

**MANAGING ENVIRONMENTAL
RESOURCES
Intermediate 1**

Fifth edition - published July 2002

**NOTE OF CHANGES TO ARRANGEMENTS
FIFTH EDITION PUBLISHED JULY 2002**

COURSE TITLE: Managing Environmental Resources (Int 1)

COURSE NUMBER: C055 10

National Course Specification:

Course Details: No Changes

National Unit Specification:

All Units:

Statement of Standards

Wording of Outcome 3 changed to refer to Intermediate 1 Managing Environmental Resources instead of the title of the unit.

Evidence requirements of Outcome 3 changed to refer to the context of the report being within Intermediate 1 Managing Environmental Resources instead of within the context of each unit.

Support Notes

Guidance on Approaches to Assessment for the units includes additional guidance which emphasises the need to produce only one report across the course and that a report from one unit may be used as evidence for Outcome 3 for the other units.

National Course Specification

MANAGING ENVIRONMENTAL RESOURCES (INTERMEDIATE 1)

COURSE NUMBER C055 10

COURSE STRUCTURE

This course comprises three mandatory units:

<i>D309 10</i>	<i>Environmental Issues (Int 1)</i>	<i>1 credit (40 hours)</i>
<i>D310 10</i>	<i>Ecosystems (Int 1)</i>	<i>1 credit (40 hours)</i>
<i>D311 10</i>	<i>Land Use (Int 1)</i>	<i>1 credit (40 hours)</i>

In common with all courses, this course includes 40 hours over and above the 120 hours for the component units. This is for induction, extending the range of learning and teaching approaches, support, consolidation, integration of learning and preparation for external assessment. This time is an important element of the course and advice on its use is included in the course details.

Seasonality should be borne in mind when deciding on the order of delivery of the units.

Administrative Information

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National Course Specification: course details (cont)

COURSE Managing Environmental Resources (Intermediate 1)

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained one of the following:

- Standard Grade Biology, grade 5, 6 or 7
- Standard Grade Chemistry, grade 5, 6 or 7
- Standard Grade Geography, grade 5, 6 or 7
- Standard Grade Physics, grade 5, 6 or 7
- Standard Grade Science, grade 5, 6 or 7
- appropriate Access 3 units.

CORE SKILLS

Core skills for this qualification remain subject to confirmation and details will be available at a later date.

Additional information about core skills is published in the *Catalogue of Core Skills in National Qualifications* (SQA, 2001).

National Course Specification: course details (cont)

COURSE Managing Environmental Resources (Intermediate 1)

RATIONALE

This course will provide a mainly practical approach to the management and use of environmental resources by considering environmental issues and land use in a local context. It will foster an interest in the well-being and care of the environment while preparing individuals for possible employment in the land and environment sector. It will contribute to the candidate's general education by emphasising the importance of an overall knowledge and understanding of one's surroundings, attitudes, values and behaviour related to sustainable practice at a time when environmental education in general is becoming increasingly important.

Delivery will concentrate on interactions with relevant local environmental activities and will contribute significantly to vocational training and raising awareness of employment opportunities in the land and environment sector. This course will be an appropriate foundation for additional units relating to particular aspects of the land- and water-based industries such as agriculture, aquaculture, conservation, forestry and horticulture.

The course will help to develop the candidate's scientific knowledge and experience by encouraging a consideration of the principles of ecological relationships. This will be achieved through the study of familiar local examples.

COURSE CONTENT

The course consists of three mandatory units. Each unit reflects one of the strands running through all Managing Environmental Resources courses (natural resources, ecological studies and land use).

Although each unit provides consideration of one aspect of the environment, this is enhanced when the units are taken as components of the course. The course provides a holistic approach to the care and responsible use of environmental resources and develops relevant knowledge and understanding, problem-solving and practical abilities.

The following tables indicate the content and suggested learning activities through which knowledge and understanding, problem solving and practical abilities are to be developed. The Content Section (which indicates the broad themes that must be covered) and the Notes section (which provides amplification) provide the mandatory content of the course. Suggested Learning Activities are shown in the right-hand column.

National Unit Specification: course details (cont)

Unit 1: Environmental Issues (Intermediate 1)

Introduction

This unit is designed to encourage candidates to become more environmentally responsible by developing a knowledge and understanding of the environment as a whole. The effects of human activity on the environment will be considered by a study of local issues and their consequences in local, national and global contexts. Consideration will also be given to the protection of the environment. Candidates should be encouraged to develop personal and interpersonal skills, which will increase their ability to make informed decisions relating to the environmental issues.

CONTENT	NOTES	SUGGESTED LEARNING ACTIVITIES
<p>1 Types of environment.</p> <p>2 Effects of human activity on the local environment.</p>	<p>Types of environment:</p> <ul style="list-style-type: none"> • natural • semi-natural • built <p>The environment includes landscapes, habitats, plants, animals and people together with the non-living elements such as water and air. These all interact within an environment.</p> <p>The effect of pollution from:</p> <ul style="list-style-type: none"> • transport • industry • agriculture and • home <p>on air, land, water, buildings and living things.</p> <p>The use of renewable resources in:</p> <ul style="list-style-type: none"> • energy production • forestry • fishing <p>and the benefits/problems encountered.</p>	<p>Identify a number of examples which help develop the concept of the whole environment and its interactions. Visit local environments, use library resources, media articles, and information technology.</p> <p>Carry out environmental surveys of the local area to identify local pollution problems. Investigate a local pollution problem eg pollution effect on roadside plants, traffic noise, river study. Carry out investigation of national pollution issues. Devise and suggest possible solutions.</p> <p>Investigate arguments for and against the use of renewable and non-renewable resources. Visit a wind farm, fish farm, forest. Compile a report on one local or national example of renewable versus non-renewable resources.</p>

National Unit Specification: course details (cont)

Unit 1: Environmental Issues (Intermediate 1)

CONTENT	NOTES	SUGGESTED LEARNING ACTIVITIES
<p>2 (continued)</p>	<p>The effects of human activity on biodiversity through studying changes in Scotland, namely:</p> <ul style="list-style-type: none"> • wetland • native woodland • moorland <p>Emphasis on the loss of biodiversity by studying individual species that are under threat of local or national extinction:</p> <ul style="list-style-type: none"> • water vole and lapwing in wetland • red squirrel and capercaillie in native woodland • corncrake and <i>Primula scotica</i>. 	<p>Design an advertising campaign to discourage the use of non-renewable resources eg use of wood in DIY/construction.</p> <p>Guest speaker discussing local/national issues.</p> <p>Compile a report on a local/national example of reduction of biodiversity.</p>
<p>3 Effects of human activity on the global environment.</p>	<p>The contribution of human activity to:</p> <ul style="list-style-type: none"> • global warming • acid rain • ozone depletion <p>and the main effects on the global environment:</p> <ul style="list-style-type: none"> • global warming - changing climate and rising sea levels • acid rain - habitat destruction and death of wildlife • ozone depletion - increase in UV radiation and thus skin cancer. <p>The contribution of human activity to loss of biodiversity through:</p> <ul style="list-style-type: none"> • habitat damage/loss on a global scale: <ul style="list-style-type: none"> rainforest seas • potential species extinction globally: <ul style="list-style-type: none"> giant panda blue whale 	<p>Carry out investigations into the effects of global warming/acid rain/ozone depletion on the global environment.</p> <p>Video/guest speaker discussing potential extinction of species.</p>

National Unit Specification: course details (cont)

Unit 1: Environmental Issues (Intermediate 1)

CONTENT	NOTES	SUGGESTED LEARNING ACTIVITIES
<p>4 Initiatives for the protection of the environment.</p>	<p>Initiatives relating to the concept of sustainable development at each of the following levels and including:</p> <ul style="list-style-type: none"> • Local - waste reduction schemes to include bottle banks, can banks and composting schemes. • National - initiatives related to biodiversity to include the Millennium Forest for Scotland and Environmentally Sensitive Areas. • International - the 'Earth Summit' (UNCED), Rio, 1992. 	<p>Guest speakers, video and media presentations on sustainable development.</p> <p>Study local examples to illustrate good practice in the use of renewable sources eg forestry, fishing, energy production.</p> <p>Design a campaign for recycling to support sustainable development.</p>
<p>5 Organisations for the protection of the environment.</p>	<p>An understanding of the role of one organisation for the protection of the environment at each of the following levels</p> <ul style="list-style-type: none"> • Local - an appropriate local organisation (voluntary or paid staff) whose work focuses on the local environment (eg Ranger Services, Community Woodland Trusts, Red Alert groups etc) • National - Scottish Environmental Protection Agency (SEPA) • International - World Wide Fund for Nature (WWF) 	<p>Interview a local ranger, or representative from a local environment organisation.</p> <p>Visit SEPA website</p> <p>Design an advertising campaign/poster for WWF.</p>

National Unit Specification: course details (cont)

Unit 1: Environmental Issues (Intermediate 1)

CONTENT	NOTES	SUGGESTED LEARNING ACTIVITIES
6 Legislation for the protection of the environment.	<p>An example of one piece of legislation for the protection of the environment at each of the following levels:</p> <ul style="list-style-type: none">• Local - an appropriate example of local byelaws to fulfil a local environmental protection need (eg relating to fishing, litter, nature reserves etc)• National - Wildlife and Countryside Act, 1981• International - fishing quota.	<p>Visit local sites where legislation has been used to protect the local environment.</p> <p>Investigate other national examples eg SSSI where legislation has been used to protect the environment.</p> <p>A debate on the use of fishing quotas - why these are set by EU legislation rather than individual countries, Habitats Directive.</p>

National Unit Specification: course details (cont)

Unit 2: Ecosystems (Intermediate 1)

Introduction

The approach in this unit will be predominantly investigative. The candidate's knowledge and understanding of simple ecosystems will be developed through basic scientific principles of observation, recording and drawing conclusions. Through this approach the candidate will be introduced to physical and biological components of ecosystems, how these can be recorded and how they influence one another. The unit will also aim to promote enjoyment and understanding of the natural world.

CONTENT	NOTES	SUGGESTED LEARNING ACTIVITIES
<p>1 Inter-relationships of an ecosystem.</p>	<p>An ecosystem is the interaction between the habitat and the community.</p> <p>The place of producers, consumers, herbivores, carnivores, omnivores and decomposers in the food chains and simple food webs.</p> <p>Energy flow and loss in food chains.</p> <p>The sun as the energy source.</p>	<p>Study a range of ecosystems by practical investigation eg tree, pond, leaf litter, rock pool, stream.</p> <p>Construct a worm composting bin or set up an aquarium.</p> <p>Investigate simple food chains and simple food webs to identify examples of producers and consumers.</p> <p>Construct food chains and food webs from studies of an ecosystem.</p>
<p>2 The physical components of an ecosystem.</p>	<p>The effects of abiotic factors on the distribution of organisms, to include temperature, light intensity, and pH and water content of soil.</p> <p>Methods of measuring and recording these abiotic factors.</p>	<p>Measure abiotic factors in a selected ecosystems.</p> <p>Design and carry out an investigation into the effect of abiotic factors on the distribution of organisms eg light intensity on plant species.</p>

National Unit Specification: course details (cont)

Unit 2: Ecosystems (Intermediate 1)

CONTENT	NOTES	SUGGESTED LEARNING ACTIVITIES
3 Biological components of an ecosystem.	Living organisms in an ecosystem should be observed, counted and identified. Methods of collection should include pitfall traps, nets and tree beating. Methods of counting to include quadrats. Construct and use simple keys to identify organisms. Importance of biodiversity in ecosystems.	Practical investigations in a range of ecosystems, using a variety of collection techniques. eg Soil ecosystems Tree ecosystems Fresh or salt water ecosystems. Compile a report of a practical investigation.

National Unit Specification: course details (cont)

Unit 3: Land Use (Intermediate 1)

Introduction

This unit is designed to familiarise candidates with land and water as the principal environmental resources, and with the ways in which they are used and managed in the local area. Candidates should develop knowledge and understanding of the principal features of a local land- or water-based industry and the factors influencing the relevant production processes. The contribution of relevant activities to the local community and economy will be considered.

It should be noted that the unit title 'Land Use' embraces water use. Candidates are expected to cover the broad features of both land and water use in (1), but at (2), (3) and (4) may select either land or water examples.

CONTENT	NOTES	SUGGESTED LEARNING ACTIVITIES
1 Principal features of local land and water use.	The range of local land and water uses, to include farming, fish farming, forestry, parks and gardens, electricity generation, housing, transport, conservation and tourism. Methods of production, range of products, distribution and marketing, employment, effects on the environment as appropriate.	Carry out a survey of local land and water uses using maps, questionnaires, photographs and statistical information.
2 Requirements of a local land or water-based industry.	Physical requirements to include buildings, machinery, energy, equipment, raw materials. Labour requirements to include permanent, temporary and seasonal staff.	Make a site visit and carry out practical activities to gain familiarity with the requirements of a land or water-based industry.
3 Factors influencing land or water-based industries.	Site location; climatic constraints; planning controls and environmental protection measures; conservation designations to include Sites of Special Scientific Interest and Special Protection Areas; incentive schemes to include Environmentally Sensitive Areas and the Countryside Premium Scheme.	Collect information from local or school/college library on locally relevant controls, measures, designations, incentive schemes and grant awarding bodies.
4 The role of land or water-based industries in the local economy.	Impact on employment, transport infrastructure, housing, service industries. Examples should be considered from a positive and a negative point of view.	Collate information from newspapers and/or magazines on the pros and cons of the impact a land or water-based industry has on the local community.

National Course Specification: course details (cont)

COURSE Managing Environmental Resources (Intermediate 1)

ASSESSMENT

To gain the award of the course (Managing Environmental Resources Int 1), the candidate must achieve all the component units of the course as well as the external assessment. External assessment will provide the basis for grading attainment in the course award.

When units are taken as component parts of a course, candidates will have the opportunity to demonstrate achievement beyond that required to attain each of the unit outcomes. This attainment may, where appropriate, be recorded and used to contribute towards course estimates and to provide evidence for appeals. Additional details are provided, where appropriate, with the exemplar assessment materials. Further information on the key principles of assessment are provided in the paper *Assessment*, published by HSDU in May 1996.

DETAILS OF THE INSTRUMENT FOR EXTERNAL ASSESSMENT

The instrument for external assessment is the external course examination which will sample across the outcomes of all the component units and will consist of a one and a half-hour paper worth approximately 80 marks. The paper will contain structured questions and short answer questions. Candidates will be expected to answer all questions.

The knowledge and understanding, problem solving and practical abilities will be based upon the course content described in the Content and Notes sections in the tables of content. The paper will also include questions set in contexts that are less familiar and more complex than those assessed in the units.

GRADE DESCRIPTIONS

Grade description for C

Candidates demonstrating performance at grade C will have achieved the component units of the course. In addition, in the course assessment candidates should be able to demonstrate the ability to:

- retain knowledge and skills over a longer period of time
- integrate knowledge and understanding, problem-solving and practical abilities acquired across component units.

Grade description for A

In addition, candidates at grade A should be able to demonstrate the ability to apply knowledge and understanding, problem-solving and practical abilities in contexts less familiar and more complex than in the unit outcomes.

The overall assessment proposed for the course, ie the combination of internal and external assessment, should provide the necessary evidence for the core skills where an automatic award is proposed. Confirmation of this will be provided at a later date.

National Course Specification: course details (cont)

COURSE Managing Environmental Resources (Intermediate 1)

APPROACHES TO LEARNING AND TEACHING

Suggestions for appropriate learning activities are contained within the Tables of Content. These activities, together with the use of relevant support materials, will provide opportunities for active learning. An investigative approach should be encouraged. Such an approach draws heavily on practical work and should provide opportunities to develop individual and group research using a variety of resources alongside the more traditional approaches of whole-class teaching. Although individual evidence of attainment of all learning outcomes is a prerequisite for each candidate, group activities can enhance the value of investigative work and foster personal, interpersonal and organisational skills.

There are opportunities for interaction with the local community in investigative work. Local experts and visiting speakers should be used as appropriate to enhance these learning experiences. Site visits should play an important part in the delivery of all component units. This practical work could provide one way of delivering the requisite knowledge and understanding. Practical investigations should be used to develop problem-solving and practical skills and not just to provide evidence for the purposes of internal assessment.

Use of the additional 40 hours

This time may be best distributed throughout the duration of the course. It should be used:

- to provide an introduction to the course and to assessment methods
- to allow more practical work to be undertaken
- to allow the integration of knowledge and understanding from separate units to enhance the learning experience
- to allow further development of interpretation and problem-solving skills
- to practise applying knowledge and understanding, problem-solving and practical abilities in contexts more complex than in the units
- for support in particular aspects of units in which candidates require to be reassessed
- to practise techniques in answering the more challenging questions associated with the course assessment
- to prepare candidates for external examination conditions.

Arrangements should be made to ensure that there will be no artificial barriers to learning and assessment. The nature of a candidate's special needs should be taken into account when planning learning experiences and selecting assessment instruments. Alternative arrangements can be made as necessary.

National Course Specification: course details (cont)

COURSE Managing Environmental Resources (Intermediate 1)

SPECIAL NEEDS

This course specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment Arrangements* (SQA, 2001).

National Unit Specification: general information

UNIT	Environmental Issues (Intermediate 1)
NUMBER	D309 10
COURSE	Managing Environmental Resources (Intermediate 1)

SUMMARY

This unit seeks to develop environmental awareness in the context of Managing Environmental Resources. The unit may also have relevance to a wide range of educational programmes.

OUTCOMES

- 1 Demonstrate knowledge and understanding related to environmental issues.
- 2 Solve problems related to environmental issues.
- 3 Collect and analyse information related to Intermediate 1 Managing Environmental Resources obtained by investigation.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained one of the following:

- Standard Grade Biology, grade 5, 6 or 7
- Standard Grade Chemistry, grade 5, 6 or 7
- Standard Grade Geography, grade 5, 6 or 7
- Standard Grade Physics, grade 5, 6 or 7
- Standard Grade Science, grade 5, 6 or 7
- appropriate Access 3 units.

Administrative Information

Superclass:	QA
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National Unit Specification: general information (cont)

UNIT Environmental Issues (Intermediate 1)

CREDIT VALUE

1 credit at Intermediate 1.

CORE SKILLS

Core skills for this qualification remain subject to confirmation and details will be available at a later date.

Additional information about core skills is published in the *Catalogue of Core Skills in National Qualifications* (SQA, 2001).

National Unit Specification: statement of standards

UNIT Environmental Issues (Intermediate 1)

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to the Scottish Qualifications Authority.

OUTCOME 1

Demonstrate knowledge and understanding related to environmental issues.

Performance criteria

- (a) The concept of the environment is defined correctly using local examples.
- (b) The effect of human activity on the local environment is described correctly in terms of its global consequences.
- (c) Initiatives for the protection of the environment are described correctly using local and other examples.

Evidence requirements

Evidence of an appropriate level of attainment must be generated from a closed book test or tests with items covering all performance criteria.

OUTCOME 2

Solve problems related to environmental issues.

Performance criteria

- (a) Relevant information is selected and presented in an appropriate format.
- (b) Conclusions drawn and explanations given are supported by evidence.

Evidence requirements

Evidence of an appropriate level of attainment must be generated from a closed book test or tests with items covering both performance criteria including the interpretation and communication of graphical information at the appropriate level. With reference to PC (b), the candidate's answers must show that the main features of the situation have been recognised and that a suitable approach has been selected to deal with it. Evidence for Outcomes 1 and 2 can be generated from an integrated test lasting 45 minutes.

National Unit Specification: statement of standards (cont)

UNIT Environmental Issues (Intermediate 1)

OUTCOME 3

Collect and analyse information related to Intermediate 1 Managing Environmental Resources obtained by investigation.

Performance criteria

- (a) Information is collected by active participation in the investigation.
- (b) Investigative procedures are described accurately.
- (c) Relevant measurements and observations are recorded in an appropriate format.
- (d) Recorded information is analysed and presented in an appropriate format.
- (e) Conclusions drawn are valid.

Evidence requirements

Evidence of an appropriate level of attainment must be generated with items covering all performance criteria. A report of one investigation relating to environmental issues is required.

The teacher/lecturer must attest that the report is the individual work of the candidate derived from active participation in the investigation. This includes setting objectives for the investigation, planning of appropriate tasks, identifying and obtaining the necessary resources, carrying out the investigation and evaluating all stages. Conclusions and recommendations should be justified by reference to evidence drawn from the investigation.

Depending on the activity, the collection of information may involve group work.

National Unit Specification: support notes

UNIT Environmental Issues (Intermediate 1)

This part of the unit specification is offered as guidance. The support notes are not mandatory.

While the time allocated to this unit is at the discretion of the centre, the notional design length is 40 hours.

GUIDANCE ON CONTENT AND CONTEXT FOR THIS UNIT

Full details to assist staff who are delivering the unit as a free-standing unit are given in the contents section of the course specification. The outline of content and context is as follows:

Outcome 1

- 1 Types of environment.
- 2 Effects of human activity on the local environment.
- 3 Effects of human activity on the global environment.
- 4 Local and global initiatives for the protection of the environment.
- 5 Organisations for the protection of the environment.
- 6 Legislation for the protection of the environment.

Outcome 2

Details of problem-solving opportunities are given in the contents section of the course specification.

Outcome 3

Details of opportunities for investigations are given in the contents section of the course specification.

For Outcome 3 investigations may be based wholly or in combination on:

- Practical work in the field or classroom
- Research using relevant literature
- Survey of an appropriate topic using relevant sampling techniques.

The nature of the unit will determine the style and scope of the investigation. The support notes on assessment (below) indicate a range of points, which may aid professional judgement in guiding the candidate's investigation and in assessing whether the performance criteria have been met.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Details of suitable approaches are given in the course specification.

National Unit Specification: support notes (cont)

UNIT Environmental Issues (Intermediate 1)

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Outcomes 1 and 2 should be assessed by an appropriate level of attainment in an integrated end-of-unit test with questions covering all performance criteria.

Test items should be constructed to allow candidates to generate evidence relating to the performance criteria as follows:

- a) Selecting and presenting information
 - sources of information include text, straightforward tables, charts, graphs, maps, diagrams
 - formats of presentation include written responses, straightforward tables, diagrams, charts and graphs.
- b) From information and situations given, candidates should be able to draw straightforward conclusions with explanations supported by the evidence.

Outcome 3 should be assessed by participation in an investigation and an appropriate level of attainment in the associated report.

The teacher/lecturer should ensure that the investigative activity to be undertaken in relation to Outcome 3 affords opportunities to demonstrate the ability to plan and organise such activity at an appropriate level of demand. The activity will relate to the course content and candidates should be made aware of the range of skills that must be demonstrated to ensure attainment of Outcome 3. Candidates are only required to produce evidence of one Outcome 3 report in relation to Intermediate 1 Managing Environmental Resources. This report can then be used as evidence for Outcome 3 for the other units of the course.

In relation to PC (a), the teacher/lecturer should check that the candidate participates actively in the planning of the investigation, deciding how it will be managed, identifying and obtaining resources and carrying out the investigation.

Candidates should provide a report with an appropriate title. The report should relate to Outcome 3, PCs (b) to (e), as follows:

b) Investigative procedures are described accurately.	A statement of the purpose of the investigation. A few short sentences including apposite illustrations containing at an appropriate level, points such as: <ul style="list-style-type: none">• A short description of the methods used• A labelled diagram or brief description of equipment used• How variables and controls were used• The range and balance of sources selected• How measurements were taken or observations made. There is no need for a long detailed description.
c) Relevant measurements and observations are recorded in an appropriate format.	Readings or observations must be recorded in a clear format, normally a table with correct headings, appropriate units and results/readings entered correctly.

National Unit Specification: support notes (cont)

UNIT Environmental Issues (Intermediate 1)

d) Recorded information is analysed and presented in an appropriate format.	Data should be analysed and presented in tables, diagrams, graphs or other equivalent form as appropriate: <ul style="list-style-type: none">• A straightforward tabular presentation must include suitable headings and units• A straightforward diagrammatic presentation must include features or measurements relevant to the investigation• A graphical presentation includes data presented in appropriate forms such as bar charts, pie charts, line graphs with suitable straightforward scales.
e) Conclusions drawn are valid.	Conclusions should use evidence from the investigation and relate back to the purpose of it. The following must be included: <ul style="list-style-type: none">• Findings supported by the analysed information or results• Identification of strengths and weaknesses in all stages of the investigation including the effectiveness of the approach, the limitations of equipment, and suggestions for improvements.

The points beside each performance criterion give an indication of what should be addressed to achieve a pass. The relevance of the points will vary according to the style and scope of the investigation. The points are intended as helpful guidance. The decision of pass or fail is made by the professional judgement of staff of the presenting centre (subject to moderation) against the performance criteria.

It is appropriate to support candidates in producing a report to meet the performance criteria. Re-drafting of a report after necessary supportive criticism is to be encouraged both as part of the learning and teaching process and to produce evidence for assessment.

SPECIAL NEEDS

This unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment Arrangements* (SQA, 2001).

National Unit Specification: general information

UNIT	Ecosystems (Intermediate 1)
NUMBER	D310 10
COURSE	Managing Environmental Resources (Intermediate 1)

SUMMARY

This unit seeks to promote understanding and enjoyment of the natural world. On completion of the unit the candidate will be able to investigate, describe and solve problems related to simple ecosystems and the biotic and abiotic factors that influence them.

OUTCOMES

- 1 Demonstrate knowledge and understanding related to simple ecosystems.
- 2 Solve problems related to simple ecosystems.
- 3 Collect and analyse information related to Intermediate 1 Managing Environmental Resources obtained by investigation.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained one of the following:

- Standard Grade Biology, grade 5, 6 or 7
- Standard Grade Chemistry, grade 5, 6 or 7
- Standard Grade Geography, grade 5, 6 or 7
- Standard Grade Physics, grade 5, 6 or 7
- Standard Grade Science, grade 5, 6 or 7
- appropriate Access 3 units.

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National Unit Specification: general information (cont)

UNIT Ecosystems (Intermediate 1)

CREDIT VALUE

1 credit at Intermediate 1.

CORE SKILLS

Core skills for this qualification remain subject to confirmation and details will be available at a later date.

Additional information about core skills is published in the *Catalogue of Core Skills in National Qualifications* (SQA, 2001).

National Unit Specification: statement of standards

UNIT Ecosystems (Intermediate 1)

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to the Scottish Qualifications Authority.

OUTCOME 1

Demonstrate knowledge and understanding related to simple ecosystems.

Performance criteria

- (a) Simple ecosystems are observed and described correctly in terms of their physical and biological components.
- (b) Selected natural ecosystems are described correctly in terms of their physical and biological components.
- (c) Changes in biological components of a selected ecosystem are related correctly to environmental factors.

Evidence requirements

Evidence of an appropriate level of attainment must be generated from a closed book test or tests with items covering all performance criteria.

OUTCOME 2

Solve problems related to simple ecosystems.

Performance criteria

- (a) Relevant information is selected and presented in an appropriate format.
- (b) Conclusions drawn and explanations given are supported by evidence.

Evidence requirements

Evidence of an appropriate level of attainment must be generated from a closed book test or tests with items covering both performance criteria including the interpretation and communication of graphical information at the appropriate level. With reference to PC (b), the candidate's answers must show that the main features of the situation have been recognised and that a suitable approach has been selected to deal with it. Evidence for Outcomes 1 and 2 can be generated from an integrated test lasting 45 minutes.

National Unit Specification: statement of standards (cont)

UNIT Ecosystems (Intermediate 1)

OUTCOME 3

Collect and analyse information related to Intermediate 1 Managing Environmental Resources obtained by investigation.

Performance criteria

- (a) Information is collected by active participation in the investigation.
- (b) Investigative procedures are described accurately.
- (c) Relevant measurements and observations are recorded in an appropriate format.
- (d) Recorded information is analysed and presented in an appropriate format.
- (e) Conclusions drawn are valid.

Evidence requirements

Evidence of an appropriate level of attainment must be generated with items covering all performance criteria. A report of one investigation relating to a simple ecosystem is required. The teacher/lecturer must attest that the report is the individual work of the candidate derived from active participation in the investigation. This includes setting objectives for the investigation, planning of appropriate tasks, identifying and obtaining the necessary resources, carrying out the investigation and evaluating all stages. Conclusions and recommendations should be justified by reference to evidence drawn from the investigation.

Depending on the activity, the collection of information may involve group work.

National Unit Specification: support notes

UNIT Ecosystems (Intermediate 1)

This part of the unit specification is offered as guidance. The support notes are not mandatory.

While the time allocated to this unit is at the discretion of the centre, the notional design length is 40 hours.

GUIDANCE ON CONTENT AND CONTEXT FOR THIS UNIT

Full details to assist staff who are delivering the unit as a free-standing unit are given in the contents section of the course specification. The outline of content and context is as follows:

Outcome 1

- 1 Inter-relationship of an ecosystem.
- 2 The physical components of an ecosystem.
- 3 Biological components of an ecosystem.

Outcome 2

Details of problem-solving opportunities are given in the contents section of the course specification.

Outcome 3

Details of opportunities for investigations are given in the contents section of the course specification.

For Outcome 3 investigations may be based wholly or in combination on:

- Practical work in the field or classroom
- Research using relevant literature
- Survey of an appropriate topic using relevant sampling techniques.

The nature of the unit will determine the style and scope of the investigation. The support notes on assessment (below) indicate a range of points, which may aid professional judgement in guiding the candidate's investigation and in assessing whether the performance criteria have been met.

National Unit Specification: support notes (cont)

UNIT Ecosystems (Intermediate 1)

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Details of suitable approaches are given in the course specification.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Outcomes 1 and 2 should be assessed by an appropriate level of attainment in an integrated end-of-unit test with questions covering all performance criteria.

Test items should be constructed to allow candidates to generate evidence relating to the performance criteria as follows:

- a) Selecting and presenting information
 - sources of information include text, straightforward tables, charts, graphs, maps, diagrams
 - formats of presentation include written responses, straightforward tables, diagrams, charts and graphs.
- b) From information and situations given, candidates should be able to draw straightforward conclusions with explanations supported by the evidence.

Outcome 3 should be assessed by participation in an investigation and an appropriate level of attainment in the associated report.

The teacher/lecturer should ensure that the investigative activity to be undertaken in relation to Outcome 3 affords opportunities to demonstrate the ability to plan and organise such activity at an appropriate level of demand. The activity will relate to the course content and candidates should be made aware of the range of skills that must be demonstrated to ensure attainment of Outcome 3. Candidates are only required to produce evidence of one Outcome 3 report in relation to Intermediate 1 Managing Environmental Resources. This report can then be used as evidence for Outcome 3 for the other units of the course.

In relation to PC (a), the teacher/lecturer should check that the candidate participates actively in the planning of the investigation, deciding how it will be managed, identifying and obtaining resources and carrying out the investigation.

National Unit Specification: support notes (cont)

UNIT Ecosystems (Intermediate 1)

Candidates should provide a report with an appropriate title. The report should relate to Outcome 3, PCs (b) to (e) as follows:

b) Investigative procedures are described accurately.	<p>A statement of the purpose of the investigation. A few short sentences including apposite illustrations containing at an appropriate level, points such as:</p> <ul style="list-style-type: none"> • A short description of the methods used • A labelled diagram or brief description of equipment used • How variables and controls were used • The range and balance of sources selected • How measurements were taken or observations made. <p>There is no need for a long detailed description.</p>
c) Relevant measurements and observations are recorded in an appropriate format.	<p>Readings or observations must be recorded in a clear format, normally a table with correct headings, appropriate units and results/readings entered correctly.</p>
d) Recorded information is analysed and presented in an appropriate format.	<p>Data should be analysed and presented in tables, diagrams, graphs or other equivalent form as appropriate:</p> <ul style="list-style-type: none"> • A straightforward tabular presentation must include suitable headings and units • A straightforward diagrammatic presentation must include features or measurements relevant to the investigation • A graphical presentation includes data presented in appropriate forms such as bar charts, pie charts, line graphs with suitable straightforward scales.
e) Conclusions drawn are valid.	<p>Conclusions should use evidence from the investigation and relate back to the purpose of it. The following must be included:</p> <ul style="list-style-type: none"> • Findings supported by the analysed information or results • Identification of strengths and weaknesses in all stages of the investigation including the effectiveness of the approach, the limitations of equipment, and suggestions for improvements.

The points beside each performance criterion give an indication of what should be addressed to achieve a pass. The relevance of the points will vary according to the style and scope of the investigation. The points are intended as helpful guidance. The decision of pass or fail is made by the professional judgement of staff of the presenting centre (subject to moderation) against the performance criteria.

It is appropriate to support candidates in producing a report to meet the performance criteria. Re-drafting of a report after necessary supportive criticism is to be encouraged both as part of the learning and teaching process and to produce evidence for assessment.

National Unit Specification: support notes (cont)

UNIT Ecosystems (Intermediate 1)

SPECIAL NEEDS

This unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment Arrangements* (SQA, 2001).

National Unit Specification: general information

UNIT	Land Use (Intermediate 1)
NUMBER	D311 10
COURSE	Managing Environmental Resources (Intermediate 1)

SUMMARY

This unit seeks to familiarise the candidate with land and water as important environmental resources. On completion of the unit the candidate will be able to describe how land and water are used in the local area, solve problems and collect and analyse relevant information.

OUTCOMES

- 1 Demonstrate knowledge and understanding related to land and water use in the local area.
- 2 Solve problems related to land and water use in the local area.
- 3 Collect and analyse information related to Intermediate 1 Managing Environmental Resources obtained by investigation.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained one of the following:

- Standard Grade Biology, grade 5, 6 or 7
- Standard Grade Chemistry, grade 5, 6 or 7
- Standard Grade Geography, grade 5, 6 or 7
- Standard Grade Physics, grade 5, 6 or 7
- Standard Grade Science, grade 5, 6 or 7
- appropriate Access 3 units.

Administrative Information

Superclass:	QA
Publication date:	July 2002
Source:	Scottish Qualifications Authority
Version:	05

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National Unit Specification: general information (cont)

UNIT Land Use (Intermediate 1)

CREDIT VALUE

1 credit at Intermediate 1.

CORE SKILLS

Core skills for this qualification remain subject to confirmation and details will be available at a later date.

Additional information about core skills is published in the *Catalogue of Core Skills in National Qualifications* (SQA, 2001).

National Unit Specification: statement of standards

UNIT Land Use (Intermediate 1)

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to the Scottish Qualifications Authority.

OUTCOME 1

Demonstrate knowledge and understanding related to land and water use in the local area.

Performance criteria

- (a) Local land and water use is described correctly in terms of current practices.
- (b) Influences on a local land or water-based industry are identified correctly in terms of location, climate and legislation.
- (c) Interactions between a land or water-based industry and the local economy are described correctly in terms of positive and negative effects.

Evidence requirements

Evidence of an appropriate level of attainment must be generated from a closed book test or tests with items covering all performance criteria.

OUTCOME 2

Solve problems related to land and water use in the local area.

Performance criteria

- (a) Relevant information is selected and presented in an appropriate format.
- (b) Conclusions drawn and explanations given are supported by evidence.

Evidence requirements

Evidence of an appropriate level of attainment must be generated from a closed book test or tests with items covering both performance criteria including the interpretation and communication of graphical information at the appropriate level. With reference to PC (b), the candidate's answers must show that the main features of the situation have been recognised and that a suitable approach has been selected to deal with it. Evidence from Outcomes 1 and 2 can be generated from an integrated test lasting 45 minutes.

National Unit Specification: statement of standards (cont)

UNIT Land Use (Intermediate 1)

OUTCOME 3

Collect and analyse information related to Intermediate 1 Managing Environmental Resources obtained by investigation.

Performance criteria

- (a) Information is collected by active participation in the investigation.
- (b) Investigative procedures are described accurately.
- (c) Relevant measurements and observations are recorded in an appropriate format.
- (d) Recorded information is analysed and presented in an appropriate format.
- (e) Conclusions drawn are valid.

Evidence requirements

Evidence of an appropriate level of attainment must be generated with items covering all performance criteria. A report of one investigation relating to land or water use in the local area is required. The teacher/lecturer responsible must attest that the report is the individual work of the candidate derived from active participation in the investigation. This includes setting objectives for the investigation, planning of appropriate tasks, identifying and obtaining the necessary resources, carrying out the investigation and evaluating all stages. Conclusions and recommendations should be justified by reference to evidence drawn from the investigation.

Depending on the activity, the collection of information may involve group work.

National Unit Specification: support notes

UNIT Land Use (Intermediate 1)

This part of the unit specification is offered as guidance. The support notes are not mandatory.

While the time allocated to this unit is at the discretion of the centre, the notional design length is 40 hours.

GUIDANCE ON CONTENT AND CONTEXT FOR THIS UNIT

Full details to assist staff who are delivering the unit as a free-standing unit are given in the contents section of the course specification. The outline of content and context is as follows:

Outcome 1

- 1 Principal features of local land and water use.
- 2 Requirements of a local land or water-based industry.
- 3 Factors influencing local land or water-based industries.
- 4 The role of a land or water-based industries in the local economy.

Outcome 2

Details of problem-solving opportunities are given in the contents section of the course specification.

Outcome 3

Details of opportunities for investigations are given in the contents section of the course specification.

For Outcome 3 investigations may be based wholly or in combination on:

- Practical work in the field or classroom
- Research using relevant literature
- Survey of an appropriate topic using relevant sampling techniques.

The nature of the unit will determine the style and scope of the investigation. The support notes on assessment (below) indicate a range of points, which may aid professional judgement in guiding the candidate's investigation and in assessing whether the performance criteria have been met.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Details of suitable approaches are given in the course specification.

National Unit Specification: support notes (cont)

UNIT Land Use (Intermediate 1)

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Outcomes 1 and 2 should be assessed by an appropriate level of attainment in an integrated end-of-unit test with questions covering all performance criteria.

Test items should be constructed to allow candidates to generate evidence relating to the performance criteria as follows:

- a) Selecting and presenting information
 - sources of information include text, straightforward tables, charts, graphs, maps, diagrams
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- b) From information and situations given, candidates should be able to draw straightforward conclusions with explanations supported by the evidence.

Outcome 3 should be assessed by participation in an investigation and an appropriate level of attainment in the associated report.

The teacher/lecturer should ensure that the investigative activity to be undertaken in relation to Outcome 3 affords opportunities to demonstrate the ability to plan and organise such activity at an appropriate level of demand. The activity will relate to the course content and candidates should be made aware of the range of skills that must be demonstrated to ensure attainment of Outcome 3. Candidates are only required to produce evidence of one Outcome 3 report in relation to Intermediate 1 Managing Environmental Resources. This report can then be used as evidence for Outcome 3 for the other units of the course.

In relation to PC (a), the teacher/lecturer should check by observation that the candidate participates actively in the planning of the investigation, deciding how it will be managed, identifying and obtaining resources and carrying out the investigation.

National Unit Specification: support notes (cont)

UNIT Land Use (Intermediate 1)

Candidates should provide a report with an appropriate title. The report should relate to Outcome 3, PCs (b) to (e) as follows:

b) Investigative procedures are described accurately.	<p>A statement of the purpose of the investigation. A few short sentences including apposite illustrations containing at an appropriate level, points such as:</p> <ul style="list-style-type: none"> • A short description of the methods used • A labelled diagram or brief description of equipment used • How variables and controls were used • The range and balance of sources selected • How measurements were taken or observations made. <p>There is no need for a long detailed description.</p>
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e) Conclusions drawn are valid.	<p>Conclusions should use evidence from the investigation and relate back to the purpose of it. The following must be included:</p> <ul style="list-style-type: none"> • Findings supported by the analysed information or results • Identification of strengths and weaknesses in all stages of the investigation including the effectiveness of the approach, the limitations of equipment, and suggestions for improvements.

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National Unit Specification: support notes (cont)

UNIT Land Use (Intermediate 1)

SPECIAL NEEDS

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