

Green Home Finance Accelerator (GHFA) Pilot GHFA-PP-11

Deliverable 8.3: End of Pilot Phase Report

March 2025

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1.0 Executive Summary

Introduction

The project has developed a product aiming to empower local authorities (LAs) and lenders with accurate building energy, carbon and financial analysis, and comprehensive data insights to maximise access to finance for residents. The product combines a robust Machine Learning analysis engine, coupled with an intuitive frontend interface to create an innovative data platform addressing the lack of genuinely accessible granular data in domestic energy efficiency.

The product addresses key barriers in two nascent markets (i.e., the green finance market and the net zero neighbourhood¹ market), providing a long-term, systemic solution integrating the financing and community net zero market. Specifically, the project aims to address the low uptake of green finance products, the challenges LAs face in gathering and utilising data for decarbonising their communities, and the inherent difficulties of scaling retrofit activities. The analytical and decision-making product being developed within this project seeks to address these challenges by developing two elements of the product²: one tool for mortgage providers and one for LAs (referred to herein as the Lender Tool and LA Tool). It should be noted that whilst there are two tools, they both use the same core software.

Key dates and financials

The pilot project commenced in January 2024 and has followed the original schedule, with key milestones (MS) being met on time as shown in Table 1. The project's last major delivery MS was met in November 2024, which saw integration of changes resulting from feedback from the Alpha User Test into the Beta tool version.

¹ A Net Zero Neighbourhood (NZN) is a set of approximately 1,000 properties which are grouped together as part of a locally-driven decarbonisation project, with the aim of enabling domestic greenhouse gas (GHG) emissions to be reduced while cutting the cost of the work required through bulk purchase, and potentially attracting in private finance in return for a share of energy savings. While local authorities are expected to have a key role in identifying and pushing forward NZN projects, communities are likely to own the projects to ensure buy-in.

² Where reference is made to the "product" in this report, this referring to both the LA Tool and the Lender Tool.

Table 1: Key project milestones.

Milestone Name/Number	Associated Deliverable	Delivery Date
Project Start	N/A	January 2024
1	Green Mortgage Customer Insights Report, Product User Insights Report, Stakeholder Workshop Report	March 2024
2	Alpha Back End Complete	March 2024
3	Complete Alpha Product	June 2024
4	Competitor Analysis Report	March 2024
5	Commercial Model Prototype	March 2024
6	Alpha Product Test Report and Commercial Model Validation Report	August 2024
7	Go to Market Plan	October 2024
8	Beta Product	November 2024
9	Future Product Roadmap	October 2024
10	Market Creation and Development Strategy	November 2024
11	Beta Product Testing	January 2025
12	User Acceptance and Integration Testing Report	February 2025
13	Interim Pilot Phase Report	September 2024
14	Draft end of Pilot Phase Report	February 2025
15	Final End of Pilot Phase Report	March 2025

Grant amount

The total eligible cost of this pilot project was £1,120,535 with a total claimable grant of £887,239.65. Whilst not complete at the time of writing, we are on target to spend in line with these amounts. This level of funding has been critical to the development of the tool. The level of capital investment required to enable the small and medium sized businesses that have partnered for this project to undertake the development work would not be accessible to us by other means. Therefore, the project team acknowledges the significant role which the Green Home Finance Accelerator has played in development of the products outlined in this report.

Geographic scope

The location of the pilot project was Great Britain. Data was included within the tools which covered England, Scotland and Wales to allow for full mortgage books of mortgage providers to be addressed within the Lender Tool. The tools themselves are able to be used by LAs and lenders in any geography for which data has been integrated into the tool. Northern Ireland was excluded because in many cases it has separate data sources which are not necessarily organised in the same way as those for Great Britain; and because the smaller market made it less attractive to focus effort on tackling the additional complexity of ingesting data from the necessary additional sources (e.g. Ordnance Survey Northern Ireland). However, it is intended that Northern Ireland should be included in future iterations of the solution.

The geographic scope of the lenders engaged within the user groups was also nationwide, but the LAs engaged naturally had a smaller coverage area, since it was only practical to engage with a limited number of authorities and each is responsible for a relatively small geographical area. The selection of LAs in the user group was primarily based on where the tool was expected, by the project team, to have the highest impact due to the authorities already being highly engaged with neighbourhood decarbonisation.

Pilot objectives

The objectives of the pilot project (henceforth ‘pilot project’ is referred to as ‘project’) were to support organisations operating in, or seeking to operate in, the UK green home market. The organisations we were seeking to support are either providing green finance products and services which would incentivise energy efficiency and low carbon heating retrofit (Lenders), or seeking to create new green home finance markets (Local Authorities). To meet these objectives, three organisations (Living Places, Eunomia and SkenarioLabs) collaborated to deliver two tools: the LA Tool and the Lender Tool.

The main objective for the LA Tool is to empower LAs to carry out early feasibility and area selection for cross-tenure retrofit programmes, at a property level. In carrying out such feasibility and selection checks, data can be generated which will support sponsoring bodies with the design and implementation of Net Zero Neighbourhoods (NZN). The LA Tool has been developed to support LAs at

different stages of their NZN journey, with six different use classes available, each corresponding to a different stage of NZN development.

The opportunity which this tool is focused on exploring is the integration of multiple analysis elements required to develop a NZN, to provide the user with an end-to-end analysis suite. Furthermore, this tool also prioritises the opportunity of presenting such analysis from the perspective of NZN development, rather than any other single element required to drive NZN development, such as retrofit analysis. When the Beta tool was tested with the LA user group, significant positive feedback was received on the integration of all necessary information into one user interface.

The Lender Tool aims to provide mortgage companies with an understanding of their mortgage book performance for corporate risk; support on proposition development for the provision of green homes finance; and financed emissions analysis for reporting. We have focused on engaging with a range of organisations within the lender market, which in the UK is made up of a small number of very large entities and a much longer list of smaller entities.

The key opportunity the Lender Tool has leveraged during the pilot is the ability to integrate it with lenders' own data and any additional data sources that may be required. Such functionality provided Lenders with a highly relevant tool that does not rely on generic and therefore unrepresentative data. Further opportunities that were addressed during the pilot include adapting the reporting produced by the tool to ensure that it is Basel III compliant.³

Barriers addressed

For the Green Finance market, the tool addresses two major barriers:

- **The challenge of understanding which properties will benefit from green mortgage offers.** This barrier prevents lenders from targeting their products appropriately.
- **The understanding of the impact of climate risk on assets.** This barrier has prevented lenders from costing in climate risk and inaction into their portfolios. By including these costs, the justification for action on climate risks through finance becomes greater.

For the Green Finance market, the Lender Tool overcomes these barriers. To tackle the first barrier, the analysis of each individual property in terms of cost of interventions and energy savings enables a calculation of whether there is a projected net benefit for the owner of taking out a green mortgage. For the second barrier, the tool uses a variety of data layers to identify the risks associated with each property, and provide a cost analysis of each risk, enabling lenders to include climate and related risk

³ Basel III is a set of measures which form part of the Basel Framework. The measures apply to active banks and were developed in response to the 2007-09 financial crisis and intended to increase banks' resilience. As part of this, banks are required to identify, assess, monitor and manage ESG risks as part of overall risk management practices.

into their portfolio risk analysis. The product was adjusted once the second barrier (climate risk) became apparent during the Alpha testing.

For the NZN market, it addresses two major barriers:

- **The challenge of understanding what returns might be possible for each individual property.** This barrier makes it challenging to establish a justification for private finance to invest in neighbourhood decarbonisation.
- **The challenge of understanding where to target initial NZN work.** Initial NZNs will need good conditions if they are to succeed and determining which areas are best is challenging but necessary in order to get the right demonstrators.

For the NZN market, the LA Tool will facilitate overcoming the second barrier once it is used by LAs. It addresses the barrier effectively by providing relevant information to enable comparison of areas. For the first barrier, the tool can provide an idea of payback period, which addresses this barrier to an extent, but given limited data it is not possible to provide an analysis of how much private finance can be raised. This would need to be included in subsequent versions once reliable data and analysis is available to enable this.

To address the barriers, the product was significantly enhanced to enable an area selection tool to be used which has ensured that the second barrier can be effectively overcome.

Consumer impact

This product does not target consumers. The LA Tool will be used by LAs (and organisations supporting LAs, such as consultancies) in the development of NZN business case development. The Lender Tool will be used primarily as a business-to-business (B2B) offering and will support lenders with their client-facing conversations.

The project took steps to ensure that underserved and hard-to reach members of the public were considered in the design of NZNs within the LA Tool. This is because these segments of society are currently a significant focus of LAs in the development of NZNs, as they are eager to maximise co-benefits by using NZNs to reduce deprivation, and because designs of successful NZNs will need to account for how to engage and support these segments.

These groups were considered by including data in the LA Tool which displayed income bands, index of multiple deprivation data, fuel poverty presence and the health needs of an area. In doing so, the tool assists LAs to make the most informed decisions when considering which neighbourhoods will benefit most from NZN design and implementation.

Outcomes and learnings

Alongside the further development of the tools to the point where they are approaching readiness for market, the key outcome from the project has been broad validation of the need for the two tools. This validation was obtained through one of the project's most successful components: the user groups. The user groups consisted of five lenders and six LAs and provided insight at multiple stages throughout the project, including feedback on versions of the tool and its value. Some also become ambassadors for the tool who may eventually become part of the route to market. Of most value to the project was the feedback on tool versions, which has helped guide the project team in developing two tools which will have maximum impact against the project's original objectives.

Unexpected results

One of the unexpected findings of the project was the different development pathways followed by each of the tool versions. The Lender Tool had a clear definition of its purpose and, besides one minor value addition, there was little in the way of significant change through the project lifecycle. The majority of suggestions made by Lender user group members during the feedback sessions were relatively minor and did not significantly alter the Lender Tool's design, with the focus instead being on refinements such as adjustments to the interface. By contrast, the LA Tool underwent relatively major changes upon consideration of feedback from both the Alpha and Beta testing stages. These changes included increasing the number of analysis scenarios presented in the tool and changing how geographical areas for analyses were selected. Both formed part of the core functionality of the tool and so required significant changes to implement.

Further investigation into the underlying drivers revealed that this diverse range of feedback reflects the emerging nature of NZN business case development. Because generating NZN business cases has not been widely undertaken by LAs or other entities, the information that is required to support the process is not well defined. Therefore, qualifying the requirements of the LA Tool was found to be a more time-consuming task compared to those of the Lender Tool. That said, it should be noted that by engaging with the valuable additions suggested by the LA user group, a tool has been created which provides valuable additional functionality compared with its capabilities at the start of the project.

As LAs are still shaping the concept of a NZN and may each have slightly different priorities when seeking to define NZNs, they were less clear than lenders on what they required from the tool. Nevertheless, as the project has progressed and the project team has engaged with the LA user group, there is now a much clearer vision of what the tool requires as well as what is necessary to successfully develop NZN business cases.

Despite the Lender Tool not being dramatically changed through the development lifecycle, the focus of the tool unexpectedly moved from being solely about targeting Green Mortgages to an equal focus on analysing the climate and transition risk of a portfolio. This was not anticipated, but reflected the way that lenders consider their portfolios, and may be the stronger driver for uptake of the tool, thereby enabling action on climate through finance.

Readiness for commercial deployment

Having implemented refinements to the Beta version of the tool (the last major tool versions for the project), the product is ready for full-scale technical deployment. Furthermore, through the relationships established in the product user groups, sales channels have already been established and are ready to begin converting opportunities into sales.

One potential barrier has been identified during the Beta testing phase. NZNs are a fairly new concept to LAs, and the requirements for a data tool around this will therefore vary for different locations. Due to the technical complexity and holistic energy modelling requirements of large-scale decarbonisation, there is a clear need for a model that can provide this service and avoid each authority attempting to reinvent the wheel – something that local authorities would in any case lack the capability to do in house and would need to outsource. However, we have also found that in some cases LAs lack the capacity to fully utilise the functionality provided by the LA Tool. Therefore, it is expected that, at least until LAs are able to expand their teams, they will likely need to engage with consultants to assist them with populating the tool and generating the necessary outputs from it (though at considerably lower cost than having to invent a new tool). To overcome this barrier, project partners have re-visited the market development plan and made the necessary adjustments.

It should be noted based our explorations with the LA user group, the NZN market is at such an early stage that there is unlikely to be an extensive opportunity for sales in the near term. By contrast we have experienced strong interest from the lender user group, indicating a more mature market that is ready to receive the tool.

In terms of inspirations for future similar projects looking to develop green finance software, it is anticipated that the methodology used to validate the commercial viability of the product will be of most value to other project teams (further details can be found in Section 9).

2.0 Pilot project summary

The efforts of the Pilot project have been focused on the development of two products; the LA Tool and the Lender Tool. Each of the tools has its own summary section below. Throughout this report, reference is made to specific project terminology. These terms are outlined in Table 2 below.

LA Tool

Tool summary

The LA Tool is a software package which is hosted online. The primary feature is an intuitive and detailed map interface where users can select the geographic areas they wish to include in the analysis. Users have a range of analysis tools that can be used, including analysis of the impact of various interventions for buildings in a given area and the potential improvement against a baseline performance scenario, in terms of metrics such as CO₂ or energy cost reductions. In providing this data, the LA Tool is intended to support LAs at different stages of their NZN development journey.

Changes made since Discovery Phase

Compared to the vision for the tool held at the Discovery Phase, there have been a number of changes. These reflect feedback gathered from the LA Tool user group on the Alpha and Beta tools. Key updates from the Alpha testing, carried out in June/July 2024, included a more intuitive mechanism for comparison of specific results and a graphical user interface that has a greater level of precision. Changes made as a result of Beta testing include the ability to click through graphical displays of results to the data sitting behind them. This reduces the time taken for the study practitioner to access the relevant data. Furthermore, an update was made to the boundaries that can be selected in the graphical interface, so that these can be aligned with council wards and other geographical boundaries, in turn improving the specificity of results.

Intended market & Geographical considerations

The LA Tool has been developed to primarily support the development of NZNs. As the name of the tool suggests, combined and unitary authorities in England are the primary market for the tool as they are of the necessary size to engage in NZN development. In terms of the potential market size, there are 10 combined authorities within England and 62 unitary authorities.^{4 5} There were no restrictions on which LAs could be engaged with during the project.

⁴ Local Government Association, “Combined authorities: an explanation of what combined authorities are and where they across the country”. Accessed on: 20/1/2025. <https://www.local.gov.uk/topics/devolution/devolution-online-hub/devolution-explained/combined-authorities>

⁵ UK Government: “Local government structure and elections”. Accessed on: 04/06/2024. <https://www.gov.uk/guidance/local-government-structure-and-elections>

Whilst combined and unitary authorities are the primary target groups, there are five further stakeholder target groups that were identified as having potential to benefit from using the tool in NZN development. These are:

- Central Government and the supporting regional NZ Hubs
- Social housing providers
- Investors
- Community organisations and other non-governmental local actors
- Consultants

Regulatory considerations

Throughout the project, consideration has been given to regulatory factors that may impact the uptake of the tool by LAs. A specific consideration was the procurement thresholds which LAs are subject to, which is the maximum value of a contract before a public procurement process is required. Furthermore, LAs will typically have their own standing orders that govern thresholds for competitive procurements. Both of these thresholds were considered when developing the commercial offering of the LA Tool, which was undertaken mid-way through the pilot project phase.

Lender Tool

Tool summary & target market

As with the LA Tool, the Lender Tool is an online hosted software package. The Lender Tool has been designed to provide its users with the following three capabilities:

- To analyse their financed emissions
- To understand the risks associated with climate on their mortgage book
- To develop targeted finance propositions based on available data

One of the valuable design features of the Lender Tool, as confirmed by members of the Lender User Group, is that it has core functionality which lenders can then expand, using their own existing or external data. The core functionality can be applied to individual domestic properties in England, Wales and Scotland, allowing lenders to analyse their whole portfolio. Furthermore, lenders can also proactively analyse potential new mortgages to provide additional insights.

Regulatory considerations

From a regulatory/approval perspective, the Lender Tool needed to provide the necessary data protection, due to the high volumes of sensitive data being used. The need to protect data is greater than simply being 'compliant' and is a key hygiene factor for any data governance discussion to be held

with lenders. This risk was mitigated through the certification of project partner, SkenarioLabs (SkL), according to ISO27001 “Information and Security Management”.⁶

Table 2: Key terms used throughout the report.

Term	Description
Alpha	First build of the potential tool focusing on core functionality, for testing with users.
Beta	Second build of the potential tool to reflect feedback from Alpha build and other insight, widening the functionality.
Discovery Phase	The previous funded Green Home Finance Accelerator (GHFA) project which gathered insight regarding the potential application of building datasets to improving home financing options for green homes.
Net Zero Neighbourhood (NZN)	A group of approximately 1,000 contiguous properties where decarbonisation work is undertaken at scale to deliver greenhouse gas reductions and broader co-benefits.
User	The user of the tool, e.g., a local authority.

⁶ ISO, “Information security, cybersecurity and privacy protection – Information security management systems – requirements” (2022).

3.0 Pilot Timeline

Key milestones

The project had a total of 15 milestones (MS) in the course of delivery, with their associated deliverable and delivery date shown in Table 3. MS 1, 6, 7, 9 & 11 involved stakeholder engagement through the tool user groups, although it should be noted that ad-hoc engagement with the user groups was undertaken where necessary throughout the project.

Table 3: Key milestones associated with the pilot.

Milestone Name/Number	Associated Deliverable	Delivery Date
Project Start	N/A	January 2024
1	Green Mortgage Customer Insights Report, Product User Insights Report, Stakeholder Workshop Report	March 2024
2	Alpha Back End Complete	March 2024
3	Complete Alpha Product	June 2024
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Milestone Name/Number	Associated Deliverable	Delivery Date
11	Beta Product Testing Report	January 2025
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13	Interim Pilot Phae Report	September 2024
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Deviations from original project plan

There were only two very minor deviations to the planned MS outlined in Table 3.

The first deviation was submission of Deliverable 5.1: Iterated go-to-market plan, which was submitted two working days behind schedule. Late delivery of Deliverable 5.1 was attributable to illness within the project team, with the required reserve resource not being available.

The second deviation was submission of Deliverable 7.1: Beta testing – functional and usability report. This deliverable was submitted in Q5, as opposed to Q4 when it was originally due. This late submission of Deliverable 7.1 was also due to illness within the project team. However, whilst the deliverable itself was late, testing of the Beta with user groups was, crucially, completed on time. To mitigate the impact of late submission of Deliverable 7.1 on completion of Deliverable 7.2, Final Product Iteration, the Beta testing feedback was collated in a MS Excel file, acting as a tracker, and shared with the project team before the original deadline of Deliverable 7.1. Therefore, the project team did not have to wait for Deliverable 7.1 to begin the process of iterating the Beta product into the final product, successfully mitigating risk arising from late submission.

Effect of delays on Pilot objectives

Neither of the two delays affected the ability of the project to meet its objectives or reduced the quality of either tool. On the contrary, Deliverable 7.1 was late in part due to the project team having to process the valuable feedback, which had been received when illness struck the team. With the changes to address the feedback now incorporated to the Beta tool, the project team has now produced an even more refined tool.

Delay impact management

There were steps during the project to mitigate the risk and impact of delays to the project. This process was implemented by creating a project risk register and updating it with necessary risks, which were

communicated during bi-weekly project team meetings. The success of these measures was measured according to timely project milestone delivery. There were 15 project MS in total, with two of these being the End of pilot draft and final reports. Of the remaining 13 MS, 11 (85%) were submitted in a timely manner.

Timeline management learnings

One of the learnings from a project management perspective was the management of knowledge within small teams. The late delivery of the two deliverables was caused by key members of the project team suffering illness at critical times, and there was insufficient overlap in different team members' knowledge for others to complete what was required in their absence. A lesson learnt would be to schedule internal deadlines for earlier, particularly where their completion is predicated on the availability of team members that hold irreplaceable knowledge.

4.0 Integration and Utilisation of Technology

Technological solutions used

Our project has leveraged a combination of advanced data analytics, climate risk modelling, and interactive front-end platforms to support lenders and local authorities in assessing and mitigating climate and transition risks:

- **Lender-Focused Tool** – Integrates climate data with financial modelling to assess the exposure of properties to risks such as flooding, subsidence, and energy inefficiency. Additionally, the system incorporates retrofit pathways, enabling lenders to identify investment opportunities that align with sustainability objectives, as well as to mitigate transition risks relating to the changing regulatory environment.
- **Local Authority Tool** – Designed to support the planning of Net Zero Neighbourhoods, this tool aggregates geospatial data, climate impact projections, and energy efficiency metrics to help local authorities prioritise areas for intervention. By visualising energy efficiency alongside socio-economic data, the platform supports strategic decision-making for decarbonisation initiatives.

The solution utilises machine learning algorithms, geospatial mapping technologies, and Application Programming Interfaces (API)⁷ integrations with climate data sources to provide dynamic, data-driven insights. Some exemplar images of the tool are shown in the Figures below. A novel aspect of our approach has been the application of predictive modelling to assess assets without current Energy Performance Certificate (EPCs) and predict their energy efficiency. Additionally, we are applying damage factors to climate risk - modelling the financial implications, thereby enabling proactive risk mitigation strategies. Finally, the analysis of transition risk by applying a novel Automated Valuation Model, developed by SkenarioLabs for this project, provides a true picture of green dividend and brown discounts⁸ - enabling a genuine assessment of the value of retrofit as a mitigation to financial risk for lender and homeowner.

Technology performance and effectiveness measurement

The core of our technology's performance assessment has been the accuracy and reliability of its energy modelling capabilities. Given the critical role of energy efficiency in both lender risk assessments and Net

⁷ An API allows different software applications to communicate. This communication allows the exchange of information which can then be used by a piece of software whilst it performs its intended function.

⁸ A "green dividend" is a premium that a person may pay to purchase a property that has a high degree of energy efficiency (or other green features) compared to the typical home. A "brown discount" is the reduction in the price that a person may be willing to pay for a property that lacks energy efficiency measures (or other green features) that a typical home may have.

Zero planning, we conducted rigorous benchmarking against established baselines and ground truth data to validate the model's outputs.

Figure 1: Demonstration of the climate risk functionality of the Lenders tool.

Climate risks

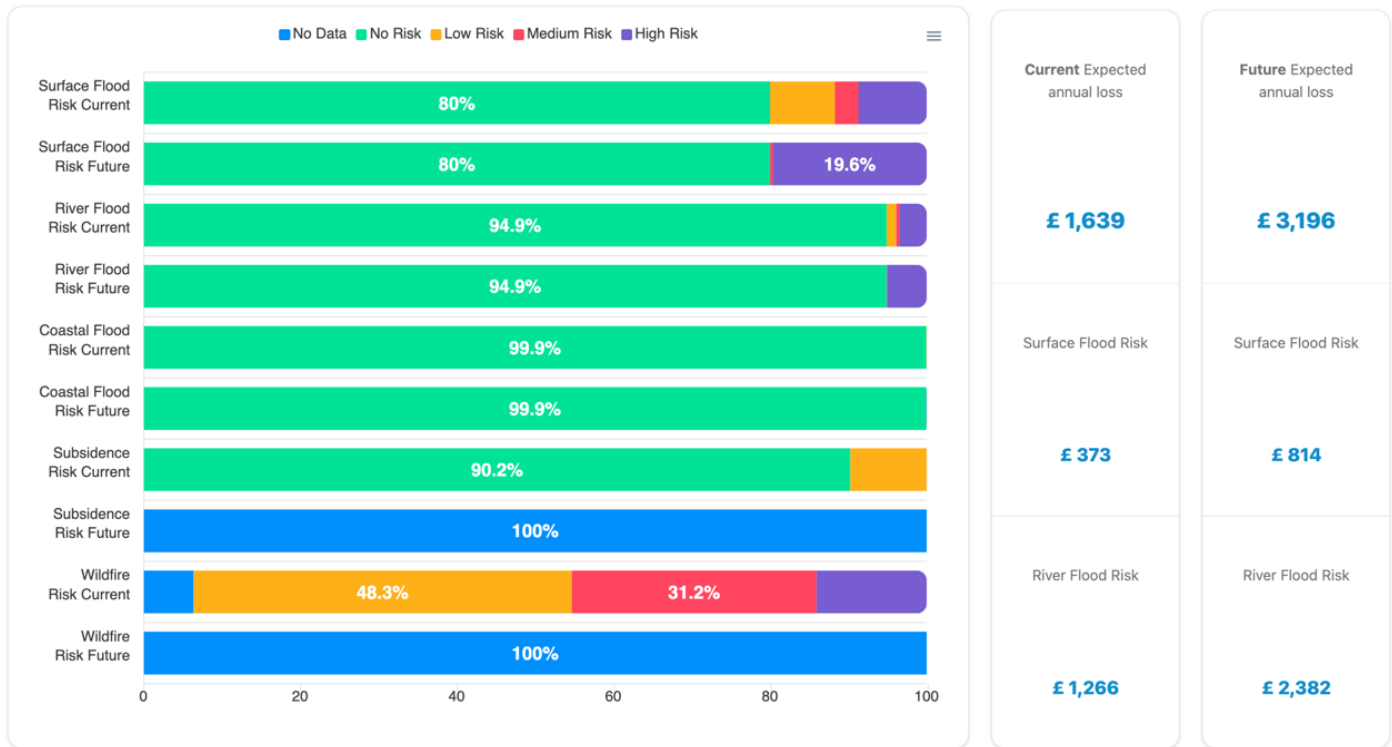


Figure 2: Demonstration of the visual tool interface for the LA tool.

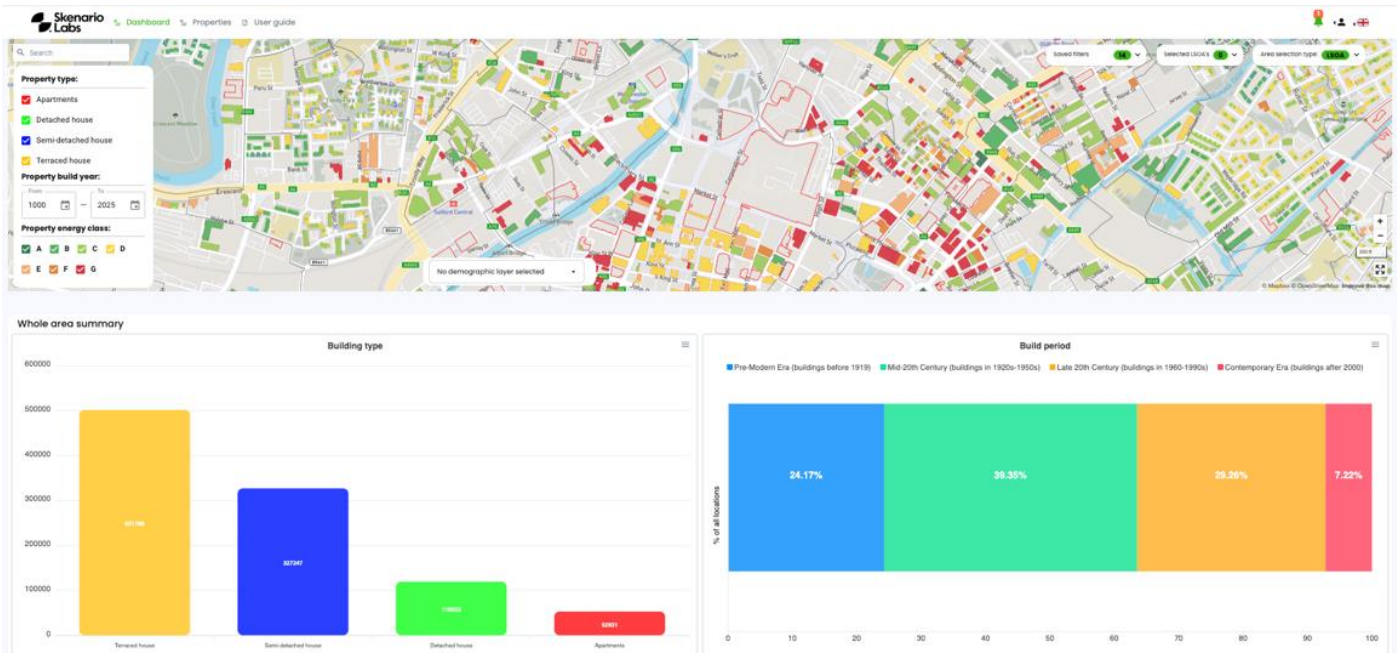


Figure 3: Demonstration of the LA Tool dashboard.

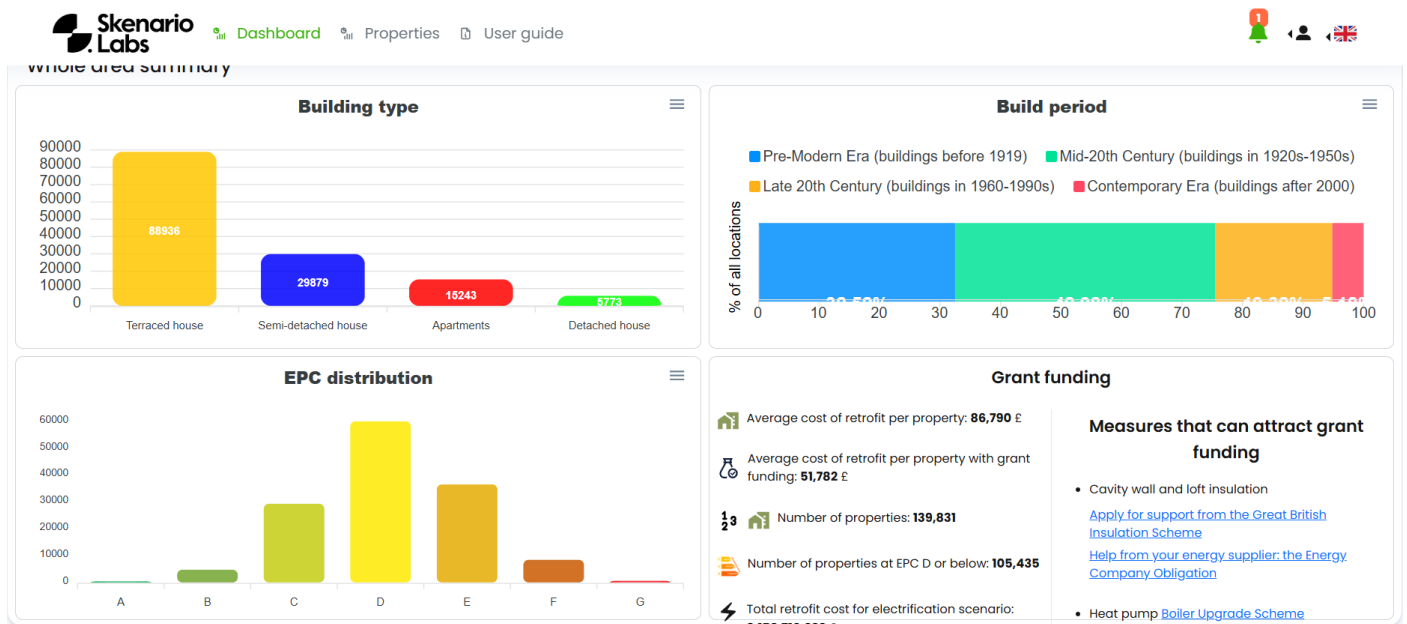
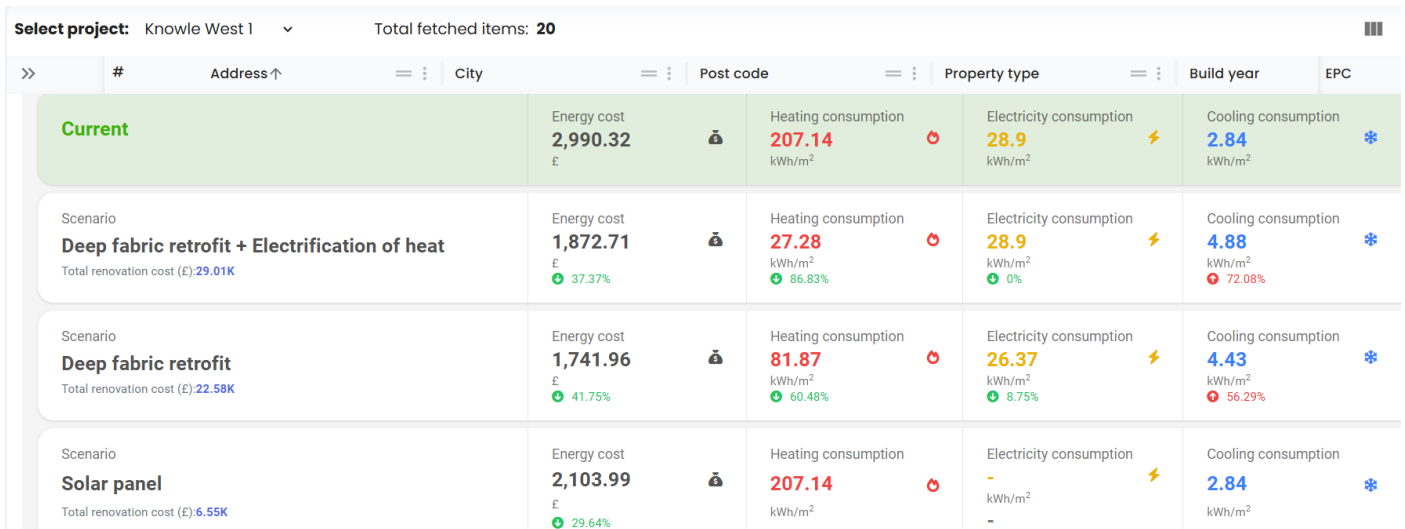


Figure 4: Demonstration of the LA tool project comparison dashboard.



Validation against established baselines

To ensure accuracy, our energy modelling was compared against:

- Standard Assessment Procedure (SAP) and RdSAP models – Our energy predictions were cross-checked with SAP, the UK government’s official methodology for assessing energy performance in dwellings.
- Publicly available EPC data – Where available, we validated our predictions against existing Energy Performance Certificate ratings, ensuring alignment with real-world building performance data.

User testing and stakeholder feedback

We incorporated ground truth validation through real-world data collection in collaboration with local authorities and lenders. This involved:

- Local authorities – Officials from five LAs assessed the tool’s ability to accurately benchmark and suggest interventions for assets in their communities. Their feedback led to refinements in spatial data visualisation to improve how the LA Tool use interacted with data and risk scoring methodologies. Additionally, we added Grant Eligibility directly due to their feedback.
- Lenders – Testing focused on how well the tool’s risk indicators aligned with their internal climate risk frameworks. Changes largely focused on making the data easier to interact with – especially to find high risk assets.
- Internal validation – Our team conducted controlled testing scenarios to assess system consistency, ensuring that the same inputs yielded reproducible results across multiple test cases.

Performance metrics and effectiveness

Effectiveness was measured using:

- Prediction accuracy – Evaluated by the deviation between modelled and actual building characteristics in tested properties.
- Usability and decision-making impact – Measured through structured user surveys, which indicated a high level of confidence in the tool’s ability to support lending and policy decisions.

Technological challenges and solutions

Several unexpected challenges arose during the implementation and launch phases:

- **Data Integration Issues** – Ensuring compatibility between disparate climate datasets and financial models required additional pre-processing and data normalisation efforts. This was addressed through the development of an automated data validation pipeline.
- **Computational Performance** – Handling large-scale geospatial data led to performance bottlenecks. Optimisations were implemented by leveraging cloud-based parallel processing and caching strategies.
- **User Interface Complexity** – Some users found the visualisation tools overwhelming, particularly in the LA interface. To mitigate this, we introduced dashboards with layered data filters and views, allowing users to tailor insights to their specific needs.

Lessons learned from technology implementation

The process of integrating new technologies into our solution provided several key takeaways:

- **Scalability is critical** – As more users engage with the system, ensuring efficient performance across larger datasets must remain a priority.
- **User-centric design matters** – Early and continuous feedback from stakeholders helped refine the interfaces to better meet their needs.
- **Interoperability enhances value** – Seamless integration with other platforms (e.g., financial risk models and local authority Geographic Information System⁹ tools) significantly improved the tool's effectiveness.

Future technological enhancements

Looking ahead, there are several potential technological advancements that could further enhance the product:

- **Dynamic Policy Scenario Analysis** – Incorporating evolving government policies, such as new Minimum Energy Efficiency Standards (MEES), carbon pricing, and incentives, to project the financial impact on property portfolios.
- **Market-Driven Risk Modelling** – Integrating economic and regulatory factors (e.g., shifts in energy prices, green mortgage incentives, and retrofit funding availability) to assess how properties will be affected over time.
- **Temporal Decarbonisation Pathways** – Developing time-series projections to model how properties transition from their current energy performance ratings to Net Zero targets, considering different retrofit adoption rates and investment scenarios.

⁹ A Geographic Information System (GIS) is used to combine data and maps in order to understand information and its relationship with geographical location.

Delivering Social, Environmental and Economic Benefits Through Transition of Place

- **Climate-Aligned Lending Strategies** – Enabling lenders to simulate the impact of different financing strategies, such as green bonds or sustainability-linked loans, on their exposure to transition risks.
- **AI-Driven Scenarios** - Expanding the platform’s ability to generate custom predictive scenarios based on regional and property-level inputs. This would allow local authorities and financial institutions to stress-test their strategies under different climate, policy, and market conditions.
- **Integration with External Retrofit Databases** - Connecting with national and regional retrofit databases to provide more granular insights into the availability and performance of retrofit solutions, further improving investment and policy decision-making.

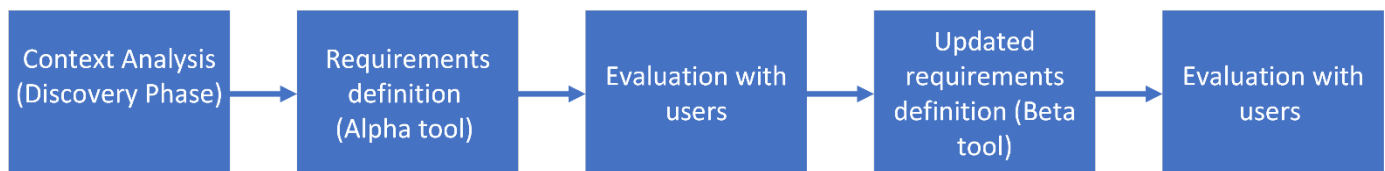
5.0 Integration of Design and Process Innovations

At every stage of each tools' development, users were considered, to ensure that each tool was highly usable and accessible. The development of each tool took an iterative approach, as shown in Figure 6. It is important to note that the user centred design process incorporated not just the technical design of the tool but also the commercial element of the tool, through for example the pricing and go-to-market strategy.

The first phase of the design process was gaining an understanding of the context in which each tool version sat. To be specific, this exercise involved understanding what the ideal user of each tool would include.

Having qualified the context in which each tool will sit, the initial list of requirements was constructed. The exact requirements are confidential and not outlined here. Having created the first list of requirements, each version of the Alpha tools was tested with the user groups as per the process in Section 12. As an output of this evaluation process, the feedback received on each tool was consolidated and triaged. The triage process ensured that no scope creep took place, and superfluous requirements were not incorporated to the tool. The same process was repeated for the Beta version of the tool, as in Figure 6.

Figure 6: User centred design process followed throughout the Pilot.



User-Centric Design Methods

Throughout the pilot phase, a user-centric design approach was adopted to ensure that both the Lender-Focused Tool and the Local Authority Tool met the distinct needs of their respective users. This included:

- **Stakeholder Workshops** – Conducted with lenders, local authorities, and sustainability experts to define key usability requirements.
- **Iterative Prototyping** – Early-stage wireframes and Alpha and Beta prototypes were tested with users, and feedback was integrated into subsequent development cycles.
- **Usability Testing** – Lenders and local authority officers participated in structured testing sessions, refining the interface to improve clarity, navigation, and decision-support features.

As a result of this process, we streamlined the dashboards, introduced scenario-based risk visualisations, and improved data layering options to accommodate different user expertise levels.

To enhance usability and tailor insights to specific user needs, the following tool-specific features were integrated:

Lender-Focused Tool

- **Portfolio Segmentation** – Lenders could analyse climate risks at different levels (e.g., property type, location, EPC ratings, mortgage product categories). For instance, Lenders may be analysing their mortgage book in a specific region or understand climate risk according to property type
- **Risk Scoring & Threshold Customisation** – Financial institutions could set their own climate risk thresholds and receive property-specific information on high-risk properties.
- **Retrofit Pathway Modelling** – Users could adjust assumptions to model investment scenarios and associated lending criteria.

Local Authority Tool

- **Spatial Data Mapping** – Users could filter assessments by neighbourhoods, housing characteristics, or socio-economic factors.
- **Custom Policy Interventions** – The tool allowed for scenario testing, enabling councils to model the impact of different Net Zero policies.
- **Comparison Between Project Areas** – The tool enables the creation and editing of different Net Zero Neighbourhood projects, and the comparison between them to create various options for delivery.

These customisation options resulted in greater user engagement, with lenders reporting improved fit with their existing risk assessment processes, and local authorities noting substantially better usability.

Iterated operational processes and their impact

Several operational improvements were introduced during the pilot phase to enhance efficiency and service quality:

- **Automated Data Processing Pipelines** – Reduced the time needed to ingest, clean, and analyse large portfolios and energy datasets which was raised by stakeholders as having been a time-consuming exercise on its own (i.e. even before additional analytics were added).
- **Modular Dashboard Architecture** – Allowed editing of the data visualisation to be done much more easily by our developers to adjust for customer requirement.
- **API Integration with External Datasets** – Enabled updates from EPC records, flood risk databases, and retrofit cost estimations.

Challenges in implementing iterated features

Some key challenges encountered included:

- **Complexity of User Requirements** – Striking a balance between advanced analytics for technical users and simplified insights for decision-makers. *Solution:* Introduced a tiered data display, allowing users to toggle between dashboard and detailed, individual property-level views.
- **Data Gaps & Standardisation Issues** – Variations in EPC data accuracy and inconsistencies across local datasets. *Solution:* Developed a process to accurately estimate EPCs by creating an RdSAP calculator. The platform ingests or estimates the components making up the asset and then runs an RdSAP assessment against the digital asset in order to produce an accurate score.
- **Stakeholder Buy-In for Process Changes** – Some organisations required additional training to fully utilise the platform’s features. *Solution:* Provided interactive onboarding and guidance materials.

Most successful design & process innovations

- **Interactive Risk Scoring Dashboards** – Provided clear, actionable insights tailored to feedback on the importance of focussing on high-risk assets for lenders.
- **Scenario-Based Modelling** – Allowed users to test different climate action strategies, making decision-making more dynamic and evidence-based.
- **Automation of Carbon Accounting (Partnership for Carbon Accounting Financials - PCAF) Reports** – Reduced manual workload for lenders, significantly improving efficiency.

Future design & process improvements

Looking ahead, potential enhancements include:

- **Improved Visualisation Features** – Developing better data visualisation techniques to make complex energy and risk data more intuitive.
- **Expert View for Consultants & Specialist Advisors** – A dedicated interface tailored for consultants and energy advisors working with local authorities, offering:
 - Advanced analytical tools for deeper assessment of energy risk and retrofit opportunities.
 - Customisable reporting templates for generating policy briefs and funding applications.
 - Comparative financial modelling to evaluate the funding potential of different intervention strategies at scale.

6.0 Pilot Partnership Learnings

Partnership delivery strategy & roles

To bring the LA and Lender Tools to market, three individual entities came together to form the project team. The project partners on the project included:

- Living Places Earth Ltd ('Living Places')
- SkenarioLabs
- Eunomia Research and Consulting Ltd ('Eunomia')

The roles of each partner throughout the project are shown in Table 4.

Table 4: Project partners and their roles.

Partner name	Role Description
Living Places	Led the project, providing the strategic oversight for the ultimate goal of facilitating the growth of place-based models for accelerated decarbonisation.
SkenarioLabs	Provided all development, data science and engineering expertise and activity, including the data platform.
Eunomia	Contributed principal project management expertise for the project, ensuring effective collaboration and adherence to project management plans across the consortium. Eunomia also brought expertise on LA operations and decarbonisation planning.

The strategy of the project team for delivering this project relied on clear assignment of roles and responsibilities between team members. Whilst Eunomia, as the project management office, retained oversight of all Work Packages (WPs), each of the eight individual WPs was assigned a lead. The assignment was based on the partners' expertise and capabilities; for example, SkenarioLabs led on delivery of the technical WPs. Eunomia maintained the overall project schedule using an Integrated Management System (IMS) and PRINCE 2 methodologies. It was the responsibility of each WP lead to communicate with Eunomia, as the pilot project management office, any issues relating to the timeline or quality of their WPs.

Partnership benefits

The benefits of delivering this pilot as a partnership of three SME organisations were multiple. Firstly, by combining the unique network of organisations held by each project partner, a broader reach was achieved when looking to market the tool through the user groups and secure buy-in from stakeholders.

By having a broad network to select user group members from, this also ensured the project could generate unique and diverse feedback, ensuring that the LA and Lender Tools were created with the best possible functionality.

Additionally, the nature of SMEs is to be dynamic and lean. By partnering SMEs together, we were able to draw on a diversity of skills and experience whilst retaining this core SME dynamic. A further benefit of the partnership approach was the ability to share knowledge when the need arose. For instance, during the project, feedback was received that information on the number of full-time equivalents (FTEs), which is in essence jobs, required to deliver certain interventions¹⁰ would be of value. With one of the project partners holding state-of-the-art knowledge in this field, but outside of the initial project team, they were able to call on their colleagues to advise the project on the feasibility of progressing this functionality.

Finally, the separation of functions between the different organisations enabled each organisation to be held accountable for delivery by the others, which helped to avoid delays and defects in delivery.

Partnership working process evaluation

Success of the partnership can also be measured against the timely delivery of MS, as outlined previously in Table 3. Of the 15 MS submitted, only two were submitted beyond their original delivery date. Both were submitted only slightly late, with the cause in each case being illness within the project team. One of the notable learnings of this project partnership is how to manage the risk of losing key knowledge holders due to illness and the difficulty of substituting for a key team member's knowledge in a timely manner. This is a particular challenge within SMEs, such as those who formed the project team in this project, although within an individual project where tasks have been carried out by one person and then need to be reported on, that person's absence is difficult to plan around.

Partnership lessons learned

The partners were mindful that a partnership between three small organisations had a number of risks. The division of labour between multiple organisations meant that it was necessary to have regular progress update meetings between senior staff from each organisation, which led to a level of project management overhead that may have been smaller if a single organisation had undertaken the work. However, these costs were planned for in advance, and the project management measures that were put in place (e.g. a shared project plan, a dedicated overall project manager to hold partners to producing deliverables on time) were effective. The most significant issue that arose was that, due to the small size of each partner, there was little redundancy within each partner, and when a team member fell ill it was not always possible for another person to stand in for them. When this issue arose, it resulted in some short delays to the production of deliverables. Had it occurred at a more critical stage, there would have

¹⁰ An example would be the number of FTEs required to deliver installation of heat pumps within a defined region, with a specific role example being an installation engineer.

been a risk of knock-on effects on other deliverables, but in practice the delayed deliverables did not have wider dependencies.

7.0 Governance Frameworks

Project governance structures

During the project lifecycle, several governance structures were implemented by the project management office to ensure delivery of the project objectives to quality, time and budgetary requirements.

One of the key communication channels created by the project management office was the establishment of bi-weekly meetings. Each meeting was attended by key representatives from each of the project partner companies, with discussion on progress of tasks assigned to each work package. Furthermore, by having a regular touch point for the teams, who were not all co-located in the same office space, the bi-weekly meetings acted as an opportunity to raised ad-hoc concerns or positive feedback, which may not have otherwise happened. A further channel of communication established was an online communication method. This communication method, used by all project partners, enabled ad-hoc communications to be made as required. When the need arose, ad-hoc meetings were established by the project management office to discuss key project matters, with the content often being upcoming deadlines.

A key aspect of any governance process is the quality assurance and internal approval of work produced. Quality assurance and approval processes were established by the project team and are discussed in Section 9.

Risk management

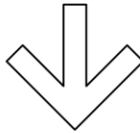
During the bi-weekly meetings, a frequent point on the agenda was the management of the risk assessment register. To manage and evaluate risks facing the project, a risk register was created. The risk register followed the process outlined in Figure 7. When new risks materialised, they were escalated to the project lead within Living Places. Despite the addition to the risk register of several risks during the project, no risks materialised into issues throughout the project's lifecycle.

Besides the broader project risks, there were also specific risk-management procedures followed by SkenarioLabs during the technical product development. By building the product using an agile sprint methodology, insights and risks were identified as they arose during development. By identifying these risks in a timely manner, their likelihood and/or impact could be mitigated, preventing the risk of submitting late or poor-quality deliverables.

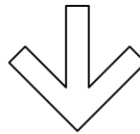
1. Identify the risks which could impact project objectives. The major risks identified included:
 - a. Lack of end-user interest and adoption – there was a risk of lack of interest amongst LAs or lenders in adopting the tool
 - b. Market and regulatory changes – this project may be affected by changes in the regulatory landscape related to green finance, energy efficiency, and retrofit. This risk is being monitored by the project team in an ongoing capacity. For instance, in December 2024, the Consultation on the Reforms to the Energy Performance of Buildings regime was launched. Whilst specifics are yet to be released on this consultation, it is anticipated there will be changes to how Energy Performance Certificate (EPC) scores will be calculated. The project team is monitoring the necessary channels to stay informed about regulatory developments such as the EPC consultant



Assess the impact which a risk may have on delivery of the projects objectives and the likelihood of it materialising



Create mitigating measures with the intention of reducing the impact or likelihood of the identified risks



Monitor the impact and likelihood of each risk as the project progresses

Figure 7: Process followed to assess risks within the risk register.

One of the most pertinent risks to the governance process was scope creep. Scope creep was most notably an issue for the technical work packages, which were responsible for delivering the required functionality of the tool. The risk was most pronounced after a testing phase, when a significant number of suggestions were made by user groups, with the goal of improving the usability or outputs of the

tools. Careful consideration by all project partners was required to balance the considerations of the desired quality outcomes of the project and the budgetary constraints. This process was mitigated by ensuring that all stakeholders had visibility of the budget, project success metrics and the feedback tracker. In providing this visibility, communication between all partners was facilitated on the topics of budget and quality and the risk of scope creep was averted.

Overall, with timely delivery of nearly all milestones within the pilot project, and most importantly, delivering a product that meets the quality requirements outlined in Section 10, the governance frameworks that were established have proven effective for the project.

8.0 Verification Processes and Quality Assurance in the Delivery of the Product

The product/service is a software product which does not include a verification element for installations. Consequently, there were no installation verification processes, and thus no relevant challenges encountered in the verification process. It is also difficult for us to comment on the role of new technologies in enhancing installer verification and assurance processes.

However, as this report is intended to provide value for other projects looking to learn lessons from our pilot project, the process of verifying the software is provided here so that it can be used for the identification of best practices.

Verification best practices

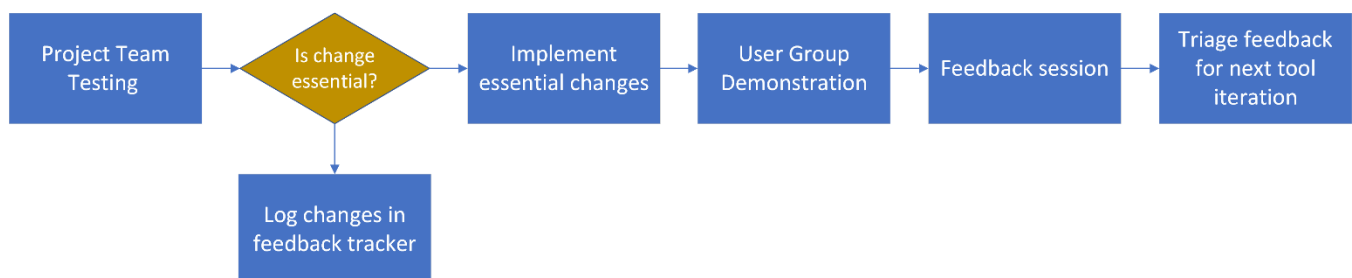
The verification/quality assurance process used for the LA and Lender Tools was the same and was used for both Alpha and Beta phase testing. The verification/quality assurance process is outlined in Figure 8 and summarised hereafter.

The first stage was for project partners to undertake testing of the tools. The intention of this testing was to identify bugs or glitches in the tools operation and check the quality of the user interface. Bugs were found during both test phases, with three key examples being:

- Data alignment of postcodes between databases sources
- Login glitches; and
- For some properties, construction year analysis where information was not available.

Beyond the intention of identifying bugs within the tools, this step intended to gather key insights from members of Living Places and Eunomia, who had not directly encountered the tools before. As shown in Figure 8, some of this feedback was implemented prior to Alpha/Beta testing with the user groups. To ensure a timely delivery of the Alpha and Beta tools, to the user groups, the feedback gathered was triaged in a feedback tracker, created in MS Excel. Only changes deemed essential, such as bug fixes or changes to the tool which would significantly improve user experience, were implemented at this stage. Changes recommended by project partner members not deemed to be essential were logged and considered again at the next feedback triage, after the user group demonstration (see Figure 8).

Figure 8: Tool verification process for verification of Alpha and Beta versions of the LA and Ledner tools.



With the Alpha/Beta tools ready for testing with the user groups, a session was held between each member of the user groups and project partners. Each user group member was given an allocated period, over which they could test the tool in the method which best suited them. The introduction of an extended period between tool demonstration and feedback gathering proved highly beneficial. It ensured active engagement of stakeholders within each user group, thereby facilitating a diverse range of feedback. At the end of the allocated period, follow-up sessions were run with each user group member to collect feedback. All feedback was received from user group members, it was triaged according to its importance. Feedback was classified as:

- To be implemented pre-release of the subsequent tool version (Beta tool for Alpha testing and Release for Beta testing)
- To be implemented post-release of the subsequent tool version – for feedback considered during Beta testing, this feedback was classified as ‘On-going development’

One of the key challenges in this verification process was mitigating against the risk of scope creep for the LA Tool. As the market for the LA Tool is significantly less developed than the Lender Tool market, there were significantly more feedback points. The challenge was incorporating feedback points that would add value to the tool in delivering its specified objectives. This challenge was overcome by undertaking regular meetings between project partners to discuss the feedback gathered at length, having robust discussion on what feedback was necessary.

Quality assurance of technical work

For this project, SkenarioLabs utilised a typical software development approach involving development work carried out in two-week sprints and testing of the results by engineers prior the release of the results and functionality to the rest of the project team. Once available, the results were reviewed by a number of individuals, including:

- SkenarioLabs Chief Technology Officer and an experienced building engineer to ensure technical validity of the results. This input was facilitated through weekly meetings with the project team and regular reviews of results and deliverables.
- SkenarioLabs Project Director to ensure functionality of the platform, completeness of the results and user friendliness of the tool. These reviews took place prior to any release of the platform to the wider project team, and weekly check-ins with the project team.
- Feedback from the wider project team and potential future users was gathered using a feedback tracker which allowed all the points raised to be evaluated by the SkenarioLabs project team and implemented where possible. The tracker allowed the SkenarioLabs team to record decisions and monitor progress.

The SkenarioLabs EPC model implements data science and machine learning technologies to determine the building EPC label. The Skenarios EPC model is trained on historical data with building features, characteristics and building energy efficiency classifications to predict the EPC rating. The accuracy of the baseline energy data was evaluated by comparing the results from the tool to data taken from actual

EPCs. The aim was to detect anomalies, calibrate the model and repeat back testing. The initial test results showed that in 50% of the cases the modelled EPC ratings matched the actual EPC rating, while in 40% of the cases the modelled EPC was either one grade higher or lower than the actual. In 10% of the cases the differences were 2 grades of higher. This indicates a reasonable level of fit with EPCs, with most discrepancies being sufficiently small not to give rise to issues. Some level of discrepancy between the modelled data and the actual EPC scores was expected because it is widely known that EPC ratings carry errors and uncertainties, as reflected in the Government's ongoing consultation on EPC reform. While this somewhat limits the value of the comparison of modelled vs. actual ratings, the EPC data is the best available source for comparison and so there was not a reasonable alternative that could be used.

9.0 Market Testing, Deployment and Distribution of Product

The content for each of these sections is set out according to each individual tool, starting with the LA Tool followed by the Lender Tool.

Local Authority Tool

Marketing strategy outline

Due to the nature of the product, it is not to be marketed to a large, general audience but to a relatively small number of organisations that are its intended users. Consequently, the approach to sales and marketing that is appropriate is very different from a public facing product. The marketing approach instead relied, and will continue to rely, on direct approaches to LAs engaged with through the User Groups. Whilst the primary target of the LA Tool was larger LAs, the LA Tool is also applicable to peripheral entities that are involved in delivering cross-tenure decarbonisation efforts, such as social housing providers or investors. There were two other competitor products being marketed in the same space as the LA Tool. To overcome this challenge, the project team ensured that the unique value of the LA Tool, such as its ability to provide end-to-end analysis, was communicated to the LA User Group.

Due to time constraints of the project team, the tool was not marketed to all the potential routes to markets. However, as the pilot project comes to a close, the intention is to begin engaging with other routes to market.

Distribution channels

Besides directly marketing to members of the user group, there were three other distribution channels considered:

- Through formal tenders – After development of the Alpha tool, one major public tender has been advertised at Expression of Interest (Eoi) stage for work that includes procuring a tool with a specification closely matching that of the tool being developed as part of this work. We have reason to believe that there may be further public procurements of a similar nature from other authorities. Therefore, using these formal tenders as a route to sales may be appropriate for several authorities. This requires careful review of public tenders, and an associated pitch that reflects the value of the tool. This is also a mechanism by which the tool can be further developed beyond Beta functionality.
- Via users from the user-group to a wider LA audience - This route to market relies on the initial users becoming ambassadors for the tool. This requires the tool to demonstrate value through its use by the user group. If successful, these users are in contact with most of the major authorities in the UK and thereby this mechanism could be very powerful in exposing the tool to a large proportion of the potential customer base.
- From partners directly to LAs - Living Places has NZNs as a core part of its business and is regularly in contact with LAs seeking to develop NZNs, providing the opportunity to market the

tool directly to potential customers. This would require demonstrations of the tool's functionality as well as testimonials from existing users. Eunomia also works closely with LAs and would be able to introduce them to the LA Tool.

Engagement monitoring

In terms of tracking engagement with the tool through the project lifecycle, membership of the user group is the most effective means of doing this. Only three LAs were engaged with in depth due to the project timeline and budget allowing for analysis of a limited number of areas. The three geographic regions selected were based on the project team being most confident in gaining insights. Only one LA disengaged with the tool as the pilot progressed from Alpha to Beta. This disengagement was attributed to the loss of key individuals within the LCA, with whom relationships were held, during progression of the project from Alpha to Beta. As the project partners were able to rapidly and easily identify a suitable replacement for the LA, this indicated high potential success of the 'directly to user group' marketing method.

Lender Tool

Marketing summary

As with the LA Tool, the Lender Tool was not marketed to a large, general audience but to a relatively small number of organisations that are its intended users. As with the LA Tool, the marketing approach instead relied, and will continue to rely, on direct approaches to lenders. Unlike the LA Tool, there were fewer direct competitors being marketed to potential customers. Of the offerings classified as competitors, each offered different functionality compared to the Lender tool, requiring little in the way of differentiation in marketing.

Distribution channels

There were two groups considered distinctly for the distribution routes: large and small lenders. For confidentiality, the exact names of the Lenders are not disclosed. To provide examples, large lenders refer to high-street banks and smaller lenders refer to local building societies.

For large lenders, the expected distribution routes are:

- GHFA User Group
 - Converting the active participation of the user group into first adopter clients.
 - Making use of offers to pilot the product with large lenders to provide test cases, especially where those convert to early adopters.
- Relationship-based extension to other large lenders
 - Living Places is actively engaged with many of the large lenders through wider work, supporting investor conversations. The Lender tool has been explored amongst this wider group, which once developed and ready to launch will become the second group of targeted customers.

- Testimonials and case studies of application of data
 - These will be developed alongside early adoption to support the ‘positive reinforcement’ factor identified.

A different approach has been planned for the smaller lenders:

- GHFA User Group
 - Engagement with the one small lender within the user group to review the tool at that scale.
 - Develop the pilots (with the larger lenders, above) to provide test cases and identify the large lender early adopters for ‘positive reinforcement’ as well as the smaller lender (building society) to understand different use needs.
 - Testing of the pricing strategy at the smaller lender scale to ensure viability.
- Development of marketing materials to support lighter touch relationship-based approach
 - Testimonials and explanation of impacts to be developed into materials that can be shared through variety of channels, including direct contact, industry bodies and trade events with a clear offer to smaller lenders.
 - Direct approaches to smaller lenders through opportunity arising from the above and with direct contact.

Engagement monitoring

Engagement with lenders through the Lender Tool user group was positive and consistent through both the Alpha and Beta testing phases. As with the LA Tool, this is the main indicator of a positive and successful marketing campaign.

10.0 Market Penetration

LA Tool

Engagement method

To understand the market penetration measurement, the size of the market is first discussed. Based on internal project team knowledge, of the 10 combined authorities and 62 unitary authorities which exist, 4-6 have gone through stage 1 of NZN development, meaning they have decided to proceed with exploration of NZN development. A smaller number of LAs (2-4) have begun the exploration process in earnest and are in the development stages of a NZN. A similar number of LAs (2-4) have begun planning for their selected NZN areas. This indicates there are, as it stands, a maximum of 14 LAs at the necessary stage of their NZN development process to begin using the tool. Based on further analysis, the expected scale of potential users for the tool is in the order of magnitude of tens of authorities.

Target engagement measurement

The primary means of engaging the LA Tool target market – of larger LAs – was through the LA User Group, which has comprised three LAs throughout the project. Three LAs were selected for engagement given the tight budgetary and resource constraints the project team were under. Therefore, measuring the market penetration rate by comparing the number of potential authorities to engage with against the actual number of authorities engaged with is not a valuable metric. That said, it is intended that in time this will become a valuable metric for comparison, as this nascent market matures, which could take place over the next few years. Furthermore, it is not possible to compare against industry benchmarks for market penetration given the nascent nature of the market in which the LA Tool is intended to operate.

Of more value is consideration of the quality of tool that has been developed and its potential to penetrate the LA market once this market evolves to an adequate state to receive the tool. This evolution will require:

- The financial resource to deliver (or at least design) NZN projects
- LAs to have the skills and capacity to sponsor and oversee NZN projects

With these in place there will be the need for a tool that enables area selection and initial analysis if it can prove of adequate accuracy and quality.

The project team now has a tool which meets the quality requirements set out in Section 10 and has incorporated the feedback gathered from a diverse range of LAs. This indicates that the tool is ready for the market once the market has evolved sufficiently.

Market barriers

One of the barriers for market entry identified early in the project was the pricing strategy. Whilst specific details of the pricing offering are not provided in this report, it can be said that LAs were concerned about their limited budgets restricting their ability to purchase the tool. Therefore, as part of developing

the go-to-market-plan, the project team explored the opportunity to provide a pricing strategy to LAs, that would reduce this potential barrier.

In terms of geographic targeting for the LA Tool, this was not undertaken. The LAs which have been targeted initially were done so based on the project teams judging them to have the highest chance of engagement, based on previous project work they have completed. Whilst geographical testing would have a place for a direct-to-consumer product, the Lender and LA Tools are targeted at institutions. Any geographical targeting of both tools would be of low value compared to the direct-to-consumer products.

Lender Tool

The primary engagement method with lenders was through the Lender User Group. Through the Lender User Group, we have directly engaged with 32% of the Lender market (based on the market share of the Lenders involved in the group), which we consider to be the best available metric for quantifying market penetration. This has provided the project team with a strong platform to demonstrate the positive value and functionality of the tool.

It was also not possible to comment on how market penetration compared to industry standards, given there are very few entities that offer a product with comparable functionality to the Lender Tool.

Given the use case of the Lender Tool is intended to provide lenders with information on their mortgage book covering England, Scotland and Wales, there was no consideration of geographic targeting when marketing the Lender Tool.

11.0 Customer and Behavioural Insights through the Delivery of Product

Outline of research

The main engagement points with stakeholders during the project were through the user groups. The LA and lender user groups, as introduced in Section 10, were formed to provide valuable feedback on various aspects of the project. This engagement took different forms at different stages. It included demonstrations of tools, provision of logins for the tools for testing, feedback sessions following testing, ad-hoc discussions about the testing process with individual users during their testing period, and substantive interviews over particular topics (e.g. commercial viability). Given the nature of the Tools, the feedback was almost entirely qualitative except for where there were specific observations on the numerical outputs of the Tools by users.

Meeting customer needs

Broadly speaking, there was very positive feedback received on both the Tools, especially on the graphical user interface and intuitive design. For the Lender Tool it was clear that it exceeded the expectations of at least half of the users engaged. There was perhaps more enthusiasm amongst medium-scale lenders as larger lenders felt they could develop something for themselves internally, but there was not a significant variation in positivity between market segments. The LA tool landed in a context where there were not really expectations within the users as the space is entirely new, and for this reason it is hard to determine any market segmentation at this stage.

Customer journey progression

The nature of both Tools is that there is not a customer journey per se, and so it is not possible to pass commentary on incentives for continuing in the journey versus opting out as would be the case for a consumer-focused tool.

Installation of low carbon measures

The nature of the Tools is that they are intended to deliver larger-scale change from lenders and LAs. Given this, no low carbon measures have been implemented as a result of the Tool as of yet, but that was the expectation, with the hope that the scale of impact will be significant if and when the tool is in use commercially.

Value proposition

Given that the customers for the Tools are corporate entities, with professionals highly literate in the subjects at hand, the value proposition was very well understood by Lenders, and reasonably well understood by the LAs (depending on which departments we were engaging at any point in time). The features most valued by customers for both tools have already been outlined, but can be broadly defined as a highly graphical and intuitive interface, and the ability to examine multiple datasets alongside each other (e.g. risk alongside specific buildings). For Lenders this also included the ability to

deliver PCAF reporting at a touch of a button. If purchases are made, these will be after the conclusion of the pilot and so it is not yet possible to determine what will drive those decisions precisely, but it is highly likely that it will be that the Tools provide the ability to answer questions that they cannot currently answer, or that it is a better cost solution to answering questions they currently answer in other ways.

Usage patterns

The Lender Tool was used in a very similar way by the different users when they engaged with it, indicating a relative uniformity in motivators for engagement. This enables a relatively concise and targeted design. By contrast the LAs that engaged with the tool did so in a diversity of ways, reflecting the specific areas of expertise and responsibility of the team member involved. For example, if they were involved in social housing they would interrogate the data in a different way to a climate officer. This reflects the challenge we experienced with the extensive requests for additional functionality we received from LAs.

Customer barriers

There were no major technical barriers to customer engagement due to the corporate nature of engagement with the tool. The fundamental question is whether the tool will enable them to deliver on their role and responsibility effectively – if so, then there was excellent engagement.

Pain points

The pain points were well captured by the Alpha and Beta testing processes, and these were used to iterate the Tools accordingly. For lenders this was primarily around wanting to understand the risk associated with their portfolios. This suggests that much better climate risk data would be hugely beneficial for this group. For LAs this was around a lack of understanding of the potential funding streams to deliver work in their areas. This suggests that a clear and simple landscape of public grants and private finance would be hugely beneficial to LAs.

12.0 Final reflections

Having completed the pilot project, the project team is able to safely say that the project objectives have been met. As planned, two tools have been refined throughout the pilot:

- LA Tool – enables sponsoring LAs to undertake early feasibility and area selection for cross-tenure retrofit programmes on a property-by-property basis.
- Lender Tool – enables mortgage lenders to analyse their financial emissions, understand the risks associated with climate on their mortgage book and develop targeted finance propositions based on data.

Development of the tools was facilitated by three project partners: Living Places, SkenarioLabs and Enumia, with the project running from January 2024 to early 2025. Based on the success of this project partnership, it is recommended that future projects look to harness the benefits of a multi-partner project team. By harnessing a diverse and broad range of capabilities from three companies, the project team has been able to utilise the necessary expertise where required and deliver the project to the highest standard. Furthermore, when carrying out testing of the two tools, having multiple project partners enabled impartial, independent testing to be carried out prior to engaging with the user groups, ensuring that user groups saw a well-refined tool. Going forward, the project partners will look to use the same approach to testing when releasing planned updates of the tools.

On reflection, there are not major changes that we would make to the overall project. One improvement would have been to conduct an initial brainstorming session with the LA user group together to identify what needs were most pressing both inside and outside the NZN context so as to enable us to target the Alpha more effectively; however, this would not have been a major change to the overall approach, and the omission of this stage did not adversely affect the final outcome.

The validation methodology followed in the project has been a significant success and has helped to ensure that the tool developed is of optimal value for potential clients. The various staged gates where feedback on the tool was received has enabled the project team to develop a product which is highly valuable for its intended customer markets. Even at the final, Beta, testing phase, the team was able to make a final adjustment to the route-to-market to best reflect how the tool can be effectively marketed. This valuable feedback was gained through user groups, who were selected to be representative of their industries. By engaging with stakeholders and bringing them into the user groups early in the piloting process, the tools were developed with maximal applicability to the stakeholders who may eventually go onto purchase the tools. This approach will be used in the planned future iterations of the tools, which lie outside the scope of the pilot project and are not discussed due to commercial sensitivity.

A standout conclusion was that, for many lenders, the route to more effective green finance was not through additional impetus behind existing or potential green finance products, but by bringing climate and environmental risk into the analysis of entire portfolios. This may have a bigger impact than individual products as it could change the way entire portfolios are managed and supported over time. This should be borne in mind when considering development of future offerings in and around the green mortgage space.

A key lesson learnt, which future projects could also learn from, is the approach to user group testing. Once the user groups have been identified, it is recommended to engage with these users early on the topic of how data produced via any tool will be implemented in the broader business environment. Specifically, the goal here would be to interrogate whether the necessary skills are present within any user group members to leverage the presented information wherever possible.

Finally, we would like to recognise the funding received from the Department for Energy Security and Net Zero's Green Home Finance Accelerator. Due to the project partnership being comprised of SMEs, the work carried out in this project would not have been possible without this support. We would also like to acknowledge the contribution of user group members to the project, who have helped provide invaluable insights which have helped drive delivery of the tools.

Report Detail

Report For

Department for Energy Security and Net Zero (DESNZ)

Report Details

Work Package 8, Deliverable 8.3 (Draft End of Pilot Phase Report), Milestone 14

Project

Name: Built Environment Investment Analysis Service

Number: GHFA-PP-11

Project Consortium

Living Places, SkenarioLabs, Eunomia Research & Consulting Ltd.

Contact

Living Places
White Post Oast, Chiddingstone Causeway
Tonbridge
TN11 8JH
United Kingdom

Web www.livingplaces.earth

LivingPlaces