energy saving trust

Energy Performance Certificates Review

Government of Jersey

March 2024

Final report

Contents

Glossary 3

1. Executive summary 4

2. Introduction and objectives 6

3. Methodology 8

4. Results 10

5. Conclusions 28

6. Recommendations for future consideration 33

Appendix A: Discussion guide for all stakeholders 34

Appendix B: References 38

Appendix C: Additional data analysis figures and tables 43

Table of figures

Figure 1: Comparison of Jersey and GB SAP rating grouped by heating type. The black line indicates the x=y line, where SAP scores would be identical between GB and Jersey 25

Table of tables

Table 1: Example property characteristics given in full dataset 27

Glossary

SAP[1]: The Standard Assessment Procedure is the methodology on which Energy Performance Certificates (EPCs) are based and was developed for **new dwellings** in England. After performing a list of calculations, SAP produces a score that evaluates the energy and environmental performance of the dwelling and assesses its compliance with building regulations. SAP scores are then used to determine a property's EPC rating.

rdSAP[2]: The Reduced Data Standard Assessment Procedure (RdSAP) is a simplified version of SAP, used to assess the energy performance and compliance of **existing dwellings** in England. It uses a set of assumptions and defaults for the dwelling based on when it was constructed to account for any missing information after the energy assessor has collected any available data during the property visit.

JSAP or Jersey rdSAP[3,4]: The Jersey-SAP (JSAP) methodology is based on England's SAP2012 v9.92, with some differentiations. There is only one software available in Jersey for domestic energy assessments, as the same JSAP webtool asnd methodology is used for producing EPCs for both new and existing dwellings.

SBEM[5]: The Simplified Building Energy Model (SBEM) is the equivalent calculation engine to SAP for commercial buildings. SBEM and its interface (iSBEM) have been developed to evaluate the energy performance of new and existing non-residential buildings and to produce its EPC.

In Jersey, SBEM has been in use since 2009 for assessing compliance of new non-domestic buildings with Part 11 of the Building-Bye Laws and was updated in 2022 to also produce Jersey EPCs for existing commercial buildings.

1 More information about SAP is available in section SAP in England.
2 More information about rdSAP is available in section RdSAP in England.
3 More information about JSAP is available in section JSAP.
4 Different sources provide different names for this tool, i.e. Quidos use the term Jersey rdSAP, whereas BRE use the term Jersey-SAP or JSAP. To avoid confusion, we will use the term JSAP throughout this report, in accordance with BRE.
5 More information about SBEM is available in sections SBEM in England and SBEM in Jersey.

1. Executive summary

The Government of Jersey commissioned Energy Saving Trust to undertake research reviewing the current EPC processes in Jersey and England and provide suitable recommendations to support them in their efforts to develop a suitable legislation framework for mandatory EPCs in the island.

Our research consisted of a literature review, stakeholder engagement and data analysis and focused on understanding the purpose, accuracy and clarity of domestic and commercial EPC processes and output documentation, the current EPCs suitability to provide appropriate recommendations for improving the energy efficiency/greenhouse gas emissions/energy costs of a property in Jersey and the users' trust and understanding in the EPC process and output documentation.

The research confirms EPCs an accepted and established approach to measuring the energy efficiency of buildings across Europe. However, due to the more recent introduction of EPCs in Jersey and limited regulation to require EPCs be undertaken at defined points in a property's lifetime, EPCs are much less prevalent in Jersey. As a result, EPCs are perceived to be less accepted and poorly understood by the Jersey public. While the situation presents challenges for the introduction of new legislation to mandate EPCs at the point of sale of a property, it is also an opportunity to review the EPC process in Jersey and [re-]position EPCs as a reliable tool to assess, improve and monitor, the energy efficiency of the island's stock.

Among other insights, stakeholder engagement suggested that the leading purpose for EPCs in Jersey is currently unclear. Notably, there is a perception among assessors and others that plans to mandate EPCs at certain trigger points is to meet targets set out in the Government of Jersey's Carbon Neutral Roadmap and under its Bridging Island Plan. However, there are concerns among stakeholders as to the accuracy of EPC outputs and the associated costs of improvements. For example, large variations seen for certain energy efficiency measures provide unreliable information on the likely costs for recommended works, and therefore payback. This makes it difficult for the EPC to be viewed as an accurate source of information to drive homeowners, landlords and businesses to improve the energy efficiency of their properties.

Energy Saving Trust's analysis highlights the following areas that need to be considered before any regulations come into force:

Short-term

- Confidently communicate the Jersey Energy Performance Assessment (JEPA) process to industry and the Jersey public. For industry this is likely to be through targeted upskilling and cross-sector collaboration, with an island-wide campaign to raise awareness and understanding of JEPA among the Jersey public.
- Additionally, through an island-wide campaign, communicate the benefits and purpose of increased energy performance data for Jersey's stock.
- Specify relevant entry criteria and benchmarks for both domestic and non-domestic assessors. For qualifications and skills this could mean that energy assessors have a relevant professional background (e.g. property surveying, building regulations/planning).

Medium-term

- Ensure that assessors have access to high-quality guidance, timely and ongoing support from training providers and/or accreditation bodies.
- Encourage the development of peer support networks involving access to more experienced and/or specialist assessors.
- Create a digitally accessibly public registry of property data.

Long-term

- Consider additional trigger points for JEPAs after the ten-year validity period is established.

2. Introduction and objectives

The Government of Jersey published their Carbon Neutral Roadmap in April 2022, setting out their strategy to achieving the goal of reducing their on-island greenhouse gas emissions to net zero by 2050.

The Government of Jersey do not currently have legislation in place requiring Energy Performance Certificates (EPCs) to be mandatory in the island. However, their Carbon Neutral Roadmap sets out the policy intent to bring forward this legislation and their Bridging Island Plan 2022 to 2025 clearly states the government's intention to reduce the carbon impact of their building stock. Heating Policy number 3[6] included in the Carbon Neutral Roadmap under Jersey's Delivery Plan 2022 – 25 deals with the application of EPCs and, in particular, outlines the requirement for a review of the existing EPC processes for both domestic and non-domestic properties.

Developed in conjunction with the Building Research Establishment (BRE), the Jersey-based EPC process is based on the same model as used in the UK (SAP) but is personalised to a Jersey-based context (JSAP). Similarly, the UK's non-domestic tool (SBEM) has been adapted to Jersey to produce commercial EPCs.

The review of both Jersey EPC schemes is viewed as an integral part of the legislative process. it is intended to legislate to make EPCs a legal requirement in certain circumstances relating to property transactions and sequentially to bring in minimum energy efficiency standards. It is, therefore, important that the Government of Jersey fully understand the strengths and weaknesses of the current schemes ahead of a consultation on the draft legislation and identify the changes needed to the methodology ahead of the legislation coming into force.

2.1 Aim of the research

The Government of Jersey commissioned Energy Saving Trust's Insight & Evaluation team to undertake research reviewing the current EPC processes in Jersey and England to provide suitable recommendations. For the purposes of this research, our team collected insights and analysed the following questions:

1. What are the stated and accepted purposes of domestic and non-domestic EPC?
2. What is the purpose, clarity and understanding of EPC's output documentation?
3. Do domestic and non-domestic EPC provide accurate estimates of energy consumption, greenhouse gas emissions and energy costs?

6 See page 74 of the Carbon Neutral Roadmap. Link here.

4. Do domestic and non-domestic EPC provide appropriate recommendations for improving the energy efficiency/greenhouse gas emissions/energy costs of the property?
5. Is the cost/payback of those recommendations accurate?
6. Do users understand, trust and get value from the EPC and the recommendations report?
7. Are there any specific areas of inaccuracy in the EPC outputs and recommendations that concern stakeholders?
8. What metrics are being used on EPC, and how relevant and accurate are they?
9. Hierarchy of the metrics – which is the key one which aligns with the aims and objectives?

3. Methodology

We comprised a mixed-method approach, combining a literature review with stakeholder engagement and data analysis.

3.1 Literature review

We identified and reviewed reports and other available studies relevant to the topic of EPC assessment and their accuracy in the UK and Jersey. We also synthesised our findings with the insights of the BRE research[7] conducted in parallel to our project to evaluate any differences in the processes and models used in the UK versus those used in Jersey. Our desk research also included an evaluation of the Government of Jersey's Carbon Neutral Roadmap, home energy audits and associated data and documentation.

More specifically our literature review focused on:

- Reviewing the EPC processes and output documentation in England and Jersey.
- Presenting an overview of JSAP, SAP and SBEM and the key metrics used in the calculations.
- Analysing the performance gap and any areas of inaccuracies in the process.

3.2 Stakeholder engagement

In order to collect qualitative data on different stakeholders' views on the prospective legislation, we arranged a number of focus groups with relevant participants who had an interest in an appropriate EPC process being introduced in Jersey.

We engaged with several stakeholder groups, as shown in the table below:

Stakeholder Group	Number engaged	Engagement type
EPC assessors	3	1 x Focus group
Financial/ banking	3	1 x Focus group
Ministers	1	Individual meeting
Policy officers	4	2 x Focus groups
Property surveyors	2	1 x Focus group
Jersey Landlord's Association	4	1 x Focus group

7 Dwellings energy performance methodology comparison between England and Jersey' and 'SBEM methodology comparison between England and Jersey' reports by BRE.

We worked closely with the Government of Jersey to recruit representatives from each stakeholder group. A purposive sampling method was utilised in close collaboration with the Government of Jersey and rationalised the most suitable individuals who would fit the profile of the interviewees we hoped to speak to. This included a reasonable variability across roles represented, high levels of insight into subjects under investigation, and a maximum variation of views allowable within the relatively limited sample size. All stakeholder engagement was done remotely, using MS Teams.

3.3 Data analysis

To assess the difference between Jersey EPCs and those from Great Britain, Energy Saving Trust commissioned Quidos to run all the Jersey EPC xml data through both the Jersey and UK SAP engines. The input data format is identical, which allows an assessment of what the EPC ratings would be in both Jersey and UK. The available output fields are shown in Table 1 in Appendix C.

The following limitations were discovered in the data:

- The space heating, hot water demand, and lighting demand for Jersey and UK did not match. There will be some changes in these due to differences in climate data and default U-values which would affect the space heating demand the most. However, these are unlikely to be of the magnitude seen in the data, where the UK figure was typically between 1.6 and 2 times higher than Jersey figures. On discussion with Quidos, it was found that this was an experimental output which was specifically for this piece of work and had not been thoroughly tested due to the time constraints of this project. Therefore, it was decided that these variables should not be used for this analysis.
- There was an issue with properties on Jersey's 18 hour electricity tariff. As there is no equivalent tariff in UK so therefore these properties had unrealistic UK SAP scores of over 100 when no renewables were present. These were excluded from the analysis.

The UK model was run using weather data from the South-West of England, to match Jersey's weather as closely as possible. To analyse the data, graphs were plotted and visually inspected to ascertain any trends. In addition to this, the difference in EPC scores between Jersey and UK were averaged and confidence intervals calculated. Where the confidence interval causes the mean to cross over 0 (i.e. no difference in score), it can be said that this is not a statistically significant result at that threshold. By calculating this for different groupings (e.g. by Property Type), this gives a statistical measure of any differences between the two sets.

4. Results

This section outlines the key findings of our research.

4.1 Literature review

Our literature review concentrates on available studies and online sources comparing the EPC processes and output documentations in Jersey and England. Our aim was to build our understanding on the topic of EPC assessment and their accuracy. We also synthesised the findings of the BRE research, conducted in parallel to our project, with our own to ensure that our insights remain relevant and can be used to evaluate the differences in the EPC processes and models in the UK versus those in Jersey.

4.1.1 Overview of domestic and non-domestic EPC processes and output documentation

4.1.1.1 England

An EPC is a report assessing the energy performance of a building. It is calculated based on how much energy a property uses versus how much energy it loses. EPCs were introduced in England and Wales in 2007 by the UK government in order to monitor the energy efficiency of domestic housing stock.

For new dwellings, EPCs are produced by an energy assessor. The assessor uses the property's specifications, building plans and drawings to find detailed information about its construction and heating systems and uses a modelling tool called SAP[8] (Standard Assessment Procedure) to calculate the property's SAP score and then the property's EPC rating, The higher the SAP score is, the better the EPC rating will be. EPC ratings range from A to G, with A being the most energy-efficient and G the least.

For existing dwellings, the energy assessor needs to visit the property and carry out an inspection, looking at various elements of its construction, such as its windows, lighting, space heating and hot water systems, insulation levels etc. After recording all the relevant information on site, the assessor puts it into rdSAP[9] (Reduced Data SAP), a simplified version of SAP modelling software to produce the property's SAP score and then the property's EPC rating.

Both EPCs for new and existing dwellings fulfil the same purpose: they provide a picture of the energy performance of those dwellings. The difference is in the way information is collected and the modelling tools used for the calculations.

Similarly to domestic EPCs, a non-domestic EPC, also known as commercial EPC, assesses the energy performance of new and existing commercial properties. Ratings range from A+ to G,

8 More information about SAP is available in section SAP in England.

9 More information about rdSAP is available in section RdSAP in England.

with A+ being the most energy-efficient rating and G the least. Commercial EPCs are produced using the Simplified Building Energy Model (SBEM), the equivalent modelling tool to SAP for non-domestic buildings. The requirement for commercial buildings to have an EPC on construction, sale or rent was introduced in England using a phased approach from 6 April 2008.

Domestic and commercial EPCs are valid for ten years. After an EPC[10] is produced, it is lodged into the government's EPC register and is kept there unless any major changes are carried out in the property i.e. insulation is installed or new windows are fitted, in which case a new EPC needs to be produced as the rating will be affected by those changes.

EPC reports show the potential to minimise a property's energy use and carbon emissions. They are, therefore, essential in order to tackle climate change and reduce the energy bills and carbon emissions of domestic and non-domestic properties. Over time, they have also been used to drive and measure the delivery of government funding schemes and support programmes relating to energy, retrofit, fuel poverty and low-carbon heating.

EPCs are mandatory by law when a domestic or non-domestic property is being rented, sold or constructed. In addition, all existing privately rented domestic and non-domestic properties need to have a minimum EPC rating of E. The purpose of this is to inform the potential buyers or renters about the energy efficiency levels, the carbon emissions and the estimated running costs of the property they are interested in. EPCs can also be used as an energy performance comparison tool between different properties. The landlords, sellers or owners of the properties are responsible for ensuring that EPCs are conducted and meet the relevant minimum standards.

An EPC report provides an EPC rating based on the energy performance of a building and a recommendations report with suggestions on how to improve its energy performance i.e. by installing insulation, draught-proofing, installing solar panels, air source heat pumps etc. It is not obligatory to act on the recommendations listed in the report – their aim is to provide the landlords or the building owners with a number of measures that can potentially improve the energy performance and efficiency of their properties, reduce their energy bills and cut their carbon emissions.

The recommendations report includes a detailed breakdown of the recommended measures, their indicative costs, typical savings per year and how much each measure could improve the property's energy efficiency rating. The recommended measures are shown in order of importance, and the energy efficiency improvements figures are based on making the improvements in that order[11].

4.1.1.2 Jersey

EPCs in Jersey are not yet mandatory. However, as part of Jersey's Carbon Neutral Roadmap, the Government want to make EPCs mandatory and introduce minimum energy efficiency standards at the points of sale or rental for domestic and commercial properties. EPCs will become a legal obligation from 1 January 2026[12] for every domestic or commercial property being sold or starting a new rental agreement. Minimum energy performance standards would be introduced no earlier than 1 January 2028. Under the new legislation, the Government of Jersey plan to rename EPCs to Jersey Energy Performance Assessments (JEPA) to indicate that the Jersey assessments will differ from the UK equivalents. Furthermore, in their Bridging Island Plan 2022 to 2025[13], the Government of Jersey set out their new policy aiming to reduce the carbon impact of new domestic and commercial buildings; according to this policy, development

10 Where we say EPC, that refers to both domestic and commercial EPCs. Otherwise, we will specify if we are referring to domestic or commercial EPCs.

11 Reference: 'Guide to Energy Performance Certificates', online post. Link here.

12 Subject to public consultation and States Assembly approval.

13 Link here.

proposals for the construction of new dwellings and other buildings[14], will only be supported where it outperforms the target energy rate[15] by 20%, as demonstrated using the existing Jersey Standard Assessment Procedure (JSAP) calculator, or Simplified Building Energy Model (SBEM) tool.

According to the Government of Jersey, the current stated aim of the legislation is to improve Jersey's energy efficiency standards and save money on energy costs by investing in energy efficiency changes. JEPA can also be used as a comparison tool between different properties.

Currently, in Jersey, domestic EPCs for existing buildings are produced after a Home Energy Audit is carried out. Similarly to England, a qualified energy assessor visits the property and records information on how it was built. After the visit, the energy assessor puts the information into Jersey rdSAP, an online tool targeted at Jersey homes, to produce the property's EPC. Home Energy Audits are currently subsidised by the government. Commercial EPCs in Jersey are generated using SBEM. They are not currently subsidised but the government have plans to introduce subsidies from January 2024.

EPCs in Jersey operate very similarly to the equivalent system in England[16]. They indicate an EPC rating, an estimate of the likely energy costs of the property, the current energy consumption, recommendations on how to reduce these costs and make the property more energy efficient and behavioural changes in order to cut the energy bills. EPCs in Jersey categorise the properties from A to G, with A being the most efficient and G the least.

4.1.2 Overview of EPC modelling software tools

4.1.2.1 SAP in England

As mentioned above, the Standard Assessment Procedure (SAP) is the methodology on which EPCs are based and was developed by BRE for **new dwellings**. After performing a list of calculations, SAP produces a score that evaluates the energy and environmental performance of the dwelling. SAP scores are used to determine a property's EPC rating and to ensure that a property complies with the Building Regulations Part L Report (BREL). More specifically, the compliance of new dwellings with Building Regulations is currently evaluated following the SAP10.2 methodology which was introduced in June 2022 and incorporated various changes to the methodology, including updated fuel prices, carbon emissions and primary energy factors.

SAP calculations establish a score from 1 to 100+ and produce an energy cost for the property based on the property's construction characteristics, its heating and hot water systems and their efficiency, internal lighting, any solar gains, air leakages and any renewable technologies installed. It does not include energy used for cooking or other appliances. The higher the SAP score is, the lower the energy costs are.

4.1.2.2 RdSAP in England

Reduced Data Standard Assessment Procedure (RdSAP) is a simplified version of SAP, used to assess the energy performance of **existing dwellings**. It uses a set of assumptions and defaults for the dwelling based on when it was constructed to account for any missing information after the energy assessor has collected any available data during the property visit. Note that according to BRE[17], whether an

14 Where they are required to meet the technical requirements of building bye-laws technical guidance documents: (a) Part 11 Conservation of fuel and power in new dwellings (2016 edition) and (b) Part 11 Conservation of fuel and power in buildings other than dwellings (2016 edition).

15 More information about Target Energy Rate in Jersey can be found in the sections 'Dwellings energy performance methodology comparison between England and Jersey' report and 'SBEM methodology comparison between England and Jersey' report.

16 However, there are also differences between the two, i.e. the EPC rating system/scoring is different in England than in Jersey, as well as the EPC bandings, as described in section 4.2.2.1.

17 Reference: 'Dwellings energy performance methodology comparison between England and Jersey' report by BRE.

assessment is conducted with RdSAP inputs or SAP inputs, so long as the RdSAP expanded inputs align with the SAP inputs, the results will be identical.

RdSAP 2012, the current version used to assess energy performance in existing dwellings in England, is due to be updated to RdSAP10.2 in March 2024.

4.1.2.3 JSAP

Based on BRE's recent report 'Dwellings energy performance methodology comparison between England and Jersey' prepared for the Government of Jersey, the Jersey-SAP (JSAP) methodology is largely based on England's SAP2012 v9.92, with some differentiations[18]. According to BRE, there are no published specifications of the JSAP methodology, as there is only one software available in Jersey for domestic energy assessments which is available on the government's website. The government of Jersey contracted BRE to develop the JSAP webtool for implementing Jersey's version of SAP2012 v9.92 in 2014. This tool was made public in September 2015.

The same JSAP webtool and methodology is used for assessing compliance against Building By-Laws and for producing EPCs for **new and existing** dwellings.

4.1.2.4 SBEM in England

The Simplified Building Energy Model (SBEM) is the equivalent calculation engine to SAP for commercial buildings. SBEM and its interface (iSBEM) have been developed by BRE to evaluate the energy performance of new and existing non-residential buildings. SBEM is used to assess whether a building complies with the Building Regulations and to produce its EPC. SBEM calculations are based on the construction characteristics of a building, i.e. insulation levels, heat loss through fabric, heating and hot water systems, ventilation, lighting and any renewable technologies installed. SBEM has been used to demonstrate compliance with Part L of the Building Regulations since 2006, and to generate EPCs since 2008.

4.1.2.5 SBEM in Jersey

In Jersey, SBEM and iSBEM have been in use since 2009 for assessing compliance of new non-domestic buildings with Part 11 of the Building-Bye Laws and were updated in 2022 to also produce Jersey EPCs for existing commercial buildings[19].

The basic energy performance calculation processes are identical in the UK and Jersey, but the specifications of the Reference/Notional buildings, the target metrics for building regulations compliance checks and the procedures for deriving EPC ratings and scales differ between them.

4.1.3 Metrics being used in EPC calculations

4.1.3.1 SAP in England[20]

According to Local Authority Building Control[21], the approved Document L Volume 1: Dwellings (2012 edition) states that the energy performance of the notional dwelling is described using the following metrics:

- *The **target primary energy rate (TPER)**, measured in kWhPE/m2/year. The primary energy rate is influenced by the performance of both the fabric and fuel. It's calculated based on the annual primary energy use of the dwelling (per unit floor area) for space heating, water heating, ventilation, and lighting. The primary energy rate can be offset if any renewable primary energy is generated onsite.*

18 In the section Main findings and insights from the BRE research, we summarise the main differentiations between JSAP and SAP based on the BRE report.

19 Reference: 'SBEM methodology comparison between England and Jersey' report by BRE.

20 Even though this section describes SAP in England, some of these metrics are also relevant for Jersey. See section 'Dwellings energy performance methodology comparison between England and Jersey' report for more details.

21 Information and text about TPER, TER, TFEE, energy cost rating and environmental impact rating were taken from Local Authority Building Control's online post titled 'Changes to SAP 10 and how they will affect you'. Link here.

- *The **target emission rate (TER)**[22], measured in kgCO2/m2/year. The emission rate is influenced by the performance of both the fabric and fuel. It is calculated based on the annual carbon emissions of the dwelling (per unit floor area) for space heating, water heating, ventilation, and lighting. The emission rate can be offset if any emissions are saved by energy generation technologies installed onsite.*
- *The **target fabric energy efficiency rate (TFEE)**, measured in kWh/m2/year. The fabric energy efficiency rate is influenced by the fabric only.*

SAP 10 also calculates some other indicators of energy performance, including:

- ***Energy cost rating (the SAP rating)**. The SAP rating is based on the cost of energy used within the dwelling for space heating, water heating, ventilation, and lighting. As mentioned above, the SAP rating is expressed on a scale of 1 to 100, where the higher the number, the lower the running costs. The energy costs can be offset if the dwelling generates energy onsite, therefore the SAP rating can be higher than 100 if renewable generation technologies are used.*
- ***Environmental Impact rating (the EI rating)**. The EI rating is based on the annual carbon emissions from the dwelling associated with space heating, water heating, ventilation, and lighting. The EI rating is expressed on a scale of 1 to 100, where the higher the number the better the standard. The annual carbon emissions can be offset if the dwelling generates energy onsite, therefore the EI rating can be higher than 100 if renewable generation technologies are used.*

Emissions factors

Carbon emissions are measured by comparing a Target Emission Rate (TER) against the predicted Dwelling Emission Rate (DER). The target rate is set within the SAP calculations by reference to a notional dwelling of the same size and shape, using a set of baseline values.

Fabric Energy efficiency

Fabric Energy Efficiency is a measure of energy demand in units of kWh/m2/year. The Fabric Energy Efficiency of a building is measured by comparing a Target Fabric Energy Efficiency (TFEE) against a predicted Dwelling Fabric Energy Efficiency (DFEE) to measure how well the building is retaining heat.

Heat loss

Heat Transfer Coefficient[23]: A Heat Transfer Coefficient (HTC) is a measure of the total rate of heat transfer between inside and out, with units of Watts per degree Celsius. It includes heat transfer through all building elements and by air movement. It is calculated by all energy models (including SAP) and the calculated value can be directly compared with a measured value. If the building has low heat transfer, then it will have a low energy requirement for heating; the HTC is linearly correlated with predicted heat demand and, hence, costs and associated emissions in SAP.

Heat Loss Parameter[24]: The Heat Loss Parameter (HLP) is simply the HTC divided by the total floor area of the dwelling,

4.1.3.2 SBEM[25]

The performance requirement is for the proposed building to achieve a carbon emission rate or a **Building Emission Rate (BER)**, that is no greater than a **Target Emission Rate (TER)**, which is derived from the emissions of the Notional building. For the English and Welsh Building Regulations, it is also required that the proposed building achieve a **Building Primary Energy Rate (BPER)** that is no greater than the **Target Primary**

22 The same abbreviation, TER, is used to describe a dwelling's Target Delivered Energy Rate. See section 'Dwellings energy performance methodology comparison between England and Jersey' report for more details.

23 Reference: Energy Saving Trust.

24 Reference: 'Modelling fabric heat loss within the Home Energy Model' report, December 2023. Link here.

25 Reference: 'A Technical Manual for SBEM', December 2022. Link here.

Energy Rate (TPER) derived from the Notional building. On the other hand, for the Scotland Building Regulations, it is required that the proposed building achieve a **Building Delivered Energy Rate (BDER)** that is no greater than the **Target Delivered Energy Rate (TDER)** derived from the Notional building.

4.1.4 Main findings and insights from the BRE research

In 2023, the Government of Jersey appointed BRE to undertake research and provide simplified explanations of the methodologies for how compliance is assessed and how EPC ratings are produced for new dwellings and new commercial buildings[26] in Jersey and England, highlighting the differences between the two. In this section of our report, we summarise the main findings of BRE's analysis to ensure that the insights from our literature review, stakeholder engagement and data analysis align with those of their research.

4.1.4.1 'Dwellings energy performance methodology comparison between England and Jersey' report

The procedure for new domestic buildings in both England and Jersey to demonstrate compliance with Building Regulations is by comparing the annual energy use and/or carbon emissions of the Actual building against those of a 'Notional' or 'Reference' building. The specification of the Notional/Reference building is a comparable building of the same size, geometry and use as the Actual building but with fabric and services efficiencies specified in accordance with compliance regulations. The Notional/Reference building model serves to generate target delivered energy, emission, or primary energy rates which the Actual building must meet or better. The choice of the metric to assess compliance can vary among administrations, depending on policy goals. In Jersey, the building used for generating compliance targets is referred to as the 'Reference' building. In England, this building is referred to as the 'Notional' building.

The key differences between the Jersey Reference and the England Notional buildings are:

- The weather datasets.
- The heating system. England Notional building uses mains gas boiler with radiators, whereas the Jersey Reference dwelling uses direct electric room heaters.
- The heating controls. For single-storey buildings where the living area is greater than 70% of the total floor area, the English Notional building uses a programmer and room thermostat. For any other building types, it uses time and temperature zone control. Jersey Reference dwelling uses a programmer and appliance thermostat.
- The hot water system. The English Notional dwelling uses the same gas boiler as space heating, whereas the Jersey Reference dwelling uses electric immersion.
- The fuel prices and carbon factors. Table 2 in BRE report provides a summary of fuel prices and carbon factors in England and Jersey, for common heating fuels in Jersey. It is important to note the electricity CO2 factor is much lower for Jersey than England, because the electricity mix in Jersey is predominantly composed of low-carbon French nuclear, while England's electricity mix relies more on fossil fuels. Note also that the JSAP webtool allows the Government of Jersey to directly edit the fuel costs as they see fit.

Both administrations use two metrics for assessing compliance with Building Regulation:

- one for assessing the overall energy efficiency of the building
- one for assessing the building's fabric performance only

26 BRE did not review existing domestic and commercial buildings in their study.

For checking compliance of the overall performance of the building, England chose to assess the performance in terms of carbon dioxide emissions, whereas Jersey chose to assess the energy performance in terms of energy use (delivered energy). In this regard:

- in England, the Actual dwelling's annual emissions in kgCO2/m2, the Dwelling Emission Rate (DER), is assessed against the Notional dwellings' annual emissions in kgCO2/m2, the Target Emission Rate (TER).
- In Jersey, the Actual building's annual delivered energy rate (kWh/m2), the dwelling's Delivered Energy Rate (also called DER), is assessed against the Notional dwelling's delivered energy rate, known as the Target Delivered Energy Rate (TER).

For checking compliance of the fabric performance only, both administrations calculate the Fabric Energy Efficiency of the Actual Dwelling (DFEE) and compare it against the Fabric Energy Efficiency of the Notional/Reference Dwelling (TFEE).

In both England and Jersey, the EPC document reports:

- an Energy Efficiency rating (the measure of annual energy costs per square meters) and band,
- an Environmental Impact Rating and band (the carbon emissions-based rating). The methodology for converting the annual running costs and CO2 emissions into ratings and bands is identical in both instances.

4.1.4.2 'SBEM methodology comparison between England and Jersey' report

As mentioned in the report by BRE, the procedure for new non-domestic buildings in both England and Jersey to demonstrate compliance with building regulations is by comparing the annual energy use and/or carbon emissions of the Actual building against those of a comparable building of the same size, geometry and use as the Actual building but with fabric and services efficiencies specified in accordance with compliance regulations in the respective administration. Similarly to the domestic process, this comparable building is referred to as the 'Notional' building in England, and the 'Reference' building in Jersey. A 'Notional' or 'Reference' building model serves to generate target delivered energy, carbon emission, or primary energy rates which the Actual building must meet or better. The choice of the metric to assess compliance can vary among administrations, depending on policy goals.

The differences between England's and Jersey's compliance methodologies lie in:

- The key divergence points between England's 2021 'Notional' and Jersey's 2016 'Reference' buildings specifications. The English Notional building specifications generally have higher standards for fabric performance, air tightness and efficiencies of space heating/cooling and hot water systems. In addition, the English Notional building is specified with photovoltaics whereas the Jersey Reference building does not have any renewable energy systems.
- The carbon factors are different for England and Jersey, particularly for electricity which has a much lower carbon emission factor in Jersey than England. Therefore, for the same energy use, the carbon emissions will be different in England and Jersey, depending on the fuel used, especially for systems which use electricity.
- The English Reference building CO2 emission rate is used to produce a Standard Emissions Rate which is equivalent to a building which just complies with the 2006 England & Wales Part L regulations and uses natural gas for space and water heating. The Jersey Notional building emission rate is equivalent to a building which just complies with Jersey BBL11 2016 and uses direct electricity for space and water heating.

- The boundary between bands B and C on the England EPC rating scale represents the rating of the Reference building with an improvement factor, i.e., Standard Emission Rate. The boundary between bands B and C on the Jersey EPC represents the rating of the Notional building.
- Different standard assumptions. The English weather database allows the user to select from 14 available weather locations in the UK, whereas the Jersey weather database consists of one Jersey weather dataset.
- Different compliance metrics. In England, there are two target metrics the new building must meet or better:
  - The Target Emissions Rate (TER), in kgCO2/m2 /yr.
  - The Target Primary Energy Rate (TPER), in kWh/m2 /yr.

In Jersey, there is one target metric the new building must meet or better:

- The Target delivered Energy Rate, also called TER, in kWh/m2 /yr.

In terms of the carbon emissions performance and rating, the key divergence points between the two buildings can be summarised as follows:

- the fabric specifications of the England Reference building are generally worse performing than the Jersey Notional building,
- The Jersey Notional building is heated with electricity (both space and water), whereas the England Reference building is heated with natural gas (both space and water).

The consequence of the points above is that the Jersey Notional building will likely have lower emissions than the England Reference building. Further, in Jersey, buildings which are inefficient and whose main heating fuel has an emission factor that is worse than that of electricity, for e.g., oil, would generally find it challenging to achieve favourable ratings on the Jersey EPC scale. The outcome is that an identical building would likely find it more challenging to achieve a favourable rating on the Jersey EPC than on the England EPC, particularly taking into account the much lower emission factor of electricity in Jersey compared to that of natural gas in England.

4.1.5 Performance gap and other areas of EPC inaccuracies according to literature

Different sources have expressed concerns that EPC ratings do not accurately represent the actual energy performance of buildings and some of them have recommended that they should be revised[27]. Some common inaccuracies found in the literature for EPCs are listed below:

- EPC ratings are calculated based on the theoretical performance of a building and do not reflect their actual energy consumption, carbon emissions and running costs because they are based on assumptions and predictions and not actual, in-use data[28]. The difference between the predicted performance by models like SAP, SBEM etc and the actual one is often termed **'the performance gap'**. The predicted energy consumption, the final costs and emissions are all affected by the performance gap.
- The actions of the residents may vary significantly from the predictions of the modelling software. For example, if some residents choose to heat their property to a higher temperature than the default temperature point used by SAP, then the actual energy use will be higher than the estimated one used for the EPC calculations. SAP also assumes that residents heat their properties to standard schedules.
- Sometimes, errors during the property assessment may also result in incorrect EPC ratings.

27 This section provides general feedback on EPC accuracy. The references we reviewed analyse EPCs in England; however, since EPC processes and outputs are very similar in England and Jersey, the areas of inaccuracies presented are relevant to Jersey as well.

28 Reference: Energy Saving Trust internal research.

- EPC reports provide a standard set of recommendations for improving the energy performance of a property, based on the year of its construction and its building characteristics. These recommendations are included in the software database and are not tailored to each specific building; therefore, for some properties i.e. traditional/historic buildings, these recommendations are not applicable. SAP/SBEM do not give the energy assessors the opportunity to provide tailored recommendations[29].
- According to the Better Buildings Partnership, heritage properties are often thought to be draughty and energy inefficient, but they can vary greatly in their energy performance depending on how they are constructed, refurbished and maintained. Current standards and building regulations aim to improve energy efficiency in the building stock, however, some recommendations are not appropriate for heritage properties. For example, insulating a heritage property may not be the right approach, and it can be a very high-risk measure to install without using the correct materials and procedures. It can cause significant damage to the property by reducing air permeability, increasing condensation risk and the potential for detrimental effects on the internal environmental conditions[30].

4.2 Stakeholder engagement

4.2.1 Overview of focus groups

Six focus groups and one meeting involving 17 participants took place during November and December 2023. See Appendix A for the discussion guide used to guide each focus group with the finance and banking sector, policy officers, a minister[31], assessors, property surveyors, and the Jersey Landlord Association (JLA). Householders were unable to be approached via assessors as originally envisaged and therefore were not included within the research.

A summary of the discussions from each of the stakeholder groups is provided. This is followed by the presentation and description of primary and secondary themes resulting from a framework analysis.

Financial and banking sector: The three representatives from the finance and banking sector were RBS International, Lloyds Banking Group, and HSBC. Participants discussed the potential of EPCs as a key lever for decarbonising finance emissions and agreed that there needs to be a consistent way to measure, record, track or monitor their assets across the Jersey property market. Representatives see EPCs as a good starting point and discussed the need for a volume of EPCs to inform a viable business case for green products, offers and incentives in Jersey. However, they perceived a low awareness of EPCs among the Jersey public and, at the same time, highlighted that EPCs have conflicting purposes; on the one hand to demonstrate need to improve a property, and on the other hand to access benefits to undertake cost-effective works. They were keen to learn more about EPCs and to understand the calculations that sit behind them.

Assessors: Three energy assessors representing themselves (i.e. self-employed) and Jersey Energy[32] had knowledge of either or both of the domestic and commercial EPC processes and outputs. Again, awareness and understanding of EPCs was perceived to be low among Jersey residents. While it was reported that users appear to trust the EPC report and its recommendations, it was noted that users tend to seek clarity from the assessor to inform their decision-making.

29 Reference: 'Minimum Energy Efficiency Standards and Heritage Properties' report, May 2018. Link here.

30 Reference: 'Minimum Energy Efficiency Standards and Heritage Properties' report, May 2018. Link here.

31 A second minister has been approached with a series of questions based on the topic guide used in the focus groups and we are awaiting their response.

32 Jersey Energy Building Services Design Consultancy.

One assessor said that because the cost-based metric (energy cost rating) and is often worse than the carbon emissions-based metric (CO2 rating)[33], it can be difficult for assessors to explain to the result to users because it suggests that the property is expensive to run but not so bad for the environment. This is because the reference/notional fuel used in the Jersey assessment is electricity, as opposed to gas in the UK, and as Jersey sources its electricity from low carbon sources (i.e. French nuclear), the carbon emissions factor in Jersey is much lower than the UK equivalent. A different assessor said that the assessment does not steer towards appropriate renewables, with air source heat pumps currently missing from the recommendations. For commercial buildings, one assessor explained that the process requires clear explanation of what is entailed. Notably, the fact that the assessment is of the building only and is not an indication of the energy efficiency of the business, needs to be clarified with the building and/or business owner early on. On EPC validity, one assessor acknowledged that the current 10 years is a long time, during which there could be changes in building regulations or certain energy efficiency improvements to a property are not picked up. The same assessor explained that a five-year period could help the Government of Jersey get a handle on progress towards the decarbonisation of Jersey's buildings. A different assessor thought that the 10-year period was fine, noting that any improvements resilient in a higher EPC would likely be reported where there are minimum standards. It was also noted that a five-year validity period would be more costly and potentially raise more opposition.

Policy officers: Two separate focus groups included four policy officers representing the Government of Jersey. Participants agreed that while EPCs have several purposes since their inception, there was confusion as to whether EPCs are first and foremost an aid to reduce costs, reduce carbon emissions or improve energy performance. Like the finance sector however, participants agreed that planned legislation to mandate EPCs at the point for sale or rent of a property aims to cement EPCs as an important comparative tool to enable users to make informed decisions about their investments and/or homes. There was discussion on the inputs that feed into the Jersey assessment in the first place, with one participant noting that energy costs per unit and recommendations costs need to be regularly updated so that they are reliable and meaningful to EPC users. BRE confirms that the JSAP webtool allows the Government of Jersey to directly edit the fuel costs as they see fit, whereas in England fuel costs used for the SAP rating are fixed/standardised until the SAP methodology gets revised. As[34]. Policy officers acknowledged the greater cost of undertaking an EPC in Jersey compared to the UK; that is, £200 to £400 in Jersey[2] versus £35 to £120 in the UK[3]. Hence, officers were generally supportive of a 10-year validity period as reducing this to five years would double the cost. It was considered that that everyone on the island should have an EPC before reducing this period.

Minister: The discussion with the Assistant Minister for the Environment with Responsibility for Energy and Climate Change. Focused on Jersey's Carbon Neutral Roadmap and associated targets, planned legislation for mandating EPCs and the point of a property being sold or rented, and eventually minimum energy efficiency standards. On the latter, it was acknowledged that the two legislative processes should be distinct, that is, minimum efficiency standards will drive the improvements following improved property information via EPCs. On EPC purpose the minister was clear that, in their view, energy efficiency and cost should be the first and foremost, more so than carbon emissions.

33 Reference: 'Energy Performance Certificates issued 2022 and 2023 (FOI)'. Link here.

34 BRE notes that as the SAP methodology gets revised, the fuel cost deflator also gets revised to account for the general rate of fuel price inflation to ensure buildings assessed based on older versions of SAP still score similarly with new versions of SAP.

They explained the purpose as showing users how to make their house as energy efficient as possible to, over time, reduce the overall cost of their energy bills. Interestingly, assessors thought that the government's priority was on emissions reductions, over and above affordability. The discussion emphasised the need for simplicity in the EPC process to help people understand the methodology more easily. They are conscious of any resulting costs of the changes and the need for requirements and associated works to be affordable and cost-effective. This is related to concerns about the changes being viewed as acceptable and ultimately being approved by the States Assembly.

Property surveyors: The focus group with two property surveyors focused on their experience of non-domestic EPC processes and outputs. Still, participants agreed that inaccuracy with input data for the Jersey assessment is a concern. They also supported clearer alignment of the EPC scoring systems in Jersey and England noting concerns that the differences, and what it means in practice, are not understood. The differences mentioned by property surveyors included the contrasting benchmarks to which a property is compared with (i.e. the England Notional and Jersey Reference buildings) (See 4.1.4). One participant explained "*the local [Jersey] only investor has very little knowledge appreciation, awareness of how it might impact them*". It was therefore suggested that banks for example, are presented with two ratings: one benchmarked against the England Notional building, and another benchmarked against the Jersey Reference building. For commercial assessments, the need for comprehensive training on part of the assessor. One participant explained that despite their professional background and experience of undertaking building surveys, they would seek input from a mechanical and electrical (M&E) specialist. They added that they had had to re-learn elements of M&E themselves as a recently qualified commercial assessor. Like others, participants also discussed availability of assessors and contractors as planned legislation comes into force, and ultimately the implication that increased demand for assessments and works would lead to relatively higher costs. In view of planned legislation, participants reported a strong demand for EPC knowledge and related CPD events among stakeholders including the finance and legal sectors in Jersey. This was supported by finance sector representatives, keen to improve their understanding of EPCs.

JLA: Participants in this focus group included the Chair, the former Vice Chair and member and Treasurer of the JLA. At least two of the participants expressed an interest in buildings and how they work, noting that they had undertaken assessor training and/or conducted assessments themselves. One participant who was currently undertaking assessments in Jersey, though not as their main job, said that it helps them to better understand the process. The same participant discussed limitations of the process related to the data collection sheet for assessments. They explained that they were unsure as to whether to select the fuel source as mains gas or Liquefied Petroleum Gas (LPG) i.e., manufactured gas. Additionally, because the participant had received training under the English system, they noticed that some of the characteristics of houses they had assessed in Jersey were very similar to those they had assessed in England and fell into different EPC categories[35]. This was not so much a limitation, but rather an observation that resulted in uncertainty in the Jersey approach.

A different participant shared their view that mandatory EPCs could reduce the availability of housing stock in the rental market, with planned minimum energy efficiency standards also a concern for JLA's members. Still, participants support the idea that buyers and renters should be able to tell the energy efficiency of a prospective investment and/or home. Discussing the Low Carbon Heat Incentive (LCHI) they believe that exclusions applicable to owner- should be considered for landlords[36].

35 The example given was typically G-rated properties in Jersey (energy cost rating) versus D-rated properties in England (energy efficiency rating).

36 Reference: 'Low Carbon Heat Incentive'. Link here.

4.2.2 Framework analysis

Interviewees' responses were analysed using framework analysis, an applied policy research methodology developed to analyse qualitative data captured through specific questions about a specific issue(s). The use of framework analysis was to extract information which has the potential to help create actionable outcomes.

The following five stages of framework analysis were used:

1. Familiarisation – the researcher(s) is immersed in data through conducting the interviews/reading the transcripts.
2. Identifying a thematic framework – recognising emerging themes and building a framework around those to categorise all responses.
3. Indexing – 'coding' (categorising) all data according to themes established in the framework.
4. Charting – data is lifted and put into charts of themes while it is still linked and contextualised with the source.
5. Mapping and interpretation – analysis of key characteristics and summarisations which echo the true thoughts and meanings of respondents in relation to the questions.

First and second order themes from the framework analysis:

First order themes	Second order themes	
Consistency in the assessment process	EPC rating system	Assessors
Availability and use of data for assessments	Property information	Local data
Communication of planned changes	Targeted messaging	Understanding nuances
Cost-effectiveness	Moderating demand	Investment approaches
Flexibility	Measurement/metric	Digitalisation
Feasibility of recommendations	User needs and preferences	Local planning

4.2.2.1 Consistency in the assessment process

A key concern of participants is the difference in the EPC rating system/scoring to the UK. For instance, for SBEM a CO2 Asset Rating of 50 is the difference between bands B and C on the England EPC scale. Whereas a CO2 Asset Rating of 100 is the difference between bands B and C on the Jersey EPC scale. Jersey EPC CO2 Asset ratings are up to Over 300 (G) whereas England EPC ratings are up to Over 150 (G). Finance representatives discussed the need for consistency in the EPC rating system across jurisdictions so that investors can compare Jersey's buildings against other potential investments. What is more, property surveyors raised the risk that property investments (mortgages, loans etc.), in a worse-case scenario, might be temporarily paused if banks do not have confidence in Jersey's EPC outcomes.

While the number of assessors in Jersey is limited, policy officers emphasised the need for consistency in the assessors themselves, notably in their background, professional experience, qualifications, and training. Having chartered surveyor status and/or heritage building experience and qualifications for example, is viewed as an important contributor to consistency and quality of assessments.

To this end, peer support was raised and a potentially valuable concept by a recently qualified assessor in Jersey. They explained that having a colleague or fellow assessor to discuss their decision-making with was beneficial.

Going beyond EPCs, a different assessor raised the likely need for a quality mark and retrofitting framework in Jersey, akin to PAS 2035 which is required for all publicly funded retrofit projects in the UK.

4.2.2.2 Availability and use of data for assessments

All the focus groups included discussions on the limitations of EPCs due to limited data and lack of use of existing data. Inadequate knowledge and data on complex heritage and/or commercial buildings is especially a limitation for the non-domestic energy assessment process and recommendations. There was also a concern raised in the property surveyors focus group that [some] building owners could be penalised for not having certain information to hand, for example the presence of insulation. Yet, there is no central database or online repository of EPCs to retrieve property information. In a different focus group, one assessor did, however, explain how they would also look to planning records to check if any works had been done.

What is more, the lack of reflection of local [Jersey] data (energy, materials, construction/contractor pricing etc.) is considered a major pitfall in the current assessment approach in Jersey. It was noted by one participant that the JSAP webtool allows the Government of Jersey's building control officers to directly edit the fuel costs as they see fit however, in practice, the process is unclear. Still, there is a potential opportunity to implement a process for reviewing and updating cost data so that it is accurate and up to date.

4.2.2.3 Communication planned changes

Given the perceived low awareness and understanding of EPCs, all focus groups highlighted the need for the Government of Jersey to communicate the purpose of the assessment and planned changes to the wider public and what this would mean for residents, landlords and businesses in the months and years to come. Regarding the planned changes for example, one participant was asked by a property manager "*What would this do? How would this affect me? How much money would it cost?*"

Several participants mentioned the need for an extended advertising campaign to publicise the mandating of assessments at key points in a property's lifetime. For small and medium sized businesses, it may [also] be that EPCs are not an immediate priority, with larger and energy-intensive businesses more likely to already have environmental policies in place. JLA representatives explained that they raise awareness of planned mandatory assessments and energy efficiency standards among their c.250 members, but also acknowledged the role of property agents and the media in informing the private rented sector. A representative shared their view that they suspect a very significant number of landlords are unaware of planned changes: "*[those landlords] will only start knowing it and caring when things start to become…mandatory*".

Stakeholders including policy offers and ministers, stated the need to make clear that the assessment process in Jersey is different to the assessment process elsewhere, including in the UK. It is thought that renaming EPCs as Jersey Energy Performance Assessments (JEPAs) and clarifying the nuances in the island's approach will help people's understanding. A key difference to highlight is that the methodology in Jersey is implemented in a jurisdiction that has a largely decarbonised electricity supply, whereas in England, the reference/notional building is mains gas. In practice, this means that a solution in Jersey is considered very low carbon because it is electrically heated, meaning high running costs for poorly insulated properties that are heated in this way. At the same time, compared with the Jersey reference/notional building, a non-electrically heated and well insulated property would have low costs and high emissions.

4.2.2.4 Cost-effectiveness

Participants supported planned legislation to mandate EPCs at the point of a property being sold or rented with this approach noted as tried as tested elsewhere (England and Scotland). It was noted that moderating demand via trigger points in this way can help to mitigate a supply and demand imbalance in qualified assessors, contractors/tradespeople, and materials.

An opportunity for larger building owners[37] was noted by one participant to have more accurate and holistic data of their portfolio, enabling investment decision to be based on evidence rather than the feedback they might get from tenants or their own perceptions.

4.2.2.5 Flexibility

Several participants believe that the Government of Jersey is primarily focused on reducing carbon emissions over and above reducing costs. In view of confusion and concerns on what the measurement/metric/should be, one participant suggested that recommendations could be based on different outputs. Across focus groups, participants mentioned the need to improve accessibility and transparency of property data through digitalisation, akin to the EPC databases available in Great Britain. The ability to view the impacts of a recommendation, or set of recommendations, on each measurement/metric could aid user understanding.

Still, many expressed concerns about the affordability and achievability of recommended works in Jersey, with some noting the higher running costs for electricity and gas as opposed to oil. It was noted that while the LCHI is viewed as a key driver of EPCs[38], a few participants highlighted the need for a standalone incentive scheme for insulation. They argued that a fabric first approach is necessary to keep bills down, with a heating system to come later.

4.2.2.6 Feasibility of recommendations

Assessors noted a preference among their clients for less disruptive measures regardless of the outcomes of the recommendation report. For example, solid floor insulation is often included but very few people would consider it. Other common recommendations include solar PV and wind turbines yet local planning laws are reported as barriers: "*Regardless of whether [it is] a listed building or not, or a heritage property or not, these are things that come up and that would never, ever, ever get through to the planning process here in Jersey…it's a very odd thing to be saying to your clientele, 'just ignore this part of the certificate because it doesn't make any sense. That would never happen*'". The overview of the assessor focus groups (section 4.2.1) addresses the omission of heat pumps in EPC recommendations.

The costs for recommended works were reported as often being wide ranging and not reflective of Jersey prices. One representative from the JLA noted that the cost of investment and payback is "*…even more important for landlords who might have two or three properties, because it goes to the bottom line*". The same participant summarised by explaining that the recommendations should first and foremost account for what work can reasonably be done.

4.2.3 Opportunity to compare UK and Jersey SAP ratings

During our research phase, we interviewed Quidos and their software partners who developed the Jersey SAP database.

It became apparent in this conversation that the way the database has been created differs from the UK database methodology, in such a way that offers an opportunity to the Jersey government to model both Jersey and UK SAP ratings/EPC bands. This would allow any differences to be analysed and also potentially add both ratings to the certificate if this was considered desirable.

37 For example, institutional landlords and social housing providers.

38 The Government of Jersey confirmed that it had approved £600k worth grants for/ 170 applications to the scheme which is open to all EPC ratings.

In the UK the data inputs for the SAP calculation are lost once the certificate has been lodged in the database. This means there is no opportunity for understanding exactly how a SAP score has been arrived at once it is lodged, even if we may understand the general characteristics.

In the Jersey database, the original inputs are retained and therefore there is an opportunity to re-model the property using the UK SAP methodology – or indeed any other alternative methodology that was being considered. This is a very significant advantage for a number of reasons. For example, it could be possible to re-run all the properties every time the cost/carbon factors change which would mean a more up to date database. It could also be exploited if the administration is keen to allow people to consider "like for like" comparisons of a single property between UK and Jersey methodologies.

The data analysis in Section 4.3 considers exactly this scenario and demonstrates the key domestic property archetypes and their differences across each model. The conclusions and recommendations section also considers the implications of this difference, and how it might offer further opportunities to the Jersey government in the future when considering any new methodology.

4.3 Data analysis

This section details trends between property characteristics and the differences between the Jersey and UK SAP ratings. For interest, a summary of some key characteristics across the Jersey EPC properties is included in Appendix C alongside any additional figures and tables that may be useful for reference but are not important enough to be included in the main text.

As discussed in the method, properties which utilised a dual (18-hour) tariff were removed as there is no equivalent in UK, which caused issues with unrealistic SAP ratings. This affected 114 (4.6%) of the 2,454 properties.

Looking at the dataset overall, there is a trend that UK has higher SAP ratings by 9.2±0.7 points (see Table 1 in Appendix C). However, in order to understand these differences, this must be broken down further.

4.3.1 Main heating fuel

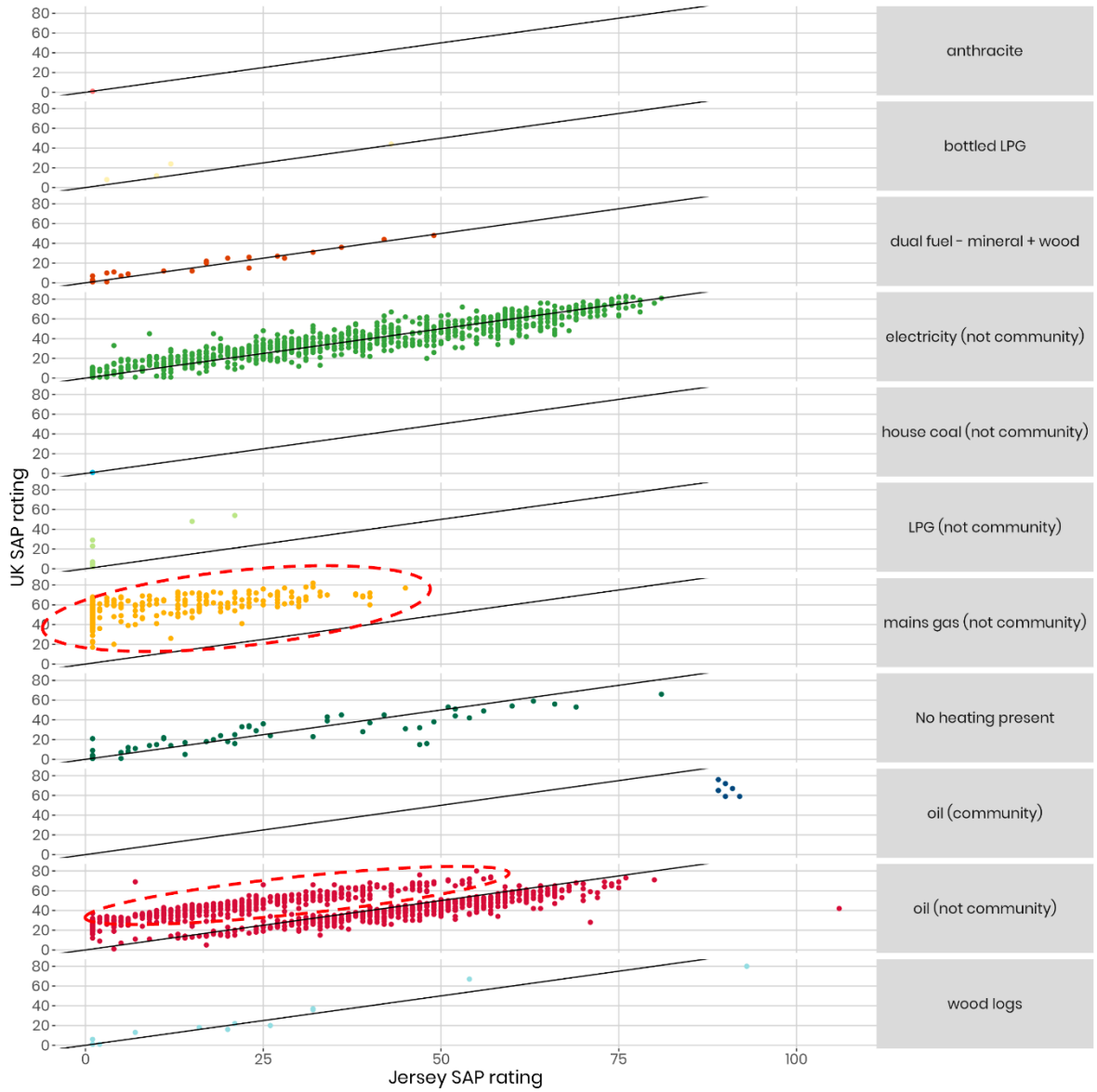

Figure 1: Comparison of Jersey and UK SAP ratings grouped by heating type. The black line indicates the x=y line, where SAP ratings would be identical between UK and Jersey.

Figure 1 examines the differences between Jersey and UK SAP ratings for different main heating types, with Table 1 (Appendix C) showing the statistics between the differences. Solid fuelled and properties with no heating system showed no significant differences between UK and Jersey ratings, with a distribution which appear well distributed above and below the x=y line (black line in Figure 1).

Electric systems do have a very small significant difference of 1.0±0.5 points, and has ranges between -28 and 36 points highlighting there may be some additional trends within this, which are discussed further in Section 4.3.2. Therefore, it can be concluded that, on average, properties with electric heating systems do not have a large difference in SAP ratings between UK and Jersey.

However, gas heated systems do show a clear trend to have higher ratings for UK (illustrated by the dotted red box in Figure 1), which is understandable given the lower gas prices in UK compared to Jersey. On average, gas properties have a SAP rating that is 46.7±1.3 points higher in UK compared to Jersey (confidence interval at 95% significance). There is a similar trend for LPG systems, however the smaller sample sizes make it difficult to be as confident in this (see Table 1).

Within oil systems (see 'oil (not community)' in Figure 1), there appears to be two groups, one showing higher SAP ratings in UK compared to Jersey circled in red. The other shows a smaller trend towards higher SAP ratings in Jersey, becoming more prominent at higher Jersey SAP ratings. Further analysis of this trend has not shown any clear reasons for this, with wall type, roof/loft type, glazing type, floor type and a more detailed examination of the heating systems not showing any apparent trend from one variable alone.

4.3.2 Other singular property characteristics

To investigate the effect of other property characteristics, the electrically heated homes were examined in more detail. These were selected as it is the largest group where we can remove some of the effects of the heat type (e.g. gas or oil issues as discussed in Section 4.3.1). Full results tables and graphs can be found in Appendix C but are omitted here for brevity.

While there were some statistically significant results for property type (see Section 6.4), these were of a small magnitude of around 1-2 SAP rating points higher in Jersey compared to UK.

The property age was also tested (see Section 6.5), which showed nearly all age bands to be statistically significant. Bands A-C (1980 and earlier) were higher in UK by a mean of around 4-5 SAP points, while bands D-H (1981-2015) were slightly lower in UK by between 2 and 7 points. Homes after 2015 did not show any statistically significant difference.

Examining the wall, loft/roof, floor construction and glazing there are some statistically significant results (see Section 6.6). However, for the wall, loft/roof and floor constructions, there are a significant number of these and seeing any trends is difficult due to the variability in their parameters. This also held true for examinations for floor area and SAP rating, with no clear trend appearing for either within this data.

While there were some trends in this single variable analysis, there are not many clear trends which can account for large difference. Therefore, any sizeable differences in EPC rating between Jersey and UK are likely to be down to a combination of various factors and identifying them is a difficult process. This was carried out using both the full dataset and the electrical heated properties only. Both datasets are available to Jersey government and can be used for further analysis by Jersey Government to identify certain property characteristic combinations which lead to lower or higher SAP ratings. For example, properties with the characteristics in Table 1 have higher SAP ratings in Jersey compared to UK by 4.9±3.6 points.

Table 1: Example property characteristics given in full dataset.

Property Characteristic	Value
Main heating type	electricity (not community)
Glazing type	double glazing, unknown install date
MainFloor	Main:(Type:Ground floor,Construction:suspended timber,Insulation-Type:as built,Insulation-Thickness:unknown)
MainWall	Main:(Construction:cavity,Insulation-Type:as built,Insulation-Thickness:unknown)
MainLoft	Main:(Construction:Pitched (slates or tiles)
MainAge	Main:B

5. Conclusions

This section outlines the key findings against the research questions posed:

1. What are the stated and accepted purposes of domestic and non-domestic EPC?

EPC reports show the potential to minimise a property's energy use and carbon emissions. They are essential in order to tackle climate change and reduce the energy bills and carbon emissions of domestic and non-domestic properties. Over time, they have also been used to drive and measure the delivery of government funding schemes and support programmes relating to energy, retrofit, fuel poverty and low-carbon heating in England. EPCs can also be used as an energy performance comparison tool between different properties.

While EPCs can have a number of purposes, Jersey stakeholders agree, first and foremost, that EPCs provide a picture of the energy performance of a property and estimated running costs. In England, EPCs are also used to assess compliance with minimum standards in the private rented sector and in the targeting of financial support for energy efficiency among householders. Though our engagement did not include householders, the consensus among the stakeholder groups consulted is that awareness and understanding of EPCs in Jersey is low. However, some did note that the LCHI had led to an increase in domestic EPCs being undertaken in Jersey.

In the commercial sector, the purpose of EPCs is less clear with Jersey stakeholders reporting the need to be clear about the breadth of the assessment and to emphasise that a non-domestic EPC is not an assessment of the energy efficiency of the entire business.

While the focus of this work was not on planned minimum standards in Jersey, stakeholders highlighted the role of increased energy performance data if and/or when such a standard comes into play. Ultimately, a greater volume of data will provide a more reliable average energy efficiency of Jersey's stock to inform the setting of achievable standards.

2. What is the purpose, clarity and understanding of EPC's output documentation?

There were mixed views on the purpose of EPCs, especially on what expected outcome is leading the process: reducing costs or reducing carbon emissions. Stakeholders are expecting the Government of Jersey to provide clarity on this. Some stakeholders mentioned that it would be valuable to be able to view the EPC recommendations based on the metric a household or a business is interested in, i.e. carbon emissions reductions, cost reductions, etc. and suggested that EPCs could be more flexible and interactive if possible. In practice, however, there needs to be clarity in the leading metric so that the primary EPC purpose can be communicated simply.

3. Do domestic and non-domestic EPC provide accurate estimates of energy consumption, greenhouse gas emissions and energy costs?

Inaccuracy has a number of causes, including human (assessor) error and incomplete data on existing properties. To mitigate inaccuracies, stakeholders believe that a certain level of experience, knowledge and skillset are required for assessing, typically more complex, commercial and/or historical buildings. This will help ensure consistency in the assessment process, outcomes, and recommendations, and could be based on a person's professional experience, qualifications and training. For example, a minimum number of years undertaking domestic assessments prior to moving onto commercial.

Given the later introduction of EPCs in Jersey there is relatively small pool of qualified assessors. Experienced and newly qualified assessors reported having queries about the assessment process (e.g. selecting the correct fuel type) and outputs (e.g. the property summary) Where assessors have reliable and timely assistance they can in turn support their clients, ultimately developing trust and understanding of the assessment process.

4. Do domestic and non-domestic EPC provide appropriate recommendations for improving the energy efficiency/ greenhouse gas emissions/energy costs of the property?

The stakeholder engagement highlighted the tendency for Jersey EPC recommendations to steer away from renewables including heat pumps and solar. Assessors explained that it was difficult to communicate to residents why such measures were not listed on the recommendations report, especially considering the Government of Jersey's LCHI. It was also noted that common recommended measures are not straightforward, meaning that often, measures perceived as disruptive were disregarded by residents. For example, solid floor insulation is often included but very few people would consider it. Other common recommendations include solar PV and wind turbines yet local planning laws are reported as barriers.

5. Is the cost/payback of those recommendations accurate?

Stakeholders reported a great deal of variation in the estimated costs of recommended measures. As a result, payback periods are expected to be treated with caution. Accurate payback was noted as especially important for Jersey's landlords as it is primarily a business, over and above a home.

6. Do users understand, trust and get value from the EPC and the recommendations report?

All stakeholders commented on the lack of accessibility of EPCs in Jersey. Many suggested the creation of an online database of EPCs like that available for England and Wales[39] and for Scotland[40]. It is recommended that the Government of Jersey make assessment data available for public consumption, resulting greater understanding, improved awareness, and trust in the EPC process.

39 Reference: 'Energy Performance of Buildings Data: England and Wales'. Link here.

40 Reference: 'Scottish EPC register'. Link here.

7. Are there any specific areas of inaccuracy in the EPC outputs and recommendations that concern stakeholders?

The main areas of inaccuracy in the EPC outputs and recommendations are the following:

- The different EPC rating system/scoring between Jersey and England which means that Jersey's buildings cannot be directly compared against the UK ones because the two systems are not aligned[41]. This was a key source of confusion for the participants as they did not understand what the different scoring systems mean in practice, which scoring system is more accurate than the other and how to accurately compare properties in the two jurisdictions.
- In Jersey there are limited data on existing buildings and no central database or online repository of EPCs to retrieve property information. Therefore, property surveyors and energy assessors need to rely on inadequate information to complete their assessment, often provided by the building occupiers, which may lead to inaccurate results, especially for commercial buildings.
- Inadequate knowledge and data on complex heritage is especially a limitation for the non-domestic energy assessment process and recommendations.
- Participants also raised concerns about the lack of inclusion of local data, e.g., energy costs, materials costs, construction/contractor pricing, etc., and the inclusion of English data instead. Since the EPC recommendations are primarily based on English data, they are, therefore, inaccurate for Jersey.
- Many participants expressed concerns about the affordability and achievability of recommended works in Jersey as the costs for recommended works were reported as often being wide-ranging and not reflective of Jersey prices.

8. What metrics are being used on EPC, and how relevant and accurate are they?

The procedure for new domestic buildings in Jersey to demonstrate compliance with the Building Regulations is by comparing the annual energy use and/or carbon emissions of the Actual building against those of a 'Reference' building. The Reference building model serves to generate target delivered energy, emission, or primary energy rates which the Actual building must meet or better.

Two metrics are used for assessing compliance with the Building Regulations:

- one for assessing the overall energy efficiency of the building,
- one for assessing the building's fabric performance only.

To check compliance with the overall performance of the building, Jersey chose to assess the energy performance in terms of energy use (delivered energy). In this regard, the Actual building's annual delivered energy rate (kWh/m2), the dwelling's Delivered Energy Rate (also called DER), is assessed against the Reference dwelling's delivered energy rate, known as the Target Delivered Energy Rate (TER).

For checking compliance of the fabric performance only, the Fabric Energy Efficiency of the Actual Dwelling (DFEE) is calculated and compared against the Fabric Energy Efficiency of the Reference Dwelling (TFEE).

The EPC document reports:

- an Energy Efficiency rating (the measure of annual energy costs per square meters) and band,
- an Environmental Impact Rating and band (the carbon emissions-based rating).

41 This is not so much an inaccuracy, but rather an observation that has resulted in uncertainty in the Jersey approach.

To demonstrate compliance with building regulations for new non-domestic buildings in Jersey, the annual energy use and/or carbon emissions of the Actual building are compared against those of a comparable building of the same size, geometry and use as the Actual building but with fabric and services efficiencies specified in accordance with compliance regulations in the respective administration. The 'Reference' building model serves to generate target delivered energy, carbon emission, or primary energy rates which the Actual building must meet or better.

In Jersey, there is one target metric the new building must meet or better: the Target delivered Energy Rate, also called TER, in kWh/m2 /yr.

Some common inaccuracies for the ability of EPCs to accurately represent the actual energy performance of buildings are listed below:

- EPC ratings are calculated based on the theoretical performance of a building and do not reflect their actual energy consumption, carbon emissions and running costs because they are based on assumptions and predictions and not actual, in-use data.
- The actions of the residents may vary significantly from the predictions of the modelling software.
- Sometimes, errors during the property assessment may also result in incorrect EPC ratings.
- EPC reports provide a standard set of recommendations for improving the energy performance of a property, based on the year of its construction and its building characteristics. These recommendations are not tailored to each specific building; therefore, for some properties i.e. traditional/historic buildings, these recommendations are not applicable.

9. Hierarchy of the metrics – which is the key one which aligns with the aims and objectives?

EPC calculations are complex, involving several steps and a large number of different metrics. Question 8 presents the main metrics used in domestic and non-domestic EPC methodologies; here we summarise the few metrics presented on EPC document reports for domestic and commercial properties, as these are the metrics used to develop policy recommendations for decarbonising buildings and communicate any changes in order to achieve climate policy targets in the future.

Domestic EPCs feature:

- an Energy Efficiency rating (the measure of annual energy costs per square meters) and band,
- an Environmental Impact Rating and band (the carbon emissions-based rating).

Non-domestic EPCs feature:

- an Energy Performance Asset Rating and band,
- a Carbon Emissions Asset rating and band.

10. Differences between UK and Jersey ratings.

Save for one tariff, unique to Jersey, it is possible to directly compare ratings between the UK and Jersey.

There are a few clear trends that have appeared in the analysis of the Jersey EPC data. The clearest being that gas heated properties have significantly higher EPC ratings (46.7±1.3) in UK compared to Jersey. There also appears to be a similar, yet smaller trend for LPG, however this is less clear due to the smaller sample size. Some oil heated properties also appear to show this trend, however this analysis was not able to ascertain a reason why given the time constraints and data available in this project.

Within other heating types, there does not appear to be a significant difference between UK and Jersey SAP rating, with the average being similar in both groups. Within electrically heated homes, there are some quite large differences in SAP rating, these differences were explored and some trends in property characteristics could be found, however not enough that any single variable could explain the differences. The clearest trend was that older properties (1980s and earlier), had higher SAP ratings in UK by around 4-5 points and those built after 1980 were typically higher in Jersey. It was therefore concluded that a combination of certain variables were likely to give the differences we see. Grouping by a large combination of variables was carried out and produced some statistically significant results, however it should be caveated that there are a significant number of small counts (i.e. less than 30) which should be treated with caution. This dataset could be used however to identify if a property is likely to be significantly different in UK to Jersey.

6. Recommendations for future consideration

In answering the research questions through stakeholder engagement and data analysis – we recommend the following areas to be explored further by the Government of Jersey.

Short-term:

- Ensure stakeholders can confidently communicate the Jersey Energy Performance Assessment (JEPA) process to industry and the Jersey public. For industry this is likely to be through targeted upskilling and cross-sector collaboration, with an island-wide campaign to raise awareness and understanding of JEPA among the Jersey public.
- Additionally, through an island-wide campaign, communicate the benefits and purpose of increased energy performance data for Jersey's stock.
- Specify relevant entry criteria and benchmarks for both domestic and non-domestic assessors. For qualifications and skills this could mean that energy assessors have a relevant professional background (e.g. property surveying, building regulations/planning).

Medium-term

- Ensure that assessors can access high-quality guidance, timely and ongoing support from training providers and/or accreditation bodies.
- Encourage the development of peer support networks involving access to more experienced and/or specialist assessors.
- Create a digitally accessible public registry of property data.

Long-term

- Consider additional trigger points for JEPAs after the ten-year validity period is established.

Appendix A: Discussion guide for all stakeholders

Research aims and purpose: Led by Energy Saving Trust, this project aims to explore the performance and effectiveness of the domestic and non-domestic Energy Performance Certificate (EPC) processes and outputs. The purpose of the research is to review of the EPC process and outputs for Jersey, its suitability and accuracy to help inform the development of appropriate EPC legislation for the Jersey Government.

As part of the research, we are engaging with a number of stakeholders including EPC Assessors, Property Surveyors, Policy Officers, Ministers, financial and banking sector representatives, the Jersey Landlord Association, and householders.

Research questions:

1. Do domestic and non-domestic EPCs provide accurate estimates of energy consumption, greenhouse gas emissions and energy costs? Are there any specific areas of inaccuracy in the EPC outputs and recommendations that concern stakeholders?

2. Does the EPC provide appropriate recommendations for improving the energy efficiency/greenhouse gas emissions/energy costs of the property?

3. Do users understand, trust and get value from the EPC and the recommendations report? Is the cost/payback of those estimates accurate?

Definitions:

The Government of Jersey's **Carbon Neutral Roadmap** builds on the progress made through the Pathway 2050: an Energy Plan for Jersey. It sets out an ambitious emissions reduction trajectory towards net zero. It also sets interim targets of reducing emissions by 68% by 2030 and 78% by 2035, measured against a 1990 baseline.

An Energy Performance Certificate (EPC) tells you how efficient your home is and gives it a rating from A (very efficient) to G (inefficient). Information about how your home is built and how it is heated is used to generate an EPC. It gives you a personalised list of home improvements that can increase your home's EPC rating.

Greenhouse gas emissions (GHGs) are generated when fossil fuels are burnt. In Jersey, the majority of emissions are generated when we drive petrol and diesel vehicles and in the boilers that heat our homes and business premises. A key priority policy is therefore accelerating the switch from fossil fuel to low-carbon property heating.

A **Home Energy Audit** is a survey to tell you how energy efficient your home is. It will tell you how much energy you're currently using, recommendations of home improvements to make your home more energy efficient, and behaviours you can change to cut your energy bills. An EPC is awarded to a home as part of a Home Energy Audit.

Introduction

Welcome and introduce self/facilitator and scribe, briefly explain purpose of the research, run through the agenda.

Housekeeping:

- On mute unless talking
- Managing discussions – feel free to contribute throughout, by unmuting, raising a hand, or in the meeting chat function. We will also ask people for their views.
- Timings – the focus group will last 1-2 hours, and individual meetings will last up to 1 hour.
- Let other people speak, talk about general workshop etiquette e.g. confidentiality, honest feedback, no right or wrong answers – interested in your personal opinion and what's important to you.
- The meeting will be recorded for analysis purposes to help us accurately collect findings for the research. The recording and auto-generated transcript will be securely stored in a password-protected folder and retained by us and destroyed after the completion of the research. Are you happy for me to record the interview?
- A report will be produced for the Jersey Government using your feedback however none of your comments will be identifiable.

Section 1: Introductions (5 mins)

1. Please can you briefly introduce yourself/ yourselves and tell me/us about your current role and organisation/business.
2. How [To what extend] are domestic and/or non-domestic EPCs part of your job?
3. How much do know about domestic and/or non-domestic EPCs?
4. What is your overall view of domestic and non-domestic EPCs?

Prompt: positive/negative/neutral, other.

5. What is your view of the purpose of EPCs?

Prompt: Tackle climate change and reduce GHG emissions, for selling/buying and renting a property, to show any potential energy costs as well as the potential to minimise a property's energy use and carbon emissions, to drive and monitor the delivery of policy, an investment appraisal tool.

6. Building on EPC purpose, why is this important? What are the limitations of EPCs regarding this purpose?

Prompt limitations of challenges of stated EPC purposes.

Section 2: EPCs in Jersey (20 mins) – NOT FOR HOUSEHOLDERS

7. What are your views on plans for EPCs to be introduced as part of Jersey Government legislation i) when properties are being sold or rented ii) at the point of having renovation work that requires planning permission/ building permits?

NB. The requirement for EPCs to be done at the point of a building control application is already in place.

8. What in your opinion are the objectives of introducing mandatory EPCs in Jersey?

Prompts: To compare the energy use and environmental impact of buildings, to support advice on how these could be improved, to drive and monitor the delivery of policies relating to energy use and emissions, others.

9. What do you perceive are the likely benefits of mandating EPCs in Jersey at key points in a property's lifetime?

Prompts: Highlights potential energy efficiency improvements, how much they will cost, and related savings to inform decisions by homeowners, landlords and prospective buyers, others.

10. What do you perceive as the opportunities for you of requiring EPCs in Jersey at key points in a property's lifetime?

Prompts: To drive and monitor the delivery of policies relating to energy use and emissions.

11. Are there any barriers or concerns do you anticipate to the implementation of mandatory EPCs in Jersey?

Prompts: Supply of qualified EPC assessors to meet demand, quality of EPC and any inconsistencies in output, others.

12. What are your views on requiring EPCs to be displayed on public buildings in Jersey by 2025?

Section 3: Awareness, trust, and value of EPCs (15 minutes)

13. What are your views on awareness of EPC outputs and recommendations i) generally ii) among Jersey residents iii) among businesses iv) other relevant stakeholders including those listed above and engaged with as part of this research?

Prompts: Low/medium/high, other.

14. What are your views on trust in EPC outputs and recommendations i) generally ii) among Jersey residents (iii) among businesses iv) other relevant stakeholders including those listed above and engaged with as part of this research?

Prompts: Low/medium/high, other.

15. To what extent do you think that there are differences in awareness, trust and/or perceived value of EPCs according to sector, ownership/tenure or other characteristic(s)?

16. To what extent do you think that users understand and trust the i) EPC process ii) outputs and recommendations report iii) the non-domestic EPC as an investment appraisal tool.

Section 4: Accuracy of EPCs (15 mins)

17. To what extent do you think that the EPC currently provides appropriate recommendations for improving the energy efficiency/greenhouse gas emissions/running costs and the costs and benefits of the recommended energy efficiency measures?

Prompts: Reliance on a cost-based metric as a headline rating i.e. the Energy Efficiency Rating (EER) measures energy costs per square metre per year.

18. Are there any specific areas of inaccuracy in the EPC outputs and recommendations that concern you and/or other relevant stakeholders?

Prompts: Over-estimation of consumption across EPC bands and interactions with fuel poverty, aspects of energy included (i.e. on-site renewables) and excluded (i.e. domestic appliances), unrealistic default u-values, EPC validity.

Section 5: EPC improvements (10 minutes)

19. What improvements, if any, could be made to the EPC process?

Prompt: Additional trigger points, others.

20. What improvements, if any, could be made to the recommendations report?

21. What do you think is an appropriate validity period for an EPC?

Prompt: Current 10 years, proposed five years in Scottish Government EPC reform consultation.

Section 6: Final general questions (5 minutes)

22. Do you have any further comments and/or contributions regarding EPCs and the introduction of EPC legislation in Jersey?

23. Are there other individuals/stakeholders you would expect us to engage with as part of the research?

Appendix B: References

EPCs in England

Source	Title	Link
UK Government	**Improving Energy Performance Certificates: action plan – progress report**	https://www.gov.uk/government/publications/improving-energy-performance-certificates-action-plan-progress-report/improving-energy-performance-certificates-action-plan-progress-report#:~:text=A%20consultation%20on%20the%20EPB,EPC%20(see%20Next%20steps)
Department for Communities and Local Government	**A guide to energy performance certificates for the construction, sale and let of non dwellings**	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/666186/A_guide_to_energy_performance_certificates_for_the_construction_sale_and_let_of_non-dwellings.pdf
Energy Saving Trust	**Guide to Energy Performance Certificates**	https://energysavingtrust.org.uk/advice/guide-to-energy-performance-certificates-epcs/
Westmorland & Furness Council	**SAP calculations explained**	https://www.eden.gov.uk/planning-and-building/building-control/building-control-guidance-notes/sap-calculations-explained/
Elmhurst Energy	**Energy Certificates for Non-Domestic Buildings**	https://www.elmhurstenergy.co.uk/energy-certificates-for-non-domestic-buildings/
Energy Advice Hub	**Does your commercial building meet the new Minimum Energy Efficiency Standards?**	https://energyadvicehub.org/does-your-commercial-building-meet-the-new-minimum-energy-efficiency-standards/

EPCs in Jersey

Source	Title	Link
Government of Jersey	**Timetable for Energy Performance Certificates**	https://www.gov.je/News/2023/Pages/TimetableForEnergyPerformanceCertificates.aspx
Government of Jersey	**Home Energy Audits**	https://www.gov.je/News/2023/Pages/TimetableForEnergyPerformanceCertificates.aspx
Bedell Cristin	**Jersey Energy Performance Assessments to become mandatory in Jersey**	https://www.bedellcristin.com/knowledge/briefings/jersey-energy-performance-assessments-to-become-mandatory-in-jersey/

SAP & Metrics being used in Domestic EPC calculations

Source	Title	Link
Greengauge	**SAP – An overview**	https://ggbec.co.uk/sap-an-overview/
Build Energy	**What are SAP calculations?**	https://www.buildenergy.co.uk/services/part-l-sap-calculations/what-are-sap-calculations/
Build Energy	**SAP 10 Released – What's New?**	https://www.buildenergy.co.uk/blog/sap-10-released-whats-new/
Falcon Energy Ltd	**What are SAP calculations? A beginners guide**	https://www.falconenergy.co.uk/what-are-sap-calculations-a-beginners-guide/
Local Authority Building Control	**Changes to SAP 10 and how they will affect you**	https://www.labc.co.uk/news/changes-sap-10-and-how-they-will-affect-you
Build Energy	**DER TER**	https://www.buildenergy.co.uk/der-ter/
Build Energy	**TFEE – How to Pass the Target Fabric Energy Efficiency**	https://www.buildenergy.co.uk/tips-and-insight/tfee/
Build Test Solutions	**The Relationship between Thermal Performance and Space Heat Demand**	https://www.buildtestsolutions.com/technical/the-relationship-between-thermal-performance-and-space-heat-

Source	Title	Link
Build Test Solutions	**Heat Loss Parameter: A Metric for Total Fabric Performance**	https://www.buildtestsolutions.com/technical/heat-loss-parameter-a-metric-for-total-fabric-performance
Climate Change Committee	**Annex: Reform of domestic EPC rating metrics to support delivery of Net Zero**	https://www.theccc.org.uk/wp-content/uploads/2023/02/Annex-Reform-of-domestic-EPC-rating-metrics-to-support-delivery-of-Net-Zero.pdf
	A Technical Manual for SBEM	https://www.uk-ncm.org.uk/filelibrary/SBEM_Technical_Manual_v6.1.e_19Dec22.pdf

SBEM

Source	Title	Link
Energist	**What is SBEM?**	https://www.energistuk.co.uk/knowledge/what-is-sbem/
BRE	**SBEM: Simplified Building Energy Model**	https://bregroup.com/a-z/sbem-calculator/
Build Energy	**What is SBEM?**	https://www.buildenergy.co.uk/services/part-l-sbem-calculations/what-is-sbem/
Falcon Energy Ltd	**Commercial SBEM Calculations**	https://www.falconenergy.co.uk/commercial-sbem-calculations/
	A Technical Manual for SBEM	https://www.uk-ncm.org.uk/filelibrary/SBEM_Technical_Manual_v6.1.e_19Dec22.pdf

Performance Gap

Source	Title	Link
Climate Change Committee	**Annex: Reform of domestic EPC rating metrics to support delivery of Net Zero**	https://www.theccc.org.uk/wp-content/uploads/2023/02/Annex-Reform-of-domestic-EPC-rating-metrics-to-support-delivery-of-Net-Zero.pdf
Department for Business, Energy & Industrial Strategy	**Improving the Energy Performance of Privately Rented Homes in England and Wales**	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/946175/prs-consultation-2020.pdf
Department for Communities and Local Government	**A guide to energy performance certificates for the marketing, sale and let of dwellings**	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/671018/A_guide_to_energy_performance_certificates_for_the_marketing__sale_and_let_of_dwellings.pdf
CrossCert	**Review of approaches to EPC assessment across chosen member states**	https://www.crosscert.eu/fileadmin/user_upload/crossCert_D3.1_Review_of_approaches_to_EPC_assessment_v4.4.pdf
Better Building Partnership	**Minimum Energy Efficiency Standards and Heritage Properties**	https://www.betterbuildingspartnership.co.uk/sites/default/files/media/attachment/BBP_Heritage%20EPC_Insight.pdf
Ministry of Housing, Communities & Local Government	**English Housing Survey** **EPC improvements modelling review**	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/724619/EHS_EPC_improvement_modelling_review.pdf
Jones Lang LaSalle	**Are EPCs a true indicator of energy efficiency?**	https://www.betterbuildingspartnership.co.uk/sites/default/files/media/attachment/BBP%20JLL%20-%20A%20Tale%20of%20Two%20Buildings%202012.pdf

Source	Title	Link
Kirsten Gram-Hansse, Susse Georg, Ellen Christiansen, Per Heiselberg	**What next for energy-related building regulations?: the occupancy phase**	https://www.tandfonline.com/doi/full/10.1080/09613218.2018.1426810?scroll=top&needAccess=true
The Conversation	**How we measure energy efficiency in homes isn't working**	https://theconversation.com/how-we-measure-energy-efficiency-in-homes-isnt-working-162565
Scottish Government	**Energy Performance Certificate (EPC) Reform Consultation**	https://www.gov.scot/binaries/content/documents/govscot/publications/consultation-paper/2023/07/energy-performance-certificate-epc-reform-consultation/documents/energy-performance-certificate-reform-consultation-2023/energy-performance-certificate-reform-consultation-2023/govscot%3Adocument/energy-performance-certificate-reform-consultation-2023.pdf
Department for Business, Energy & Industrial Strategy	**The Non-Domestic Private Rented Sector Minimum Energy Efficiency Standards**	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/970192/non-domestic-prs-mees-epc-b-future-trajectory-implementation.pdf
Gerald Eve, Evora Edge, Irwin Mitchell	**Energy Performance in Non-Domestic Buildings, Policy Briefing**	https://www.geraldeve.com/wp-content/uploads/2021/07/BRIEFING-NOTE_Energy-Performance-in-non-domestic-buildings_JULY-2021.pdf
ClimateXChange	**An evidence review of data associated with non-domestic buildings**	https://www.climatexchange.org.uk/media/5408/cxc-an-evidence-review-of-data-associated-with-non-domestic-buildings-august-2022.pdf

Appendix C: Additional data analysis figures and tables

6.1 Available EPC Data Fields

Table 2: Available data fields from extract from Jersey analysis by Quidos

Variable	Description
No	Unique number ID
RRN	Report Reference Number for the property
Total floor area	Total floor area of the property in square metres
Property Age/Age band	Age band of the property and up to 4 extensions
Property Type	e.g. Detached, semi-detached
Electricity Supply	Type of tariff the electricity runs off
Main heating type	Main fuel for space heating
Heat Pump Present	Flag if a heat pump is present
Heating System detail	Full details of the heating system
Product detail	If present the manufacturer and model of the heatings system
Distribution system	Type of distribution system (e.g. radiators or underfloor heating)
Hot water heating type	Main fuel for hot water heating
Renewables flag	Flag if renewables are present at the property

Variable	Description
PV	Flag if solar PV is present at the property
Wind	Flag if a wind turbine is present at the property
Wall Type + insulation level	Details of wall construction and insulation
Loft/roof type + insulation levels	Details of loft/roof construction and insulation
Floor type + insulation levels	Details of floor construction and insulation
Glazing type	Details of glazing type
Jersey energy efficiency rating	Jersey energy efficiency rating (i.e. 'SAP rating')
Jersey environmental impact rating	Jersey environmental impact rating
Jersey Primary Energy	Primary energy for Jersey in kWh
Jersey carbon emissions	Carbon emissions for Jersey property (kgCO2e)
Jersey Space heating demand	Space heating demand for property as is in Jersey (kWh)
Jersey Hot water demand	Hot water heating demand for property as is in Jersey (kWh)
Jersey lighting demand	Lighting demand for property as is in Jersey (kWh)
UK energy efficiency rating	UK energy efficiency rating (i.e. 'SAP rating')
UK environmental impact rating	UK environmental impact rating
UK Primary Energy	Primary energy for UK in kWh
UK carbon emissions	Carbon emissions for UK property (kgCO2e)
UK Space heating demand	Space heating demand for property as is in UK (kWh)
UK Hot water demand	Hot water heating demand for property as is in UK (kWh)
UK lighting demand	Lighting demand for property as is in UK (kWh)

6.2 Property breakdown

The following figures give a breakdown of some key property characteristics in the Jersey EPC register.

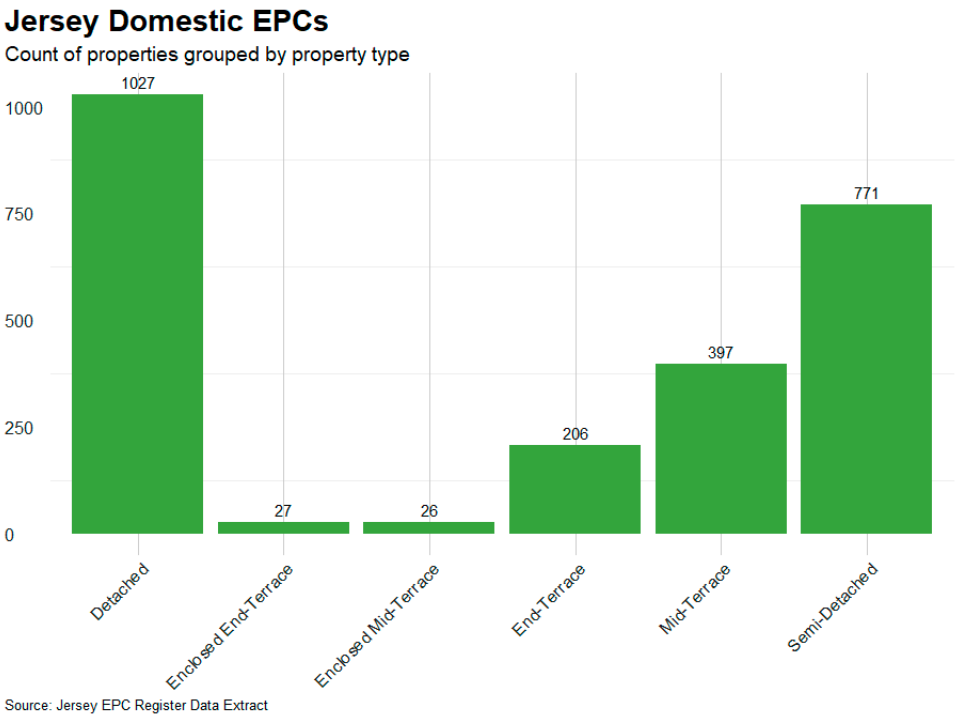

Figure 2: Count of the various property types within the Jersey EPC database (n=2454)

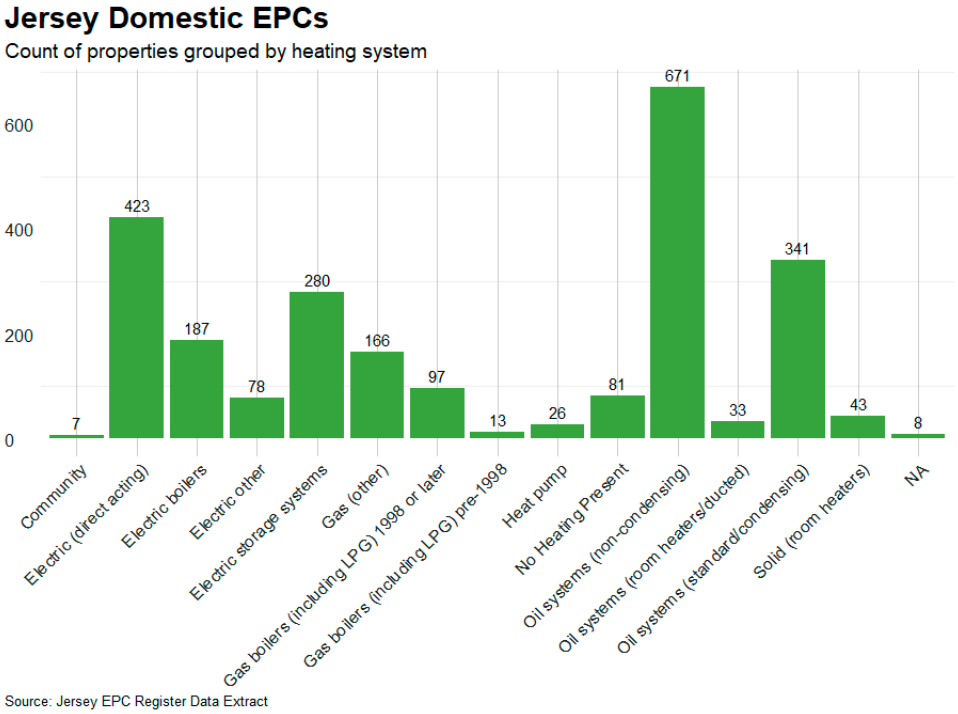

Figure 3: Main heating system categories on EPCs. These have been simplified to create appropriately sized groups.

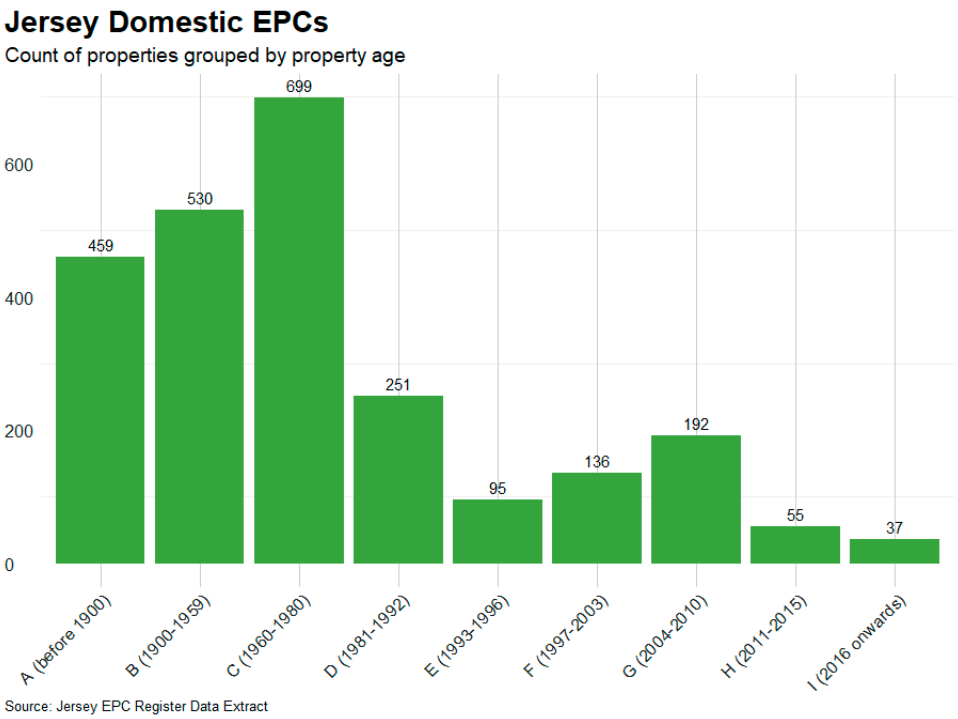

Figure 4: Age of main building (i.e. not including any extensions)

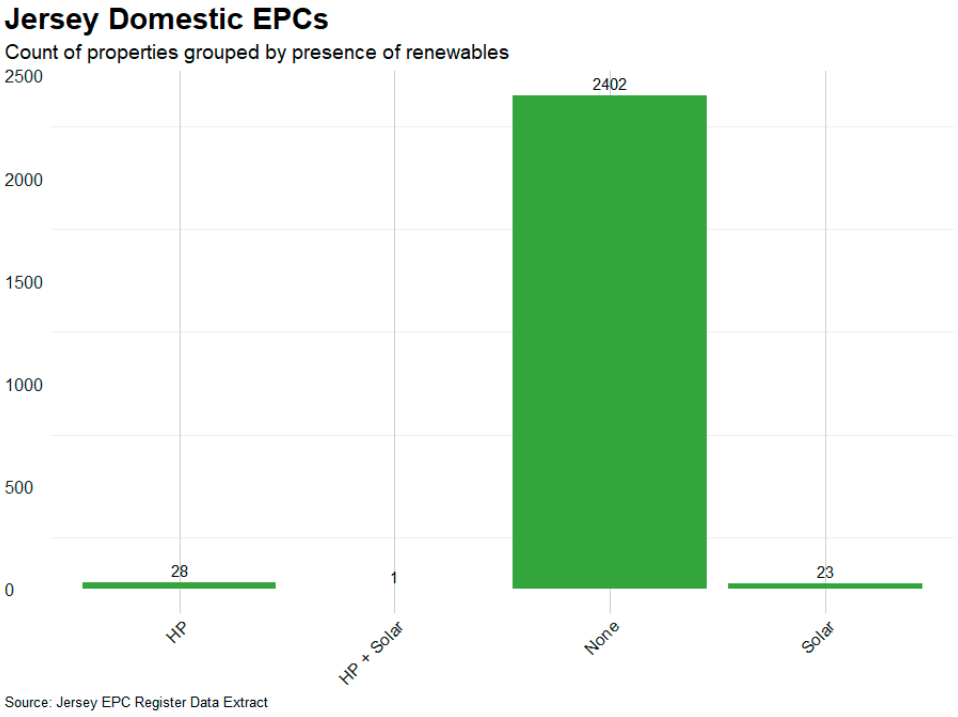

Figure 5: Presence of renewables (HP = heat pump)

6.3 Heating Type

Table 3: Statistics for difference in EPC ratings for different main heating types. Those marked with * reach statistic significance criteria (mean rating with confidence interval does not cross 0).

		EPC difference (Jersey – UK ratings)				
Main heating type	Count	Min	Median	Mean	Max	CI95
LPG (not community)*	9	1	22	16.8	33	10.4
No heating[42]	81	-32	0	-0.6	20	1.8
anthracite	1	0	0	0	0	NA
bottled LPG	4	1	3.5	5	12	7.9
dual fuel – mineral + wood	27	-8	0	1	7	1.3
electricity (not community)*	887	-28	2	1	36	0.5
house coal (not community)	2	0	0	0	0	0
mains gas (not community)*	266	14	48	46.7	67	1.3
oil (community)*	7	-33	-24	-23.9	-13	6.4
oil (not community)*	1043	-64	0	7.8	62	0.9
wood logs	13	-13	1	0.9	13	3.8
Overall*	2340	-64	3	9.2	67	0.7

42 Actual definition in EPC: To be used only when there is no heating/hot-water system or data is from a community network

6.4 Property Type

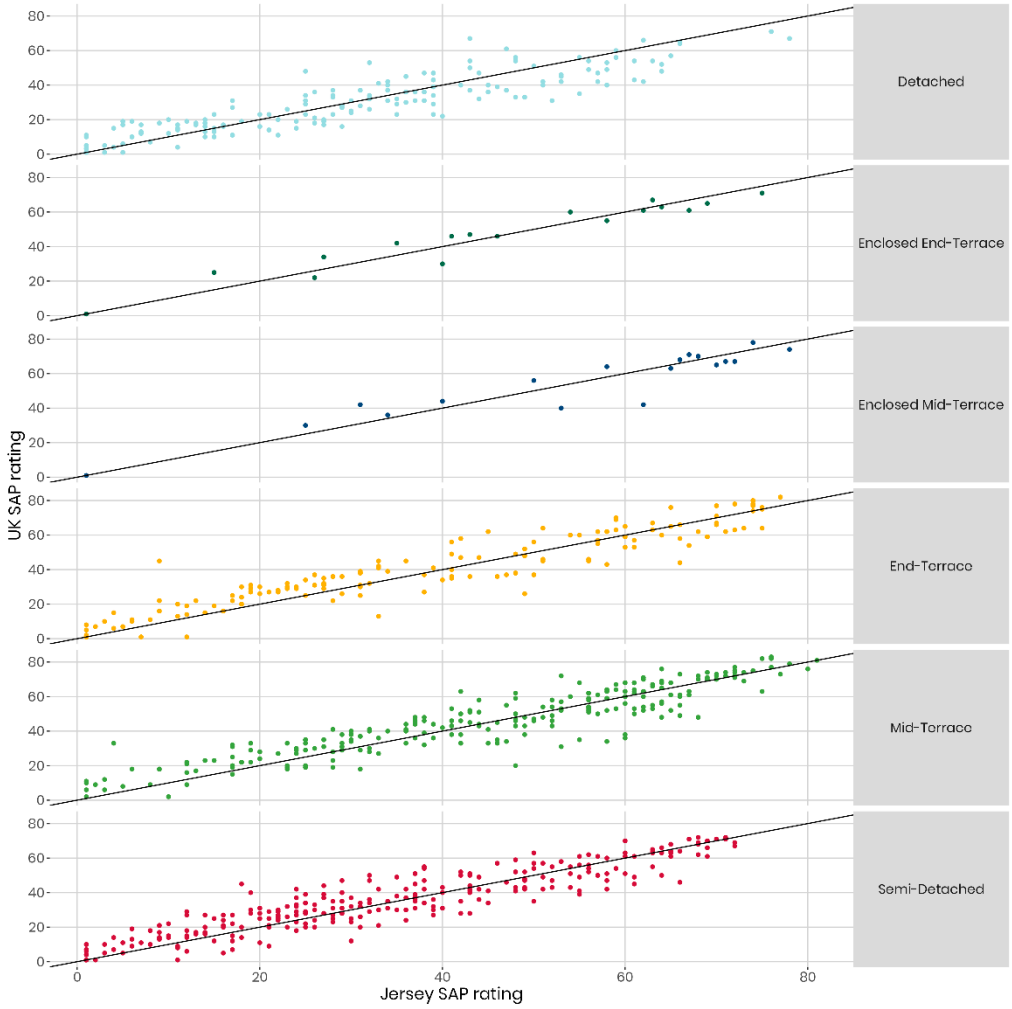

Figure 6: Comparison of EPC rating between Jersey and UK for different property types. There does not appear to be any significant trend between different property types, with similar distributions between the types. Table 3 shows some statistically significant trends for some terraces and semi-detached properties, however this is in the order of a couple of SAP rating points so it is not a strong trend.

Table 4: Statistics for difference in EPC ratings for different property types. Those marked with * reach statistic significance criteria (mean rating with confidence interval does not cross 0).

		EPC Difference (UK – Jersey)				
Property Type	**Count**	**Min**	**Median**	**Mean**	**Max**	**CI95**
Detached	173	-21	0	-0.7	24	1.2
Enclosed End-Terrace	17	-10	0	0.6	10	2.8
Enclosed Mid-Terrace	18	-20	2	-0.4	11	3.7
End-Terrace*	149	-23	3	1.9	36	1.3
Mid-Terrace*	251	-28	3	1.3	29	1
Semi-Detached*	279	-20	2	1.4	27	0.9
Total*	887	-28	2	1	36	0.5

6.5 Property Age

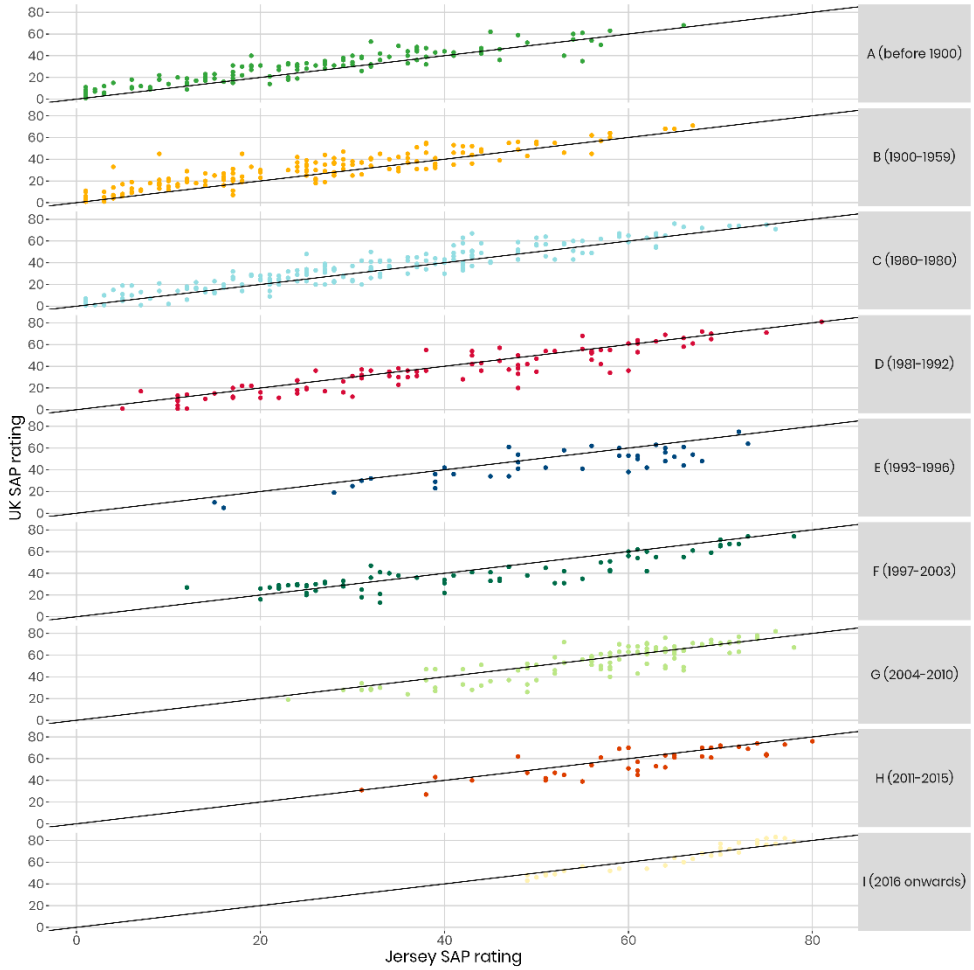

Figure 7: Comparison of EPC rating between Jersey and UK for different property ages – this figure only includes electrically heated properties. There does appear to be a trend for older properties (pre 1981) to be around 3-5 points higher in UK on average when just considering electrically heated properties. This appears to be more significant at lower Jersey SAP ratings. Properties from 1981-2015 trend to have slightly higher (around 1.5-7 points) ratings for Jersey than UK, with those 2016 onwards not having a statistically significant result.

Table 5: Summary of difference between UK and Jersey EPC rating by main house age (i.e. excluding any additional extensions). Those marked with * are statistically significant

		EPC Difference (UK – Jersey)				
Main Age	**Count**	**Min**	**Median**	**Mean**	**Max**	**CI95**
A (before 1900)*	138	-20	4	4	21	1
B (1900-1959)*	170	-11	5	5.3	36	1
C (1960-1980)*	192	-12	4	3	24	0.9
D (1981-1992)*	97	-28	-2	-2.9	17	1.5
E (1993-1996)*	40	-22	-7	-6.8	14	2.6
F (1997-2003)*	71	-22	-4	-3.4	15	2
G (2004-2010)*	109	-23	0	-1.6	19	1.5
H (2011-2015)*	38	-16	-4	-3.8	14	2.3
I (2016 onwards)	32	-8	-1	-0.3	7	1.6
NA*	887	-28	2	1	36	0.5

6.6 Construction Types

Table 6: Summary of difference between UK and Jersey EPC rating by loft construction type. Those marked with * are statistically significant

Loft/roof construction		EPC Difference (UK – Jersey)				
	Count	Min	Median	Mean	Max	CI95
Main:(Construction:Another dwelling above,Insulation:Not Defined,Insulation-Thickness:Not Defined)*	283	-23	3	1.6	24	0.9
Main:(Construction:Flat,Insulation:Flat roof insulation,Insulation-Thickness:100mm)*	4	5	8	7.5	9	2.8
Main:(Construction:Another dwelling above,Insulation:Not Defined,Insulation-Thickness:)	3	-4	-1	-0.7	3	8.7
Main:(Construction:Flat,Insulation:Flat roof insulation,Insulation-Thickness:)	3	1	4	3.0	4	4.3
Main:(Construction:Flat,Insulation:Flat roof insulation,Insulation-Thickness:as built)	23	-12	1	0.4	15	2.6
Main:(Construction:Flat,Insulation:Flat roof insulation,Insulation-Thickness:unknown)	13	-11	-1	-0.5	12	4.1
Main:(Construction:Flat,Insulation:Unknown ,Insulation-Thickness:Not Defined)	5	-10	2	0.4	9	9.3
Main:(Construction:Pitched (slates or tiles)	476	-24	1	0.6	36	0.7
Main:(Construction:Pitched roof with sloping ceiling,Insulation:Sloping ceiling insulation,Insulation-Thickness:)	60	-28	2	0.9	14	2.4
Main:(Construction:Same dwelling above,Insulation:Not Defined,Insulation-Thickness:Not Defined)	14	-10	1	1.6	7	2.5
Main:(Construction:Flat,Insulation:Unknown ,Insulation-Thickness:100mm)	1	0	0	0.0	0	NA
Main:(Construction:Flat,Insulation:Unknown ,Insulation-Thickness:as built)	1	4	4	4.0	4	NA
Main:(Construction:Flat,Insulation:Unknown ,Insulation-Thickness:unknown)	1	1	1	1.0	1	NA

Table 7: Summary of difference between UK and Jersey EPC rating by floor construction type. Those marked with * are statistically significant

Floor Construction		EPC Difference (UK – Jersey)				
	Count	Min	Median	Mean	Max	CI95
Main:(Type:Ground floor,Construction:suspended timber,Insulation-Type:as built,Insulation-Thickness:unknown)*	118	-18	4	3.0	27	1.2
Main:(Type:Ground floor,Construction:suspended timber,Insulation-Type:retro-fitted,Insulation-Thickness:unknown)*	4	8	10	10.5	14	4.0
Main:(Type:Ground floor,Construction:unknown,Insulation-Type:as built,Insulation-Thickness:unknown)*	65	-12	4	4.2	36	1.8
Main:(Type:Other flat below,Construction:,Insulation-Type:,Insulation-Thickness:unknown)*	223	-24	1	1.2	24	0.9
Main:(Type:same dwelling below,Construction:,Insulation-Type:,Insulation-Thickness:unknown)*	12	-1	1.5	2.7	7	1.8
Main:(Type:semi-exposed upper floor to unheated space,Construction:solid,Insulation-Type:as built,Insulation-Thickness:unknown)*	13	-21	-13	-9.5	5	5.2
Main:(Type:Ground floor,Construction:solid,Insulation-Type:as built,Insulation-Thickness:unknown)	365	-28	0	-0.1	23	0.8
Main:(Type:Ground floor,Construction:solid,Insulation-Type:unknown,Insulation-Thickness:unknown)	7	-10	4	3.7	18	8.4
Main:(Type:Ground floor,Construction:suspended (not timber)	7	-13	-5	-3.4	7	8.3
Main:(Type:Ground floor,Construction:suspended timber,Insulation-Type:retro-fitted,Insulation-Thickness:100mm)	3	-5	2	1.7	8	16.2

Floor Construction		EPC Difference (UK – Jersey)				
	Count	Min	Median	Mean	Max	CI95
Main:(Type:Ground floor,Construction:suspended timber,Insulation-Type:retro-fitted,Insulation-Thickness:150mm)	2	9	13	13.0	17	50.8
Main:(Type:Ground floor,Construction:suspended timber,Insulation-Type:retro-fitted,Insulation-Thickness:50mm)	2	-8	-3	-3.0	2	63.5
Main:(Type:Ground floor,Construction:suspended timber,Insulation-Type:unknown,Insulation-Thickness:unknown)	3	5	11	11.3	18	16.2
Main:(Type:Ground floor,Construction:unknown,Insulation-Type:unknown,Insulation-Thickness:unknown)	3	0	6	4.0	6	8.6
Main:(Type:exposed floor,Construction:suspended (not timber)	2	3	4	4.0	5	12.7
Main:(Type:semi-exposed upper floor to partially heated space,Construction:,Insulation-Type:,Insulation-Thickness:unknown)	21	-8	3	2.8	16	3.1
Main:(Type:semi-exposed upper floor to unheated space,Construction:solid ,Insulation-Type:unknown,Insulation-Thickness:unknown)	3	-16	-11	-9.0	0	20.3
Main:(Type:semi-exposed upper floor to unheated space,Construction:suspended timber,Insulation-Type:as built,Insulation-Thickness:unknown)	15	-23	4	1.7	10	4.3
Main:(Type:semi-exposed upper floor to unheated space,Construction:suspended timber,Insulation-Type:retro-fitted,Insulation-Thickness:150mm)	2	-2	1.5	1.5	5	44.5
Main:(Type:semi-exposed upper floor to unheated space,Construction:unknown,Insulation-Type:as built,Insulation-Thickness:unknown)	10	-22	0	-3.9	9	8.2

Floor Construction		EPC Difference (UK – Jersey)				
	Count	Min	Median	Mean	Max	CI95
Main:(Type:Ground floor,Construction:solid,Insulation-Type:retro-fitted,Insulation-Thickness:100mm)	1	-7	-7	-7	-7	NA
Main:(Type:Ground floor,Construction:solid,Insulation-Type:retro-fitted,Insulation-Thickness:150mm)	1	-6	-6	-6	-6	NA
Main:(Type:Ground floor,Construction:solid,Insulation-Type:retro-fitted,Insulation-Thickness:50mm)	1	5	5	5	5	NA
Main:(Type:Ground floor,Construction:solid,Insulation-Type:retro-fitted,Insulation-Thickness:unknown)	1	2	2	2	2	NA
Main:(Type:exposed floor,Construction:unknown,Insulation-Type:as built,Insulation-Thickness:unknown)	1	4	4	4	4	NA
Main:(Type:semi-exposed upper floor to unheated space,Construction:suspended (not timber)	1	-20	-20	-20	-20	NA
Main:(Type:semi-exposed upper floor to unheated space,Construction:suspended timber,Insulation-Type:retro-fitted,Insulation-Thickness:unknown)	1	8	8	8	8	NA

Table 8: Summary of difference between UK and Jersey EPC rating by wall construction type. Those marked with * are statistically significant

Wall Construction		EPC Difference (UK – Jersey)				
	Count	Min	Median	Mean	Max	CI95
Main:(Construction:cavity,Insulation-Type:as built,Insulation-Thickness:)*	27	-10	4	4.1	15	2.1
Main:(Construction:cavity,Insulation-Type:internal,Insulation-Thickness:unknown)*	13	-6	5	2.9	6	2.3
Main:(Construction:granite or whinstone,Insulation-Type:as built,Insulation-Thickness:unknown)*	100	-28	4	2.7	21	1.4
Main:(Construction:solid brick,Insulation-Type:as built,Insulation-Thickness:unknown)*	139	-24	4	3.5	36	1.4
Main:(Construction:solid brick,Insulation-Type:internal,Insulation-Thickness:unknown)*	6	0	8.5	8.5	21	7.4
Main:(Construction:solid brick,Insulation-Type:unknown,Insulation-Thickness:unknown)*	7	6	11	10.6	14	2.3
Main:(Construction:timber frame,Insulation-Type:as built,Insulation-Thickness:unknown)*	40	-20	-4	-5.5	10	2.3
Main:(Construction:cavity,Insulation-Type:as built,Insulation-Thickness:unknown)	363	-24	0	-0.4	23	0.8
Main:(Construction:cavity,Insulation-Type:external,Insulation-Thickness:)	4	-8	-3	-1.5	8	11.4
Main:(Construction:cavity,Insulation-Type:external,Insulation-Thickness:100mm)	7	-5	4	3.1	9	4.2
Main:(Construction:cavity,Insulation-Type:external,Insulation-Thickness:50mm)	6	-11	4.5	3.8	16	9.2
Main:(Construction:cavity,Insulation-Type:external,Insulation-Thickness:unknown)	6	-13	4.5	4.8	24	12.6

Wall Construction		EPC Difference (UK – Jersey)				
	Count	Min	Median	Mean	Max	CI95
Main:(Construction:cavity,Insulation-Type:filled cavity + internal,Insulation-Thickness:50mm)	2	1	2	2.0	3	12.7
Main:(Construction:cavity,Insulation-Type:filled cavity + internal,Insulation-Thickness:unknown)	20	-12	3	1.4	7	2.0
Main:(Construction:cavity,Insulation-Type:filled cavity,Insulation-Thickness:unknown)	30	-11	0.5	0.9	14	2.1
Main:(Construction:cavity,Insulation-Type:unknown,Insulation-Thickness:unknown)	16	-16	2.5	0.9	10	4.1
Main:(Construction:granite or whinstone,Insulation-Type:internal,Insulation-Thickness:)	4	-2	10	8.0	14	11.0
Main:(Construction:granite or whinstone,Insulation-Type:internal,Insulation-Thickness:50mm)	7	-6	2	2.0	8	4.0
Main:(Construction:granite or whinstone,Insulation-Type:internal,Insulation-Thickness:unknown)	10	-5	1	2.8	14	4.6
Main:(Construction:sandstone or limestone,Insulation-Type:as built,Insulation-Thickness:unknown)	10	-20	0	-2.5	9	7.6
Main:(Construction:solid brick,Insulation-Type:external,Insulation-Thickness:100mm)	4	-7	1	0.8	8	12.5
Main:(Construction:solid brick,Insulation-Type:external,Insulation-Thickness:50mm)	5	-7	4	3.6	14	9.3
Main:(Construction:solid brick,Insulation-Type:external,Insulation-Thickness:unknown)	3	-7	1	0.3	7	17.4
Main:(Construction:solid brick,Insulation-Type:internal,Insulation-Thickness:50mm)	3	1	4	3.7	6	6.3

Wall Construction		EPC Difference (UK – Jersey)				
	Count	Min	Median	Mean	Max	CI95
Main:(Construction:system built,Insulation-Type:as built,Insulation-Thickness:unknown)	30	-10	1	-0.1	9	1.8
Main:(Construction:system built,Insulation-Type:unknown,Insulation-Thickness:unknown)	2	-5	-0.5	-0.5	4	57.2
Main:(Construction:timber frame,Insulation-Type:as built,Insulation-Thickness:)	6	-2	5	5.2	11	5.8
Main:(Construction:timber frame,Insulation-Type:internal,Insulation-Thickness:)	4	-15	-4	-5.5	1	11.1
Main:(Construction:timber frame,Insulation-Type:internal,Insulation-Thickness:50mm)	2	3	4	4.0	5	12.7
Main:(Construction:cavity,Insulation-Type:filled cavity + external,Insulation-Thickness:50mm)	1	-8	-8	-8	-8	NA
Main:(Construction:cavity,Insulation-Type:filled cavity + external,Insulation-Thickness:unknown)	1	4	4	4	4	NA
Main:(Construction:cavity,Insulation-Type:filled cavity,Insulation-Thickness:)	1	1	1	1	1	NA
Main:(Construction:cavity,Insulation-Type:internal,Insulation-Thickness:50mm)	1	3	3	3	3	NA
Main:(Construction:granite or whinstone,Insulation-Type:as built,Insulation-Thickness:)	1	4	4	4	4	NA
Main:(Construction:granite or whinstone,Insulation-Type:internal,Insulation-Thickness:100mm)	1	-7	-7	-7	-7	NA
Main:(Construction:solid brick,Insulation-Type:external,Insulation-Thickness:)	1	-7	-7	-7	-7	NA
Main:(Construction:solid brick,Insulation-Type:unknown,Insulation-Thickness:)	1	5	5	5	5	NA

Wall Construction		EPC Difference (UK – Jersey)				
	Count	Min	Median	Mean	Max	CI95
Main:(Construction:system built,Insulation-Type:external,Insulation-Thickness:unknown)	1	-1	-1	-1	-1	NA
Main:(Construction:timber frame,Insulation-Type:internal,Insulation-Thickness:150mm)	1	-8	-8	-8	-8	NA
Main:(Construction:timber frame,Insulation-Type:internal,Insulation-Thickness:unknown)	1	4	4	4	4	NA

Table 9: Summary of difference between UK and Jersey EPC rating by glazing type. Those marked with * are statistically significant

		EPC Difference (UK – Jersey)				
Glazing Type	**Count**	**Min**	**Median**	**Mean**	**Max**	**CI95**
double glazing, unknown install date*	397	-28	3	1.5	29	0.8
not defined*	35	-12	3	4.0	27	2.6
secondary glazing*	14	-3	7.5	6.2	11	2.6
double glazing installed before 2002	131	-21	2	0.5	18	1.2
double glazing installed during or after 2002	301	-23	0	0.0	36	0.8
double, known data	4	2	2.5	3.8	8	4.6
triple glazing	5	-18	-7	-6.0	4	10.3

Contact

Energy Saving Trust is an independent organisation working to address the climate emergency.

Energy Saving Trust

energysavingtrust.org.uk

@EnergySvgTrust

223-231 Pentonville Road
London N1 9NG