Agriculture, Environmental and Animal Care: Agriculture, land management and production

T Level outline content: draft version

June 2020

Contents

Introduction

Outline content

This outline content has been produced by [T Level panels](#) of employers, professional bodies and providers, and is based on the same standards as those used for apprenticeships. The outline content will form the basis of the specifications for T Level Technical Qualifications, which will be developed by awarding organisations for approval by the Institute for Apprenticeships and Technical Education. One awarding organisation will be appointed to develop and deliver each Technical Qualification following a procurement process.

Colleges and other education and training providers will decide how to structure the T Level courses they offer, based on the qualification specifications. This will enable them to deliver the study programme's mandatory components in the most effective way for students.

A T Level programme consists of a Technical Qualification, substantial industry placement, English and maths, and other occupation-specific requirements where essential for entry to skilled employment. This outline content relates solely to the Technical Qualification part of a T Level programme.

Further information about T Levels is available on the website of the Institute for Apprenticeships and Technical Education here: www.instituteforapprenticeships.org, and at www.education.gov.uk.

Agriculture, Environmental and Animal Care: Agriculture, land management and production pathway

Awarding organisations will need to ensure that students have an up-to-date knowledge of the legal and regulatory obligations relating to employment in the occupations relevant to the T Level and understand the practical implication of these on their work.

Maths, English and digital skills are set out in a separate annex. Awarding organisations should integrate these within the qualification so that they are applied in occupationally relevant contexts.

Core content

The core content relates to the whole route 'route core'. The core knowledge and understanding is assessed through an examination and core skills through a practical employer-set project.

The core knowledge and understanding focuses on the students' knowledge and understanding of contexts, concepts, theories and principles relevant to the T Level. This could include, where appropriate, assessment of knowledge and understanding relevant to the route and the pathway.

The employer-set project provides the opportunity to develop and apply a minimum range of core skills important for employability. The allocation of content to each type of assessment will need to be approved by the Institute for Apprenticeships and Technical Education.

Core knowledge and understanding across Agriculture, Environmental and Animal Care Route

Element	Content
Sustainability	Key requirements of environmental legislation • associated obligations for businesses, their employees and other stakeholders. Key government environmental policies and initiatives • the opportunities and risks they bring to agriculture, environmental and animal care sector • the associated environmental performance measure e.g. water and energy use. The concept of sustainable development • sustainable development goals at a macro (national and international) and micro (business) level • types of sustainable solutions to meet development goals including social, environmental, economic and human • concerns and expectations of key stakeholders. The concept of climate change and scientific views on causes and impacts • the impact of increased rainfall and higher temperatures upon environments, conservation practices, habitats, flora, fauna and water levels • policies and initiatives to manage these changes at national and local level. Waste management principles (e.g. recycle, reduce, reuse) • key requirements of associated legislation • types of materials that require specific actions (e.g. asbestos) • measures in place by the sector and organisation to meet requirements.

Biosecurity	Principles of biosecurity • factors influencing biosecurity e.g. international trade, new technologies • biosecurity risk factors in different types of agriculture, environmental and animal care situations • biosecurity measures including inspection, monitoring, regulation, passports, isolation and their importance in maintaining health production and service environments.
Working in the agriculture, environmental and animal care sector	Employment rights and responsibilities (e.g. union membership, working hours) of the employer and employee • expectations of professional conduct and behaviours in the workplace (including punctuality, cleanliness, respect for own and others work and work area, respect for the land, property and belongings of others (including animals) • typical activities that can lead to disciplinary and grievance procedures • how these expectations are met and demonstrated by employees. Principles of effective teamwork • how teams are developed, including the role of the team leader • team dynamics and how they are managed, and behaviours influenced • qualities of effective team members and team leaders and how these qualities are demonstrated • the importance of team work to team and project performance • techniques used to monitor and manage individual and team performance e.g. goal and objective setting, performance management reviews, providing constructive feedback • techniques used to manage team conflict (e.g. mediation) and when and how they should be applied.

Working in the agriculture, environmental and animal care sector (continued)	Progression opportunities which exist within the agriculture, environmental and animal care sector • the purpose of continuing professional development (CPD) and the benefits it brings to the individual and their employer • methods of personal and professional development (e.g. coaching, independent research) and the types of organisations that can provide this type of support, including professional bodies. • their suitability for achieving planned outcomes.
Ethics	Ethical principles (e.g. honesty, transparency, justice) • how these are used in codes of conduct, employment terms and conditions and workplace policies • how these are represented by ethical behaviours • how these are incorporated into business ethics • how these impact on business operations, including interaction with stakeholders and the supply chain.
Supply Chain	The supply chain • different types of organisations involved and their role • different ways in which the supply chain is sequenced and operates • implications of failing to meet supply chain demands • environmental impact of the supply chain including whole life cycle of a product • types of procurement (e.g. competitive bidding, direct purchase) and their suitability for different situations. Principles of stock management (including stock rotation, storage, conditions, monitoring stock levels, ordering stock, dealing with deliveries, maintaining records) • how they are applied in different types of business • implications to businesses of ineffective processes.

Business	The types of business organisations e.g. sole trader, partnership, limited company, not for profit
	- common business structures and hierarchies
	- the financial, legal and commercial implications of type of business
	- typical organisational policies and their relationship to legislation
	- types of business objectives and values associated with different business structures.
	The principles of enterprise skills e.g. risk taking, innovation, resilience
	- how they are applied to develop business growth and change including sales opportunities and diversification of the business
	- types of business risk (e.g. financial, reputational) and risk management methods that can be deployed.
	How businesses measure success (including Key Performance Indicators (KPIs), Service Level Agreements (SLAs), benchmarking, supply chain requirements)
	- the information used to determine if success measures are met
	- quality standards, quality control and quality assurance
	o their purpose, differences and application to organisations quality standards expected by internal and external stakeholders and associated quality assurance requirements e.g. audits.
	The principles of project management (including purpose and scope of the project, milestones and timescales, supply chain, people management, resources, budgeting).
Equality	Factors to consider (including equality legislation, cultural differences, religious needs) when working with people from diverse backgrounds and cultures
	- how to show empathy and respect to those from different backgrounds and cultures to our own
	- acceptable and unacceptable behaviours and language.
	Characteristics protected by equality legislation.

Communication	Different types of communication (including verbal, non-verbal and digital) • the formats used for the types of communication (e.g. business reports, emails, letters, websites) and associated business conventions • the types and value of images and visual aids to support written text and oral presentations • their suitability for different purposes and audiences • the importance of spoken language, body language and tone in communication and how each is used to convey different messages to different audiences for different purposes • the benefits and limitations of social media including risk of misuse, promoting the business.
Relationship Management	Principles of customer care (including first impressions, representing business and self, supporting customers, the difference between customer wants and needs, the importance of accurate knowledge, working to an expected timescale) • how these can be applied when dealing with different stakeholders, including internal customers • legal requirements (including legislation relating to consumer protection) when interacting with different types of customers and customer relationships including business to business (B2B) • typical procedures used to deal with customer disputes and complaints, including escalation to relevant individuals and departments • how to apply customer service principles and the benefits to the individual (e.g. increased motivation, positive feedback) and business (e.g. customer loyalty, customer confidence). Roles of different stakeholders including internal and external customers • their expectations • interrelationships between stakeholders.

Finance	The concept of profit • types of profit (including net and gross) and significance of each to business success • types of cost incurred by business (products, ancillary products, types of overheads, labour), their classifications (direct, indirect, fixed, variable) • measures used to reduce costs and implications of using these to profitability, reputation and quality • types of taxation (including payroll, business) • how costs and revenue are forecast • how profit is calculated.
Health and Safety	Key requirements of health and safety legislation e.g. for lone working, safe manual handling • the respective duties imposed on employees and employers • the importance of taking personal responsibility for health and safety of self and others • the techniques and methods used to comply with legislation e.g. use of Personal Protective Equipment (PPE), regular communication with lone workers. The purpose of risk assessments • typical structures and content • how they are developed and used • implications for poor development and application. Hazards and risks associated with working in the agriculture, environmental and animal care sector (e.g. working with hazardous materials, lone working) • typical control measures in place to minimise risks, including the types of PPE used, fatigue and stress management for lone workers. Procedures to follow when dealing with emergency situations e.g. spilt cleaning materials, slurry exposure, flooding.

Information and data	Key requirements of legislation relating to the security of information and data
	• types of information and data protected by legislation including client data, intellectual property • methods used by businesses to manage information and data including version control, access controls, indexing, cyber security.

Employer-set project

The employer-set project ensures students have the opportunity to combine core knowledge and skills to develop a substantial piece of work in response to an employer-set brief. The employer-set project forms part of the Technical Qualification and is a separate part of the T Level programme to the Industry Placement.

To ensure consistency in project scope and demand, awarding organisations will develop assessment objectives, which require students to:

- plan their approach to meeting the brief

- apply core knowledge and skills as appropriate

- select relevant techniques and resources to meet the brief

- use maths, English and digital skills as appropriate

- realise a project outcome and review how well the outcome meets the brief

The awarding organisation will work with a relevant employer or employers, to devise a set brief that:

- ensures a motivating starting point for students' projects, for example, a real-world problem to solve

- ensures students can generate evidence that covers the assessment objectives

- is manageable for providers to deliver

- is officially approved by the awarding organisation and employer

For Agriculture land management production, in achieving the assessment objectives and meeting the brief, students must demonstrate the following core skills:

- **Analysing**

    o e.g. identifying common features of data obtained on options to improve a business' environmental impact, classifying and organising data into types, discerning patterns.

- **Communicating**

    o e.g. using visual and oral methods to engage an audience with proposals for improving representation and diversity in the sector.

- **Critical thinking**

    o e.g. questioning information and data, evaluating pros and cons of the introduction of new machinery or plant into a business, taking out of the whole life cycle.

- **Decision making**

  - e.g. identifying likely impact of skills scarcity in the business and using evidence to substantiate conclusions.

- **Investigating**

  - e.g. developing search criteria/queries for secondary research and designing and carrying out tests for primary research into the environmental impact of a business.

- **Working in a team**

  - e.g. developing and implementing a communication plan for the introduction of a new lone working policy.

Occupational Specialist Content

Specialist content is structured into different occupational specialisms, which correspond to the apprenticeship standards listed on the relevant occupational map. Occupational specialisms ensure students develop the knowledge and skills necessary to achieve a level of competence needed to enter employment in the occupational specialism, and are organised around 'performance outcomes' that indicate what the student will be able to do, as a result of learning and applying the specified knowledge and skills.

There are some content areas that are included in both the Core and Occupational Specialism sections, this is intentional. Where in Core, it is because it is content that is applicable to all Agriculture, Environmental and Animal Care students, regardless of the occupational specialism. If the same content is also in the Occupational Specialism, it is because the knowledge and skills need to be developed within the context of the Performance Outcome. In the occupational specialism, it is therefore likely to require different content to reflect the Performance Outcome.

Occupational Specialist Content

Occupational Specialism: Habitat management (land and water)

Performance Outcome 1: Establish habitats to meet management objectives.

For this performance outcome, students are expected to acquire knowledge related to woodland, grassland (including moorland) and wetland habitats and niches for species within those habitats. They should develop skills related to each type of habitat and related niches and demonstrate skills related to two types of habitat as well as one niche for a specified species. The AO should determine the habitats and niches for each assessment series.

Knowledge Specific to Performance Outcome	Skills
Health and safety Typical hazards and risks associated with establishing habitats in urban and countryside environments, including unfamiliar, unexpected and emergency environments and control measures to be put in place to mitigate these health and safety risks to protect self, colleagues and others (e.g. volunteers, public). Practical first aid techniques for use when establishing habitats e.g. broken bones from falls, irritations resulting from contact with flora. **Environment** Conservation designations in the UK (e.g. National Nature Reserves, National Parks, Sites of Special Scientific Interest and Areas of Outstanding Natural Beauty) • their characteristics • benefits and limitations • legal requirements • how they affect management decisions. Characteristics of habitat sites including:	Interpret maps. Interpret habitat establishment plans. Identify discrete steps in completing a complex task. Sequence and prioritise steps. Allocate resources (including people, equipment, materials) to steps. Identify hazards on site. Use rules and formulae to calculate the materials required for the establishment of habitats. Assess soil suitability. Assess the project for potential risks of realisation. Apply the use of hand tools when establishing habitats. Estimate distances. Identify flora and fauna through observation of characteristics. Apply manual handling techniques. Prepare tools, equipment and machinery for use.

- water e.g. ditches, lakes

- land including grassland, woodland, boundaries

- flora and fauna

- D.A.T.E.S (drainage, aspect, topography, exposure, situation) and microclimates

- activities including business (livestock and arable farming, forestry) and leisure (e.g. rambling).

Implications of habitat site characteristics to establishing habitats including

- relationship with local business and communities

- seasonality e.g. seasonal water levels and climatic changes, farming calendar

- management objectives.

The principles behind how flora and fauna (both native and non-native) live and survive and how this knowledge is used when planning for and establishing habitats.

Characteristics of ecosystems found in different landscapes (including wetland, grassland and woodland environments)

- key habitats and species encountered

- how ecosystems affect management decisions

- how conservation work complements/interacts with other land management uses e.g. recreation, game keeping, estate management.

Clean tools.

Apply protection to the environment surrounding the new habitat e.g. fencing, silt / large debris traps.

Apply biosecurity controls.

Dig site area using hand tools.

Apply shovelling techniques e.g. to excavate.

Remove unwanted vegetation.

*** Establishing woodlands ***

Assess the quality of tree stock for planting.

Dig holes for tree planting.

Position the tree to planting line and planting plan.

Fill holes with growing media.

Cut turf for slit planting a tree.

Slit plant a tree.

Replace turf after slit planting.

Apply tree protection.

*** Establishing grassland ***

Remove topsoil.

Create a tilth suitable for purpose.

Broadcast seed / apply vegetation.

*** Establishing wetland ***

Assess soil suitability.

Determine water table.

Assess water resistance.

Dig hole to required depth.

Install lining.

Plant aquatic plants.

Plant and animal classification (including families, genera, species,)	***Establishing niches*** Interpret plans and drawings. Measure materials. Cut materials. Join materials.
- the format for scientific names according to the international code of nomenclature - characteristics and morphology that can be used to classify plants and animals - the techniques (e.g. observation, botanical keys) and information sources (e.g. internet and books) used to identify plants and animals - purpose of classification and use of scientific names when establishing surveys (e.g. ensure correct species is removed or saved, to identify protected or invasive species) and implications for inaccurate use.	
Types of invasive, protected and dangerous plant and animal species established by legislation that can be encountered when establishing habitats	
- characteristics that enable identification in an environment - implications of finding invasive / protected / dangerous species in an environment - how to mitigate for invasive / protected / dangerous species in an environment.	
The potential positive and negative environmental impacts of establishing habitats including on flora, fauna, habitats (including human)	
- implications for existing flora, fauna and habitats - implications for achieving	

management objectives

- measures used to minimise and mitigate for negative impacts

- measures used to maximise positive impacts.

The purpose of environmental risk assessments

- the content of an environmental risk assessment

- how environmental risk assessments are conducted

- the site factors that need to be incorporated into an environmental risk assessment (e.g. terrain, ground conditions, vegetation type, season, weather, vehicle use, proposed operations, management approach) their interrelationships and how they are managed.

Requirements of habitats and niches (including access to food, shelter, protection and mates for reproduction)

- the abiotic (e.g. soil, moisture, light intensity) and biotic (e.g. presence or absence of predators, food sources) characteristics that provide these requirements.

Resources and materials which support a sustainable approach to establishing habitats

- their potential internal (i.e. within the habitat) and external (i.e. outside of the habitat) sources

- the benefits and limitations of sourcing internally and externally to sustainable development

- their suitability for meeting management objectives.

Site operations

How a site operates for establishing habitats including

- private and public realm considerations

- logistics of transportation (including suitability of different types of transport) access, delivery, storage, utilities, signage and use of people, materials and equipment

- the importance of biosecurity and keeping a site clear, clean and environmentally sound

- implications for the relationship with client/customer, public and other colleagues.

Factors that influence the choice of floral species (including biological, ecological and economic)

- how they affect decision making for different habitats and niches e.g. soil and growing media capacity to support flora and fauna

- how they impact on meeting different management objectives.

Characteristics (e.g. health, size) of good quality stock (including seeds, grass, trees, aquatic plants) and techniques used to assess the condition of stock plants.

Planting techniques, including support, protection and aftercare

- their suitability for different species, habitats and purposes

- how they are applied including equipment and materials required.

Types of soils (including loams, clays, silts, sands, organics) and growing media (including inorganic e.g. rock and organic e.g. bark, aquatic substrate)

- their characteristics and properties (including pH, nutrient availability, drainage and water holding capacity, organic matter and living organisms in the soil, colour and heat retention, ease of cultivation, existing pollutants, horizons)

- their influence on flora selection and growth

- techniques used to determine soil characteristics including texture testing, pH testing, digging a profile pit.

Methods of vegetation clearance including hand clearance, chemical clearance and mechanical clearance

- legal and environmental implications of their use

- their suitability for different sites and purposes.

Factors that affect the suitability of an environment for establishing wetlands e.g. potential for water retention, water table

- techniques and equipment required to assess the suitability of the environment.

Techniques used to prepare environments for establishment of habitats, including protection of the surrounding environment (e.g. fencing to prevent access from grazing livestock, silt

/ large debris traps on water courses, buffer zones to prevent access by invasive species)	
• how the techniques are applied accurately, safely and effectively including processes involved, equipment required, information and data required	
• suitability of techniques for different environments and landscape features.	
Utilities that may be located in the environment	
• how they affect establishment plans and activities	
• information that can be used to locate them	
• legal requirements.	
The types of materials that can be used to establish habitats	
• their properties	
• the importance of sensitivity to the local environment, including local heritage	
• the impact of wear and tear to use in establishing habitats and implications to whole life cycle.	
Business	
Types of management objectives (commercial and conservation) and the types of activities undertaken to achieve them.	
Organisations that can support habitat establishment, including those that can provide funding	

- the relevant responsibilities of all parties

- the specialist skills they can provide

- the benefits and limitations of wider teamwork.

Types of relationships involved with establishing habitats including with partners, contractors, stakeholders and communities

- implications for completing work efficiently and effectively

- how relationships affect the reputation of the organisation

- how relationships affect the success of the operations at a local and national level.

Legislation

The broad framework of relevant legislation

- the difference between primary, secondary legislation and byelaws

- key requirements and restrictions of legislation related to establishing habitats e.g. protected activities (e.g. bird nesting) heritage assets

- permissions required for establishing habitats on different land designations.

Information and data

Information required to determine characteristics of the environment and sources used to acquire the information e.g. observation, maps, plans.

Types of information that can inform operational decisions, e.g. local D.A.T.E.S, forecasted weather
 	
    • their characteristics
 	
    • their sources
 	
    • how they are used
 	
    • their suitability for different purposes.
 	
Types of maps, their conventions and symbols
 	
    • associated tools (e.g. compass, GPS)
 	
    • how they are used to locate and navigate locations in different types of environments.
 	
Techniques used to present information including computer aided design, maps, mathematical diagrams.
 	
Organisations (e.g. National Biodiversity Network, Met Office) that can support decision making and the types of information and data they can provide.
 	
Tools machinery and equipment
 	
Tools, equipment and machinery (including vehicles) required for establishing habitats
 	
    • their characteristics and purposes
 	
    • how they are operated and used accurately, efficiently and safely
 	
    • how they are maintained including cleaning and storage
 	
    • their suitability (including limitations) for different tasks and locations involved in establishing habitats, including their	

environmental impact.	

Performance Outcome 2: Survey habitats to inform management decisions

For this performance outcome, students are expected to demonstrate skills related to surveying in land (woodland or grassland) and wetland habitats.

Knowledge Specific to Performance Outcome	Skills
Health and safety Typical hazards and risks associated with surveying habitats in urban and countryside environments, including unfamiliar, unexpected and emergency environments and control measures to be put in place to mitigate these health and safety risks to protect self, colleagues and others (e.g. volunteers, public). **Environment** Conservation designations in the UK (e.g. National Nature Reserves, National Parks, Sites of Special Scientific Interest and Areas of Outstanding Natural Beauty) • their characteristics • benefits and limitations • legal requirements • how they affect surveying activities. How habitats and vegetation are managed to promote conservation • the different types of management used • the implications for surveying activities. The principles behind how our flora and fauna (both native and non-native) live and survive and how this knowledge is used when surveying habitats. Characteristics of ecosystems found in different landscapes (including wetland, grassland, woodland environments)	Locate survey environment from a map. Verify the accuracy of measuring equipment. Establish a fixed datum. Interpret information available from digital technology e.g. bat detectors. Use equipment to carry out surveys e.g. quadrant. Identify flora and fauna from keys. Capture habitat data. Assess heritage asset values. Measure with precision. Record findings. Input data into digital software. Validate data. Interpret mathematical diagrams. Collate and classify data. Estimate populations. Substantiate conclusions with evidence. Synthesise information. Present data using mathematical diagrams. Manage own time to meet objectives.

• key habitats and species encountered • how surveying activities interact with other land uses (e.g. farming, tourism). Plant and animal classification (including families, genera, species) • the format for scientific names according to the international code of nomenclature • characteristics and morphology that can be used to classify plants and animals • the techniques (e.g. observation, botanical keys) and information sources (e.g. internet and books) used to identify plants and animals • implications for inaccurate classification and use of scientific names. Types of invasive, protected and dangerous plant and animal species (including those established by legislation) that can be encountered when establishing habitats • characteristics that enable identification in an environment. Types of heritage assets (e.g. aqueducts, ridge and furrow, sawpit) found in a surveying area • the characteristics • sources of information used to support identification. **Surveys** Different types of surveys that are undertaken e.g. preliminary ecological appraisals, species specific surveys	

- the associated techniques

- their suitability for different purposes and locations

- how the techniques are applied, including timescales, seasonality, resources needed.

How a surveying site operates including

- private and public realm considerations

- logistics of transportation, access, delivery, storage, utilities, signage and use of people, materials and equipment

- the importance of biosecurity and keeping a site clear, clean and environmentally sound

- implications for the relationship with client/customer public and other colleagues.

Potential human-animal interactions encountered when undertaking surveys

- possible effects of interactions on animals and humans

- actions that can mitigate for negative impacts.

Business

Types of management objectives (commercial and conservation)

- how management objectives affect survey design and implementation.

Organisations that can support habitat surveys

- the relevant responsibilities of all parties

- the specialist skills they can provide

- the benefits and limitations of wider teamwork and networking.

Types of relationships involved with surveying habitats including with partners, contractors, stakeholders and communities

- implications for completing work efficiently and effectively

- how relationships affect the reputation of the organisation.

Legislation

Key requirements and restrictions of legislation (primary, secondary, byelaws) related to surveying habitats e.g. protected species, trespass

- permissions required for surveying habitats on different land designations.

Information and data

Types of information that can contribute to surveying activities, e.g. land ownership, boundaries

- their characteristics

- their sources

- how they are used

- their suitability for different purposes.

Types of maps, their conventions and symbols

- associated tools (e.g. compass, GPS)

- how they are used to locate and navigate locations in different types of environments.

Techniques used to present information including computer aided design, maps, mathematical diagrams.

Tools machinery and equipment	
Tools, equipment and machinery (including vehicles) required for surveying habitats • their characteristics and purposes • how they are operated and used accurately, efficiently and safely • how they are maintained including cleaning and storage • their suitability (including limitations) for different tasks and locations involved in surveying habitats. Developments in technology (e.g. thermal imaging, drones) and how they can be used to support surveying activities.	

Performance Outcome 3: Manage habitats to meet management objectives

For this performance outcome, students are expected to acquire knowledge related to woodland, grassland (including moorland) and wetland habitats. They should develop skills related to each type of habitat and demonstrate skills related to two types of habitat. The AO should determine the habitats for each assessment series.

Knowledge Specific to Performance Outcome	Skills
Health and safety Typical hazards and risks associated with working in urban and countryside environments, including unfamiliar, unexpected and emergency environments and control measures to be put in place to mitigate these health and safety risks to protect self, colleagues and others (e.g. volunteers, public). Practical first aid techniques for use when dealing with minor injuries e.g. cuts resulting from the use of machinery and equipment, sprains from slips and trips. **Environment** Conservation designations in the UK (e.g. Areas of Outstanding Natural Beauty, listed buildings and structures) • their characteristics • benefits and limitations • legal requirements • how they affect management decisions. Characteristics of habitat sites including: • water e.g. rivers, canals, lakes, tidal variations, locks, culverts • land including grassland, woodland, boundaries • flora and fauna	Assess maintenance requirements of a site. Dynamically assess site for health and safety risks. Set out worksite signage and controls. Operate tools, machinery and equipment. Remove vegetation from a habitat • for woodland – e.g. fell / coppice / pollard trees and shrubs • for wetland – e.g. remove aquatic vegetation • for grassland – e.g. harvest, topping Maintain boundaries e.g. • cut back hedgerows • remove debris from river • reinforce canal banks • dig out existing materials in ditches • repair masonry • trimming pond grass • repair fencing. Maintain access routes and gates e.g. clear debris, level aggregates, repair ironmongery (e.g. gate / lock hinges)

• D.A.T.E.S (drainage, aspect, topography, exposure, situation) and microclimates • activities including business (gamekeeping, fisheries) and leisure (e.g. sports events, fishing). Implications of habitat site characteristics to the management of habitats (including seasonal water levels, local materials, climatic changes) and meeting management objectives. How habitats and vegetation are managed to promote conservation, amenity use and commercial values • the different types of management used • their suitability for the environment and meeting management objectives. The principles behind how flora and fauna (both native and non-native) live and survive and how this knowledge is used when managing habitats. Characteristics of ecosystems found in different landscapes (including wetland, grassland and woodland environments,) • key habitats and species encountered • how conservation work complements/interacts with other land management uses e.g. livestock farming, seed/plant production. Plant and animal classification (including families, genera, species) • the format for scientific names according to the international code	Classify waste and allocate to storage. Optimise work processes. Make good the site area following management activities. Undertake routine biosecurity measures e.g. removing debris and soil from clothing, clean machinery and equipment before leaving a site. Minimise / avoid damage to surrounding habitats.

of nomenclature.

Types of invasive, protected and dangerous plant and animal species (including those established by legislation) that can be encountered when establishing habitats

- characteristics that enable identification in an environment

- implications of finding invasive / protected / dangerous species in an environment

- how to mitigate for invasive / protected/ dangerous species in an environment.

Typical pests (e.g. moths, aphids, mammals)

- their characteristics (including life cycle, dispersal)

- methods of prevention and treatment

- benefits and limitations of prevention and treatment options to the habitat and wider environment

- implication of pests to habitat development and survival.

Different types of boundaries including between different land uses, ownership, designations

- their relationship to their locations, usage and site characteristics

- the activities involved in their management.

The potential positive and negative environmental impacts of managing habitats including on flora, fauna, habitats

(including human)

- implications for existing flora, fauna and habitats

- implications for achieving management objectives

- measures used to minimise and mitigate for negative impacts

- measures used to maximise positive impacts.

The purpose of environmental risk assessments

- the content of an environmental risk assessment

- how environmental risk assessments are conducted

- the site factors that need to be incorporated into an environmental risk assessment (e.g. terrain, ground conditions, vegetation type, season, weather, proposed operations, management approach) their interrelationships and how they are managed.

Asset management

Types of assets including infrastructure (bridge), historical (e.g. ruin), functional (e.g. sluice)

- their characteristics

- assess management whole life cycle

- their location

- the contribution to national and organisations responsibilities and protection of communities

- how asset management contributes to management of

habitats and meeting management objectives. **Habitat management** How a site operates for managing habitats including - private and public realm considerations - logistics of transportation, access, delivery, storage, utilities, signage and use of people, materials and equipment - the importance of biosecurity and keeping a site clear, clean and environmentally sound - implications for the relationship with client/customer, public and other colleagues. Potential human-animal interactions encountered when undertaking surveys - possible effects of interactions on animals and humans - actions that can mitigate for negative impacts. Utilities that may be located in the environment - how they affect establishment plans and activities - information that can be used to locate them - legal requirements. Types of maintenance e.g. planned, reactive and their suitability for different situations and environments - the purpose of planned maintenance	

- the content and formats of planned maintenance programmes

- the process involved in developing maintenance programmes

- documentation required for maintenance and verification of maintenance activities.

Techniques (including soft engineering techniques) used to maintain and repair habitats (woodland, grassland, wetland), access routes (e.g. paths, gates), assets (e.g. culverts, sluices)

- how they are applied

- equipment and materials required and their suitability to meet sustainable and heritage management.

Resources and materials available which support the management of habitats

- their potential internal (i.e. within the habitat) and external (i.e. outside of the habitat) sources

- the benefits and limitations of sourcing internally and externally to sustainable development

- their suitability for meeting management objectives.

Business

Types of management objectives (commercial, conservation, recreation) and the types of activities undertaken to achieve them.

Organisations that can support habitat management, including those that can provide funding (e.g. Stewardship Council)

- the relevant responsibilities of all parties - the specialist skills they can provide - the benefits and limitations of wider teamwork. Types of relationships involved with managing habitats including with partners, category 1 responders, contractors, stakeholders and communities - implications for completing work efficiently and effectively - how relationships affect the reputation of the organisation - how relationships contribute to and affect meeting management objectives. **Legislation** Key requirements and restrictions of legislation (primary, secondary and byelaws) related to the management of habitats e.g. emergency situations (e.g. flooding) that require immediate habitat management, heritage assets - permissions required for management activities on different land designations. **Information and data** Types of information that can contributes to managing decision making e.g. management objectives, survey data - their characteristics - their sources - how they are used	

- their suitability for different purposes. Types of maps, their conventions and symbols - associated tools (e.g. compass, GPS) - how they are used to locate and navigate locations in different types of environments. Organisations that can support management decision making and the types of information and data they can provide. **Tools machinery and equipment** Tools, equipment and machinery (including vehicles) required for managing habitats - their characteristics and purposes - how they are operated and used accurately, efficiently and safely - how they are maintained including cleaning and storage - their suitability (including limitations e.g. potential for polluting the environment) for different tasks and locations involved in managing habitats.	

Performance Outcome 4: Facilitate public interaction with habitats

For the purpose of this performance outcome, the public refers to visitors to a managed habitat environment and volunteers. Students are expected to demonstrate skills engaging with both visitors and volunteers.

Knowledge Specific to Performance Outcome	Skills
Health and safety Typical hazards and risks associated with working in urban and countryside environments, including unfamiliar, unexpected and emergency environments and control measures to be put in place to mitigate these health and safety risks to protect self, colleagues and others (e.g. volunteers, public). Practical first aid techniques for use in situations when dealing with the public e.g. heart attacks, unresponsive after being submerged in water. **Environment** Conservation designations in the UK (e.g. National Nature Reserves, National Parks, listed buildings and structures) • their characteristics • benefits and limitations • legal requirements. Characteristics of habitat sites including: • water e.g. ditches, lakes • land including grassland, woodland, boundaries • flora and fauna • D.A.T.E.S (drainage, aspect, topography, exposure, situation) and microclimates	Use technology solutions available to communicate with others. Configure digital technology. Instruct others on habitat information e.g. health and safety, identifying flora and fauna. Demonstrate habitat management practices. Represent information and data using mathematical diagrams. Create digital media to enhance work. Control digital functions. Convey technical information orally to non-technical audiences. Create texts. Check understanding of others. Identify sources of information. Develop search criteria or questions to be answered. Monitor own performance and standards. Produce interpretation material. Assess the need for volunteer services. Allocate volunteers and associated resources to roles. Assess a situation for potential adverse effects.

• activities including business (livestock and arable farming, forestry) and leisure (e.g. rambling).	Convey information to an audience to stimulate discussion.
How habitats and vegetation are managed to promote conservation, amenity use and commercial value	Adapt style and tone to meet the needs of the message and audience.
• the different types of management used.	Model appropriate behaviours.
The principles behind how flora and fauna (both native and non-native) live and survive.	
Characteristics of ecosystems found in different landscapes (including wetlands, grassland, woodland environments)	
• key habitats and species encountered	
• how conservation work complements/interacts with other land management uses including recreational and commercial.	
Plant and animal classifications (including families, genera, species)	
• the format for scientific names according to the international code of nomenclature	
• characteristics and morphology that can be used to classify plants and animals	
• the techniques (e.g. observation, botanical keys) and information sources (e.g. internet and books) used to identify plants and animals	
• how the information is used to inform members of the public.	
Types of invasive, protected and dangerous plant and animal species (including those established by legislation) that can be encountered when the public interact with habitats	

- characteristics that enable identification in an environment - implications of finding invasive / protected / dangerous species in an environment - how to mitigate for invasive / protected/ dangerous species in an environment. The potential positive and negative environmental impacts of managing habitats including on flora, fauna, habitats (including human) - implications for existing flora, fauna and habitats - measures used to minimise and mitigate for negative impacts - measures used to maximise positive impacts. Requirements of habitats (including access to food, shelter, protection and mates for reproduction) - the abiotic (e.g. soil, moisture, light intensity) and biotic (e.g. presence or absence of predators, food sources) characteristics that provide these requirements - how these are identified and used when managing habitats. Resources and materials available which support a sustainable approach to the management of habitats and assets - their potential internal (i.e. within the habitat) and external (i.e. outside of the habitat) sources - the benefits and limitations of sourcing internally and externally to sustainable development	

- their suitability for meeting management objectives.

The principles of access management

- the legal status of a Right of Way and Open Access to the Countryside legislation

- different types of boundaries and their relationship to their locations, usage and site characteristics

- different types of surfaces (aggregate, paving, woodchip, pitching) and furniture/structures (such as gates, bridges, boardwalks, benches, bins) and their suitability for different areas and usage such as multi-user access paths

- best practice in design (e.g. path width, surface usability).

Asset management

Types of assets including infrastructure (bridge), historical (e.g. ruin), functional (e.g. sluice)

- their characteristics

- assess management whole life cycle

- their location

- the contribution to national and organisations responsibilities and protection of communities

- how this asset management contributes to management of the environment.

Techniques used to establish, maintain and survey woodland, grassland and wetland habitats and their application.

Site operations

How a site operates for managing habitats

including

- private and public realm considerations

- logistics of transportation, access, delivery, storage, utilities, signage and use of people, materials and equipment

- the importance of biosecurity and keeping a site clear, clean and environmentally sound

- implications for the relationship with client/customer, public and other colleagues.

Business

Types of relationships involved with managing habitats including with partners, contractors, stakeholders and communities

- how relationships affect the reputation of the organisation and the success of the operations at a local and national level.

The purposes of visitor interpretation including to stimulate change, explain ideologies, enhance knowledge

- related interpretive devices including people, media, objects, self-guiding tools, built structures

- complementary visitor management tools e.g. signage, trail design

- the significance and contexts to be included in any interpretation messages

- how to use tools, devices and message content to engage an audience.

How to convey organisational messages

- to influence others

- to promote awareness with the public and stakeholders

- to enhance the business reputation

- formats used to convey messages and how images and diagrams can enhance a message

- tools and technology available to use to communicate with a range of people e.g. social media, e-mail, digital applications.

Volunteers

Typical roles undertaken by volunteer to contribute to achieving operational outcomes

- the costs, benefits and limitations of using volunteers to contribute to achieving operational outcomes

- techniques used to promote volunteering opportunities and recruit volunteers

- typical induction and training programmes used to support volunteers to carry out their roles

- techniques used to brief and inform volunteers (including small and large groups) on their roles

- techniques used to motivate individual and groups of volunteers.

Legislation

Key requirements and restriction of legislation (primary, secondary, byelaws) related to public interaction with habitats e.g. employment, rights of way and access routes.

Information and data

Types of maps, their conventions and symbols

• associated tools (e.g. compass, GPS) • how they are used to locate and navigate locations in different types of environments. **Tools, machinery and equipment** Tools, equipment and machinery (including vehicles) required for managing habitats • their characteristics and purposes • how they are operated and used accurately, efficiently and safely • how they are maintained including cleaning and storage • their suitability (including limitations e.g. potential for polluting the environment) for different tasks and locations involved in managing habitats.	