# Unit 3: Understanding Environmental Management

## Delivery guidance

This is a mandatory unit in all of the pathways from 540 GLH and above. At 180 GLH and 360 GLH it is optional, for learners studying the International Level 3 in Agriculture, Horticulture or Land-based Subjects. Developing a sound understanding of different landscapes and environments is essential for learners going into the land-based sector. Learners need to fully understand:

- the features of different landscapes
- the features of different environments
- the internal and external factors that threaten environments
- the implications of losing different landscapes and environments.

You should include variety within the sessions to ensure a good level of knowledge and understanding is achieved, your learners are engaged and motivated, and they also learn practical skills. Sessions should include:

- theory lessons with engaging activities
- presentations to ensure knowledge and understanding is secured
- guest speakers to give learners an industry perspective
- preparation for the set task, using the Sample Assessment Materials.

### Approaching the unit

This unit feeds into many other aspects of the land-based sector and gives an understanding of wider environmental management and issues. This is very advantageous for learners seeking employment in the sector as it widens their skill set and improves their approach to work.

The focus of the unit is to ensure your learners have knowledge and understanding of the threats to habitats and ecosystems, and also of the need for human impact on environments to be managed. A range of habitats will be covered, including grasslands, forests, wetlands and coastal/aquatic environments.

You could begin this unit by discussing the importance of having a good knowledge and understanding of the threats that habitats and ecosystems face. You also need to make your learners aware that the assessment for this unit involves them carrying out a task set by Pearson, and the Sample Assessment Materials can be used to prepare them for this.

Your learners can draw on any previous knowledge they may have if they have completed or are completing *Unit 7: Work Experience in the Land-based Sectors*, *Unit 24: Land-based Workshop Practices* or *Unit 26: Applied Agricultural Farming Practice*.

Learning aim A begins with the abiotic and biotic features of grasslands, forests, wetlands and coastal/aquatic environments. It then moves on to changes in habitats and their impact, conservation of habitats and ecosystems and its importance, and a

range of habitat management and species management techniques. This learning aim requires you to give your learners the opportunity to see a variety of habitats. They will need to be given personal protective equipment for these activities. Your learners would also benefit from some input from guest lecturers to enhance the delivery of this unit.

Learning aim B begins by highlighting all of the agricultural and horticultural practices that impact on the environment. You need to get your learners to consider a full range of agricultural and horticultural practices in order for them to establish which cause the most impact. Moving on from this you need to direct your learners to think about human impacts on the environment, such as extraction of natural resources, renewable energy, tourism, migration and restoration. You should ensure they consider both the advantages and disadvantages of these practices, and the extent of the impact on the environment. You may find websites such as the International Union for Conservation of Nature and World Wide Fund for Nature useful.

Learning aim C examines influences and management strategies for weather hazards. Learners should examine the range of different weather hazards and, as these increase, consider the causes, features and impacts of them. They also need to consider the monitoring systems for weather hazards, planning and preparation prior to them, and ultimately the restoration and recovery after they have occurred. In addition to this, learners would benefit from employer engagement – perhaps guest speakers from a renewable energy company to discuss the advantages and disadvantages of the sector.

## Assessment model

| Learning aim | Key content areas | Recommended assessment approach |
|---|---|---|
| **A** Explore the ecology and conservation of different environments | **A1** Ecology of land-based ecosystems<br>**A2** Conserving biodiversity in ecosystems through growth, development and change | This unit is assessed through a Pearson Set Assignment. |
| **B** Understand human impacts on different environments | **B1** Environmental impacts of agriculture and horticulture on ecosystems<br>**B2** Other human impacts on the environment | |
| **C** Examine influences and management strategies for weather hazards | **C1** Weather hazards<br>**C2** Managing the impact of weather hazards | |

## Assessment guidance

This unit is assessed through a Pearson Set Assignment where learners demonstrate their knowledge and understanding of environmental management. Learners' work will be submitted in the form of a completed assignment which will be assessed by the centre staff using the assessment criteria in this unit.

In order to best prepare your learners for the Set Task Assignment, Sample Assessment Materials are available on the Pearson website. These materials can be used to create similar style activities for learners to attempt as preparation for assessment.

## Getting started

**This gives you a starting place for one way of delivering the unit, based around the recommended assessment approach in the specification.**

### Unit 3: Understanding Environmental Management

**Introduction**

This unit prepares learners going into the land-based sector as it gives them good knowledge and understanding of different landscapes and environments, how to maintain them and the internal and external factors that threaten them.

### Learning aim A – Explore the ecology and conservation of different environments

**Learning aim A1**

- Begin by discussing the importance of environmental management and its impact on the wider environment.
- Split learners into pairs to identify what abiotic and biotic features are found in grasslands and forests.
- Get your learners to carry out research and identify the common flora and fauna found in grasslands and forests, using reference books and/or phone apps.
- Have a group discussion about what abiotic and biotic features are found in grasslands, forests, wetlands and coastal/aquatic environments.
- Get your learners to independently carry out research and identify the common flora and fauna found in grasslands, forests, wetlands and coastal/aquatic environments.
- Give a presentation on the changes in local habitats and consider the impact that this has had on the flora and fauna within them.

**Learning aim A2**

- Ask learners to complete a food web for a named ecosystem from grasslands, forests, wetlands or coastal/aquatic environments.
- Get learners to complete a pyramid of numbers and a pyramid of biomass for your food web from the previous session.
- Ask learners to complete a worksheet where they define interspecific competition and intraspecific competition, giving examples of each.
- Get learners to research the definitions and give examples of different habitat and species management, including reintroduction, translocation, wildlife corridors, afforestation, selective logging, use of quotas, close seasons, education and eco-tourism.
- Deliver a presentation about legislation – both in the local area and international legislation. Cover grasslands, forests, wetlands and coastal/aquatic environments.

### Learning aim B – Understand human impacts on different environments

**Learning aim B1**

- Begin by giving an introduction into what human impact is, what we can do to reduce human impact and correct methods for using different tools and equipment.

- Ask learners to carry out research into different irrigation systems and the impacts that they can have on the environment. Irrigation systems include rainwater harvesting, clay pot irrigation systems, sprinkler systems, trickle drip systems and flood irrigation. These could be from different countries to get learners thinking about future possible employment in other countries.
- Get learners to produce posters about the impact of loss of habitat for either crop production or livestock production (either they choose or you can allocate). These could be displayed in the learning environment for future preparation for assessment.
- Give a presentation about the reasons why fertilisers are used in agriculture and horticulture, their advantages and disadvantages. Consider with learners different application techniques and alternative types of fertilisers.
- Get your learners to work in small groups to list the different types of fertilisers that are available, including their purpose, advantages and disadvantages.
- Lead a discussion about what is meant by the term 'eutrophication', how it occurs, how it could be prevented and the environmental impact.

**Learning aim B2**

- Deliver a presentation about extraction of natural resources, including rocks, minerals, sand, oil and natural gas, and its impact on the environment and the local area. For example, a visit to a quarry could be a good opportunity for learners to safely see this in action.
- Get learners to produce leaflets (of their choosing from the list, or you can allocate) about the advantages, disadvantages and impact of different renewables, including nuclear power, wind power, solar power and geothermal power.
- Get learners to write down on post-it notes their initial thoughts on the advantages and disadvantages of tourism on the environment, and stick these on the board. A discussion could follow where the post-it notes provide prompts; you can add information about the advantages and disadvantages tourism can have on an area. Include litter, soil erosion, buildings, development and effects on wildlife.

## Learning aim C – Examine influences and management strategies for weather hazards

**Learning aim C1**

- Introduce the learning aim by outlining what is to be covered.
- Deliver a presentation outlining what tropical storms, hurricanes and cyclones are: what causes them? What are their features? What is the impact of them?
- Get learners to work in pairs and research and produce mind maps about what can be done to manage the impact when a tropical storm, hurricane or cyclone occurs.
- Have a group discussion about what causes flooding and what infiltration is. How does infiltration impact on flooding?
- Get learners to work in pairs and allocate them one of previous weather, soil types, agriculture, deforestation, urbanisation or climate change. They should research, make notes and prepare a presentation.

**Learning aim C2**

- Get learners to work independently to research how different agricultural and horticultural activities impact on the likelihood and severity of drought.
- Give a presentation about how storms are predicted and monitored: what indicators do we look for? To what extent does this allow for their movement and behaviour to be predicted?
- Hold a question and answer session, maybe based on a recent extreme weather event, about what indicators we see before a tropical storm, cyclone or hurricane.
- Hold a group discussion about the predictability of storms and weather patterns, and their seasonality. How does this influence emergency planning and preparation?
- Ask learners to research methods of restoration and recovery. Propose different scenarios of weather hazards and have learners discuss restoration and recovery in groups.

## Details of links to other BTEC units and qualifications, and to other relevant units/qualifications

This unit links to:

- Unit 7: Work Experience in the Land-based Sectors
- Unit 24: Land-based Workshop Practices
- Unit 26: Applied Agricultural Farming Practice
- Unit 30: Tree and Shrub Pruning and Maintenance.

## Resources

In addition to the resources listed below, publishers are likely to produce Pearson-endorsed textbooks that support this unit of the BTEC International qualifications in Agriculture/Horticulture/Land-based Subjects. Check the Pearson website (http://qualifications.pearson.com/endorsed-resources) for more information as titles achieve endorsement.

### Textbooks

Bromley, P – *Countryside Management* (Routledge, 1990) ISBN 9780419151401. This text will be useful for the habitat management skills, and also some of the skills and techniques throughout other aspects of the unit.

Garrod, G – *Strategic Countryside Management* (Elsevier Science, 2005) ISBN 9780080438894. This text will be useful for outlining different skills and techniques throughout much of the unit.

Keirle, I – *Countryside Recreation Site Management: A Marketing Approach* (Routledge, 2002) ISBN 9780415248853. This text will be useful for outlining different skills and techniques throughout much of the unit.

Starr, C – *Woodland Management: A Practical Guide* (The Crowood Press, 2013) ISBN 9781847976178. This text will be useful for outlining different skills and techniques throughout much of the unit.

Sutherland, WJ – *Managing Habitats for Conservation* (Cambridge University Press, 1995) ISBN 9780521447768. This text will be useful for outlining different skills and techniques throughout much of the unit.

Sankar, A – *Environmental Management* (Open University Press India, 2015) ISBN 9780199458912. This text will be very useful for outlining environmental issues around the world and how to manage them.

### Journals

*International Journal of Rural Management* – a useful journal that will allow learners to read about different techniques and their success around the world.

*Land – Open Access Journal* – a useful journal that will allow learners to read about different techniques and their success around the world.

### Websites

Visit the Wildlife Conservation Society website, which outlines endangered species around the world and different habitat management techniques, their advantages and disadvantages.

Visit the International Union for Conservation of Nature website for an outline of different conservation strategies around the world and their successes.

*Pearson is not responsible for the content of any external internet sites. It is essential for tutors to preview each website before using it in class so as to ensure that the URL is still accurate, relevant and appropriate. We suggest that tutors bookmark useful websites and consider enabling students to access them through the school/college intranet.*