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**Overview**

This standard is for people who are required to determine the requirements for use of environmental technologies in building services engineering.

The person carrying out this work must be able to give advice on a range of environmental technologies, their appropriateness for use in a variety of situations and associated legal and regulatory requirements. They must also consider the implications for the environment of work activities, procedures and resource selection.

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**Performance  
criteria**

- You must be able to:
- P1 advise on the advantages and disadvantages of diverse **environmental technologies** available in different situations
  - P2 explain the **legal and regulatory** requirements that apply to the installation and operation of **environmental technologies**
  - P3 analyse building features and fabric, and advise on the appropriateness of different **environmental technologies**
  - P4 assess the impact the installation of **environmental technologies** can have on building and system performance
  - P5 advise on the **work activities** and installation requirements for different **environmental technologies**
  - P6 specify **work activities** and **procedures** which minimise disruption to the **environment**
  - P7 specify work methods and **resources** which minimise risks to the **environment** and building fabric
  - P8 communicate to **relevant persons** the operational characteristics and the service and maintain requirements of different **environmental technologies**

## Knowledge and understanding

### You need to know and understand:

- K1 the characteristics and benefits of different **environmental technologies**
- K2 the **legal and regulatory** requirements governing the installation and operation of **environmental technologies**
- K3 the **legal and regulatory** requirements related to different types of buildings including relevant environmental performance standards
- K4 **factors** to consider when identifying whether it would be advantageous to install **environmental technologies**
- K5 how to advise on situations in which would be advantageous to install **environmental technologies**
- K6 how to advise on situations in which it would not be advantageous to install **environmental technologies**
- K7 the impact installation of **environmental technologies** can have on the performance of buildings against **legal and regulatory** requirements, and how to determine this in different situations
- K8 potential implications for the **environment of work activities** and **procedures** used in installing and maintaining environmental technology systems and components
- K9 work methods and **resources** which minimise damage or risks to the **environment** and building fabric including:
  - K9.1 prefabrication and installation methods that reduce material wastage
  - K9.2 materials and products that are hazardous to the environment and how to identify them and avoid or minimise their use
  - K9.3 **procedures** for handling and disposing of hazardous materials and products
  - K9.3 materials and products that are recyclable, how to identify them and **procedures** to deal with them
- K10 information that needs to be communicated to **relevant persons** about the operational characteristics and the service and maintain requirements of different **environmental technologies**

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**Additional information**

**Scope related to performance criteria**

**1 Environmental technologies**

- 1.1 solar photovoltaic
- 1.2 solar thermal
- 1.3 heat pumps (air and ground source)
- 1.4 combined heat and power installations (CHP)
- 1.5 grey water recycling
- 1.6 rainwater harvesting
- 1.7 biomass
- 1.8 micro-wind turbine
- 1.9 micro hydro

**2 Legal and regulatory**

- 2.1 building regulations
- 2.2 health and safety regulations
- 2.3 control of waste
- 2.4 planning
- 2.5 recycling
- 2.6 landlords' obligations
- 2.7 listed buildings
- 2.8 conservation areas

**3 Procedures**

- 3.1 information management
- 3.2 project management
- 3.3 risk assessment and management
- 3.4 implementing and monitoring health & safety requirements
- 3.5 implementing and monitoring environmental requirements
- 3.6 accident reporting
- 3.7 emergencies (e.g. fire, flood, explosion, toxic atmosphere, electrical shock, injury to person)
- 3.8 communication with clients, customers and stakeholders
- 3.9 implementing and monitoring requirements related to listed buildings or

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conservation areas

3.10 estimating

**4 Environment**

4.1 ecology

4.2 noise

4.3 visual impact

4.4 carbon performance

4.5 energy use

4.6 water use

4.7 historic buildings

**5 Relevant person(s)**

5.1 customers/clients/client representatives/users

5.2 supervisors/site manager(s)/contract manager(s)

5.3 other contractors/trades/consultants

5.4 planning advisors/officers

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Determine requirements for environmental technologies in building services engineering



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<b>Range related to</b>	<b>1 Resources</b>
<b>performance criteria</b>	1.1 plant and equipment
	1.2 materials and other consumables

**Range related to knowledge and understanding****1 Environmental technologies**

- 1.1 solar photovoltaic
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**3 Factors**

- 3.1 physical (e.g. hydrology, geology, exposure, solar gain, light levels, temperature range, wind speed)
- 3.2 technical (e.g. resource availability, materials and equipment performance, structural forms, component life, heating and cooling, health and safety, fire protection, access, transportation, traffic generation)
- 3.3 environmental (e.g. sustainability, energy use, local ecology, emissions, pollution risk)
- 3.4 requirements (e.g. client and user needs, regulatory, legal, timescales, BIM protocols, contractual, cost, management of hazards and risks)

**4 Procedures**

- 4.1 information management
- 4.2 project management
- 4.3 risk assessment and management
- 4.4 implementing and monitoring health & safety requirements
- 4.5 implementing and monitoring environmental requirements
- 4.6 accident reporting
- 4.7 emergencies (e.g. fire, flood, explosion, toxic atmosphere, electrical shock, injury to person)
- 4.8 communication with relevant person(s)
- 4.9 implementing and monitoring requirements related to listed buildings or conservation areas
- 4.10 estimating

**5 Environment**

- 5.1 ecology
- 5.2 noise
- 5.3 visual impact
- 5.4 carbon performance
- 5.5 energy use
- 5.6 water use
- 5.7 historic buildings

**6 Resources**

- 6.1 labour
- 6.2 plant and equipment
- 6.3 materials and other consumables

**7 Relevant person(s)**

- 7.1 customers/clients/client representatives/users
- 7.2 supervisors/site manager(s)/contract manager(s)
- 7.3 other contractors/trades/consultants
- 7.4 planning advisors/officers



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**Glossary**

**Work activities**

Work in progress, response to change circumstances, work that affects others.

**External Links** Links correct at time of NOS approval

- Health & Safety Executive Documents <http://www.hse.gov.uk/pubns>
- The quality of buildings and building work in England  
<https://www.gov.uk/government/policies/providing-effective-building-regulations-so-that-new-and-altered-buildings-are-safe-accessible-and-efficient>
- The quality of buildings and building work in Wales  
<http://wales.gov.uk/topics/planning/buildingregs/?lang=en>
- The quality of buildings and building work in Northern Ireland [www.buildingcontrol-ni.com/](http://www.buildingcontrol-ni.com/)
- The quality of buildings and building work in Scotland  
<http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards>
- British Standard 7671: – Requirements for Electrical Installations  
<http://www.theiet.org/resources/wiring-regulations/>
- Carriage of dangerous goods authorisations  
<https://www.gov.uk/government/publications/carriage-of-dangerous-goods-authorisations>
- The requirements and information on microgeneration  
<https://www.gov.uk/government/publications/microgeneration-strategy>
- Refrigeration and Air Conditioning Standards  
[http://www.iso.org/iso/home/store/catalogue\\_tc/catalogue\\_tc\\_browse.htm?commid=50356](http://www.iso.org/iso/home/store/catalogue_tc/catalogue_tc_browse.htm?commid=50356)
- F-Gas guidance - <https://www.gov.uk/managing-fluorinated-gases-and-ozone-depleting-substances>
- BRA Jointing of Copper Pipework Guide  
<http://www.feta.co.uk/associations/bra/downloads>
- Waste Electrical and Electronic Equipment recycling (WEEE):  
[www.hse.gov.uk/waste/waste-electrical.htm](http://www.hse.gov.uk/waste/waste-electrical.htm)
- Control of Substances Hazardous to Health (COSHH): [www.hse.gov.uk/coshh](http://www.hse.gov.uk/coshh)
- Construction (Design and Management) Regulations:  
<http://www.hse.gov.uk/construction/cdm.htm>

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