

Unit 41: Understand and Carry Out Tree Planting, Aftercare and Protection

Unit code:	H/600/9836
QCF Level 3:	BTEC National
Credit value:	10
Guided learning hours:	60

● Aim and purpose

This unit aims to provide learners with an understanding of tree planting, aftercare and protection management and how this can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

● Unit introduction

The establishment and protection of trees has become an important issue and society has come to appreciate the value of trees for their amenity and commercial purposes. They also form an important part of the global debate concerning climate change. Learners will need to understand the role of trees in society and the relevant legal and environmental considerations.

Trees have varying establishment and protection requirements according to species and planting situation. This establishment and protection may be undertaken for a number of reasons, which may include initial afforestation and amenity planting, or restocking and replacement planting. Learners should develop the ability to make informed decisions as to the impact of the work on the subsequent health and vitality of trees and select appropriate methods to meet the desired learning outcomes. Learners must also be aware of the limitations of the alternative methods available and their potential impacts on the environment.

This unit requires learners to apply their understanding of establishment and protection methods to a range of practical situations, and develop their practical tree work skills to meet specific establishment and protection requirements. In the practical work individual skills must be developed, but teamwork is equally essential to achieve set learning outcomes in realistic working situations. Work site organisation and management are also vital parts of the practical work in this unit.

● Learning outcomes

On completion of this unit a learner should:

- 1 Understand the environmental and legal considerations relevant to tree establishment and protection
- 2 Understand methods of site preparation and tree protection
- 3 Be able to plant and establish amenity or forest trees.

Unit content

1 Understand legal and environmental considerations relevant to the establishment and protection of trees

Trees and Society: Commercial value; amenity value; contribution to sustainability issues for example climate change; benefits at different scales for example local, regional, national, international; Governmental and non-governmental organisations concerned with tree establishment and protection for example Forestry Commission, Environment Agency, Department for Food and Rural Affairs, BTCV (British Trust for Conservation Volunteers), National Trust; grants and financial support for tree establishment and protection.

Legal and environmental considerations: current environmental protection and management legislation for example Forestry Act 1967, Town and Country Planning Act 1990, Wildlife and Countryside Act 1981, Water Resources Act 1989; current pesticide legislation for example Food and Environment Protection Act 1985, current health and safety legislation for example Health and Safety at Work Act 1974, Control of Substances Hazardous to Health (COSHH) Regulations 2002; variations in legislation between countries in the UK and Europe; risk assessments; plant transportation and distribution; imported plants; current legislative requirements for example Plant Health Act 1967, Plant Health (Great Britain) Order 1993 (as amended), phytosanitary certification; record keeping

2 Know methods of site preparation and tree protection

Site preparation: site preparation methods; dealing with existing vegetation for example burning, chipping, windrowing, brash raking, screefing; cultivations for example mounding, scrape-mounding, ploughing, scarifying, drain and dollop, rotavation, destumping, hand cultivation; resources for example human, manual equipment, tractor mounted machinery; environmental considerations for example soil types, ground compaction, water courses

Tree protection: physical barriers for example fencing, tree shelters and cages; repellents; approved traps; predators; culling; supports; pesticides for example fumigation and herbicides; mats; technical and hand weeding; abiotic and biotic agents for example grey squirrels, deer, rabbits, insects, human, climate; ground conditions; previous treatments; existing structures and systems; unwanted vegetation growth

3 Be able to plant and establish amenity or forest trees

Amenity tree planting: soil for example type, texture, drainage, specific features and properties, nutrients and moisture; planting stock and materials for example feathered trees and standards; planting specification for example spacings, stock density, methods; care and handling of amenity trees; plant storage and transport; tools and equipment; irrigation; fertilisers; environmental considerations for example ground conditions; planting methods for example beating up, pit planting, notch planting, turf planting and mound planting; timing; health and safety; personal protective equipment (PPE)

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 assessment 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:
P1 explain the benefits to society of tree establishment		
P2 compare sources of financial support available for tree establishment and protection [IE]		
P3 evaluate the environmental considerations associated with tree establishment and protection [IE]		
P4 summarise the legal considerations associated with tree establishment and protection [IE]		
P5 evaluate methods of site preparation		
P6 explain the importance of correct selection, care, handling and storage of planting stock		
P7 evaluate tree establishment and protection methods [CT]	M2 for a specified site prepare a plan for establishing maintaining and protecting either amenity or forest trees and justify your choices	D1 for a specified site evaluate a plan for establishing, maintaining and protecting either amenity or forest trees making recommendations for improvement
P8 select planting stock and materials		
P9 produce planting specifications		
P10 carry out site clearance and preparation works [EP, SM]		
P11 plant amenity or forest trees [SM]		

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:
P12 carry out post-planting protection and maintenance [CT]	M3 for a specified site carry out a plan for establishing, maintaining and protecting either amenity or forest trees and justify the methods used.	D2 evaluate establishment, maintenance and protection of a given site recommending appropriate improvements.

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.

Key	IE – independent enquirers CT – creative thinkers	RL – reflective learners TW – team workers	SM – self-managers EP – effective participators
------------	--	---	--

Essential guidance for tutors

Delivery

Delivery of this unit will involve practical assessments, written assessment, visits to suitable collections and will have links to industrial 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 fieldwork, research using the internet and/or library resources 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 in order 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 prior to any work-related activities so that naturally occurring evidence could be collected at the time. For example, learners may have the opportunity to plant trees or install and maintain fencing and they should be encouraged to 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.

Visiting expert speakers could add to the relevance of the subject for learners. For example, an arboricultural or forest contractor, forest manager, head gardener or tree officer could talk about their work, the situations they face and the methods they use.

Whichever delivery methods are used, it is essential that tutors stress the importance of health and safety and the potential impacts of activities on the environment. Tutors should take account of the seasonality of tree planting when planning the delivery of the learning outcomes. Learners should be exposed to alternative planting and establishment methods that are commonly used, and given the opportunity to undertake as many as possible.

Health and safety issues must be addressed before learners undertake site visits or practical work with any items of equipment, and risk assessments must be undertaken prior to practical activities. Adequate PPE must be provided wherever appropriate and used following the production and implementation of suitable risk assessments.

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.
Assignment 1: Trees and Society (P1, P2, P3, P4, M1)
Introduction to the assignment.
Classroom lectures and discussions on the benefit of trees.
Classroom Lectures and expert visitor on the legal and environmental framework.

Topic and suggested assignments/activities and/assessment
Tutor led internet research for sources of funding for tree establishment and protection.
Report writing.
Presentation of report.
Evaluation of report and other evidence.
Assignment 2: Planning for Planting (P5, P6, P7, M2, D1)
Introduction to the assignment.
Site visit to view methods of site preparation tree establishment and protection.
Practical demonstrations and practice of methodology.
Preparation of planting specifications.
Classroom review of techniques.
Preparation of Tree Management Plan.
Presentation of Tree Management Plan.
Evaluation of Plan and other evidence.
Assignment 3: Realising the Plan (P8, P9, P10, P11, P12, M3, D2)
Introduction to the assignment.
Practical site preparation, tree establishment, protection and maintenance.
Preparation of log books and other evidence.
Evaluation of evidence.

Assessment

For P1 learners should explain the benefits to society of tree establishment. Learners should endeavour to include specific examples with regard for scale; for example, local, national, global. Evidence for P1 could be through learner presentations.

For P2 learners should consider the various governmental and non-governmental organisations and departments that provide financial support for tree projects. A table identifying these and their characteristics would provide suitable evidence. Learners should ensure they include reference to EU initiatives as well as those for the UK.

P3 and P4 require learners to describe the legal and environmental considerations relevant to the establishment and protection of trees. This can be linked directly to work being undertaken for P1, P2 and/or P2. Learners should ensure they cover regulations for felling, transportation and planting. Evidence may be in the format of a formal presentation, project or report.

For P5 learners need to evaluate different methods of site preparation. Ideally this would be through site visits to locations that demonstrate different techniques. Field notebooks would provide evidence. Alternatively, classroom notes of tutor presentations would be acceptable.

P6 requires learners to explain the importance of correct care, handling and storage of trees. This could be assessed directly during practical activities using observation records and/or witness statements, and learners could give verbal answers to tutors. Learners could also submit log books as suitable evidence.

For P7 learners must evaluate methods of tree establishment and tree protection. Tutors should identify the methods or agree them through discussion with the learners. Tutors should consider seasonal changes when planning when this criterion will be addressed. Evidence could be produced through class exercises and case studies. Alternatively assessment could be through practical activities with evidence from log books and observation records.

P8 and P9 require learners to select planting stock and materials and produce planting specifications. These two criteria could be assessed as part of a wider assignment covering P10, P11 and P12. A planting schedule and specification would provide suitable evidence. Tutor led question and answer sessions could also be considered.

P10, P11 and P12 all relate to the assessment of practical skills and evidence could be linked to the three criteria. Access to a suitable planting site of similar size and complexity for all learners is essential. Log books, video or photographic records and observation records would provide suitable evidence. Assessment of P10, P11 and P12 must reflect the learner's consideration of safe working practice, risk assessment and use of personal protection equipment.

M1 builds on P2, P3 and P4 but extends the learner's understanding beyond financial support to include the role of organisations that are concerned with tree establishment and protection in the UK and Europe. Statutory obligations and other legal considerations need to be understood and learners should submit evidence to illustrate the range of responsibilities and organisations that exist. Suitable evidence could include presentations, annotated internet research and notes from classroom lectures and discussions. Expert visitors could also be interviewed.

M2 is concerned with developing the skills and knowledge addressed in P5, P6 and P7 by relating that knowledge to a specified site. Learners should produce a plan for preparation, planting and protection and justify their conclusions. Ideally this should be linked to other practical work and undertaken following a site visit. Suitable evidence would be a presentation and discussion.

M3 is concerned with developing the skills and knowledge addressed in P8, P9, P10, P11 and P12 by relating those skills to a specified site and requiring learners to justify the tasks undertaken and methods used. Suitable evidence would be log books, video and photographic evidence and observation records. M3 also links to M2 and learners could carry out tasks according to the plan devised for M2.

D1 requires learners to evaluate the plan produced for M2 and make suggestions for improvement. This could be assessed through self-evaluation, tutor led question and answer sessions or notes from classroom discussions. Alternatively, a visiting expert could be invited to comment on the plans submitted after a presentation by the learner.

D2 requires learners to evaluate the activities undertaken for M3 and make suggestions for improvement. This could be assessed through self-evaluation, tutor led question and answer sessions or notes from classroom discussions.

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, P2, P3, P4, M1	Trees and Society	The Estate on which you work is considering a programme of tree planting. You have to prepare a briefing document to present to the Estate Management Team. The document should outline the benefits of a tree planting programme, possible sources of funding and legal obligations.	Report to the Estate Management Team. Research notes. Table of Organisations.

Criteria covered	Assignment title	Scenario	Assessment method
P5, P6, P7, M2, D1	Planning for Planting	The Management Team have accepted your rationale for tree planting and you are now required to produce a Tree Management Plan. The plan should cover all aspects tree establishment and protection.	Tree Management Plan. Planting Specifications. Log Book. Observation Records. Evaluation.
P8, P9, P10, P11, P12, M3, D2	Realising the Plan	The Estate Management Team have accepted your Tree Management Plan and now require you carry out your plan and proceed to establish, protect and maintain the new plantings.	Log Book. Observation records. Evaluation.

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
Understanding Ecology of Trees, Woods and Forests	Standard TW4 Clear sites for tree planting Standard TW5 Cultivate sites for tree planting Standard TW6 Plant and establish trees Standard TW7 Carry out post-planting protection and maintenance Standard TW8 Control unwanted vegetation around trees
	Understanding Woodland Management.

Essential resources

To complete this unit learners should have access to suitable sites for practical demonstration of tree establishment and protection techniques and methods. Tutors should consider the seasonal nature of work undertaken and plan accordingly. Learners will also require appropriate tools and machinery. Learners must be equipped with suitable personal protection equipment.

Employer engagement and vocational contexts

Tree establishment and protection provide a wealth of opportunities for employer engagement and vocational contexts. Particularly fruitful will be engagement with charitable organisations and local initiatives. For example, the National Trust and BTCV volunteer activities.

Commercial organisations can provide opportunities although they may be limited in scope due to the often small-scale nature of companies involved. Large Estates and rural visitor attractions may provide valuable experience while Council Parks, Recreation and Gardens department may have established programmes that would benefit learners.

Indicative reading for learners

Textbooks

Agate E – *Fencing: A Practical Handbook* (BTCV, 2001) ISBN 094675229X

Agate E – *Tree Planting and Aftercare: A Practical Handbook* (BTCV, 2001) ISBN 0946752257

Agate E – *Woodlands: A Practical Handbook* (BTCV 2002) ISBN 0946752338

Hart C – *Practical Forestry for the Agent and Surveyor, 3rd Edition* (Sutton Publishing Ltd, 1991)
ISBN 0862999626

Hibberd B – *Forestry Practice* (The Stationery Office Books, 1991) ISBN 0117102814

Kerr G and Evans J – *Growing Broadleaves for Timber* (The Stationery Office Books, 1993) ISBN 0117103144

Paterson D and Mason W – *Cultivation of Soils for Forestry* (Forestry Commission, 1999) ISBN 085538400X

Pepper H – *Forest Fencing, 3rd Edition* (The Stationery Office Books, 1992) ISBN 0117103047

Potter M – *Tree-shelters* (The Stationery Office Books, 1991) ISBN 0117102881

Singer M and Munns D – *Soils: An Introduction, 6th Edition* (Prentice Hall, 2005) ISBN 0131190199

Taylor C M A – *Forest Fertilisation in Britain* (HMSO, 1991) ISBN 0117102946

Willoughby I, Dewar J and Williamson D – *The Use of Herbicides in the Forest, 4th Edition* (HMSO, 1995)
ISBN 0117103306

Journals

Arboricultural Association newsletter

Arboriculture journal

Forestry Journal

Quarterly Journal of Forestry

Websites

www.btcv.org.uk

www.forestry.gov.uk

www.hsegov.uk

www.pesticides.gov.uk

www.trees.org.uk

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 ...
Independent enquirers	evaluating objectives of tree establishment projects, financial support for tree establishment and the environmental considerations associated with tree establishment.
Creative thinkers	looking at different ways of tree establishment and protection. responding to changing circumstances to protect and maintain trees when planted.
Self-managers	organising time and resources to prepare a site and establish trees.
Effective participators	undertaking a sequence of steps for site clearance and preparation works.

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 ...
Independent enquirers	carrying out research into the benefits of trees to society
Team workers	collaborating with others to establish and protect trees.

● Functional Skills – Level 2

Skill	When learners are ...
ICT – Use ICT systems	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	
Use ICT to effectively plan work and evaluate the effectiveness of the ICT system they have used	
Manage information storage to enable efficient retrieval	
Follow and understand the need for safety and security practices	
Troubleshoot	
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	investigating the benefits of trees to society
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: <ul style="list-style-type: none"> • text and tables • images • numbers • records 	preparing a Tree Management Plan
Bring together information to suit content and purpose	
Present information in ways that are fit for purpose and audience	devising a presentation of a Tree Management Plan
Evaluate the selection and use of ICT tools and facilities used to present information	
Select and use ICT to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists	

Skill	When learners are ...
Mathematics	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	
Identify the situation or problem and the mathematical methods needed to tackle it	calculating planting densities
Select and apply a range of skills to find solutions	
Use appropriate checking procedures and evaluate their effectiveness at each stage	
Interpret and communicate solutions to practical problems in familiar and unfamiliar routine contexts and situations	
Draw conclusions and provide mathematical justifications	
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	discussing the responsibilities of organisations concerned with tree establishment and protection
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	evaluating the legal and environmental considerations of establishing and protecting trees
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	preparing a report to outline the rationale for tree establishment.