## UNIT 4 Assess the energy performance of new-build non-dwellings prior to first occupancy using Dynamic Simulation Models (DSMs)

Element 4.1 Conduct energy assessment of new-build non-dwellings
Element 4.2 Produce Energy Performance Certificates

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### About this Unit

This Unit covers assessing the energy performance of new-build non-dwellings prior to first occupancy. The aim of the assessment is to gather data and information, in accordance with the approved tools, to ensure compliance with the relevant aspects of the Building Regulations and to enable the generation of Energy Performance Certificates and recommendations for cost-effective improvement.

**This Unit relates to new-build non-dwellings that can only be assessed using a Dynamic Simulation Model (DSM) as opposed to the Simplified Building Energy Model (SBEM) which applies to Unit 3.**

Element 4.1 requires that you conduct energy assessment of new-build non-dwellings prior to first occupancy.

Element 4.2 requires that you produce Energy Performance Certificates and recommendations for cost-effective improvement for new-build non-dwellings.

| **Element 4.1** | **Conduct energy assessment of new-build non-dwellings** |
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| **Performance Criteria**<br><br>**You must be able to:**<br><br>1 conduct assessments in the design and construction of new-build non-dwellings<br><br>2 apply conventions in order to identify the energy design philosophy from drawings and specifications<br><br>3 apply assessment conventions in order to establish site factors, built form and dimensions of new-build non-dwellings from drawings and specifications<br><br>4 apply conventions in order to identify the constructions and thermal properties of new-build non-dwellings from drawings and specifications<br><br>5 calculate the thermal transmittances (U values) of opaque elements in accordance with the relevant technical standards for the types of construction used<br><br>6 apply conventions in order to identify the air-tightness and ventilation of new-build non-dwellings from drawings, tests and specifications<br><br>7 apply conventions in order to identify the heating, cooling and hot water systems used in new-build non-dwellings from drawings and specifications<br><br>8 apply conventions in order to identify the lighting and renewable energy used in new-build non-dwellings from drawings and specifications<br><br>9 apply conventions in order to assess new technologies in new-build non-dwellings<br><br>10 identify and communicate **options for improvement** in the energy performance of new-build non- | **Knowledge and Understanding**<br><br>**You must know and understand:**<br><br>(a) the different stages involved in assessing the energy performance of new-build non-dwellings i.e. the design assessment and the 'as built' assessment (leading to the production of a final Energy Performance Certificate)<br><br>(b) relevant aspects of the legislation and regulations and the points at which an Energy Performance Certificate is required for new-build non-dwellings<br><br>(c) the detailed assessment requirements that apply to the property as defined by the approved tool<br><br>(d) the definitions and conventions embodied within the approved tool<br><br>(e) the principles of building structure, elements, fabric, services and overall design philosophy<br><br>(f) the use of energy performance rating calculation<br><br>(g) how to recognise the various types of building construction and materials from drawings, specifications and services<br><br>(h) the requirements and application of current, relevant Building Regulations that apply to the energy performance of new-build non-dwellings<br><br>(i) the various emission rates and how to calculate each<br><br>(j) the requirements and application of other technical standards relevant to the energy performance of new-build non-dwellings |

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| dwellings | (k) the factors which are relevant to determining the energy performance of a new-build non-dwellings<br><br>(l) the assumptions that are made in determining energy performance<br><br>(m) the factors that are not deemed to affect energy performance<br><br>(n) how to collate information required to assess the energy performance of new-build non-dwellings from drawings and specifications |

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| **Element 4.1** | **Conduct energy assessment of new-build non-dwellings** |
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**Scope**

A. **Options for improvement**:
(i) measures to ensure compliance with relevant Building Regulations
(ii) further improvements to energy performance

| **Element 4.2** | **Produce Energy Performance Certificates** |
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| **Performance Criteria**<br><br>**You must be able to:**<br><br>1 use approved tools correctly to determine energy performance ratings<br><br>2 use approved tools to generate recommendations for appropriate measures to improve the energy performance of the property<br><br>3 check the recommendations generated and make any necessary amendments<br><br>4 delete recommendations that are inappropriate, providing your reasons<br><br>5 prepare and issue an Energy Performance Certificate that meets relevant codes of practice and standards<br><br>6 explain the Energy Performance Certificate and recommendations for cost-effective improvement clearly to the client<br><br>7 maintain internal records which are clear, complete and conform to accepted professional and statutory requirements | **Knowledge and Understanding**<br><br>**You must know and understand:**<br><br>(a) the prescribed format and content of an Energy Performance Certificate<br><br>(b) the range of measures to improve the energy performance of properties that may be included within an Energy Performance Certificate<br><br>(c) the technology used to produce Energy Performance Certificates and how to use it correctly<br><br>(d) the principles underpinning the approved tools used to calculate energy ratings<br><br>(e) how to input data using the approved tools in order to determine energy performance ratings<br><br>(f) how to use approved tools to generate recommendations for measures to improve the energy performance of property<br><br>(g) the importance of checking that data has been entered correctly and how to review data if the calculation will not process<br><br>(h) the importance of checking the recommendations generated, deleting any that are inappropriate, and providing your reasons<br><br>(i) the way in which recommendations are generated and circumstances when it is appropriate to delete them<br><br>(j) the importance of checking the Energy Performance Certificate to ensure it is clear and complete |

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**There is no Scope for this Element .**