

BER Assessors – Dwellings Technical Bulletin

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1. Determining the Living Area of a Dwelling

Recording Survey Details of Living Area

BER Assessors are required to identify and measure the living area of a dwelling for the purposes of domestic BER assessments. The Assessor must clearly indicate the living area and its dimensions on the dwelling sketches or architectural plans and record this data on the Survey Form. As detailed in the [January 2011 Technical Bulletin](#), a dwelling survey is required for “Existing” and “New Final” BERs.

Choosing the Living Area

DEAP defines the living area as “the largest public room (irrespective of usage by particular occupants), together with any rooms not separated from that room”. The DEAP Manual also states that “Kitchens (including rooms like kitchen-diners) are not considered to be public rooms on their own. However, if there is no door between the room identified as the largest public room and the kitchen, then the kitchen should be included when calculating the living room area.”

In this guidance, a dining area adjoining a kitchen is assumed to be part of that kitchen. Public rooms would typically be referred to on plans or by the homeowner as sitting rooms, lounges, parlours, family rooms or living rooms.

The following guidance deals with two different cases as illustrated in the diagram below:

- Case (1a): The kitchen is separate from other public rooms
- Case (1b): The kitchen includes a public room

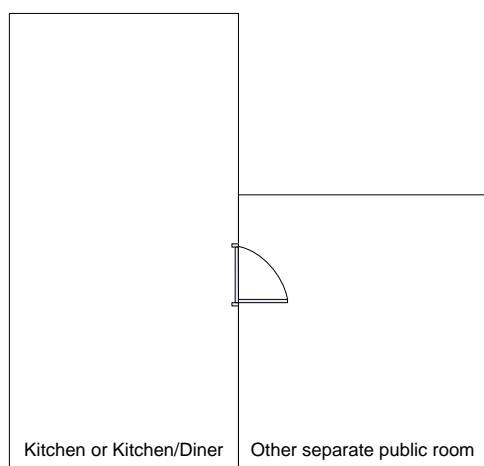


Diagram for case (1a)

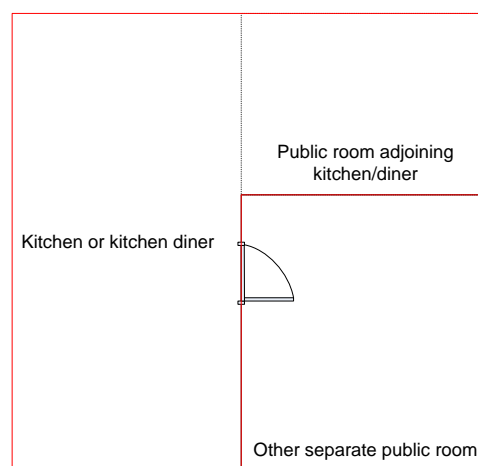


Diagram for case (1b) - combined room outlined in red

As per the following table, the kitchen is only chosen as the living area in case (1a) if there is no other public room in the dwelling.

Dwelling contains a Kitchen (or Kitchen/Diner)	Dwelling contains other Public Room(s)	Living Area specified in DEAP
√	√	Other separate public room with largest floor area
√	X	Kitchen - as there is no public room

Table 1a: Standalone Kitchen/Kitchen-Diner

In some dwellings, the room containing the kitchen and dining area also contains a public room as per case (1b). In this case the combined kitchen/dining/public room may be chosen as the Living Area even when there are other public rooms in the dwelling. The deciding factor is floor area of the public rooms, as summarised in Table 1b:

Situation	Living Area
Area of public room \geq Area of largest other separate public room	Combined kitchen/diner/public room
Area of public room $<$ Area of largest other separate public room	Other separate public room

Table 1b: Dwellings with a combined kitchen/diner/public room

In Table 1b, “Area of Public Room” = Area of Combined Room – (Area of Kitchen/diner). This is the public room adjoining the kitchen/diner.

In case (1b), it may not always be obvious where the kitchen/dining area ends and the public room begins. Often the boundary is marked by a change of floor surface from tiles or linoleum in the kitchen/diner to carpet or wooden flooring in the public room. Alternatively, a change in room-width or style may indicate the change in room function.

In any case, when measuring the floor area of the public room section of a combined kitchen/diner/public room, if the boundary between public room and kitchen/diner is unclear or ambiguous, the Assessor should choose the most pessimistic option, in other words, the largest Living Area of the possible options available.

Accuracy of Living Area Measurements

Bay windows, chimney breasts and other small areas within the living room area **must** be included in the living room area measurement. DEAP Appendix S4 states that “Small bay windows, small porches, small door entrances or recesses, small chimney breasts, where they affect the total floor area by less than 10% overall, can all be ignored for the purposes of **total floor area** measurement.” However, this text from DEAP Appendix S4 does not apply to measurement of the living room area.

2. Advice to the Client from the BER Assessor

The BER Assessor is expected to provide advice to the homeowner on the main energy saving opportunities identified on foot of the BER assessment. Opportunities (as emphasised in the BER Advisory Report), may include an inefficient heating system, poor insulation or inefficient lighting. This advice is part of good professional conduct required in the BER Assessor’s [Code of Practice](#). It is important that the homeowner understands the BER and “typical” rating for their dwelling type and age. The assessor may find further information on typical dwelling ratings in the [BER Information Leaflet](#) under the section “How Does My Home Rate?”

3. Flue Gas Heat Recovery Systems in DEAP

A Flue Gas Heat Recovery System (FGHRS) is a mechanism to recover heat from a boiler’s exhaust gas, which improves the efficiency of the boiler. The recovered heat can be used to pre-heat water entering the boiler. Sections 1, 2 and 3 of the SAP Appendix Q [FGHRS Assessment Methodology](#) provide further useful information on these devices.

FGHRS units must be listed on the SAP Appendix Q website [search facility](#) to be accounted for in DEAP. Unlisted FGHRS units are excluded from the BER calculation.

If the FGHRS is on the SAP Appendix Q list, then its contribution to the BER is calculated using an Excel spreadsheet which can be downloaded from the SAP Appendix Q [website](#) under “How to use the data”. At present this spreadsheet is only valid for condensing boilers fuelled by Gas or LPG. If an Assessor encounters an FGHRS unit on a non-condensing Gas/LPG boiler or on an Oil boiler then the unit must be ignored for the purposes of the BER until such time as it is catered for on SAP Appendix Q.

To calculate the contribution of the FGHRS to the BER the following information is input to the spreadsheet:

Data Required	Value
Boiler Brand Name	-
Boiler Model Name	-
Fuel	LPG/Gas/Oil
Boiler Type	Regular/Combi
Condensing or Non-Condensing	Condensing or Non-Condensing
FGHRS Brand Name and Model Name	-
Total Dwelling Floor Area	From DEAP Dimensions tab
Volume of Hot Water store	From DEAP Water Heating tab
Temperature Factor	From DEAP Water Heating tab “Temperature Factor Unadjusted” x “Temperature Factor Multiplier”
Water Storage heat loss	From DEAP Water Heating tab “Storage Loss”
Primary Circuit Heat loss	From DEAP Water Heating tab “Primary Circuit Loss”
Combi Loss	From DEAP Water Heating tab “Additional Loss for Combi Boiler”
Contribution from Solar Water Heating	From DEAP Water Heating tab “Solar Hot Water Input”
Efficiency of Water Heating System	Set to ‘0’% in this instance.
Energy Saved by WWHRS	Set to ‘0’ in this instance.
Space Heating Requirement	From DEAP Dist. System Losses and Gains tab “Annual Space Heating Requirement”
Fraction of heat from Secondary/Supplementary system	From DEAP Energy Requirements Space Heating tab
Electricity used by Keep-hot facility	From DEAP Water Heating tab

The spreadsheet uses this information to calculate the annual energy saved by the FGHRS in kWh. This number is input into the DEAP software in the Energy Requirements, Fuel Data tab in the “Renewable and energy saving technologies” section.

The example below shows how the data for an FGHRS unit which saves 350kWh per annum is entered into DEAP:

Renewable and energy saving technologies		Type	Part L total contribution [kWh/y]	Delivered energy [kWh/y]	Primary energy conversion factor	CO ₂ emission factor [kg/kWh]
Technology/Comment						
Renewable energy 1						
Energy produced or saved	FGHRS	Not Renewable	0	350	1.1	0.203
Energy consumed	None			0.00	0.00	0.000

The Part L contribution is taken to be 0 kWh/yr for FGHRs. The 'Primary Energy Conversion Factor' and 'CO2 Emission Factor' are chosen for the fuel used by the boiler.

If a FGHR unit is included in the BER calculation in the manner described above then the Efficiency Adjustment Factors from Table 4c for condensing boilers such as load compensation, weather compensation and underfloor heating **must be ignored**, i.e. the Efficiency Adjustment Factors are set to their default value of '1'. This derogation is carried out in the heating system controls lookup function in DEAP under the Dist. System Losses and Gains tab.

4. Thermostatic Radiator Valves on Hot Water Cylinders

In some domestic hot water systems the temperature of the water in the hot water cylinder is controlled by a thermostatic radiator valve (TRV) rather than the usual cylinder thermostat. For the purposes of DEAP a cylinder thermostat is defined as “a sensing device to measure the temperature of the hot water cylinder and switch on and off the water heating. A single target temperature may be set by the user.” A TRV does not achieve this level of control so it is not considered to act as a cylinder thermostat in DEAP. Also, a TRV controlling the heat delivered to the cylinder does not provide a boiler interlock to the water heating system.

5. Default Window U-values in Existing Dwellings

The [May 2009 Technical Bulletin](#) (Page 4) outlines the use of DEAP Section S8 in determining the U-value of a window in an existing dwelling.

Specifically, a U-value from DEAP Table 6a may only be used if *all* data relating to the window is available to the Assessor. If an Assessor is unable to verify *all* properties of a window, e.g. the type of low-emissivity coating is unavailable, then the appropriate default value from Table S9 must be used, regardless of what other data is available to the Assessor. In examples 1 and 2 below, the Assessor must assume a narrower airgap than the 16mm airgap observed. This is because the Assessor was unable to determine all of the other relevant properties of the window and the Appendix S defaults are then to be used.

Example 1

A BER Assessor encounters a double-glazed, PVC window with a gap of 16mm. There is no firm indication of low-E coating on the window and the window was installed in 2005:

In this example, it is unclear to the Assessor whether there is a low-E coating or not. Therefore, the default value from Table S9 must be used: as it was installed post-2003 a low-E coating (hard coat, $e_n = 0.15$) is assumed to be present:

Glazing	Low E coating	Frame	Metal thermal break assumed	U-value (W/m ² K) (based on Table 6a)	Solar transmittance (based on Table 6b)	Comment
Double	Yes	Wood/pvc	n/a	2.2	.72	Air filled low E hard coat $e_n = .15$ 12mm gap

Example 2

A BER Assessor encounters a double-glazed, wood-frame window with a gap of 16mm. There is no firm indication of low-E coating on the window and the window was installed in 2000.

It is unclear whether there is a low-E coating or not so the default value from Table S9 must be used. As it was installed before 2004 it was assumed that there is no low-E coating:

Glazing	Low E coating	Frame	Metal thermal break assumed	U-value (W/m ² K) (based on Table 6a)	Solar transmittance (based on Table 6b)	Comment
Double	No	Wood/pvc	n/a	3.1	.76	Air filled 6mm gap

Example 3

A BER Assessor encounters a double-glazed, wood-frame window with a gap of 16mm. The window was installed in 2006. Manufacturer’s certified data is available indicating that the gap is filled with Argon and a soft low-E coating has been applied with $en = 0.05$. As all the required data is available, Table 6a may be used which gives a U-value of 1.7 W/m²K:

	Type of frame					
	Window with wood or PVC-U frame (use adjustment in Note 1)			Window with metal frame with 4mm thermal break (use adjustments in Note 2)		
	6 mm gap	12 mm gap	16 or more mm gap	6 mm gap	12 mm gap	16 or more mm gap
double-glazed, argon filled (low-E, $en = 0.05$, soft coat)	2.3	1.8	1.7	2.8	2.2	2.1

6. Micro Wind Turbines in DEAP

A number of BER Assessors have recently asked SEAI about inclusion of micro wind turbines in BER assessments. Measured power data from the wind turbine may be used in a BER assessment only if the data covers a minimum of a continuous twelve-month period. This data may be in the form of printouts from (or photographs of) onsite metering equipment. In keeping with the Code of Practice and DEAP Survey Guide, the Assessor must keep a record of all such data.

Measured wind turbine data is entered in the Energy Requirements, Fuel Data page under the “Renewable and energy saving technologies” section in DEAP. In the picture below data for a wind turbine producing 1100kWh of electricity per year is entered in DEAP.

Renewable and energy saving technologies		Type	Part L total contribution [kWh/y]	Delivered energy [kWh/y]	Primary energy conversion factor	CO ₂ emission factor [kg/kWh]
Renewable energy 1						
Energy produced or saved	Micro wind turbine	Renewable Electrical	1100	1100	2.7	0.643
Energy consumed	None			0.00	0.00	0.000

7. Translation of Certified Test Data for use in BER Assessments

The [April 2009 Technical Bulletin](#) (Page 5) provides information on the requirements of certified product performance data.

Certified test data must be produced to the relevant standards by a body with the relevant accreditation. In addition at least one of the following criteria must be met by that test data:

- a) Documentation is in English, or,
- b) Documentation is accompanied by an English translation from the accredited test house,

or,

- c) Documentation is accompanied by an English translation from a Professional Translator qualified in translation from the specified language to English. Such translators should be sourced via the “Irish Translators and Interpreters Association” (ITIA) [search engine](#).

International bodies such as the Institute of Translating and Interpreting (ITI) in the UK, or the International Federation of Translators, <http://www.fit-ift.org> are potential sources for suitable translators. Assessors are advised to consult with the BER Helpdesk if uncertain regarding the source of a translation.

8. Semi-exposed Walls in Existing Dwellings

A semi-exposed wall is one that is adjacent to an unheated space. This affects the rate of heat loss through the wall – i.e. the U-value - a fact accounted for by adding an extra thermal resistance, R_u , as described in the Building Regulations 2008 Part L [Technical Guidance Document](#).

The manner in which this adjustment is made depends on the source of the U-value of the wall:

- If the U-value of the semi-exposed wall is based on a default value for an exposed wall taken from DEAP Table S3 then the “Wall is semi-exposed” option in DEAP is selected for existing dwellings;
- If the U-value of the wall is a non-default value, i.e. a value calculated by the Assessor, then the adjustment must be calculated manually by the Assessor and the final value entered manually into DEAP. A record of the supporting calculation must be retained by the Assessor. In this case, the R_u value can be taken from DEAP Appendix S6.1 or from Tables A3/A4/A5 in TGD L 2008.