Occupational Standard

Building Energy Rating (BER) Assessors for Dwellings

Version	Update	Date
1.0	Occupational standard developed	May 2014
2.0	Occupational standard updated to take account of DEAP methodology updates. Training specification content removed and provided in a separate document.	Jan. 2023

Contents

Introduction

The occupational standard for domestic BER assessors details the required knowledge, skills and competence of a registered BER assessor. It describes the standard of knowledge expected of a registered domestic BER assessor to work independently as a competent assessor.

Purpose

This standard identifies the primary activities and responsibilities that are fundamental to the Building Energy Rating Assessment of dwellings.

The main purpose of this standard is to provide information to BER training providers and BER assessors on the standard of knowledge and competency required to successfully carry out the role of a BER assessor.

This standard provides a framework to be used by those assessing the competency of assessors and can also be used to provide a roadmap for the development of competency on the path to registration as an assessor.

The standard provides a framework for Continuing Professional Development for use by assessors to assess their own knowledge and skills and guide them on the areas they need to focus on for self-development.

Registering as a domestic BER assessor

To register as a BER assessor, you must meet the pre-qualification requirements and complete an accredited BER training course. Further information on the registration requirements are available on the SEAI website here.

To join the register, an individual must have achieved the standard of knowledge skill and competence set out in this occupational standard of BER assessors for dwellings.

This is achieved by the following
1. demonstrating they have met the pre-qualification requirements
2. successfully completing the BER training course and achieving a result of 70% or more in the assignments and exams and
3. completing the SEAI BER Assessor induction module.

Element	Indicator
Pre-qualification requirement	Domestic BER assessors require an NFQ Level 6 Advanced/Higher Certificate in construction studies (or similar) or a recognised equivalent. As a minimum, BER assessors should have good knowledge and experience of the following prior to completing the BER Assessor training course. a) The ability to survey buildings, take measurements and carry out detailed calculations. b) The ability to read and interpret building drawings and specifications. c) Basic knowledge of building regulations. d) Basic knowledge of construction methods for domestic buildings. e) Basic knowledge of domestic building services, including heating, hot water, ventilation, and lighting). Pre-qualification criteria (seai.ie)
Completion of the BER training course	Completion of an accredited BER training course - QQI Building Energy Rating Assessment (Dwellings) level 6 award – 6N0732 The BER training course typically includes both contact time with a trainer and self-directed learning hours in order to become familiar with the DEAP methodology and practice documentation.
Induction module	The SEAI induction module is delivered by SEAI as a webinar and provides information to applicants who wish to join the BER Assessor register and have successfully demonstrated they have met the registration requirements. The webinar provides information on the supports for BER assessors, technical documents, BER assessor Code of Practice, managing the BER assessor & client relationship, quality assurance processes, publishing BER ratings – National Administration System (NAS) and communications from SEAI.

Upon registration, BER assessors agree to abide by the BER assessor Code of Practice and engage with the BER quality assurance processes.

Standards of knowledge and competency for registered Domestic BER assessors

This section describes in detail what a registered BER assessor for dwellings needs to know and how well they need to know it. All registered assessors must meet this standard of knowledge.

The standard is divided into 8 units to cover the main activities of a registered assessor carrying out assessments of dwellings. These units are outlined in Table 2.

Table 2: Units of Competency

Unit		Guidance
1	Fundamentals	Assessors are expected to have gained this knowledge from pre-qualifications and/or experience prior to attending the accredited BER training course.
2	Context	Awareness and knowledge of the legislative environment in which BER Assessors operate.
3	Data Collection – Surveying and Documentation	Ability to identify, record and verify dwelling information from plans, specifications, documentation and site surveys.
4	Calculations	Ability to use the information collected to carry out calculations for entry in DEAP.
5	Methodology + Software	Ability to apply the methodology and use the DEAP software to correctly calculate the BER for a variety of new and existing dwelling forms of varying complexity, including dwellings with extensions.
6	BER Results + Part L compliance	Ability to interpret and explain BER results and the Part L compliance checks in DEAP.
7	Publication of BER certificates and advisory reports	Ability to correctly publish BER certificates and advisory reports.
8	Professional practice	Ability to provide a professional service to clients to ensure they obtain the best BER based on the information available to the BER assessor.

Further detail is provided below for each unit including a list of topics, guidance on the scope of each topic and how it applies to the work of an assessor. Each topic is mapped to the relevant learning outcome listed in the BER Assessor Training course specification where applicable.

Unit 1 - Fundamentals			
Topic		**What an assessor needs to know about the topic**	**Learning Outcome**
1.1	Surveying	Ability to identify, survey and record building details including sketching layouts and taking measurements, interpreting house drawings and construction specifications to gather information for a BER assessment	n/a
1.2	Mathematics	Ability to carry out mathematical calculations including areas, volumes and average storey heights and to apply mathematical formulas.	n/a
1.3	Domestic construction	Knowledge of domestic building construction methods, space and water heating and ventilation systems, cooling and energy upgrade measures.	n/a
1.4	IT	Broad range of IT skills to use the suite SEAI systems to assist in the assessment and publication of BERs.	n/a

Unit 2 - Context			
Topic		**What an assessor needs to know about the topic**	**Learning Outcome**
2.1	EU legislation	Awareness of the EPBD, Eco-design and Energy Labelling Regulations and their relevance for BER assessments.	1
2.2	Climate policy and targets	Awareness of EU and Irish climate policies and targets relating to building energy performance.	1
2.3	Irish energy legislation and regulations	Awareness of BER Regulations, Building Regulations, Building Control Regulations, and Construction Products Regulations.	1
2.4	Part L of the building regulations	Understand TGD L for dwellings including requirements for new build, extensions and major renovations and how TGDs are applied to demonstrate compliance with Building Regulations Part L using the DEAP methodology.	4, 12 & 13
2.5	DEAP methodology	Ability to explain the general principles of the DEAP methodology, BER calculation assumptions, DEAP calculation limitations and constraints, the meaning of and rationale behind use of standardised occupant behaviour and asset/calculated rating approach in DEAP assessments, BER methodology documentation, energy calculations in DEAP (energy demand, delivered energy, primary energy, CO_2 emissions, EPC, CPC, RER), the dwelling features that significantly affect BER calculations, the general principles that apply when entering dwelling data and component characteristics in DEAP.	10

Unit 3 - Data Collection – Surveying			
Topic		**What an assessor needs to know about the topic**	**Learning Outcome[i]**
3.1	Health and safety	Ability to identify the risks associated with surveying a dwelling and take actions to minimise or mitigate risks to people or the property while conducting a BER assessment.	2
3.2	General characteristics	Ability to gather the information in sketches, drawings, photographs, survey forms and other documentation in accordance with the DEAP Survey Guide requirements including dwelling type, the age of the original dwelling and any extensions and the number of storeys.	5, 6 & 7
3.3	Building dimensions	Ability to identify heated and unheated spaces and to measure and record all dimensions needed to calculate the area and average storey heights, living area and room in roof.	5, 6, & 7
3.4	Building fabric elements and types	Ability to identify the building fabric type and construction methods for walls, floors and roofs and to identify the presence of any retrofitted insulation.	7
3.5	Windows and doors	Ability to identify frame and glazing type, size, orientation and overshading for each window and door type	7
3.6	Thermal mass	Ability to identify the thermal mass category of building elements	5 & 6
3.7	Ventilation	Ability to identify dwelling features affecting ventilation heat loss including chimneys, flues, background vents, structure type, draught lobbies, sheltered sides and suspended wooden floors and ventilation systems.	7
3.8	Lighting	Ability to identify lighting types.	8
3.9	Space heating systems and controls	Ability to identify space heating systems (individual, group, district heating and CHP), primary and secondary heating, central heating pumps, oil boiler pumps, warm air systems, gas flue fans and space heating system controls.	9
3.10	Heat pumps	Ability to identify the type of heat pump, heat emitter types, flow temperatures, hours of operation and any back-up heating.	9
3.11	Cooling	Ability to identify the presence of cooling	5 & 6
3.12	Water heating systems and controls	Ability to identify hot water systems with/ without storage and distribution losses, primary circuit loss types, insulation types and thickness for hot water storage and water heating system controls.	9
3.13	Water appliances that limit hot water usage	Ability to identify shower types, flow restrictors, low water consumption appliances and wastewater heat recovery systems.	9
3.14	Space and water heating fuel types	Ability to identify the fuel type for the space and water heating systems and regional restrictions in relation to fuel type.	9

3.15	Renewable systems	Ability to identify renewable technologies including solar water heating, solar space heating, photovoltaics, wind turbines.	9

Unit 3 - Data Collection – Documentation			
Topic		**What an assessor needs to know about the topic**	**Learning Outcome**
3.16	General documentation to support DEAP inputs	Understanding of the use of non-default data in DEAP and how non-default data from different sources can be identified as acceptable including WEP, HARP, PCDB, CE marking, Declarations of Performance, Agrément certificates and accredited U-value calculators.	3
3.17	U-values for floors, walls, roofs	Understand acceptable supporting documentation for non-default U-values, including 'as-built' confirmations, declared thermal conductivities, Appendix S defaults for retrofitted insulation, photographs, SEAI declaration of works.	3 & 7
3.18	Windows and doors	Understand acceptable supporting documentation for non-default U-values and solar transmittance values.	7
3.19	Thermal bridging factors	Understand acceptable supporting documentation for non-default Y-values (<0.15 W/m^{2}K) including acceptable construction details and certified details from plans/specifications, thermal modeler certification, and y-value calculations.	3 & 7
3.20	Ventilation and airtightness	Understand acceptable pressure test data for constructed and planned dwellings. Identify PCDB data for mechanical ventilation.	3 & 7
3.21	Lighting design data	Understand acceptable lighting design information to verify lighting type, wattage and efficacy of bulbs.	3 & 8
3.22	Space heating	Understand acceptable sources of information and documentation to verify seasonal efficiencies for heating (individual, group, district heating and CHP).	3 & 9
3.23	Hot water demand, storage and distribution	Understand acceptable sources of information and documentation to verify insulated pipework, manufacturer's declared cylinder losses, low water consumption appliances, shower types, flow restrictors and wastewater heat recovery.	3 & 9
3.24	Heat pumps	Understand acceptable sources of information and documentation to verify heat pump performance for space and water heating including designer/installer sign-off, non-default flow temperatures for heat pumps	3 & 9
3.25	Cooling	Understand acceptable sources of information and documentation to verify cooling information.	3

Unit 4 - Calculations

Topic		What an assessor needs to know about the topic	Learning Outcome
4.1	Building dimension calculations	Ability to apply the procedures and conventions used in DEAP to calculate building dimensions including floor and heat loss areas, average storey heights, room in roofs.	5, 6 & 7
4.2	U-value calculations	Ability to calculate the U-value of various types of walls, roofs and floors based on the International Standards cited in the DEAP manual, Technical Guidance Document (TGD) Part L and BRE 443, using acceptable sources of relevant non-default data.	7
4.3	Solar transmittance	Ability to calculate the correct solar transmittance value to support non-default U-values.	7
4.4	Y-value calculations	Ability to calculate y-values using the psi-values and junction lengths provided.	7
4.5	Thermal mass category	Ability to determine the thermal mass category by calculation and use of tables in Appendix S.	7
4.6	Hot water storage volume	Ability to determine domestic hot water storage volume from measurements taken on site.	10
4.7	Low water consumption	Ability to calculate if the 'low water consumption' threshold can be selected in DEAP.	10
4.8	Deriving non-default central heating pump efficiencies for use in DEAP	Ability to calculate a non-default energy consumption value for pumps from information gathered for non-default central heating pump efficiencies.	10
4.9	Cost comparison calculation	Ability to determine the 'cheapest to run' system where multiple systems are present to identify the primary and secondary heating system by carrying out fuel cost comparisons.	9 & 10
4.10	Photovoltaics	Ability to calculate the delivered energy associated with the renewable contribution from photovoltaics.	9 & 10
4.11	Solar space heating	Ability to use the excel calculator to determine the delivered energy associated with individual and group solar space heating systems.	9 & 10
4.12	Heat pump efficiencies	Ability to use the excel calculator to determine the efficiency of low-temperature heat pumps, gas-fired heat pumps, direct exchange heat pumps, exhaust air heat pumps and multiple heat pump arrangements.	9 &10

Unit 5 - DEAP Methodology and Software – Building Fabric			
Topic		**What an assessor needs to know about the topic**	**Learning Outcome**
5.1	Building fabric heat loss	Understand how dwelling heat losses are calculated and entered in DEAP, how unheated spaces such as garages, stairwells, rooms in the roof, access corridors, conservatories and other large glazed areas affect a BER, the significance of varying U-values for different building elements in DEAP, the methodology for dwellings that are part of larger premises in DEAP such as dwellings adjoining other dwellings, unheated or commercial spaces, the input of curtain wall systems and glass block walls in DEAP, the default U-value of various types of walls, roofs, floors, windows and doors using DEAP tables and how to adjust the defaults to more accurate values on retrofitted building elements. Understand when basements are included or excluded from BERs and how heat losses in basements are calculated. Describe the heat loss limits as specified in all revisions of the TGD Part L for opaque elements.	7 & 10
5.2	Windows and doors	Understand the different types of window frames/ glazing/ gaps/ gas filling/ age for identification of window defaults and how they are entered in DEAP, determining U-value and frame factor for windows and doors using DEAP Tables and the International Standards recognised in DEAP, evaluating the effect of varying the window specification using DEAP. Describe the heat loss limits as specified in all revisions of the TGD Part L for openings.	7 & 10
5.3	Solar gains	Understand how solar gains are calculated and affect the space heating requirement calculation, and how the utilisation factor for solar gains is applied in DEAP and the effect of solar and light access factors, solar and light gains on the BER.	7 & 10
5.4	Thermal bridging factors	Understand the thermal bridging requirements as specified in TGD L, explain how thermal bridging is accounted for and entered in DEAP and when it is appropriate to use non-default thermal bridging factors.	7 & 10
5.5	Thermal mass category	Understand thermal mass categories and how the thermal mass category affects the heat demand calculation and how it is entered in DEAP.	7 & 10

Unit 5 - DEAP Methodology and Software – Ventilation			
Topic		**What an assessor needs to know about the topic**	**Learning Outcome**
5.6	Ventilation rates	Understand the dwelling features that affect the ventilation rate and how they are entered in DEAP, when a chimney can be classified as a flue in DEAP, the situations where vents are excluded from DEAP calculations, how to measure the effective area of a background vent, how structure type, draught lobbies, sheltered sides and suspended wooden floors affect a BER.	7 & 10

5.7	Draught-stripping	Understand the methodology for determining the % of openings draught stripped and how it is entered in DEAP.	7 & 10
5.8	Airtightness	Understand the impact of dwelling pressure test results on the BER, the requirement for pressure testing as specified in the TGD Part L and how air tightness is entered in DEAP.	7 & 10
5.9	Mechanical ventilation	Understand the default and non-default test data required for all ventilation methods in DEAP, how it is entered in DEAP, the effect of ventilation methods on BER in airtight and non-airtight dwellings, and how the benefits from heat recovery are accounted for.	7 & 10

Unit 5 - DEAP Methodology and Software – Lighting

Topic		What an assessor needs to know about the topic	Learning Outcome
5.10	Lighting	Understand how lighting is accounted for and entered in DEAP, the use of lighting design figures versus default figures, and the impact of lighting on the BER result.	8 & 10

Unit 5 - DEAP Methodology and Software – Overheating

Topic		What an assessor needs to know about the topic	Learning Outcome
5.11	Overheating risk assessment	Understand how the risk of overheating is calculated and entered in DEAP and what the results mean.	7 & 10

Unit 5 - DEAP Methodology and Software – Space and Domestic Hot Water Heating Systems

Topic		What an assessor needs to know about the topic	Learning Outcome
5.12	Annual space heat requirement	Understand how the space heating requirements are calculated for different dwellings and entered in DEAP for individual, group and district heating systems, how the mean internal temperature is calculated in DEAP, the heating schedule used in the DEAP calculation, the difference between the "ideal" and "actual" space heat requirement, primary and secondary heating and how the energy demand from the primary and secondary heating systems is apportioned.	9 & 10
5.13	Primary and secondary heating	Understand how to determine and enter in DEAP, the primary and secondary heating systems in a dwelling, the DEAP definition of habitable rooms and how this is used to identify primary and secondary heating, how to identify the main heating system in a small energy-efficient dwelling with heating in only some habitable rooms, the systems requiring default entry of electric space or water heating for dwellings that are unheated or partially/inadequately heated, how to treat systems that have missing components and distinguish their treatment from systems that have broken components.	9 & 10

5.14	Space and water heating appliance efficiency	Understand the term gross seasonal efficiency as it relates to boilers, heat pumps, and other heating appliances, how it is accounted for in DEAP and impacts the BER, the rationale behind and content of the Home-Heating Appliance Register of Performance (HARP) database.	9 & 10
5.15	Heat pump efficiency	Understand the heat pump methodology and how heat pump efficiency is calculated and entered in DEAP, the designer/installer sign-off sheet, the impact of design flow temperatures and hours of operation on the DEAP calculated heat pump efficiency, how low temperature, gas-fired, and group heat pump system efficiency is calculated and inputted in DEAP.	9 & 10
5.16	Range cookers	Understand the different types of range cooker systems and if/how they are entered in DEAP.	9 & 10
5.17	CHP	Understand the fraction of heat and hot water supplied by CHP is determined and entered in DEAP.	9 & 10
5.18	Group/community heating	Understand the definition of group/community heating and how the annual fuel consumption for space and water heating is calculated, how to input group heating schemes with multiple heat sources and the distribution loss factor for group heating schemes.	9 & 10
5.19	District heating	Understand the definition of district heating, the methodology, and how to enter district heating in DEAP.	9 & 10
5.20	Space and water heating efficiency adjustment factors	Understand the efficiency adjustment factors and how they are derived and entered in DEAP, how the emitter type can affect the heating system efficiency, the effect different types of controls have on the heating system efficiency.	9 & 10
5.21	Supplementary electric water heating	Understand when and how supplementary electric heating for DHW should be included when calculating a BER.	9 & 10
5.22	Hot water energy demand/losses	Understand the factors impacting on hot water heating demand, including controls and how to enter them in DEAP, how to compare and contrast the heat losses from hot water storage and non-storage systems, how to differentiate between combi boilers and other boiler systems in dwellings, and identify the type of combi boiler and keep hot facilities, the different types of primary pipework and associated circuit losses.	9 & 10
5.23	Heating system controls	Understand the different heating control categories in DEAP, how to identify the heating controls and enter them in DEAP, how the control category affects the annual space heating requirement.	9 & 10
5.24	Heating system responsiveness categories	Understand how the responsiveness category is determined and entered in DEAP and how the responsiveness category affects the heating system efficiency.	9 & 10
5.25	Central heating pumps and fans	Understand how the number and location of pumps and fans affects the calculation of the space heating demand and how to input in DEAP.	9 & 10

Unit 5 - DEAP Methodology and Software – Cooling			
Topic		**What an assessor needs to know about the topic**	**Learning Outcome**
5.26	Cooling energy demand	Understand how the space cooling requirements are calculated and entered in DEAP, how the mean internal temperature is calculated in DEAP, the cooling schedule used in the DEAP calculation and the impact of cooling on the overall energy usage and associated CO_2.	10

Unit 5 - DEAP Methodology and Software – Renewables			
Topic		**What an assessor needs to know about the topic**	**Learning Outcome**
5.27	Renewable technologies	Understand how energy produced, saved or consumed by a renewable or energy-saving technology is accounted for and entered in DEAP and how the renewable contribution from solar DHW systems and heat pumps are accounted for in DEAP and the impact on the BER.	10
5.28	Photovoltaics	Understand how varying the orientation of a solar collector affects its performance, how to apply the solar over-shading and correction factor, and how to measure the aperture area of solar collectors.	10
5.29	Solar water heating and solar space heating	Understand how the system is integrated into the overall heating system, how to identify dedicated solar storage volume in different types of solar-heated water storage arrangements, identify the angle of tilt of a solar collector, demonstrate the ability to measure the aperture area of solar collectors, explain how varying the orientation of a solar collector affects its performance, demonstrate how to apply the solar over-shading correction factor.	9 & 10
5.30	Special features & specific data	Understand how the procedures listed in DEAP Appendix Q affect a BER.	10

Unit 5 - DEAP Methodology and Software – Fuel and primary energy factors			
Topic		**What an assessor needs to know about the topic**	**Learning Outcome**
5.31	Fuel Types	Understand the use of primary energy and CO_2 factors for different fuel types, how they are entered in DEAP and their impact on the BER, how the fuel type for different solid fuel systems in different locations is determined, the process for using current and other electricity primary energy and CO_2 factors in DEAP.	3 & 10

Unit 6 - BER Results and Part L compliance			
Topic		**What an assessor needs to know about the topic**	**Learning Outcome**
6.1	BER results	Understand the characteristics associated with the different ratings, when assessment limitations, caveats or explanations should be included with a BER assessment, how the BER is affected by changes in the fabric or dimensions of the building, type and efficiency of space and or water heating systems and heating system controls, how the DEAP software can be used to provide information on improving energy performance	11 & 12
6.2	Part L compliance	Ability to use DEAP to check compliance with specific requirements of the TGD L and how this is relayed to the client. Understand the TGD L requirements which the DEAP software does and does not demonstrate conformance with Part L requirements applicable to new dwellings depending on planning permission and construction dates, evaluating case studies for dwellings meeting the Building Regulations Part L requirements.	13
6.3	Dwelling and Part L compliance reports	Understand the content and purpose of each of the DEAP reports and how to generate them.	11

Unit 7 - Publication of BER Certificates and Advisory Reports			
Topic		**What an assessor needs to know about the topic**	**Learning Outcome**
7.1	Documentary evidence	Understand the key documentary & photographic evidence that should be uploaded to the DEAP software, the requirements for the retention of supporting documentation/ calculations for the life of the BER certificate.	2 & 3
7.2	National Administration System	Understand the operations of the BER National Administration System.	2
7.3	MPRN verification	Understand the MPRN utility in NAS/DEAP to confirm the MPRN.	2
7.4	Errors & notices	Understand the publication errors and notices and purpose of the NAS validation rules.	2
7.5	Publication of documentation	Ability to upload and publish BER Certificates and Advisory Reports. Ability to edit the advisory report post-publication.	2
7.6	Advisory report overview	Understand the purpose and content of the BER advisory report, the upgrade measures and how the recommendations are generated, the minimum and target potential ratings.	11
7.7	Generating and publishing an advisory report	Ability to produce appropriate draft and published advisory reports for new and existing dwellings which are consistent with the BER result and relevant to the dwelling in question.	11
7.8	Improving a BER	Understand the effects and potential risks which should be considered before including any recommendation in advisory reports, the relevant sources of information such as Good Practice Guides and Building Regulation Technical Guidance Documents,	11

		the measures to improve the energy performance of various dwelling types without compromising the performance of any other aspect of those dwellings.	

Unit 8 - Professional Practice

Topic		What an assessor needs to know about the topic	Learning Outcome
8.1	Professionalism	Ability to act with integrity and diligence to ensure each BER assessment is executed competently, in an independent manner, and in accordance with the Regulations, the BER Assessor's Code of Practice and all other directions issued by SEAI. Understanding of the requirements of the BER Assessor Code of Practice, including the responsibilities of the BER assessor, the requirement for BER assessors to act in an independent manner, advertising and sales promotion requirements for BER assessors, record-keeping requirements for publishing BER assessments.	2
8.2	Quality Assurance	The BER QA processes and best practice for publishing assessments. Understanding of the requirements of the BER Assessor Quality Assurance Documents.	2
8.3	Engagement and communications with the client	Ability to clearly communicate with clients regarding the BER service and regulations, the terms of engagement, timelines for delivery of their BER certificate and advisory report, documentation required to support the BER and ability to explain the results of a BER and the recommended upgrade measures in the advisory report.	2 + 11
8.4	Organisational skills	Ability to manage time well to ensure that BERs are published in a timely manner and that the retention and maintenance of records, data and documentation are done so in a safe and secure way.	2
8.5	Confidentiality and data protection	Understand the responsibilities in relation to data protection legislation.	2

[i] Learning outcome specified in the QQI specification for BER Assessment (Dwellings) 6N0732