L E V E L T W O

Edexcel Diploma in Environment and Land-based Studies Unit 2.1

Sample Assessment Materials

Unit 1
Environmental influences upon ecosystems and production zones

INTRODUCTION

This Sample Assessment Material is intended to provide centres with advice and guidance on the setting and assessment of learner assignments for the above mentioned Diploma unit. It is structured as follows:

1. Advice to tutors
2. 'How you will be assessed'
3. Example of a learner assignment brief
4. Advice to assessors
5. Marking grids
6. Evidence structure

Further advice on the delivery and assessment of the Edexcel Diploma is provided in the Unit Specifications and Tutor Support Materials.

Sector relevant purpose

The ability to understand the principles of ecology is essential to the success of most environmental and land-based enterprises. The collection, interpretation and communication of data and recommendations drawn from findings is central to decision making and to the subsequent management of ecosystems and of environmental and land-based enterprises.

Tutors have the opportunity to identify a range of habitats that their learners could study within the chosen region. These may be linked directly to work that environmental and land-based organisations currently undertake.

1 ADVICE TO TUTORS

The requirements for the assessment of Diploma internally-assessed units are set down in the respective units, and tutors are advised to familiarise themselves with these. A copy of the assessment requirements for this unit is reproduced in section 2, below.

Experiential learning

The use of experiential learning techniques is fundamental to the concept of the Diploma, and tutors should maximise the use of 'do, review, re-do' opportunities when learners or working through their assignments. Learners will benefit from regular and structured feedback.

Personal learning and thinking skills

In addition to the specific requirements of the unit the tutor should ensure that opportunities are not missed for the development and enhancement of Personal Learning and Thinking Skills (PLTS), which underpin the Diploma concept.

Learner assignments for internal assessment should be treated as a vehicle through which these important generic skills can be delivered and reinforced, and in a context that is relevant both to the sector and to learner level.

Functional skills

The performance of the assessment tasks should also be treated as a vehicle through which Functional skills can be evaluated and reinforced, in a context that is relevant both to the sector and to the learner. The use of formative assessment techniques and mentoring aid learner development in these important skill areas is strongly encouraged.

The assignment brief

For this unit the centre needs to have access to appropriate habitats where the learners undertake fieldwork. It should be possible for any centre in any location to find some area which is suitable.

The land use decision around which the assignment must be built could be in relation to any from the Lantra SSC 'footprint', for example, agriculture, forestry, horticulture, recreation or fishery management

The planning and fieldwork work must be carried out in groups but weather data must be recorded individually. All other aspects of the assignment must be carried out individually.

Learners should be encouraged to explore the interactions between species in the countryside with minimal input from the tutor and with minimal disturbance to the habitat.

2 'HOW YOU WILL BE ASSESSED'

The assignment is based upon you planning and undertaking a survey of an environment to determine the influences on plant and animal habitats and land use and to support decision making.

You must plan and carry out environmental fieldwork and monitoring using appropriate methods, working with others and reviewing your progress on the way.

You will present your conclusions in order to support given land use decisions and include:

- key habitat features including physical features, level of biodiversity, energy flows, nutrient cycling, succession and species interactions
- topographical, climatic and weather influences on land-use and ecosystems
- climate change influences on land-use and ecosystems.

You will need to use reasoned arguments and evidence in the presentation of your findings.

Assessment

The evidence requirements are shown in the marking grids. These will be used by your tutor when marking your completed work. Your tutor will decide which mark band should be applied to your work for each area of assessment focus. This will be on the principle of best fit and, for example, work may be classified as mark band 2 despite aspects of the work falling into mark band 1 and other areas of the work falling into mark band 3.

To improve your marks and move across the mark bands from band 1 to band 3 your work will have to generally increase in depth and complexity with more description, reasoning and justification as you move across the mark bands.

3 EXAMPLE OF A LEARNER ASSIGNMENT BRIEF

Environmental and Land-based Studies Diploma Principal Learning

Level 2: Unit 1 – Environmental Influences Upon Ecosystems and Production Zones

Assignment title: Habitat surveys and decision making

Advice to learners

When producing work for this unit you should:

- plan your work and agree appropriate timescales with your tutor
- give periodic updates on your progress to him/her
- demonstrate commitment, initiative and teamwork during your work.

Your tutor will divide the class into groups to undertake the planning element and the fieldwork. Data relating to the weather must be recorded by each individual. Other data may be recorded as a group or by each individual. All other work relating to this assignment must be that of the individual and not undertaken in groups.

You will be required to present your conclusions to staff from the Park and from the Diploma consortium.

Health and safety considerations must be covered by your tutor with you before you start any practical work. This MUST include risk assessment and the provision of appropriate personal protective equipment (PPE).

Introduction

The ability to understand how the ecology of a land-based system works is essential to the success of most environmental and land-based enterprises.

The collection, interpretation and communication of data and recommendations drawn from findings is central to decision making and to the subsequent management of ecosystems and of environmental and land-based enterprises.

This assignment is the culmination of the work we have been doing for this unit.

We have already had staff from the Sustainable Country Park visit us to talk about their work, the objectives for the park and the methods they use.

This assignment will require us to visit the Park and to survey parts of it before using the data you have collected to draw appropriate conclusions to help them with their decision making.

Scenario

This is a real situation. The Park has been identified by the local authority as the site for their new land-based horticultural training unit for disabled and disadvantaged learners.

It is their intention to build a 30 metre x 15 metre x 4 metre horticultural glasshouse next to an area (50 metres by 40 metres) to be used for growing-on some of the plants produced in the glasshouse.

They wish to use existing topsoil for the growing media in both the glasshouse and the outdoor growing areas.

Currently they wish to grow a range of foods in the greenhouse which will be transplanted into the outdoor growing area. Tomatoes, courgettes, lettuces, cabbages and maize have

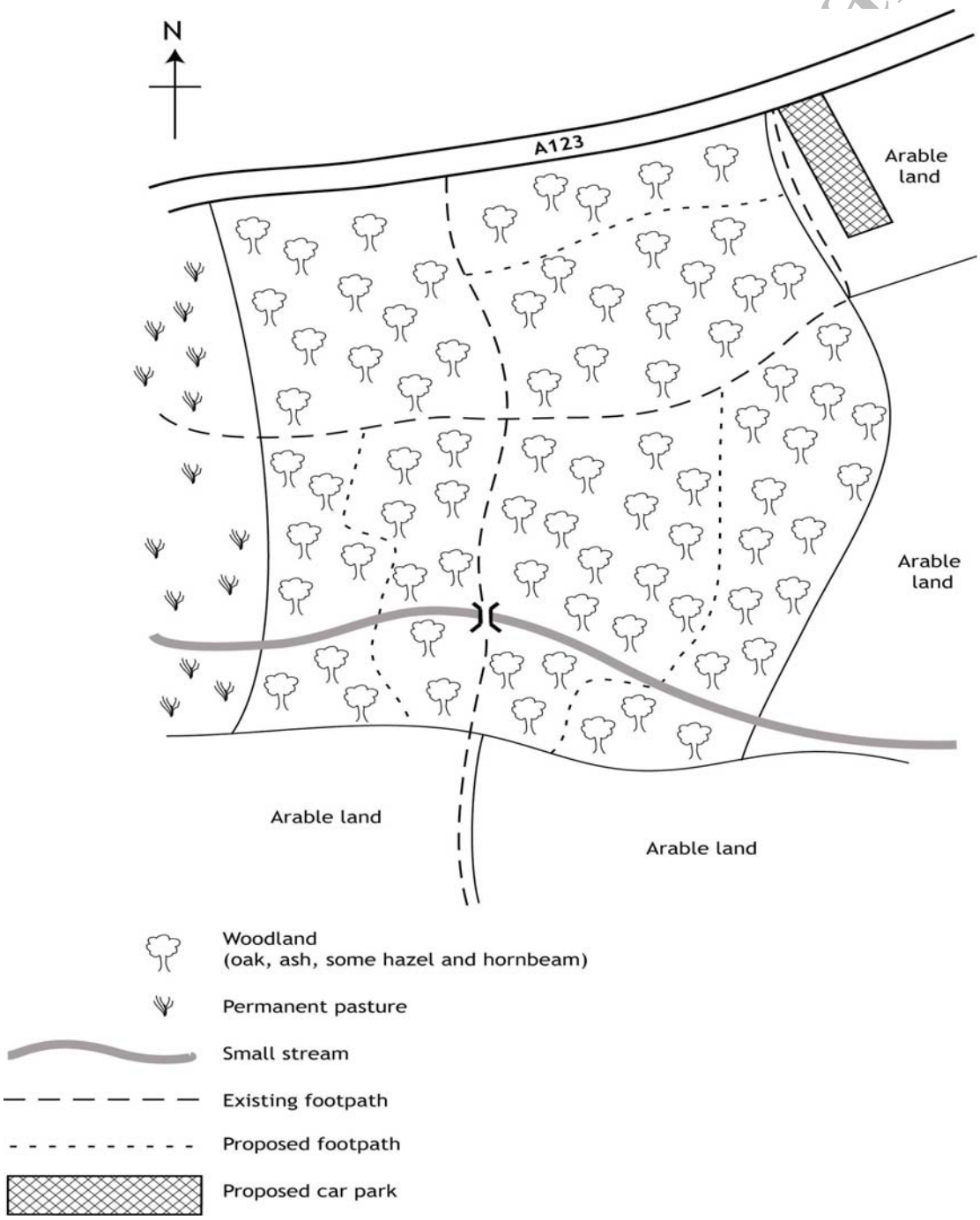
been considered. They also wish to grow some more delicate plants and keep them in the glasshouse. Peppers, melons and cucumbers have been discussed.

Planning permission is not expected to be a problem, neither is funding for the project. Staffing of the facility will be covered by the local authority parks and education departments.

The project will require suitable access, parking, services (electricity, gas, water and drainage) and security. Toilet facilities will also be required. You do NOT need to consider these within your assignment.

The Park is large, covering some 182 hectares (ha) [450 acres]. We will be working on the northern edge of the Park, in a site that covers approximately 12 ha. (see Map 1).

Fortunately part of the management plan for this area of woodland is to clear fell the existing trees and to use them for timber production in a sustainable context.



Scale (approx) 1cm:10m Map1 : Sustainable Country Park – Assignment Study Area

The Park staff have been asked to make a choice regarding the siting of the unit. They can either position it adjacent to either the east or west of the proposed car park.

You have been asked to produce detailed ecological information regarding these two sites and to make a recommendation to the Park as to which site should be developed.

You will be given equipment to use to identify and record ecological data and identification keys that will cover the site's flora and fauna. This equipment will include portable weather stations that will provide weather data over the period between our visits.

You can use whatever sources of relevant information to help you that you can access. References, including personal communications, to the sources of information that you use should be included in your evidence. Your tutor will be able to advise you as to which websites are most useful as an introduction to this assignment.

Task 1

In order to understand how the ecology of the system works you will visit the site twice with the class. These will be full day visits so you will be expected to bring all weather clothing and enough food and drink for the day.

Your tutor will divide the class into groups. Once this has been done you will be given time to prepare and agree a plan of action (with timescales and resource requirements) with your colleagues and tutor.

You must collect data and information on:

- the key features of the habitats
- identification of the key plant and animals that live in the habitats
- environmental measurements:
  - soil (texture, pH, N-P-K tests)
  - weather (rainfall, minimum and maximum soil and air temperatures, wind speed and direction, sunlight) *
  - water measurements (relevant chemical, physical and biotic sampling) –this will be from the water supply already in existence at the site.

* Remember that you will be required to record the weather data you use yourself but you can use other data collected by your group.

Task 2

You are required to produce evidence which explains how the topography, climate and weather will influence the proposed developments.

You will be expected to:

- analyse how the land use and ecosystems have been influenced by the topography, soils and climate using reasoned arguments and evidence

- provide an evaluation of real and/or potential changes to ecosystems caused by climate change (remember that this should be global climate change rather than artificial climate change caused by the glasshouse)

Task 3

In order to support the given land-use decision you will provide evidence (which you will produce individually) which will include descriptions of the key features of the habitat including maps that show the location of the site and sampling areas.

You need to identify and classify the plant and animal species present in these habitats.

You will produce examples of the recorded plants present in the habitats which are annotated to show their identifying features. Remember you should not pick and press these. They must either be annotated drawings or photographs with annotations.

Your evidence will also include information sheets on the recorded animal species present in the habitat with pictures of the animal.

Finally, you will also be required to provide a description of the biodiversity and succession in the habitats you have studied.

Task 4

Add to your evidence the individually recorded environmental data measurements, including soil types.

Present them using appropriate methods, eg graphs and tables, and interpret the results by drawing appropriate conclusions as to the habitat's biodiversity.

Task 5

Produce evidence to describe how one of the nutrient cycles occurs within the habitat, this should be pictorial and show clearly where the nutrients are stored and converted.

You should also present a complex food web for one of the habitats and show how energy moves throughout this habitat.

Task 6

You will be required to communicate your evidence to your peers, tutor and to Park staff.

You should concentrate on answering two questions:

1. Which of the two sites is better suited to the development and why?; and
2. Will it be possible to use the existing soils for the growing media?

ADVICE TO ASSESSORS

The learners will be expected to plan their work related to this assignment in order to meet the centre submission deadline for the completed work.

The tutor should follow guidelines set in the unit and in Annexe E of the specification.

When dividing the class into groups care must be taken to ensure that this is done as equitably as possible.

The tutor should meet the learners to discuss the learners proposed schedule and ensure that the schedule includes regular review meetings. The tutor will review progress and discuss the content of the work providing feedback to learners in order for them to reflect on their work and provide any additional work to improve the content.

Tutors should provide learners with an introductory list of resources, including websites, that they can use to carry out the preliminary work for this assignment.

For Task 1

Learners will visit the site twice.

Learners will be expected to approach field work in a responsible and professional manner, taking care to record data and store it appropriately.

Learners should show knowledge of the key features present within the habitat. The learner should become proficient with dichotomous keys for the identification of plant species and show an understanding of the important features used to identify plants.

Animal can be identified not only by sightings but also by signs of their presence such as tracks, feeding signs, faeces and nests/holes. Learners should have ample opportunity to explore the site to find such evidence.

Learners should dig soil pits and collect samples to use for analysis which may be carried out in the field or in a laboratory. They will be expected to carry out pH and N-P-K testing and draw conclusions about the type and quality of the soils. Health and safety must be addressed before any fieldwork is carried out.

Learners are required to undertake basic weather recording and water quality sampling using simple equipment. This work must be carried out in groups but weather data must be recorded individually.

For Task 2

Learners are expected to research the site to find out about it's topography, soils, water resources and climate. They will also research the main habitats and land uses for the site and they should be able to show a good understanding of how topography, soils, water resources and climates have affected the habitats and land uses that are present.

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For Task 3

Learners should present evidence which interprets the data and information collected for Tasks 1 and 2. The evidence should include maps of the habitat and the recorded plant and

animal species found. Learners must also outline the principles of biodiversity and succession.

For Task 4

All of the environmental data collected should then be presented appropriately and interpreted using the knowledge they have gained from the first 3 tasks. The site's biodiversity and succession should be considered.

For Task 5

Learners must consider how nutrients cycle and how energy flows throughout one of the habitats. They will be expected to research the different species found in the habitat for Assessment Focus 1 and can then use this information to assist the completion of a food chain for this assessment.

For Task 6

Learners must finally communicate their evidence and conclusions in appropriate forms for different audiences. Tutors should indicate at least two types of audience for each learner.

Websites

www.bbc.co.uk/nature	BBC Nature
www.bbc.co.uk/gardening	BBC Gardening
www.constructionskills.net	ConstructionSkills is the Sector Skills Council for construction
www.defra.gov.uk	Department of environment, food and rural affairs
www.euskills.co.uk	Energy & Utility Skills in Action
www.environment-agency.gov.uk	The Environment Agency
www.face-online.org.uk	Farming and Countryside Education
www.field-studies-council.org	Field Studies council
www.improveltd.com	Improve is the Sector Skills Council for Food and Drink Manufacturing and Processing across the UK and part of the Skills for Business Network
www.landex.org.uk	Land Based Colleges Aspiring To Excellence
www.lantra.co.uk	Lantra is the Sector Skills Council for the environmental and land-based sector
www.lbcnc.org.uk	Land Based Colleges National Consortium
www.metoffice.gov.uk/climate/uk	Met Office website
www.naturalengland.org.uk	Natural England, conservation group

www.skillsactive.com	Skills Active is the Sector Skills Council for Active Leisure and Learning
www.wildlifetrust.org	Wildlife trust

5 MARKING GRID (Reproduced from the unit)

Marking grid A

Assessment focus	Mark Band 1	Mark Band 2	Mark Band 3	Maximum marks available
LO.1.1 Know fundamental principles of ecology	Describes an example of habitat dynamics, biodiversity and succession	Describes in detail an example of habitat dynamics, biodiversity and succession	Thoroughly describes an example of habitat dynamics, biodiversity and succession	
	(0-4)	(5-7)	(8-10)	10
LO.1.2 Know fundamental principles of ecology	Identifies and classifies some plant and animal species in a habitat	Identifies and classifies the majority of plant and animal species in a habitat	Identifies and classifies most plant and animal species in a habitat	
	(0-3)	(4-5)	(6-7)	7
LO.2.1 Understand how physical factors influence natural and managed environments	Analyses how topography, climate and weather influence environments with limited relevance to research carried out	Analyses how topography, climate and weather influence environments with detailed relevance to research carried out	Analyses how topography, climate and weather influence environments with clear and detailed relevance to research carried out	
	(0-3)	(4-5)	(6-7)	7
LO.2.2 Understand how physical factors influence natural and managed environments	Gives an evaluation of potential changes to environments caused by climate change	Evaluates in detail potential changes to environments caused by climate change	Thoroughly evaluates potential changes to environments caused by climate change	

Assessment focus	Mark Band 1	Mark Band 2	Mark Band 3	Maximum marks available
	(0-3)	(4-5)	(6-7)	7
LO.3.1 Be able to survey habitats to support decision making	Produces a basic plan for a habitat survey	Produces a detailed plan for a habitat survey	Produces a clear and detailed plan for a habitat survey	
	(0-4)	(5-7)	(8-10)	10
LO.3.3 Be able to survey habitats to support decision making	Produces some interpretation of environmental data of the time	Produces detailed interpretation of environmental data	Produces detailed and clear interpretation of environmental data	
	(0-4)	(5-7)	(8-10)	10
LO.3.4 Be able to survey habitats to support decision making	Communicates conclusions in relevant ways for different audiences	Communicates appropriate conclusions in relevant ways for different audiences	Communicates clear and appropriate conclusions in relevant ways for different audiences	
	(0-3)	(4-5)	(6-7)	7
			Total marks for Grid A:	58

Marking grid B

Assessment focus	Mark Band 1	Mark Band 2	Mark Band 3	Maximum marks available
LO.3.2 Be able to survey habitats to support decision making	Uses appropriate survey methods demonstrating limited initiative and commitment whilst working collaboratively with others	Uses appropriate survey methods demonstrating frequent initiative and commitment whilst working collaboratively with others	Uses appropriate survey methods demonstrating consistent initiative and commitment whilst working collaboratively with others	
	(0-4)	(5-7)	(8-10)	10
LO.3.5 Be able to survey habitats to support decision making	Reviews progress and acts on outcomes	Reviews progress in a detailed manner and acts on outcomes	Reviews progress thoroughly and acts on outcomes	
	(0-3)	(4-5)	(6-7)	7
			Total marks	17
			Total marks for Grid A + B	75

6 EVIDENCE STRUCTURE

Evidence structure

Learning outcome	Marking grid	Activity/section	Evidence
LO.3	A	Planning fieldwork and research	Written/recorded evidence, field log/ diary including diagrams, graphs or charts etc where necessary AC3.1
LO.3	B	Carrying out fieldwork and research	Learner observation records AC 3.2
LO.3	A	Processing results	Written/recorded evidence, field log/ diary including diagrams, graphs or charts etc where necessary AC3.3
LOs.1, 2, 3	A	Presenting appropriate conclusions to support decision making	Written/recorded evidence, field log/ diary including diagrams, graphs or charts etc where necessary AC1.1, AC1.2, AC2.1, AC2.2, AC3.4

Unit summary

Learning outcome number	Learning outcome The learner should:	Assessment criteria The learner can:
LO.1	Know fundamental principles of ecology	1. Describe habitat dynamics, biodiversity and succession 2. Identify and classify plant and animal species
LO.2	Understand how physical factors influence environments	1. Analyse how physical factors influence environments using reasoned arguments and evidence [IE 6] 2. Evaluate real and/or potential changes to ecosystems caused by climate change
LO.3	Be able to survey habitats to support decision making	1. Plan habitat surveys[IE2, TW2] 2. Use survey methods, showing initiative and commitment, whilst working collaboratively with others [SM2, TW1] 3. Interpret environmental data 4. Communicates conclusions in relevant ways for different audiences[RL6] 5. Review progress and act on outcomes [RL3]

PLTS: This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills which are embedded in the assessment of this unit. By achieving the criteria, learners will have demonstrated effective application of the referenced elements of the skills. *Annexe B* of this document lists the personal, learning and thinking skills and their elements.