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## Environmental Science: Earth's Resources (National 4)

**SCQF:** level 4 (6 SCQF credit points)

**Unit code:** H24R 74

### Unit outline

The general aim of this Unit is to develop skills of scientific inquiry, investigation and analytical thinking, along with knowledge and understanding of the Earth's resources. Learners will apply these skills when considering the applications of the Earth's resources on our lives, as well as the implications for society and the environment. This can be done by using a variety of approaches, including investigation and problem solving.

The Unit covers the key areas of the responsible use and conservation of non-renewable and renewable resources; the formation and use of fossil fuels; the derivation and uses of materials derived from crude oil; the risks and benefits of different energy sources, including those produced from plants; the carbon cycle and processes involved in maintaining the balance of gases in the air, and the causes and implications of changes in the balance.

Learners will apply scientific skills and communicate information related to their findings, which will develop skills of scientific literacy.

Learners who complete this Unit will be able to:

- 1 apply skills of scientific inquiry and draw on knowledge and understanding of the key areas of this Unit to carry out an experiment/practical investigation
- 2 draw on knowledge and understanding of the key areas of this Unit and apply scientific skills

This Unit is a mandatory Unit of the National 4 Environmental Science Course and is also available as a free-standing Unit. The Unit Specification should be read in conjunction with the *Unit Support Notes*, which provide advice and guidance on delivery, assessment approaches and development of skills for learning, skills for life and skills for work. Exemplification of the standards in this Unit is given in *Unit Assessment Support*.

The *Added Value Unit Specification* for the National 4 Environmental Science Course gives further mandatory information on Course coverage for learners taking this Unit as part of the National 4 Environmental Science Course.

## Recommended entry

Entry to this Unit is at the discretion of the centre. However, learners would normally be expected to have attained the skills, knowledge and understanding required by one or more of the following or equivalent qualifications and/or experience:

- ◆ National 3 Environmental Science Course or relevant component Units
- ◆ National 3 Geography Course or relevant component Units
- ◆ National 3 Biology Course or relevant component Units
- ◆ National 3 Science Course or relevant component Units

There may also be progression from National 3 Chemistry or National 3 Physics.

In terms of prior learning and experience, relevant experiences and outcomes may also provide an appropriate basis for doing this Unit.

## Equality and inclusion

This Unit Specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence. For further information, please refer to the *Unit Support Notes*.

# Standards

## Outcomes and Assessment Standards

### Outcome 1

The learner will:

**1 Apply skills of scientific inquiry and draw on knowledge and understanding of the key areas of this Unit to carry out an experiment/practical investigation by:**

- 1.1 Planning an experiment/practical investigation
- 1.2 Following procedures safely
- 1.3 Making and recording observations/measurements correctly
- 1.4 Presenting results in an appropriate format
- 1.5 Drawing valid conclusions
- 1.6 Evaluating experimental procedures

### Outcome 2

The learner will:

**2 Draw on knowledge and understanding of the key areas of this Unit and apply scientific skills by:**

- 2.1 Making accurate statements
- 2.2 Solving problems

## Evidence Requirements for the Unit

Assessors should use their professional judgement, subject knowledge and experience, and understanding of their learners, to determine the most appropriate ways to generate evidence and the conditions and contexts in which they are used.

The key areas covered in this unit are:

- ◆ the responsible use and conservation of non-renewable and renewable resources
- ◆ the formation and use of fossil fuels
- ◆ the derivation and uses of materials derived from crude oil
- ◆ the risks and benefits of different energy sources, including those produced from plants
- ◆ the carbon cycle and processes involved in maintaining the balance of gases in the air, and the causes and implications of changes in the balance

The following table describes the evidence for the Assessment Standards.

Assessment Standard	Evidence required
Planning an experiment or practical investigation	<p>A plan that includes:</p> <ul style="list-style-type: none"> <li>◆ an aim</li> <li>◆ a variable to be kept constant</li> <li>◆ observations and/or measurements to be made</li> <li>◆ necessary equipment and/or materials</li> <li>◆ the method, including safety considerations if necessary</li> </ul>
Following procedures safely	Record showing the learner was observed following the procedure safely.
Making and recording observations/measurements correctly	<p>Raw data recorded in a relevant format, for example a table.</p> <p>Repeated measurements, where appropriate.</p> <p>Where measurements are repeated, averages must be calculated.</p>
Presenting results in an appropriate format	Results presented in one format from: line graph, bar graph, scatter graph, or other appropriate format.
Drawing a valid conclusion	A conclusion that includes reference to the aim, and is supported by the data.
Evaluating experimental procedures	Suggested at least one improvement to the procedures used.
Making accurate statements and solving problems	<p>Achievement of at least 50% of the total marks available in a holistic assessment.</p> <p>The assessment must <b>not</b> be split into smaller sections, such as individual key areas.</p>

Exemplification of assessment is provided in *Unit Assessment Support*.

## Assessment Standards thresholds

### Outcome 1

Learners are not required to show full mastery of the Assessment Standards to achieve Outcome 1. Instead, five out of the six Assessment Standards for Outcome 1 must be met to achieve a pass. Learners must be given the opportunity to meet all Assessment Standards.

### Outcome 2

Learners are assessed using a holistic test that covers Assessment Standards 2.1 and 2.2. To gain a pass for Outcome 2, learners must achieve 50% or more of the total marks available in the assessment.

## Transfer of evidence

Evidence for the achievement of Outcome 1 for this Unit can be used as evidence of Outcome 1 in the SCQF level 4 Units: *Environmental Science: Living Environment* (H24P 74) and *Environmental Science: Sustainability* (H24S 74).

Evidence for the achievement of Outcome 2 for this Unit is **not** transferable between the SCQF level 4 Units: *Environmental Science: Living Environment* (H24P 74) and *Environmental Science: Sustainability* (H24S 74).

## Re-assessment

SQA's guidance on re-assessment is that there should be only one or, in exceptional circumstances, two re-assessment opportunities. Re-assessment must be carried out under the same conditions as the original assessment and must be of equal demand.

### Outcome 1

Learners can either re-draft their original Outcome 1 report or carry out a new experiment or practical investigation.

### Outcome 2

Learners must have a full re-assessment opportunity that consists of a holistic assessment. To achieve Outcome 2, learners must achieve 50% of the total marks available in the re-assessment.

# Development of skills for learning, skills for life and skills for work

It is expected that learners will develop broad, generic skills through this Unit. The skills that learners will be expected to improve on and develop through the Unit are based on SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work* and drawn from the main skills areas listed below. These must be built into the Unit where there are appropriate opportunities.

## **2 Numeracy**

- 2.1 Number processes
- 2.2 Money, time and measurement
- 2.3 Information handling

## **4 Employability, enterprise and citizenship**

- 4.6 Citizenship

## **5 Thinking skills**

- 5.3 Applying
- 5.4 Analysing and evaluating

Amplification of these is given in SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work*. The level of these skills should be at the same SCQF level of the Unit and be consistent with the SCQF level descriptor. Further information on building in skills for learning, skills for life and skills for work is given in the *Unit Support Notes*.

# Administrative information

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**Superclass:** QA

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## History of changes to National Unit Specification

Version	Description of change	Authorised by	Date
1.1	Standards section: change to wording in Assessment Standard 1.2 to clarify meaning; 'accurately' replaced with 'correctly'; Evidence Requirements section: wording added/changed to clarify Evidence Requirements	Qualification Development Manager	June 2013
2.0	Updated due to the removal of Assessment Standards in Outcome 2. Assessment Standard 2.4 has been reclassified as 2.2. Marks and clarification of 50% cut-off score have been introduced. Evidence requirements updated and transfer of evidence updated.	Qualifications Manager	April 2018
2.1	Assessment standard thresholds added.	Qualifications Manager	October 2018
3.0	<p>Refined guidance on Evidence Requirements; removed option for assessment-standard-specific evidence for Outcome 2. Added 'Assessment Standards thresholds' heading to existing information. Refined guidance on re-assessment. Some changes made to the format throughout the document to improve accessibility.</p> <p><b>What you need to do differently</b></p> <ul style="list-style-type: none"><li>◆ If you are already assessing outcome 2 holistically at the end of the unit, by using the assessment as a single test with marks and a cut-off score, you don't need to do anything differently.</li><li>◆ If you have been assessing outcome 2 atomistically, by assessing each key</li></ul>	Qualifications Manager	August 2025

Version	Description of change	Authorised by	Date
	area and each problem-solving skill separately, you must change to using the holistic approach for outcome 2. You must do this by administering the test in a single sitting, at the end of the unit, and applying the marks and cut-off score in the unit assessment support pack.		

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Note: readers are advised to check SQA's website: [www.sqa.org.uk](http://www.sqa.org.uk) to ensure they are using the most up-to-date version of the Unit Specification.

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