



## Designing the Perfect EPC – What works for you?

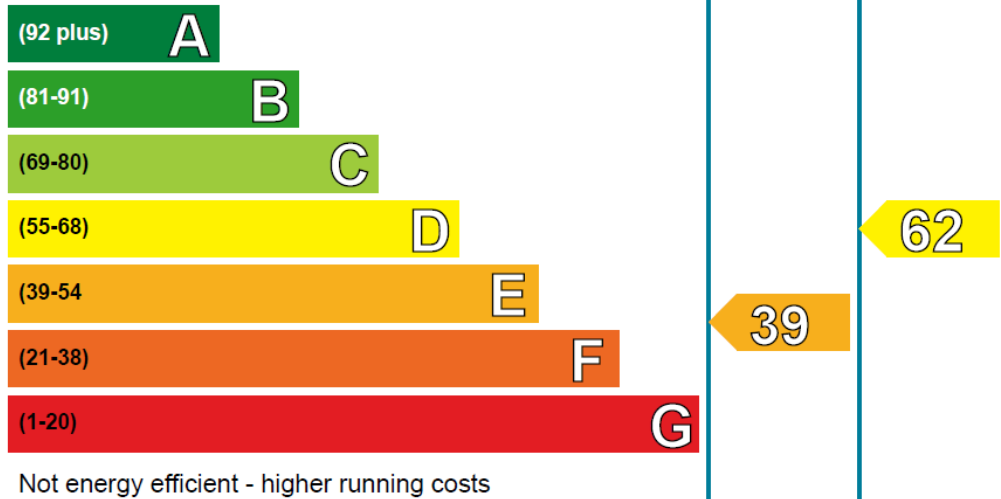
The following document contains examples of EPC output to be used as reference material for workshop breakout discussions. These are taken from a combination of existing and proposed EPC documents – with the latter informed by a range of our sister projects which can be viewed [here](#).

When making a selection, the specific EPC (e.g. country of origin) should not be considered – just the format and choice made on that particular feature.

# A. Choice of outputs

## 1. EPC rating and related info

Very energy efficient - lower running costs



## 2. EPC rating + information available from current assessment

| INDICADOR GLOBAL                         |        | INDICADORES PARCIALES                         |   |   |   |
|--|--------|---|---|---|---|
|  | 42.4 D | CALEFACCIÓN                                   |   | ACS   |   |
|  |        | <i>Emisiones calefacción [kgCO2/m² año]</i>   | G | <i>Emisiones ACS [kgCO2/m² año]</i>         | G |
|  |        | 34.86   |   | 1.15  |   |
| <i>Emisiones globales [kgCO2/m² año]</i> |        | REFRIGERACIÓN                                 |   | ILUMINACIÓN                                 |   |
|  |        | <i>Emisiones refrigeración [kgCO2/m² año]</i> | A | <i>Emisiones iluminación [kgCO2/m² año]</i> | A |
|  |        | 0.78  |   | 5.64  |   |

## 3. EPC rating + new metrics requiring extra data collection from new assessment



# B. Improvement recommendations

## 1. Part of document in summarised/standardised form

| Recommended measures                        | Indicative cost | Typical saving per year | Rating after improvement |             |
|---|-----------------|-------------------------|--------------------------|-------------|
|   |                 |                         | Energy                   | Environment |
| 1 Cavity wall insulation                    | £500 - £1,500   | £261                    | E 47                     | E 39        |
| 2 Floor insulation (suspended floor)        | £800 - £1,200   | £55                     | E 49                     | E 41        |
| 3 Low energy lighting for all fixed outlets | £25             | £22                     | E 49                     | E 41        |
| 4 Upgrade heating controls                  | £350 - £450     | £55                     | E 51                     | E 43        |
| 5 Solar water heating                       | £4,000 - £6,000 | £35                     | E 52                     | E 44        |
| 6 Solar photovoltaic panels, 2.5 kWp        | £5,000 - £8,000 | £247                    | D 62                     | E 51        |

## 2. Part of document, specific to the property (e.g. created by assessor)

| ENERGY SAVING MEASURES               |                 |                           |  |                        |
|--------------------------------------|-----------------|---------------------------|--|------------------------|
| Energy Saving Measures (ESM)         | Investment, BGN | Final energy saved, kWh/a | Reduced CO <sub>2</sub> emissions, t/a | Pay-back period, years |
| <u>Measures on building envelope</u> |                 |                           |  |                        |
| B1.....                              |                 |                           |  |                        |
| B2.....                              |                 |                           |  |                        |
| .....                                |                 |                           |  |                        |

## 3. Not Part of main document and summarised/standardised elsewhere

**Energy Performance Certificate Scotland**

Non-Domestic buildings and buildings other than dwellings

SCOTTISH PARLIAMENT, 1 HORSE WYND, EDINBURGH EH99 1SP

Date of assessment: 26 June 2019 Reference Number: 0692-2063-3530-6401-1103  
 Date of certificate: 16 August 2019 Building type: Office/Workshop  
 Total conditioned area: 3269.0m<sup>2</sup> Assessment Software: EPCgen, v5.6.1.1  
 Primary energy indicator: 248 kWh/m<sup>2</sup>/yr Approved Organisation: CIBSE Certification Ltd

**Building Energy Performance Rating**

Excellent

Net Zero Carbon or better

Approximate Energy Use: 123 kWh per m<sup>2</sup> per year  
 Approximate Carbon Dioxide Emissions: 45.34 kgCO<sub>2</sub> per m<sup>2</sup> per year

The building energy performance rating is a measure of the effect of a building on the environment in terms of carbon dioxide (CO<sub>2</sub>) emissions. The better the rating, the less impact on the environment. The current rating is based upon an assessor's survey of the building. The potential rating shows the effect of undertaking all of the recommended measures listed below. The Recommendations Report which accompanies this certificate explains how this rating is calculated and gives further information on the performance of this building and how to improve it.

**Benchmark**

A building of this type built to current building regulations at the date of issue of this certificate would have a building energy performance rating of: **18 B**

**Recommendations for the cost-effective improvement of energy performance**

1. Replace tungsten GLS spotlights with LEDs: Payback period dependent on hours of use.
2. Review lighting installation. Consider upgrading MSP office lighting to LED lamps. Consider upgrading CFL Downlights to LED alternative.

There are additional improvement measures applicable to this building. Refer to the Recommendations Report.

THIS PAGE IS THE ENERGY PERFORMANCE CERTIFICATE WHICH MUST BE AFFIXED TO THE BUILDING AND NOT BE REMOVED UNLESS REPLACED WITH AN UPDATED CERTIFICATE.

SCOTTISH PARLIAMENT, EDINBURGH EH99 1SP  
 16 August 2019 0692-2063-3530-6401-1103

**Recommendations Report**

**Recommended measures with a short payback period (less than 3 years)**

| Recommendations (short payback) | Potential Impact |
|---------------------------------|------------------|
|                                 |                  |

**Recommended measures with a medium payback period (3 to 7 years)**

| Recommendations (medium payback) | Potential Impact |
|----------------------------------|------------------|
|                                  |                  |

**Recommended measures with a long payback period (more than 7 years)**

| Recommendations (long payback) | Potential Impact |
|--------------------------------|------------------|
|                                |                  |

**Other measures**

This section lists other measures selected by your assessor based upon an understanding of the building and/or a valid existing Recommendations Report.

| Recommendations (other)  | Potential Impact |
|--|------------------|
| Replace tungsten GLS spotlights with LEDs: Payback period dependent on hours of use.   | MEDIUM           |
| Review lighting installation. Consider upgrading MSP office lighting to LED lamps. Consider upgrading CFL Downlights to LED alternative. | MEDIUM           |
| Incorporate daylight based dimming control in perimeter areas and spaces with daylight access.   | MEDIUM           |
| Replace 38mm diameter (T12) fluorescent tubes on failure with LED alternatives.  | MEDIUM           |
| Replace tungsten GLS lamps with LEDs: Payback period dependent on hours of use.  | MEDIUM           |
| Some walls have uninsulated cavities - introduce cavity wall insulation.   | LOW              |
| Some solid walls are poorly insulated - introduce or improve internal wall insulation.   | LOW              |

4. Not part of main document, specific to the property (e.g. created by assessor)

**EPC form** for residential buildings  
in accordance to *Building Energy ACT X2Y*

**Renovation recommendations – component evaluation**

| Building envelope                          | Recommendation | "new" avg. U-value | New rating                           | Energy                                | Cost effectiveness (e.g. pay-back time) | Included in Option 1?    |
|--|----------------|--------------------|--------------------------------------|---------------------------------------|---|--------------------------|
| Roof or attic                              |                |                    | <span style="color: green;">■</span> | <span style="color: yellow;">■</span> | <span style="color: red;">■</span>      | <input type="checkbox"/> |
| External walls                             |                |                    |                                      |                                       |   | <input type="checkbox"/> |
| Windows                                    |                |                    |                                      |                                       |   | <input type="checkbox"/> |
| Doors                                      |                |                    |                                      |                                       |   | <input type="checkbox"/> |
| Ground floor or floor to unheated basement |                |                    |                                      |                                       |   | <input type="checkbox"/> |

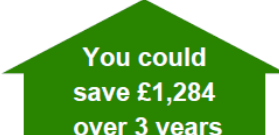
| Technical systems                             | Recommendation | Energy source, provided power, EU energy label | New rating                           | Energy                                | Cost effectiveness (e.g. pay-back time) | Included in Option 1?    |
|---|----------------|--|--------------------------------------|---------------------------------------|---|--------------------------|
| Heating system                                |                |  | <span style="color: green;">■</span> | <span style="color: yellow;">■</span> | <span style="color: red;">■</span>      | <input type="checkbox"/> |
| Domestic hot water                            |                |  |                                      |                                       |   | <input type="checkbox"/> |
| Ventilation system                            |                |  |                                      |                                       |   | <input type="checkbox"/> |
| Cooling system                                |                |  |                                      |                                       |   | <input type="checkbox"/> |
| Renewable energies (outside of other systems) |                |  |                                      |                                       |   | <input type="checkbox"/> |
| Other: e.g. Lighting                          |                |  |                                      |                                       |   | <input type="checkbox"/> |

Potential energy savings when Option 1 is implemented: **XYZ** kWh/yr

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100 

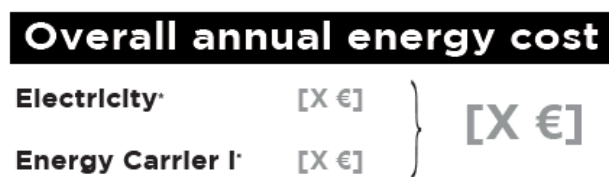
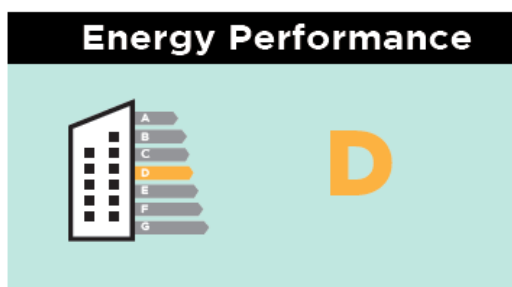
# C. Basis of output data

## 1. Only modelled estimates

| Estimated energy costs for this home |                      |                        |   |
|--------------------------------------|----------------------|------------------------|---|
|                                      | Current energy costs | Potential energy costs | Potential future savings  |
| Heating                              | £5,142 over 3 years  | £4,041 over 3 years    |  |
| Hot water                            | £330 over 3 years    | £225 over 3 years      |   |
| Lighting                             | £249 over 3 years    | £171 over 3 years      |   |
| <b>Totals</b>                        | <b>£5,721</b>        | <b>£4,437</b>          |   |

These figures show how much the average household would spend in this property for heating, lighting and hot water. This excludes energy use for running appliances such as TVs, computers and cookers, and the benefits of any electricity generated by this home (for example, from photovoltaic panels). The potential savings in energy costs show the effect of undertaking all of the recommended measures listed below.

## 2. Only measured estimates



*\*Indicators based on actual measurements for energy cost (fixed costs, taxes and levies not included)*

## 3. Combination

(Mixture of above)

# D. General format

## 1. Online, interactive interface

### Energy performance certificate (EPC)

#### Certificate contents

- Rules on letting this property
- Energy rating and score
- How this property compares to others
- Breakdown of this property's energy performance
- Recommendation report
- Who to contact about this certificate
- Other certificates for this property

#### Share this certificate

- Email
- Copy link to clipboard
- Print

3/801+3/904  
Westminster Underground Station  
London  
SW1A 2LW

Energy rating  
**B**

Valid until  
**14 November 2032**

Certificate number  
**0364-4542-8376-5070-1018**

Property type  
Restaurants and Cafes/Drinking Establishments/Takeaways

Total floor area  
54 square metres

#### Rules on letting this property

Properties can be let if they have an energy rating from A+ to E.

You can read [guidance for landlords on the regulations and exemptions](#).

## 2. Paper/PDF

#### Energy Performance Certificate (EPC) Scotland

41 ALLAN PARK DRIVE, EDINBURGH, EH4 1LP

Dwelling type: Semi-detached house  
Date of assessment: 04 March 2015  
Date of certificate: 07 March 2015  
Total floor area: 33 sq m  
Primary Energy Indicator: 555 kWh/m<sup>2</sup>/year

Reference number: 6215-1227-6308-0634-1306  
Type of assessment: RESAP - existing dwelling  
Approved Organisation: EPCAP  
Main heating and fuel: Oil and radiators, mains gas

You can use this document to:  
1. Compare current ratings of properties to see which are more energy efficient and environmentally friendly  
2. Find out how to save energy and money and also reduce CO<sub>2</sub> emissions by improving your home

Estimated energy costs for your home for 3 years\* £5,721  
Over 3 years you could save £1,254

#### Energy Efficiency Rating

This graph shows the current efficiency of your home, taking into account both energy efficiency and fuel costs. The higher the rating, the lower your fuel bills are likely to be.

Your current rating is band E (55). The average rating for EPCs in Scotland is band E (54).  
The potential rating shows the effect of undertaking all of the improvement measures listed within your recommendations report.

#### Environmental Impact (CO<sub>2</sub>) Rating

This graph shows the effect of your home on the environment in terms of carbon dioxide (CO<sub>2</sub>) emissions. The higher the rating, the less impact it has on the environment.

Your current rating is band F (53). The average rating for EPCs in Scotland is band E (50).  
The potential rating shows the effect of undertaking all of the improvement measures listed within your recommendations report.

#### Top actions you can take to save money and make your home more efficient

| Recommended measures                 | Indicative cost | Typical savings over 3 years |
|--------------------------------------|-----------------|------------------------------|
| 1 Cavity wall insulation             | £300 - £1,500   | £700.00                      |
| 2 Floor insulation (suspended floor) | £600 - £1,200   | £160.00                      |
| 3 Low energy lighting                | £25             | £50.00                       |

A list of recommended improvement measures for your home, together with more information on potential cost and savings and advice to help you carry out improvements can be found in your recommendations report.

To find out more about the recommended measures and other actions you could take today to stop energy bills rising, visit [www.electra.gov.uk](#) or contact Home Energy Scotland on 0800 556 1122.

THIS PAGE IS THE ENERGY PERFORMANCE CERTIFICATE WHICH MUST BE ATTACHED TO THE ENERGY LABEL. THIS IS NOT THE ENERGY LABEL. THE ENERGY LABEL IS AVAILABLE SEPARATELY.

## 3. Combination

#### Energy performance certificate (EPC)

- Rules on letting this property
- Energy rating and score
- How this property compares to others
- Breakdown of this property's energy performance
- Recommendation report
- Who to contact about this certificate
- Other certificates for this property

#### Share this certificate

- Email
- Copy link to clipboard
- Print

3/801+3/904  
Westminster Underground Station  
London  
SW1A 2LW

Energy rating  
**B**

Valid until  
**14 November 2032**

Certificate number  
**0364-4542-8376-5070-1018**

Property type  
Restaurants and Cafes/Drinking Establishments/Takeaways

Total floor area  
54 square metres

#### Rules on letting this property

Properties can be let if they have an energy rating from A+ to E.

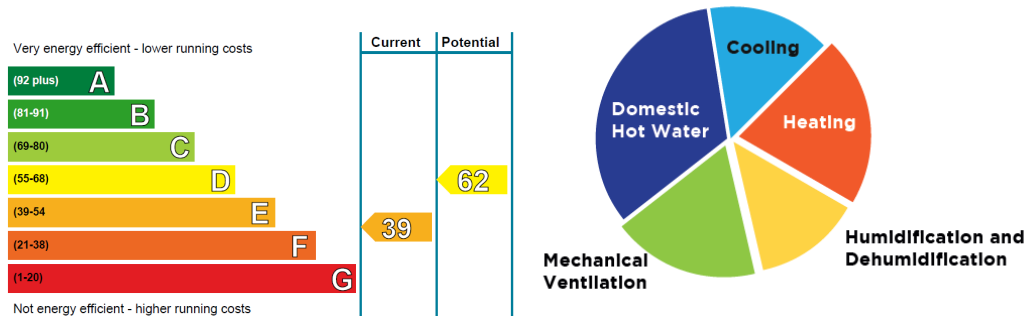
You can read [guidance for landlords on the regulations and exemptions](#).

#### Energy rating and score

This property's energy rating is B.

# E. Output format (primary form of information)

## 1. Graphical/visual



## 2. Tabular

| Nombre | Tipo  | Superficie [m <sup>2</sup> ] | Transmitancia [W/m <sup>2</sup> -K] | Factor solar | Modo de obtención. Transmitancia | Modo de obtención. Factor solar |
|--------|-------|------------------------------|-------------------------------------|--------------|----------------------------------|---------------------------------|
| V1     | Hueco | 2.99                         | 2.96                                | 0.53         | Estimado                         | Estimado                        |
| V2     | Hueco | 2.99                         | 2.96                                | 0.53         | Estimado                         | Estimado                        |
| V3     | Hueco | 2.99                         | 2.96                                | 0.53         | Estimado                         | Estimado                        |
| V4     | Hueco | 2.98                         | 2.96                                | 0.53         | Estimado                         | Estimado                        |
| V5     | Hueco | 2.99                         | 2.96                                | 0.53         | Estimado                         | Estimado                        |
| V6     | Hueco | 2.98                         | 2.96                                | 0.53         | Estimado                         | Estimado                        |
| V7     | Hueco | 2.99                         | 2.96                                | 0.53         | Estimado                         | Estimado                        |
| V8     | Hueco | 2.74                         | 2.96                                | 0.53         | Estimado                         | Estimado                        |
| V9     | Hueco | 2.71                         | 2.96                                | 0.53         | Estimado                         | Estimado                        |
| V10    | Hueco | 8.33                         | 5.70                                | 0.60         | Estimado                         | Estimado                        |

## 3. Textual

### The energy efficiency rating of your home

Your Energy Efficiency Rating is calculated using the standard UK methodology, RdSAP. This calculates energy used for heating, hot water, lighting and ventilation and then applies fuel costs to that energy use to give an overall rating for your home. The rating is given on a scale of 1 to 100. Other than the cost of fuel for electrical appliances and for cooking, a building with a rating of 100 would cost almost nothing to run.

As we all use our homes in different ways, the energy rating is calculated using standard occupancy assumptions which may be different from the way you use it. The rating also uses national weather information to allow comparison between buildings in different parts of Scotland. However, to make information more relevant to your home, local weather data is used to calculate your energy use, CO<sub>2</sub> emissions, running costs and the savings possible from making improvements.

### The impact of your home on the environment

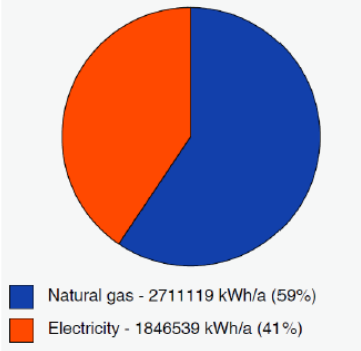
One of the biggest contributors to global warming is carbon dioxide. The energy we use for heating, lighting and power in our homes produces over a quarter of the UK's carbon dioxide emissions. Different fuels produce different amounts of carbon dioxide for every kilowatt hour (kWh) of energy used. The Environmental Impact Rating of your home is calculated by applying these 'carbon factors' for the fuels you use to your overall energy use.

The calculated emissions for your home are 98 kg CO<sub>2</sub>/m<sup>2</sup>/yr.

The average Scottish household produces about 6 tonnes of carbon dioxide every year. Based on this assessment, heating and lighting this home currently produces approximately 9.1 tonnes of carbon dioxide every year. Adopting recommendations in this report can reduce emissions and protect the environment. If you were to install all of these recommendations this could reduce emissions by 3.0 tonnes per year. You could reduce emissions even more by switching to renewable energy sources.

## 4. Combination

### Delivered energy for building operation

| Delivered energy for building operation              | Delivered energy |                       | Structure of total energy use for building operation by energy sources (kWh/a)  |
|--|------------------|-----------------------|---|
|  | kWh/a            | kWh/m <sup>2</sup> /a |   |
| Heating $Q_{th}$                                     | 1.085.094        | 44                    |  <p>■ Natural gas - 2711119 kWh/a (59%)<br/>■ Electricity - 1846539 kWh/a (41%)</p> |
| Cooling $Q_{fc}$                                     | 10.495           | 0                     |   |
| Ventilation $Q_{fV}$                                 | 955.098          | 38                    |   |
| Humidification $Q_{fpa}$                             | 319.063          | 13                    |   |
| Domestic hot water $Q_{fhw}$                         | 1.626.026        | 65                    |   |
| Lighting $Q_{fL}$                                    | 536.446          | 22                    |   |
| Electricity $Q_{f,elec}$                             | 25.437           | 1                     |   |
| <b>Total delivered energy for building operation</b> | <b>4.557.659</b> | <b>183</b>            |   |
| Renewable energy used in building (kWh/a)            | 0                |                       |   |
| Primary energy for building operation (kWh/a)        | 7.621.442        |                       |   |
| CO <sub>2</sub> Emissions (kg/a)                     | 1.520.890        |                       |   |

### Measures to improve the quality of the building envelope

- Thermal protection of exterior walls
- Ceiling thermal protection to the attic
- Roof-ceiling thermal protection in the attic
- Windows replacement
- Glazing replacement
- Thermal ceiling protection above the basement
- Elimination of transmission thermal bridges
- Elimination of convection thermal bridges and improvement of air tightness



# F. Overall length of document(s)

## 1. 1-page

Issue Date: [Insert text here] EPB Assessor name: [Insert text here]  
 Building Reference: [Insert text here] EPIC Reference: [Insert text here]  
 Procedure used: [Insert text here] U-CERT [Link to EPIC database](#)

### Measured EPB Assessment

#### Building Information

Name: [Insert text here]  
 Address: [Insert text here]  
 Municipality: [Insert text here]  
 Postal Code: [Insert text here]  
 Region: [Insert text here]  
 Country: [Insert text here]  
 Cadastral Ref.: [Insert text here]

Building Situation: [Insert text here]  
 Year of Construction: [Insert text here]  
 Previous Interventions: [Insert text here]  
 Object Type: [Insert text here]  
 Building Category: [Insert text here]  
 Building Ref. Area: [Insert text here]

#### Energy Performance

#### Overall annual energy cost

Electricity: [€ K] [€ K]  
 Energy Carrier 1: [€ K] [€ K] [€ K]

\*Values based on other indicators for energy cost (Heat costs, base and water not included)

#### Assessor Information

Name: [Insert text here] Address: [Insert text here]  
 ID: [Insert text here] Municipality: [Insert text here]  
 Company name: [Insert text here] Postal Code: [Insert text here]  
 Company ID: [Insert text here] Region: [Insert text here]  
 Email: [Insert text here] Country: [Insert text here]  
 Phone: [Insert text here]

## 2. Multiple page, single document

The image shows a multi-page document titled 'Energy Performance Certificate (EPC) Scotland'. It contains several sections:
 

- Building Information:** Details about the building, including name, address, and construction details.
- Energy Performance:** A section with a large 'D' grade and a chart showing energy consumption and carbon emissions.
- Assessor Information:** Details about the assessor, including name, company, and contact information.
- Recommendations:** A list of suggested improvements to enhance the building's energy efficiency.

## 3. Multiple documents

Issue Date: [Insert text here] EPB Assessor name: [Insert text here]  
 Building Reference: [Insert text here] EPIC Reference: [Insert text here]  
 Procedure used: [Insert text here] U-CERT [Link to EPIC database](#)

### Measured EPB Assessment

#### Building Information

Name: [Insert text here]  
 Address: [Insert text here]  
 Municipality: [Insert text here]  
 Postal Code: [Insert text here]  
 Region: [Insert text here]  
 Country: [Insert text here]  
 Cadastral Ref.: [Insert text here]

Building Situation: [Insert text here]  
 Year of Construction: [Insert text here]  
 Previous Interventions: [Insert text here]  
 Object Type: [Insert text here]  
 Building Category: [Insert text here]  
 Building Ref. Area: [Insert text here]

Issue Date: [Insert text here] EPB Assessor name: [Insert text here]  
 Building Reference: [Insert text here] EPIC Reference: [Insert text here]  
 Procedure used: [Insert text here] U-CERT [Link to EPIC database](#)

### Measured EPB Assessment

#### Building Information

Name: [Insert text here]  
 Address: [Insert text here]  
 Municipality: [Insert text here]  
 Postal Code: [Insert text here]  
 Region: [Insert text here]  
 Country: [Insert text here]  
 Cadastral Ref.: [Insert text here]

Building Situation: [Insert text here]  
 Year of Construction: [Insert text here]  
 Previous Interventions: [Insert text here]  
 Object Type: [Insert text here]  
 Building Category: [Insert text here]  
 Building Ref. Area: [Insert text here]

Issue Date: [Insert text here] EPB Assessor name: [Insert text here]  
 Building Reference: [Insert text here] EPIC Reference: [Insert text here]  
 Software used: [Insert text here] U-CERT [Link to EPIC database](#)

### Calculated EPB Assessment

#### Building Information

Name: [Insert text here]  
 Address: [Insert text here]  
 Municipality: [Insert text here]  
 Postal Code: [Insert text here]  
 Region: [Insert text here]  
 Country: [Insert text here]  
 Cadastral Ref.: [Insert text here]

Building Situation: [Insert text here]  
 Year of Construction: [Insert text here]  
 Previous Interventions: [Insert text here]  
 Object Type: [Insert text here]  
 Building Category: [Insert text here]  
 Building Ref. Area: [Insert text here]

#### Energy Performance

#### Overall annual energy cost

Electricity: [€ K] [€ K]  
 Energy Carrier 1: [€ K] [€ K] [€ K]

\*Values based on other indicators for energy cost (Heat costs, base and water not included)

#### Thermal Score

Heating: [Score] Occupied (h): [Score]  
 Ventilation: [Score] [Score]  
 Air Tightness: [Score] [Score]  
 Airtightness: [Score] [Score]  
 Total: [Score]

#### Assessor Information

Name: [Insert text here] Address: [Insert text here]  
 ID: [Insert text here] Municipality: [Insert text here]  
 Company name: [Insert text here] Postal Code: [Insert text here]  
 Company ID: [Insert text here] Region: [Insert text here]  
 Email: [Insert text here] Country: [Insert text here]  
 Phone: [Insert text here]