COSCSMO08 SQA Unit Code H99R 04

Evaluate sustainable resources and requirements for the whole life cycle of a construction project

Overview

This unit is about assessing and quantifying the whole life cost and low carbon cost implications for the project. You will need to review them against the project criteria and energy goals and priorities and select the most viable options.

You will also need to ensure that solutions that meet the energy use and control criteria are specified. You will need to prescribe commissioning procedures and certification for the property and systems and identify any improvements required. You will also need to provide operations and maintenance instructions to users.

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Performance criteria

You must be able to:

Evaluate project whole life and low carbon costs

P1 confirm energy goals and priorities for the project, both currently and in the future

P2 confirm assumptions about cost elements, alternative designs, construction, services, financing and use options for the project stage with stakeholders

P3 review and present the potential whole life costs and low carbon cost of the project from available design and development information

P4 assess and quantify the whole life costs and low carbon cost implications for the project taking into account the views of experts and project stakeholders

P5 review the whole life costs and low carbon costs against the project criteria and energy goals and priorities

P6 summarise and present clearly and accurately the whole life costs and low carbon costs

P7 discuss the whole life costs and low carbon costs with stakeholders and select and agree the most viable options

Assess and provide for the conservation of energy use

You must be able to:

P8 review legislative requirements in order to identify the energy use and control criteria relevant to the type of property and systems

P9 ensure that the information on the property and systems necessary to assess energy use is gathered and recorded

P10 ensure that solutions which meet the criteria for the type of property and systems are reviewed, calculated and specified

P11 prescribe commissioning procedures and certification necessary for property and systems

P12 identify and define any consequent improvements that may be required to meet energy use and control criteria relevant to the type of property and systems

P13 provide operating and maintenance instructions to users to enable property and systems to be operated in an energy efficient manner

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Knowledge and understanding

You need to know and understand:

Evaluate project whole life and low carbon costs

K1 how to confirm energy goals and priorities for the project, both currently and in the future (application)

K2 how to confirm assumptions about cost elements, alternative designs, construction, services, financing and use options for the project stage with stakeholders (application)

K3 how and why to review the potential whole life costs and low carbon costs of the project from available design and development information (analysis)

K4 how to present the potential whole life costs and low carbon costs of the project from available design and development information (application)

K5 how and why to assess and quantify the whole life costs and low carbon costs implications for the project taking into account the views of experts and project stakeholders (analysis)

K6 how and why to review the whole life costs and low carbon costs against the project criteria and energy goals and priorities (analysis)

K7 how to summarise the whole life costs and low carbon costs (application)

K8 how to present the whole life costs and low carbon costs (application)

K9 how and why to discuss the whole life costs and low carbon costs with stakeholders (synthesis)

K10 how and why to select the most viable options (evaluation)

K11 how and why to agree the most viable options (evaluation)

Assess and provide for the conservation of energy use

You need to know and understand:

K12 how and why to review legislative requirements in order to identify the energy use and control criteria relevant to the type of property and systems (analysis)

K13 how to ensure that the information on the property and systems necessary to assess energy use is gathered and recorded (application)

K14 how to ensure that solutions which meet the criteria for the type of property and systems are reviewed, calculated and specified (application)

K15 how and why to prescribe commissioning procedures and certification necessary for property and systems (evaluation)

K16 what to identify as consequent improvements that may be required to meet energy use and control criteria relevant to the type of property and systems (understanding)

K17 how and why to define any consequent improvements that may be required to meet energy use and control criteria relevant to the type of property and systems (evaluation)

K18 how to provide operating and maintenance instructions to users to enable property and systems to be operated in an energy efficient manner (application)

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Scope/range

Evaluate project whole life and low carbon costs

1 Energy goals and priorities:
- 1.1 energy sources and infrastructure
- 1.2 energy consumption
- 1.3 low carbon targets
- 1.4 use of renewable resources
- 1.5 use of non-renewable resources
- 1.6 energy reduction programmes
- 1.7 heat recovery and re-use energy efficient technologies
- 1.8 energy efficient practices

2 Project Stage:
- 2.1 Stage 0 (Strategy)
- 2.2 Stage 1 (Brief)
- 2.3 Stage 2 (Concept)
- 2.4 Stage 3 (Definition)

3 Stakeholders:
- 3.1 the client
- 3.2 financial advisers
- 3.3 consultants
- 3.4 potential contractors
- 3.5 potential subcontractors and suppliers
- 3.6 potential investors
- 3.7 partners in the development programme
- 3.8 facilities/asset managers

4 Whole life costs and low carbon cost:
- 4.1 energy sources and infrastructure
- 4.2 design stage
- 4.3 materials and components (including embodied energy)
- 4.4 construction and installation
- 4.5 energy use
- 4.6 grey water usage
- 4.7 operations/maintenance
- 4.8 adaptation/demolition/decommissioning

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Scope/range

5 Assess and quantify:

- 5.1 cost benefit analysis
- 5.2 whole life
- 5.3 life cycle costing
- 5.4 lifetime impact modelling
- 5.5 in-use asset performance
- 5.6 carbon accounting
- 5.7 value management feasibility studies
- 5.8 elemental cost planning
- 5.9 risk management
- 5.10 cost effective out-performance of statutory requirements
- 5.11 decision tools for passive/active systems
- 5.12 model costs of alternative designs

6 Present:

- 6.1 orally
- 6.2 in writing
- 6.3 graphically
- 6.4 electronically
- 6.5 simulation

Assess and provide for the conservation of energy use

7 Criteria:

- 7.1 carbon dioxide emissions
- 7.2 efficiency of construction
- 7.3 efficiency of building services and installation
- 7.4 u values
- 7.5 continuity of insulation
- 7.6 air leakage

8 Property and systems:

- 8.1 new development
- 8.2 existing development

9 Information:

- 9.1 building type

Scope/range

9.2 building size and capacity

9.3 current energy usage

9.4 building fabric

9.5 building heating, lighting and ventilation

10 Gathered and recorded:

10.1 design proposals

10.2 measured survey

10.3 condition survey

10.4 energy measurement and assessment tools

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