

# Unit 5: Understand and Carry Out Identification, Planting and Care of Trees

<b>Unit code:</b>	<b>Y/600/9980</b>
<b>QCF Level 3:</b>	<b>BTEC National</b>
<b>Credit value:</b>	<b>10</b>
<b>Guided learning hours:</b>	<b>60</b>

## ● Aim and purpose

This unit aims to provide learners with an understanding of the identification, planting and care of trees and how this can be put into practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or to further education and training.

## ● Unit introduction

The correct identification and knowledge of trees and shrubs is essential to the professional development of anyone wishing to pursue a career in forestry or arboriculture.

In this unit learners will be introduced to the system of classification and nomenclature for trees and shrubs, the conventions that apply and how they are used. Learners will examine the features which help in identifying trees and shrubs and learn to use botanical characteristics in conjunction with identification keys to identify trees and shrubs.

Learners will study the selection criteria and suitability factors of a range of tree and shrub species, as well as tree and shrub combinations, in relation to a range of conditions such as size and shape, soil and drainage. Learners will also study the influence of infrastructure on tree and shrub selection.

Learners will practise and develop their skills in planting and providing support to a wide range of trees and shrubs of various sizes and categories in a variety of situations. Health and safety issues when working with equipment will be an important factor and learners will have the opportunity to evaluate the range of equipment, tree support and protection options commonly used within the forestry and arboriculture industries.

Learners will build on their skills and knowledge of aftercare requirements to ensure the survival and successful establishment of the trees and shrubs they have planted.

Throughout the unit learners will be made aware of safe working practices, environmental considerations and sustainability.

Learners will be encouraged to focus on the development of knowledge and skills which relate to their area of study and are significant locally or regionally.

## ● Learning outcomes

### On completion of this unit a learner should:

- 1 Be able to identify trees and shrubs
- 2 Understand the site and establishment requirements of trees
- 3 Be able to plant trees and shrubs
- 4 Understand the planting of trees and shrubs
- 5 Know the aftercare requirements of trees and shrubs.

# Unit content

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## 1 Be able to identify trees and shrubs

*Classification:* Linnaeus, kingdom, division, class, order, family, genus, species; variety and cultivar; inter-specific and bi-generic hybrids; conventions of taxonomy and nomenclature

*Identification:* features eg leaf, bud, twig, bark, flower, fruit, shape, habit; summer and winter appearance; identification aids eg identification keys

## 2 Understand the site and establishment requirements of trees

*Sites:* site considerations, eg topography, aspect, exposure, drainage, soil type, climate and microclimate; site preparation techniques; technique feasibility, cost-effectiveness, resource implications

*Infrastructure influence:* urban, rural eg underground and overhead services, highways, footpaths, rights-of-way, wayleaves

*Suitability of species:* eg ultimate size, shape, aesthetic value, species mixtures and combinations, root spread, possible seasonal nuisance, arboricultural or silvicultural merit

## 3 Be able to plant trees and shrubs

*Planting techniques:* pit planting, mound planting, notch planting

*Support and immediate aftercare:* soil amelioration eg fertilisers, organic materials, mycorrhizae, water retention materials; staking and supporting eg stakes, frames, guys, ground anchors, treeshelters

*Legislation:* current legislation eg Environmental Protection Act 1990, Food and Environmental Protection Act 1995, Wildlife and Countryside Act 1981, Health and Safety at Work Act 1974, Management of Health and Safety at Work Regulations 1999, Control of Substances Hazardous to Health Regulations 2002 (COSHH); environmental considerations eg oil and fuel spillage and storage, soil stability and erosion, soil compaction, nesting and breeding seasons, protected species, waste disposal, watercourses; health and safety considerations eg warning symbols, risk assessment, safe systems of work, operator training, PPE, safety devices, pre-operational checks

## 4 Understand the planting of trees and shrubs

*Planting stock:* planting stock categories (bare root, root balled, containerised), eg transplant, whip, feathered tree, light standard, standard, heavy standard, semi-mature, plugs, root trainers

*Planting equipment:* spade types for different conditions eg standard, schlick, mansfield, graft, spike; tree planting machines eg hydraulic tree spades, rotary planters, augers

## 5 Know the aftercare requirements of trees and shrubs

*Protection:* shelters; fences; tree cages; supports eg guys, anchors, stakes, guards

*Aftercare:* inspection; nutrition; watering; formative pruning requirements; moisture retention; mulching; adjustment/removal of support; use of pesticides

## Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
<p><b>P1</b> identify 40 trees and 30 shrubs by botanical names</p>	<p><b>M1</b> identify 60 trees in their growth and dormant stages</p>	<p><b>D1</b> specify the appropriate selection, planting and aftercare of trees for a given site.</p>
<p><b>P2</b> explain the classification of trees, from kingdom to variety and cultivar, and including inter-specific and bi-generic hybrids</p>		
<p><b>P3</b> describe botanical and morphological features that aid identification in all seasons</p>		
<p><b>P4</b> use keys and other information to identify plants by botanical characteristics [IE]</p>		
<p><b>P5</b> evaluate the suitability of trees and shrubs in relation to the following conditions:</p> <ul style="list-style-type: none"> <li>● climatic and microclimate</li> <li>● soil and drainage</li> <li>● environmental</li> <li>● feasibility and cost-effectiveness</li> </ul> <p>[IE]</p>	<p><b>M2</b> explain selected tree and shrub combinations to meet objectives for a given site</p>	
<p><b>P6</b> evaluate the aesthetic value of trees and tree and shrub combinations [IE]</p>		

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
<p><b>P7</b> explain the influence of infrastructure on the selection of trees and shrubs</p> <ul style="list-style-type: none"> <li>● rural/urban</li> <li>● underground and overground services</li> <li>● paths, highways, right-of-way</li> </ul>		
<p><b>P8</b> describe the plant factors that influence selection; size and shape; seasonal nuisance; arboricultural or silvicultural merit.</p>		
<p><b>P9</b> plant bare-root transplants, whips and standards safely [TW]</p>	<p><b>M3</b> discuss the importance of correct stock choice</p>	
<p><b>P10</b> plant containerised woody plants safely [TW]</p>		
<p><b>P11</b> provide appropriate support and immediate aftercare to trees safely [TW]</p>		
<p><b>P12</b> comply with health and safety and environmental legislation while planting trees and shrubs</p>		
<p><b>P13</b> review the categories of planting stock</p>		
<p><b>P14</b> evaluate the equipment available for planting trees and the suitability of specific equipment for different situations [IE]</p>		
<p><b>P15</b> evaluate the use of conditioners and ameliorants in tree planting, including fertilizers, organic materials, mycorrhizae, water retention materials [IE]</p>		

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
<p><b>P16</b> describe methods of protecting trees including shelters, fences, tree cages, tree guards</p>	<p><b>M4</b> discuss how trees in the UK are affected by damaging agents.</p>	
<p><b>P17</b> review the use of tree supports, including function and types available</p>		
<p><b>P18</b> describe the aftercare requirements of trees, including inspection, nutrition, watering, mulching, adjustment/removal of supports.</p>		

**PLTS:** This summary references where applicable in the pass criteria, in the square brackets, the elements of the personal, learning and thinking skills. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

<b>Key</b>	IE – independent enquirers CT – creative thinkers	RL – reflective learners TW – team workers	SM – self-managers EP – effective participators
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# Essential guidance for tutors

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## Delivery

Delivery of this unit will involve practical and written assessments, visits to suitable tree and shrub collections and will link to work experience placements.

Tutors delivering this unit have opportunities to use as wide a range of techniques as possible. Lectures, discussions, seminar presentations, site visits, supervised tree planting practicals, internet and/or library-based research and the use of personal and/or industrial experience would all be suitable. Delivery should stimulate, motivate, educate and enthuse learners.

Work placements should be monitored regularly to ensure the quality of the learning experience. It would be beneficial if learners and supervisors were made aware of the requirements of this unit before any work-related activities are undertaken so that naturally occurring evidence can be collected at the time. For example, learners may have the opportunity to undertake tree planting operations or identify tree and shrub species as part of a vegetation survey and they should ask for observation records and/or witness statements to be provided as evidence of this. Guidance on the use of observation records and witness statements is provided on the Edexcel website.

Whichever delivery methods are used, it is essential that tutors stress the importance of sound environmental management and the need to manage the tree resources using legal and sustainable methods.

Health and safety issues relating to tree planting and establishment operations must be stressed and reinforced regularly, and risk assessments must be undertaken before any practical activities.

Tutors should consider integrating the delivery, private study and assessment for this unit with other relevant units and assessment instruments learners are taking as part of their programme of study.

Techniques should be taught, initially, through discussion and group work for the identification section, and through closely supervised practical sessions for the planting outcomes. Tutors must be able to show current industry best practices. Learners would benefit from having access to real planting schemes, although the sites available and their planting objectives may influence the range of activities that can be undertaken.

As learners develop their skills and confidence they should be encouraged to take more responsibility for their work, but activities must not take place without appropriate supervision. Learners are likely to develop their skills at different rates and progress should be monitored closely and allowance made for extra support for less experienced learners while enabling more experienced learners to extend their skills.

Classroom-based sessions are recommended to examine techniques in depth and promote discussion and evaluation.

Delivery should be based on working with specimens and woodland trees of all types and on carrying out practical operations in realistic work settings.

For learning outcome 1 there should be sufficient opportunity for learners to familiarise themselves with a wide range of woodland and amenity trees in their growth and dormant stages. Delivery is likely to include lectures, discussion, supervised practical sessions and independent learner research. Periodic identification tests can be conducted with samples in the classroom or by identifying trees growing in situ. Learners should use a variety of techniques to identify trees including visual, sensory, tree identification books, charts and keys. Learners can collect and preserve specimens as a means of improving their identification skills.

Learning outcomes 2, 3, 4 and 5 are directly linked. They require learners to understand site conditions and requirements that will inform the choice of tree species, as well as the choice of planting methods and stock. Delivery is likely to include lectures, discussion, supervised practical sessions and independent learner research.

Learning outcome 3 requires learners to physically plant a range of tree species and stock types in different situations and this will lead into the aftercare programme developed for learning outcome 5. Delivery is likely to include lectures, discussion, supervised practical sessions and independent learner research. It is important that learners have access to sufficient planting stock and equipment, preferably in a realistic planting situation. A planting contractor or specialist could be invited to give their perspective on planting sites and possible constraints and solutions.

For learning outcome 5, understanding of planting techniques will lead to discussions on species and methods of planting and staking in relation to a relevant aftercare programme. This may be addressed through visits to prospective planting sites or through learners being given responsibility for the management and completion of a planting project. A visit to a specialist nursery may be appropriate to help learners appreciate the different categories of available planting stock.

Learners should have the opportunity to visit established planting schemes and carry out a range of aftercare tasks. Aftercare can be discussed in a formal taught environment or in the workplace. A local authority landscape officer, or similar, may be invited to talk to learners about the aftercare of municipal planting schemes, the problems faced and possible solutions.

Learners are not required to use approved pesticides, but simulation and demonstration of application techniques could be used to enhance their learning.

## Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan gives **an indication of the volume of learning it would take the average learner** to achieve the learning outcomes. It is **indicative and is one way of achieving the credit value**.

Learning time should address all learning (including assessment) relevant to the learning outcomes, regardless of where, when and how the learning has taken place.

Topic and suggested assignments/activities and/assessment
Introduction and overview of the unit.
<b>Assignment 1: Plant Features and Classification</b> (P2, P3)
Tutor introduces the assignment.
Theory session: introduce the classification system and its application to trees and shrubs.
Practical sessions: learners become familiar with botanical and morphological features.
<b>Assignment 2: Tree and Shrub Identification</b> (P1, P4, M1)
Tutor introduces the assignment.
Theory session: introduce learners to identification keys and botanical names.
Learners become familiar with using identification keys and botanical names.
<b>Assignment 3: Establishment Planning</b> (P5, P6, P7, P8, P13, P14, P15, M2)
Tutor introduces the assignment.
Theory sessions: introduce learners to the establishment requirements of trees and shrubs.
Practical sessions: learners visit a range of planting sites to review suitability, aesthetic value of combinations and the influence of infrastructure.
<b>Assignment 4: Tree Planting</b> (P9, P10, P11, P12, M3, D1)
Tutor introduces the assignment.

## Topic and suggested assignments/activities and/assessment

Theory sessions: introduce learners to different planting stock and equipment.

Practical sessions: introduce how to plant a range of trees and shrubs, as well as providing appropriate support and immediate aftercare.

Learners plant a range of trees and shrubs and provide appropriate support and immediate aftercare.

### **Assignment 5: Aftercare of Trees** (P16, P17, P18, M4, D1)

Tutor introduces the assignment.

Theory sessions: introduce learners to the establishment requirements of trees.

Learners visit a range of planting sites to review methods of protecting and supporting trees, as well as aftercare arrangements.

Unit review.

## Assessment

For P1, learners must identify 40 trees and 30 shrubs species correctly by their botanical names and must include summer and winter trees. Tutors should identify the range of trees and shrubs or agree them through discussion with learners. Where possible, to ensure assessment is fair, the size and complexity of the tasks should be the same for all learners. One way of assessing this is through identification tests, but there is also scope for assignment work involving plant collections. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P4.

For P2 learners must explain the classification of trees from kingdom to variety and cultivar, including inter-specific and bi-generic hybrids. This could be assessed using diagrams and illustrations, through the production of a poster or information sheet, project or assignment work. Individual examples could be used to illustrate the classification system. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This should be assessed in conjunction with P3 and can be linked to P4.

For P3, learners must describe the botanical and morphological features that aid identification in all seasons. This could include leaf shape, pattern, bark, flowers and habit. This could be assessed using diagrams and illustrations, through the production of a poster or information sheet, project or assignment work. Individual examples could be used to illustrate the classification system. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This should be assessed in conjunction with P2 and can be linked to P4.

For P4, learners must use keys and other information to identify plants correctly by their botanical characteristics. Tutors should identify the range of trees and shrubs or agree them through discussion with learners. Where possible, to ensure assessment is fair, the size and complexity of the tasks should be the same for all learners. One way of assessing this is through identification tests, but there is also scope for assignment work involving plant collections. This could be assessed in conjunction with P1, P2 and P3.

For P5, learners must evaluate the suitability of trees and shrubs in relation to the climate and microclimate, soil and drainage, environmental, feasibility and cost- effectiveness. One way of assessing this is through the production of a written report. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed with criteria P6, P7, P8, P13, P14 and P15, and can be linked to P9 and P10.

For P6, learners must evaluate the aesthetic value of trees and tree and shrub combinations. One way of assessing this is through the production of a written report. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P5, P7, P8, P13, P14 and P15, and can be linked to P9 and P10.

For P7, learners must explain the influence of infrastructure on the selection of trees and shrubs, covering rural/urban areas, underground and overground services, paths, highways and rights-of-way. Access to an urban planting scheme could form the background for suitable research or an individual project or assignment. It is preferable that all learners within a cohort study the same area and draw their own conclusions about potential conflict with the infrastructure. One way of assessing this is through the production of a written report. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P5, P6, P8, P13, P14 and P15, and can be linked to P9 and P10.

For P8, learners must describe the plant factors that influence selection, covering size and shape, seasonal nuisance and arboricultural or silvicultural merit. One way of assessing this is through the production of a written report. Verbal methods of assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P5, P6, P7, P13, P14 and P15, and can be linked to P9, P10 and P11.

For P9, learners must plant bare-root transplants, whips and standards safely. Tutors should identify the range of trees and shrubs or agree them through discussion with learners. Where possible, to ensure assessment is fair, the size and complexity of the tasks should be the same for all learners. One way of assessing this is through practical observation and assessment, using witness testimony provided by work placement employers or a practical work diary. This could be assessed in conjunction with P10, P11 and P12.

For P10, learners must plant containerised woody plants safely. Tutors should identify the range of trees and shrubs or agree them through discussion with learners. Where possible, to ensure assessment is fair, the size and complexity of the tasks should be the same for all learners. One way of assessing this is through practical observation and assessment, using witness testimony provided by work placement employers or a practical work diary. This could be assessed in conjunction with P9, P11 and P12.

For P11, learners must provide appropriate support and immediate aftercare to trees safely. Tutors should identify the range of support and aftercare requirements or agree them through discussion with learners. Where possible, to ensure assessment is fair, the size and complexity of the tasks should be the same for all learners. One way of assessing this is through practical observation and assessment, using witness testimony provided by work placement employers or a practical work diary. This could be assessed in conjunction with P9, P10 and P12.

For P12, learners must comply with health and safety and environmental legislation when planting trees and shrubs. One way of assessing this is through practical observation and assessment, using witness testimony provided by work placement employers or a practical work diary. Verbal assessment may be appropriate, using digital, audio or other recording methods before planting to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P9, P10 and P11.

The tutor must ensure that, where a variety of bare-root and containerised stock is planted in different situations, fairness of assessment is maintained. Learners should have access to a range of appropriate equipment, planting material and support and aftercare materials.

For P13, learners must review the categories of planting stock. One way of assessing this is through the production of a written report. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P5, P6, P7, P8, P14 and P15, and can be linked to P9 and P10.

For P14, learners must evaluate the equipment available for planting trees and the suitability of specific equipment for different situations. One way of assessing this is through the production of a written report. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P5, P6, P7, P8, P13 and P15, and can be linked to P9 and P10.

For P15, learners must evaluate the use of conditioners and ameliorants in tree planting, including fertilisers, organic materials, mycorrhizae and water retention materials. One way of assessing this is through the production of a written report. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P5, P6, P7, P8, P13 and P14, and can be linked to P9 and P10.

For P16, learners must describe methods of protecting trees, including shelters, fences, tree cages and tree guards. One way of assessing this is through the production of a written report. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P17 and P18, and can be linked to P11.

For P17, learners must review the use of tree supports, including function and the types available. One way of assessing this is through the production of a written report. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P16 and P18, and can be linked to P11.

For P18, learners must describe the aftercare requirements of trees, including inspection, nutrition, watering, mulching and adjustment/removal of supports. One way of assessing this is through the production of a written report. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P17 and P18, and can be linked to P15.

For M1, learners must identify 60 trees in their growth and dormant stage by their botanical and common names (as relevant to industry) and this could include those identified in P1. Identification tests would be appropriate, as would tree species collections. Evidence could be a poster or information sheet, project or assignment work. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P3 and can be linked to P4.

For M2, learners must select and explain appropriate tree and shrub combinations for a given site. One way of assessing this could be through the production of a written report. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This could be assessed in conjunction with P6.

For M3, learners must discuss the importance of correct stock choice. The drawing up of a planting specification for a planting project would be an ideal way to assess this. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding.

For M4, learners must discuss how trees in the UK are affected by damaging agents. They should show an understanding of the impact of pest and disease attacks on newly planted trees along with other agents such as climate, road de-icing salt and vehicle and human damage. Evidence could be a logbook of observed tree damage over an extended period or a list of possible damage and damaging agents that might affect newly planted trees in the first two years of establishment. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This should be assessed in conjunction with P16.

For D1, learners must specify the appropriate selection, planting and aftercare of trees for a given site. Learners need to develop a specification for given objectives. One way of assessing this is through the production of a written report. Verbal assessment may be appropriate, using digital, audio or other recording methods to ensure underpinning knowledge and understanding. This should be assessed in conjunction with P9, P16 and M4.

### **Programme of suggested assignments**

The following table shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the grading grid. This is for guidance and it is recommended that centres either write their own

assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, P4, M1	Tree and Shrub Identification	Participate in identification tests to identify 40 tree and 30 shrub species.	Oral assessment. Identification tests. Practical observation and assessment. Plant collection portfolio.
P2, P3	Plant Features and Classification	Produce an information leaflet that explains the classification of trees and describes the features of trees that can aid identification in all seasons.	Written evidence. Oral assessment.
P5, P6, P7, P8, P13, P14, P15, M2	Establishment Planning	Produce a report which evaluates the site and establishment requirements of trees, as well as the factors which need to be considered when planting trees and shrubs.	Written evidence.
P9, P10, P11, P12, M3, D1	Tree Planting	Safely plant and provide appropriate support and aftercare to bare-root and containerised trees and shrubs. Comply with environmental legislation.	Witness testimony. Practical observation and assessment. Practical work diary. Completed observation checklist.
P16, P17, P18, M4, D1	Aftercare of Trees	Produce a summary of the main aftercare, support and protection requirements of trees and shrubs.	Written evidence.

## Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC Land-based sector suite. This unit has particular links with:

Level 2	Level 3
Introduction to Practical Forestry Skills	T6 Plant trees T7 Carry out post-planting protection and maintenance T8 Control unwanted plant growth around trees
Understanding Ecology of Trees, Woods and Forests	Understand and Carry Out Tree Planting, Aftercare and Protection
	Understand the Principles and Identify the Signs of Pests and Diseases of Trees
	Undertake Tree and Shrub Pruning and Maintenance
	Understand and Carry Out Forest and Woodland Skills

## Essential resources

Learners will need access to a suitable range of tree planting equipment. This includes planting spades and forestry equipment such as Schlick, tree ties, nails, tree guards, tubes, secateurs, soil conditioning agents, treeshelters and stakes. They will also need access to a sufficient number of bare-root and containerised trees and shrubs to plant and suitable planting and establishment sites.

A range of equipment currently in use commercially should be available for learners to use and compare.

There is also a need for adequate classroom and workshop facilities including video and computer-based presentation equipment. Botanical keys and a range of trees and shrubs for identification must be available, reflecting locally or regionally important species. There should also be adequate washing and welfare facilities available at the centre and on work sites.

## Employer engagement and vocational contexts

This unit focuses on the practical aspects of successful tree and shrub planting and establishment and will give learners background knowledge and understanding of a broad range of factors which influence successful tree and shrub establishment. Tutors are encouraged to create and develop links with forestry, arboricultural and horticultural contractors who are involved in tree and shrub establishment work. Learners would benefit from visiting a range of establishment sites with different characteristics and complexities in order to contextualise and enhance their learning. Wherever possible, learners should participate in establishment activities, perhaps through a period of work experience. Tutors should take account of the seasonality associated with tree and shrub planting and establishment activities when planning delivery and assessment.

## Indicative reading for learners

### Textbooks

Agate E – *Toolcare: A Maintenance and Workshop Manual* (BTCV, 2000) ISBN 9780946752249

Agate E – *Fencing: A Practical Handbook* (BTCV, 2001) ISBN 9780946752294

Agate E – *Tree Planting and Aftercare: A Practical Handbook* (BTCV, 2001) ISBN 9780946752256

Agate E – *Woodlands: A Practical Handbook* (BTCV, 2002) ISBN 9780946752331

Brickell C – *RHS Encyclopedia of Plants & Flowers* (Dorling Kindersley, 2008) ISBN 9781405330978

Hodge S and Forestry Commission – *Research for Practical Arboriculture* (Bulletin) (Stationery Office Books, 1991) ISBN 9780117102972

Johnson A and Smith A – *Plant Names Simplified* (Landsmans Bookshop, 1972) ISBN 9780900513046

Johnson O – *Collins Tree Guide* (Collins, 2006) ISBN 9780007207718

Kerr G and Evans J – *Growing Broadleaves for Timber* (Forestry Commission, 1993) ISBN 9780117103146

Mitchell A – *The Pocket Guide to Trees of Britain and Northern Europe* (Parkgate Books, 1997) ISBN 9781855853652

Phillips R and Grant S – *Trees in Britain, Europe and North America* (Pan, 1978) ISBN 9780330254809

Platt K – *Plant Names A-Z* (Karen Platt, 1999) ISBN 9780952881032

Potter M J – *Treeshelters* (Forestry Commission, 1991) ISBN 9780117102880

Trout R C and Pepper H – *Forest Fencing* (Forestry Commission, 2006) ISBN 0855386886

## **Journals and magazines**

*Arboricultural Journal* – Arboricultural Association

*Euro Arb* magazine

*Forestry and British Timber* magazine

*Journal of Arboriculture* – ISA Publications

*Newsletter* – Arboricultural Association

*Plant Health Care* – ISA Publications

*Tree Maintenance* – ISA Publications

*Tree News* – The Tree Council

*Treeline* – International Society of Arboriculture

## Delivery of personal, learning and thinking skills (PLTS)

The following table identifies the PLTS opportunities that have been included within the assessment criteria of this unit:

Skill	When learners are ...
<b>Independent enquirers</b>	using keys and other information to identify plants by their botanical characteristics evaluating the suitability of trees and shrubs in relation to: <ul style="list-style-type: none"> <li>• climate and microclimate</li> <li>• soil and drainage</li> <li>• environmental</li> <li>• feasibility and cost-effectiveness</li> </ul> evaluating the aesthetic value of trees and tree and shrub combinations evaluating the equipment available for planting trees and the suitability of specific equipment for different situations evaluating the use of conditioners and ameliorants in tree planting, including fertilisers, organic materials, mycorrhizae, water retention materials
<b>Team workers</b>	planting bare-root transplants, whips and standards safely planting containerised woody plants safely providing appropriate support and immediate aftercare to trees safely.

Although PLTS opportunities are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
<b>Reflective learners</b>	evaluating the influence of planting stock size and support on the financing of tree and shrub planting schemes
<b>Self-managers</b>	practising using identification aids.

## ● Functional Skills – Level 2

Skill	When learners are ...
<b>ICT – Use ICT systems</b>	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	producing reports and information sheets using ICT programs
<b>ICT – Find and select information</b>	
Select and use a variety of sources of information independently for a complex task	using the internet to research information on planting stock and support prices
<b>ICT – Develop, present and communicate information</b>	
Enter, develop and format information independently to suit its meaning and purpose including: <ul style="list-style-type: none"> <li>• text and tables</li> <li>• images</li> <li>• numbers</li> <li>• records</li> </ul>	producing reports and information sheets using ICT programs
Bring together information to suit content and purpose	producing reports and information sheets using ICT programs
Present information in ways that are fit for purpose and audience	producing reports and information sheets using ICT programs
<b>Mathematics</b>	
Select and apply a range of skills to find solutions	calculating the quantity of planting stock and material required
<b>English</b>	
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	using keys to identify trees and shrubs correctly
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	producing reports and information sheets.