



BER Assessors – Dwellings Technical Bulletin

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The archive of previous bulletins is available under
http://www.sei.ie/Your_Building/BER/BER_FAQ/FAQ_BER/Assessors/SEI_BER_Reports.html

1 Choosing the correct property address

It is critical that BER Assessors make every effort to ensure that they have the correct postal address for the dwelling that is being rated. It is up to the Assessor to make sure that they publish the rating under an accurate postal address.

The address should allow for unique identification of the property in so far as possible, and in such a way that prospective purchasers or renters (or their agents) can content themselves that the rating before them in fact relates to the property in question. This is a duty of care which Assessors owe to their clients. Any ambiguity in addresses should be eliminated or Assessors run the risk that a rating will be revoked and will thereafter need to be republished with a satisfactory address.

Assessors should confirm the postal address with the building owner and in addition there are a number of tools available to assist Assessors in verifying the postal address, as outlined below.

1. Meter Point Reference Number (MPRN)

The Meter Point Reference Number (MPRN) is a unique reference allocated to the house by the ESB. It can be found on the household electricity bill. Through the NAS, Assessors are provided with access to the ESB's database of MPRNs to look up the MPRN address and to assist in ensuring that the rating is being published for the correct dwelling.

The MPRN is generally reliable however there can be situations where there may be an issue with the address stored in the MPRN database. For example, in the case of new developments the address given to the ESB may have been the address used during the construction phase and may be out of date. If there are significant differences between the MPRN address and the postal address inserted in DEAP, the Assessor must publish the rating under the most accurate address.

2. Other Utility Bills

Other utility bills, such as gas bills, can be another useful reference point.

3. An Post

An Post: <http://address.anpost.ie/precisionaddressanpost/precisionaddresspost.aspx>

An Post provide an address verification service. The maximum number of searches allowed is 10 per day or 80 per month. If you require more searches per month then you need to contact info@dataireland.ie. The address is verified by checking the details you provide against Ireland's official address database, the Irish GeoDirectory.

4. GeoDirectory

GeoDirectory: <http://www.geodirectory.ie/GeodirectoryMap.aspx>

The GeoDirectory is a database (a joint An Post and Ordnance Survey initiative) that contains the address and map coordinates of over 1.7 Million addresses, every building in the Republic of Ireland. The database is updated by An Post postal workers, with official updates released on a quarterly basis. GeoDirectory offer services such as GeoAddress Locator which could be used to confirm dwelling addresses.

5. Bizmaps

Bizmaps: <http://www.bizmaps.ie/>

Bizmaps offer a service called Address Link which is an address matching software tool that matches addresses to the GeoDirectory.

6. Eircom Phonebook

Eircom: <http://www.eircomphonebook.ie/displayhome.ds>

The Eircom phonebook is provided online and can be helpful in confirming an address if you have the name of the owner and the county they reside in.

2 Guidance relating to DEAP “Dimensions” and “Building Elements”

2.1 U-value adjustments for semi-exposed elements

New dwellings

When performing a BER assessment on a new dwelling, then BER Assessors should refer to Section 3.3 of the DEAP manual, which outlines the adjustments which may be made to U-values of semi-exposed elements between the dwelling and an unheated space. The U-value adjustment is based on the effective thermal resistance, “Ru”, of the unheated space. Tables A3, A4 and A5 of Building Regulations 2008 TGD L indicate values of Ru which should be used in new dwellings adjoining unheated spaces.

With reference to Table A4 of Building Regulations 2008 TGD L, the Ru values specified for access corridors apply to unheated spaces in which each dwelling is approached via a common horizontal internal access or circulation space which may include a common entrance hall. The corridor does not form an open space between more than one storey.

The Ru values for stairwells apply to common enclosed areas which are open between more than one storey such as a stairwell or lift shaft.

Existing dwellings

When using default U-values for semi-exposed walls between an existing dwelling and an unheated space, the “Wall is semi-exposed” option in DEAP can be selected. DEAP then automatically applies the Ru values in section S6.1 of the DEAP manual to the default U-value.

Doors adjacent to unheated spaces

As stated in Section 3.3 of the DEAP manual: “The effect of unheated spaces, however, need not be included if the area of the element covered by the unheated space is small (i.e. less than 10% of the total exposed heat loss areas of the dwelling). Consequently a door in an element abutting an unheated space would not need to have its U-value changed (unless it is part of a very small flat where the U-value of the door might make a significant contribution to the result).”

2.2 When to include garages in the dwelling BER assessment

To determine if a garage should be included in the BER assessment, refer to Section 1 of the DEAP manual:

“Garages:

- should be included if heating is provided within the garage from the main central heating system;
- should not be included where the garage is thermally separated from the dwelling and is not heated by the central heating system “

As further information on this issue:

- If the garage adjoining the dwelling is heated by the main space heating system, then it should always be included in the DEAP assessment.
- If the garage is not heated by the main space heating system one of the following two scenarios apply:
 - If the garage is likely to reach the same or similar temperatures to the dwelling (because there is little or no insulation between the dwelling and garage and the garage external wall is insulated and achieving similar U values to the other external walls of the dwelling), then the garage should be included as it is not thermally separated.
 - If the wall between the dwelling and the garage is well insulated or the external garage wall is poorly insulated, then the garage is unlikely to reach similar temperatures to the dwelling and is therefore thermally separated. This garage would not be included as part of the dwelling DEAP assessment.

2.3 Including glass block walls in DEAP

A wall consisting of “glass blocks” can sometimes be used in a dwelling in place of a normal wall or window. CIBSE Guide A lists the thermal conductivity of glass as 1.05W/mK which may be used in place of certified thermal conductivity for the glass in a glass block wall. Once the glass thickness is measured, the U-value can then be determined.

The glass block wall may be entered as a window or a wall in DEAP. If there is a certified solar transmittance value and U-value available for the glass blocks, then it may be entered under “building elements -> windows” in DEAP. In the case where there is no certified U-value and solar transmittance data, the glass block wall should be entered as a wall - thick glass will absorb more light than thin glass, so the values in Table 6b of the DEAP manual should not be used.

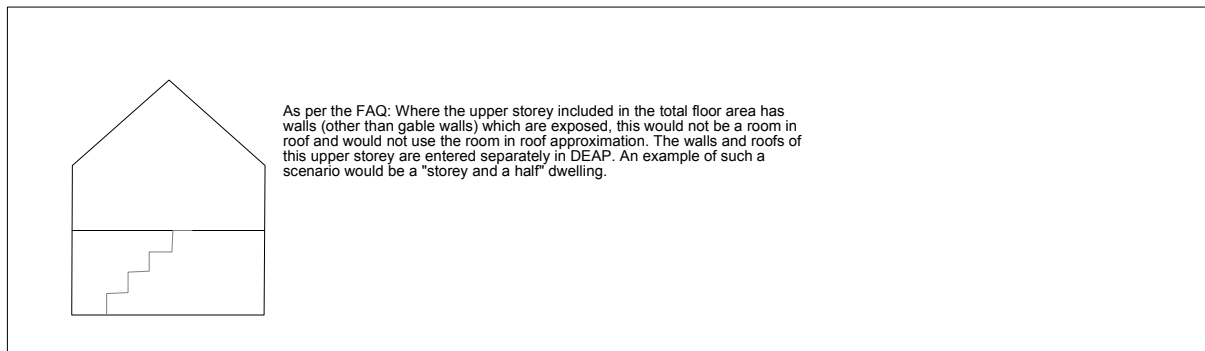
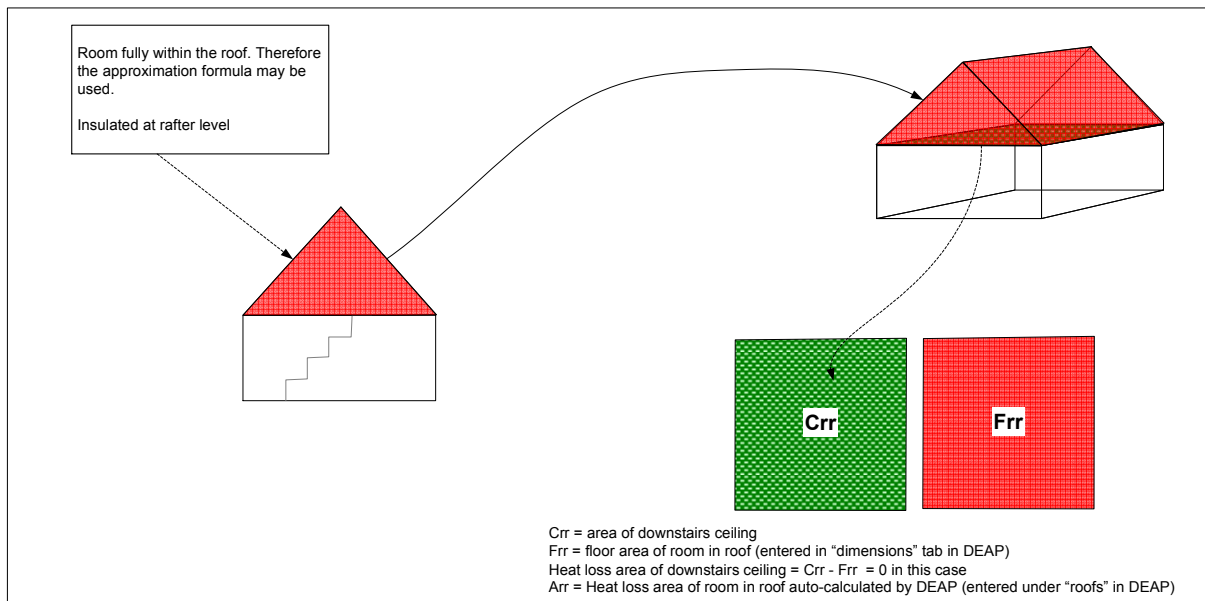
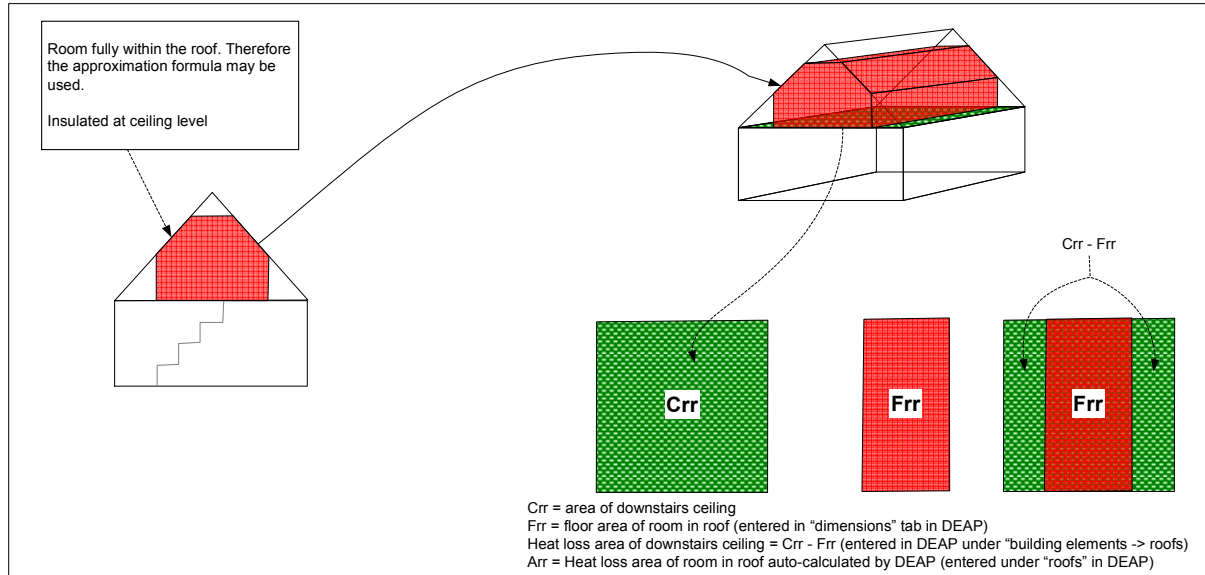
In the absence of other information, the thermal bridging effect of the adhesive between the glass blocks may be ignored as the adhesive can be assumed to have a similar thermal conductivity to that of the glass blocks.

2.4 DEAP Survey Form – heat loss areas

With reference to both the DEAP Survey Form and the May Technical Bulletin, Assessors must ensure that the correct heat loss areas are entered in DEAP and recorded in the heat loss table section of the DEAP Survey Form prior to publishing the BER Certificate. When calculating wall heat loss areas, ensure that opening areas such as doors and windows are not included in the wall heat loss area.

2.5 Further information on the “room in roof” facility in DEAP

The following three diagrams provide further illustration of the room in roof approximation facility for existing dwellings in DEAP. These diagrams are supplementary information to the BER FAQ under http://www.sei.ie/Your_Building/BER/BER_FAQ/FAQ_DEAP/Building_Elements/How_do_I_enter_a_“room_in_roof”_in_DEAP_.html.



3 Guidance relating to DEAP “Energy Requirements”

3.1 Solar space heating in group heating systems

Solar space heating for group heating systems can be accounted for in DEAP using the method defined under [http://www.sei.ie/Your Building/BER/BER_Assessors/Technical/DEAP/](http://www.sei.ie/Your_Building/BER/BER_Assessors/Technical/DEAP/).

When this guidance is used, the spreadsheet used in the methodology should be kept on file as part of the records for the BER assessment.

The methodology estimates the amount of solar thermal energy which will be delivered to the dwelling based on the total floor area of all dwellings served by the solar heating system. To this end the total dwelling floor area, or at least the total number of dwellings for which the solar space heating system is designed for should be specified by the system designer or client.

When determining the hot water storage losses in a group heating system the BER Assessor should refer to Section 4.5 of the DEAP manual.

3.2 Specifying group heating systems in DEAP

Under “Energy Requirements” -> “Group” -> “Space Heating” in DEAP, the “percentage of heat” entry for heating systems 1/2/3 is the percentage of heat which the dwelling receives from the group heating scheme boilers and is not reduced when CHP or secondary individual heating are present. This percentage of heat column only represents group heating appliances which provide heat only (and not electricity). Therefore it does not include the portion of heat from CHP plant (which also generates electricity) or secondary heating (which is not part of the group heating scheme – it is within the dwelling).

Scenarios and corresponding DEAP entries:

1. A single boiler (90% efficient; mains gas fuel) in the group heating system. No other source of heat (from CHP or secondary heating) is present. The distribution loss factor for the group heating system is taken from the DEAP manual Table 9. The “Percentage of heat” is 100% for this boiler as it is the only group heating boiler present as shown in the following illustration the from DEAP software:

Main group heating system		Calculation of primary energy and CO ₂ emission factors			
Is charging based on heat consumed?	Yes	Distribution loss factor	1.05		
Efficiency method for charging method	1	Fraction of heat from CHP unit/recovered from power station	0.00		
Heat for space heating delivered to dwelling [kWh/y]	936				
Secondary system					
% of heat from secondary/supplementary system	0.00				
Efficiency of secondary/supplementary system [%]	0				
Energy required for secondary space heating [kWh/y]	0				
Heat Source	Fuel type	Efficiency[%]	Percentage of heat [%]	Primary energy conversion factor	CO ₂ emission factor [kg/kWh]
Heating System 1	Mains Gas	90	100	1.1	0.203
Heating System 2	None	0.00	0	0	0
Heating System 3	None	0.00	0	0	0
Solar Space heating system	0				
Factors for heat delivered to dwelling from heating systems 1/2/3			100 of 100 ✓	1.283	0.237

2. Same as (1) above but with the addition of another boiler (92% efficient; oil) which supplies 40% of the heat from group heating boilers. Therefore the mains gas boiler supplies 60% in the “percentage of heat” column and the oil boiler supplies 40% in the “percentage of heat” column.

Main group heating system		Calculation of primary energy and CO ₂ emission factors			
Is charging based on heat consumed?	Yes	Distribution loss factor	1.05		
Efficiency method for charging method	1	Fraction of heat from CHP unit/recovered from power station	0.00		
Heat for space heating delivered to dwelling [kWh/y]	936				
Secondary system					
% of heat from secondary/supplementary system	0.00				
Efficiency of secondary/supplementary system [%]	0				
Energy required for secondary space heating [kWh/y]	0				
Heat Source	Fuel type	Efficiency[%]	Percentage of heat [%]	Primary energy conversion factor	CO ₂ emission factor [kg/kWh]
Heating System 1	Mains Gas	90	60	1.1	0.203
Heating System 2	Heating Oil	92	40	1.1	0.272
Heating System 3	None	0.00	0	0	0
Solar Space heating system			0		
Factors for heat delivered to dwelling from heating systems 1/2/3			100 of 100 ✓	1.272	0.266

3. Same as (2) above but the dwelling itself also contains an open fire which is a fixed room heater. The “percentage of heat” column must **ALWAYS** total 100% and therefore the addition of the open fire (secondary heating system) does not reduce the percentages of heat from “Heating System 1” or “Heating System 2”. When the Percentage of Heat column does not total 100%, DEAP flags this with a red “X” on the DEAP screen. Refer to Table 7 of the DEAP Manual for guidance on the fraction of heat supplied by secondary heating systems. Percentage of heat from secondary is therefore 10%:

Main group heating system		Calculation of primary energy and CO ₂ emission factors			
Is charging based on heat consumed?	Yes	Distribution loss factor	1.05		
Efficiency method for charging method	1	Fraction of heat from CHP unit/recovered from power station	0		
Heat for space heating delivered to dwelling [kWh/y]	843				
Secondary system					
% of heat from secondary/supplementary system	10				
Efficiency of secondary/supplementary system [%]	30				
Energy required for secondary space heating [kWh/y]	312				
Heat Source	Fuel type	Efficiency[%]	Percentage of heat [%]	Primary energy conversion factor	CO ₂ emission factor [kg/kWh]
Heating System 1	Mains Gas	90	60	1.1	0.203
Heating System 2	Heating Oil	92	40	1.1	0.272
Heating System 3	None	0.00	0	0	0
Solar Space heating system			0		
Factors for heat delivered to dwelling from heating systems 1/2/3			100 of 100 ✓	1.272	0.266

4. Same as (3) above but with a CHP system supplying a fraction of 0.2 of the heat. The percentages from the secondary system and Heating systems 1 and 2 are not reduced when the CHP system is added as detailed at the start of this section of the Technical Bulletin.

Main group heating system		Calculation of primary energy and CO ₂ emission factors			
Is charging based on heat consumed?	Yes	Distribution loss factor	1.05		
Efficiency method for charging method	1	Fraction of heat from CHP unit/recovered from power station	0.2		
Heat for space heating delivered to dwelling [kWh/y]	843				
Secondary system					
% of heat from secondary/supplementary system	10				
Efficiency of secondary/supplementary system [%]	30				
Energy required for secondary space heating [kWh/y]	312				
Heat Source	Fuel type	Efficiency[%]	Percentage of heat [%]	Primary energy conversion factor	CO ₂ emission factor [kg/kWh]
Heating System 1	Mains Gas	90	60	1.1	0.203
Heating System 2	Heating Oil	92	40	1.1	0.272
Heating System 3	None	0.00	0	0	0
Solar Space heating system			0		
Factors for heat delivered to dwelling from heating systems 1/2/3		100 of 100	✓	1.272	0.266

5. Finally, take a system the same as (4) above, but add a solar space heating system. It is determined using the methodology in Section 3.1 of this technical bulletin that the "Percentage of Heat" from the group solar space heating system is 20% of the heat output from "heat-only" plant. Therefore, this is entered as per the following diagram, and each of the percentages from Heating system 1 and 2 are reduced by 20% of what they were prior to addition of solar heating. The Percentage of Heat column still must total 100%.

Main group heating system		Calculation of primary energy and CO ₂ emission factors			
Is charging based on heat consumed?	Yes	Distribution loss factor	1.05		
Efficiency method for charging method	1	Fraction of heat from CHP unit/recovered from power station	0.2		
Heat for space heating delivered to dwelling [kWh/y]	843				
Secondary system					
% of heat from secondary/supplementary system	10				
Efficiency of secondary/supplementary system [%]	30				
Energy required for secondary space heating [kWh/y]	312				
Heat Source	Fuel type	Efficiency[%]	Percentage of heat [%]	Primary energy conversion factor	CO ₂ emission factor [kg/kWh]
Heating System 1	Mains Gas	90	48	1.1	0.203
Heating System 2	Heating Oil	92	32	1.1	0.272
Heating System 3	None	0.00	0	0	0
Solar Space heating system			20		
Factors for heat delivered to dwelling from heating systems 1/2/3		100 of 100	✓	1.018	0.213

4 Pressure testing in DEAP and for TGD L compliance

Section 1.5.4 of Building Regulations 2008 TGD L outlines the requirements for air permeability pressure testing of new dwellings. Section 1.5.4.3 indicates that permeability testing does not need to be carried out on every single new dwelling but must be tested in accordance with the sample regime defined in Table 4 of TGD L.

TGD L Section 1.3.4.4 indicates that a dwelling tested according to the sampling regime in Table 4 of TGD L should achieve a permeability test result of $10\text{m}^3/(\text{h.m}^2)$ or better. As per 1.5.4.1 of TGD L, the permeability test result in " $\text{m}^3/(\text{h.m}^2)$ " is divided by 20 to obtain the air changes per hour (ac/h) value to be entered in DEAP if an air permeability test has been carried out.

If the permeability test is not carried out on the actual dwelling, or dwelling(s) of the same type, subject to the sampling regime above, then "No" must be answered to "Has an air permeability test been carried out" when assessing the dwelling in DEAP. DEAP then assumes a default air leakage for the dwelling.

There is further information available under TGD L sections 1.5.4 and 1.3.4 and also under [http://www.sei.ie/Your Building/BER/BER Assessors/Technical/DEAP/Air Pressure Testing/](http://www.sei.ie/Your_Building/BER/BER_Assessors/Technical/DEAP/Air_Pressure_Testing/). In particular: "Where air pressurisation tests are carried out on a sample of dwellings representing a specific dwelling type, the **maximum** air pressure test result for that dwelling type, q50, measured in m^3 per hour per m^2 envelope area, should be divided by 20 to give the "Adjusted result of pressurisation test". This is the value that should be entered into the DEAP software for all of the untested dwellings of that type. Where an individual dwelling has actually been tested, the air pressure test result for that dwelling, q50, measured in m^3 per hour per m^2 envelope area, should be divided by 20 to give the "Adjusted result of pressurisation test". This is the value that should be entered into the DEAP software for that actual dwelling."

Examples:

Scenario	TGD L conformance	DEAP: "Has an air permeability test been carried out"	DEAP: "Adjusted result of air permeability test [ac/h]"
2 houses in a development with no permeability test carried out on any dwelling by the developer	No	"No"	n/a as these dwellings do not have a test result available.
2 houses in a development . They are not of the same type. Only one house has a permeability test result available and achieves $6\text{m}^3/(\text{h.m}^2)$	Yes on one house. No on the other	Yes on one house. No on the other	Tested house has test result of $6\text{m}^3/(\text{h.m}^2)$. Divide by 20 to get 0.3 ac/h on that house. n/a on the other house as no result available
2 houses in a development . They are of the same type. Only one house has a permeability test performed and achieves $6\text{m}^3/(\text{h.m}^2)$	Yes to both	Yes to both	0.3 ac/h on both as the sample regime applies (houses are of the same type).
9 houses in a development . They are of the same type. 2 houses have a permeability test performed and achieve: 1) $6\text{m}^3/(\text{h.m}^2)$ 2) $10\text{m}^3/(\text{h.m}^2)$	Yes to all 9 houses	Yes to all 9 houses	0.3 ac/h on the house which actually achieved $6\text{m}^3/(\text{h.m}^2)$. 0.5 ac/h on the remaining 8 houses.

In general, for BER assessments, SEI encourage BER Assessors to use non-default certified test data wherever possible. This non-default data must be properly certified and substantiated. Where actual air permeability test results are identified in a BER assessment audit, SEI may look for supporting evidence that the permeability test results are available, and that the test was carried out by an individual or organisation competent to do so.

Individuals may, for example, demonstrate competence to carry out permeability tests on dwellings by being registered under the NSAI's Air Tightness Testers Scheme:

<http://www.nsai.ie/index.cfm/area/page/information/airtightnesstesting>.

Additionally, individuals and organisations may demonstrate competence by being accredited to carry out tests to **I.S.EN 13829:2000** by the Irish National Accreditation Board (INAB):

<http://www.inab.ie/aboutaccreditation/accreditationschemes/laboratoryaccreditation/testingcalibration/> or any other bodies capable of providing accreditation to ISO /IEC 17025: "General Requirements for the Competence of Testing and Calibration Laboratories"

Guidance on TGD L 1.5.4.7 relating to developments with 3 dwellings or less:

The conditions outlined in TGD L 1.5.4.7 may be used to demonstrate air-tightness compliance to the Building Regulations requirements. In this case, if a dwelling of the same type was built by the same builder in the preceding 12 months and if that original dwelling achieved a permeability test result $\leq 10\text{m}^3/\text{m}^2/\text{h}$ then the current dwelling would be deemed to be compliant to the Part L air permeability requirements. In this case an air permeability test would not be required on the actual dwelling. In the BER assessment of the actual dwelling the permeability test result is set to $10\text{m}^3/\text{m}^2/\text{h}$ or $0.5\text{ac}/\text{h}$ in DEAP.

Permeability tests and provisional BER assessments:

For provisional ratings the dwelling will not be completed at the time the BER assessment is being carried out, so there will be no permeability test result available for the dwelling. Substantiation of permeability test results for provisional ratings can be made via a permeability test for a similar building with the:

- Same builder/developer
- Same structure type (timber frame/masonry/ICF)
- Same dwelling type
- Same floor area

Further detail on what constitutes a similar building is available under

http://www.sei.ie/Your_Building/BER/BER_Assessors/Technical/DEAP/Air_Pressure_Testing/.

If test data for a similar building is unavailable, the following default permeability test results can be used for provisional ratings for new dwellings:

- $0.25\text{ ac}/\text{h}$ (adjusted permeability test result to be used in DEAP) for dwellings without Balanced Mechanical Ventilation (CIBSE TM23 Best Practice)
- $0.15\text{ ac}/\text{h}$ (adjusted permeability test result to be used in DEAP) for dwellings with Balanced Mechanical Ventilation (CIBSE TM23 Best Practice)

These figures must then be replaced with an actual permeability test result for the dwelling (or development sample regime) when publishing the final BER for the dwelling.