



## **Release Notes for Version 3.2.1 of DEAP July 2012**

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This document relates to the Dwelling Energy Assessment Procedure (DEAP) software Version 3.2.1. DEAP Version 3.2.1 is the most recent version of DEAP software and repairs the known issues in DEAP Version 3.2.0 (launched December 2011). Aside from repair of these minor issues, DEAP Version 3.2.1 and DEAP Version 3.2.0 are functionally identical and will produce the same results. Version 3.2.1 may be installed as a direct replacement for the previous versions (V3.2.0, V3.1.0, V3.0.0 or V3.0.1). Assessment records from these previous versions are transferred during the install process to V3.2.1 using the instructions in this document. This document details the contents of the download package, changes made in this version of DEAP and also includes install instructions. This document **MUST** be read in full prior to installing DEAP V3.2.1.

## 1 About DEAP

The Dwelling Energy Assessment Procedure (DEAP) is the official procedure for calculating Building Energy Ratings (BERs) for dwellings in Ireland, as required under the European Communities (Energy Performance of Buildings) Regulations, 2006 (S.I. No. 666 of 2006). The DEAP software is the tool for using this methodology to generate Domestic BERs.

Under Technical Guidance Document (TGD) L to the Building Regulations 2011 and 2008, DEAP is the method used to show that CO<sub>2</sub> emissions, energy usage, fabric insulation levels and level of renewable energy technologies all meet the requirements set out in TGD L 2011 and 2008. Likewise, under TGD L to the Building Regulations 2005, DEAP is the method used to show that CO<sub>2</sub> emissions and fabric insulation levels meet the requirements set out in TGD L 2005. DEAP is not used to demonstrate conformity with other provisions for dwellings in TGD L to Building Regulations 2005, 2008 and 2011, such as thermal bridging, heating controls, and insulation of plumbing and ducting services.

DEAP can also be used to assess existing dwellings. Guidance in the DEAP manual gives further information on this process.

The software is downloaded from [http://www.seai.ie/Your\\_Building/EPBD/DEAP/Download/](http://www.seai.ie/Your_Building/EPBD/DEAP/Download/)

## 2 DEAP v3.2 features

### 2.1 Changes from DEAP v3.2.0 to v3.2.1.

DEAP v3.2.1 is functionally identical to its predecessor, DEAP v3.2.0, apart from correction of a number of minor issues. The changes introduced in DEAP v3.2.1 are as follows:

Change	Description of change
Updates to DEAP Manual – Latest version is DEAP Manual V 3.2.1.	<ul style="list-style-type: none"> <li>Updated Table 6b footnotes on derivation of the solar transmittance entry, “<math>g_{\perp}</math>”, in DEAP, particularly when using BFRC/WEP (NSAI) window certificates and other certified window data. Derivation of DEAP <math>g_{\perp}</math> entry from “<math>g_{\text{window}}</math>” also provided: <math display="block">g_{\perp} = g_{\text{window}} / [\text{Frame Factor} * 0.9].</math> </li> <li>Included relevant information from Technical Bulletins from October 2011 – April 2012.</li> <li>Removed broken link to DECLG website under smokeless fuel information (Section 10.3.3).</li> <li>Added detail under “List of Relevant Standards” section on use of cross referenced test standards when identifying valid test data.</li> <li>Added clarification on Table H2 being from national climate data.</li> <li>Added clarification on Table H3 being mandatory when choosing overshadowing values for solar collectors.</li> <li>Clarified in Appendix N that CHP efficiency defaults are entered as fractions in DEAP.</li> <li>Extended title of Table S3a to reference other spaces adjoining apartments.</li> </ul> <p>Version 3.2.1 of the DEAP Manual must be used for all published ratings from the date that DEAP v3.2.1 is launched.</p>
Fixed data importing issues	<p>DEAP v3.2.0 did not import the following fields correctly. This has been fixed:</p> <ul style="list-style-type: none"> <li>Dist. system losses and gains -&gt; central heating pump inside dwelling.</li> <li>Start -&gt; shared BER number</li> </ul>
Fixed assessment export/save issues	<p>Some fields did not save/export correctly from DEAP v3.2.0. These have been fixed:</p> <ul style="list-style-type: none"> <li>Building elements -&gt; windows tab caused assessment save error when single window copied multiple times. Fixed.</li> <li>MVHR efficiency field no longer allowed default to blank when changing between different types of mechanical ventilation.</li> <li>Repair to first line of XML files.</li> <li>DEAP mandates that percentage of low energy lighting is an integer.</li> <li>DEAP now saves assessor name and number correctly.</li> <li>Issue for assessments created on 29<sup>th</sup> February fixed.</li> </ul>
DEAP SDF records database upgrade	<p>DEAP v3.2.1 prevents issues with the “County” fields and fatal error when upgrading from earlier versions of DEAP database during install.</p>
Fixed other usability issues	<p>The following usability issues have also been fixed</p> <ul style="list-style-type: none"> <li>DEAP v3.2.1 ensures that the “walls exposed to ground” entry for heated basement floors zeroed for other floor types.</li> <li>When using the “Get MPRN Address” entry for addresses with more than 4 lines, DEAP ensures the address fields are populated correctly.</li> <li>The “wall is semi exposed” option is no longer visible for the “semi exposed” wall types. These walls already have an Ru value accounted for in their U-value.</li> <li>The PA ratio and AU value fields under “floors” were not displaying correctly on screen. This has been fixed.</li> </ul>

## 2.2 Main changes from DEAP v3.1.0 to DEAP v3.2.0

The primary differences between DEAP v3.2.0 and DEAP v3.1.0 are listed in the following table. These changes are based on the outcome of a public consultation in 2011. DEAP v3.2.1 also contains these updates.

Change	Description of software change
TGD L 2011 compliance checking	DEAP checks that a number of requirements in <a href="#">TGD L 2011</a> Section 1 are met. Namely: <ul style="list-style-type: none"> <li>• Energy and CO<sub>2</sub> requirements are met using MPEPC and MPCPC</li> <li>• Minimum level of installed renewable technologies</li> <li>• Fabric insulation levels compliance checking</li> <li>• Air permeability testing (now also added for dwellings to which TGD L 2008 applies)</li> <li>• Solar fraction for DHW solar water heating systems &lt;=60%</li> </ul>
DEAP electricity factors auto-update	The primary energy and CO <sub>2</sub> factors for electricity in DEAP can be updated automatically by SEAI. Electricity factors reflect the most recent electricity grid fuel mix changes each year. DEAP allows the user to manually configure the electricity factors used in an assessment. However, DEAP V3.2.0 will not upload assessments unless the latest electricity factors are used in the assessment.
Changes related to Combined Heat and Power (CHP)	DEAP allows specification of CHP in individual heating systems. In addition, DEAP calculates the renewables contribution from CHP for the purposes of TGD L 2008 and TGD L 2011 compliance checking.
DPI settings	DEAP now works on PCs with lower DPI (Dots Per Inch) settings. This caters for PCs using larger font sizes in Windows.
Built in DEAP Manual: PDF	The DEAP manual included in the DEAP software is in Adobe PDF format to avail of full PDF functionality. In addition the manual has been updated for new features and a number of clarifications.
Access to BER technical bulletins	The BER technical bulletins webpage is now accessible from within the DEAP software provided the PC is connected the internet.
Change to Dwelling Types and new "Purpose of Rating" and "Extension" fields	The "apartment" and "house" dwelling types have been removed and a new dwelling type, "basement apartment" has been added. The new field, "purpose of rating" allows the software to record the reason why the assessment is being carried out. DEAP also records the presence of an extension in existing dwellings. <b>If the "Purpose of Rating" and "Extension" fields are visible on the DEAP screen then one of the available values must be selected prior to upload of the BER assessment.</b>
U-value defaults	A number of U-value defaults have been updated and are detailed in the DEAP manual Appendix S.
Details from Table 2 and Table 4 lookup facilities	DEAP records the options chosen in carrying out the DEAP Table 2 and Table 4 lookup functions under the water heating and dist. system losses and gains tabs. Some minor updates have been made to Tables 2 and 4 as detailed in the DEAP manual.
New graphs	DEAP displays graphs summarising the data on the results and net space heat demand tabs.
Non default central heating pump power	DEAP accepts user defined entries for central heating pump power. This is particularly useful for low power pumps and/or high efficiency pumps.
Windows U-value fix	DEAP no longer crashes when window U-value <1.0 is entered.
New fuel types	DEAP caters for heating appliances designed to burn bioethanol and biodiesel fuels. These fuels can be selected when the appliance cannot burn fossil fuels.
Additional pump power; group heating	Group heating now has an electrical power overhead of 1% of the dwelling space and water heating demand.
Numerical rounding	A number of fields have been updated to ensure that more consistent and accurate numerical rounding is applied across the software and importing/exporting of XMLs.

## 3 Compatibility with earlier versions of DEAP

DEAP V3.2.1 can import XMLs from the following versions of DEAP:

- DEAP V2.1.2
- DEAP V3.0.0
- DEAP V3.0.1
- DEAP V3.1.0
- DEAP V3.2.0

DEAP V3.2.1 can be installed directly onto a PC with DEAP V3.0.0, DEAP V3.0.1, DEAP V3.1.0 or DEAP V3.2.0 already installed. The previous version is removed by the DEAP V3.2.1 installer package.

## 4 Installing DEAP V3.2.1

The downloaded DEAP V3.2.1 package includes a single file called “**DEAP 3.2.1 release**”. The download is approximately 10MB.

The recommended system requirements are as follows:

- 256MB of RAM
- 200MB of available hard disk space
- Monitor that supports 800 x 600 resolution or higher
- Microsoft Internet Explorer 8.0 or later
- Windows XP SP2 or later or Windows Vista or Windows 7
- 32 bit or 64 bit PC
- Latest .NET Framework (3.5 or higher)

### 4.1 Downloading DEAP

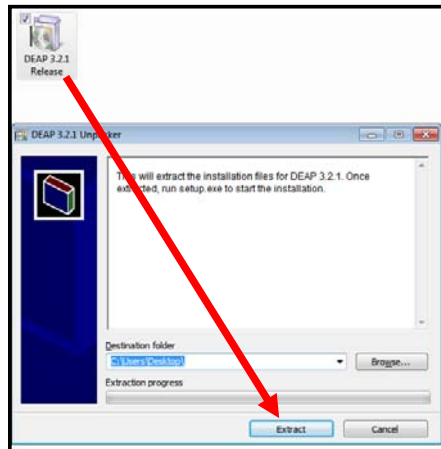
The DEAP download is available under [http://www.seai.ie/Your\\_Building/EPBD/DEAP/Download/](http://www.seai.ie/Your_Building/EPBD/DEAP/Download/). **Before downloading the software, please read the terms and conditions shown. This release notes document must also be read prior to download and install of the software.** Then, enter your email address and click the “Download” button.

The first option you will be presented with is “Do you want to Run or Save this file?”. Select “Save” as it will then allow you to select the destination folder on your computer in which you would like to save the “DEAP 3.2.1 release” file. It should be saved to a location specified by the user on the PC hard drive. The default location is the PC desktop.

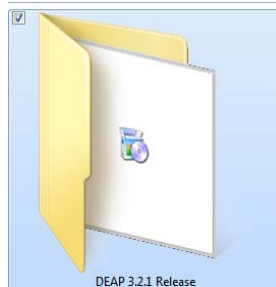
## 4.2 Installation

Installing DEAP V3.2.1 does not require uninstalling previously installed versions of DEAP. Before installation DEAP V3.2.1, ensure that the PC is connected to the internet and that there are no instances of the DEAP software open on the PC. The time required for the installation to complete will vary based on the speed of the PC and the internet connection bandwidth available. The DEAP installation process may require the user to have administrator rights on the PC.

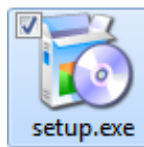
Run the downloaded “**DEAP 3.2.1 release**” file and the window below will ask the user to extract the DEAP installation files to the PC to a location specified by the user:



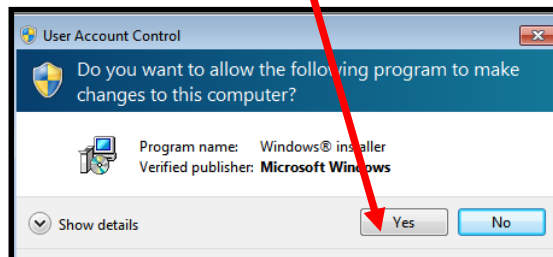
The “DEAP 3.2.1 Release” folder will be created at the location specified by the user:



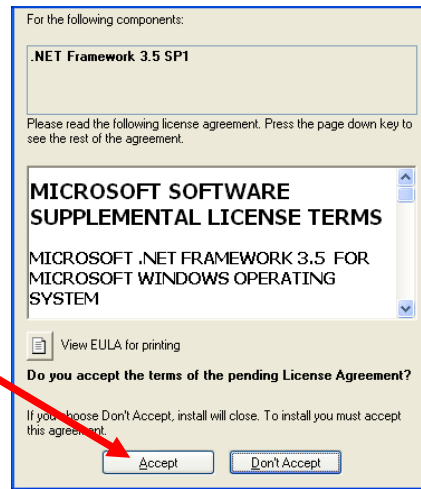
Open the folder. It contains a file called “**Setup**”. Double click on this “Setup” icon:



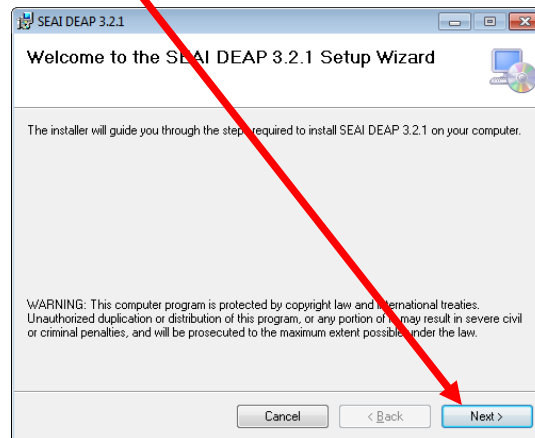
Depending on the PC operating system, the installation **may** request permission for the installation to proceed. To allow the installation to proceed, select “Yes”:



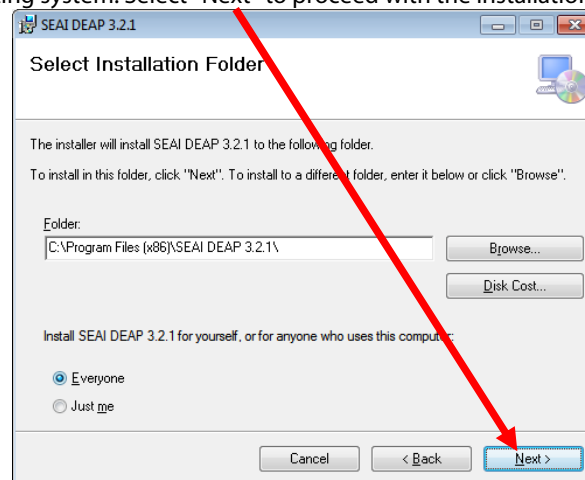
Depending on files already installed on the PC, DEAP V3.2.1 installation **may** request to install “.NET Framework 3.5” as shown below. This must be accepted for the DEAP installation to proceed. If this screen does not popup it means that the PC already has the correct “.NET Framework” version installed for DEAP V3.2.1 to run on the PC and should require no further action for this step on the part of the user.



The installation commences. Select “Next” to continue with the installation.

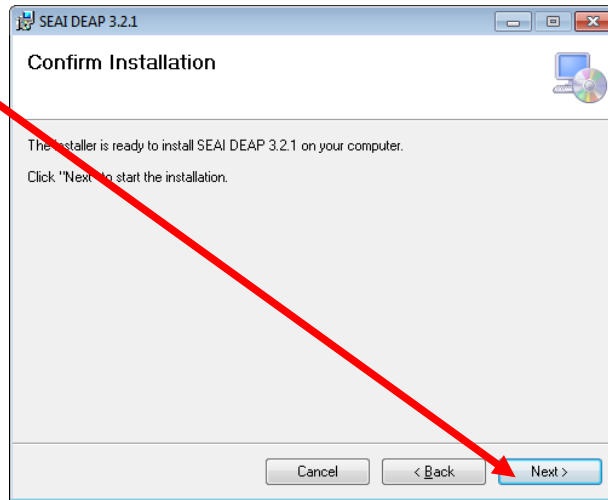


The installation process will display the default folder where DEAP is installed. The location of this folder is dependent on the operating system. Select “Next” to proceed with the installation.

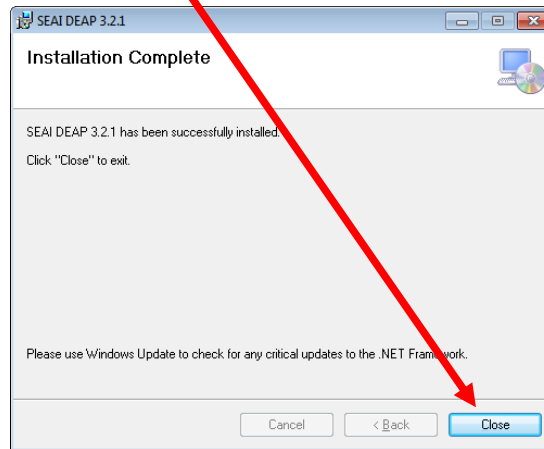




Select "Next" to confirm installation.

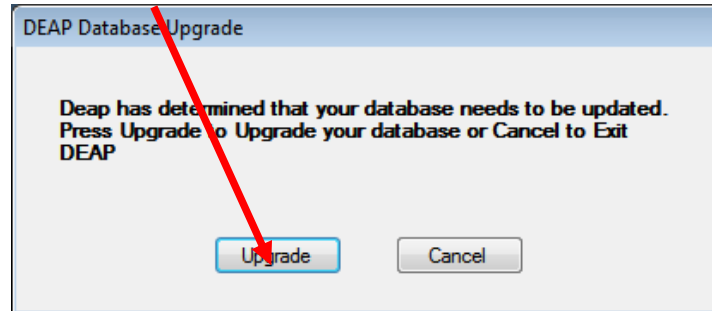


Once the installation is finished, select "Close".



### 4.3 Launching DEAP V3.2.1

DEAP V3.2.1 is launched from the "SEAI DEAP III" icon on the PC desktop or from within the PC start menu. Where DEAP V3.2.1 is first being launched on a PC with DEAPV3.2.0, DEAP V3.1.0, DEAP V3.0.0 or DEAP V3.0.1 previously installed, then DEAP offers to upgrade the DEAP database in which records from the previous version of DEAP are held. Selecting "Upgrade" as shown below allows this to proceed. At this stage, DEAP V3.2.1 is ready for use on the PC. This "upgrade" will only occur the first time DEAP V3.2.1 is launched on the PC.



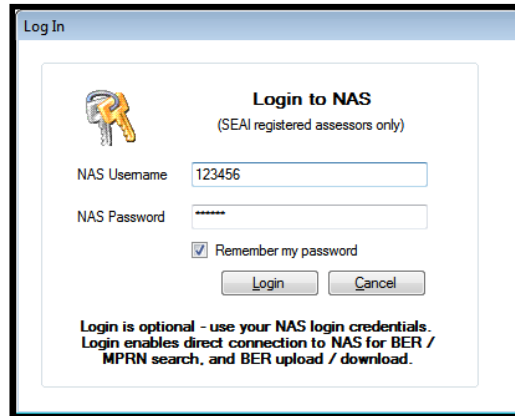
This database upgrade will not be required on subsequent uses of DEAP V3.2.1.

## 5 Further Details on New DEAP V3.2.0 Features

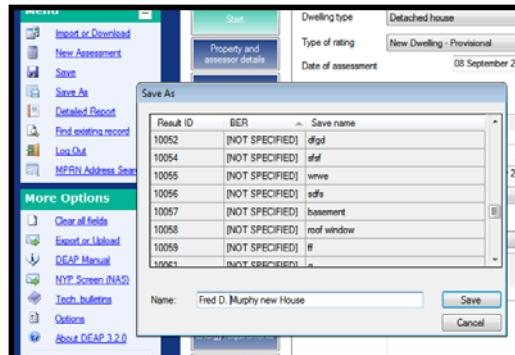
This section details the majority of functional and aesthetic changes to the DEAP software relative to the previous release (DEAP V3.1.0). **These features are also contained in DEAP V3.2.1.**

### 5.1 General changes

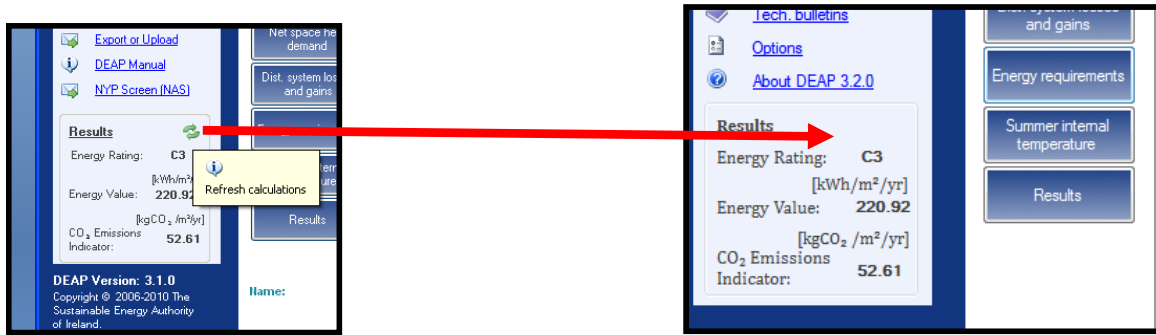
- The user can choose for DEAP to remember their login details (NAS Username and password) on the PC being used:



- DEAP allows for “large font sizes” (also called Dots per Inch settings) on the Windows operating system ensuring all interfaces in DEAP software remain accessible.
- The “Find Existing Record” search function lists the BER number and BER grade. In addition, when saving a record in DEAP, the user can now see a list of the previously saved records. The list shows the ResultID, the BER number and the name used by the DEAP user in saving the previous records:



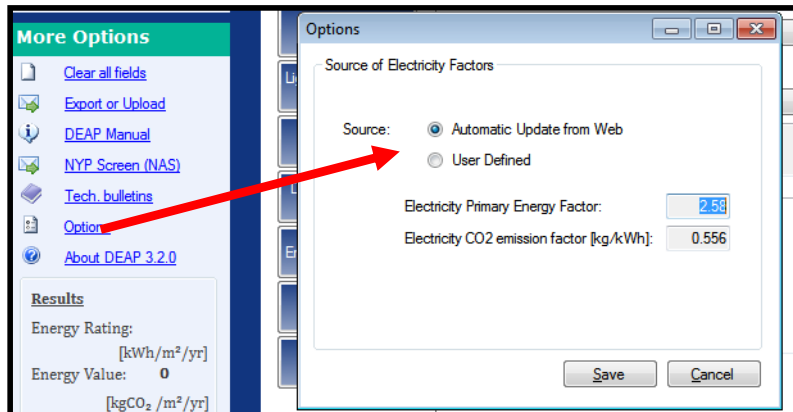
- The DEAP manual is now displayed in DEAP as a PDF file. If unable to view PDF files, the user should download the Adobe Reader software from <http://get.adobe.com/reader/>.
- DEAP links directly to the online BER Technical Bulletin search function provided the user has internet access.
- DEAP automatically updates the Energy Rating, Energy Value and CO<sub>2</sub> emissions displayed on screen when the user updates the DEAP data entries. Previous versions of DEAP required the user to select the “refresh calculations” button. This button is no longer required in DEAP V3.2.0 as the refresh occurs automatically as each entry is changed. The following diagram shows the refresh button in DEAP V3.1.0 no longer visible in DEAP V3.2.0:



## 5.2 Electricity Factors

The Primary Energy and CO<sub>2</sub> emissions factors for electricity in DEAP V3.2.0 have been updated to reflect the current fuel mix in the national electricity grid. As of December 2011, the factors used for electrical heating, pumps, fans and lighting in DEAP are 2.58 (primary energy) and .556kgCO<sub>2</sub>/kWh (CO<sub>2</sub> emissions) in DEAP V3.2.0. The derivation of these figures is detailed on [www.seai.ie/berfaq](http://www.seai.ie/berfaq). These figures represent more efficient electricity production with lower emissions/kWh than the figures in previous versions of DEAP (2.7 primary energy and 0.643 kgCO<sub>2</sub>/kWh CO<sub>2</sub> emissions). The figures used for electric heating systems in the version of DEAP being used also apply to on-site electricity generating technologies such as PV if they are installed.

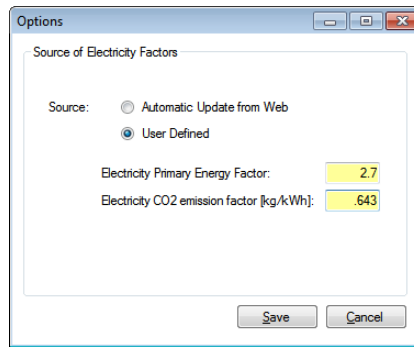
The new “Options” menu in DEAP allows the user to select the latest available figures, automatically downloaded via internet webservice by DEAP V3.2.0. This is the default position adopted by DEAP V3.2.0 each time it is launched by the user:



DEAP applies these electricity factors to electricity used in the dwelling:

Energy requirements		
Select space heating type: Individual		
Space heating   Water heating   Pumps, fans and electric keep-hot facility   Fuel data		
Fuel	Primary energy conversion factor	CO <sub>2</sub> emission factor [kg/kWh]
Main space heating system: Electricity	2.580	0.556
Secondary space heating system: Manufactured Smokeless Fuel	1.20	0.392
Main water heating system: Electricity	2.580	0.556
Supplementary water heating system: Electricity	2.580	0.556
Pumps, fans	2.58	0.556
Energy for lighting	2.58	0.556

Alternatively, the user may choose to specify “user defined” electricity factors. For example, if a user wishes to recreate an assessment from an earlier version of DEAP using the factors 2.7 and 0.643:

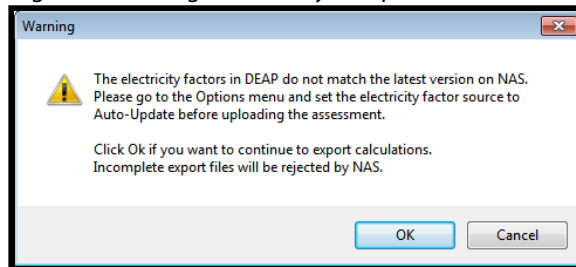


DEAP will then apply these electricity factors to electricity used in the dwelling:

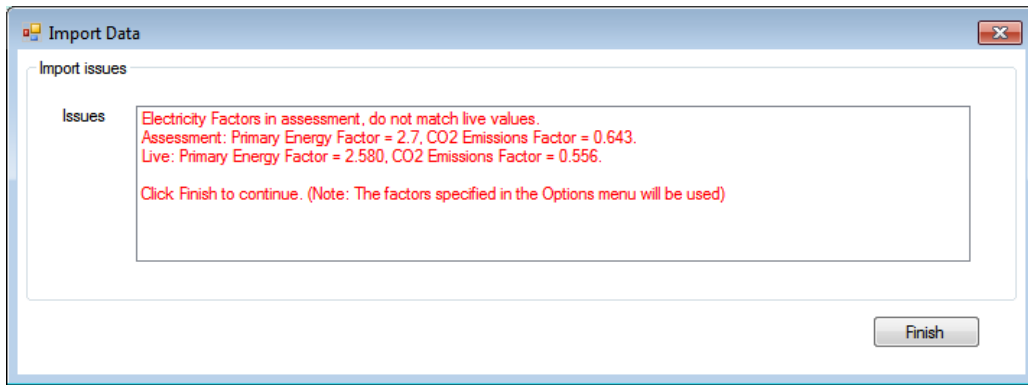
Energy requirements			
Select space heating type: Individual			
Space heating		Fuel data	
	Fuel	Primary energy conversion factor	CO <sub>2</sub> emission factor [kg/kWh]
Main space heating system	Electricity	2.7	0.643
Secondary space heating system	Manufactured Smokeless Fuel	1.20	0.392
Main water heating system	Electricity	2.7	0.643
Supplementary water heating system	Electricity	2.7	0.643
Pumps, fans		2.7	0.643
Energy for lighting		2.7	0.643

The factors from the automatic web update **MUST** be applied when uploading ratings to the NAS from DEAP V3.2.0. The electricity factors available from the automatic web update are expected to change each year as new energy balance figures for the grid efficiency and emissions become available. However, this alone will not require republication of the BER assessment on NAS as new electricity factors become available.

If the user attempts to export or upload a rating and the automatically downloaded electricity factors are not available, DEAP V3.2.0 will flag that the rating is not ready for upload:

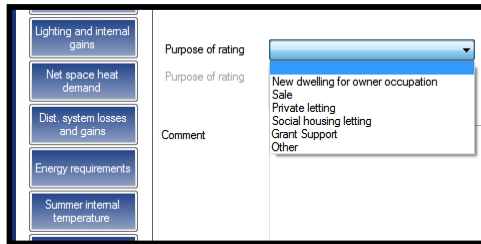


In cases where the user imports a rating which has NOT used the automatic web update electricity factors, DEAP V3.2.0 will issue a warning on import. For example, and ratings generated in earlier versions of the DEAP software will have used 2.7 and 0.643 and the following will appear on import to DEAP V3.2.0. In this case, the assessor may proceed with the import, but the electricity factors selected in the DEAP "Options" menu at the time by the user will be applied to the assessment:

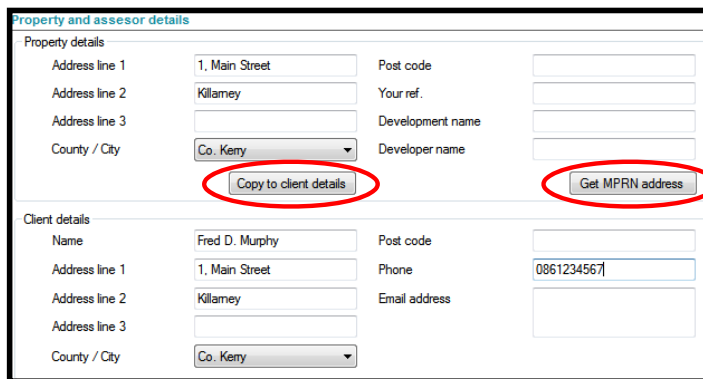


### 5.3 “Start” and “Property and Assessor Details” tabs

- For existing dwellings, DEAP requires the user to specify if there is an extension in the dwelling being assessed. This must be set to YES or NO by the user.
- The “Dwelling Type” entry no longer displays the types “House” or “Apartment” for assessments being created in DEAP V3.2.0. The new Dwelling Type option, “Basement Apartment” has been added to the list of available dwelling types in DEAP. Basement apartments are typically located under a larger building below street level.
- DEAP checks for TGD L 2011 compliance. The methods and compliance checks for TGD L 2011 are largely similar to those used for TGD L 2008 dwellings. However, the U-values required for Building Elements, along with the MPEPC (Maximum Permitted Energy Performance Coefficient) and MPCPC (Maximum Permitted Carbon Performance Coefficient) are more stringent than in 2008 as detailed in the respective TGD L documents. Additional checks for air permeability test results and solar hot water fraction are detailed later in this document.
- DEAP displays a new entry recording the purpose of the rating. One of these options must be selected by the user prior to publishing the rating:



- The Property and Assessor Details tab allows the user to populate the Property Address with the MPRN database address provided the user is logged into NAS. In addition, the property address can be copied to client address. At all times the user must ensure that the property and client address entered are correct:



### 5.4 “Ventilation” tab

- The field “number of flueless gas fires” has been renamed to “Number of flueless combustion room heaters” to cater for gas and non-gas flueless appliances. Flueless gas fires are still entered in this field.
- TGD L 2011/TGD L 2008 detail specification of air permeability tests for BER and TGD L compliance checking for new-final BER assessments. DEAP checks that the value entered complies with the airtightness requirement in TGD L 2008/TGD L 2011 for new-final assessments. The value entered in DEAP is compared to the m<sup>3</sup>/m<sup>2</sup>/hr limits detailed in TGD L 2011 and TGD L 2008 divided by 20. The limit in TGD L 2011 is 7 m<sup>3</sup>/m<sup>2</sup>/hr (or 0.35 ac/h). The limit in TGD L 2008 is 0.5ac/h. The following examples illustrate this check in DEAP for new-final assessments:

1) Exceeding the TGD L 2011 requirement:

2) Meeting the TGD L 2011 requirement:

3) Exceeding the TGD L 2008 requirement:

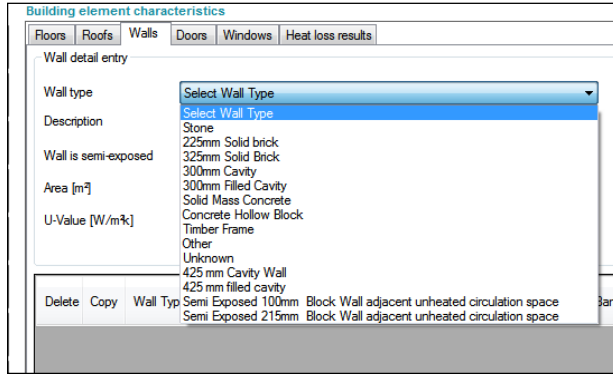
4) No pressure test result specified by means detailed in TGD L 2008/2011 for new-final dwelling.

- DEAP requires that the parameters used to determine the mechanical ventilation efficiency and specific fan power from SAP appendix Q are detailed by the user. An example is shown below:

- The number of sheltered sides is no longer defaulted when an assessment is commenced. The user must specify the number of sheltered sides according to the guidance in the DEAP manual.

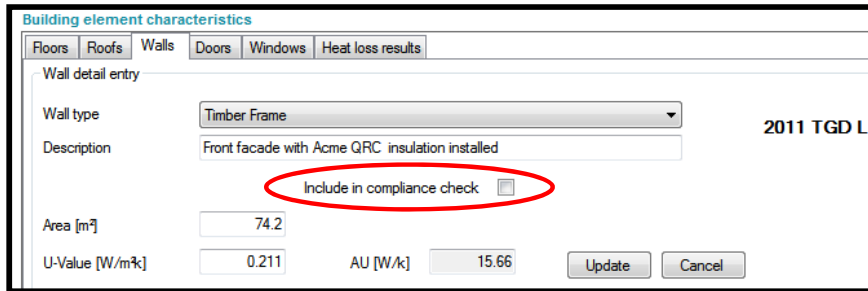
### 5.5 “Building Elements” tab

- Some of the roof U-value defaults have been updated in DEAP manual Table S5. This is reflected in the DEAP software.
- DEAP has additional wall types and associated defaults as per DEAP manual Tables S3 and S3a:

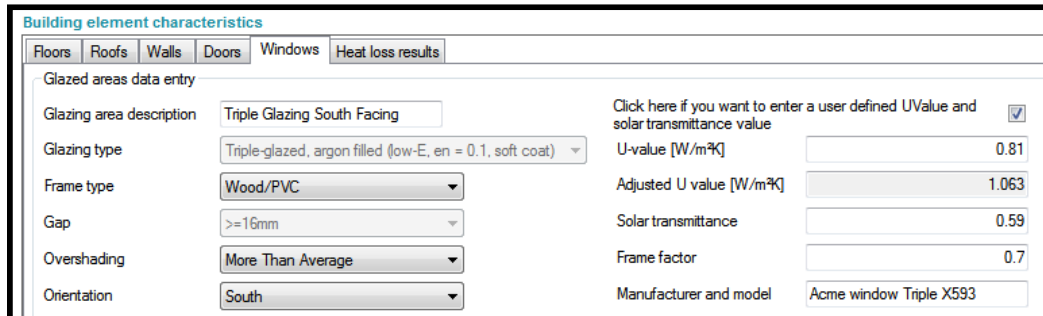


The new “Semi Exposed 100mm/215mm Block Wall” uninsulated wall types have U-value defaults based on DEAP Manual Table S3a. These defaults include an Ru value for the unheated space between the semi exposed heat loss wall and the external environment. Therefore the “wall is semi exposed” option should **not** be selected in DEAP as this would duplicate the effect of this Ru value.

- For TGD L 2011 and TGD L 2008 dwellings, some semi exposed walls in apartments may be excluded from the TGD L fabric compliance check. Heat loss walls must be included in the TGD L compliance check unless the conditions provided in TGD L Section 1.3.1.2 are met. These walls are always included as heat loss for the purposes of the BER and EPC/CPC calculation but are omitted from the TGD L fabric compliance check using the option highlighted below:



- Window U-value < 1.0 can now be directly entered in DEAP:

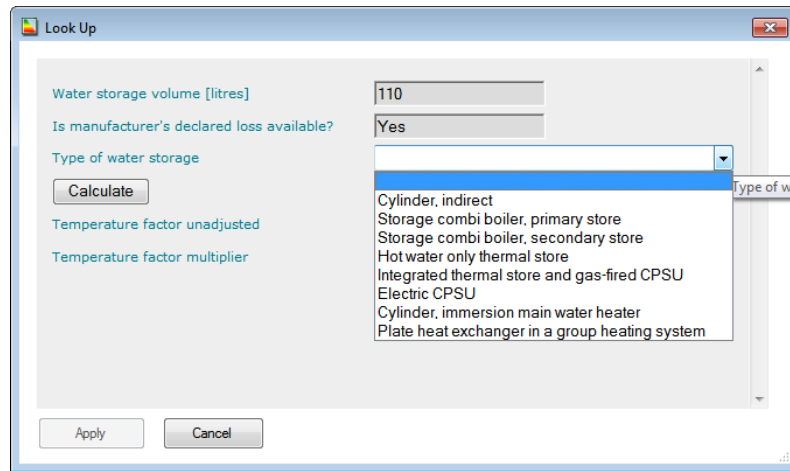


- TGD L 2011 fabric compliance checking has been added to DEAP. The method applied is similar to that in TGD L 2008 assessments. However the U-values in TGD L 2011 Section 1.3 are used in compliance checking.

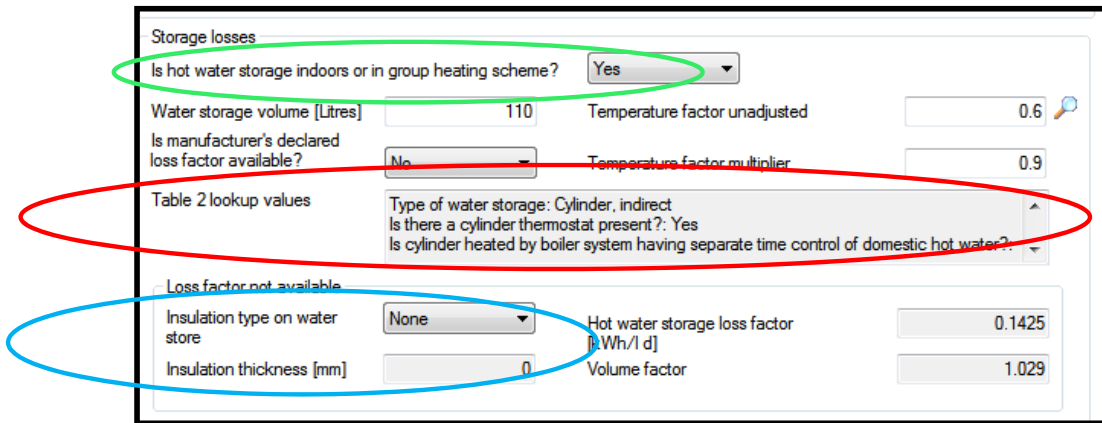


### 5.6 “Water Heating” tab

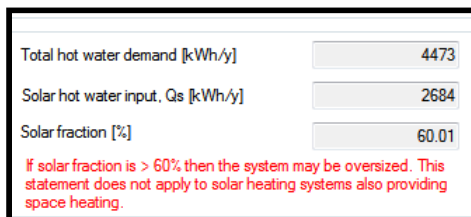
- DEAP Table 2 has been expanded to cater for water heating using an immersion and a group heating system via a plate heat exchanger. These have been added to the Table 2 hot water storage loss factor lookup:



- DEAP now records the entries chosen by the user in the Table 2 lookup in the DEAP XML as shown in red below.
- The user must specify if the hot water storage is located inside/outside the dwelling heated space for individual water heating systems or else if the water heating system is part of a group heating scheme. This is shown in green below.
- DEAP allows the user to specify “none” as the insulation type on the hot water storage volume. This is shown in blue below:



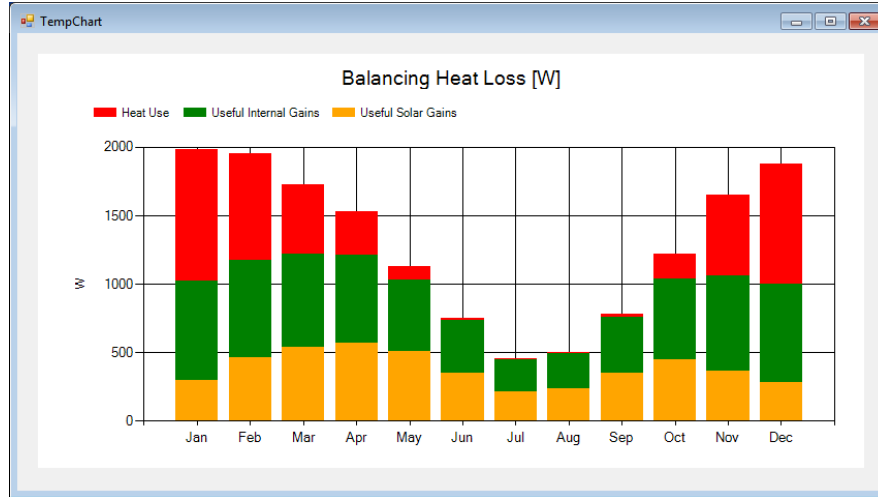
- DEAP calculates the solar fraction in cases where solar DHW is provided to the dwelling. This is the solar hot water input as a percentage of the total hot water demand. DEAP flags cases where the solar fraction exceeds 60% as this may indicate the system is oversized, particularly where the solar heating system provides hot water only:



- The Solar Collector Performance Factor in the DEAP solar water heating tab has been expanded to allow for unglazed solar collectors (which would typically have a high collector performance factor). In addition, the aperture area, zero loss collector efficiency and collector heat loss coefficient have all been expanded to allow for up to three decimal places.

### 5.7 “Net Space Heat Demand” tab

- DEAP displays a chart with “Heat Use”, “Useful Internal Gains” and “Useful Solar Gains” for each month:



### 5.8 “Dist. System Losses and Gains” tab

- The user may enter non-default total power consumption for central heating pumps as per DEAP Table 4f. In addition, the user should specify whether the central heating pumps are inside or outside the dwelling. The total central heating pump power is auto-calculated by DEAP and should only be edited where alternative pump data is available as per DEAP Table 4f. For example the dwelling below has three central heating pumps calculated by the BER Assessor to use 264kWh/y in total following the methodology in DEAP Table 4f. In addition, these central heating pumps are located inside the dwelling.

	Number present	Boiler controlled by room thermostat	Inside dwelling	Total electricity consumption [kWh/y]	Heat gain [W]
Central heating pump	3	Yes	Yes	264	30
Oil boiler pump	0	No	No	0	0
Gas boiler flue fan	1			45	
Warm air heating system or fan coil radiators present?	No			0	0
<b>Totals</b>				<b>309</b>	<b>30</b>

- The fan power for fan coil radiators is recorded under the “Warm air heating system or fan coil radiators present” entry.
- The choices made by the user during the Table 4 lookup are now displayed in DEAP:

**Distribution system loss and gains**

Control and responsiveness

Temperature adjustment [°C]

Heating system control category

Heating system responsiveness category

Table 4 lookup values

Heating system: Air-to-water heat pump (electric)  
 Heat Emitter Type: Underfloor heating, pipes in insulated timber floor  
 Heating System Controls: Programmer and at least two room thermostats  
 Space heating system also supplies DHW: Yes

- The Table 4 lookup is updated to reflect a number of minor changes DEAP manual Table 4 (detailed in Section 6 of this document).

### 5.9 “Energy Requirements -> Individual Heating Systems” tab

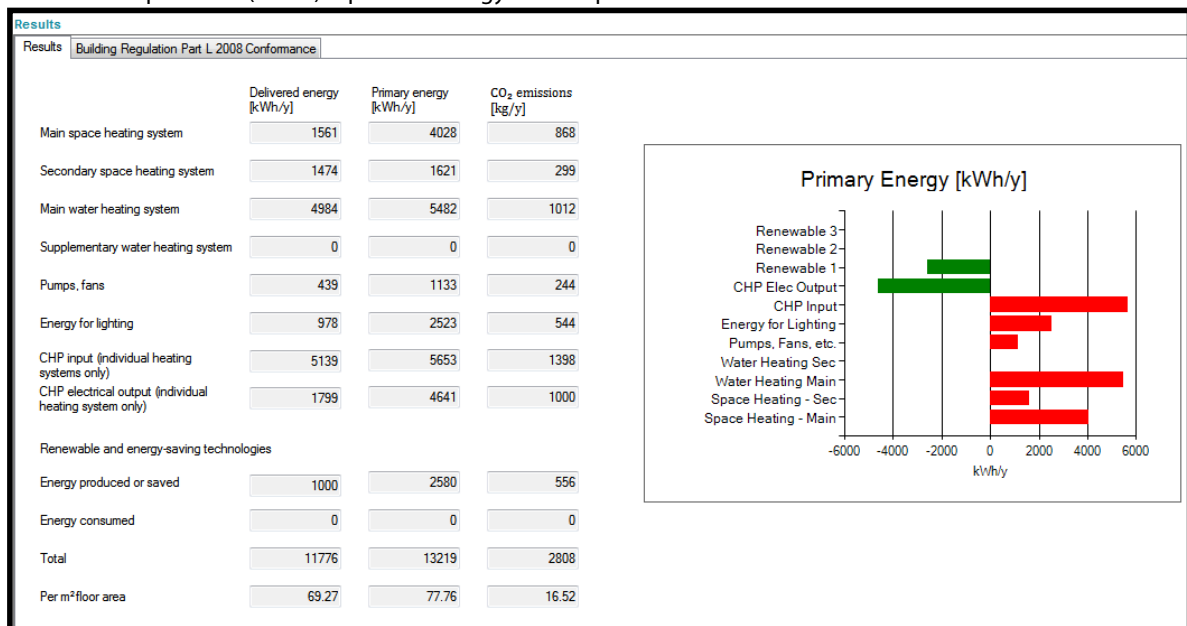
- Combined Heat and Power (CHP) systems can be entered in DEAP for individual heating systems. The fuel used and electricity generated by the individual CHP system are also displayed on the DEAP results tab. The following fields are specified by the DEAP user:
  - Fraction of main space and water from CHP (this should be provided from design data or operational records). DEAP calculates the remaining main space and water heating from the “main heating system” and “main water heating system”.
  - Electrical and thermal efficiency of CHP plant based on Gross Calorific Value of input fuel.
  - CHP fuel type.
- The user may record the make and model of the secondary space heater. This is important where data from HARP or test data is used for appliance efficiency.
- “Supplementary water heating” fuel type now automatically changes to “electricity” when “Is supplementary electric water heating used in summer?” is set to “Yes” on the water heating tab.
- Bioethanol and biodiesel added as fuel types as per DEAP Table 8. Biodiesel or bioethanol must be verified as being from renewable sources only. Fuel type of biodiesel or bioethanol should not be selected if the appliance can burn any other fuel (for example kerosene mixed with biodiesel or pure kerosene). These fuels are considered renewable when DEAP checks for renewables contribution compliance against TGD L 2008 and TGD L 2011.

### 5.10 “Energy Requirements -> Group Heating Systems” tab

- Bioethanol and biodiesel fuel types added as per DEAP Table 8.
- As outlined in DEAP Appendix C, energy associated with the electricity used for pumping water through the distribution system is included in DEAP. DEAP adds electrical energy equal to 1% of the thermal energy required for main space and water heating.

### 5.11 “Results” tab

- DEAP displays a graphical representation of the primary energy uses in the dwelling. Negative quantities (in green) represent energy generated by the installed systems (such as PV panels or CHP systems). Positive quantities (in red) represent energy consumption on site.



- The Building Regulations conformance tab now displays conformance for TGD L 2011 dwellings where the building regulations compliance checking is to TGD L 2011. This includes more stringent

MPCPC/MPEPC values than those used in 2008. In addition the fabric compliance checks are more stringent than 2008.

- Additional TGD L 2008/2011 renewables contribution from CHP, bioethanol and biodiesel now calculated by DEAP. The CHP contribution is detailed in DEAP manual Appendix N.

## 6 DEAP Manual V3.2 changes relative to DEAP V3.1

The DEAP manual V3.2 includes a number of functional changes and clarifications from published Domestic BER Technical Bulletins. **These updates are also contained in the DEAP manual V3.2.1.** The Technical Bulletins remain a useful resource as they include a greater level of detail and worked examples not provided in the manual. The changes in the manual are summarised as follows:

- Significant level of detail from the [Domestic BER Technical Bulletins](#) and [FAQs](#) included in the manual. Assessors are still advised to consult the Technical Bulletins and FAQs when seeking guidance on specific issues if the required information is not available in the DEAP manual or Survey Guide. SEAI will continue to produce BER Technical Bulletins as and when required (for example recurring issues found by the BER QA audit team).
- Addition of guidance relating to TGD L 2011.
- New-final dwellings also require dwelling survey.
- Specification of "Purpose of rating" field.
- Addition of "Basement apartment" dwelling type.
- Replacement of "flueless gas fires" with "flueless fixed combustion heaters"
- Assessor must specify the mechanical ventilation system configuration when using non default mechanical ventilation parameters from SAP Appendix Q.
- Detail on solar fraction calculation.
- Appendix A: Primary and secondary heating systems:
  - Detail on identifying main space heating system by count of habitable rooms heated clarified.
  - Bathroom roomheaters are not to be counted as secondary heaters.
  - Towel radiators are to be ignored in DEAP assessments.
  - Identification of the heating system which is cheapest to run.
  - References added to the NSAI SR50 draft Code of Practice for plumbing, heating and solar water heating installations.
- Incorporation of solid fuel ranges into DEAP Appendix B.
- Appendix C: Group heating schemes:
  - Details of heat pumps in group heating schemes.
  - Expanded detail on calculation of distribution heat loss factor.
  - 1% overhead for group heating water distribution pumps.
- Addition of new fuel types (biodiesel and bioethanol).
- Detail on automatic update of electricity factors in DEAP.
- Appendix G: Heat pumps:
  - Expanded detail on calculation of heat pump seasonal performance factor (SPF).
  - Reference to water heating SPF calculation when EN255-3 test results available.
  - Treatment of heat pumps with fan coil or low temperature radiators.
- Appendix H: Updated collector performance factor calculation for unglazed collectors.
- Appendix K now explicitly requires the need to use certified data when using non default or non-ACD psi values.
- Appendix L details use of energy labels for light bulbs to identify the low energy light count for the dwelling.
- Appendix M2 provides detail on calculation of kWh/yr yield from on-site wind turbines where monitored energy yield is not available over a twelve month period.
- Appendix N updated to cater for individual CHP heating systems and the renewable energy contribution calculated in DEAP from CHP systems.
- Appendix S: DEAP for existing dwellings:
  - Additional wall type defaults automatically referenced by DEAP from Table S3 and S3a expanded. Values from Table S3a incorporate the Ru value for the semi exposed wall.
  - Table S3b included where "default" walls are retrofitted with additional dry lined insulation.
  - Table S5 roof U-values updated to reflect current U-value calculation standards applied to original building regulations insulation specifications.
  - Additional thermal mass category identification detail added to Table S10.

- Sheltered sides default of 0 must be assumed on existing dwellings unless proven otherwise during site survey.
- Table 2 expanded to include cylinder with main water heating from immersion and plate heat exchange from a group heating scheme.
- Table 2a added to identify storage volume based on width/height of cylinder. This data is based on the BS1566 standard. Assessors are no longer required to use the formula outlined in April 2009 technical bulletin for cylinder volume derivation.
- Table 4: heating system controls and default efficiencies:
  - Added bioethanol flueless fire default efficiency.
  - Updated default efficiency for condensing gas boilers installed pre-1998.
  - Additional detail on low temperature or fan coil radiators to Tables 4c and 4d.
  - Addition of heat pumps tested to EN255-3 for water heating to Table 4c.
  - Detail on systems equivalent to boiler interlock in Table 4c.
  - Identifying the heat emitter operating temperature for heat pumps under Table 4c.
  - Programmers in group heating schemes may be centralised in the group heating scheme rather than localised in the dwelling (Table 4e).
  - Detail of fan coil radiator electricity consumption in Table 4f.
  - Calculation of non-default central heating pump power in Table 4f.
- Table 6a: Default U-values for PVC, metal and semi-exposed doors.
- Addition of thermal conductivities of common building materials in Table 12a (applicable to all dwellings in the absence of certified data).
- Addition of thermal conductivities of common insulation materials in Table 12b (applicable to new-provisional and existing dwellings in the absence of certified data).

## 7 Terms and Conditions

- 1 By installing and using the Software you signify your acceptance of these terms and conditions of use of the Software.
- 2 SEAI is licensing you to use the Software for the purpose of carrying out assessments using the DEAP method.
- 3 The Software is provided "as is", which means that SEAI takes no responsibility for the Software or its performance or non-performance.
- 4 No warranty of any kind is expressed or implied and to the extent permitted by law all statutorily implied warranties are hereby excluded.
- 5 You use and rely on the Software at your own risk.
- 6 SEAI will not be liable for data loss, loss of profits or any other kind of loss, whether direct or indirect, suffered by you or any third parties, while using or misusing this Software howsoever caused, whether by breach of contract, tort or otherwise.
- 7 If SEAI is held by a court of competent authority to be liable under these terms and conditions of use, such liability shall not exceed €100 (one hundred Euro) only.
- 8 You shall not modify, copy, duplicate, decompile, reverse engineer, reproduce, license or sublicense the Software, or transfer, assign or convey the Software or any right in the Software to anyone else without the prior written agreement of SEAI.
- 9 Any form of commercial use and distribution of the Software is not authorised without the prior written agreement of SEAI.
- 10 Technical support in the installation or use of the Software is only available to registered BER Assessors.
- 11 These terms and conditions of use will be governed by Irish law and subject to the exclusive jurisdiction of the Irish courts.
- 12 The user must read the DEAP software release notes in full prior to installation of the software.

## 8 Contact Information

DEAP is the property of the Sustainable Energy Authority of Ireland (SEAI). DEAP software is unsupported for persons not registered as BER Assessors.

If you have any queries please contact us: [http://www.seai.ie/Your\\_Building/BER/BER\\_Contact\\_Info/](http://www.seai.ie/Your_Building/BER/BER_Contact_Info/)

## **Appendix A: Issues and Troubleshooting**

This section addresses commonly asked questions and known issues with DEAP Version 3.2.1, particularly in relation to installation of the software.

### **A1: Downloading DEAP using “Google Chrome”**

When downloading DEAP using “Google Chrome” internet browser, you may be first asked if you wish to “save” the file. When the “DEAP 3.2.1 release” icon appears on the bottom left of the select the “Show in Folder” option. This allows the user to see the folder containing the downloaded “DEAP 3.2.1 release” file located in the “downloads” folder. Proceed with the installation as per the instructions earlier in this document.

### **A2: Downloading DEAP using “Mozilla Firefox”**

When downloading DEAP using “Mozilla Firefox” internet browser, you are asked to “save” the file. The “downloads” window opens. Once the download is complete, right click on the “DEAP 3.2.1 release” file and select “open containing folder”.

This allows the user to see the folder containing the downloaded “DEAP 3.2.1 release” file located in the “downloads” folder. Double click on the “DEAP 3.2.1 release” icon in the “downloads” folder and you will be given the option to RUN the process which unzips the installation package. Follow the installation instructions earlier in this document to complete the installation.