



City & Guilds Level 3 Award in the Fundamental Principles and Requirements of Environmental Technology Systems (2399-01)

Version 7.0 (September 2025)

Qualification Handbook

Qualification at a glance

Subject area	Construction and Building
City & Guilds number	2399
Age group approved	16+
Entry requirements	No entry requirements
Assessment	Online multiple-choice examination
Grading	Pass/Fail
Approvals	Full approval required
Support materials	SmartScreen
Registration and certification	Consult Walled Garden for last dates

Title and level	City & Guilds qualification number	Regulatory reference number	GLH	TQT
City & Guilds Level 3 Award in the Fundamental Principles and Requirements of Environmental Technology Systems	2399-01	600/4282/5	15	20

Version and date	Change detail	Section
1.3 Oct 2011	Amended centre resource guidelines	Error! Reference source not found.
1.4 Oct 2011	Amended UANs for units 341 and 342	Units
2.0 Jan 2012	Amended Title and QAN for 2399-01	Section 1
3.0 May 2012	Updated to reflect new qualifications (unit 201 removed from all but 2399-01) Test specs updated	Sections 1, 2, 4 and appendices
	Amended total number of questions and number of questions per learning outcome for Unit 311 and Unit 313	4. Assessment
4.0 Sep 2013	Amendment to the learner pre-requisite entry requirements for 2339-13-14	Resource requirements
6.1 Sep 2017	Deleted QCF	Throughout
7.0 Sep 2025	Removed reference to qualifications 2399-13, 2399-14, 2399-23, 2399-24, 2399-33, 2399-34, 2399-43, 2399-44, as they are no longer open for registrations/certification.	Throughout
	Updated general information and appendix	Throughout
	Formatting updates	Throughout

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1 Introduction to the qualification

This document contains the information that centres need to offer the following qualifications:

Qualification objective

This qualification meets the needs of candidates in England, Wales and Northern Ireland who want to gain a basic understanding of small-scale environmental technologies to allow them to advise homeowners. It allows candidates to learn, develop and demonstrate the knowledge required for employment and/or career progression in environmental technologies within the building services engineering sector.

This qualification contributes knowledge and understanding towards environmental technology systems. Once candidates have achieved this qualification they can progress onto City & Guilds qualifications providing training and assessment for specific environmental technologies. It also provides a nationally recognised qualification for environmental technologies.

Total Qualification Time

TQT is the number of notional hours which represents an estimate of the total amount of time that could reasonably be expected for a learner to demonstrate the achievement of the level of attainment necessary for the award of a qualification.

TQT consists of the following two elements:

- the number of hours that an awarding organisation has assigned to a qualification for guided learning
- an estimate of the number of hours a learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment, which takes place as directed by – but, unlike guided learning, not under the immediate guidance or supervision of – a lecturer, supervisor, tutor or other appropriate provider of education or training..

Qualification title	Number	GLH	TQT
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Structure

To achieve the **City & Guilds 2399-01 Level 3 Award in the Fundamental Principles and Requirements of Environmental Technology Systems** candidates must achieve 2 credits from one mandatory unit (201).

City & Guilds unit number	Unit title	GLH
Mandatory unit:		
Learners must achieve all 2 credits from one mandatory unit.		
201	Know the fundamental working principles, installation options and regulatory requirements for micro-renewable energy and water conservation technologies	15

Qualification support materials

City & Guilds also provides the following publications and resources specifically for this qualification:

Description	How to access
Assignment guide for centres	www.cityandguilds.com
Promotional materials information sheet	www.cityandguilds.com
Handbook	www.cityandguilds.com
SmartScreen	www.smartscreen.co.uk

SmartScreen is City & Guilds' tutor and learner support website. For details about SmartScreen support for this product please check the SmartScreen area of the City & Guilds website **SmartScreen | City & Guilds**

2 Centre requirements

Approval

Centres already offering City & Guilds qualifications in this subject area

To offer this qualification/these qualifications, new centres will need to gain both centre and qualification approval. Please refer to the document **Centre Approval Process: Quality Assurance Standards** for further information.

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualification before designing a course programme.

Resource requirements

Centre staffing

Staff delivering these qualifications must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be occupationally competent or technically knowledgeable in the area(s) for which they are delivering training and/or have experience of providing training (this knowledge must be to the same level as the training being delivered)
- have recent relevant experience in the specific area they will be assessing
- have credible experience of providing training.

Continuing Professional Development (CPD)

Centres are expected to support their staff in ensuring that their knowledge of the occupational area remains current and of best practice in delivery, mentoring, training, assessment and quality assurance, and that it takes account of any national or legislative developments.

Quality assurance

Approved centres must have effective quality assurance systems to ensure optimal delivery and assessment of qualifications. Quality assurance includes initial centre approval, qualification approval and the centre's own internal procedures for monitoring quality. Centres are responsible for internal quality assurance and City & Guilds is responsible for external quality assurance. All external quality assurance processes reflect the minimum requirements for verified and moderated assessments, as detailed in the Centre Assessment Standards Scrutiny (CASS), section H2 of Ofqual's General Conditions. For more information on both CASS and City & Guilds quality assurance processes visit the **What is CASS?** and **Quality Assurance Standards** documents on the City & Guilds website.

Standards and rigorous quality assurance are maintained by the use of:

- internal quality assurance
- City & Guilds external quality assurance.

In order to carry out the quality assurance role, Internal Quality Assurers (IQAs) must:

- have appropriate teaching and vocational knowledge and expertise
- have experience in quality management/internal quality assurance
- hold or be working towards an appropriate teaching/training/assessing qualification

- be familiar with the occupation and technical content covered within the qualification.

External quality assurance for the qualification will be provided by City & Guilds. External Quality Assurers (EQAs) are appointed by City & Guilds to approve centres, and to monitor the assessment and internal quality assurance carried out by centres. External quality assurance is carried out to ensure that assessment is valid and reliable, and that there is good assessment practice in centres.

The role of the EQA is to:

- provide advice and support to centre staff
- ensure the quality and consistency of assessments and marking/grading within and between centres by the use of systematic sampling
- provide feedback to centres and to City & Guilds.

Learner entry requirements

City & Guilds does not set entry requirements for this qualification. However, centres must ensure that candidates have the potential and opportunity to gain the qualification successfully.

Age restrictions

Learners must be 16 or over.

This qualification is not approved for use by learners under the age of 16, and City & Guilds cannot accept any registrations for learners in this age group.

Access arrangements, reasonable adjustments and special consideration

City & Guilds has considered the design of this/these qualification(s) and its/their assessments in order to best support accessibility and inclusion for all learners. City & Guilds understands however that individuals have diverse learning needs and may require reasonable adjustments to fully participate. Reasonable adjustments, such as additional time or alternative formats, may be provided to accommodate learners with disabilities and support fair access to assessment.

Access arrangements are adjustments that allow candidates with disabilities, special educational needs, and temporary injuries to access the assessment and demonstrate their skills and knowledge without changing the demands of the assessment. These arrangements must be made before assessment takes place.

The Equality Act 2010 requires City & Guilds to make reasonable adjustments where a disabled person would be at a substantial disadvantage in undertaking an assessment.

It is the responsibility of the centre to ensure at the start of a programme of learning that candidates will be able to access the requirements of the qualification.

Special consideration is a post examination adjustment to a candidate's mark or grade to reflect temporary injury, illness or other indisposition at the time of the examination/assessment.

Please refer to the documents 'Joint Council for Qualifications (JCQ) Access Arrangements and Reasonable Adjustments', 'JCQ – A Guide to the special consideration process' and 'Access arrangements – When and how applications need to be made to City & Guilds' for more information. All of these are available on the **City & Guilds website**

3 Course design and delivery

Initial assessment and induction

An initial assessment of each learner should be made before the start of their programme to identify:

- if the learner has any specific training needs
- any support and guidance they may need when working towards their qualification
- any units they have already completed or credit they have accumulated which is relevant to the qualification
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme, so the learner fully understands the requirements of the qualification, their responsibilities as a learner and the responsibilities of the centre. This information can be recorded on a learning contract.

Inclusion and diversity

City & Guilds is committed to improving inclusion and diversity within the way we work and how we deliver our purpose which is to help people and organisations develop the skills they need for growth. More information and guidance to support centres in supporting inclusion and diversity through the delivery of City & Guilds qualifications can be found here:

Inclusion and diversity | City & Guilds ([cityandguilds.com](https://www.cityandguilds.com))

Sustainability

City & Guilds are committed to net zero. Our ambition is to reduce our carbon emissions by at least 50% before 2030 and develop environmentally responsible operations to achieve net zero by 2040 or sooner if we can. City & Guilds is committed to supporting qualifications that help our customers to consider sustainability and their environmental footprint.

More information and guidance to support centres in developing sustainable practices through the delivery of City & Guilds qualifications can be found here:

Our Pathway to Net Zero | City & Guilds ([cityandguilds.com](https://www.cityandguilds.com))

Centres should consider their own carbon footprint when delivering this qualification and consider reasonable and practical ways of delivering this qualification with sustainability in mind. This could include:

- reviewing purchasing and procurement processes (such as buying in bulk to reduce the amount of travel time and energy and considering and investing in the use of components that can be reused, instead of the use of disposable or single use consumables)
- reusing components wherever possible
- waste procedures (ensuring that waste is minimised and recycling of components is in place wherever possible)
- minimising water use and considering options for reuse/salvage as part of activities wherever possible.

Artificial Intelligence (AI)

City & Guilds has published a **Position Statement on AI** including guidance on its use. This is designed to help learners, tutors and assessors to complete Non-Exam Assessments (NEAs), coursework and other internal assessments successfully. Staff delivering this/these qualifications must ensure familiarity with the statement.

Recommended delivery strategies

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualification before designing a course programme.

Centres may design course programmes of study in any way which:

- best meets the needs and capabilities of their learners
- satisfies the requirements of the qualification.

When designing and delivering the course programme, centres might wish to incorporate other teaching and learning that is not assessed as part of the qualification. This might include the following:

- literacy, language and/or numeracy
- personal learning and thinking
- personal and social development
- employability.

Where applicable, this could involve enabling the candidate to access relevant qualifications covering these skills.

For further information to assist with the planning and development of the programme, please refer to the following:

- City & Guilds 2399 qualification handbook
- SmartScreen.

4 Assessment

Summary of assessment methods

City & Guilds provides the following assessments:

- Online, on-demand testing using multiple choice questions (e-assessment)

Time constraints

The following time constraints must be applied to the assessment of this qualification:

- Learners must be assessed within the lifespan of the qualification.
- All assessments must be completed and assessed within the candidate's period of registration. Centres should advise learners of any internal timescales for the completion and marking of individual assignments.

Evidence requirements

This qualification must be assessed using the City & Guilds set e-assessment examination.

Test specification

The way the knowledge is covered by the test is laid out in the table below:

Graded: Pass/Fail

Test 2399-201 Know the fundamental working principles, installation options and regulatory requirements for micro-renewable energy technologies and water conservation technologies

Duration: 55 minutes		
Outcome	Number of questions	Percentage %
1. Know the fundamental working principles of micro-renewable energy and water conservation technologies	10	37%
2. Know the fundamental requirements of building location/building features for the potential to install micro-renewable and water conservation systems to exist	9	33%
3. Know the fundamental regulatory requirements relating to micro-renewable energy and water conservation technologies	4	15%
4. Know the typical advantages and disadvantages associated with micro-renewable energy and water conservation technologies	4	15%
Total	27	100%

5 Units

Availability of units

The units for this qualification follow.

Structure of units

The units in this qualification are written in a standard format and comprise the following:

- City & Guilds unit number
- Title
- SummitSkills unit reference number (in brackets)
- Level
- Credit value
- Unit Accreditation Number (UAN)
- Recommended Guided Learning Hours (GLH)
- Information on assessment
- Unit aim
- Relationship to National Occupational Standards (NOS), other qualifications and frameworks
- Endorsement by a sector or other appropriate body
- Learning outcomes which comprised a number of assessment criteria
- Notes for guidance (if applicable).

Unit 201

Know the fundamental working principles, installation options and regulatory requirements for micro-renewable energy and water conservation technologies (ET001)

Level:	3
Credits:	2
UAN:	K/602/3138
GLH:	15
Assessment method:	Online multiple-choice e-assessment test (2399-201)
Aim:	<p>The purpose of this unit is to enable learners to develop a fundamental knowledge of micro-renewable energy and water conservation technologies. The aims of this unit are:</p> <ul style="list-style-type: none">• to allow learners to develop the knowledge required to be able to communicate with others in relation to the fundamental working principles, potential to install and regulatory requirements for micro-renewable and water conservation technologies• to prepare eligible learners to progress to the specialist knowledge and competence units for the installation, commissioning, handover, inspection, service and maintenance of micro-renewable energy and water conservation technologies.

Details of the relationship between the unit and relevant national standards

The learning outcomes of this unit are based upon some of the knowledge requirements relevant to the following SummitSkills National Occupational Standards:

- Determine Legislative and Working Practice Requirements for Environmental Technology Systems EVTS 9.

Support of the unit by a sector or other appropriate body

This unit is endorsed by the SSC SummitSkills.

Learning outcome

The learner will:

LO1 Know the fundamental working principles of micro-renewable energy and water conservation technologies

Assessment criteria

The learner can:

AC1.1 Identify the fundamental working principles for each of **heat producing micro-renewable energy technologies**

AC1.2 Identify the fundamental working principles for each of **electricity producing micro-renewable energy technologies**

AC1.3 Identify the fundamental working principles of **co-generation technologies**

AC1.4 Identify the fundamental working principles of **water conservation technologies**

Range

AC1.1 Heat producing micro-renewable energy technologies:

- Solar thermal (hot water)
- Ground source heat pump
- Air source heat pump
- Biomass

AC1.2 Electricity producing micro-renewable energy technologies:

- Solar photovoltaic
- Micro-wind
- Micro-hydro

AC1.3 Co-generation technologies:

- Micro-combined heat and power (heat-led)

AC1.4 Water conservation technologies:

- Rainwater harvesting
- Greywater re-use

Learning outcome

The learner will:

- LO2 Know the fundamental requirements of building location/building features for the potential to install micro-renewable energy and water conservation systems to exist

Assessment criteria

The learner can:

- AC2.1 Clarify the fundamental requirements for the potential to install a solar water heating system to exist
- AC2.2 Clarify the fundamental requirements for the potential to install a solar photovoltaic system to exist
- AC2.3 Clarify the fundamental requirements for the potential to install a ground source heat pump system to exist
- AC2.4 Clarify the fundamental requirements for the potential to install an air source heat pump system to exist
- AC2.5 Clarify the fundamental requirements for the potential to install a biomass system to exist
- AC2.6 Clarify the fundamental requirements for the potential to install a micro-wind system to exist
- AC2.7 Clarify the fundamental requirements for the potential to install a micro-hydro system to exist
- AC2.8 Clarify the fundamental requirements for the potential to install a micro-combined heat and power (heat led) system to exist
- AC2.9 Clarify the fundamental requirements for the potential to install a rainwater harvesting/greywater re-use system to exist.

Learning outcome

The learner will:

LO3 Know the fundamental regulatory requirements relating to micro-renewable energy and water conservation technologies

Assessment criteria

The learner can:

AC3.1 Confirm what would be typically classified as 'permitted development' under town and country planning regulations in relation to the deployment **technologies**

AC3.2 Confirm which sections of the current building regulations/building standards apply in relation to the deployment of **technologies**

Range

AC3.1, 3.2 Technologies:

- Solar thermal (hot water)
- Solar photovoltaic
- Ground source heat pump
- Air source heat pump
- Micro-wind
- Biomass
- Micro-hydro
- Micro-combined heat and power (heat-led)
- Rainwater harvesting
- Greywater re-use

Learning outcome

The learner will:

LO4 Know the typical advantages and disadvantages associated with micro-renewable energy and water conservation technologies

Assessment criteria

The learner can:

AC4.1 Identify typical advantages associated with each **technology**

AC4.2 Identify typical disadvantages associated with each **technology**

Range

AC4.1, 4.2 Technology:

- Solar thermal (hot water)
- Solar photovoltaic
- Ground source heat pump
- Air source heat pump
- Micro-wind
- Biomass
- Micro-hydro
- Micro-combined heat and power (heat-led)
- Rainwater harvesting
- Greywater re-use

Appendix 1 Relationships to other qualifications

Links to other qualifications and frameworks

This qualification has links to City & Guilds Level 3 Domestic Plumbing and Heating (6189).

Literacy, language, numeracy and ICT skills development

This qualification includes opportunities to develop and practise many of the skills and techniques required for success in the following qualifications:

- Functional Skills (England) – see www.cityandguilds.com/functionalskills
- Essential Skills (Northern Ireland) – see www.cityandguilds.com/essentialskillsni
- Essential Skills Wales.

There might also be opportunities to develop skills and/or portfolio evidence if learners are completing any Key Skills alongside this qualification.

Appendix 2 Reference materials

Solar Thermal

Publication	Edition/ Version	Author/ Publisher	ISBN:
Solar Heating Design and Installation Guide	2007	CIBSE	9781903287842
CE 131 Solar water heating systems – guidance for professionals, conventional indirect models	March 2006	Energy Saving Trust	
Water Regulations Guide: including the Water Byelaws 2000 (Scotland)	2001	WRAS	9780953970803

Heat Pumps

Publication	Edition/ Version	Author/ Publisher	ISBN:
BS EN 15450: 2007 Heating systems in buildings: Design of heat pump heating systems		BSI	9780580563850
TR/30 – Guide to Good Practice Heat Pumps	2007	HVCA	0903783584
CE 82 Domestic Ground Source Heat Pumps: Design and installation of closed-loop systems	2007	Energy Saving Trust	
Water Regulations Guide: including the Water Byelaws 2000 (Scotland)	2001	WRAS	9780953970803

Water Harvesting and Re-use

Publication	Edition/ Version	Author/ Publisher	ISBN:
BS8515: 2009 Rainwater harvesting systems – Code of Practice		BSI	9780580604904
BS8525 – 1:2010 Greywater systems – Part 1: Code of Practice		BSI	9780580634758
Rainwater Harvesting Design & Installation Guide	2010	CIBSE	9781906846084
Water Regulations Guide: including the Water Byelaws 2000 (Scotland)	2001	WRAS	9780953970803

Guidance on permitted reference materials

Candidates are permitted to take the stated reference materials into the online examinations. Candidates **must not** be permitted to communicate with each other or refer to any other materials.

Permitted reference materials taken into examinations **can** contain the following:

- Bookmarks (e.g. blank post-it notes, post-it notes numbered to indicate chapters or corners of pages folded)
- Highlighting of text

Permitted reference materials taken into exams **must not** contain the following:

- Sample exam questions, answers or diagrams
- Any writing in the regulations or accompanying written notes
- Notes, diagrams or any content that may in any way advantage the candidate in answering questions within the exam.

It is the responsibility of the centre to ensure any material used in the exam does not advantage candidates in anyway.

FAQs

1) Question: **Do we have to access a copy of all these documents for each candidate?**

Answer: No, these documents are not required to answer the questions. However, for some questions, access to these documents may be helpful for clarifying or referencing specific regulatory policy or codes of practice that candidates should have been taught in reference to the unit content. Centres may wish to make a single set of the documents concerned available for the candidates to refer to, rather than a set of documents per candidate.

2) Question: **Can the relevant extracts from the documents be pulled out as reference for candidates so they don't have to browse through lots of irrelevant pages?**

Answer: This is acceptable as long as the originator/owner of the document deems this acceptable or has given permission. Please note that as stated in the guidance above, bookmarks or blank post-it notes to indicate chapters or folded corners of pages can be used.

Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to www.cityandguilds.com or click on the links below:

Centre handbook: quality assurance standards

This document is for all approved centres and provides guidance to support their delivery of our qualifications. It includes information on:

- centre quality assurance criteria and monitoring activities
- administration and assessment systems
- centre-facing support teams at City & Guilds/ILM
- centre quality assurance roles and responsibilities.

The centre handbook should be used to ensure compliance with the terms and conditions of the centre contract.

Centre assessment: quality assurance standards

This document sets out the minimum common quality assurance requirements for our regulated and non-regulated qualifications that feature centre-assessed components. Specific guidance will also be included in relevant qualification handbooks and/or assessment documentation.

It incorporates our expectations for centre internal quality assurance and the external quality assurance methods we use to ensure that assessment standards are met and upheld. It also details the range of sanctions that may be put in place when centres do not comply with our requirements or actions that will be taken to align centre marking/assessment to required standards. Additionally, it provides detailed guidance on the secure and valid administration of centre assessments.

Access arrangements: when and how applications need to be made to City & Guilds

This provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

The **centre document library** also contains useful information on such things as:

- conducting examinations
- registering learners
- appeals and malpractice.

Useful contacts

Please visit the **contact us** section of the City & Guilds website.

City & Guilds

City & Guilds is the global skills partner, empowering people, organisations and economies to develop the skills they need for growth. With almost 150 years of trusted expertise, we support people into work, help them develop on the job and move into the next job.

We work with Governments, employers, training providers, colleges and industry stakeholders to design and deliver high-quality training, qualifications, assessments and credentials that lead to meaningful career progression. We understand the life-changing link between skills development, social mobility and success. Our solutions span critical sectors including construction, engineering, transport, energy and electrical, serving over 1 million learners annually.

Through our comprehensive portfolio of brands and trusted global network, we set industry-wide standards for technical, behavioural and commercial skills to improve performance and productivity. We believe you can achieve your potential - and we're here to help make it happen.

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