growth</p> <p>6.5 Identify a minimum of two fertilizers for use with woody plants</p>

	<p>6.6 Describe a minimum of two methods of application for fertilizers</p>
<p>7. Understand the importance of pre-planting soil surveys for woody plants</p>	<p>7.1 List four advantages of undertaking a soil survey prior to planting woody plants</p> <p>7.2 Describe the process of undertaking a soil survey</p> <p>7.3 Identify information that can be obtained from a soil survey</p>

SUPPORTING UNIT INFORMATION

T/602/3921 The interaction of soil environments and woody plants - Level 2

INDICATIVE CONTENT

- 1) Igneous, sedimentary and metamorphic rocks. Physical and chemical weathering. Aggregates. Properties of sand, silt and clay. Role of organic matter. The effects on the soil of the differing properties – drainage, warmth, nutrient holding capacity, water holding capacity, compaction, micro-organism content, organic matter content, bulk density and pH levels. Soil structure and texture Soil profile and horizons O, A, B, C & D.
- 2) Gravitational and capillary water. Wilting point, field capacity, available water, hygroscopic water, soil moisture deficit, saturation point, flooded and the water table. Loam, clay and sandy soil pore size.
- 3) Principal major and minor nutrients. Nitrogen, potassium, phosphorous, magnesium, calcium, manganese, boron and iron. Clay and sand soils and varying nutrient availability. Role of nutrients played in plant growth. Signs and/or symptoms of deficiency. Nitrogen cycle outline to include -. Nitrogen in atmosphere, fixed to soil by bacteria in legumes, fixed to soil by soil bacteria, added to soil from animal waste as ammonia, bacteria converting ammonia to nitrites, bacteria converting nitrites to nitrates, nitrates taken up by plants, plants eaten by animals, de nitrification bacteria convert nitrate to atmospheric nitrogen and decomposers.
- 4) Nitrifying bacteria, mycorrhizal fungi, earthworms. Benefits of them for the soil and the plant.
- 5) Percentage of hydrogen ions expressed as pH. pH numeric scale values for neutral =7, a high value >7 and a low value <7. Changing pH – up application of lime and down with flowers of sulphur/sulphate of iron. Two implications for woody plants of a low value or of a high value – reduced nutrient availability – stunted growth, chlorosis, cupping and crinkling of leaves, root damage and death
- 6) Oxygen, water, nutrients – major and minor, good soil structure, good drainage and the presence of beneficial soil organisms. Poor drainage, lack of soil oxygen, low nutrient levels, toxin accumulation, lack of water and compaction. Signs – flooding, compaction, shallow soil, poor structure. Symptoms - stunted growth, leaf discoloration, wilting, chlorotic foliage and necrosis. Improving drainage and water availability and aeration, liming, application of organic matter and fertilizing. Fertilizer types - compound or simple, nitrogen based, slow release. Broadcast, liquid feed, tree pit planting compost, green manures, slow release, compound or straight, inorganic and organic nutrient stick.
- 7) Determine remedial actions - drainage, fertilizer requirement, organic matter requirement, decompaction needs, additions/changes of soil and species choice. Soil profile pit to identify horizons O, A and B, texture and structure analysis, separate top and sub soil, pH test on top and sub soil – work in a W pattern across larger sites. Information – type, good or bad structure, pH, moisture holding capacity, drainage potential, depth of top soil, presence of organic matter, earthworms, micro-organisms, stones, content of the O horizon, present vegetation growth, previous uses.

TEACHING STRATEGIES AND LEARNING ACTIVITIES

Centres should adopt a delivery approach which supports the development of their particular learners. The aims and aspirations of all learners, including those with identified special needs, including learning difficulties/disabilities, should be considered and appropriate support mechanisms put in place.

METHODS OF ASSESSMENT

This unit will be internally assessed, internally and externally moderated via a learner's portfolio and other related evidence, against the unit outcomes and assessment criteria.

Minimum requirements when assessing this unit

ABC expects that staff will be appropriately qualified to assess learners against the outcomes and criteria within the units. Generally teaching staff should be qualified and/or vocationally experienced to at least a level above that which they are teaching.

EVIDENCE OF ACHIEVEMENT

Evidence presented to support achievement is not prescribed for each learning outcome. It **could** typically include

- Product evidence
- Observation reports
- Oral/written questions and answers
- Reports/notes
- Worksheets/job sheets/workbooks
- Witness statements
- Taped evidence (video or audio)
- Photographic evidence
- Case studies/assignments/projects
- Interview/professional discussion
- Site risk assessment
- Tool / equipment inventory lists / maintenance schedules
- Pictorial identifications
- Letters / emails seeking clarification / confirmation of understanding
- Internet research / copies of items with relevant knowledge highlighted

This is not an exhaustive list and learners should be encouraged to develop the most appropriate evidence to demonstrate their achievement of the learning outcomes and assessment criteria.

All evidence must be clearly signposted and made available for the external moderator upon request.

All internal assessments must be accompanied by a signed Declaration of Authenticity (this document is available on the ABC web site).

ADDITIONAL INFORMATION

The following learning lists are available on the ABC website

- Woody Vegetation
- Pests, Diseases and Disorders of Amenity Trees

Unit Title	A/602/3922 Woody plant physiology
Level	2
Credit Value	5
Guided Learning Hours	37
Unit Summary	This unit looks at the classification and naming system of trees, shrubs and climbers. Learners will explore the internal and external structure of woody plants. They will learn about the physiological processes and bio-mechanical structure of these plants. They will also explore defence mechanisms used by woody plants, the causes of ill health and treatment/preventative measures available to maintain healthy woody plants.
Learning Outcomes (1 to 8) <i>The learner will</i>	Assessment Criteria (1.1 to 8.7) <i>The learner can</i>
1. Understand the international system of plant naming	1.1 Identify the principal divisions within the plant naming system 1.2 Define a minimum of two terms used within the system 1.3 Identify examples of woody plants to demonstrate an understanding of the terms defined
2. Understand the function of cells found in ring porous, diffuse porous and coniferous woody plants	2.1 Identify the cells found in woody plants 2.2 Identify the function(s) of the cells found in woody plants 2.3 Identify the difference in cell structure between ring porous, diffuse porous and coniferous woody plants
3. Understand the main physiological processes that woody plants carry out and the main environmental factors which influence growth	3.1 Describe the principles of the physiological processes of woody plants 3.2 Identify a minimum of three environmental factors which influence growth 3.3 Describe how these factors influence growth 3.4 Describe two ways in which woody plants adapt in order to survive

	<p>3.5 Identify what fuels the physiological processes</p> <p>3.6 Define the terms potential energy and kinetic energy</p> <p>3.7 Define the terms dynamic and static mass</p>
<p>4. Understand principles applied to the growth of woody plants</p>	<p>4.1 Define the term phenology</p> <p>4.2 Identify the main phenological periods of the tree calendar</p> <p>4.3 Identify two critical periods when the tree is vulnerable to attack</p> <p>4.4 Identify a minimum of three factors involved in germination of tree seeds</p> <p>4.5 Define the term secondary thickening</p> <p>4.6 Outline the processes of secondary thickening</p> <p>4.7 Outline how sexual reproduction occurs in trees in relation to</p> <ul style="list-style-type: none"> • pollination • fertilization <p>4.8 Define the terms dioecious and monoecious</p> <p>4.9 Describe the method of seed dispersal as used by a named tree</p>
<p>5. Understand the woody plant root system</p>	<p>5.1 Identify four functions of roots</p> <p>5.2 Identify a minimum of three different forms of tree root system</p> <p>5.3 Identify two shapes of tree root systems</p> <p>5.4 Identify a minimum of four factors affecting root distribution</p> <p>5.5 Identify how trees are anchored in the ground</p> <p>5.6 Identify two causes of a loss of anchorage</p> <p>5.7 Define the term 'root to shoot' ratio</p>
<p>6. Understand what is meant by tree biomechanics</p>	<p>6.1 Identify what is meant by the term biomechanics</p>

	<p>6.2 Define a minimum of four key terms associated with tree biomechanics</p>
<p>7. Understand the defence mechanisms used by woody plants</p>	<p>7.1 Identify a minimum of three physical measures used by woody plants to prevent or resist the effects of ill health</p> <p>7.2 Identify a minimum of three chemical measures used by woody plants to prevent or resist the effects of ill health</p> <p>7.3 Describe the formation of the walls/barriers formed as part of the CODIT model</p> <p>7.4 Define the term woundwood</p>
<p>8. Understand the causes, prevention or control of ill health in woody plants</p>	<p>8.1 Identify the signs or symptoms of a named pest, disease or disorder</p> <p>8.2 Identify and describe one of the four fungal colonisation strategies</p> <p>8.3 Give an example of a fungus with a named colonisation strategy</p> <p>8.4 Describe two types of woody plant rot associated with fungi</p> <p>8.5 Give an example of a woody plant fungus with a named type of rot</p> <p>8.6 Identify the significance of a named pest, disease or disorder when found on a tree</p> <p>8.7 For a named pest, disease or disorder, identify a preventative or cultural or control measure</p>

SUPPORTING UNIT INFORMATION

A/602/3922 Woody plant physiology - Level 2

INDICATIVE CONTENT

- 1) International Code of Nomenclature for algae, fungi, and plants. Kingdom, division, class, family, genus, species, variety, cultivar, common name, inter specific hybrid, inter generic hybrid, graft hybrid (chimera) and clone. Angiosperm and gymnosperm.
- 2) Monocotyledon and dicotyledon. Pith, parenchyma, vascular cambium, phloem, xylem, tracheids, rays, cork cambium, bark, green layer (photosynthetic), lenticel, resin duct, annual ring, sapwood and heartwood. Identify the functions of each cell. Identify the differences in ring and diffuse porous and conifers xylem size and position within the annual growth, xylem to tracheids and resin ducts in conifers.
- 3) The principles of the following processes - photosynthesis, respiration, transpiration, transportation, defence, storage, reproduction, cell division/growth and anchorage. Environmental factors - sunlight, temperature extremes, pollution, water availability, wind, oxygen and carbon dioxide levels. Tropisms such as geotropism, phototropism, thigmotropism and hydrotropism. Plant adaptations such as dark green leaves and stems, bark, leaf and bark shedding, reduced numbers of stoma, needles, altering shape and growth rate. Define potential and kinetic energy. Define dynamic (living and functional) and static mass (dead or dysfunctional).
- 4) Phenology – timing of natural processes 5 main periods - onset of growth, expansion of leaves and needles, high photosynthetic period, wood production and storage and dormancy. Critical periods – bud break and leaf fall
Seed germination – cold period, water, light, temperature.
Secondary thickening. Pollination. Fertilization. Methods of tree seed dispersal – wind, water, animals, humans. Define monoecious and dioecious.
- 5) Functions – anchorage, uptake of water, uptake of nutrients, respiration, storage, to form symbiotic relationships. Forms – lateral, lateral with droppers/sinker, lateral and tap, sloping, vertical, two tiered. Shape – tap, heart and surface root systems. Root distribution – soil compaction, water, nutrient and oxygen availability, soil type, ground topography, wind and species of tree. Loss of anchorage – root severance, soil erosion, high winds, moisture on leaves+wind and a wet soil combination. Define root to shoot ratio.
- 6) Tree Structure as an undamaged, self-optimised structure. Axiom of uniform stress and the minimum lever arm (body language of trees). Compression and tensile forces, slenderness, bulges, fibre buckling, cracks, ribs, hazard beam and hollowness.
- 7) Mechanisms of defence – physical measures spines, thorns, prickles, bark, leaf adaptations, hairs – chemical measures, phenolics, tannins, resins, gums terpenes and cyanide production. Compartmentalisation of decay in trees (COD IT) walls 1-3 Reaction Zone and wall 4 Barrier Zone. Describe woundwood and distinguish it from callus.
- 8) (There is a list for guidance only) Signs and symptoms, life cycle/infection and preventative or cultural or control measure for a named pest, disease or disorder. Identify the arb significance of pest, diseases and disorders e.g. not practical to control, requires control or treatment, not treatable, likely to cause death or failure of tree. Fungal colonisation strategies - heartrot, sapwood intact, sapwood exposed and active pathogenesis. Types of rot – white rot (selective delignification and simultaneous), brown rot and soft rot. Remedial

or preventative measures for causes of ill health for a named pest, disease or disorder.

TEACHING STRATEGIES AND LEARNING ACTIVITIES

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METHODS OF ASSESSMENT

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Minimum requirements when assessing this unit

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EVIDENCE OF ACHIEVEMENT

Evidence presented to support achievement is not prescribed for each learning outcome. It **could** typically include

- Product evidence
- Observation reports
- Oral/written questions and answers
- Reports/notes
- Worksheets/job sheets/workbooks
- Witness statements
- Taped evidence (video or audio)
- Photographic evidence
- Case studies/assignments/projects
- Interview/professional discussion
- Site risk assessment
- Tool / equipment inventory lists / maintenance schedules
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ADDITIONAL INFORMATION

The following learning lists are available on the ABC website

- Woody Vegetation
- Pests, Diseases and Disorders of Amenity Trees

Unit Title	A/602/3936 The supply, planting and aftercare of woody plants
Level	2
Credit Value	3
Guided Learning Hours	22
Unit Summary	In this unit, learners will look at the values of woody plants in the environment. They will develop an understanding of the plant handling process including lifting, storage and planting on site. They will also learn about the aftercare of woody plants.
Learning Outcomes (1 to 5) <i>The learner will</i>	Assessment Criteria (1.1 to 5.2) <i>The learner can</i>
1. Understand the values of woody plants in the environment	1.1 List a minimum of ten values of woody plants in the environment
2. Understand the plant handling process from lifting in the nursery through to storage at the planting site	2.1 Describe a correct procedure for storing trees after lifting in the nursery 2.2 Describe a correct procedure for labelling trees at the time of lifting 2.3 Describe a correct procedure for bundling trees in the nursery ready for transportation 2.4 Describe a correct procedure for packaging trees in the nursery ready for transportation 2.5 Describe a correct procedure for transporting trees from the nursery to site 2.6 Describe a correct process of protecting tree roots at the site of planting prior to planting
3. Understand methods of planting woody plants	3.1 Define two sizes of tree 3.2 Describe a suitable method of planting a <ul style="list-style-type: none"> • cell grown tree • bare rooted whip tree • standard tree

	<p>3.3 Describe a suitable method of staking</p> <ul style="list-style-type: none"> • a standard standard • an extra heavy standard <p>3.4 Describe a suitable method of tying a tree to a stake</p> <p>3.5 Describe a suitable method of backfilling a planting hole</p> <p>3.6 Describe a suitable method of mulching a newly planted tree</p> <p>3.7 Identify a suitable mulch material</p> <p>3.8 Identify a minimum of two reasons for mulching a newly planted tree</p> <p>3.9 Describe a suitable method of planting a shrub</p> <p>3.10 Identify appropriate measures required when planting trees of a given size into an unfavourable site condition</p>
<p>4. Understand appropriate protection and support system requirements</p>	<p>4.1 Identify an appropriate support system for use with newly planted tree stock</p> <p>4.2 Identify how a newly planted tree/shrub may be protected from rabbit or deer damage</p> <p>4.3 Identify a minimum of two ways that a young tree/shrub may be protected from grass cutting machinery damage</p>
<p>5. Understand the aftercare requirements of newly planted stock</p>	<p>5.1 Identify the elements of an aftercare programme for newly planted trees/shrubs to ensure successful establishment</p> <p>5.2 Identify a minimum of three causes of newly planted tree stock failing to establish</p>

SUPPORTING UNIT INFORMATION

A/602/3936 The supply, planting and aftercare of woody plants - Level 2

INDICATIVE CONTENT

- 1) Values of woody plants from the categories of environmental, amenity, landscape, ecological and social. Individual features of specimen trees such as size, shape, form, foliage, bark, flowers, fruits and other interest
- 2) Lifting to arrival at a planting site – lifting, bundling, labeling, packaging, transportation and storage of stock on site – healing in. From the HTA code of plant handling.
- 3) Seedling, cell grown, transplant, (1+0, 1+1, 1+1u1) whip, multi-stemmed, feathered, standard standard and extra heavy standard as in BS 3936 Nursery Stock. Planting spear, notch and pit. Staking – one third high, conventional one stake, double stake, underground guying. Backfilling – layers of soil compressed with the ball of the foot not the heel. Organic and inorganic mulch materials. Reasons for mulching – reduce water evaporation from the soil, prevent weed growth competition – aimed at helping establishment. Unfavourable site choice - weedy, wet, dry, slope, windy, high alkalinity or reclaimed brown field site.
- 4) Aboveground support, underground support and guards. Rabbits and deer individually or by fences – take account of height or type of deer.
- 5) 3 year after care programme to include tree/shrub replacement, re-firming, watering, mulch maintenance, formative pruning to BS 3998, tie and stake adjustment, weed control, pest and disease control.
Failures – (exclude vandalism) roots dried out prior to planting, lack of watering post planting, too much competition for water from weeds, flooded tree pits, wrong choice of species for soil conditions e.g. pH, planted too deep.

TEACHING STRATEGIES AND LEARNING ACTIVITIES

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- Worksheets/job sheets/workbooks
- Witness statements
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- Photographic evidence
- Case studies/assignments/projects
- Interview/professional discussion
- Site risk assessment
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ADDITIONAL INFORMATION

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- Woody Vegetation
- Pests, Diseases and Disorders of Amenity Trees

Unit Title	L/602/3956 Principles of tree surgery operations
Level	2
Credit Value	3
Guided Learning Hours	22
Unit Summary	This unit covers the principles of carrying out tree surgery operations. Learners will need to refer to current British Standards and current legislation and regulations relating tree surgery operations
Learning Outcomes (1 to 2) <i>The learner will</i>	Assessment Criteria (1.1 to 2.1) <i>The learner can</i>
1. Understand the principles of tree surgery operations	1.1 Define the following terms <ul style="list-style-type: none"> • crown lifting • crown thinning • crown reduction and re-shaping • formative pruning • pollarding 1.2 Describe tree pruning operations as per BS 3998 1.3 Distinguish when deadwood removal is necessary 1.4 Describe the treatment of cavities and water pockets 1.5 Identify the principles of fitting a brace or a prop in a tree 1.6 Identify the British Standard advised inspection period for a bracing system 1.7 Indicate in what circumstances the use of a bracing or propping system is appropriate
2. Understand tree surgery work needs to be carried out in accordance with best practice and in compliance with the relevant Acts and Regulations	2.1 Identify compliance with best practice and the following Acts and Regulations that apply to tree works <ul style="list-style-type: none"> • Health and Safety at Work Act • Management of Health and Safety at Work Regulations • First Aid at Work Regulations • Work at Height Regulations • Lifting Operations and Lifting Equipment Regulations • Provision and Use of Work Equipment Regulations

	<ul style="list-style-type: none">• Personal Protective Equipment Regulations• Manual Handling Regulations• Reporting of Injuries, Diseases and Dangerous Occurrences Regulations• Wildlife and Countryside Act• AFAG leaflets
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SUPPORTING UNIT INFORMATION

L/602/3956 Principles of tree surgery operations - Level 2

INDICATIVE CONTENT

- 1) Definitions and descriptions - crown lifting, crown thinning, crown reduction and re-shaping, formative pruning, pollarding as per BS 3998. Include target pruning, directional pruning, utility pruning and correct pruning techniques. Treatments – cavities wet and dry, water pockets as per BS 3998. Fitting procedure for a flexible or rigid brace and/or a prop. Inspection periods for a brace - annual from the ground, and with binoculars if required and a 5 year detailed aerial inspection. Circumstances for use – compression fork, heavy limb, weak cavity, splits/cracks - reduce risk.
- 2) One example as a minimum required for each.
Health and Safety at Work Act, Management of Health and Safety at Work regulations, First Aid at Work regulations, Working at Height regulations, Lifting Operations and Lifting Equipment regulations, Provision and Use of Work Equipment regulations, Personal Protective Equipment regulations, Manual Handling regulations, Reporting of Injuries, Diseases and Dangerous Occurrences regulations, Wildlife and Countryside Act, Countryside Rights of Way Act and the Conservation of Habitats and Species regulations, AFAG leaflets and CS units/equivalents – related to the operations listed in 1.

TEACHING STRATEGIES AND LEARNING ACTIVITIES

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METHODS OF ASSESSMENT

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Minimum requirements when assessing this unit

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EVIDENCE OF ACHIEVEMENT

Evidence presented to support achievement is not prescribed for each learning outcome. It **could** typically include

- Product evidence
- Observation reports
- Oral/written questions and answers
- Reports/notes

- Worksheets/job sheets/workbooks
- Witness statements
- Taped evidence (video or audio)
- Photographic evidence

- Case studies/assignments/projects
- Interview/professional discussion
- Site risk assessment
- Tool / equipment inventory lists / maintenance schedules
- Pictorial identifications
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- Internet research / copies of items with relevant knowledge highlighted

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ADDITIONAL INFORMATION

The following learning lists are available on the ABC website

- Woody Vegetation
- Pests, Diseases and Disorders of Amenity Trees

Unit Title	Y/602/3958 Tree inspections and statute and common law applied to trees
Level	2
Credit Value	3
Guided Learning Hours	22
Unit Summary	In this unit, learners will explore the development of a systematic and logical method of inspecting trees for obvious signs and symptoms of ill health. They will learn about the aspects of common and statute law appropriate to carrying out tree surgery works
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.9) <i>The learner can</i>
1. Understand the processes of undertaking safety inspections of trees	<p>1.1 Select appropriate headings under which to collect tree data related to risks posed by a tree</p> <p>1.2 Identify why a systematic and diagnostic process needs to be applied to inspecting trees</p> <p>1.3 Classify by broad category the risk posed by a tree with a defect</p> <p>1.4 Identify why a timescale is applied to any recommended action</p> <p>1.5 Select an appropriate item of equipment that may assist the tree inspector</p>
2. Understand the need to select the appropriate recommendation following inspection	<p>2.1 Identify an appropriate recommendation given a tree with a named defect or condition</p> <p>2.2 Describe the implications of a given recommendation on a named tree species</p>
3. Understand how aspects of common law are applied to trees.	<p>3.1 Define the term common law</p> <p>3.2 Identify how common law precedent is applied to</p> <ul style="list-style-type: none"> • overhanging branches • trespassing roots • dangerous trees • poisonous trees • right to light

<p>4. Understand how aspects of statutory legislation apply to the protection of trees</p>	<p>4.1 Define the term statute law</p> <p>4.2 Identify the purpose of a</p> <ul style="list-style-type: none"> • Tree Preservation Order (TPO) • Conservation Area designation <p>4.3 Identify for the owner the implication of a tree protected by a</p> <ul style="list-style-type: none"> • Tree Preservation Order • Conservation Area <p>4.4 Identify the penalties that could follow a breach of a</p> <ul style="list-style-type: none"> • Tree Preservation Order • Conservation Area rules <p>4.5 Identify what information is required when making an application to work on a protected tree</p> <p>4.6 Identify the processes that Local Planning Authorities (LPA's) have in place when determining an application</p> <p>4.7 Identify to whom the applicant/agent may appeal against a LPA decision or non-determination and in what timescale</p> <p>4.8 Identify a minimum of four exemptions for</p> <ul style="list-style-type: none"> • working on tree with a TPO • working on a tree in a Conservation Area • the need for a felling licence <p>4.9 Identify when a felling licence is</p> <ul style="list-style-type: none"> • required • not required
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SUPPORTING UNIT INFORMATION

Y/602/3958 Tree inspections and statute and common law applied to trees – Level 2

INDICATIVE CONTENT

1) Mandatory information – tree id, condition, recommendations, work priority as a timescale. Optional – species if known, height, crown spread, dbh, age class, next inspection date etc, or equivalent headings.

Risk = probability of failure, severity of damage/size of part, target and frequency of occupation – risk category very high, high, medium, low or none. Systematic or diagnosis inspection process means hopefully no defect is missed. Binoculars, probe or mallet.

2) Any recommendation covered in BS 3998. Defects – low branches, dense crown, over extended branches, a very large crown for the space, compression fork with included bark, advanced fungal decay at the tree base, hazard beam, 70%+ and <70% hollow, further investigation – more competent person, felling, pruning, bracing, chemical application, do nothing, soil amelioration, wound repair or move the target.

Implications could include future management requirements, epicormic growth, fungi colonisation, spreading disease, further decline, potential energy reduction, unsightly, potential for damage to a neighbouring tree, flower and fruit loss, sun scorch, death, etc.

3) Common law- arising from a court case where a precedent is set – higher courts. Dangerous trees (as in unsafe), overhanging branches, trespassing roots, poisonous trees and the right to light.

4) Statute law – made by an Act of parliament.

Tree preservation orders current regulations, conservation area designation current Act, and felling licences from the current Forestry Act.

TPO permission from LPA required.

CA notice (section 211) of intention to carry out works required to be given to LPA.

5 days notice for emergency works to LPA.

Complete an application form for TPO works.

Penalties to include fines and tree replacement.

LPA need to determine application within 8 weeks taking opinion into account but can ask for an extension.

CA no permission is required but LPA have 6 weeks to decide if tree warrants

TPO and cannot condition notice of intent.

Applicant may appeal a decision or a non-determination to the Secretary of State within 28 days of notification.

Exemptions: minimum of 4 for each TPO tree, CA and felling licence.

Felling licence requirement for the removal of **living** timber per calendar quarter from **woods/forests**.

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METHODS OF ASSESSMENT

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EVIDENCE OF ACHIEVEMENT

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ADDITIONAL INFORMATION

The following learning lists are available on the ABC website

- Woody Vegetation
- Pests, Diseases and Disorders of Amenity Trees

Unit Title	R/602/3960 The principles of aerial tree surgery and ground based arboricultural operations
Level	2
Credit Value	3
Guided Learning Hours	22
Unit Summary	In this unit, learners will explore the principles and practice of carrying out ground based arboricultural and aerial operations. They will learn about the equipment used and its maintenance with adherence to Health and Safety legislation and current best practice
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.5) <i>The learner can</i>
1. Understand the practices of carrying out aerial tree surgery operations	1.1 Identify correct branch removal techniques 1.2 Identify six potential tree and site related hazards to consider prior to aerial tree work 1.3 Describe a technique of accessing a tree with a rope and harness 1.4 Describe a technique of limb or stem removal using a chainsaw 1.5 Identify tools that are used for aerial based pruning operations 1.6 Identify a method of dismantling a tree 1.7 Describe how timber can be controlled using ropes during dismantling operations 1.8 Identify the procedures for ensuring a work site is guarded from the general public
2. Understand the requirements of daily and routine maintenance and service checks carried out on a chainsaw	2.1 Identify a minimum of four factors to take into account when preparing to operate a chainsaw 2.2 Identify the pre-start checks on a chainsaw 2.3 Identify the daily maintenance routine required for a chainsaw

	<p>2.4 Identify the correct</p> <ul style="list-style-type: none"> • cold start procedure for a chainsaw • re-fuelling procedure of a chainsaw <p>2.5 Identify the correct PPE requirements for using a chainsaw</p> <ul style="list-style-type: none"> • on the ground • off the ground <p>2.6 Identify six safety features of a chainsaw</p>
<p>3. Understand the processes of maintaining and storing personal protective, lifting and tree surgery equipment</p>	<p>3.1 Select appropriate storage methods for a named item of PPE or safety equipment</p> <p>3.2 Describe how lifting equipment is identified</p> <p>3.3 Identify time frames for examining lifting equipment</p>
<p>4. Understand the practices of carrying out ground based arboricultural operations</p>	<p>4.1 Identify one correct tree felling technique</p> <p>4.2 Define the terms snedding or delimiting</p> <p>4.3 Describe one technique of crosscutting using a chainsaw</p> <p>4.4 Identify tools that are used to assist felling and crosscutting operations</p> <p>4.5 Identify six potential hazards associated with tree felling operations</p>

SUPPORTING UNIT INFORMATION

R/602/3960 The principles of aerial tree surgery and ground based arboricultural operations - Level 2

INDICATIVE CONTENT

- 1) 3 cut technique, step cuts – inboard and outboard, sink cuts with and without ropes. Overhead/underground services, hazard tree, public, highway and structures. Rope and harness –thrusting, foot locking, climbing aids, from a MEWP. Climbing ions and strop. Tools for tree pruning operations powered or hand operated. Tree dismantling – free fall, ropes or crane. Arboricultural and Forestry Advisory Group and HSE leaflets. Code of Practice for setting out signs at New Roads and Street Works. Working at Height regulations. INDG 317 Chainsaws at Work advice booklet.

- 2) AFAG 301, 308, INDG 317 Chainsaws at Work advice booklet.

- 3) AFAG 301, 308, 401, 402, LOLER, Working at Height Regs, Control of Vibration at Work Regs, Noise at Work Regs, Guide To Good Climbing Practice.

- 4) AFAG 301, 308, 401, 402, LOLER, Working at Height Regs, Control of Vibration at Work Regs, Noise at Work Regs, Guide To Good Climbing Practice.

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ADDITIONAL INFORMATION

The following learning lists are available on the ABC website

- Woody Vegetation
- Pests, Diseases and Disorders of Amenity Trees

Unit Title	H/602/3963 Principles of woodlands, forestry and ecology
Level	2
Credit Value	3
Guided Learning Hours	22
Unit Summary	In this unit, learners will explore the history of woodland/forestry in Great Britain from 1600 A.D. up to the development of community forests, identifying types of woodland/forestry system and management principles. The unit also covers an introduction to ecology and woodland ecosystems
Learning Outcomes (1 to 6) <i>The learner will</i>	Assessment Criteria (1.1 to 6.5) <i>The learner can</i>
1. Understand how woodland/forestry cover has changed from 1600 A.D. to the present day	1.1 Identify four major influences that have changed the woodland cover of England and Wales since 1600 A.D. to the present day
2. Understand woodland structure and how a woodland develops	2.1 Define a minimum of two stages related to vegetation development in a woodland 2.2 Describe a minimum of four operations commonly used in woodland management 2.3 Describe the horizontal structure of a woodland 2.4 Describe the vertical structure of a woodland 2.5 Identify the four layers of the vertical structure 2.6 Give four examples of plant species found in each of the vegetation layers
3. Understand the principles of common silvicultural systems of tree management	3.1 Describe two common silvicultural systems of growing trees 3.2 Outline two advantages and two disadvantages of each system 3.3 Identify what is meant by the term continuous cover forestry

<p>4. Understand the main types of woodland management</p>	<p>4.1 Give a definition for one main type of woodland found in the UK</p> <p>4.2 Identify the key principles of managing one of the main types of woodland</p>
<p>5. Understand the main aims and objectives of community woodlands and forests</p>	<p>5.1 Identify the main aims of community forests/woodlands as outlined by government and national policy</p>
<p>6. Understand how a woodland ecosystem and a simple woodland food chain or web functions</p>	<p>6.1 Define the terms</p> <ul style="list-style-type: none"> • ecosystem • ecotone <p>6.2 Describe a simple food chain or web</p> <p>6.3 Identify a</p> <ul style="list-style-type: none"> • producer • primary consumer • secondary consumer • tertiary consumer • decomposer <p>6.4 Identify a minimum of four influences on a woodland ecosystem</p> <p>6.5 Identify the effects that one catastrophic event can have on an ecosystem</p>

SUPPORTING UNIT INFORMATION

H/602/3963 Principles of woodlands, forestry and ecology - Level 2

INDICATIVE CONTENT

1) The history of woodland cover from 1600 A.D. and the changes that have occurred up to and including designation of community woodlands and the National Forest. Industrial revolution, advent of chainsaws, world wars, Forestry Commission, farming practices, Dutch elm disease, storm of 1987 and development of community woodlands/forests.

2) High forest, plantation, coppice, succession, climax vegetation and natural regeneration.
Operations - weeding, cleaning, brashing, thinning and clear felling.
Vertical structure high canopy, shrub layer, field/herbaceous layer and ground layer.
Horizontal woodland structure: made up of edge, tall, medium and small size trees, shrub layer, rides, glades and water features.
Four examples of species of plant found typically in each vegetative vertical layer canopy, shrub and field.

3) Clear fell, selection or shelterwood.
Continuous Cover forestry – term given to a forestry system that maintains a cover of trees as a management principle – not a clear felling system.

4) Ancient woodland, ancient semi-natural woodland, semi-natural woodland, wood pasture, coppice and coppice with standards.

5) Community woodlands and community forests - multi-purpose, recreation, conservation of wildlife and landscape value – secondary aim of woodland products.

6) Define ecosystem and ecotone.
Food chain/web made up of producers, consumer primary, secondary and tertiary, decomposers and name one from each group.
Competition, selection, catastrophic change e.g storm, DED, fire.
Loss of food, habitat – nest/roost sites, increased predation, overall loss of species diversity, increase in pest species

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ADDITIONAL INFORMATION

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- Woody Vegetation
- Pests, Diseases and Disorders of Amenity Trees

Unit Title	T/602/3966 The principles of managing special trees
Level	2
Credit Value	3
Guided Learning Hours	22
Unit Summary	This unit covers the recognition of special trees, why they are valuable and the principles of managing them.
Learning Outcomes (1 to 7) <i>The learner will</i>	Assessment Criteria (1.1 to 7.1) <i>The learner can</i>
1. Understand the values of special trees	1.1 Define what is meant by a special tree 1.2 Identify when a tree is a <ul style="list-style-type: none"> • Champion tree • Notable • Heritage 1.3 Recognise a minimum of four values of special trees 1.4 Identify what TROBI stands for
2. Understand the characteristics of an ancient tree	2.1 Identify the six key characteristics of an ancient tree 2.2 Identify why these characteristics are valuable 2.3 Describe the aging process 2.4 Describe how to age an ancient tree 2.5 Identify one of each of the following <ul style="list-style-type: none"> • saproxylic insects • red data book species • British protected mammal species (schedule 5 list) • European mammal protected species (schedule 2 European list)
3. Understand the feature of a veteran tree	3.1 Identify the six key features of a veteran tree 3.2 Describe how these features have developed 3.3 Identify four methods of enhancing veteran features

<p>4. Understand the principles of managing Ancient trees</p>	<p>4.1 Identify a minimum of two techniques used to manage the living tree</p> <p>4.2 Identify a minimum of two techniques used to manage the surrounds of a living tree</p>
<p>5. Understand the principles of maintaining Veteran trees</p>	<p>5.1 Identify a minimum of two techniques used to manage the living tree</p> <p>5.2 Identify a minimum of two techniques used to enhance the values of the living tree</p> <p>5.3 Identify a minimum of two techniques used to manage the surrounds of a living tree</p>
<p>6. Understand the risks associated with retaining veteran trees</p>	<p>6.1 Define the term <i>hazard</i></p> <p>6.2 Define the term <i>risk</i></p> <p>6.3 Define the term <i>target</i></p> <p>6.4 Identify six features of a veteran tree which could lead to harm being caused to people</p> <p>6.5 Identify four control measures which can be used to reduce or mitigate the risk posed to people by a retained veteran tree</p> <p>6.6 Outline a methodology that may lead to a more quantified risk assessment of a retained veteran tree</p> <p>6.7 Identify one appropriate method of undertaking pruning work safely on a retained veteran tree</p>
<p>7. Understand the key legislative requirements when working on and around veteran trees</p>	<p>7.1 Identify the key implications of the Wildlife and Countryside Act, Countryside Rights of Way Act and the Conservation of Habitat Regulations in relation to</p> <ul style="list-style-type: none"> • working near protected bird, mammal and plant species – killing, harming, disturbing and destruction of habitats • penalties for a breach of the legislation • the procedure to adopt if it is suspected bats may be present in a tree that requires pruning works • the correct procedure if bats are actually found during tree work operations

SUPPORTING UNIT INFORMATION

T/602/3966 The principles of managing special trees - Level 2

INDICATIVE CONTENT

1) Define/describe ancient – old for its species. Veteran – niches for wildlife as features and maybe old. Champion - tallest or largest girth of its kind in the UK - TROBI. Heritage - historical, archaeological, cultural associations, landscape character, rare, botanical interest or commemorative. Notable - magnificent mature tree worthy locally or nationally.

2) Ancient tree. Crown growing downwards, large girth, hollowing trunk, stag-headedness, fruiting bodies of heart rot fungi, cavities, water pockets, sap runs, creviced bark, internal aerial roots and an 'old look'. Phoenix growth. Describe how to age an ancient tree. Saproxylic insects, red data book species, British protected species (sch 5 list) and European protected species (sch 2 list).

3) Veteran tree: habitat features as above – wounds or decay and significant amounts of deadwood having developed as a consequence of life/environmental conditions. Tears, rip cuts, coronet cuts, holes.

4) Reduce the risk, avoid cutting, leave torn/broken ends, coronet cuts, retain dead material, seek specialist help and protect. Retain dead trees, protect roots, avoid damage to bark, avoid ground compaction, reduce competition, establish nectar sources and plant replacements.

5) Reduce the risk, avoid cutting, leave torn/broken ends, coronet cuts, retain dead material, seek specialist help and protect. Keep alive, create habitat features, carryout retrenchment pruning. Avoid ground compaction, reduce competition, establish nectar sources and plant replacements.

6) Define hazard, risk and target. Identify features of a veteran tree that could cause failure e.g. presence of fungal fruiting bodies, cavities, hazard beam, decay in trunks, decayed roots or deadwood. Control measures – bracing, propping, tree surgery work, combination or move the target away from tree. Outline a methodology (QTRA, THREATS or a suitable methodology) of quantifying the risk – identify the components that make up a quantified process. MEWP to undertake work safely.

7) W&C Act – intentional, CR of W Act – reckless and Cof H Regs – deliberate. Identify the key implications – destruction, killing, harming, disturbing, taking or having in possession any derivative of a protected species. Identify the current penalties for offences – fines, imprisonment and confiscation of equipment. Undertake a bat risk assessment prior to tree work looking for signs and presence, if suspected dismantle tree carefully, if at any time presence confirmed STOP work and inform SNCO. If bats disturbed during work STOP work, inform SNCO and local bat group, in summer allow bats to fly off, retain any injured or dead bats for collection. In winter retain all bats in darkness in container with oxygen for collection.

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ADDITIONAL INFORMATION

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- Woody Vegetation
- Pests, Diseases and Disorders of Amenity Trees

Unit Title	A/602/3967 Principles of tree surgery equipment use and maintenance
Level	2
Credit Value	3
Guided Learning Hours	22
Unit Summary	This unit covers equipment use and its maintenance with adherence to Health and Safety legislation and current best practice
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.3) <i>The learner can</i>
1. Understand the setting up procedure, safe operation and routine maintenance required by a MEWP	1.1 Identify the PPE requirements 1.2 Identify the site safety checks required when preparing to work 1.3 Identify the correct procedure when working from the platform 1.4 Identify the daily maintenance requirements 1.5 Describe the machine safety checks required prior to starting work 1.6 Identify the current examination regime for MEWPs
2. Understand the setting up procedure, safe operation and routine maintenance required by a brushwood chipper	2.1 Identify the PPE requirements 2.2 Identify the checks required on the chipper prior to starting 2.3 Identify the safety checks required of the site prior to starting the chipper 2.4 Identify the safe method of operation of the chipper 2.5 Identify the maintenance requirements of the chipper 2.6 Describe four hazards and four controls associated with brushwood chipping

<p>3. Understand the setting up procedure, safe operation and routine maintenance required by a stump grinder</p>	<p>3.1 Identify the PPE requirements</p> <p>3.2 Identify the checks required prior to starting the stump grinder</p> <p>3.3 Identify the safety checks required of the site and machine prior to starting the stump grinder</p> <p>3.4 Identify the safety aspects of operating the stump grinder</p> <p>3.5 Identify the maintenance requirements</p> <p>3.6 Describe the four hazards and four controls associated with stump grinding</p>
<p>4. Understand the signing of tree operations adjacent to a highway</p>	<p>4.1 Identify the correct PPE for highway working</p> <p>4.2 Identify the correct street works signs for highway operations in 30mph limit using a give and take set up</p> <p>4.3 Define each of the following as associated with highway work site set up and signage</p> <ul style="list-style-type: none"> • works area • working space • safety zone • lead in taper • longways clearance • sideways clearance • exit taper

SUPPORTING UNIT INFORMATION

A/602/3967 Principles of tree surgery equipment use and maintenance - Level 2

INDICATIVE CONTENT

- 1) AFAG 403. Working at Height regulations.
- 2) AFAG 604. Noise at Work regulations.
- 3) AFAG 606. PPE regulations.
- 4) Code of Practice for Signing at New Roads and Street Works

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The following learning lists are available on the ABC website

- Woody Vegetation
- Pests, Diseases and Disorders of Amenity Trees

Recognition of Prior Learning (RPL), Exemption and Credit Transfer

ABC encourages its centres to recognise the previous achievements of learners through Recognition of Prior Learning (RPL), Exemption and Credit Transfer. Prior achievements may have resulted from past or present employment, previous study or voluntary activities. Centres should provide advice and guidance to the learner on what is appropriate evidence and present that evidence to the external moderator in the usual way.

Certification

Learners will be certificated for all units and qualifications that are claimed.

ABC's policies and procedures are available on the ABC web site in the Examination Officers' Guide.