



## Deep Retrofit Pilot Programme

### Data monitoring

#### 1. Preface

The Deep Retrofit Programme (DRP) requires homes to monitor their energy usage for three years post-works. The following guidelines aim at assisting the contractor to complete SEAI's Deep Retrofit Data Monitoring workbook - as required by the programme.

As this is a Pilot project, these guidelines are subject to change as required by SEAI.

#### 2. Why data monitoring?

The data monitoring workbook is used to record energy consumption and costs of the different home energy sources in the home. This data record is used to compare energy consumption and cost, and calculate annual energy and monetary savings for the home, for 3 years post works.

Over time, the data monitoring worksheet will show energy trends. This information can be utilised to compare energy performance between homes and identify opportunities for further improvement.

Data monitoring will inform the installation and commissioning of equipment in the homes, the downstream operation of that equipment and to learn from homeowner behaviours in using the equipment. This will also assist in closing the gap between design of systems and their performance.

While the primary purpose of the data collection is energy monitoring, SEAI also invite other data monitoring that may inform other value proposition offerings such as health and air quality.

#### 3. Using the data monitoring workbook

- The data monitoring workbook must be completed by the contractor.
- The workbook is divided into three sections: **1)** House details, **2)** Pre DRP data records, and **3)** Post DRP data monitoring.
- To select from a drop down menu, please first click in to the yellow answer field and then navigate to the drop-down icon to the right of the cell.
- The workbook is password protected and only yellow cells can be accessed and edited by the user.

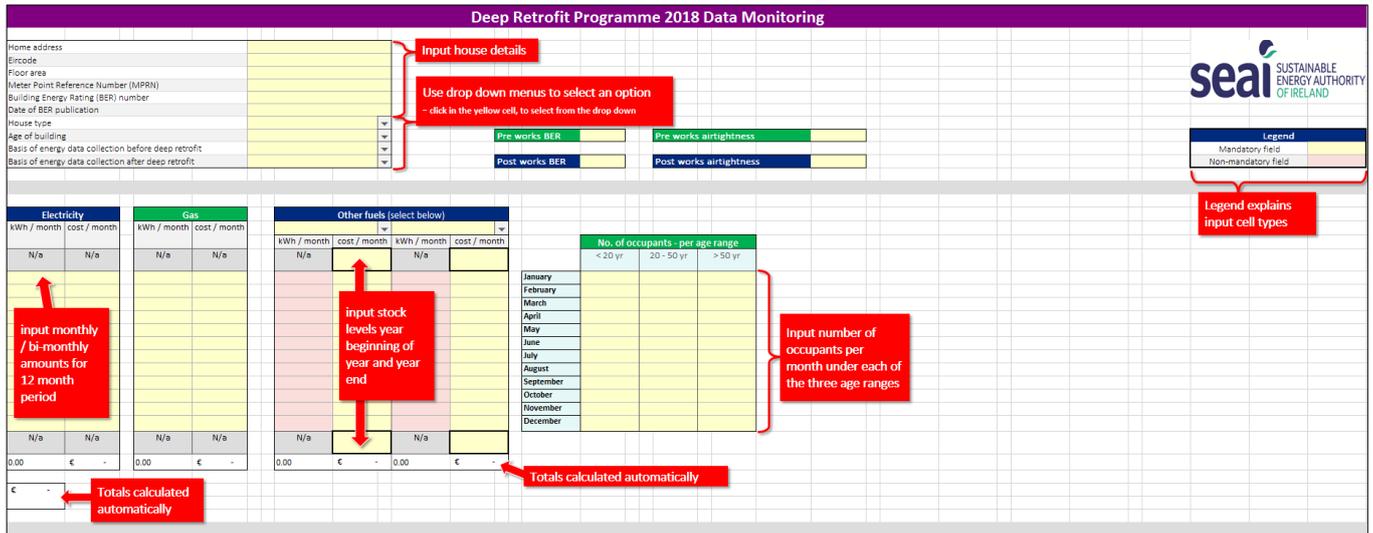


Yellow cells (mandatory) to be completed by the contractor



Pink cells (non-mandatory) to be completed by the contractor

- All other cells are locked, un-editable and/or auto completed by the workbook and do not require user input.
- The second tab of the Data Monitoring Workbook, titled “Data Monitoring Guide”, provides further guidance on how to complete the data input - as illustrated in **Figure 1**.



**Figure 1:** The Data Monitoring Guide - located on the second tab of the workbook.

#### 4. House Details

The first section of the data monitoring worksheet requires input of home details, BER rating and airtightness, as shown in **Figure 2**.



**Figure 2:** House details, BER and airtightness information

#### 5. Pre deep retrofit data records

The pre DRP data record will require billing information from the previous 12 month period to calculate the annual fuel consumption and cost pre-works.

Depending on the energy provider, bills may not occur at monthly intervals. If this is the case, cost and kWh can be divided over the relevant period and input accordingly by the user (usage within the 12 month period only).

There are options to input electricity and gas amounts, and an “other fuels” field to capture any additional fuels consumed. These can be recorded by cost only (at relevant month), as kWh information may not be available. For non-metered data (e.g. heating oil or solid fuels) we take the stock level at the start of the measurement period and end of the measurement period and all the deliveries in between. If an assessor does not have stock levels, it is assumed that the tank/silo is full at the start of the measurement period and empty at the end.

Users are also required to record the average number of occupants in the home each month, under three age ranges (< 20, 20-50, and >50).

Pre DRP	Electricity		Gas		Other fuels (select below)				No. of occupants - per age range			
	kWh / month	cost / month	kWh / month	cost / month	kWh / month	cost / month	kWh / month	cost / month				
Stock levels - beginning of year	N/a	N/a	N/a	N/a	N/a		N/a			< 20 yr	20 - 50 yr	> 50 yr
January										January		
February										February		
March										March		
April										April		
May										May		
June										June		
July										July		
August										August		
September										September		
October										October		
November										November		
December										December		
Stock levels - year end	N/a	N/a	N/a	N/a	N/a		N/a					
<b>Total / year</b>	0.00	€ -	0.00	€ -	0.00	€ -	0.00	€ -				
<b>Pre DRP annual fuel cost</b>	€ -											

Figure 3: Pre deep retrofit data records

## 6. Post deep retrofit data monitoring

Post deep retrofit data monitoring is required for 3 years post-works. This data enables savings calculations to be made and validates the benefits of deep retrofit. This section is to be completed using the home's smart meter data.

The post deep retrofit data monitoring comprises space and water heating, electricity, other fuels and electricity generation (Solar PV).

Post DRP Year 1	Space heating (electricity consumed by heat pump)				Water heating (electricity consumed by heat pump) (if separated out from space heating)				Whole house electricity		Other fuels (wood logs or wood)	Electricity Generated (Solar PV)		Average monthly temperature (°C)		Average monthly humidity		No. of occupants - per age range			
	Primary space heating		Secondary space heating		Primary water heating		Secondary water heating		kWh / month	cost / month		kWh / month	net elec. demand / surplus (kWh/month)	Living room	Master	Living room	Master				
January																					
February																					
March																					
April																					
May																					
June																					
July																					
August																					
September																					
October																					
November																					
December																					
<b>Total / year</b>	0.00	€ -	0.00	€ -	0.00	€ -	0.00	€ -	0.00	€ -	€ -	0.00	0.00								
<b>Total savings for year 1, compared to pre DRP data</b>																					
€ savings	€ -																				
kWh savings	0.00																				

Figure 4: Post deep retrofit data monitoring fields

### 6.1 Water and space heating

Select the correct fuel type using the drop down menus for these sections. If the metering does not split out electricity consumption of the heat pump for space and water heating, then the overall heat pump electricity consumption should be input under the **Space Heating** section.

### 6.2 Whole house electricity

The user is required to input kWh and cost per month for **'Whole house electricity'** use.

### 6.3 Other Fuels

The user is required to record any other fuels used (e.g. wood logs or wood pellets), typically cost of any solid fuels for room stoves. This is an optional field as not all homes will have this requirement.

### 6.4 Electricity Generated (Solar PV)

The user is required to input kWh / month of any electricity generated from Solar PV panels. The workbook auto calculates net electricity demand or surplus energy generation if applicable.

### 6.5 Temperature and humidity readings

Temperature and humidity readings are to be taken at 15 minute intervals, in order to build hourly data profiles and obtain monthly averages. Readings should be taken from two different rooms - the master bedroom and the living room.

The reporting that can be generated by smart meters will vary and may not be transferrable to our data monitoring workbook. If reports can be generated in excel format, then simple calculations can be applied to ascertain temperature patterns throughout the day and seasonally.

SEAI can request data at any point with two weeks' notice, as evidence to support average monthly temperature and humidity scores.

## 7. Biannual reporting to SEAI

Biannual reporting will commence upon completion of deep retrofit works, in a 6-monthly cycle. Biannual reports are automatically generated, on the third tab of the data monitoring workbook.

Biannual reports are to be submitted to SEAI.

Deep Retrofit Programme 2018																					
Post DRP Year 1 Q1 report	Space heating				Water heating				Whole house electricity		Other fuels (wood logs or)	Electricity Generated (Solar PV)		Average monthly temperature (°C)		Average monthly humidity		No. of occupants - per age range			
	Primary space		Secondary space heating		Primary water heating (select)		Secondary water heating		kWh / month	cost / month	cost / month	kWh / month	surplus / month	Living room	Master bed	Living room	Master bed	< 20	20 - 50	> 50	
	kWh / month	cost / month	kWh / month	cost / month	kWh / month	cost / month	kWh / month	cost / month						Temp (°C)	Temp (°C)	Temp (°C)	Temp (°C)				
January	0	€ - 0	0	€ - -	0	€ - 0	0	€ - -	0	€ - -	€ - -	0	0	0	0	0	0	0	0	0	0
February	0	€ - 0	0	€ - -	0	€ - 0	0	€ - -	0	€ - -	€ - -	0	0	0	0	0	0	0	0	0	0
March	0	€ - 0	0	€ - -	0	€ - 0	0	€ - -	0	€ - -	€ - -	0	0	0	0	0	0	0	0	0	0
April	0	€ - 0	0	€ - -	0	€ - 0	0	€ - -	0	€ - -	€ - -	0	0	0	0	0	0	0	0	0	0
May	0	€ - 0	0	€ - -	0	€ - 0	0	€ - -	0	€ - -	€ - -	0	0	0	0	0	0	0	0	0	0
June	0	€ - 0	0	€ - -	0	€ - 0	0	€ - -	0	€ - -	€ - -	0	0	0	0	0	0	0	0	0	0
<b>Total (6 months)</b>	<b>0</b>	<b>€ - 0</b>	<b>0</b>	<b>€ - -</b>	<b>0</b>	<b>€ - 0</b>	<b>0</b>	<b>€ - -</b>	<b>0</b>	<b>€ - -</b>	<b>€ - -</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Figure 5: The Biannual Data Monitoring Report will be automatically generated on the third tab of the workbook, upon input of data. This report can be extracted for submission to SEAI.

## 8. Future reporting requirements

### 8.1 Mandatory fields

SEAI may make some non-mandatory fields mandatory in the future, pending review of the workbook and feedback.

### 8.2 Air quality and health

Air quality and health reporting protocols for the Deep Retrofit Programme are under consideration by SEAI, and may be added to the Deep Retrofit data monitoring requirements at a later date.

SEAI may incorporate an air quality & health research and development project from a 3<sup>rd</sup> party which Deep Retrofit projects could be subject to.