SCQF level 5
Unit Specification

Environmental Science: Sustainability

SCQF: level 5 (6 SCQF credit points)

Unit code: J265 75

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 sustainability. Learners will apply these skills when considering the applications of sustainability on our lives, as well as the implications on society/the environment. This can be done by using a variety of approaches, including investigation and problem solving.

The Unit covers the key areas of: an introduction to sustainability; food; water; energy and waste management. Learners will research issues, 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 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*.

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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 4 Environmental Science Course or relevant component Units
- National 4 Geography Course or relevant component Units
- National 4 Science Course or relevant component Units

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: an introduction to sustainability, food, water, energy and waste management.

Sustainability
1 Introduction to sustainability a. Introduction to sustainability, to include definition. Sustainable development, to include definition, to include integration of social, economic and environmental issues, as well as the implementation of Agenda 21 to facilitate sustainable development at a local authority/community level b. Global citizenship
2 Food a. The impacts of increasing global population on food supplies b. Strategies in farming for a secure food supply, to include intensive farming, GM crops and agrochemicals c. Organic farming: advantages and disadvantages d. Strategies in freshwater and marine-based systems for a secure food supply, to include intensive fishing and alternative species e. Fish conservation approaches, to include marine conservation areas, zoning, sustainable fishing methods f. The environmental impact of food distribution — 'food miles' — to include the term 'carbon footprint'. The term 'carbon neutral', including the impacts of carbon offsetting g. National and European policies and legislation relating to food production
3 Water a. The impacts of increasing global population on water supplies. Clean water supplies in LEDCs and MEDCs b. Issues arising from water use in: industry — thermal pollution, effluents agriculture — water abstraction and irrigation, may lead to low water levels in rivers domestic — washing, cooking, heating, sanitary, may lead to water shortages in times of drought, may lead to water use restrictions, impacts on public health, contamination of water supplies, conservation, and tourism and recreation c. Sustainable approaches to water use, to include methods of water conservation d. National policies, legislation and other organisations (SEPA) relating to water use

4 Energy

a. The impacts of increasing global population on energy supplies
b. Renewable and non-renewable energy sources and issues arising from their use
c. The enhanced greenhouse effect, to include carbon dioxide and methane and their sources
d. Sustainable approaches to reducing greenhouse gas emissions
e. Social, economic and environmental impacts of climate change, including habitat loss, reduction in biodiversity, changes in species distribution, rising sea levels leading to flooding, loss of agricultural land and loss of business
f. National organisations, policies and legislation relating to energy use

5 Waste management

a. Increasing waste production in response to society's demands
b. Sustainable approaches to managing waste, to include reduce, reuse and recycle
c. The need for education and personal responsibility
d. National organisations, policies and legislation relating to waste management

Evidence can be drawn from a variety of sources and presented in a variety of formats. The table below describes the evidence for the Assessment Standards which require exemplification. Evidence may be presented for individual Outcomes or gathered for the Unit as a whole, through combining assessment holistically in a single activity. If the latter approach is used, it must be clear how the evidence covers each Outcome.

Assessment Standard	Evidence required
Planning an experiment	The plan should include: ♦ an aim ♦ a dependent and independent variable ♦ key variables to be kept constant ♦ measurements/observations to be made ♦ the resources ♦ the method including safety considerations
Presenting results in an appropriate format	One format from: table, line graph, chart, key, diagram, flow chart, summary or other appropriate format.
Drawing a valid conclusion	Include reference to the aim.
Evaluating experimental procedures	Suggest an improvement with justification.
Making accurate statements	At least half of the statements should be correct across the key areas of this Unit.
Solving problems	One of each: ♦ make generalisation/prediction ♦ select information ♦ process information, including calculations, as appropriate ♦ analyse information
Outcome 2: making accurate statements and solving problems may be combined into one holistic assessment, with marks allocated to each question. In this case, to achieve Outcome 2 the candidate must achieve at least 50% of the marks available in the set of questions.	

Outcome 1: Candidates must achieve at least five out of the six Assessment Standards to achieve a pass.

Transfer of Evidence
Evidence for the achievement of Outcome 1 for this Unit can be used as evidence for the achievement of Outcome 1 in the Units H24R 75 *Environmental Science: Earths Resources* and H24P 75 *Environmental Science: Living Environment*.

Where Assessment Standard 2.2 is being assessed separately from Assessment Standard 2.1, evidence of achievement of Assessment Standard 2.2 for this Unit can be used as evidence of achievement of Assessment Standard 2.2 in the units H24R 75 *Environmental Science: Earths Resources* H24P 75 *Environmental Science: Living Environment*.

Note: this does not apply when Outcome 2 is being assessed holistically.

As Assessment Standard 2.1 (Making accurate statements) relates specifically to the key areas of each Unit, evidence is **not transferable** between the Units for this Assessment Standard.

Exemplification of assessment is provided in *Unit Assessment Support*. Advice and guidance on possible approaches to assessment is provided in the *Unit Support Notes*.

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

Published: July 2019 (version 3.0)

Superclass: QA

History of changes to National Unit Specification

Version	Description of change	Authorised by	Date
2.0	Added table detailing content to be covered. Transfer of evidence updated.	Qualifications Manager	April 2018
3.0	Unit code updated	Qualifications Manager	July 2019