

Qualification specification

NCFE Level 3 Certificate in Championing Sustainability in the Workplace QN: 610/0143/0



Qualification summary

Qualification title	NCEE Loyal 3 Cartificate	in Championing Sustaina	ability in the Workplace
Qualification title	NOFE Level 3 Certificate	in Championing Sustaina	ability in the Workplace
Ofqual qualification number (QN)	610/0143/0	Aim reference	61001430
Guided learning hours (GLH)	181	Total qualification time (TQT)	360
Minimum age	16		
Qualification purpose	This qualification is designed for learners wishing to gain knowledge, skills and understanding to support sustainability in the workplace. On completion of the certificate, the learner will have the opportunity to use their skills in the workplace as a sustainability champion or within an entry level sustainability role (such as a sustainability coordinator or assistant). They may also progress into higher education in a variety of green roles.		
Assessment method	Internally assessed and externally quality assured portfolio of evidence.		
Work/industry placement experience	Work/industry placement experience is not required.		
UCAS	An application for UCAS	points has been made fo	r this qualification.

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Section 1: introduction

Please note this is a draft version of the qualification specification and is likely to be subject to change before the final version is produced for the launch of the qualification. If you are using this qualification specification for planning purposes, please make sure that you are using the most recent version.

Aims and objectives

This qualification aims to:

- focus on the study of championing sustainability in the workplace
- offer breadth and depth of study, incorporating a key core of knowledge
- provide opportunities to acquire a number of practical skills

The objectives of this qualification are to:

 provide the learner with the opportunity to develop their knowledge and skills in order to champion sustainability in a variety of workplace settings

Support handbook

This qualification specification must be used alongside the mandatory support handbook on the qualifications page on the NCFE website, which contains additional supporting information to help with the planning, delivery and assessment.

This qualification specification contains all of the qualification-specific information you will need that is not covered in the support handbook.

Entry guidance

This qualification is designed for learners who would like to work in a role championing sustainability in the workplace.

Entry is at the discretion of the centre.

There are no specific prior skills/knowledge a learner must have for this qualification. However, learners may find it helpful if they have already achieved a level 2 qualification.

Centres are responsible for ensuring that all learners are capable of achieving the learning outcomes and complying with the relevant literacy, numeracy and health and safety requirements.

Learners registered on this qualification should not undertake another qualification at the same level, or with the same/a similar title, as duplication of learning may affect funding eligibility.

Achieving this qualification

To be awarded this qualification, learners are required to successfully achieve 7 mandatory units and 2 optional units.

Please refer to the list of units in appendix A or the unit summaries in section 2 for further information.

To achieve this qualification, learners must successfully demonstrate their achievement of all learning outcomes of the units as detailed in this qualification specification.



Progression

Learners who achieve this qualification could progress to the following:

- employment:
 - environmental coordinator
 - sustainability coordinator
 - o environmental assistant
 - sustainability assistant
- further education:
 - o environmental science
 - environmental sustainability
- higher education
 - HNC/HND in applied science (environmental science)
 - Higher Apprenticeship: Technician Scientist
 - Degree Apprenticeship: Environmental Practitioner
 - BSc Global environmental change and sustainability
 - BSc Environmental science

Progression to higher level studies

Level 3 qualifications aim to facilitate progression to higher level study, which requires knowledge and skills different from those gained at levels 1 and 2. Level 3 qualifications enable learners to:

- apply factual, procedural and theoretical subject knowledge
- use relevant knowledge and methods to address complex, non-routine problems
- interpret and evaluate relevant information and ideas
- understand the nature of the area of study or work
- demonstrate an awareness of different perspectives and approaches
- identify, select and use appropriate cognitive and practical skills
- use appropriate research to inform actions
- review and evaluate the effectiveness of their own methods

Resource requirements

There are no mandatory resource requirements for this qualification, but centres must ensure learners have access to suitable resources to enable them to cover all the appropriate learning outcomes.

How the qualification is assessed

Assessment is the process of measuring a learner's skill, knowledge and understanding against the standards set in a qualification.

This qualification is internally assessed and externally quality assured.

The assessment consists of one component:

• an internally assessed portfolio of evidence which is assessed by centre staff and externally quality assured by NCFE (internal quality assurance (IQA) must still be completed by the centre as usual)

All the evidence generated by the learner will be assessed against the standards expected of a level 3 learner for each learning outcome.

Internal assessment

We have created some sample tasks for two of the internally assessed units, which can be found within a separate document in the member's area of our website. These tasks are not mandatory. You can contextualise these tasks to suit the needs of your learners to help them build up their portfolio of evidence. The tasks have been designed to cover some knowledge learning outcomes for:

- Inspiring environmental responsibility in the workplace (H/650/0676)
- Sustainable construction (T/650/0680)

and provide opportunities for stretch and challenge. For further information about contextualising the tasks, please contact the curriculum team.

Each learner must create a portfolio of evidence generated from appropriate assessment tasks, which demonstrates achievement of all the learning outcomes associated with each unit. On completion of each unit, learners must declare that the work produced is their own and the assessor must countersign this. Examples of suitable evidence for the portfolio for each unit are provided in section 2.

A centre may choose to create their own internal assessment tasks. There are 4 essential elements in the production of successful centre-based assessment tasks.

These are:

- ensuring the assessment tasks are meaningful with clear, assessable outcomes
- appropriate coverage of the content, learning outcomes, or assessment criteria
- having a valid and engaging context or scenario
- including sufficient opportunities for stretch and challenge for higher attainers

Please see the guidance document for creation of internal assessment tasks on our website.

Assessment guidance is provided for each unit. Assessors can use other methods of assessment as long as they are valid and reliable and maintain the integrity of the assessment and of the standards required of this qualification.

Section 2: unit content and assessment guidance

This section provides details of the structure and content of this qualification.

The types of evidence listed are for guidance purposes only. Within learners' portfolios, other types of evidence are acceptable if all learning outcomes are covered and if the evidence generated can be internally and externally quality assured. For approval of methods of internal assessment other than portfolio building, please contact your external quality assurer.

The explanation of terms explains how the terms used in the unit content are applied to this qualification. This document can be found in section 3.



Unit 01: The challenges of sustainability in the workplace: (A/650/0673)



Unit summary

In this unit the learner will identify the main pollutants from different sectors and the different ways they contribute to climate change and global warming. Learners will also be able to identify processes that can be made more sustainable and the root causes of the lack of sustainability. They will know about global sustainability goals and how they are linked.

Assessment				
This unit is internally assessed, via a portfolio of evidence.				
Mandatory Graded P/F Level 3 24 GLH				

Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Understand how	1.1 Identify the main pollutants from a variety of sectors
different sectors	1.2 Describe different ways pollutants contribute to climate change and
contribute to climate	global warming
change and global	
warming	
2. Understand	2.1 Identify a variety of workplace processes that can be made more
sustainable working	sustainable or contribute to the sustainability of a workplace
practices within a	2.2 Consider how different processes can be made more sustainable
given workplace	2.3 Investigate the root causes of the lack of sustainability
	2.4 Explain what green claims are and why they are used by a business
	2.5 Explain why organisations may want to communicate their sustainability
	claims and intentions to stakeholders
	2.6 Evaluate the importance of internal and external verification when
	businesses make environmental claims
	2.7 Explain what greenwashing is
	2.8 Identify 3 different types of greenwashing and give a definition for
	each
3. Know about global	3.1 Explain the purpose of the United Nations' set of 17 sustainable
sustainability goals	development goals (UNSDGs)
	3.2 Explain how the goals are linked
	3.3 Apply a range of sustainable development goals to a workplace

Range

1. Understand how different sectors contribute to climate change and global warming

1.1 Pollutants:

- carbon dioxide
- mercury
- carbon monoxide
- sulphur dioxide
- pesticides
- industrial wastewater
- nitrogen oxide
- micro plastics
- methane

1.1 Sectors:

- finance
- construction
- agriculture
- tourism
- manufacturing
- media
- retail

1.2 Different ways:

- greenhouse effect:
 - direct
 - indirect
- water toxicity

2. Understand sustainable working practices within a given workplace

2.1 and 2.2 Processes:

- printing
- energy management
 - o use of office facilities
 - kettles
 - fans
 - chargers
 - microwaves
 - fridges
- travel
- waste

2.3 Root causes:

- printing
- energy management
- use of office facilities
- travel
- waste

2.8 Different types of greenwashing:

- environmental imagery
- misleading labels
- hidden trade-offs
- irrelevant claims

3. Know about global sustainability goals

3.3 Sustainable development goals:

- goal 7 affordable and clean energy
- goal 8 decent work and economic growth
- goal 9 industry innovation and infrastructure
- goal 12 responsible consumption and production
- goal 13 climate action
- goal 14 life below water
- goal 15 -life on land

Delivery and assessment guidance

- **1.1** Transport should also be considered for all sectors rather than being stand alone.
- **1.2** Examples can include flooding, ice caps melting, ocean circulation and weather patterns. The learner must give a minimum of 3 different examples.
- **2.1** The tutor could provide examples or case studies from a specific workplace, or the learner could use their own workplace if appropriate.
- **2.2** Learners should include using less paper, heating controls, turning off computer and lighting, using energy efficient devices, component repair rather than replacement, transport management, recycling and waste streaming.
- **2.3** Learners should be directed to investigate what is causing these unsustainable practices.
- **2.4** Green claims are sometimes called environmental claims or eco-friendly claims.
- **2.5** Examples could include funders/investor requirements, customer expectations, reputation.
- **2.6** Learners should consider the importance of using an external accredited scheme and internal audits. Learners could research which accreditation schemes are available in their home nation or refer to the UNSDGs.
- **3.2** The tutor should explain that not all of the goals will be applicable to a workplace and the learners should focus on the sustainability-based goals, how they are linked and how they could be implemented in the workplace.
- **3.3** If the learner is not in employment, tutors could provide case studies of different workplace environments.

Unit 02: Environmental standards and legislation (D/650/0674)



Unit summary

In this unit the learner will understand environmental standards and key legislation relating to the environment, energy, waste, and air quality and know about international environmental law and treaties.

Assessment					
Т	his unit is internally assess	sed, via a portfolio of evider	ice.		
Mandatory Graded P/F Level 3 8 GLH					

Learning outcomes The learner will:	Assessment criteria The learner can:
1 Understand	1.1 Explain the difference between statutory and non-statutory requirements
environmental standards and	1.2 Identify key legislation relating to environment, energy, waste, and air quality within own home nation and summarise the key points
legislation	1.3 Identify two environmental regulatory bodies within home nation and explain their roles
	1.4 State the possible impact of non-compliance to an organisation
2 Know about international	2.1 Identify examples of international environmental legislation and outline the key points
environmental law	2.2 Compare and contrast two environmental laws in two different countries
and treaties	2.3 Summarise two major declarations on environmental law
	2.4 Outline the key points of 4 international environmental law (IEL) treaties

Range

1. Understand environmental standards and legislation

1.4 Impact:

- reputational
- environmental
- financial

2. Know about international environmental law and treaties

2.3 Major declarations:

- The Declaration of the United Nations on the Human Environment
- The Rio Declaration on the Environment and Development

2.4 International environmental law (IEL) treaties:

- Kyoto Protocol 1997
- United Nations Framework Convention on Climate Change 1992
- International Energy Charter 2015
- Paris Agreement 2015
- Montreal Treaty 1987

Delivery and assessment guidance

- **1.2** Key legislation should be taken from the country of study. The learner could also look at legislation from other countries and governing bodies to carry out a comparison.
- **2.2** Learners could look at the United States of America, Canada or Australia and compare them to Europe.



Unit 03: Greening the workplace (F/650/0675)



Unit summary

In this unit the learner will understand what green procurement is and know the benefits and disadvantages. Learners will know about energy efficiency and waste management in the workplace, they will also know about low carbon technologies and strategies that can help meet zero carbon emissions. The learner will also know the different environmental and sustainability roles available in the workplace.

emissions. The learner will also know the different environmental and sustainability roles available in					
the workplace.					
	Assessment				
This unit is internally assessed, via a portfolio of evidence.					
Mandatory Graded P/F Level 3 30 GLH					

Learning outcomes The learner will:	Assessment criteria The learner can:
1 Understand green	1.1 Explain what is meant by the term green procurement
procurement in the workplace	1.2 Justify the internal benefits of green procurement to an organisation
Workplace	1.3 Consider the potential disadvantages of green procurement
2 Know about waste management in the	2.1 Identify the common types of waste from different workplaces
workplace	2.2 Explain how common types of waste from different workplaces could be recycled in an environmentally friendly manner
	Explain how common types of waste should be disposed of in an environmentally friendly manner
	2.4 Explain what the circular economy is
	2.5 Describe how the circular economy can benefit a workplace
3 Know about energy	3.1 Identify areas of high energy consumption in different workplaces
efficiency in the workplace	3.2 Explain how high energy consumption could be optimised in the workplace
4 Know about low	4.1 Explain what decarbonisation is
carbon	4.2 Explain why decarbonisation is important
technologies and decarbonisation in	4.3 Identify 3 main strategies that can help countries meet energy needs with zero carbon emissions
the workplace	4.4 Describe how a range of solutions can help a workplace reduce its carbon emissions
	4.5 Identify the most suitable methods of decarbonisation in a range of workplaces
5 Understand	5.1 Explain the main duties of an environmental and sustainability officer
environmental and	5.2 Describe how an environmental and sustainability officer stays up to date
sustainability roles	with current working practices
available in the workplace	5.3 Describe how a range of roles can be involved in the selection of locations for new workplaces
•	5.4 Describe how a range of roles can help workplaces adapt their practice to
	become more environmentally friendly and sustainable

1. Understand green procurement in the workplace

1.2 Benefits:

- environmental
- social
- cost
- reputational
- staff and customer expectations

1.3 Disadvantages:

- cost
- lack of choice

2. Know about waste management in the workplace

2.1 Workplaces:

- office space
- · hospitality and catering
- health care
- construction
- automotive
- textile industry

3. Know about energy efficiency in the workplace

3.1 Areas of high energy consumption in different workplaces:

- office space (for example, lighting, heating, air conditioning, IT)
- hospitality and catering (for example, cooking, reheating, fridges, freezers, logistics, laundry, lighting, heating)
- construction (for example, generators, materials production, mass haulage)
- automotive (for example, fuel consumption, manufacturing techniques)
- textile industry (for example, manufacturing process)

4. Know about low carbon technologies and decarbonisation in the workplace

4.3 3 main strategies:

- optimise
- electrify
- decarbonise

4.4 Range of solutions:

- insulation
- natural light optimisation
- process optimisation
- install light-emitting diode (LED) lighting
- renewable heat technology
- purchase renewable energy
- use of external consultants and experts

4.5 Workplaces:

- factory plant
- city centre office block
- education establishments

5. Understand environmental and sustainability roles available in the workplace

5.1 Main duties:

- analyse the environmental impact of current working practices
- recommendations for improvement
- encourage behavioural change at company and individual level
- inter-team communication
- environmental reporting

5.3 Roles:

- urban planner
- landscape architect
- environmental scientist
- environmental geologist

5.4 Roles:

- ecologist
- energy manager
- sustainability engineer
- environmental consultant

Delivery and assessment guidance

- **2.1** All range must be covered. The tutor could provide case studies or give examples of common types of waste and ask the learners to match them to different workplaces.
- **2.2** The learners must refer to all range in 2.1.
- **2.3** The tutor must ask the learner to look at their own or a specific workplace or learning environment to identify how common types of waste would be recycled or disposed of. The tutor could also refer learners to the waste hierarchy: reduce, reuse, recycle, recovery, disposal. The tutor could also provide case studies.
- **2.4** The tutor should explain the concept of a circular economy where components and products can be made from processed/recycled material rather than raw materials, for example recycling plastic to make new plastic products or designing electrical devices in a way to make them easier to repair.
- **3.2** The tutor could ask the learner to look at their own or a specific workplace to identify how high energy consumption could be optimised, or they could provide case studies. Learners should consider green purchasing.
- **4.2** The tutor should explain how greater energy efficiency is important to meet emission targets and improve air quality and global temperature. The tutor should explain how decarbonisation of our energy systems can make workplaces more sustainable.
- **4.5** All range must be covered
- **5.2** The learner could consider professional membership, networking, accreditation and continuing professional development (CPD).
- **5.3** Learners should consider how these roles can influence the location of new workplaces and provide input about the existing environment which may affect development. All range must be covered.
- **5.4** Learners can consider these roles individually or apply them to an existing workplace. All range must be covered.

Unit 04: Inspiring environmental responsibility in the workplace (H/650/0676)



Unit summary

In this unit the learner will know the key elements involved in promoting a culture of change in an organisation, explain which behaviors require change to improve environmental responsibility and discuss key benefits. The learner will also know the purpose of strategic planning, the roles of those involved and the process of strategic planning. The learner will be able to review policies and procedures, identify adaptions that could be made and explain the process of affecting changes.

involved and the process of strategic planning. The learner will be able to review policies and procedures, identify adaptions that could be made and explain the process of affecting changes.					
Assessment					
This unit is internally assessed, via a portfolio of evidence.					
Mandatory Graded P/F Level 3 12 GLH					

Learning outcomes The learner will:	Assessment criteria The learner can:
1 Know how to promote a culture	1.1 Identify the key elements involved in promoting cultural change within an organisation
of change	1.2 Explain why a range of behaviours require change to improve environmental responsibility in the workplace
	1.3 Discuss the key benefits of a sense of purpose in relation to sustainability individuals and teams
	Describe how a range of communication channels can be used effectively in the workplace to suggest new methods of working
2 Understand the	2.1 Describe the purpose of strategic planning
process of	2.2 Clarify the roles of those involved in the strategic planning process
strategic planning	2.3 Explain the process of strategic planning
	2.4 Discuss the importance of working to a budget, deadlines, continuous review of progress and monitoring implementation within strategic planning
	2.5 Explain how individuals could influence strategic planning to support sustainability in the workplace
3 Be able to evaluate	3.1 Review an existing policy and identify adaptations that could be made to
and suggest	improve the sustainability of the workplace
adaptions to	3.2 Review an existing procedure and identify adaptations that could be made
existing policies	to improve the sustainability of the workplace
and procedures	3.3 Explain the process of affecting changes in policies or procedures

1. Know how to promote a culture of change

1.1 Key elements:

- identifying which behaviours need to change in an organisation
- understanding motivation
- reward and recognition
- buy in (from peers and from more senior colleagues)
- communication
- creating a plan
- evaluating progress
- green champions/teams

1.2 Range of behaviours:

- regular printing
- bringing water bottles to work
- leaving lights on
- using general waste bins
- having individual heaters
- boiling a full kettle

1.3 Key benefits:

- team mindset
- pride in place of work
- motivation to succeed
- achieving goals
- celebrating success

1.4 Range of communication channels:

- regular meetings
- visual presentation
- 2-way communication

2. Understand the process of strategic planning

2.2 Roles

- individual contributors
- managers
- executives and chief executive officers (CEOs)

2.3 Process

- understand current situation and recognise the need for change
- planning documents
- strategic analysis and implementation
- review cycles and reporting

Delivery and assessment guidance

- 1.2 All range must be covered.
- **1.4** The tutor should focus on the results of good communication particularly in developing trust, clarity of information and giving reasons for change.
- 2.2 Learners should be encouraged to look at this as a cycle of creation, implementation, and review.
- **2.5** The tutor could give examples of business cases such as switch to LED lighting, solar panels, better recycling facilities, switching to electric vehicles. Surveys could be carried out with staff and customers on what improvements they would like to see. A gap analysis of what the business is doing compared to other organisations. The business could go for an environmental certification.
- **3.3** The tutor could ask the learners to look at their own workplace or provide case studies relevant to the workplace and/or home nation.

Unit 05: Sustainable transport (J/650/0677)



Unit summary

In this unit the learner will be able to define air quality terms, identify air pollutants, how they are created in the workplace and their impact on air quality and human health. The learner will also know the range of fuel cell options available for vehicles, the types of hydrogen fuel cells and requirements for a hydrogen fuel cell vehicle infrastructure. The learner will know the demands facing the electric vehicle charging structure and the ways employers can support the uptake of sustainable modes of transport.

Assessment					
	This unit is internally a	ssessed, via a portfolio	of evidence.		
Mandatory Graded P/F Level 3 25 GLH					

Learning outcomes	Assessment criteria
The learner will:	The learner can:
Understand the impact of petrol/diesel fuelled transport on air quality	1.1 Define the following terms: • poor air quality • acceptable air quality • excellent air quality
	1.2 Identify where a range of air pollutants may occur 1.3 Explain how a range of air pollutants are created in various workplaces 1.4 Discuss the impact of air pollutants on air quality 1.5 Investigate the human and environmental health impact of air pollutants 1.6 Evaluate the pollutant contributions of a range of vehicles in common public and private use 1.7 Discuss their impact on the environment
2 Know about hydrogen and other fuel cells	2.1 Explain what a fuel cell is 2.2 State the range of fuel and fuel cell options available to vehicles 2.3 Consider the 5 types of hydrogen fuel cells which could be used in a vehicle 2.4 Justify the selections made when choosing which type of hydrogen fuel cell should be used in a vehicle 2.5 Identify the main requirements for a hydrogen fuel cell vehicle infrastructure
3 Know about the demand facing the electric vehicle (EV) charging infrastructure	 3.1 Explain the different methods of charging electric vehicles (EV's) in terms of their power requirements 3.2 Compare the current and expected national power demands of EV's as the UK approaches 2030 3.3 Describe the intended purpose of the UK government's ban on petrol and diesel vehicles by 2030

4 Know ways	4.1 Identify sustainable modes of transport and describe the benefits of their
employers can	use
support the uptake	4.2 Justify the recommendation of certain sustainable modes of transport for a
of sustainable	range of employee commutes
modes of transport	4.3 Evaluate the environmental impact of a range of employee options for
	sustainable transport



1. Understand the impact of petrol/diesel fuelled transport on air quality

1.2 and 1.3: Air pollutants:

- sulphur dioxide
- nitrogen oxides
- particulate matter
- carbon dioxide
- carbon monoxide

1.6 Range of vehicles:

- petrol and diesel cars
- buses (including fossil fuel and hydrogen)
- trains
- bicycles
- boats
- aircraft

2. Know about hydrogen and other fuel cells

2.2 Range of fuel and fuel cell options:

- petrol
- diesel and bio diesel
- liquefied petroleum gas (LPG)
- electricity
- hydrogen
- hybrid
- synthetic

2.3 5 Types of hydrogen fuel cells:

- proton exchange membrane (PEM)
- alkaline fuel cell (AFC)
- phosphoric acid fuel cell (PAFC).
- molten carbonate fuel cell (MCFC)
- solid oxide fuel cell (SOFC)

2.5 Main requirements:

- generation
- transportation
- storage
- disposal

3. Know about the demand facing the electric vehicle (EV) charging infrastructure

3.1 Methods of charging:

- alternating current (AC) charging
- direct current (DC) charging
- trickle charging
- 4. Know ways employers can support the uptake of sustainable modes of transport

4.2 Range of employee commutes:

- long distance
- short distance
- inner city
- rural

4.3 Range of employee options:

- car sharing
- cycle to work scheme
- bus/train season tickets
- working from home vs going into the office
- use of teams/zoom vs physical meetings
- reduced need for large car parks
- use of expenses incentives to promote sustainable travel
- human resources (HR) practices that accommodate staff using 'slow travel' for their holidays

Delivery and assessment guidance

1.1 Poor – high levels of pollution especially that of smog, this will be due to a large number of polluting vehicles in an area. This will have a distinctive impact on environment and human health.

Acceptable – air quality that meets basic standards and may be high or unacceptable on rare occasions with a moderate impact on the environment and health.

Excellent – minimal air pollution across an area, regularly exceeding minimum standards. Little to no effect on environment and human health.

The tutor should focus on the impact of air quality on wildlife, human health and infrastructure.

1.2 and 1.3 All range must be covered.

- **1.5** Students should discuss the impact of the following on human health:
- nitrogen dioxide (NO2) respiratory irritant, inflammation to airways, cough, production of mucus and shortness of breath
- sulphur dioxide (SO2) irritates the lining of the nose, throat and airways
- ammonia (NH3) causing of cancer especially lung cancer
- ozone (O3) adverse effects on the cardiovascular system
- carbon monoxide (CO) high indoor levels can be fatal, while exposure to lower levels can result in symptoms that resemble flu, viral infections, or food poisoning

Delivery and assessment guidance

- non-methane volatile organic compounds (NMVOCs) sensitive people may suffer irritation of the eyes, nose and throat, headaches, and dizziness
- **1.6** All range must be covered. The learners could use a range of internet resources and calculators to estimate emissions for all vehicle types given.
- **2.5** The tutor should ask the students to think about the following:
- the need for large scale hydrogen production facilities in the UK
- to be truly carbon neutral "green" energy needs to be used to develop the hydrogen
- will heavy goods vehicle (HGV) lorries be required to transport the hydrogen, and will this require new tankers?
- will existing forecourts be sufficient or require investment to make them suitable for hydrogen?
- **3.2** The UK has been used as it is at the forefront of EV commitment, therefore students in any country will be able to use this as a case study.

Learners should talk about the need for investment in the electrical grid across the country to cope with the need for increased capacity and who would be responsible for the charging infrastructure.

Learners will need to talk about government, local government car parks, private businesses' car parks and individual households.

It is important to discuss the challenges that are faced as part of this for households with only on street parking.

The grid and charging infrastructure need flexibility to balance and ensure there are no blackouts.

AC charging – charges vehicles at various speeds more suitable for slower/home charging.

DC charging – typically used in fast and rapid chargers as electricity is supplied as a constant.

Trickle charging – designed to slowly charge the battery and preventing battery degradation.

- 3.3 The tutor should direct students to review the UK government's commitment to 2030.
- **4.1** The tutor could look at common ways of getting to and from their workplace and the benefits. Rail/light rail (tube, metro, subway) generally uses electricity but main area is transporting large numbers of people in a smaller area on a single platform.

Car sharing – encourages employees to car share and share costs of transport, helps reduce the number of cars on the road and in the car parks.

Cycling to work – helps employees with their health and fitness also requires less cars on the road and in car parks.

Bus/tram – whilst uses diesel, reduces the number of cars on the road significantly and allows for more people to travel collectively.

Walking to work - helps employees with their health and fitness also requires less cars on the road and in car parks, also no need for any form of storage or parking.

Delivery and assessment guidance

E-scooters are becoming popular as part of people's transport journeys.

E-bikes help make long bike rides more manageable.

4.2 Learners will need to identify different areas and understand that there is not a one size fits all method. A holistic approach is required to ensure all have a fair representation.



Unit 06: The impact of energy generation (K/650/0678)



Unit summary

In this unit the learner will know the range of fossil fuel sources, identify those most likely to be removed and how they will be replaced. The learner will also know the impact of different methods of power generation and the advantages and disadvantages of green power generation. The learner will know how industries can use renewable energy sources to begin transition to self-generation.

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Assessment			
This unit is internally assessed, via a portfolio of evidence.			
Mandatory	Graded P/F	Level 3	22 GLH

Learning outcomes	Assessment criteria
The learner will:	The learner can:
1 Understand the	1.1 List a range of fossil fuel sources
role of fossil fuel generation in the	1.2 Review the fossil fuel contributors to the UK National Grid and discuss their longevity, output, and efficiency
transition to renewable energy	1.3 Identify the fossil fuels most likely to be removed from the UK National Grid sources and discuss how they will be replaced
	1.4 Discuss the geographical environment of own home nation and identify the most likely sources of renewable energy
	1.5 Describe the concept of energy density of fossil fuel sources
2 Understand the full environmental cost	2.1 Compare the total environmental impact of different methods of power generation
of nuclear power production	2.2 Compare the use of nuclear fuels and fossil fuels to generate power with a view to sustainability
3 Know about green	3.1 Explain what is meant by green power generation
energy generation	3.2 Identify 4 methods of green power generation
	3.3 Discuss the advantages and disadvantages of green power generation for a range of 3 renewable energy sources
	3.4 Explain how carbon capture technology could allow fossil fuels to continue
	3.5 Explain how battery storage technology could be used in the transition to a renewable energy grid
4 Understand how workplaces can	4.1 Explain how industries can use renewable energy sources to begin to transition from grid power to self-generation
access sustainable energy sources	4.2 Explain the importance of industries aspiring to be self-sufficient in their own power generation

1. Understand the role of fossil fuel generation in the transition to renewable energy

1.1 Fossil fuel sources:

- coal
- oil
- gas

1.2 Fossil fuel contributors:

- coal
- oil
- gas (open and combined)
- 2. Understand the full environmental cost of nuclear power production

2.1 Different methods of power generation:

- nuclear
- fossil fuel:
 - o coal
 - o gas
- renewable energy:
 - wind
 - solar
- 3. Know about green energy generation

3.2 Methods:

- on shore wind
- offshore wind
- solar
- hydro dam
- wave turbines
- biomass
- geothermal

3.3 Renewable energy sources:

- wind power (on shore, offshore)
- solar power
- biomass
- nuclear
- tidal

- **4.** Understand how workplaces can access sustainable energy sources
- 4.1 Renewable energy sources:
- solar power
- wind power
- hydro electric

4.2 Importance:

- reduces reliability on the grid
- reduces carbon footprint
- reduces ongoing operating costs
- energy security
- reputational benefit

Delivery and assessment guidance

- **1.4** Tutors should refer learners to UK fuel type power generation or other home country alternative if deemed suitable by the tutor.
- **2.1** The learners could carry out a research task.
- **2.2** The learners must evaluate both fuels for environmental impact and power output and provide a supporting decision.
- **3.3** Learners could be provided with case studies, and provide a table to identify advantages and disadvantages of green power, for example:
- wind power and solar are clean and renewable but unpredictable
- position/location is critical for solar power
- some energy sources require a large physical presence
- some generate smoke and CO2
- biomass is a widely available source
- burning wood is a renewable source of fuel but is not considered clean because it emits smoke into the atmosphere
- nuclear power is a clean source of energy, reliable and predictable
- **3.4** The tutor could ask the learners to think about carbon capture balancing a fossil fuel power station elsewhere or carbon capture neutralising emissions from a fossil fuel power station.
- **3.5** The tutor could discuss how surplus energy stored during the night could be used at peak times.
- **4.1** Learners should not focus on heat as this is covered in Unit 7.

Unit 07: Heat decarbonisation (L/650/0679)



Unit summary

In this unit the learner will know current popular methods of fuelling heat in the workplace and the different renewable heating systems which could be used. The learner will also know the range of options for reducing heat demand, the challenges countries face, and opportunities presented by decarbonising heat.

Assessment					
This unit is internally assessed, via a portfolio of evidence.					
Mandatory	(Graded P/F	Level 3	20 GLH	

Learning outcomes The learner will:	Assessment criteria The learner can:
Understand the role of fossil fuels for heat production in the workplace	1.1 Identify the current popular methods of fuelling heat in the workplace
2 Know about alternative heating technologies which could be used in the workplace	2.1 Evaluate different renewable heat systems to heat buildings
3 Know about current alternative methods of reducing heat consumption	3.1 Describe a range of options for reducing heat demand and consumption
4 Understand why some countries are	4.1 Explain what net zero by 2050 means and how this translates into the workplace
prioritising heat decarbonisation	4.2 Describe the challenges countries face in decarbonising the heat network4.3 Describe the opportunities presented by decarbonising heat

1. Understand the role of fossil fuels for heat production in the workplace

1.1 Current popular methods:

- natural gas (such as boilers)
- heating oil
- electric heating (electric heaters / night-time storage heaters)
- heat ventilation and air conditioning (HVAC) systems
- 2. Know about alternative heating technologies which could be used in the workplace

2.1 Different renewable heat systems:

- air source heat pumps (ASHP)
- ground source heat pumps
- water source heat pumps
- district heat networks
- biomass boilers
- 3. Know about current alternative methods of reducing heat consumption

3.1 Range of options for reducing heat demand and consumption:

- insulate the building fabric
- insulate roof/ceilings
- prevent drafts
- double glazing windows
- more efficient boilers/heating systems
- heating controls
- green and blue roofs/living walls
- 4. Understand why some countries are prioritising heat decarbonisation

4.2 Challenges:

- cost
- infrastructure
- skills

4.3 Opportunities

- job creation
- reduced carbon emissions
- energy security

Delivery and assessment guidance

2.1 The tutor could provide case studies and ask the learners to discuss the advantages and disadvantages of each renewable heat system.

4.2 and 4.3 This should be in context of the UK for learners studying there or in the context of own home nation if not.

Unit 08: Sustainable Construction (T/650/0680)



Unit summary In this unit the learner will know the stakeholders who contribute to sustainable design prior to construction. Learners will also know the different pollutants and nonsustainable construction techniques from a building site and more sustainable alternatives. They will also know the impact construction materials have on the environment and how effective site management can make construction sites more sustainable. Assessment This unit is internally assessed, via a portfolio of evidence. Optional Graded P/F Level 3 20 GLH

Assessment criteria
The learner can:
1.1 Identify the different stakeholders which contribute to sustainable design prior to construction
Describe the responsibilities of different stakeholders as part of the design process
2.1 Discuss a range of pollutants from a typical building site
2.2 Identify a range of non-sustainable construction techniques and suggest more sustainable alternatives
2.3 Identify 5 of the most environmentally damaging construction
techniques in use today and describe how they harm the environment
2.4 Evaluate a range of techniques that are currently unavoidable and suggest alternatives
3.1 List and describe environmentally damaging methods of extracting
construction materials from the environment
3.2 Identify at least 4 construction materials that are not sustainable and
suggest more sustainable alternatives
3.3 Describe how effective site management can make construction sites more sustainable

2. Understand the environmental impact of current methods of construction

2.1 Range of pollutants:

- air
- water
- noise

2.3 Environmentally damaging construction techniques:

- use of heavy plant
- · accidental spillage and dumping
- · poor selection of materials
- material waste
- misuse of natural resources

3. Understand the environmental impact of construction materials

3.2 Construction materials:

- concrete
- sandstone
- additives
- steel reinforcement bar

Delivery and assessment guidance

- **1.1** Learners should consider architects, planners and construction organisations who are all key contributors to the design of a project. This is about designing a new infrastructure or building to be as sustainable as possible during its construction and operation.
- **1.2** Tutors should direct learners to research the key responsibilities of different stakeholders in ensuring sustainable construction.
- **2.2** The learner should consider the use of concrete and additives, prefabricated materials made in controlled environments rather than on site, including concrete and steel forms, hemp and wood.
- **2.4** For example, cranes could be replaced with workers carrying materials to the height. This is unrealistic and would increase cost and time for projects but would be more sustainable.
- **3.1** Learners should consider raw materials used in processing and manufacturing primary and secondary construction materials.
- **3.3** Learners should consider:
- construction waste
- blueprints
- groundwater runoff
- plant selection
- fleet management

Unit 09: Biodiversity in the workplace and the community (Y/650/0681)



Unit summary

In this unit the learner will know what biodiversity is, the benefits of biodiversity and the impact of a lack of biodiversity on an ecosystem. Learners will also be able to identify ways to support biodiversity in the workplace and the community, know how businesses can be proactive in supporting biodiversity, how employees can influence employers and the consequences of not supporting hindiversity

This unit is internally assessed, via a portfolio of evidence. Optional Graded P/F Level 3 20 GLH				
	Assessment			
biodiversity.				
blodiversity, now employees can initidefice employers and the consequences of not supporting				

Learning outcomes	Assessment criteria
The learner will:	The learner can:
1 Understand the	1.1 Explain what biodiversity is
benefits of	1.2 Describe the benefits of biodiversity
biodiversity for the environment	1.3 Consider the impact of a lack of biodiversity on an ecosystem
2 Know how to	2.1 Identify ways biodiversity could be supported in the workplace and the
promote	community
biodiversity	2.2 Explain how businesses could be proactive in supporting biodiversity in
through the	the workplace and the community
workplace and the	2.3 Explain how employers can encourage employees or community members
community	to actively support biodiversity in the workplace or the community
	2.4 Explain how employees or community member can influence employers
	to actively support biodiversity in the workplace or the community
	2.5 Discuss the consequences of not supporting biodiversity in the workplace
	or the community

Know how to promote biodiversity through the workplace and the community

2.1 Ways biodiversity could be supported:

- tree planting
- bat/bird boxes
- hedgehog holes
- bee friendly planting/roof space for beehives
- procurement practices
- green and blue spaces
- conscious and considered grounds planning
- reducing/stopping lawn mowing
- reducing/stopping pesticide use
- considering biodiversity in the design of capital projects

2.2 Proactive in supporting biodiversity:

- sponsoring green spaces/gardens
- supporting community projects through employee volunteering
- sponsorship of community projects
- make employer facilities available to community groups
- partnerships with local wildlife and nature organisations

2.4 Influence employers:

- hosting community and biodiversity meetings
- coordinating a biodiversity group
- opening contact channels
- newsletters/blogs/webpage/social media
- sharing knowledge and resources

2.5 Consequences:

- reduced number of species in the environment
- reduced air quality
- possible collapse of eco systems
- pollinating crops by hand could be timely and costly
- biodiversity audits and fines

Delivery and assessment guidance

- **1.2** Learners should consider the following:
- that trees act as the lungs of earth taking in carbon dioxide and returning oxygen for mammals to breath
- there are not just benefits to the environment but also to people's physical and mental health by providing a place to exercise and relax in
- biodiversity can help provide food
- bees which are essential pollinate crops that we rely on for food
- biodiversity regulates the earth's climate

Delivery and assessment guidance

- **1.3** Tutor to provide case studies of ecosystem examples.
- **2.2** The learners could be asked to carry out a study of their own workplace or learning environment or can be provided with case studies, if not in employment. Learners should be encouraged to research local organisations.



Unit 10: Sustainable food (A/650/0682)



Unit summary

In this unit the learner will know the transportation methods that contribute to the global food supply chain and the environmental impact of year-long availability. Learners will know the importance and limitations of the global supply chain, the carbon footprint of a range of foods, the environmental impact and how employers could promote lower carbon foods in the workplace. Learners will also know the current and alternative sustainable packaging methods and the benefits and drawbacks to having no packaging in place.

Assessment					
This unit is internally assessed, via a portfolio of evidence.					
Optional Graded P/F Level 3 20 GLH					

Learning outcomes The learner will:	Assessment criteria The learner can:
1 Be able to review the impact of the	1.1 Identify a range of transportation methods that contribute to the global food supply chain and evaluate their green credentials
global food supply chain	1.2 Explain the environmental impact of foods in relation to the consumer benefit of year-long availability
2 Understand ways to improve the	Identify a number of limitations of the current global supply chain and suggest improvements
supply chain	2.2 Describe the importance of the current global supply chain by comparing the food available for UK consumers with and without this facility
3 Know how to	3.1 State the travel and growth carbon footprints of a range of foods
reduce carbon	3.2 Discuss the environmental impact of meat consumption
footprints and	3.3 Discuss how an employer could promote lower carbon foods in the
promote the use of lower carbon foods	workplace
4 Understand why	4.1 Describe and justify current packaging methods for:
food companies	• meat
make	• drinks
unsustainable	• eggs
choices for	vegetables
packaging and know sustainable	canned goods
alternatives	4.2 Suggest more sustainable packaging methods for a range of foods
	4.3 Discuss the benefits and drawbacks of shops which have no packaging in place, instead relying on consumers to bring their own storage containers

Range

1. Be able to review the impact of the global food supply chain

1.1 Transportation methods:

- shipping
- aviation
- haulage
- rail

1.2 Environmental impact:

- greenhouse gas emissions
- · habitable land used for agriculture
- fresh water use
- fresh water eutrophication
- livestock outweighing wild mammals
- sustainability badges:
 - Fairtrade
 - Red Tractor
 - Marine Stewardship Council (MSC)

3. Know how to reduce carbon footprints and promote the use of lower carbon foods

3.1 Range of foods:

- avocados from Peru
- apples from the USA
- grapes from Chile
- potatoes from Israel
- brussels sprouts from Australia
- as part of their growth process
- as part of their transportation

3.2 Environmental impact:

- deforestation
- biodiversity loss
- greenhouse gas emissions
- water usage
- soil degradation
- climate change

4. Understand why food companies make unsustainable choices for packaging and know sustainable alternatives

4.2 A range of foods:

- meat
- drinks
- eggs
- vegetables
- canned goods

Delivery and assessment guidance

- **2.1** The learners could use case studies to describe limitations to the global supply chain such as Brexit, 'pingdemic', Ever Given.
- **2.2** The learners could carry out research into whether it's worth the logistical supply chain to have year-round foods.
- **3.1** The example in the range are the main sources found on UK shelves.
- **3.3** Learners may wish to consider:
- canteens and vending machines
- organic produce
- marketing material
- buying seasonal produce
- sourcing local suppliers
- Fairtrade and Marine Stewardship Council (MSC) approved purchasing
- national initiatives, such as Veganuary

The learners must be aware of the amount of energy required to grow fruit, vegetables and meat.

- **4.2** This should include single use, reusable material, sourcing, and disposal.
- **4.3** Learners should talk about pros and cons of glass containers, tetra packs and other materials.

Unit 11: Sustainable water management in the workplace (D/650/0683)



Unit summary

In this unit the learner will know how water is used in different workplaces and ways to reduce the amount of water used in a range of workplaces. The learner will also know how the employer and environment benefit from reducing water consumption and ways that wastewater can be treated to remove contaminants.

Tomovo contaminanto:							
Assessment							
This unit is internally assessed, via a portfolio of evidence.							
Optional Graded P/F Level 3 20 GLH							

Learning outcomes The learner will:	Assessment criteria The learner can:			
1 Understand how	1.1 Discuss how water is used in a range of workplaces			
water is used in	1.2 Describe ways to reduce the amount of water used in a range of			
the workplace	workplaces			
2 Be able to create a	2.1 Identify sources of water consumption that could be reduced within the			
strategy to reduce	workplace			
water consumption	2.2 Describe methods of reducing the amount of water consumed in the			
within the	workplace			
workplace	2.3 Explain how the employer and environment benefit from employers			
	reducing the volume of water consumed			
3 Know how	3.1 Identify ways to reduce water usage in workplace practices			
workplaces can	3.2 Consider ways that wastewater can be treated to remove			
improve water	contaminants before discharge			
management				

Range

1. Understand how water is used in the workplace

1.1 and 1.2 Workplaces:

- plant farming
- car manufacture
- meat production
- textiles
- office

2. Be able to create a strategy to reduce water consumption within the workplace

2.2 Methods of reducing the amount of water consumed:

- water aerators / low flow taps
- dual flush toilets
- waterless urinals
- rainwater harvesting
- water recycling processes
- leak detection
- optimising water use in grounds maintenance

2.3 How the employer and environment benefit:

- financial savings
- reduced water load on wholesaler
- minimises the effect of drought and water shortages
- reduced use of electric to pump water
- reduce risk of environmental pollution or contamination
- reduced political conflict

3. Know how workplaces can improve water management

3.2 Ways that wastewater can be treated to remove contaminants:

- remove water from cleaning processes and look for dry cleaning alternatives
- majority of water used in industry is for cooling, are there more suitable ways to cool?
- can the water be cleaned and reused in a circular system?

Delivery and assessment guidance

- **1.1 and 1.2** All range must be covered.
- **2.1** The tutor could ask learners to carry out a water audit of their workplace or learning environment.
- **3.1** Learners can use their own workplace, or the tutor could give a specific example. The learner should consider manufacturing methods, rainwater harvesting, grey water harvesting, up to date equipment.

Assessment strategies and principles relevant to this qualification

The units we offer have been developed in line with the specific assessment strategies or principles of different Sector Skills Councils (SSCs) or by us where there is no SSC lead.

The key requirements of the assessment strategies or principles that relate to units in this qualification are summarised below.

The centre needs to ensure that individuals undertaking assessor or quality assurer roles within the centre conform to the SSC or our assessment requirements for the unit they are assessing or quality assuring.

Assessment strategy

Knowledge learning outcomes:

- assessors will need to be both occupationally knowledgeable and qualified to make assessment decisions
- internal quality assurers will need to be both occupationally knowledgeable and qualified to make quality assurance decisions

Competence/skills learning outcomes:

- assessors will need to be both occupationally competent and qualified to make assessment decisions
- internal quality assurers will need to be both occupationally knowledgeable and qualified to make quality assurance decisions

Section 3: explanation of terms

(This table explains how the terms used at level 3 in the unit content are applied to this qualification (not all verbs are used in this qualification).

Apply	Explain how existing knowledge can be linked to new or different situations in practice.			
Analyse	Break the subject down into separate parts and examine each part. Show how the main ideas are related and why they are important. Reference to current research or theory may support the analysis.			
Clarify	Explain the information in a clear, concise way.			
Classify	Organise according to specific criteria.			
Collate	Collect and present information arranged in sequential or logical order.			
Compare	Examine the subjects in detail and consider the similarities and differences.			
Critically compare	This is a development of compare where the learner considers the positive aspects and limitations of the subject.			
Consider	Think carefully and write about a problem, action or decision.			
Demonstrate	Show an understanding by describing, explaining or illustrating using examples.			
Describe	Write about the subject giving detailed information in a logical way.			
Develop (a plan/idea which)	Expand a plan or idea by adding more detail and/or depth of information.			
Diagnose	Identify the cause based on valid evidence.			
Differentiate	Identify the differences between 2 or more things.			
Discuss	Write a detailed account giving a range of views or opinions.			
Distinguish	Explain the differences between 2 or more items, resources, or pieces of information.			
Draw conclusions (which)	Make a final decision or judgement based on reasons.			
Estimate	Form an approximate opinion or judgement using previous knowledge or considering other information.			

Evaluate	Examine strengths and weaknesses, arguments for and against and/or similarities and differences. Judge the evidence from the different perspectives and make a valid conclusion or reasoned judgement. Reference to current research or theory may support the evaluation.			
Explain	Provide detailed information about the subject with reasons showing how or why. Responses could include examples to support these reasons.			
Extrapolate	Use existing knowledge to predict possible outcomes that might be outside the norm.			
Identify	Recognise and name the main points accurately (some description may also be necessary to gain higher marks when using compensatory marking).			
Implement	Explain how to put an idea or plan into action.			
Interpret	Explain the meaning of something.			
Judge	Form an opinion or make a decision.			
Justify	Give a satisfactory explanation for actions or decisions.			
Perform	Carry out a task or process to meet the requirements of the question.			
Plan	Think about and organise information in a logical way using an appropriate format.			
Provide	Identify and give relevant and detailed information in relation to the subject.			
Reflect	Learners should consider their actions, experiences or learning and the implications of this for their practice and/or professional development.			
Review and revise	Look back over the subject and make corrections or changes.			
Select	Make an informed choice for a specific purpose.			
Show	Supply evidence to demonstrate accurate knowledge and understanding.			
State	Give the main points clearly in sentences or paragraphs.			
Summarise	Give the main ideas or facts in a concise way.			

Section 4: support

Support materials

The following support materials are available to assist with the delivery of this qualification and are available on the NCFE website:

- learner's evidence tracking log (LETL)
- learning resources
- qualification factsheet

Useful websites

Centres may find the following websites helpful for information, materials and resources to assist with the delivery of this qualification:

- www.greenclaims.campaign.gov.uk
- www.sdgs.un.org/goals
- www.businessinsider.com
- www.environmental-conscience.com
- www.google.com
- www.energy.gov
- www.en.wikipedia.org
- <u>www.gridwatch.co</u>.uk
- www.gov.uk
- www.icao.int
- www.calculator.carbonfootprint.com
- www.gov.uk

These links are provided as sources of potentially useful information for delivery/learning of this subject area. NCFE/CACHE do not explicitly endorse any learning resources available on these websites. For official NCFE/CACHE endorsed learning resources, please see the additional and teaching materials sections on the qualification page on the NCFE website.

Other support materials

The resources and materials used in the delivery of this qualification must be age-appropriate and due consideration should be given to the wellbeing and safeguarding of learners in line with your institute's safeguarding policy when developing or selecting delivery materials.

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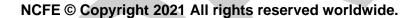
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* To continue to improve our levels of customer service, telephone calls may be recorded for training and quality purposes.

Appendix A

Units



Knowledge only units are indicated by a star. If a unit is not marked with a star, it is a skills unit or contains a mix of knowledge and skills.

Mandatory units

	Unit number	Regulated unit number	Unit title	Level	GLH	Notes
7	Unit 01	A/650/0673	The challenges of sustainability in the workplace	3	24	
7	Unit 02	D/650/0674	Environmental standards and legislation	3	8	
7	Unit 03	F/650/0675	Greening the workplace	3	30	
7	Unit 04	H/650/0676	Inspiring environmental responsibility in the workplace	3	12	
7	Unit 05	J/650/0677	Sustainable transport	3	25	

$\stackrel{\wedge}{\Box}$





Optional units

	Unit number	Regulated unit number	Unit title	Level	GLH	Notes
公	Unit 08	T/650/0680	Sustainable construction	3	20	
$\stackrel{\wedge}{\Box}$	Unit 09	Y/650/0681	Biodiversity in the workplace and the community	3	20	
☆	Unit 10	A/650/0682	Sustainable food	3	20	
☆	Unit 11	D/650/0683	Sustainable water management in the workplace	3	20	

The units above may be available as stand-alone unit programmes. Please visit our website for further information.