



## **Qualification Specification**

### **Level 3 Diploma in Energy Management**

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## Introduction

The aim of the Level 3 Diploma in Energy Management qualification is to equip candidates with a broad basic understanding of the core areas of energy management.

This qualification is aimed at those entering the profession, for example, through the recently approved Junior Energy Manager Trailblazer Apprenticeship, or as a standalone energy management qualification for individuals working in, for example, the areas of facilities management, property or environmental services.

Achievement of the qualification enables candidates to apply for membership of energy management professional bodies, such as the Energy Managers Association (EMA)

The awarding organisation for this qualification is ProQual AB. This qualification is regulated by the Office of Qualifications and Examinations Regulation (Ofqual) and the Council for the Curriculum Examinations and Assessment (CCEA) Regulation. The Regulated Qualifications Framework (RQF) includes those qualifications regulated by Ofqual and CCEA Regulation.

## Entry Requirements

There are no formal entry requirements for this qualification.

Centres should carry out an **initial assessment** of candidate skills and knowledge to identify any gaps and help plan the assessment.

## Qualification Profile

Qualification title	<b>ProQual Level 3 Diploma in Energy Management</b>
Ofqual qualification number	601/8098/5
Level	3
Total Qualification Time	360
Assessment	Pass or fail Internally assessed and verified by centre staff External quality assurance by ProQual verifiers
Qualification start date	1/11/15
Qualification end date	

## Qualification Structure

To achieve the Level 3 Diploma in Energy Management, candidates must complete all 11 of the following Mandatory Units:

H/507/9083 Energy Management : An Introduction

K/507/9084 Energy Management : Technical and Operational

M/507/9085 Energy Management : Energy Assessments, Measurements and Verification

T/507/9086 Energy Management : Behavioural Change and Motivation

A/507/9087 Energy Management : Regulatory & Legal Compliance and Carbon Management

F/507/9088 Energy Management : Strategy/Plan

J/507/9089 Energy Management : Waste Management

A/507/9090 Energy Management : Procurement

F/507/9091 Energy Management : Transport

J/507/9092 Energy Management : Water

L/507/9093 Energy Management : Information & Communications Technology

Each of the above units also form separate qualifications (listed below), refer to the **Level 3 Awards in Energy Management Specification** for further details.

601/9098/3 ProQual Level 3 Award in Energy Management : An Introduction

601/8109/6 ProQual Level 3 Award in Energy Management : Technical and Operational

601/8104/7 ProQual Level 3 Award in Energy Management : Energy Assessments, Measurements and Verification

601/8103/5 ProQual Level 3 Award in Energy Management : Behavioural Change and Motivation

601/8107/2 ProQual Level 3 Award in Energy Management : Regulatory & Legal Compliance and Carbon Management

601/8108/4 ProQual Level 3 Award in Energy Management : Strategy/Plan

601/8111/4 ProQual Level 3 Award in Energy Management : Waste Management

601/8106/0 ProQual Level 3 Award in Energy Management : Procurement

601/8110/2 ProQual Level 3 Award in Energy Management : Transport

601/8112/6 ProQual Level 3 Award in Energy Management : Water

601/8105/9 ProQual Level 3 Award in Energy Management : Information & Communications Technology

## Centre Requirements

Centres must be approved to offer this qualification. If your centre is not approved please complete and submit form **ProQual Additional Qualification Approval Application**.

### Staff

Staff delivering this qualification must be appropriately qualified and occupationally competent.

### Assessors/Internal Quality Assurance

For each competence-based unit centres must be able to provide at least one assessor and one internal quality assurance verifier who are suitably qualified for the specific occupational area. Assessors and internal quality assurance verifiers for competence-based units or qualifications will normally need to hold appropriate assessor or verifier qualifications, such as:

- ProQual Level 3 Certificate in Teaching, Training and Assessment
- Award in Assessing Competence in the Work Environment
- Award in Assessing Vocationally Related Achievement
- Certificate in Assessing Vocational Achievement
- Award in the Internal Quality Assurance of Assessment Processes and Practices
- Certificate in Leading the Internal Quality Assurance of Assessment Processes and Practices

## Support for Candidates

Materials produced by centres to support candidates should:

- enable them to track their achievements as they progress through the learning outcomes and assessment criteria;
- provide information on where ProQual's policies and procedures can be viewed;
- provide a means of enabling Internal and External Quality Assurance staff to authenticate evidence

## Assessment

Candidates must demonstrate the level of knowledge described in each unit. Assessment is the process of measuring a candidate's knowledge and understanding against the standards set in the qualification.

Each candidate is required to produce evidence which demonstrates their achievement of all of the learning outcomes and assessment criteria for each unit.

Evidence can include:

- assignments/projects/reports
- worksheets
- portfolio of evidence
- record of oral and/or written questioning
- candidate test papers

**Learning outcomes** set out what a candidate is expected to know, understand or be able to do.

**Assessment criteria** specify the standard a candidate must meet to show the learning outcome has been achieved.

*Learning outcomes and assessment criteria for this qualification can be found from page 8 onwards.*

There must be valid, authentic and sufficient for all the assessment criteria. However, one piece of evidence may be used to meet the requirements of more than one learning outcome or assessment criterion.

## Internal Quality Assurance

An internal quality assurance verifier confirms that assessment decisions made in centres are made by competent and qualified assessors, that they are the result of sound and fair assessment practice and that they are recorded accurately and appropriately.

## Adjustments to Assessment

Adjustments to standard assessment arrangements are made on the individual needs of candidates. ProQual's Reasonable Adjustments Policy and Special Consideration Policy sets out the steps to follow when implementing reasonable adjustments and special considerations and the service that ProQual provides for some of these arrangements.

Centres should contact ProQual for further information or queries about the contents of the policy.

## Results Enquiries and Appeals

All enquiries relating to assessment or other decisions should be dealt with by centres, with reference to ProQual's Enquiries and Appeals Procedures.

## Certification

Candidates who successfully complete all of the Mandatory Units required for this qualification will be awarded a certificate giving the full qualification title -

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#### **Claiming certificates**

Centres may claim certificates for candidates who have been registered with ProQual and who have successfully completed all of the units. All certificates will be issued to the centre for successful candidates.

#### **Replacement certificates**

If a replacement certificate is required a request must be made to ProQual in writing. Replacement certificates are labelled as such and are only provided when the claim has been authenticated. Refer to the Fee Schedule for details of charges for replacement certificates.

# Learning Outcomes and Assessment Criteria

## H/507/9083 Energy Management: An Introduction

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Understand the fundamentals of energy management	1.1 Define what energy is 1.2 Identify different types of energy 1.3 Define what carbon emissions are 1.4 Define what energy management is 1.5 Identify the importance of core energy management competencies, including: Technical and Operational, Energy Assessment and Measurement & Verification, Behavioural Change and Motivation, Regulatory and Legal Compliance and Carbon Management, Strategy and Plan, Waste Management, Procurement, Transport, Water and ICT 1.6 Explain the role of an energy manager 1.7 Describe the process of energy reporting 1.8 Describe how energy reporting can contribute to reducing energy consumption
2 Understand energy consumption in the workplace	2.1 Describe various ways that energy is used in the workplace 2.2 Explain how energy use varies with respect to equipment used in the workplace 2.3 Describe the typical inefficiencies in energy consumption in working environments 2.4 Describe how energy consumption can be measured in the workplace 2.5 Explain what energy saving practices can be introduced to reduce energy consumption 2.6 Explain organisational benefits of the reduction of energy consumption
3 Understand obstacles to reducing energy consumption in the workplace	3.1 Explain the key obstacles to reducing energy consumption in the workplace 3.2 Describe what actions can be taken to overcome the key obstacles to reducing energy consumption 3.3 Identify different channels used for stakeholders' engagement
4 Understand common energy use systems in the workplace	4.1 Outline common energy use systems 4.2 Describe how common energy use systems operate 4.3 Outline opportunities for improvement of energy use systems in workplace
5 Understand the importance of collecting and managing energy data	5.1 Describe where to find energy data 5.2 Describe how to collect energy data



Learning Outcome - The learner will:	Assessment Criterion - The learner can:
	<ul style="list-style-type: none"> <li>5.3 Identify different types of meters</li> <li>5.4 Identify individual identifiers of meters</li> <li>5.5 Describe an energy bill and its elements, including the meter's individual identifiers</li> <li>5.6 Describe different types of data collection methods</li> </ul>
6 Understand the importance of energy audits and assessments in the workplace	<ul style="list-style-type: none"> <li>6.1 Explain the framework for carrying out an energy audits</li> <li>6.2 Describe approaches to energy assessments</li> <li>6.3 Demonstrate an understanding of energy audits and assessments as means of identifying opportunities to improve energy performance</li> </ul>
7 Understand the importance of energy consumption awareness in the workplace	<ul style="list-style-type: none"> <li>7.1 Identify opportunities of raising energy consumption awareness in the workplace</li> <li>7.2 Describe various channels of disseminating energy awareness across the workplace</li> </ul>
8 Understand the key legislative and regulatory requirements covering energy in the UK	<ul style="list-style-type: none"> <li>8.1 Identify what legislation is in place to reduce energy consumption and carbon emissions</li> </ul>
9 Understand the importance of an organisation's energy strategy, planning and policy	<ul style="list-style-type: none"> <li>9.1 Explain the importance of an organisation's energy strategy, planning and policy</li> <li>9.2 Outline an organisation's energy objectives and targets</li> <li>9.3 Identify the benefits of an organisation's energy strategy, planning and policy</li> <li>9.4 Identify global energy trends and their impact of organisational setting</li> </ul>
10 Understand key areas of waste management in the workplace	<ul style="list-style-type: none"> <li>10.1 Explain what the European Waste Hierarchy is</li> <li>10.2 Identify waste streams in the workplace</li> <li>10.3 Describe how waste can be a renewable resource</li> </ul>
11 Understand key areas of procurement	<ul style="list-style-type: none"> <li>11.1 Describe simple procurement actions</li> <li>11.2 Explain advantages and disadvantages of direct and indirect suppliers</li> </ul>
12 Understand the relevance of transport to energy management	<ul style="list-style-type: none"> <li>12.1 Explain the relevance of transport to energy management</li> <li>12.2 Describe how energy consumption varies according to the type of transport used</li> <li>12.3 Outline what action can be taken to reduce energy consumption from transport</li> </ul>
13 Understand water consumption in the workplace	<ul style="list-style-type: none"> <li>13.1 Explain the impact of water consumption on energy consumption and carbon emissions</li> <li>13.2 Describe processes within the workplace which use water</li> </ul>

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
14 Understand the impact of ICT on energy consumption	13.3 Identify actions that can be taken to reduce water consumption 14.1 Explain IT as an element of energy and water consumption 14.2 Describe how energy consumption varies according to the type of ICT equipment used 14.3 Identify actions that can be taken to reduce energy consumption from ICT

## K/507/9084 Energy Management : Technical and Operational

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Understand how energy is consumed in different types of building and/or processes	1.1 Identify different sources of energy in a building or process 1.2 Identify how energy is distributed from the energy source to energy users in a building or process (e.g. electric cables, pipes, ducts, etc.) 1.3 Use data to determine which energy use equipment and systems consume the most energy 1.4 Build a profile to show energy consumption in a building or process 1.5 Identify major mechanisms where energy (electricity and heat) is gained, lost and/or can be recovered from a building or process
2 Understand how energy use equipment and systems operate	2.1 Describe how key energy use systems operate in a building or process 2.2 Describe how energy consumption can vary in a building (e.g. occupancy, weather pattern, temperature, etc.) or process (e.g. production levels, waste, etc.) 2.3 Identify appropriate energy performance indicators (e.g. energy use, energy consumption, energy efficiency, etc.) for the energy use equipment and systems 2.4 Describe how inefficiencies arise and what opportunities there are to improve the energy performance of various energy uses
3 Understand the role of design, installation and commissioning of energy use equipment and systems	3.1 Describe how the energy consumption of one energy use equipment can have an effect on the energy consumption of another energy use equipment 3.2 Outline the importance of design, installation and commissioning on the planned operating life of energy use equipment and systems 3.3 Describe the design and installation requirements for energy use equipment that brings about energy efficiency 3.4 Describe techniques used to ensure that energy use equipment and systems have been installed, tested and commissioned according to energy efficient design requirements
4 Understand how to use operational and maintenance controls to operate the energy use equipment and systems efficiently	4.1 Outline the importance of operational controls and maintenance controls on the planned operating life of energy use equipment and systems

**Learning Outcome - The learner will:****Assessment Criterion - The learner can:**

- 4.2 Identify sources of information for operational and maintenance controls of energy use equipment and systems
- 4.3 Define the operational and maintenance requirements for energy use equipment and systems that brings about energy efficiency –
- Start-up and shut down
  - Matching energy demand with supply
  - Scheduling techniques
  - Operating procedures
  - Maintenance procedures, etc.

## M/507/9085 Energy Management – Energy Assessments, Measurements and Verification

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Be able to understand basic metering and know how to collect and record data	1.1 Describe how energy and water are measured (manually and remotely/automatically) 1.2 Identify and classify existing (fiscal) metering 1.3 Demonstrate an understanding of billing information 1.4 Verify the accuracy of billed (non-financial) data 1.5 Select and install sub-metering
2 Be able to carry out basic checks on bills and other recorded data to verify accuracy and repeatability	2.1 Define a metering and measurement plan 2.2 Meet the installation requirements and install the meter as per manufacturers' requirements 2.3 Define calibration requirements 2.4 Record information using: <ul style="list-style-type: none"> <li>• simple spreadsheets</li> <li>• proprietary software systems</li> </ul> 2.5 Check the accuracy of information
3 Be able to set targets in line with published guidelines	3.1 Use the information to measure energy performance 3.2 Identify the variable that affects the energy consumption in their organisation 3.3 Define the energy baseline and energy performance indicator 3.4 Make adjustments to information to compare year-on-year information 3.5 Use data to set targets for energy performance
4 Be able to report against targets to a range of stakeholders	4.1 Develop plans to monitor energy consumption and energy projects 4.2 Report energy performance against targets to senior management, colleagues and other stakeholders 4.3 Report in accordance with legislative and regulatory guidelines
5 Be able to compare Energy Assessment methods	5.1 Identify the pros and cons of different energy assessment methods 5.2 Use a transparent and consistent methodology to identify and quantify opportunities for improvements in energy performance 5.3 Be able to define the opportunities for improvements in energy performance 5.4 Relate the opportunities for improvement in cost/energy savings and carbon reduction

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
6 Be able to choose product and system solutions that reduce energy/carbon	6.1 Demonstrate an understanding of the energy performance of buildings and processes 6.2 Identify opportunities to improve energy performance 6.3 Identify where to view up-to-date, credible information about improving energy performance 6.4 Relay the benefits of the information into organisational/operational benefits (£)

## T/507/9086 Energy Management : Behavioural Change and Motivation

<b>Learning Outcome - The learner will:</b>	<b>Assessment Criterion - The learner can:</b>
1 Be able to identify changes required to improve energy performance	1.1 Define their energy performance goals 1.2 Communicate the need for change to various stakeholders
2 Be able to develop structures and strategies for change to improve energy performance	2.1 Identify sources of guidance within their organisation 2.2 Identify key players 2.3 Use data and organisational information and be able to communicate with key players
3 Be able to monitor and report on progress towards defined energy performance goals	3.1 Report and communicate on the status of energy performance and progress of improvements

## A/507/9087 Energy Management : Regulatory & Legal Compliance and Carbon Management

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Be aware of key EU directives and UK legislation relevant to energy and climate change	1.1 Identify relevant EU energy and climate change directives 1.2 Identify relevant UK energy and climate change regulations
2 Be aware of economic incentives for energy management	2.1 Describe economic incentives that are currently available
3 Be able to quantify the impact of legislation on their organisation	3.1 Identify key issues for UK companies arising from EU and UK legislation
4 Be able to anticipate broad changes that might affect long-term organisational plans	4.1 Explain the issue of compliance versus best practice in the context of their organisation 4.2 Outline the long term direction of legislation
5 Know where to find current legislation and regulatory information	5.1 Identify sources of up-to-date information
6 Understand factors influencing carbon reduction	6.1 Identify current regulations and legislation relating to carbon reduction 6.2 Identify opportunities for carbon reduction and penalties for non-reduction 6.3 Describe factors that influence carbon reduction, e.g. types of buildings/operations/renewables 6.4 Identify reporting needs 6.5 State their organisation's position on carbon reduction
7 Be able to assess simple carbon footprints	7.1 Define the boundary of carbon footprint (e.g. scope 1, scope 2 and scope 3) 7.2 Carry out carbon footprint studies 7.3 Monitor and review carbon footprint studies
8 Be able to factor the cost of carbon into Business Cases	8.1 Describe carbon markets and how they operate 8.2 Identify the carbon costs of different types of energy 8.3 Describe how Power Purchase Agreements are used for off-site generation of energy 8.4 Explain what is meant by: <ul style="list-style-type: none"> <li>• carbon credits</li> <li>• carbon offsets</li> <li>• carbon efficiency</li> </ul> 8.7 Explain how their organisation can influence its supply base 8.8 Explain why carbon consultants may be engaged 8.9 Explain the potential use of renewable energy solutions within their organisation 8.10 Develop and use a carbon plan



## F/507/9088 Energy Management : Strategy/Plan

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
<p>1 Understand global energy trends and their impact on business operations</p>	<p>1.1 Explain global energy trends in terms of:</p> <ul style="list-style-type: none"> <li>• Supply and demand of energy</li> <li>• Projection of energy consumption</li> <li>• Climate change adaptation</li> <li>• De-carbonising energy supply markets etc.</li> </ul> <p>1.2 Explain the impact of energy consumption on:</p> <ul style="list-style-type: none"> <li>• Energy pricing</li> <li>• Business competition and survival</li> <li>• Security of supply</li> <li>• Climate change and wider environment etc.</li> </ul> <p>1.3 Explain the financing of energy savings in terms of:</p> <ul style="list-style-type: none"> <li>• In-company financing</li> <li>• On-demand energy purchasing</li> <li>• Green investment banking</li> <li>• Energy performance contracting etc.</li> </ul>
<p>2 Determine suitable objectives and targets for improvement</p>	<p>2.1 Describe the relationship between an energy policy, objectives, targets and action plan</p> <p>2.2 Analyse various improvement projects within a portfolio of opportunities</p> <p>2.3 Define the overall project plan and implementation schedule taking into consideration:</p> <ul style="list-style-type: none"> <li>• Energy policy</li> <li>• Energy objective and targets</li> <li>• Compliance with regulatory and other requirements</li> </ul>
<p>3 Develop an action plan around energy, carbon and water</p>	<p>3.1 Plan and implement operational and maintenance controls of energy use in their organisation</p> <p>3.2 Prioritise the implementation of opportunities for improvement</p> <p>3.3 Develop systems to manage change and address barriers for change</p> <p>3.4 Develop and execute contingency plans</p> <p>3.5 Benchmark the overall plan against other similar plans</p>
<p>4 Understand how success will be measured and verified</p>	<p>4.1 Describe how energy performance can be measured and verified</p> <p>4.2 Propose and implement monitoring to verify energy performance</p>

## J/507/9089 Energy Management : Waste Management

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Understand key challenges in waste streams and the appropriate use of waste	1.1 Describe the different steps of the European Waste Hierarchy 1.2 Describe the waste stream of their organisation, including: <ul style="list-style-type: none"> <li>• recyclables</li> <li>• food waste</li> <li>• waste water</li> <li>• unrecyclables</li> <li>• energy from waste</li> <li>• landfill and hazardous or toxic waste</li> </ul>
2 Understand financial advantages and disadvantages of their organisation's waste stream	2.1 Explain the fiscal and reputational value of processing waste 2.2 Explain the fiscal and reputational risks of landfill of waste
3 Understand the use of waste as a renewable resource	3.1 Describe processes of using waste as a resource, e.g. the use of food waste through anaerobic digestion, the waste being feedstock, energy producer source of renewable fertilizer 3.2 Describe the processing of other waste streams (e.g. recyclables, waste water, unrecyclables, energy from waste, landfill and hazardous or toxic waste)
4 Be able to undertake a basic audit of greenhouse gas emissions in their workplace	4.1 Identify the greenhouse gas emissions of all aspects of waste processes such as sorting, transport, processing and final use 4.2 Understanding greenhouse gas emissions from energy from waste and landfill

## A/507/9090 Energy Management : Procurement

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Be able to carry out simple procurement actions	1.1 Conduct daily monitoring and review of procured goods, including: <ul style="list-style-type: none"><li>• the makeup of charges on bills</li><li>• sources of information, e.g. pass-through charges</li><li>• impact of subsidies/taxes</li><li>• interface with operations</li></ul>
2 Be able to plan for their personal development	2.1 Identify areas for personal development in the purchasing of energy, e.g. <ul style="list-style-type: none"><li>• making retrospective claims for charging errors</li><li>• how to deal with unexpected or unplanned situations</li><li>• not allowing a contract to expire</li></ul>

## F/507/9091 Energy Management : Transport

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Understand key energy management challenges associated with the transport and logistics sector	1.1 Explain the key challenges, such as: <ul style="list-style-type: none"><li>• energy security</li><li>• sources of inefficiencies in transport system</li><li>• congestion (when transport demand exceeds transport supply)</li><li>• air pollution</li></ul>
2 Understand the impact of climate change on the transport sector	2.1 Describe the climate adaptation and mitigation strategies associated with the transport sector 2.2 Identify the impacts associated with climate change
3 Understand local, regional, national and international energy management initiatives/policies associated with the transport sector	3.1 Describe initiatives that have been adopted to improve efficiency, reduce congestion and other negative impacts associated with the transport sector

## J/507/9092 Energy Management : Water

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Understand water use and conservation in their workplace	1.1 Describe the areas of water use in their workplace 1.2 Describe the impact of water use in their workplace 1.3 Describe the supply chain and customer issues associated with water 1.4 Identify water companies, regulatory bodies and sources of information 1.6 Describe current trends in terms of regulation and water competition 1.7 Explain external environmental impacts of water use and conservation
2 Be able to undertake a basic water audit of their workplace	2.1 Describe the water boundary conditions for the workplace site 2.2 Track water inputs, uses and outputs in the workplace 2.3 Identify sources of water, including mains supply, rainwater, greywater and boreholes 2.4 Identify water using products and systems within the workplace 2.5 Identify discharges of water and areas of reuse 2.6 Measure water flows through, meter readings, bills, abstraction records and discharge records 2.7 Identify water leaks 2.8 Describe the role of meters and submeters 2.9 Develop a basic water audit for the workplace
3 Be able to identify the water-using fixtures and fittings in their workplace	3.1 Describe water-using fixtures and fittings, e.g. <ul style="list-style-type: none"> <li>• Water efficiency showers</li> <li>• Water efficient taps</li> <li>• Water efficient toilets</li> <li>• Water efficient kitchen taps</li> <li>• Water efficient white goods</li> <li>• Operation of regulators, restrictors and aerators</li> </ul> 3.2 Identify the advantages and disadvantages of specific water efficient devices
4 Be able to identify water efficiency within processes in their workplace	4.1 Identify processes within the workplace which use water 4.2 Identify sources of information for water efficient processes, such as cleaning-in-place, air conditioning, equipment cooling systems, etc. 4.3 Describe the water requirements of IT systems internally and externally

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
5 Be able to understand the links between water and energy in their workplace	4.4 Identify areas of water use optimisation in production systems or operations 4.5 Identify financial instruments and sources of information and assistance for process efficiency 5.1 State how much energy is used for heating and cooling water 5.2 State how much energy is used for pumping and treating water and waste water 5.3 Explain the water-energy nexus 5.4 Identify the energy used in external water and wastewater treatment 5.5 Identify energy related costs associated with water, ice and steam
6 Be able to develop behaviour change programmes and communications for water efficiency in their workplace	6.1 Identify who is responsible for water use in the workplace 6.2 Explain the role of Facilities Management contractors in water management 6.3 Describe how to inform colleagues of water efficiency measures 6.4 Develop effective water efficiency messages and communications 6.5 Develop behaviour change programmes 6.6 Communicate water efficiency externally and internally

## L/507/9093 Energy Management : Information & Communications Technology

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Understand the energy and water usage by ICT in their workplace	1.1 Describe how water is used in ICT cooling systems 1.2 Define the typical power footprint of computing devices and peripherals 1.3 Explain how to use power monitoring equipment to measure the energy usage of ICT equipment 1.4 Explain how to use appropriate sampling and reliable estimation methods of energy consumption 1.5 Describe how to conduct ICT equipment surveys 1.6 Describe how to use power meters and software tools to measure energy usage 1.7 Describe the energy usage of ICT infrastructures such as fat client, thin client, web-based, including where the ICT services are being delivered and their energy sources
2 Be able to model different IT infrastructures and estimate power consumption	2.1 Model different types of infrastructure and their likely power consumption and water usage 2.2 Conduct internal audits and ensure a consistent methodology 2.3 Assess, plan and cost changes to ICT infrastructure 2.4 Treat energy consumption information from vendors appropriately 2.5 Describe heat dissipation and cooling methods for server infrastructure and PC equipment 2.6 Explain how infrastructure design can affect energy usage
3 Be able to estimate the carbon footprint of their organisation's ICT infrastructure including offsite services	3.1 Estimate the carbon footprint, including: <ul style="list-style-type: none"> <li>• Energy sources and their fuel mix</li> <li>• The boundaries of their organisation</li> <li>• Outsourced ICT functions such as hosting/business continuity solutions and their impact</li> <li>• Questions to ask external suppliers</li> </ul>



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