

VALUER PROJECT

Valuations and Lending Underwriting Energy Reduction

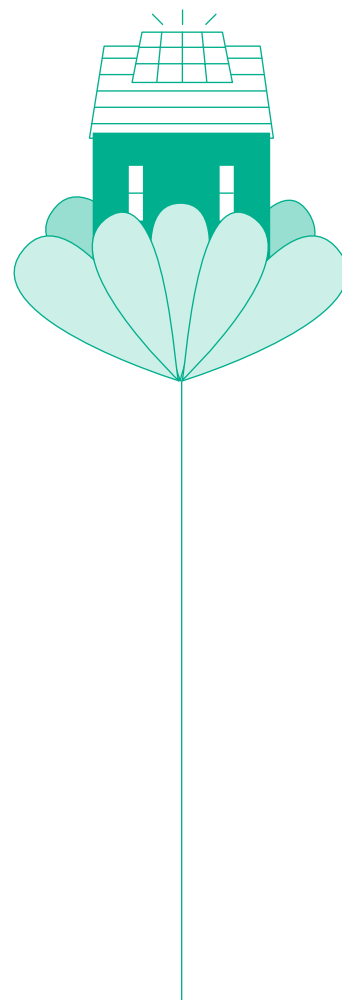
Final Report

Thursday, 18 August 2022



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Executive Summary

The VALUER (Valuations and Lending Underwriting Energy Reduction) project commenced in March 2020 and concluded in March 2022. The project aimed to evidence value differences between high and low energy homes, both new build and existing, and featured the UK's first mortgage product to recognise low energy bills via Monmouthshire Building Society, and enhanced green valuation tools from Rightmove.

The 24 month project, supported by the Department for Business, Energy and Industrial Strategy, was a collection of industry partners led by Monmouthshire Building Society, The Royal Institution of Chartered Surveyors (RICS), the UK's number one property portal Rightmove and zero carbon homebuilder and sustainable energy service provider Sero.

The project saw the first mortgages and additional borrowing offered in the UK that recognised home energy efficiency in their affordability calculations. Monmouthshire Building Society were the first mortgage lender in the UK to adopt the findings from a previous piece of research known as the "LENDERS" project, and adapted their affordability calculation tool to more accurately reflect actual home energy bills.

Within two 'geofenced' areas in south Wales broadly representative of urban and edge-of-town locations, new home purchasers seeking to borrow from Monmouthshire Building Society were offered pilot 'green' mortgage products that included assessments of energy efficiency within the affordability considerations. These new considerations could potentially increase the maximum affordable mortgage by up to £12k for a very low energy home, compared to a poorly performing property. Equally, existing homeowners were offered 'green' additional borrowing products with similar novel considerations to help fund energy efficiency measures.

Alongside novel borrowing, Rightmove developed their Surveyor Comparator Tool (SCT) to include 'green' considerations that draw on Energy Performance Certificates (EPC) and energy efficiency information to enable surveyors to better compare and value any 'green' features in homes, as well as their Automated Valuation Model (AVM) to understand which features impact value and to help process green features.

As part of the core understanding of the project, the Royal Institution of Chartered Surveyors worked closely to incorporate the findings from the data exercise to review and enhance the guidance provided to their professional members, whose role is to advise lenders both as to the property value and potential property risks attached to mortgage lending.

By providing specialist information to homeowners seeking to undertake energy improvements within their current home, Sero aimed to tackle the decarbonisation of the current UK housing stock and assist Welsh Government in their climate emergency pledge. By successfully demonstrating that low energy homes have better future value than high energy homes, zero carbon homebuilder Sero are confident that this will help support the higher cost of building or retrofitting carbon reducing elements into these homes.

The project delivered real pilot deployment of these green home finance products within the two geofenced areas, deploying the relevant financial products across existing and new build homes, and across a significant range of energy performance. Collectively, this comprehensive set of options aimed to identify the desirability of the offers and existence of a viable market, whether the availability of the products drove or incentivised energy efficiency retrofit works and/or equivalent low energy homes sales, and whether the products generate a sustainable return/benefit to the lender.



Prof. Sarah Sayce | 22 Oct 1950 - 22 Nov 2021

The report is dedicated in loving memory of our colleague, Professor Sarah Sayce who sadly passed away during the course of the project. She is greatly missed by many.

Project Overview



The project commenced on the 1st of March 2020 and concluded on the 18th of March 2022. It was a collaboration between lead partner **Monmouthshire Building Society (The Society)** and **Rightmove, RICS and Sero**.



The project aimed to help **identify and evidence any value differential between low and high energy homes**, as well as **delivering two pioneering 'green' lending offerings** focussing on the affordability element of mortgages and the value of living in an energy efficient home.

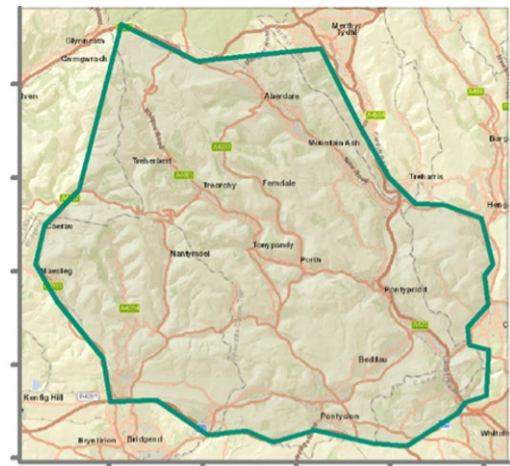


The original project budget was £1,053,283.25 overall equating to **£552,542.25 grant** at an average rate of 52.46%.

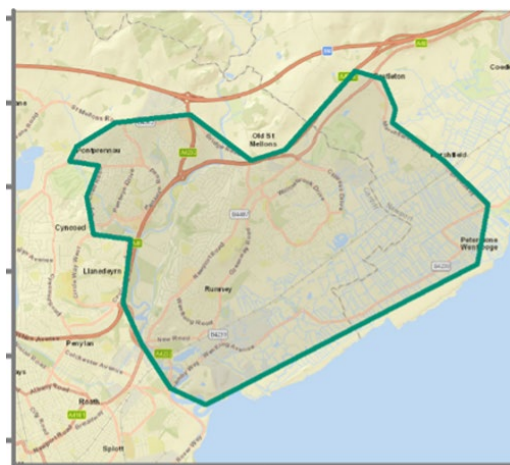
Aims and Objectives

The project aimed to pilot 'green' mortgage products and 'green' additional borrowing products in two pilot areas in South Wales (Aspen Grove in Cardiff & Parc Eirin in Tonyrefail). It focused on new, low energy housing developments but also including the surrounding existing homes to a radius of a few miles or post code areas. Within these 'geofenced' areas which included 7702 postcodes, new home purchasers would be offered pilot mortgage products that included assessments of energy efficiency and other new considerations, and existing homeowners would be offered the potential to borrow funds (dependant on individual circumstance) with similar novel considerations to help fund the undertaking of appropriate energy efficiency measures.

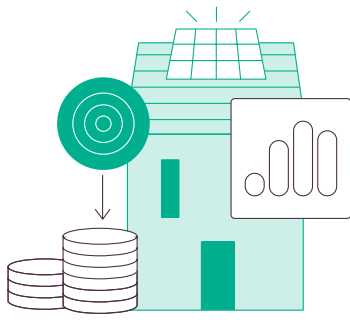
The VALUER project sought to directly progress from the work undertaken by the LENDERS project (funded by Innovate UK), the adoption of which is a stated goal in the BEIS 2017 "Clean Growth Strategy". The LENDERS project demonstrated at significant scale that secured lending maximum borrowing amounts could be adjusted to reflect more accurately estimated energy bills derived from Energy Performance Certificates (EPCs), whilst retaining other limiting factors such as Loan to Value. Subsequent to BEIS's adoption within the "Clean Growth Strategy", LENDERS was adopted for live use by the Development Bank of Wales "Help to Buy" scheme operated throughout Wales, which was monitored and reviewed by the Building Research Establishment (BRE). This affordability adjustment was to be applied to both additional borrowing and full mortgage products as one of the underlying Green product enhancements.



Parc Eirin Geofenced Area



Aspen Grove Geofenced Area

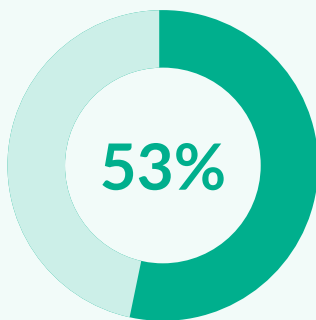


The VALUER project additionally sought to develop the capacity to recognise a difference in market value of low energy consuming homes compared to high energy consuming homes, and their ability to support more borrowing due to lower fuel costs. The VALUER project therefore sought to not just enable homeowners' access to higher maximum additional borrowing and mortgage amounts for lower energy homes, but to be able to recognise in the marketplace the "value difference" of these homes either once upgraded or as built and use this to further support financial benefits. This novel addition would be made possible through inclusion of Royal Institution of Chartered Surveyors (RICS) who together the standards for surveyors and Rightmove,

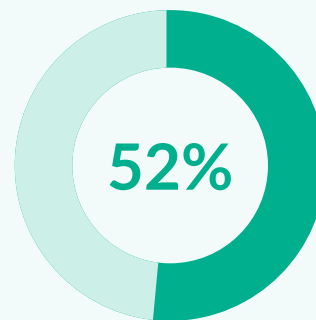
who provide Automated Valuation Models (AVMs), and provide the de-facto standard Surveyor Comparator Tool (SCT) used by all the top 25 survey firms to underpin their valuations.

The ability to identify low energy consuming homes' "value difference" could affect the Loan to Value (LTV) for the individual property, therefore also influencing both additional borrowing and mortgage offer amounts. However, for the wider UK this "value difference" would be fundamental to influencing homebuyers, sellers and 'retrofitters' – put simply, if low energy homes could be evidenced to have a higher value, this would be highly likely to significantly drive behaviours towards decarbonisation across owner/occupier and private landlord residential sectors (who have mandated minimum energy efficiency standards, noncompliance of which can result in financial penalties).

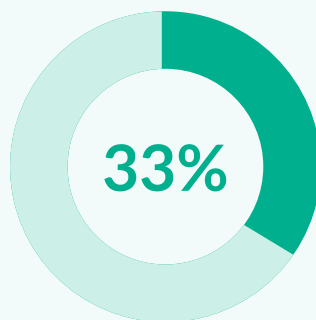
Landlords might be especially interested to learn that 53% of renters surveyed by LettingaProperty.com were prepared to pay more for a greener property. Of those who were happy to stump up for sustainability, 52% would willingly pay 10% more rent, while 33% would accept a 5% rent increase. 8% of renters even said they would be willing to weather a rent increase of 20% if it meant they could rent a greener home. This uplift in rent could accelerate the payback for the energy efficiency measures. Equally, those residents living in more efficient homes are less likely to default on rental/mortgage repayments as their disposable income is not consumed by the rising cost of energy.



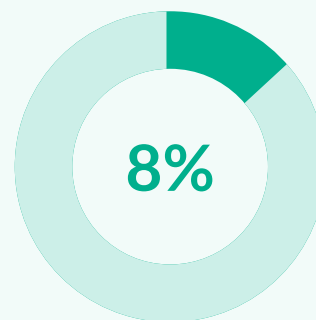
53% of renters surveyed by LettingaProperty.com were prepared to pay more for a greener property



52% would willingly pay 10% more rent



33% would accept a 5% rent increase



8% of renters would accept an increase of 20% if it meant they could rent a greener home

The VALUER project therefore sought to create two new financial products via Monmouthshire Building Society which broadly comprised:



A 'green' mortgage product that used the LENDERS methodology to estimate true energy costs and additionally;

- Develop a prototype mechanism to identify any low energy "value difference" in the property's survey and valuation, and reflect this value in the mortgage offer LTV,
- Investigate the potential to extend this to cover "Active Home Energy Management" services to further reduce bills and therefore further adjust the affordability calculation.
- Includes a new 'green' home process to ensure additional 'green' survey considerations and checks are undertaken as part of the product offer.



A 'green' further advance product pilot that uses the LENDERS methodology to estimate true energy costs, potentially enabling increased borrowing and additionally;

- Develop a prototype mechanism to identify any low energy "value difference" in the property's survey and valuation, and reflect this value in the offer LTV,
- Investigate the potential to extend this to cover "Active Home Energy Management" services to further reduce bills and therefore further adjust the affordability calculation.
- Include a Retrofit Process aligning with PAS2035:2019 and TrustMark to ensure the necessary pre and post retrofit checks are undertaken as part of the product offer.

The significant added value of the VALUER project would be the development and piloting of new mechanisms to identify 'green' value (or 'brown' discount/'price chipping' to account for the cost of future retrofit works required) with Rightmove, the market leading service provider, comprising:



A 'green' Surveyor Comparator Tool (SCT) enhanced to draw from EPC and other potential sources of energy efficiency information. This Rightmove tool would feed surveyors with relevant comparison homes with similar 'green' features to aid their decision on values.



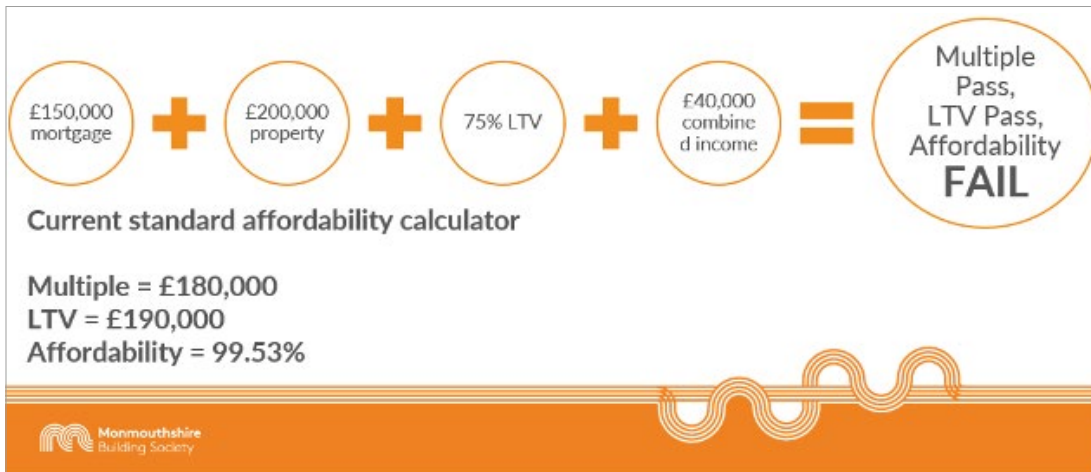
A 'green' Automated Valuation Model (AVM) enhanced to utilise additional information drawn from listing to power back-book valuations and similar functions with an enhanced awareness of, and capacity to process, 'green' property features.

Whilst not directly financial products, these SCT and AVM tools would impact the LTV in the financial products developed by The Society. Given the market-leading position of Rightmove (and RICS's position as guardian of standards), these tools also had potential to very rapidly and very significantly change the wider marketplace as well. For example, should AVMs start adopting green/brown features into the modelling, reflecting Rightmove findings on where a 'green premium' exists based on EPCs, this could see an almost immediate change to how valuations are calculated, and in some cases result in higher performing EPC properties having higher values produced by the AVM. The methodology gets more complicated for 'brown' discounts or price chipping, as today the volatile market place and current regulations does not give leverage or indeed produce data which can influence automated valuations.

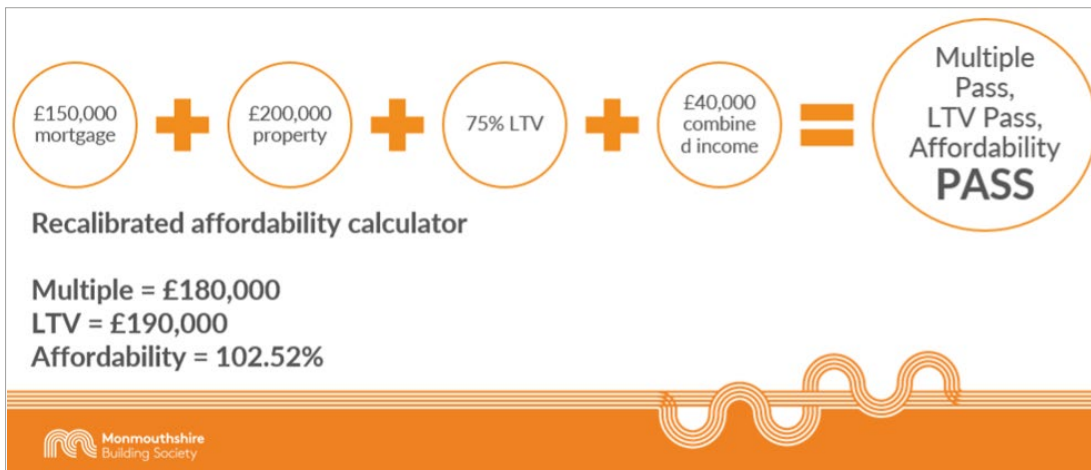
Outcomes

The Society successfully adapted their affordability calculator to incorporate more accurate running cost data for energy efficient homes. Due to the reduced expenditure associated with running a highly efficient home, borrowers could potentially increase their maximum borrowing by £12,000 when compared to purchasing a poorly operating home. A working example of the updated affordability calculation can be seen below;

Standard Calculation Method:



Recalibrated Calculation Method:

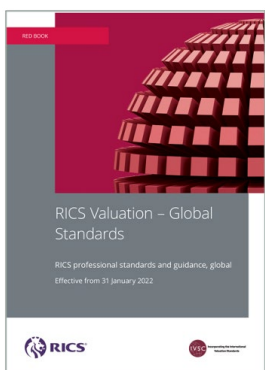
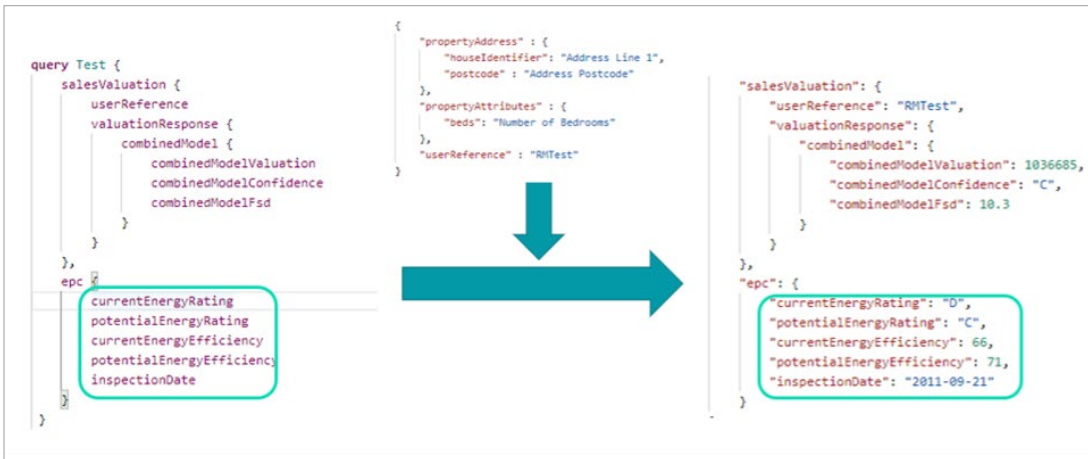


The project also saw partners Rightmove successfully enhance both the Surveyor Comparator Tool (SCT) and the Automated Valuation Model (AVM) so that;

EPC data has been added to the SCT and is now clearly displayed among other key pieces of information about the home:

| | KEY ATTRIBUTES | SECONDARY ATTRIBUTES | LEASES / MULTISTOREY | FINANCIALS | | | |
|---------------------|----------------|----------------------|----------------------|------------------|---------|------------------|--------|
| Property type | House | Bathrooms | 2 | Number of floors | 2 | Council tax band | Band F |
| Property style | Detached | Living Rooms | 2 | Floor level | Unknown | | |
| Bedrooms | 4 | Cloakrooms | 1 | Lift | No | | |
| Tenure | Freehold | Conservatory | 0 | Utl (years) | Unknown | | |
| Year built | 1998 | Heating | Oil | Above shops | No | | |
| Floor area | 162 sqm | Ex Local Authority | No | | | | |
| Parking | Double Garage | Equestrian | No | | | | |
| Energy Rating | D | Condition | Good | | | | |
| EPC Inspection Date | 13 May, 2014 | Construction type | | | | | |
| | | | Standard | | | | |

Algorithms within the AVM now updated to include EPC data within the estimated calculation of property values:



In support of this, RICS updated the valuation guidance within the RICS Valuation – Global Standards (also known as the Red Book) to better reflect energy efficiency as a value differential. This included a significant increase in references towards Environmental, Social and Governance (ESG), reflecting several of the recent changes made to the International Valuation Standards. This latest edition of guidance for practitioners came into effect as of the 31st of January.

Key Achievements

The project engaged with multiple stakeholders across a broad range of sectors, delivering the message that increased energy efficiency can be directly linked to increased property demand and value.

These sectors included;



General public



Lenders



Maintenance providers



Estate agents



Conveyancers



Home builders



Surveyors



Property portfolio managers



General trades

The Society Green Mortgage was recognised as a non-high street lender offering green mortgages on the Money Saving Expert website as well as in multiple publications such as The Intermediary, Mortgage Solutions and This Is Money.

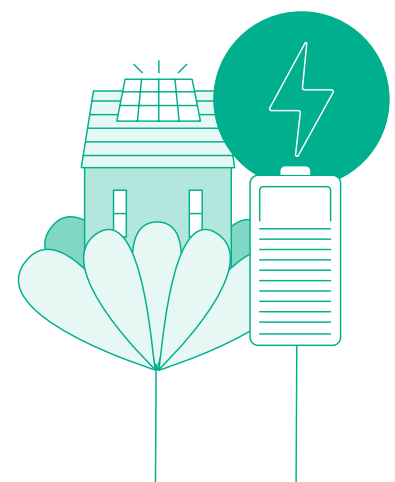
Sero have managed to engage with multiple lenders (namely Principality Building Society, Hodge Bank and Hinkley & Rugby Building Society) who are now engaged in digital decarbonisation tool finance pilots, this is as a direct result of The Society's trailblazing pilot through this project.

The project successfully demonstrated a scalable solution that enables lenders to assess their mortgage books (existing customers with established borrowing) in order to support homeowners on their decarbonisation journey, also presenting opportunities to the lender for further green borrowing products.

Barriers and Challenges Overcome

At the beginning of the project, one of the biggest challenges we encountered was a lack of engagement from those at the frontline of residential sales and lettings. Estate Agents and surveyors from within the two geofenced areas were invited to multiple engagements with the project team. One such event was a webinar in March 2021 (Covid restrictions at the time meant we couldn't engage face to face) where 29 agents were invited to discuss the project and interject their thoughts on how residential energy efficiency impacts their day to day activities. Unfortunately, attendance was poor however those who attended found it beneficial. Likewise, surveyors were invited to a similar webinar the following week and though attendance was slightly higher, it was still disappointing given the importance of the implied message to their work.

Once Covid restrictions were lifted in Wales, we reapproached the estate agents local to The Society's flagship branch. Over 60 invitations were sent to local property agents and conveyancers, inviting them to drop into The Society to discuss how the energy efficiency of homes impacts their sector. However of those invited, one attendee visited the branch. He is a local conveyancer and genuinely sees the benefit of understanding digital property assets such as Intelligent Energy Systems, retrofit plans (such as Sero's Pathway to Zero) and digital property passports.



It would appear that much still needs to be done to encourage key members of the housing industry (agents, surveyors and conveyancers) to actively engage with these issues rather than awaiting their reactive response once legislative measures catch up. After all, they are the consumer facing entities that the general public rely on for advice and guidance.

Following the RICS hosted roundtable event at Parliament Square, industry professionals summarised current barriers and how we as a sector could address them;

1. UK Government should announce a timeframe for when a response will be made to the consultation on lenders and EPC performance. This will help the industry prepare for implementation and strengthen the communication with consumers about the importance of investing in energy efficacy.
2. Government should investigate whether basing energy improvement targets and legislation on the EPC methodology is appropriate given it is not specifically intended to encourage and monitor decarbonisation.
3. The requirement for upfront information at the point of a property sale, which should include a Home Survey, needs to be explored as a method to inform potential buyers on the energy performance and expected improvements required. This can take the form of a building passport/logbook and will help assist consumers in buying a home they know and are prepared to improve.
4. To avoid unnecessarily or potentially damaging green measures being installed in homes, the government should explore the option to require a retrofit assessment and detailed plan for net-zero for an individual home before public funds are spent on specific works. This will ensure appropriate measures are installed and in the correct time frame.
5. Given the current cost-of-living challenges, the government should explore the option to set a price cap for consumers investing in energy efficacy works on a home, potentially introduced at a sliding scale of years to allow for gradual work to be undertaken without significant upfront costs.
6. The government should work with the industry to investigate the benefits of creating a minimum standard and level of training to be able to advise on retrofit measures. This will support a drive towards quality and accountability, with professional bodies such as the RICS ready to assist. Organisations such as TrustMark and their Data Warehouse can further support the administration and promotion of those who can support retrofitting works.
7. The government should invest in a large information and educational awareness campaign to inform consumers of the benefits and need to invest in green improvements to a home – especially if any Minimum Energy Efficiency Standards (MEES) - style regulation is introduced in the owner-occupier sector.
8. With the VALUER Project largely focused on those owner-occupiers with a mortgage, the government should give an increased emphasis on the estimated 50% of the private homeowner sector who are not tied into a mortgage.

Additionally, the collaboration identified the following barriers and how they can be addressed;

9. Lenders will need products that support homeowners (both owner occupier and landlord) to retrofit homes. This in turn needs to be underpinned with a strong supply chain and trusted installers.
10. Mortgage advisors (who are typically the first point of call for a property purchase, not an estate agent), and those who can directly influence a consumer's thinking, should review how they communicate the risks and need to invest in energy efficiency improvements to a home. This will need to happen when MEES-style regulations get introduced into the owner-occupier sector, so purchasers are aware of any immediate and future financial risks e.g. refusing to approve a mortgage on an EPC E home without a commitment by the buyer to invest in energy improvement works.

Key Learnings

The EPC A rated product which was launched by The Society saw minimal interest across England and Wales. Applications or enquiries that were received sought products to support EPC B rated properties (Three applications received with two immediately declined due to not being A rated). It is apparent that most new homes are built to EPC B standard as such they will see less of a benefit using the affordability calculator and further consideration needs to be given as to whether B rated new homes will support meeting the UK carbon reduction goals. This perhaps highlights a separate issue; that most new properties being built to an EPC B standard. The fact that there are currently no legal requirements on a minimum EPC rating for new build homes is entirely counterproductive given that achieving in excess of EPC A is both achievable and scalable as Parc Eirin and Aspen Grove have demonstrated.

Overall, the EPC A rated product and affordability calculator were not required in the current housing market. However, given the current energy and cost

of living crisis unfolding across the UK, this may not be the case in 6 months' time when we approach the first heating period to be affected by the significant increase in energy costs. Those seeking to purchase more energy efficient homes may then notice a clearer difference, not only in the running cost of the purchased home but also the increased affordability afforded to them by such a purchase.

Conversely, this might be of concern for those already struggling to afford to heat their home who fall within the 'able to pay' category by default (as they are not residing in social accommodation). Should they either seek to sell a poorly performing home or move to another, their limited affordability might be narrowed further. Equally, their ability to implement measures within the new home might be impacted.

The Society established that in order to support their current and future members on their journey to net zero, first they must be engaged and well informed on the matter. **Key lessons learnt include:**



Mailshot Selection

For the purposes of this project, the 150 candidates for the mailshot which offered them a free home survey and subsequent Pathway to Zero (Sero's bespoke plan to get a home to Net Zero in a sequence of Steps) were selected on the following;

- Within the geofenced area of both pilot sites
- Income to value ratio
- Loan to value ratio
- No default payments on account
- Homeowner occupiers – not buy to let properties

Of the 150 mailshots that were sent by The Society, only 3 responses were received. Two surveys were undertaken as the third cancelled with short notice due to Covid. In all, there were over 1,000 Monmouthshire Building Society mortgage holders within the Parc Eirin geofenced area, though they were narrowed down to 100 through the above mentioned factors.

It may have been beneficial to contact these members more personally such as by telephone, video chat or face to face and offer some supporting information as to why undertaking an evaluation of their home's energy efficiency would be of benefit to them. Our initial plans to utilise the new build sites for face to face communications not only with new purchasers but also with the surrounding neighbourhood were unfortunately thwarted due to Covid restrictions. By making the communication more personal, it may have encouraged people to engage – even if just to ask further questions regarding the information presented. This would also have potentially reduced the possibility of recipients assuming the mailshot was spam or fraudulent in some way.



Follow Up Campaigns

Through the Society there were multiple engagements within the Green Finance sector, a stronger consumer emphasis could be beneficial for future campaigns. Targeting specific demographics such as;

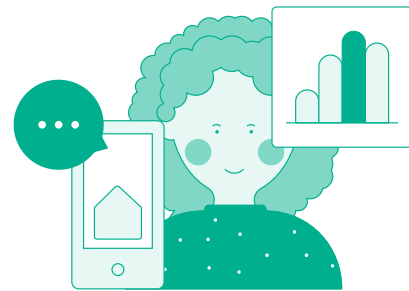
- buy to let landlords who might be impacted by the increase in Minimum Energy Efficiency Standards (MEES) in the coming years
- downsizers looking for a hassle free forever home without the need for retrofit measures nor the worry of increasing energy costs
- homeowners looking to undergo a whole home renovation project that could be guided to include retrofit measures within their plans

Active marketing campaigns raising awareness for each demographic could ensure that multiple customer segments identify themselves as a beneficiary of one or more of these campaigns. Though the goal would ultimately be to facilitate finance for these consumers, the campaigns could benefit from being more informative than a 'sales pitch' equipping the audience with the 'Why' as well as the 'How'.



Face To Face Engagement On New Build Sites

Due to the outbreak of Covid 19, The Society was unable to secure a space within the sales homes at Parc Eirin as was originally intended. Contact was reduced to a bare minimum, even banning leaflets. This was a huge blow to the project as a whole as being able to engage with potential purchasers could have seen a significant interest in the lending products and affordability calculator. Though this was beyond the control of the project, any future developments would clearly see the benefit of having an onsite mortgage expert able to explain the difference between the bespoke offers available on energy efficient homes and the differences that could make for both affordability and rates.



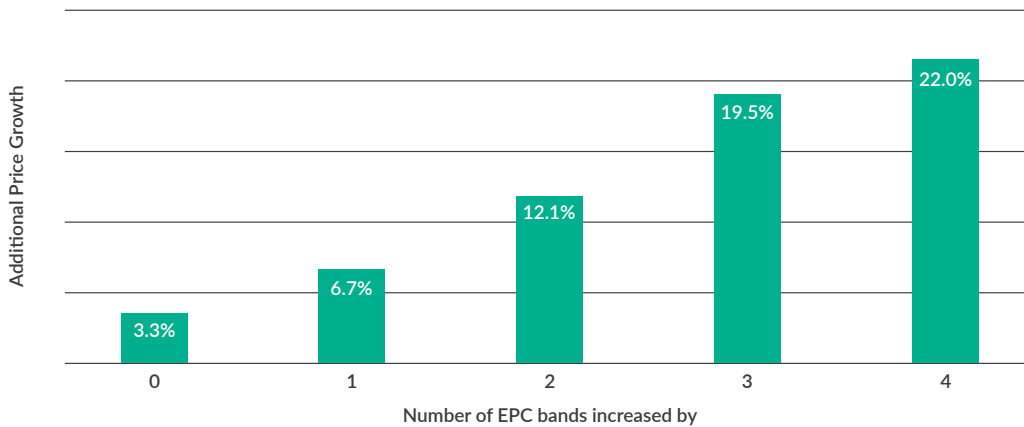
Development Of Future Mortgages

It should be noted that since the inception of the project, the demand for homes as well as property prices have increased substantially. So much so that new build sites have waiting lists of pre-approved consumers reducing the need for specialised products such as the EPC A mortgage product created by The Society in the current climate. For the development of future Green Mortgage incentives, this should be taken into consideration as increased borrowing of up to £12,000 (as would have been the benefit from the recalibrated affordability calculator created by The Society) may have made little impact to the purchaser. This was evident at Parc Eirin, where an excessive demand built throughout the pandemic whilst the development was delayed, resulting in a list of pre-approved consumer who didn't need support with affordability who were ready to buy the houses as soon they became available.

Focus on supporting homeowners who seek finance to improve their current home might be a more suitable target audience given the average energy efficiency of homes in the UK is an EPC D. New mortgage products for those moving into homes in need of improvement would also potentially encourage retrofit improvements to be undertaken alongside other desired works within the property such as updating décor, layout and utilities.

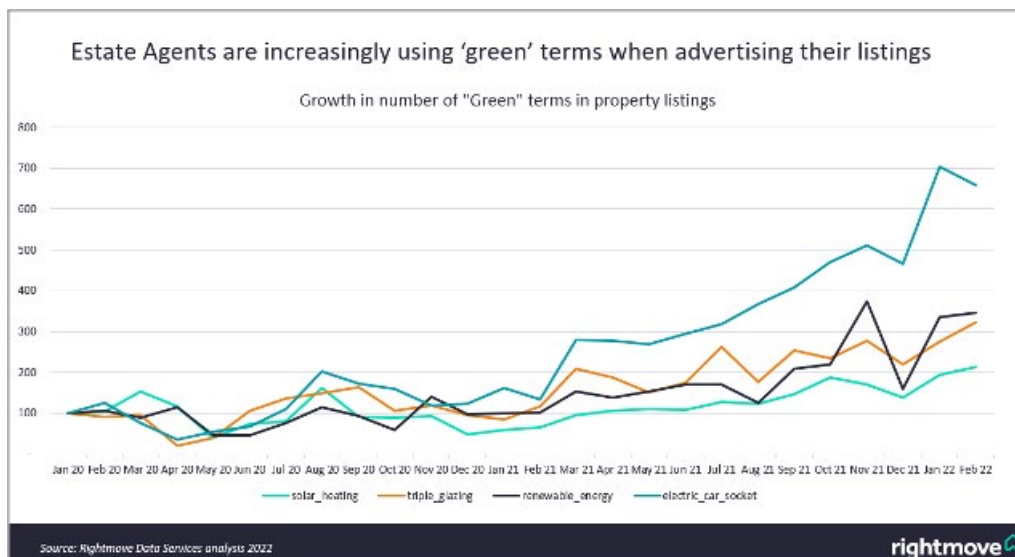
Key Findings

Through a Rightmove study of 200,000 pairs of property transactions where each home was initially sold with a lower EPC then re-emerged onto the market with a higher EPC, the project was able to identify a clear correlation between the improvement in energy efficiency and an increase in resale value in excess of market trends. The study removed overt changes to the 200,000 homes, such as a change in floor area, to help reduce other factors that may have influenced the value of the homes. A table of findings demonstrated that on average increasing a home’s efficiency by:



- 1 EPC band = 6.7% increase above market trends
- 2 EPC bands = 12.1% increase above market trends
- 3 EPC bands = 19.5% increase above market trends
- 4 EPC bands = 22% increase above market trends

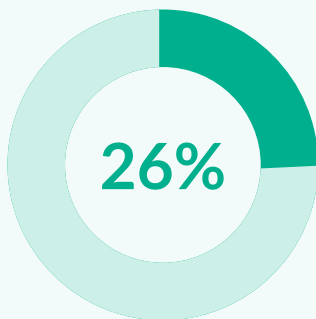
Rightmove were also able to evidence that green features contained within estate agent property listings are increasing with a sharp upturn since March 2021, having more than tripled since January 2020. Through their online key word search they were also able to confirm that consumers are actively seeking terms such as ‘Solar Panels’ and ‘Heat Pump’ with staggering increases in popularity. Solar Panels went from ranking 499th in November 2020 to 160th in November 2021 (and continues to increase). Equally, Heat Pump was ranked >1000th in November rising to 209th 12 months later. One of the most popular key word search criteria is Electric Car Socket, indicating that the electrification of our vehicles is having the biggest impact on our housing choices.



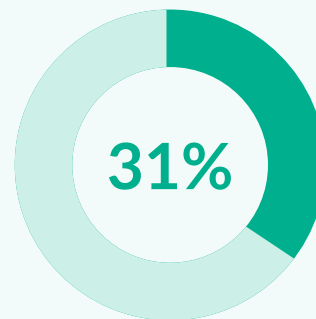
Through Sero’s digital decarbonisation tools (the capture survey and subsequent Pathway to Zero), the project was able to demonstrate that both The Society properties that took part in the pilot were able to retrospectively reach net zero carbon by the 2030’s which bodes well for the rest of The Society’s back book. In this case neither party opted for borrowing from the Society as they had their own funds to use.

Rightmove were again able to provide valuable data to support the notion of a green premium at the Parc Eirin new build development in Tonyrefail. Four of the house types increased in value from March 2020 to March 2022 in excess of market trends. The baseline data indicated that the Parc Eirin geofenced area (5 mile radius) generally increased in value by 21%, with the county borough of Rhondda Cynon Taf increasing on average by 22%, both baseline figures were higher than the Wales wide increase of 18%. However, the homes at Parc Eirin demonstrated the following increases:

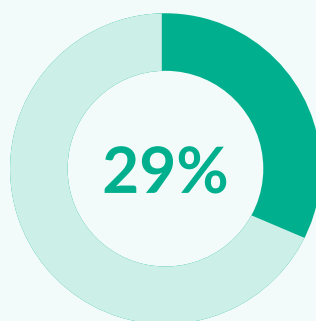
- 3 bed Osborn increased by 26%, 5% above the geofenced area
- 3 bed Galbraith increased by 31%, 10% above the geofenced area
- 3 bed Welwyn increased by 29%, 8% above the geofenced area
- 4 bed Queenie increased by 22%, 1% above the geofenced area



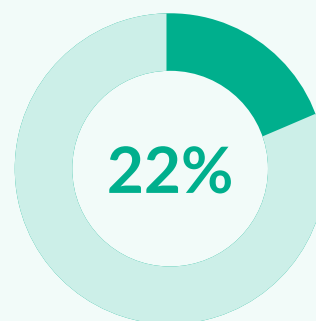
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3 bed Welwyn increased by 29%,
8% above the geofenced area



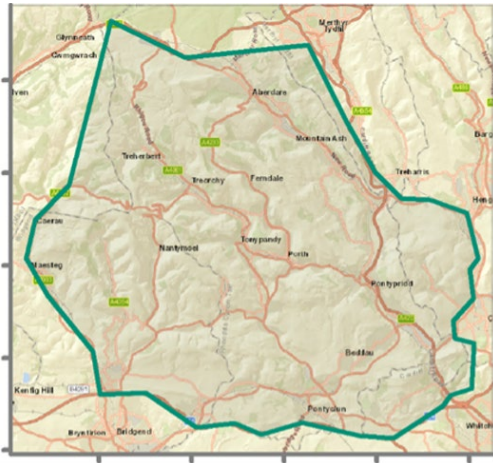
4 bed Queenie increased by 22%,
1% above the geofenced area

Annex

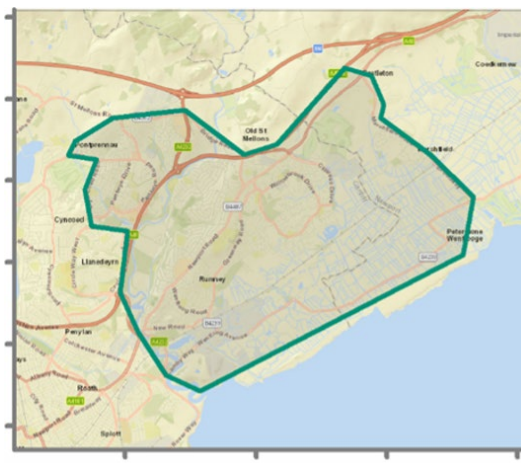


Annex 1 | Geofenced Areas

A geofenced perimeter was drawn around each of the sites; five miles encompassing Parc Eirin in Tonyrefail and two miles encompassing Aspen Grove formerly known as Eastern High. This was completed using Rightmove’s Draw-a-Search tool. The selected geofenced areas took into account the population density of the immediate vicinity to enable significant levels of data to be analysed, whilst also factoring in comparable sites.



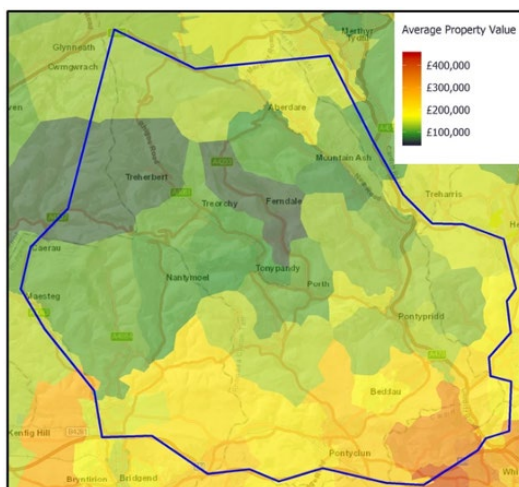
Parc Eirin Geofenced Area



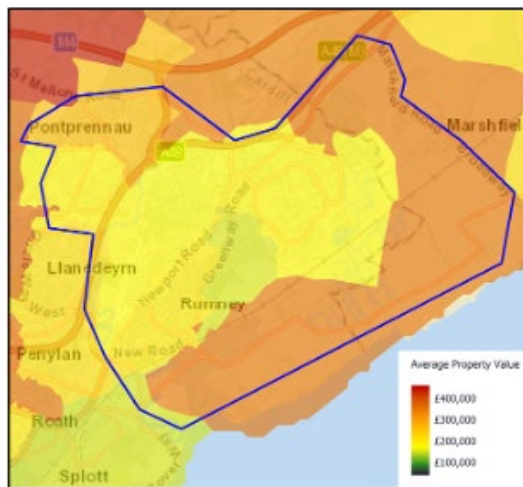
Aspen Grove Geofenced Area

Annex 2 | Value Maps

For each of the geofenced areas, a heat map of average property values was also produced.



Parc Eirin Residential Value Map



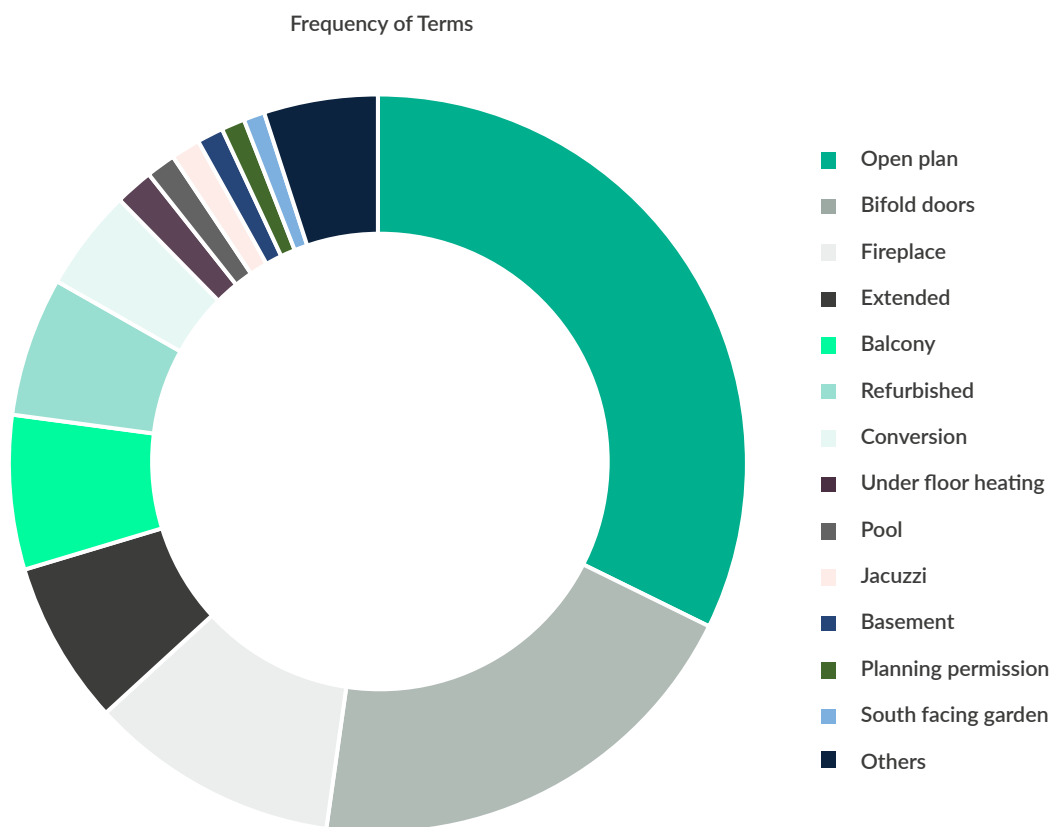
Aspen Grove Residential Value Map

Annex 3 | Frequency of Estate Agent Terms on Rightmove

Rightmove incorporated and built a series of new datasets to assist with the collection of green features. These new datasets enriched the existing Rightmove datasets and helped identify whether a property is considered green or not green. These included:

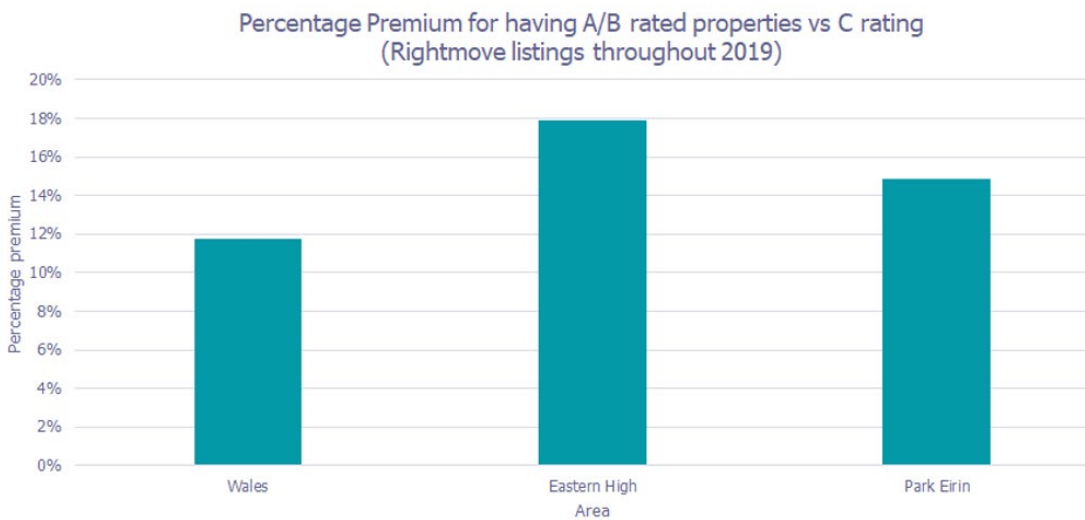
- Government issued historic “flat-file” EPC dataset (Source: MHCLG), including energy efficient ratings, CO2 emission data and additional property attributes
- EPC rating/CO2 rating certificate uploaded to Rightmove listings – extracted using machine learning based image recognition technology
- Floorplans uploaded to Rightmove listings - extracted using machine learning based image recognition technology
- Rightmove listing descriptions – extracting green features and terms from the estate agent’s property description on the Rightmove listings

Investigations into the extraction of EPC/Floorplan features from images was undertaken. A framework was built to extract both “green” and “brown” features from Rightmove listings with the types of features shown below;

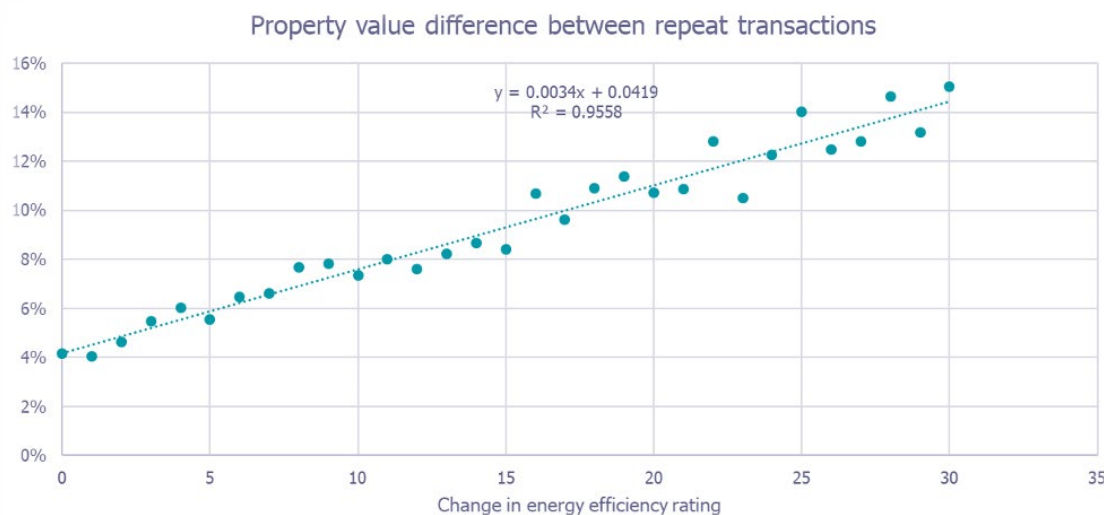


Annex 4 | Rightmove Data Analysis

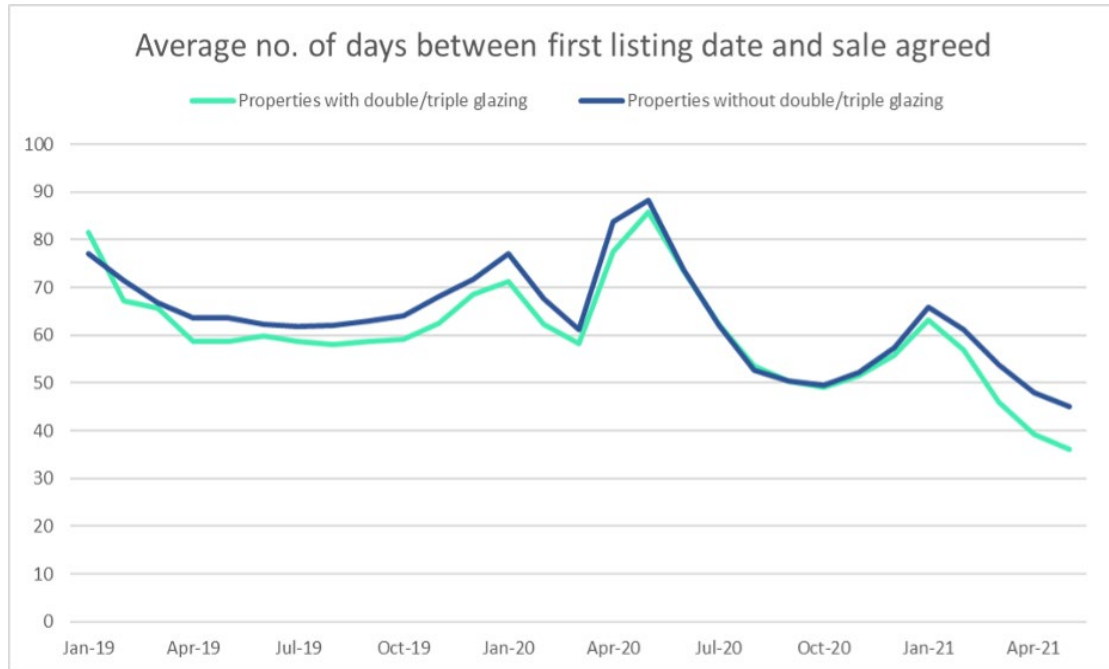
Rightmove undertook AVM pilot enhancements, which involved building green features into the Automated Valuation Model (AVM). An initial investigation was completed into how the Energy Performance Certificate (EPC) rating affects the property valuation as well as the variety of ‘green’ features that can be extracted from Rightmove listings and how they affect the value. Below is an example of the initial analysis into the impact of EPC rating on the Rightmove asking price for the two geofenced areas alongside the Wales average;



This exercise looked at a sample of properties that have sold more than once and have had two different EPC inspections as part of these sales. The difference between the EPC data on each sale was analysed to determine how this affects the change in sold price, benchmarking against the average index for the market. The chart below shows one of the key findings comparing change in energy efficiency and property value. As the increase in energy efficiency gets larger, the additional property value also increases with a strong correlation. For example, if a property increases by 10 energy efficiency points, this will on average add 7.5% more value to the home when it is eventually sold.



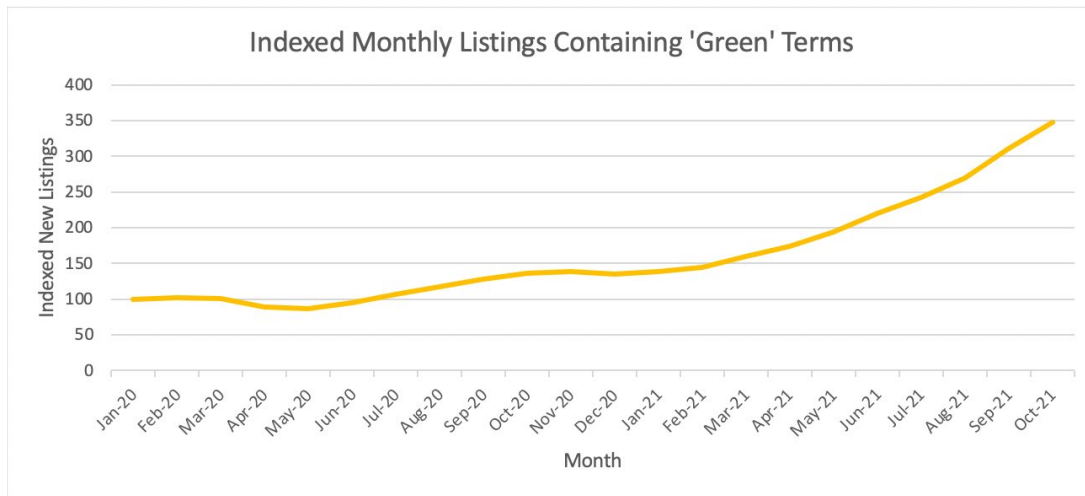
Rightmove looked at the average time on market between the properties being listed and being marked SSTC and the analysis showed that properties with green features sold faster than properties without. See below an example for properties with double/triple glazing mentioned in the Rightmove listing – overall, these properties sell quicker than those without double/triple glazing, and this trend looks to be getting quicker in 2021.



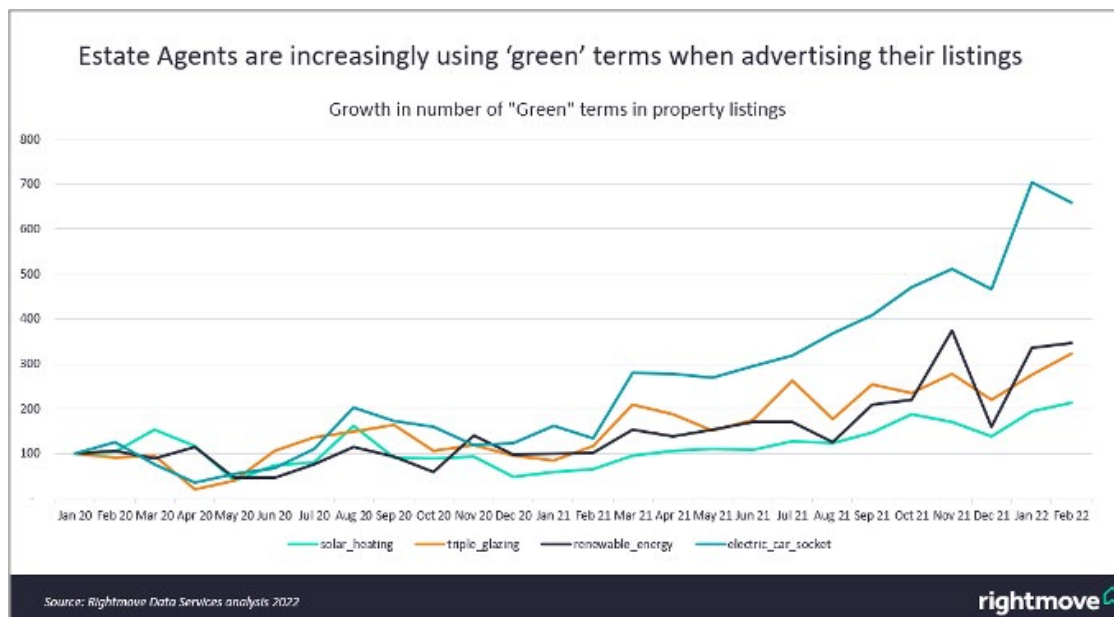
A large part of the work highlighted how estate agent and consumer behaviours are starting to change regarding the awareness of green features and how they are becoming a selling point of the property. Keyword sort is a Rightmove feature where consumers can search for features of the property and the search results will prioritise listings with these features. The rankings of some of the more common green features/terms are increasing and becoming more common in the consumer’s list of property requirements:

| Term | November 2020 Rank | November 2021 Rank |
|------------------|--------------------|--------------------|
| Solar Panels | 499 | 160 |
| Heat Pump | >1000 | 209 |
| Electric Car | >1000 | 464 |
| Energy Efficient | >1000 | 882 |

Equally, the number of listings on Rightmove where estate agents specifically mention green terms has been steadily increasing. Since Jan 2020, the number of listings that mention green terms has more than tripled as seen below;



An example of the specific 'green terms' being utilised by estate agents within their property listings can be seen below. The impact of increased adoption of electric vehicles can clearly be seen as 'electric car socket' is the leading term.

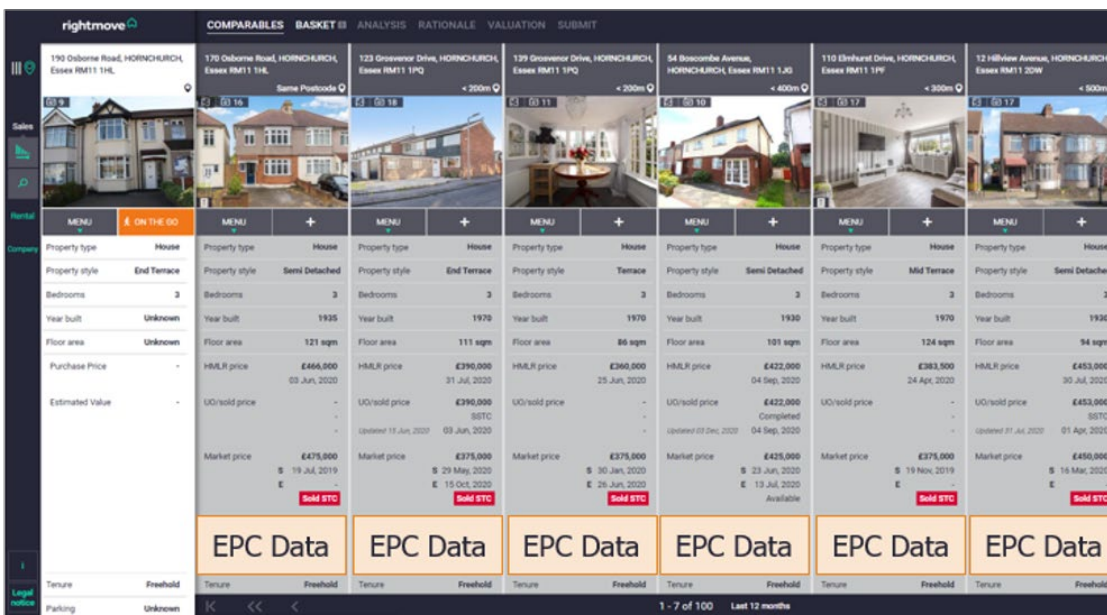
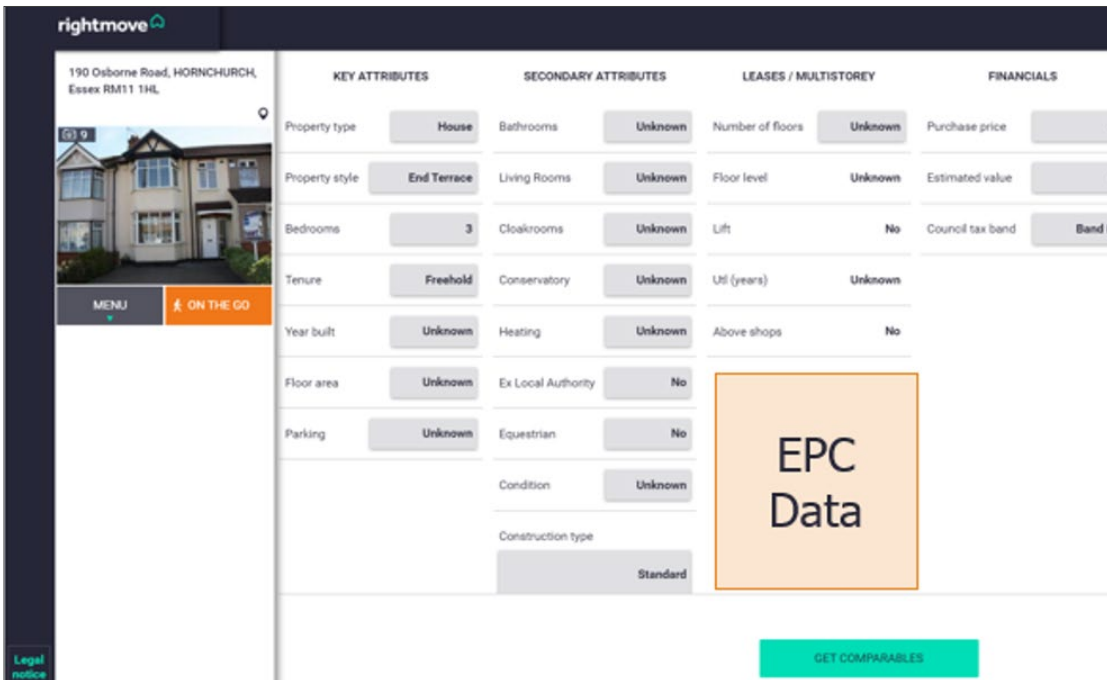


Source: Rightmove Data Services analysis 2022

Annex 5 | Surveyor Comparable Tool Enhancement

Development work to make EPC ratings visible for subject and comparable properties in the SCT was undertaken by Rightmove. Below is an example of the progress made within the tool.

EPC data will appear in the following sections of the SCT

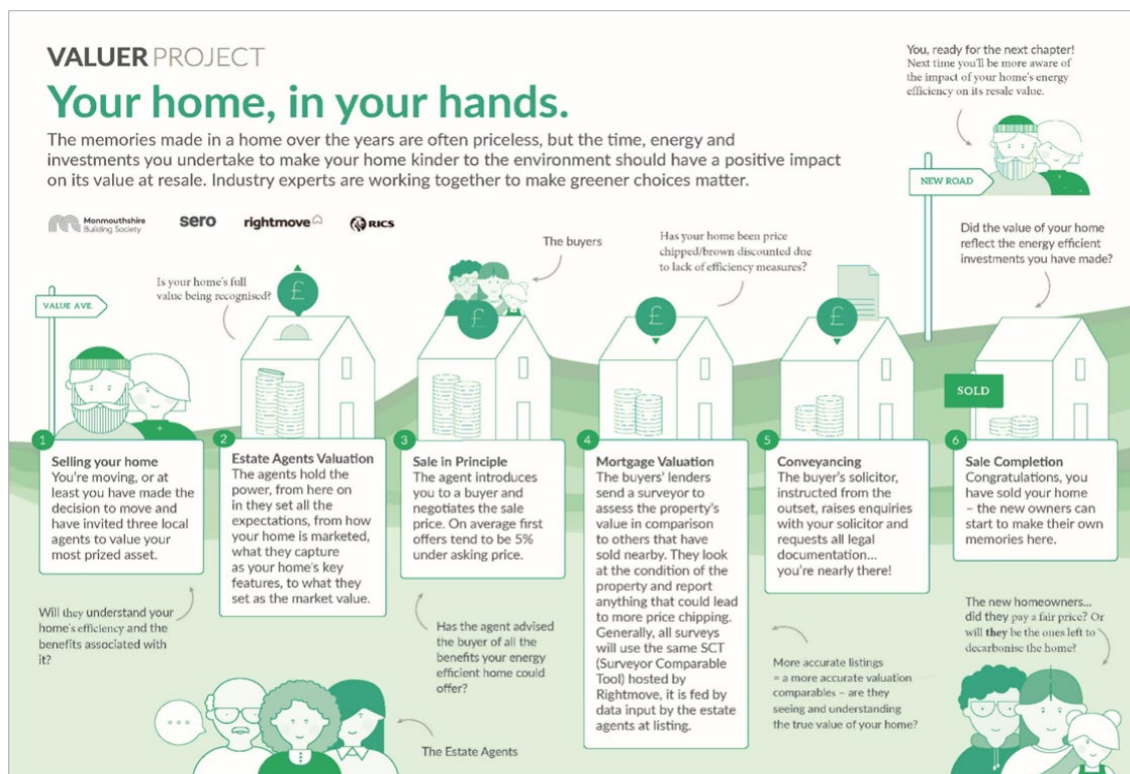


Revised view within SCT

| | KEY ATTRIBUTES | SECONDARY ATTRIBUTES | LEASES / MULTISTOREY | FINANCIALS |
|---------------------|----------------|----------------------|----------------------|------------------|
| Property type | House | Bathrooms | 2 | Council tax band |
| Property style | Detached | Living Rooms | 2 | Band F |
| Bedrooms | 4 | Cloakrooms | 1 | |
| Tenure | Freehold | Conservatory | 0 | |
| Year built | 1998 | Heating | Oil | |
| Floor area | 162 sqm | Ex Local Authority | No | |
| Parking | Double Garage | Equestrian | No | |
| Energy Rating | D | Condition | Good | |
| EPC Inspection Date | 13 May, 2014 | Construction type | Standard | |

Annex 6 | Sales Process and Journey

The collaboration surmised that the expectations on price are set by the vendor and the agent. The Valuer in effect is asked to verify this figure – but by then energy efficiency has either influenced price or it has not. If it has not then it will not be reflected in a mortgage valuation, although it could form part of more general advice following a survey. In this case it is more likely to be through a price chip.



Annex 6 | Dissemination

Below is a range of articles in which the VALUER project was featured;

- <https://www.thisismoney.co.uk/money/mortgageshome/article-9887687/Mortgage-lender-offer-bigger-loans-eco-friendly-homes.html>
- <https://www.mortgagesolutions.co.uk/news/2021/09/07/monmouthshire-bs-trials-green-mortgage-offering-higher-affordability-for-epc-rated-homes/>
- <https://www.rtpi.org.uk/media/9054/cynllunio-autumn-2021-b.pdf>
- <https://www.moneysavingexpert.com/mortgages/green-mortgages/>
- <https://theintermediary.co.uk/2022/02/monmouthshire-building-society-launches-energy-efficient-mortgage-range/>

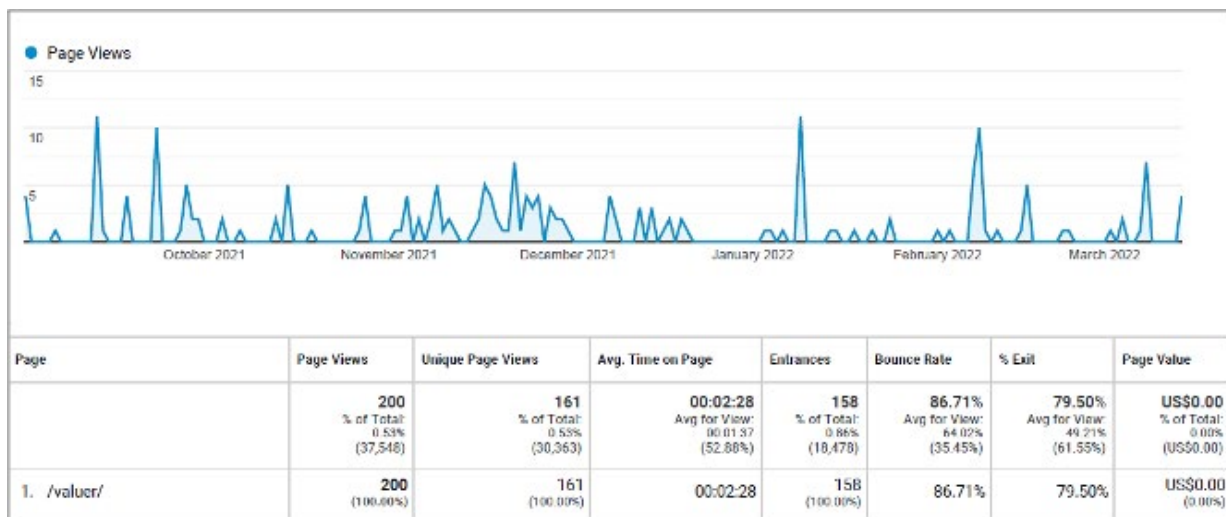
Homes UK 2021

The VALUER project exhibited at the HOMES UK event on the 23rd and 24th of November 2021 at the ExCel in London. The event was attended by over 2,000 industry professionals including those from the surveying world, house builders, private and social landlords. The event had a specific emphasis on tackling the climate emergency given that it closely followed COP 26 which was held in Glasgow over two weeks at the beginning of November 2021. As part of the two day event, the collaboration delivered a 45 minute talk on the Knowledge Stage discussing the findings of the project.



Valuer Web Page

Throughout the project, the VALUER web page was kept up to date with the latest project outcomes. It will continue to serve as a valuable resource beyond the closure of the project. From the 1st of September 2021 to the 14th of March 2022, the page was visited by individuals in 43 different cities from around the world, equating to 200 page views with an average of almost two and a half minutes spent on the page per visit.



Monmouthshire Building Society Energy Efficient Homes Event

On Tuesday 15th of February 2022, an event was hosted by Monmouthshire Building Society at their flagship branch in Newport to engage their members, the general public, local estate agents and surveyors. 60 invitations were sent to local property agents and conveyancers, inviting them to drop into Monmouthshire Building Society to discuss how the energy efficiency of homes impacts their sector.



RICS Roundtable Event

On Monday the 28th of February 2022, over 20 industry professionals gathered at the Royal Institution of Chartered Surveyors' head office in Parliament Square, London to discuss the importance of energy efficiency when valuing homes. The session's topics included;

- Valuation
- EPCs
- Finance
- Incentives
- Skills & Training
- Information & Advice



Futurebuild 2022

On Tuesday the 1st of March 2022 the VALUER team attended Futurebuild 2022 hosted at the ExCel in London. Thanks to BEIS, the collaboration was invited to present on the Innovation Stage alongside the other Green Home Finance Innovation Fund projects.

