



Department for
Energy Security
& Net Zero

Home Upgrade Grant Phase 1 Evaluation

Final Report

DESNZ Research Paper Number 2024/012

December 2024



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Executive Summary

Background

The Sustainable Warmth Fund (SWF) is a Local Authority-led initiative within the Department for Energy Security and Net Zero (DESNZ) policy representing part of the UK government's broader efforts to enhance domestic energy efficiency for low-income households. The fund consolidated two schemes, namely the £286.7m Local Authority Delivery Phase 3 (LAD3) and £218.6m Home Upgrade Grant Phase 1 (HUG1), offering a unified funding opportunity for local authorities. This initiative aimed to improve energy efficiency and provide clean heat solutions for low-income households, whether residing on or off the gas grid. LAD3 specifically targeted on-gas grid properties, while HUG1 focused on off-gas grid properties.

Rationale for evaluation of HUG1

Verian was commissioned by DESNZ to conduct a process evaluation of HUG1, covering the period from April to December 2023. There were four main reasons DESNZ decided that the process evaluation should be focused on HUG1 rather than the SWF scheme as a whole. First, DESNZ had already commissioned a large-scale evaluation for LAD 1/2, and therefore decided to focus on HUG1 with the resources available. Second, LAD Phase 3 built on and improved on delivery of LAD Phases 1 and 2, which completed delivery 12 months prior. Therefore, the department felt there was less to learn from that scheme in terms of a focus on on-gas grid homes. Thirdly, as HUG1 was the first LA led scheme which targeted off-gas grid homes, DESNZ wanted to understand the challenges of this context and factor behind successful delivery. Finally, HUG1 was more challenging in terms of delivery than LAD3, Therefore DESNZ had greater interest in finding out reasons behind varying LA delivery performance to inform future policy and scheme design.

Evaluation objectives and methodology

The evaluation had two primary objectives. Firstly, it aimed to develop a qualitative typology outlining the spectrum of delivery models under the Sustainable Warmth Fund (SWF), encompassing both LAD3 and HUG1. Secondly, it sought to provide in-depth insights into the implementation of HUG1 from the perspectives of local authority staff, delivery partners, installers, and households.

The primary audience for this evaluation included the policy and delivery teams within the Net Zero Buildings (Domestic) Directorate, as well as other schemes' policy and delivery teams. The evidence derived from this evaluation contributed valuable insights into efficiency improvements and management processes for future schemes.

The evaluation employed a multiple qualitative case study approach. The qualitative typology was first developed through a phased review of the available data on LAD3 and HUG1 projects and validated through discussions with the DESNZ team. It was subsequently used as a framework for selecting case studies. Therefore, the typology was both an output of and input to the research activities. The evaluation focused on ten HUG 1 projects purposively selected to relevant types: Nottingham City Council, Greater London Authority, Blackpool, Liverpool City Combined Authority, North Yorkshire, Cheshire East, Leicester, Plymouth, South Derbyshire, and Wakefield. The report's findings were based on interviews conducted with DESNZ staff, local authority representatives, delivery partners, customer support teams, installers, and households. Additionally, the evaluation incorporated a review of scheme guidelines and scheme data.

The summary findings of the evaluation are outlined below, structured around context and four project process areas – Governance, Uptake and Service Provision - and presented as responses to the Key Evaluation Questions.

Main findings

Context

KEQ1: What contextual factors influence the ability for project leads to deliver installations under HUG1?

Research identified that three key types of contextual factors influence HUG1 implementation: external (i.e. the characteristics of the area receiving measures), organisation-specific, and project-specific factors.

These factors significantly influenced scheme 'uptake'. The specific external factors the evaluation found to be most influential were largely dictated by the eligibility criteria of the scheme design. Notably, the scheme's off-gas requirement and focus on low-income households in fuel poverty made it harder for LAs to identify properties. Consequently, projects tended to concentrate their installations in rural areas, which were more likely to be off the gas grid. However, challenges arose in identifying households when fuel poverty rates were low in these areas. Beyond scheme requirements, variations in the type of housing stock impacted the suitability of certain measures and the effectiveness of the uptake and service provision stages. Property layout, age, and conservation status, characteristic of specific locations within a project's geography, could affect the viability of installing key measures such as Air Source Heat Pumps (ASHPs), Solar PV, and loft insulation.

Organisational factors, particularly the expertise and capacity of the project lead, delivery partner, and consortia local authorities, influenced project planning and execution. Stakeholders highlighted that previous experience led to more rigorous procurement processes and a prioritisation of certain measures. This was felt to lead to a higher quality of installation. Additionally, longer, established relationships with delivery partners, explored further in the Governance section, were believed to help drive higher installation rates due to collaborative ways of working.

Lastly, project-specific factors, including whether a project received both HUG1/LAD3 funding and the distribution of measures in the bid, had varied effects on project leads' ability to deliver installations. Securing both funding streams did not originally allow for budget transfers across schemes. Treasury approvals were later given enabling certain projects to allocate more resources to LAD3 when HUG1 proved challenging. Overall, this had little impact on HUG1 delivery.

Targets for specific measures (the measure mix) were perceived by most project leads to have limited impact on their ability to deliver, partly due to the overall low installation rates achieved. Consequently, specific measures were rarely 'capped out,' and DESNZ's agreement to adjust project targets during the mid-point review (MPR) process helped mitigate the risk of this occurring in some case study locations. For example, in Leicester, retrofit assessments often identified opportunities for installing different measure combinations in homes from those specified in the bid, including measured where planned numbers were low. The delivery partner appreciated the flexibility provided by the MPR that allowed them to install these new measures.

Governance

KEQ2: What models of project governance exist for LAD 3 and HUG1?

The evaluation identified four governance approaches across the ten case studies explored. These governance approaches are defined by whether the project is a single LA or consortium, as well as the relationship and roles of LAs and delivery partners. A range of influences affected the decision on whether to be part of a consortium or single LA bid. These included contextual factors such as pre-existing political affiliations, experience and level of expertise, as well as specific motivations such as benefitting from or building greater capacity. One benefit identified by participating LAs of consortium membership was its ability to minimise the administrative burden or exposure of dealing directly with DESNZ. Single LAs tended to range from highly confident and experienced in their single bid or more politically isolated. Prior experience with a competent delivery partner was a major factor in driving this level of confidence.

Across the ten case studies, the governance approach is one of the most important determinants of implementation outcome: it shapes project decision making and use of consortium members and delivery partners.

The four governance approaches are as follows:

- 1) Actively-led consortium approach: a project lead (i.e. the lead applicant named in the bid) manages HUG1 on behalf of consortium members.
- 2) Overseeing relationships consortium approach: while the project lead/lead applicant oversees the project, delivery of HUG1 is largely managed by consortium members).
- 3) Single delivery partner-led approach (a single LA relies on a DP to deliver the scheme).
- 4) Single LA-led approach (the majority of management of the scheme is handled by the LA rather than a delivery partner).

Interviews indicated that delivery partners were a particularly important component within the delivery model in order to achieve good HUG 1 installations. Three key observations were made around the use of delivery partners. Firstly, their level of responsibility for delivery varied highly across all projects, from appointing installers to managing the customer journey end-to-end. Secondly, delivery partners also varied in the degree to which their organisational priorities were exclusively commercial or were connected with promoting wider social value (for example, as Community Interest Company). While identified no clear connection between delivery partner priorities and project outcomes were identified, project leads tended to describe the latter as more strategically aligned. Thirdly and most importantly, the length of time a project lead had worked with a delivery partner prior to this scheme was the strongest indicator of how embedded the relationship was. Length of relationship, through interviews and analysis was found to have a positive association with installation rates (see KEQ5, below).

KEQ3: To what extent is the existing project governance approach consistent with the LA bid?

Governance approaches in the ten case studies generally aligned with the Local Authority (LA) bid, but three exceptions were identified. Firstly, delivery partners were not specified in the bid and were procured subsequently, leading to delays and slower uptake due to an extended procurement process, resulting in fewer installations than initially anticipated. Secondly, approaches were modified after the expected funding from LAD3 was not awarded. The notable impact of this adjustment was an increased responsibility for a lead LA compared to other consortium members, attributed to the smaller scale of delivery. Finally, consortia experienced changes, such as the restructuring of political units. Project leads perceived the impact of these changes on delivery as minimal.

KEQ4: How is the lead LA managing the consortium members, delivery partners, suppliers and keeping them accountable?

The Lead LAs managed consortium members and delivery partners through several different approaches across the 10 case studies. In actively led consortia, the lead consortium member established regular meetings and data sharing agreements to oversee, control, and monitor delivery. This approach was noted for its flexibility in accommodating additional capacity requests during the delivery phase, as highlighted by lead consortium members.

On the other hand, the overseeing relationship approach heavily relied on consortium members to share data, posing challenges in maintaining accountability and meeting installation targets. Individual consortium members might manage mini-consortia or have separate funding for HUG1, contributing to a more complex governance structure. In this scenario, project leads often faced capacity constraints in handling requests due to the numerous involved members.

Across all types of projects, formal management and oversight of delivery partners presented challenges for project leads. Project leads and delivery partners sought to overcome these challenges through regular focused meetings, clear delineation of roles and strategic alignment. These types of solutions appeared to be more characteristic longer, more embedded project lead-delivery partner relationships.

KEQ5: How does the project governance approach affect scheme implementation outcomes?

The research identified several ways in which project governance approaches can influence implementation outcomes, with certain approaches demonstrating greater effectiveness in overcoming potential barriers.

Actively led consortia, which were characterised by stronger collective capacity and a consistency in scheme approach, appeared to be the most effective at supporting delivery across the board. For example, a project lead could cover tasks for LAs with limited resources and draw on the advice and support of consortium members to adjust approaches and collectively problem solve. In comparison to actively led consortia, overseeing relationship consortia approaches reported more issues in relation to data management and reporting. For example, this included needing to develop and manage additional templates to consolidate data from a broader set of consortium members.

Single LAs, as smaller projects without consortia partners, had less available capacity to deliver. Some also reported limited resource within their project lead team. Therefore, certain projects relied more on delivery partners for successful delivery than other approaches and were vulnerable to issues here. In contrast, delivery challenges in the one LA-led project, Wakefield, appeared to be partly a result of the LA's lack of experience in delivering a specific measure (Air Source Heat Pumps) and need to take sole responsibility for a range of complex decisions early in the project.

The strongest relationships between project leads and their delivery partners were often also the longest. These were formed before delivery of the Sustainable Warmth Fund and characterised by frequent contact and established ways of working. Longer-term partnerships were associated with higher installation rates, successful collaboration, and clearly defined roles. Project leads with prior experience leveraged their familiarity with delivery partners to navigate the scheme's short timescales, minimizing delays in installation and uptake. In contrast, projects with newly procured partners experienced lower installation numbers, rates, and customer satisfaction.

External factors such as the extent of rurality, housing stock, and supply chain dynamics were largely beyond the control of these governance structures and approaches. These factors ultimately placed a constraint on regional delivery potential within which governance approaches operated.

Uptake

KEQ 6: What range of methods or approaches are used by LAs to identify homes? What factors influence which approach is used?

Case study interviews revealed two primary approaches employed in identifying homes: blanket and targeted strategies. Many projects opted for a combination of these approaches, given the perceived difficulty in reaching eligible households for HUG1. Notably, the Greater London Authority (GLA) exclusively used a blanket approach. Blanket strategies aimed to reach a broad pool of potential applicants and involved multi-channel marketing through digital

and physical platforms, in-person events, and referrals via local networks and social prescribers. On the other hand, targeted approaches were designed to address challenges related to data quality, using energy efficiency data or demographic information to identify eligible households.

While projects commonly employed a combination of both blanket and targeted approaches, several factors influenced the prioritisation of these methods, with local context and governance approaches playing a role in these decisions. The choice to adopt blanket approaches was guided by considerations such as the ease of reaching and engaging with community members within the LA, as well as the quality and availability of communication channels. In instances where park home sites were available and could be effectively targeted, project leads found success in generating interest among a broad spectrum of potentially eligible households. On the other hand, more targeted approaches were often shaped by the quality of available data, the expertise of project leads and their delivery partners, and their capacity to leverage local knowledge for narrowing down eligible households. Therefore, a history of experience and an embedded relationship between partners proved valuable in supporting and enhancing targeted approaches.

KEQ7. Which approaches to community engagement and recruitment have been most effective and why? Which have been less effective? What have been the lessons learnt?

The most effective strategies for raising awareness and identifying households for the HUG1 scheme focused on addressing widespread scepticism and building trust in energy efficiency initiatives. With households often sceptical and hesitant due to concerns about scams, effective branding in marketing played a crucial role. Strong branding that clearly delineated the roles of various partners, including the local authority (LA), delivery partner, and installers, helped differentiate the HUG1 scheme from less reputable local initiatives. In-person demonstrations, engagement events, and home visits were identified as effective in alleviating fears about complex measures like Air Source Heat Pumps (ASHPs).

Project leads emphasised the importance of a targeted approach to household identification, especially given the limited availability of off-gas properties. This approach involved cross-referencing Energy Performance Certificate (EPC) data with databases on off-gas property distribution, fuel poverty rates, and coal-fired heating usage. While blanket approaches were deemed to have had a broader reach, combining them with more targeted follow-ups proved successful. The ability to pre-filter eligible households in a time-efficient manner was highlighted as beneficial.

Where uptake approach was deemed less effective, this was attributed to poor oversight by project leads, mismanagement by delivery partners, and confusing or non-existent scheme communications. Challenges included delays in household verifications, distrust leading to dropouts, and frustration due to unclear signs of council involvement. Challenges in household recruitment for the HUG1 scheme were identified, including potential disqualification of eligible rural properties based on income or size, difficulties accessing accurate EPC data, obstacles related to property improvements, and widespread scepticism among households. Overcoming

these challenges required targeted strategies and effective communication throughout the customer journey.

Service provision

KEQ 8. How are installers recruited?

In most projects (seven), installers were recruited through the project's delivery partner. Different recruitment models were used in three (Nottingham, South Derbyshire, and Plymouth) of the ten case studies, with varying degrees of success. These were informed to some extent by governance approaches.

Nottingham (Overseeing relationships approach) was the only project which put in place a dynamic purchasing system for consortium members to appoint installers from. This was chosen by the project lead due to the scale and diversity of the consortium membership and their experience of working in LAD Phase 2. This allowed LAs to quickly access installers specializing in specific measures. However, it created resource strains on the project lead to manage and coordinate the large number of installers. In South Derbyshire, the council took charge of recruiting installers directly, while the delivery partner handled outreach and triage functions. This led to difficulties and delays due to disputes over installer contracts. Conversely, Plymouth believed it benefited from a grant-based model from others where installers directly contracted households for measure installations. This was felt to avoid lengthy procurement processes. No other project used this approach.

KEQ 9 What types of energy efficiency installations are being delivered through HUG1, and to what extent does this align with the scheme objectives?

There were far more energy efficiency measures (1149) delivered than low carbon heating measures (482) in the ten case study projects.¹ Among those energy efficiency measures, the majority were priority measures, i.e. aligned with a fabric first approach.² A high number of 'other' measures (796) were also installed, primarily made up of Solar PV. Therefore, while bids specified a fabric first approach, fewer than half of all measures installed were fabric measures. Due to the low number of measures installed it is more difficult to evaluate alignment to scheme objectives. As research was conducted with a sub sample of projects receiving HUG1 funding, findings are only directly applicable to this sub-sample.

KEQ 10 To what extent are the homeowners and landlords engaged by the project willing to undertake this model's priority installation measure types?

The scheme mainly benefited owner-occupied households, with minimal landlord participation across case study areas. LAs felt it was difficult to engage landlords due to the requirement for them to make a minimum contribution of one third of the total costs of works.

¹ [Official Statistics - Green Homes Grant Local Authority Delivery \(LAD\) and Home Upgrade Grant \(HUG\) release, August 2024](#)

² Priority measures refers to those which are recommended by the Sustainable Warmth Guidance. These are covered in detail in [Chapter 4: Service Provision](#) but are energy efficiency measures aligned with a fabric first approach (insulation) and low carbon heating technologies.

Most households interviewed were happy to receive measures recommended by PAS 2035, and made compromises around the changes made to their property to benefit from the HUG1 scheme. This included accepting recommended primary or supporting measures when these did not reflect their first preferences. Households praised the swift and trouble-free installation process and tended to offer positive feedback due to the no-cost installation experience. Project leads suggested these households could be used as community advocates for future schemes.

Instances of dissatisfaction often revolved around the technical complexity of measures, visual disruption or complaints about the suitability or aesthetics of measures. Air Source Heat Pumps were highlighted as requiring a period of adjustment and households reported others in their area switching these off due to high bills. Households also tended to reject supporting measures, such as vents or door undercuts as unnecessary and struggled to understand their purpose.

KEQ 11 To what extent has the implementation of the SWF affected the delivery of future energy efficiency improvements?

Recommendations from project leads for future schemes applied to scheme eligibility criteria, timelines and overarching design. In terms of household eligibility criteria, project leads requested greater flexibility to avoid the risk of excluding the most deprived households and the inclusion of more holistic criteria to take account for a range of inequalities at a local level. Project leads universally saw timelines as too short to sufficiently deliver, even when a skilled delivery partner and installers were already in place. Beyond potentially lengthy procurement processes, project leads discussed that identifying and engaging with households and performing the necessary checks was a long and unpredictable process. Finally, project leads and delivery partners requested more involvement in the design of schemes such as HUG1 to ensure their experience was drawn from to fit these to the needs of their local areas.

Project leads mentioned key lessons from delivering the HUG1 scheme that would inform future approaches. These included spending sufficient time and effort at bid stage to ensure the measure mix (i.e. the ratio of planned measures) was realistic based on measure complexity and local context. In terms of awareness raising and household identification, project leads focused on combining the most effective 'blanket' and 'targeted' techniques and ensuring scheme marketing was clear and consistent. While changes in overarching governance approaches were rarely discussed, project leads mentioned using delivery partners, particularly they felt had local knowledge or non-commercial priorities that align with scheme objectives.

Overarching themes and conclusions

A case study approach allowed the evaluation team to draw out some of the major themes shaping delivery of HUG1. These can be used to inform the design and delivery of future schemes. Case studies also provide specific examples of the key challenges and opportunities that illustrate the wide variations in local experiences of installing measures under HUG1. Separately, the qualitative typology can be used as a reference tool against key factors identified as important through this report. It is important to note that findings from these ten

case studies are not directly applicable to all HUG1 projects and or wider set of LAD3/HUG1 projects within the typology framework. However, the section below outlines key insights that the evaluation team believe are most generalisable.

The evaluation emphasises that successful HUG1 delivery depended on the extent to which a project's context aligned with scheme requirements. This was particularly the case in terms of off-gas specifications, addressing fuel poverty, and incorporating a diverse range of housing stock. An effective and efficient delivery of HUG1 required varied geographies, including rural fuel-poor properties with minimal complexities related to property type or conservation status.

In addition to a project's contextual factors, implementation outcomes were strongly linked to governance models, with a particular emphasis on the involvement of delivery partners. For example, larger consortia more focused on 'managing relationships' appeared to face a range of challenges around co-ordination and data collection of many different installers that were not present in medium or smaller consortia. Nottingham found managing many installers across a large area challenging, whereas smaller geographic areas such as Plymouth (single LA) achieved some of the highest rates of planned installations. In terms of governance, success of implementation is also facilitated by an embedded relationship, often the result of long-standing collective experience between the project lead and delivery partner. Ideally, this was established before the announcement of the LAD scheme. This evaluation indicates that end-to-end ownership of the customer journey by a delivery partner is beneficial, especially under conditions of a pre-established trusting relationship. Instances where delivery partners assumed responsibility without sufficient oversight or control from the project lead led to various challenges, including issues around installation numbers, quality, and customer satisfaction.

Moreover, the hesitancy and scepticism of some households towards energy efficiency schemes, discussed by project leads, delivery partners and households (see KEQ7, above) indicates the importance of branding in driving trust in the scheme. These responses suggest that material that highlights the role of LA and emphasizes the legitimacy of the scheme and its various delivery partners is most effective at addressing this scepticism.

Glossary of terms

Term	Definition
Account Manager	The DESNZ staff member responsible for oversight of one or more projects.
Bid	The formal request to receive Sustainable Warmth funding. This contains a summary of key information, eligibility criteria and application requirements.
Bid approach	The decision to request Sustainable Warmth funding as a consortium bid or a single LA bid (see below).
Consortium bid	A bid made on behalf of multiple Local Authorities.
Cost cap	The maximum average subsidy to fund the installation of measures per property within a project. For HUG1 owner occupier properties, the maximum average subsidy per property is £25,000.
Delivery partner	An external organisation contracted to manage the delivery aspect of the project on behalf of the lead LA.
Delivery model	The organisational structure and approach through which project leads delivered installations for HUG1 and LAD3.
HUG1	The first phase of the Home Upgrade Grant scheme, designed to help local authorities (LAs) upgrade energy inefficient off-gas grid homes.
LAD3	The third phase of the Local Authority Delivery scheme, designed to help local authorities (LAs) upgrade energy inefficient on-gas grid homes.
PAS 2035	A standard for the retrofit and energy efficiency sector for housing, required for projects funded by various schemes, including HUG1 and LAD3.
Project	A successful bid that has delivered energy efficiency measures (see below) to households.
Project lead	The governance body responsible for administering the grant and overseeing the scheme. This is typically a local authority but may also be a regional governance body such as the Greater London Authority. Within a consortium bid, the project lead is the local authority identified as leading the bid.
Measure(s)	The energy efficiency measures delivered to residents, e.g. types of insulation, low carbon heating or heating controls.
Measure Mix	The balance of different energy efficiency measures included by LAs in their bids, as informed by scheme guidance.
Single LA bid	An application made up of a single Local Authority.

1. Introduction

1.1 The Sustainable Warmth Fund

Improving domestic energy efficiency is a key priority for the UK government, both in terms of meeting national climate change targets and supporting consumers to have warmer homes and lower energy bills. A central component in meeting net zero targets is the achievement of EPC C ratings across UK buildings where practically possible. Within this transition towards net zero, it is also important to ensure fuel poor households, of which there are 3.26m³ in the UK, are not left behind.

The Sustainable Warmth Fund (SWF) is a Local Authority delivered scheme, one of a range of approaches launched by the UK government to improve domestic energy efficiency and provide appropriate energy efficiency and clean heat solutions to low-income households. It brings together two schemes – the Local Authority Delivery Phase 3 (LAD3) and Home Upgrade Grant Phase 1 (HUG1) – into a single funding opportunity for local authorities to upgrade the energy efficiency of low-income households living both on and off-grid. LAD3 is focused on on-grid properties and HUG1 on off-grid properties. HUG1 is delivered through local authorities to households in England only.

Verian was commissioned by the Department for Energy Security and Net Zero (DESNZ) to undertake a process evaluation of HUG1. This report provides a cross-case synthesis of findings⁴ related to the evaluation questions agreed with DESNZ in the evaluation scoping phase.

1.2 Methodology

1.2.1 Evaluation objectives

This evaluation has two main objectives. **First**, to develop a qualitative typology of the range of delivery models under the SWF (LAD 3 and HUG 1). **Second**, to undertake a process evaluation that will provide detailed insights on how local authorities have implemented HUG1 from the perspective of local authority staff, delivery partners, installers, and households.

1.2.2 Evaluation questions

To address the above objectives, the Key Evaluation Questions (KEQ), presented in **Table 1** below were formulated during the evaluation scoping phase, building on, refining, and prioritising the originally proposed questions in the Invitation to Tender. The KEQs have been mapped against project context, and the three project process areas of the HUG1 scheme.

³ Source: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1139133/annual-fuel-poverty-statistics-lilee-report-2023-2022-data.pdf

⁴ This study draws on a sample of 10 projects (consortia and LA) who have delivered HUG1.

Table 1: Evaluation Questions

Process area	Key Evaluation Questions
Context	KEQ 1: What contextual factors influence the ability for project leads to deliver installations under HUG1?
	KEQ 2: To what extent has the implementation of the SWF affected the delivery of future energy efficiency improvements?
Project governance	KEQ 3: What models of project governance exist for LAD3 and HUG1?
	KEQ 4: To what extent is the existing project governance approach consistent with the LA bid?
	KEQ 5: How does the project governance model affect scheme implementation outcomes?
	KEQ 6: How are LAs managing their consortium members, delivery partners, suppliers and keeping them accountable?
Uptake	KEQ 7: What range of methods or approaches are used by LAs to identify homes? What factors influence which approach is used?
	KEQ 8: Which approaches to community engagement and recruitment have been most effective and why? Which have been less effective? What has been the lessons learnt.
Service Provision	KEQ9: How are installers recruited?
	KEQ 10: What types of energy efficiency installations are being delivered through HUG1, and to what extent does this align with the scheme objectives?
	KEQ 11: To what extent are the homeowners and landlords engaged by the project willing to undertake this model's priority installation measure types?

1.2.3 Evaluation approach

The process evaluation adopted a **qualitative case study approach**, involving primary qualitative data collection methods complemented by scheme data. Ten case study projects out of a possible 42 projects under HUG1 have been purposively selected. The projects were selected to allow analysis and comparison of the different delivery models identified through

the typology stage – see [Chapter 3 \(Project Typology\)](#). They represent a variation in scheme characteristics including governance arrangements, fund size, and geography.

Table 2 below presents the overarching characteristics of each case study project. The selected projects are Nottingham, the Greater London Authority (GLA), Blackpool, Liverpool, Cheshire East, North Yorkshire, Leicester, Plymouth, South Derbyshire and Wakefield.⁵

Table 2: Selected case study locations

Consortia projects			Single bid projects
Name	# of consortium members	Size of consortia	Names
1. Nottingham	60	'Super -Sized'	7. Leicester
2. Greater London Authority (GLA)	33	'Super -Sized'	8. Plymouth
3. Blackpool	14	Medium	9. South Derbyshire
4. Liverpool	6	Medium	10. Wakefield
5. North Yorkshire ⁶	5	Small	
6. Cheshire East	3	Small	

1.2.4 Evaluation methods

This evaluation used a range of primary and secondary methods⁷. Specifically, this included:

- **Group discussions with DESNZ staff** who are involved in scheme design (policy team members) and delivery (i.e. account managers). They provided detailed accounts about the scheme and HUG1 implementation processes drawing on their experiences and knowledge of specific projects.
- **Group discussions⁸ with local authority representatives** in charge of scheme delivery. This included staff members who had been involved in the bidding process, as

⁵ For ease of reference, each case study is referred to in the report by a simplified version of the lead LA's name. For example, Liverpool rather than Liverpool City Region Combined Authority (LCRCA).

⁶ North Yorkshire was a consortium bid, but single delivery due to local government restructuring.

⁷ Please refer to Table 2 in the accompanying Annex for a detailed breakdown of participants engaged through this research.

⁸ In smaller projects, one on one interviews with the relevant team members were held instead.

well as staff that are currently involved in the day to day running of the programme such as project leads/managers, finance officers, engagement and outreach officers, delivery partners.

- **In-depth interviews with installers** to understand their interaction with local authorities and households, supply side challenges, how they interpret and implement regulations and how this affects delivery outcomes.
- **In-depth interviews with households** to provide rich insights on their experiences of the scheme's delivery processes. In addition to the primary data collection, the evaluation also drew on secondary analysis of scheme data to build and strengthen our evidence base. This included project bids, scheme documents, and data from internal monitoring systems.
- The analysis of secondary data, comprising scheme data, bid documents and qualitative assessments of projects by account managers, contributed to the development of typology and the design of the case study fieldwork. The secondary data alleviated the burden on participants by minimizing their information-sharing requirements but also supplemented emerging evidence obtained from primary data collection.

1.2.5 Fieldwork implementation

The fieldwork for this evaluation took place between June and September 2023. Each case study location had a lead researcher from the evaluation team who conducted all the interviews, undertook the data analysis and led the case study write up for that project. The technical annex accompanying this report contains the ten case study reports that have been synthesised in this report.

1.2.6 Analysis approach

The evaluation process was guided by the evaluation matrix (refer to the accompanying technical annex), outlining Key Evaluation Questions (KEQs), sub-questions and criteria⁹ that directed our evaluative judgments. The KEQs and sub-questions were mapped against project context and the key process areas of Governance, Uptake and Service Provision. They built on the questions in the invitation to tender with inputs from the DESNZ evaluation and policy teams.

Our data analysis was a dynamic, iterative process. The evaluation team engaged in weekly post-fieldwork debriefs, discussions, and presented interim findings to key DESNZ stakeholders twice. This process allowed us to examine emerging hypothesis and assumptions, and develop, test and refine new hypothesis over the course of the evaluation. This also meant we were able to provide early sight of thinking and evidence for reflection by the delivery team and account managers. DESNZ feedback enabled the evaluation team to delve deeper into various case study locations and stakeholder perspectives, broadening the scope of our inquiries. Additionally, to facilitate cross-case analysis, we undertook a formal desk-based analysis. This involved initially documenting case study findings in a consistent template. Subsequently, we developed an analysis framework aligned with the evaluation

⁹ Criteria in this context refers to the evidence that matters to answer the KEQ and sub questions. They represent probes or exploratory items of the sort of evidence we will piece together to answer the evaluation questions.

matrix, ensuring a comprehensive examination across cases for this synthesis report. By synthesising key findings in relation to each KEQ, we aimed to extract actionable insights that address specific aspects of our evaluation framework. These have formed the basis for making recommendations lessons learnt in this evaluation different stakeholders. For further details, the technical annex accompanying this report contains the 10 case study reports that have been synthesised in this report.

1.2.7 Limitations

A significant drawback in this evaluation was the limited engagement and participation from installers. We sought to interview at least one installer per LA and two to three where possible. To address this limitation, we experimented with alternative approaches to recruit installers during the fieldwork phase, particularly by leveraging contacts through LAs with limited success. Recruiting this audience has been a recurring challenge for DESNZ across a range of projects. Seven installers were interviewed across five different projects. In two of these projects, Plymouth and Greater London Authority, installations were almost exclusively carried out by the installer who was interviewed. The limited installer experiences and perspectives across multiple cases creates a gap in a holistic view of delivery in some case studies. Consequently, our findings lack triangulation against this source, potentially overlooking alternative explanations for our conclusions. For example, limited evidence has been gathered on installers' views of the specific barriers to installing the scheme's priority measures. Despite this limitation, the insights gained from the interviewed installers align with the perspectives of other research participants within the case study locations, offering some validation.

1.3 Report structure

The remainder of this document is structured as follows:

[Chapter 2](#): provides more detail around the Sustainable Warmth Fund, and key stages in the project process identified during the inception phase.

[Chapter 3](#): outlines how the typology was developed and refined and key findings from this stage. It explains how the typology was used to sample ten case studies and limitations to be aware of.

[Chapters 4 – 7](#): present the findings from the case study research relating to project context and the key process areas of governance, uptake and service provision.

[Chapter 8](#): discusses the conclusions from the research and lessons learned.

2. Overview of the Sustainable Warmth Fund and Home Upgrade Grant Phase 1

The primary purpose of the Sustainable Warmth competition funding was to raise the energy efficiency rating of low-income and low EPC rated homes (those with D, E, F or G ratings) on the gas grid, and off gas grid. The funding supported low-income households to install upgrades to improve the energy efficiency of their homes. Recipients of upgrades were low-income household (with an annual income of less than £30,000 gross income) who live in both owner-occupied and private rented sector with an EPC rating of D, E, F and G (Band D homes are capped at 30%).

Upgrades involved the installation of energy efficiency and heating measures compatible with the Standard Assessment Procedure (SAP)¹⁰ including wall, loft and underfloor insulation and low carbon heating technologies.). Contractors were required to be TrustMark certified (and MCS certified where applicable), or else accredited to a scheme that the Department of Energy Security and Net Zero was satisfied as equivalent. They were required to comply with PAS 2035 in delivering all installations.

Competition for Sustainable Warmth Funding began on 16 June 2021. Grant offers were made in Autumn 2021. Delivery of the scheme began in January 2022. An initial scheme end date of 31 March 2023 was extended by up to six months where project leads successfully applied for this.

There were 51 live projects in receipt of Sustainable Warmth Funding (42 for HUG1) with levels of funding ranging in value from c.£335,000 to £118m across both HUG1 and LAD3 schemes. 24 of these projects are consortium bids.

Access to Sustainable Warmth Funding was through an application to the Department of Energy Security and Net Zero (DESNZ). Only Local Authorities (LA) or Local Net Zero Hubs in England were eligible to apply. Local Authorities could lead or be a partner in a consortium application. Where an LA joins a consortium, a lead LA must be identified who becomes the primary point-of-contact for DESNZ. LAs can also join multiple consortium applications. All applications were subject to a total minimum funding proposal value of £250,000, although there was no maximum funding amount.

2.1 Home Upgrade Grant Phase 1

The HUG component of Sustainable Warmth explicitly targeted off-gas grid homes. Verian developed an overview of the high-level process from consultation with DESNZ delivery colleagues and is presented in **Table 3** below. The main parts of the process identified were governance, uptake and service provision.

¹⁰ A Reduced Data Standard Assessment Procedure (RdSAP) applies to existing buildings, whereas as a Standard Assessment Procedure (SAP) applies to new buildings only.

Table 3: Project process areas

Context (while not a process area, this affects delivery)	
1. Governance	
<ul style="list-style-type: none"> • Structure • Roles and responsibilities • Management and monitoring • Stakeholder relationships 	
2. Uptake	3. Service Provision
<ul style="list-style-type: none"> • Awareness raising and household identification • Application and eligibility determination 	<ul style="list-style-type: none"> • Recruitment • Onboarding • Monitoring • Installation

1. Governance. This refers to how the project is overseen and how decisions that guide the management of the project are made. Governance also includes topics such as stakeholder roles and responsibilities, communication between stakeholders, and approaches to monitoring project progress and delivery of the scheme. A key distinction between governance of different projects is whether they are directly managed by a single LA or through a consortium, and whether installers and delivery partners have been brought in to support or take over project management.

2. Uptake. This involves marketing and encouraging potential demand for energy efficiency measures. It consists of two primary steps:

- **Awareness raising and household identification:** Projects employ diverse outreach approaches to identify eligible residents within a community and encourage their participation in the scheme.
- **Application and eligibility determination:** Applicants can apply online via various websites, over the phone, or in person at the council, possibly with external support. Other entities, such as energy companies, might assist applicants through the process. Eligibility is determined through a screener where applicants provide details about their income, benefits status, and household situation, along with supplying income eligibility documentation (e.g., bank statements, payslips, employer letters). This stage may also involve a follow-up survey, and homes without an Energy Performance Certificate (EPC) rating will undergo an EPC survey as part of the eligibility process.

3. Service provision. This involves managing the delivery and installation of measures. It consists of several steps that encompass recruitment, onboarding, installation, and aftercare. These vary by project approaches:

- **Recruitment of installers** entails engaging in procurement discussions, identifying Energy Company Obligation (ECO) or other qualified local installers, ensuring compliance with various requirements (including TrustMark, and PAS), conducting delivery risk assessments, and establishing a vetted framework of contractors and subcontractors.

- **Onboarding** entails setting up installers to work with the project lead, as well as briefing, training and support if needed. Onboarding may include meetings to discuss ways of working, align expectations, flag potential risks, and discuss the nuances of local context and planning regulations and their potential impact on meeting scheme requirements. This may be overseen by a central procurement team. Not all project leads formally onboard their installers.¹¹
- **Installation** adheres to quality standards, led by a project coordinator following the PAS 2035 specification. Customers provide satisfaction sign-off upon completion, triggering the issuance of a payment certificate, contingent upon EPC and Trustmark registration.
- **Aftercare** responsibilities are divided between installers and the Local Authority (LA). Installers may provide recipients user manuals, benefits descriptions, or demonstrations for operating complex measures (e.g., Air Source Heat Pumps). LA representatives conduct post-installation visits to address queries, and inspections might occur for quality assurance.

¹¹ Reasons for this are discussed in more detail in Chapter 7: Service Provision, below.

3. Delivery model project typology

The development of a project typology was designed to address the first objective of this evaluation – to produce an overview and categorisation of different delivery models adopted by all local authorities participating in LAD3 and HUG1.¹² The typology was used to inform purposive sampling of a range of experiences for the case study research.

3.1 Developing a typology:

The evaluation team developed an initial typology framework through a series of steps:

- 1) **Mapping potential attributes.** The evaluation team drew from documents shared by DESNZ to populate a range of attributes against four priority process related areas of the HUG1 scheme: [i\) Context](#), [ii\) Project Governance](#), [iii\) Uptake and](#) [\(iv\) Service Provision](#). These documents included bid documents, scheme return data and initial typology notes completed by members of DESNZ’s team.
- 2) **Reviewing data for quality and availability.** Following this, the evaluation team reviewed the programme documentation supplied by DESNZ to assess the availability of data needed to categorise delivery models. The team assessed attributes for their completeness, distinctiveness (i.e. not duplicating other possible attributes), coherence across data sources, and extent they allowed for helpful categorisation. No attributes were included relating to Uptake due to a lack of clear and consistent indicators.¹³
- 3) **Agreeing key attributes.** The output of the process above was a set of suggestions for attributes to include in the typology and reasoning for this. The evaluation team identified 22 attributes in the inception report. Of these, six core attributes were included in the final typology:¹⁴
 - i. Bid approach (i.e. whether consortium or single LA)
 - ii. Consortium size
 - iii. Initial bid value
 - iv. Experience, defined by whether the LA or consortium has received funding under LAD 1a or b the past. Contained in the application under q1d.¹⁵

¹² It was agreed in discussion with DESNZ evaluation analysts that the typology was expected to provide a broad framework rather than a systematic, robust categorisation of LAs. The main reasons for this were due to the many differences and nuances between bids, local delivery contexts, and within consortia, as well as gaps in data or concerns around quality. The aim was for case studies to build on the typology draw out important factors that are likely to influence delivery within the different typologies.

¹³ We recognise that the absence of attributes related to uptake limits the depth of insight into how the delivery model influences uptake and other implementation outcomes. To overcome this, and as reported in the finding section of this report, the evaluation sought additional insights from households regarding their decision-making processes for specific HUG 1 measures. Additionally, we corroborate these findings from households with insights from local authorities, delivery partners and installers.

¹⁴ For more detail on this process and rationale, please see the Technical Annex: 2. Delivery Model Typology. 2.1.3 Establishing key attributes.

¹⁵ Question wording: “Has your LA, or every LA in your consortium, received funding under LAD Phase 1a or 1b?”

- v. Use of deliver partner or not
- vi. Size of delivery partner.

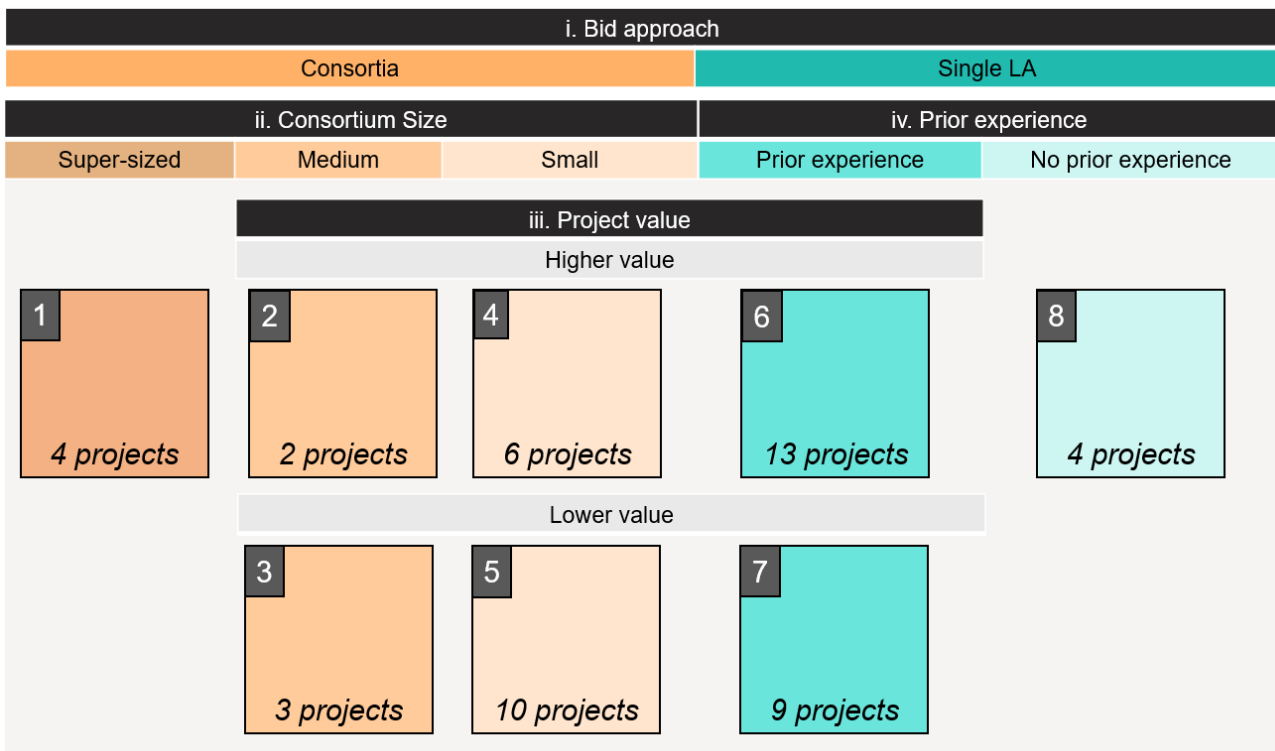
Attributes i-iv (Bid approach, Consortium size, Initial bid value and Experience) were deemed sufficient (by Verian and DESNZ) to categorise the 51 projects into a typology for sampling a range of experience in the case study research.

4) **Typology development.** The team proposed eight types. All projects (LAD3 and HUG1) were allocated to a type. Basic thematic and descriptive analysis was used to identify additional shared characteristics within typologies, for example population size and number of measures installed. The evaluation team then developed a description of each typology, presenting these to DESNZ’s LAD3/HUG1 delivery team for discussion, amendment and sign off.

3.2 Agreed typology:

The eight delivery model ‘types’ qualitatively validated following the inception phase are described in **Figure 1** below. This validation stage involved Verian presenting and sharing an overview and categorization (typology) of delivery models with DESNZ, incorporating amends. This typology was subsequently signed off. This typology framework sets out how the 51 projects were distributed across these groups. Characteristics related to the other core attributes are outlined in **Table 4**.

Figure 1: Typology framework



3.3. Refining the typology and interaction with the case studies

The typology enabled the evaluation research team to sample a range of projects for the case study research. While LAD3 projects were included in the previous typology development stage, the case study phase of research was focused on HUG1 projects. The case study research also informed a refinement of the understanding of the typology and the extent to which attributes are likely to correlate with implementation outcomes. The key implementation outcomes examined were number of installations achieved under HUG1, rates of installation (planned vs. delivered), alignment with scheme objectives (in terms of installing priority and cost-effective measures, and household experiences).

The case study research retrospectively indicated that, of the six attributes i) Bid approach and ii) Consortium size had the clearest association with projects' implementation outcomes. For example, project leads from consortia-bid approaches highlighted the benefit of increased collective capacity that helped them deliver measures across a diverse range of off-gas areas. 'Super-sized' consortia faced specific governance challenges around managing a large group of stakeholders, with risks for implementation outcomes. This is covered in more detail in [Chapter 5 \(Governance\)](#) below.

The evaluation team found that attributes iii) Initial Bid Value and iv) Experience of previous government schemes were of limited use in understanding the implementation of the 42 HUG1 projects.

Initial bid value is limited in informing understanding of either LAD3 or HUG1 delivery specifically. This figure is the sum total of funding received by LAD3/HUG1 schemes and so does not show the value of each funding stream within this. Case study research indicated that prior funding experience could directly improve delivery if project leads successfully operationalised this experience. For example, this experience might prompt the formation of governance structures or prior identification of installers with relevant expertise.

However, the ten case studies indicated that data recording whether a project had prior funding experience under LAD 1a or 1b was of limited relevance to delivery of HUG1 for three reasons:

- All project leads at LAs had experience in delivering retrofit energy efficiency schemes. For example, Wakefield was categorised as having no experience delivering LAD1a or 1b, but the project leads outlined relevant experience from other retrofit schemes.
- Many project leads saw HUG1 as a unique retrofit energy scheme, meaning that prior experience could be less directly relevant than for other schemes. Project leads pointed towards a) the HUG1 eligibility criteria, including exclusively targeting off-gas properties, and b) HUG1's recommended measures, especially Air Source Heat Pumps (ASHPs) where few LAs had direct experience of delivery.
- All ten projects in the case studies worked with a delivery partner. Therefore, even LAs with limited experience of previous schemes, including LAD 1a or 1b, could bolster this through their use of a delivery partner. These delivery partners were often not named in the bids and not assessed in DESNZ's evaluation of prior experience.

Table 4: Typology full description

Name	Definition	Projects (chosen case studies are bolded)
Consortia Projects		
1. Super-sized consortia	Project that applied for funding through a consortium with over 24 members.	Total projects : 4 GLA (33 authorities), Cambridge & Peterborough Combined Authority (69), Nottingham City Council (60), Portsmouth City Council (24)
2. Medium sized consortia (high value)	Consortia with between 7 to 19 members with total award above £20 million for HUG1 and LAD3 schemes.	Total projects: 2 Ealing London Borough, Liverpool City Region Combined Authority
3. Medium sized consortia (low value)	Consortia with between 7 to 19 members with total award below £20 million for HUG1 and LAD3 schemes.	Total projects : 3 Blackpool Borough Council , Devon County Council, Stroud Council
4. Small sized consortia (high value)	Consortia with 6 or fewer members with Total award above £5 million for the HUG1 and LAD3 schemes.	Total projects: 6 Cambridge City Council, Carlisle City Council, Cornwall County UA, North Yorkshire Council , WOE Combined Authority, West Suffolk District Council
5. Small sized consortia (low value)	Projects with 6 or fewer members with Total award below £5 million for the HUG1 and LAD3 schemes	Total projects: 10 Bristol City Council, Broadland District Council, Cheshire East UA , City of York Council, Sedgemoor District Council, East Lindsey District Council, Hastings Borough Council, Oxfordshire County Council, Tees Valley Combined Authority, Shropshire County Council

Single LA Projects		
6. Single LA with prior experience (High value)	Project leads with a single bid approach that have prior experience +Total award above £2.8 million.	<p>Total projects: 13</p> <p>Barnsley Metropolitan Borough Council, Great Yarmouth Council, Leicester City Council, Northumberland County Council, Plymouth Council, London Borough of Barking & Dagenham, Walsall Metropolitan Council, Warwick Council, City of Bradford Metropolitan District Council, Calderdale Council, North Tyneside, Norwich City Council, Royal London Borough of Greenwich</p>
7. Single LA with prior experience (Low value)	Project leads with a single bid approach that have prior experience +Total award below £2.8 million	<p>Total projects: 9</p> <p>Castle Point Borough Council, Central Bedfordshire Council, East Riding of Yorkshire, Redbridge, Greenwich, Newcastle upon Tyne Metropolitan DC, Sevenoaks Council, South Derbyshire Council, Colchester Borough Council, Waltham Forest Council</p>
8. Single LA with no experience	Project leads with a single bid approach that have no prior experience.	<p>Total projects: 4</p> <p>Hartlepool Council, Wakefield Council, Lincoln City Council, Sheffield City Council</p>

4. Case study findings: Context

This chapter introduces the key contextual factors associated with project leads' levels of success in implementing HUG1 installations. Many project leads frequently equated the success of their projects with the number of installations achieved compared to the initially set targets. Subsequent chapters will explore the effects of these contextual factors on delivery across the process stages.

4.1 Contextual factors influencing HUG1 implementation.

Context refers to the set of circumstances in which project leads delivered HUG1. Three types of contextual factors were identified through the case study research to affect HUG1 implementation:

- 1) **'External' factors:** local characteristics of the area receiving measures, such as geography, levels of poverty, and type of building stock, that are beyond the influence of the project lead or other organisations involved in delivery.
- 2) **Organisation-specific factors:** characteristics of the project leads and delivery partner, such as level and type of experience, relationships with partners, and levels of capacity.
- 3) **Project-specific factors:** characteristics of the specific HUG1/Sustainable Warmth Fund project, such as the measure mix and amount of LAD3 and HUG1 funding received, as defined by the bid. These were largely within the control of the organisation responsible for the bid. This was typically the project lead, although there were cases where delivery partners had some influence on these factors.

4.1.1 External factors

Extent of rurality, fuel poverty rates and type of housing stock were the primary external factors highlighted by project leads which influenced HUG1 implementation. These factors were discussed in the majority of case studies. The importance of rurality and fuel poverty were directly related to the scheme design in terms of its eligibility criteria: its off-gas requirement and targeting of low-income households likely to be in fuel poverty. In contrast, type of housing stock was a wider contextual factor which affected the ease of installing different types of priority measure.

As HUG1 targeted off-gas grid properties, the degree of rurality significantly influenced the count of eligible properties within a project's coverage area. The number of installations accomplished relied heavily on how much of each project was in a rural area. Project leads emphasised the concentration of off-gas properties in rural areas. In regions like North Yorkshire or Cheshire East, which comprised a mix of urban and rural areas, efforts were directed primarily toward rural regions rather than focusing on low-income or fuel-poor urban areas. Blackpool Council and Nottingham consortium members highlighted the suitability of HUG1 due to the abundance of rural properties in Lancashire's villages and Nottinghamshire. Conversely, this was one of the challenges noted by the urban GLA consortium, which achieved only 4% of planned installations compared to Nottingham's 13% at

the time of the interview. Both GLA and its delivery partner found it challenging to identify eligible households within their area as a result of low off-gas presence in urban areas.¹⁶

However, fuel poverty rates were generally lower in rural areas. This could further reduce the pool of potentially eligible households within projects. Project leads stated that although rural areas were more likely to have a higher number of off-gas grid homes, they were less likely to be in fuel poverty. For example, households in rural off-gas properties in Wakefield and Cheshire East tended to have incomes above the HUG1 thresholds when compared to the LA's urban on-grid households. LAs reported that areas with high fuel poverty rates were often on-gas and urban. For example, Liverpool is predominantly urban with 20% of households being fuel poor while 95% of households are connected to the gas grid.¹⁷

Project leads highlighted that the type of housing stock affected the suitability of certain measures, such as ASHPs, Solar PV and loft insulation. The Greater London Authority (GLA) reported that many eligible households in London lived in midstory flats, which restricted the installation of Solar PV. The Leicester project lead also explained that many eligible properties in Leicester had insufficient outdoor space to fit ASHPs. Leicester also reported that the need for planning permission for solid wall insulation in older Victorian buildings led to delays and households dropping out of the scheme. Additionally, the Wakefield project lead observed similar effects around planning permission for eligible off-gas properties in conservation areas. In summary, case studies outlined a range of different types of housing stock which determined installation feasibility in a systemic way. Please see [Chapter 7](#) for more detail.

Interviews with project leads and delivery partners corroborated that rurality, fuel poverty rates, and type of housing stock significantly affected their ability to identify households and install priority measures.¹⁸ Additionally, project leads expressed that this context was discovered as the scheme elapsed due to its novel off-gas grid focus. Overall, project leads expressed that the interaction between scheme requirements and their local context greatly affected delivery outcomes. This is discussed in detail in [Chapter 7 \(Service Provision\)](#).

LAs reported additional contextual factors with some influence on their ability to install measures under HUG1. Compared to rurality, housing stock and income, these were either felt to be less influential or were only highlighted by a select number of case studies. While these factors were influenced to a degree by scheme requirements (for example, the identification of

¹⁶ National estimates indicate that 24% of inner London and 13% of outer London properties are off-gas grid, suggesting that there are additional complexities related to uptake to be aware of. Source:

<https://www.gov.uk/government/statistics/sub-national-estimates-of-households-not-connected-to-the-gas-network>

¹⁷ This is slightly above the latest national average of 87%. Source: <https://www.gov.uk/government/statistics/sub-national-estimates-of-households-not-connected-to-the-gas-network>

¹⁸ Source: [Sustainable Warmth competition \(closed to applications\) - GOV.UK \(www.gov.uk\)](#) For example, the Competition Guidance recommends the installation of heat loss prevention energy efficiency measures such as wall, loft and underfloor insulation in households through a fabric first approach. Applications where less cost-effective measures such as solar PV and double glazing made up a high percentage of measures or costs were scored lower unless sufficient justification was made.

ASHPs as a priority measure), they were largely related to challenges with skills, infrastructure and geography.

- 1. Supply chain capacity and skills:** LAs reported that insufficient numbers of available installers locally, particularly those who were PAS 2035 qualified, reduced the number of installations possible. GLA identified this as one of the issues affecting London that made it more challenging to reach installation targets. Installers were more likely to be small businesses and struggled to manage the high cash flow risk associated with schemes such as HUG1. Other LAs found it difficult to find installers with pricing competitive enough to install quality measures below the cost cap. Cheshire East, Leicester, GLA and South Derbyshire reported that PAS 2035 compliance increased the unit price of installations. PAS 2035 also increased the time, effort and cost of procurement efforts, as reported by Wakefield.
- 2. Electric infrastructure:** Two LAs, Leicester and Wakefield, reported that weak existing electrical infrastructure in certain neighbourhoods made it harder to install energy-intensive appliances such as ASHPs.
- 3. Size of consortium area and local market:** In North Yorkshire, the large area covered by the consortium made it difficult for installers working across the region. In particular, long distances made it less profitable for installers to work on projects across the region.

4.1.2 Organisation-specific factors

Organisation-specific factors were those related to the experience and capacity of all the organisations involved in delivering HUG1. These organisations included the project lead and their delivery partner and all LAs across consortia.

Certain project leads reported refining procurement approaches based on previous experiences, and believed higher quality installations were achieved as a result. Regarding procurement, some project leads discussed how negative past experiences informed stricter criteria for the delivery of HUG1, leading to installations that were better aligned to household needs. For example, Blackpool reported a more stringent vetting process by requiring installers be recommended by product manufacturers, have references from LAs, and have certain types of insurance. Blackpool believed this rigour led to a higher quality of installation to help lower household energy bills. Having the support of an embedded delivery partner was seen to facilitate an increased level of vetting of installer qualifications. North Yorkshire had selection criteria on ethical business policies to minimise the risk of perverse incentives, so that households got appropriate measures rather than the most profitable ones for installers.

Past experience could also inform fundamental project decisions such as delivery partner responsibilities and involvement, measure mix strategies¹⁹, or innovative approaches to installer recruitment. Leicester and South Derbyshire shared that prior experience across previous LAD schemes informed their decision to bring in an external delivery partner instead of delivering the scheme internally. Both LAs reflected that managing most aspects of delivery in-house was too resource-intensive. In terms of the measure mix, GLA stated their previous experience had confirmed that draughtproofing was difficult to deliver in London. This measure was therefore deprioritised for HUG1. In contrast, Wakefield specifically focused on installing ASHPs to build internal expertise in managing delivery of this

¹⁹ Measure mix refers to the balance of different priority measures included by LAs in their bids.

measure. Previous experience could inform more innovative approaches to overcome likely delivery hurdles. Plymouth and its delivery partner required installers to sign direct contracts with households and pointed towards greater efficiency of delivery as a result. Both organisations believed this was a more efficient delivery approach as it avoided delays to installer recruitment through lengthy procurement processes. This assessment was based on past experience and the direct contract approach was described as ‘tried-and-tested’ on other schemes.

One delivery partner highlighted the benefits of previous experience in more targeted household identification. In Leicester, E.ON, a large delivery partner, highlighted how previous experience enabled a faster identification of households by allowing them to draw on existing databases with similar eligibility criteria. They supplemented open-source data, with data from previous schemes such as the Warm Homes Fund which also targeted off-gas properties.

Both consortia and single LAs reported that having previously formed relationships either between LAs, the delivery partner and/or installers played a key role in facilitating installations. This is explored in more detail in Chapter 5: Governance. Project leads believed this was especially important for HUG1 due to the perceived short timelines and range of potential barriers to installing measures within an off-gas property. These relationships between organisations facilitated delivery through (1) established ways of working, (2) pre-existing contractual agreements (3) and/or the ability to onboard more efficiently.

- 1) **Established ways of working:** For both consortia and single LAs, established relationships across consortium members or with delivery partners enabled a faster project set-up through a continuation of existing team structures. It also benefited mutual support and collective problem solving. For example in Liverpool, when issues that were previously faced on LAD2 around standard measures like loft insulation, underfloor, and EW1, delivery partners were able to draw on prior experience. Project leads also felt data sources generated from collaboration on previous schemes facilitated delivery.
- 2) **Flexible budget allocations:** For consortia, established relationships between members facilitated delivery based on flexible and effective budget allocations. For example, budget could be re-allocated based on the delivery performance of members.
- 3) **Onboarding:** Established relationships between LAs, delivery partners and installers could enable a faster set-up and more efficient delivery due to the familiarity of installers with publicly funded schemes and compliance requirements. This allowed installers to be onboarded more efficiently.

Connecting LAs’ prior experience directly to installation outcomes poses some challenges. Nevertheless, as elaborated in [Chapter 3 \(Project typology\)](#), interviewees emphasised various types of prior experiences they deemed pertinent to scheme delivery. These included the expertise of the project lead or the delivery partner, past experiences across LAD schemes, involvement in initiatives like the Warm Homes Grant or ECO, and the establishment of networks and relationships within a consortium and between the project lead and delivery partner.

LA capacity informed project leads’ decision on whether to use a delivery partner. However, once a delivery partner was used, project leads did not believe internal capacity affected their ability to deliver. Across the case studies of Liverpool, Nottingham,

Leicester or Cheshire East, the (limited) capacity of the LA was highlighted as an important factor informing the decision to use a delivery partner. However, the Cheshire East case study (see technical report) highlights the potential risk of project leads spending unplanned time and resource to resolve issues they believed were caused by a poor-quality delivery partner.

Across case studies, project leads highlighted that low quality and limited availability of accurate data sources prevented effective household identification. This was particularly the case for EPC data which was reported to be inaccurate, out-of-date or not available for all properties. This was reported in seven out of ten case studies. While project leads had anticipated some level of inaccuracy, they reflected estimates of delivery in their bids that were overly optimistic. Project leads stated that overestimating scheme delivery potential adversely affected their projects. Additionally, this slowed down delivery whilst other sources were analysed.

4.1.3 Project-specific factors

Project-specific factors in the context of HUG1 refer to unique elements that are distinctive to each individual project within the scope of HUG1. Among the 10 case studies examined, two notable project-specific factors significantly influenced the implementation of HUG1: the type of funding they received (i.e. whether for LAD3 and HUG1), and the measure mix they pursued.

Local Authorities (LAs) highlighted that the type of funding received significantly influenced governance approaches²⁰ and level of collaboration to drive uptake. For instance, exclusively receiving HUG1 funding informed the strategic decision of the East Cheshire consortium²¹ to appoint Cheshire East as the overseeing authority for HUG1 delivery. This was also due to their higher concentration of off-gas properties compared to other consortium members. In contrast, both GLA and Nottingham included consortium members who had independently secured HUG1 funding outside the collective bid. While Nottingham did not perceive this as a challenge, the GLA observed that this approach resulted in certain boroughs displaying less commitment in terms of time and resources toward consortium-level marketing initiatives.

Securing both HUG1 and LAD3 enabled the possibility of budget transfers, yielding varied outcomes. LAs perceived budget transfers as a means to enhance efficiency across the entire Sustainable Warmth Scheme. However, this practice tended direct resource to 'easier' LAD3 installations over HUG1 initiatives. In Blackpool, resources were redirected towards LAD3 delivery during the interim period before securing HUG1 funding. This allocation was viewed by the project lead as having a lasting detrimental effect on HUG1 delivery as thin resources were used to prioritise LAD and these could not easily shift back to HUG1. Similarly, in Leicester, any remaining unused HUG1 budget was transferred to LAD3, which improved the overall LA performance in the Sustainable Warmth Fund.

²⁰ The structure of organisational relationships through which each Sustainable Warmth project was delivered, see Chapter 5: Project Governance.

²¹ This consortium consisted of three members: Cheshire East, Cheshire West and Chester and Warrington Borough.

Across the case studies, the composition of measures allowed by the scheme was perceived to be unhelpful to scheme delivery, reflected in the low installation rates. Many LAs or consortia found themselves significantly far from achieving their initial measure mix targets agreed with DESNZ as part of their bid application for the scheme. In specific instances, such as Wakefield and North Yorkshire, the measure mix was considered overly restrictive, causing hinderances in installations due to a measure cap. This constraint resulted in reported instances where agreed-upon and recommended measures could not be installed due to reaching the measure cap in these areas.

The extent to which the measure mix impacted LAs' ability to deliver was also seen to depend on the flexibility of DESNZ to accommodate changes. During the HUG1 scheme delivery, DESNZ agreed to adjust LA targets as part of the midpoint review process. Across case studies, many installed measures deviated from the initial bid for a range of reasons including challenges with scheme timelines, identifying households and with specific types of measures (See [Chapter 7: Service Provision](#)). LAs valued the flexibility of DESNZ to approve changes in the measure mix. However, certain LAs, for example Wakefield and North Yorkshire, had their change requests rejected and therefore viewed the measure mix as a restrictive factor in delivering HUG1.

5. Case study findings: Governance

This chapter explores the range of governance approaches used across the ten different case studies, the characteristics of these approaches and their effect on implementation outcomes. Findings are based on discussion with LAs, delivery partners and installers.

The term project governance is used here to refer to the structure of organisational relationships (i.e. LAs, delivery partners and installers) through which each Sustainable Warmth project was delivered. This structure informed how projects were overseen, how decisions were made, and how delivery of the scheme was implemented.

5.1 Consistency of governance approach from bid to delivery

During the implementation of projects, Local Authorities' (LAs) governance approaches typically aligned with the outlined strategies in their project bids. Roles such as project manager, head of team, engagement officer, or delivery officer, as specified in the bids, remained consistent. Relationships between consortium members also remained stable, often reflecting patterns established in previous schemes and initiatives. For instance, in Blackpool, the HUG1 initiative seamlessly integrated into the broader portfolio of schemes and activities delivered by the 14-member consortium under the Cosy Homes in Lancashire (ChiL) initiative established in 2013.

However, key exceptions to this consistency emerged, particularly in areas of procurement, funding, and consortium membership. Notably, in Liverpool (consortium bid) and South Derbyshire (single bid), delivery partners were not named in the bid, and their procurement occurred after funding had been awarded. Project leads in these cases reported initial delays and slower uptake due to prolonged procurement processes and alterations in the responsibilities of multiple delivery partners. This, in turn, hampered the process of identifying households, leading to fewer installations than initially expected.

Another exception occurred when expectations in the bid design regarding the simultaneous awarding of LAD3 funding alongside HUG1 funding were not met. For example, while Cheshire East was designated as the lead LA in the bid document, the three consortium members initially planned to share scheme management responsibilities. However, due to a smaller scheme budget, a more streamlined approach involved one team overseeing delivery instead of three separate teams. The project lead explained this had been chosen to increase efficiency.

The final factor affecting consistency was a change in consortium membership. This could involve an LA deciding to leave the HUG1 consortium, as seen in Blackpool's consortium bid. Alternatively, changes could occur at the consortium level as a political entity, such as North Yorkshire restructuring into a single LA covering the same area. Despite these changes, project leads in both Blackpool and North Yorkshire perceived their impacts on delivery as relatively minor.

5.2 Factors informing different governance approaches to HUG1

Our analysis indicates that governance was one of the most influential drivers of scheme implementation outcomes of Sustainable Warmth. Across the ten case studies, four governance approaches were identified (described in detail in [HUG1 governance approaches](#) below). Governance approaches were defined by whether the project was a single LA or consortium, as well as the dynamics of the relationship between LAs and delivery partners, including their respective roles.

5.2.1 Consortia or single bid

Of the ten case studies examined, six were consortium bids and four were single bids. LAs decided whether to enter or not to form a consortium for a set of key reasons. All consortia shared similar motivations for joining together. However, the size and context of the consortium shaped which of these they prioritised varied.

Reasons for joining a consortium	Reasons for bidding/delivering as single LA
<p>Political affiliation: Being part of a pre-existing political or geographical unit.</p> <p>Prior consortium experience: Collective experience especially to manage delivery of an energy efficiency scheme.</p> <p>Higher perceived chance of success (at bid stage): Presenting a more compelling funding opportunity around eligible households, diverse property types, or a mixture of urban and rural settings.</p> <p>Greater capacity to deliver: Taking advantage of the consortium super-structure, resources of project leads or delivery partners to drive better implementation outcomes for the programme.²²</p> <p>Building capacity: Using the experience of collective delivery of the scheme to build capacity in the project leads, consortium members, or in the local area or supply chain.²³</p> <p>Shielding: Consortium members being able to avoid the administrative burden or exposure of dealing directly with DESNZ.²⁴</p>	<p>Politically distinct: Lacking affiliation with potential consortium partners. For example, Leicester entered as a single LA due to reported political differences from other local LAs.</p> <p>Lack of consortium experience: A history of operating alone for the delivery of previous government funding.²⁵</p> <p>Delivery experience: Having experience of delivering a range of energy efficiency schemes locally as a single LA, and often with a chosen delivery partner.²⁶</p> <p>Sufficient capacity to deliver: Single LAs were often confident they or delivery partners were able to deliver without support from consortium lead.</p> <p>Prioritising LA's own local knowledge and expertise: Seeking direct management of the project to ensure delivery takes account of unique local context.²⁷</p> <p>Influence of a delivery partner: Bid processes being initiated by a delivery partner directly approaching a single LA, as in the case of Leicester.</p>

²² Project leads observed this reduced the administrative burden on individual LAs.

²³ This approach could be also designed to align with a wider local policy agenda around fuel poverty, sustainability, net zero, or health.

²⁴ This motivation was only discussed by members of Nottingham, a larger consortia. Interviewed consortium members claimed that an appealing feature of the Midlands Net Zero Hub (MNZH) was that it prevented them from having to field certain requests and questions from DESNZ.

*For HUG1, Liverpool used two delivery partners. The project lead had a recent relationship with one delivery partner. The other delivery partner was newly procured.

²⁵ For example, Wakefield reported to have always operated through single-bid applications.

²⁶ Sefton Council opted to deliver separately from the Liverpool City Region Combined Authority (LRCA) consortium due to perceived local expertise. Similarly, the Plymouth project lead (single bid) believed they and their delivery partner had developed extensive delivery expertise through collaborating on range of schemes. This included using behaviour change to encourage thousands of households to install small measures through a European Regional Development Fund (ERDF) sustainability project and delivering heating systems to 700 homes through the Green Deal Communities fund from 2015 onwards.

²⁷ For example, Plymouth felt local knowledge and established networks were crucial as Plymouth was a 'closed city', described as one in which contractors are constantly working together on a small, similar set of projects. This created a highly localised supply chain drawn on for energy efficiency measures.

Project leads believed that implementation outcomes would not have been improved if they had made a different consortium or single-bid decision. Rather than attributing challenges with HUG1 to this governance decision, project leads focused on delays to the scheme, the specific requirements of delivering the scheme - i.e. the eligibility criteria and measures –or the performance of their delivery partners. In case studies such as Plymouth and Blackpool, these challenges were described as encouraging them to focus their efforts on LAD3. For example, by the point Blackpool were notified of receiving HUG1 funding in April 2022, the project lead and delivery partner claimed to have allocated the majority of resource to LAD3 after receiving a timeline extension.

5.2.2 Projects and their use of partners

The case studies reveal that all projects used a delivery partner to provide expertise and additional resources. The decision to engage a delivery partner was based on experience, with eight out of ten projects choosing partners who had supported the local authority (LA) or consortium in previous schemes, notably LAD 1 & 2.

Three key observations emerge regarding delivery partners in the HUG1 scheme.

- **The first observation regarding delivery partners involves the varying levels of responsibility delegated to them by project leads.** This variation was driven by the project leads' needs for expertise and capacity, coupled with their trust in the delivery partner and its capabilities. In Wakefield (single bid), the project lead limited their delivery partner's role to appointing installers. This was the most constrained role of all the case studies, due to perceived constraints related to data sharing. The individual overseeing scheme delivery in Wakefield expressed concerns about granting the delivery partner responsibility for identifying eligible households while adhering to GDPR compliance. Conversely, in North Yorkshire (consortium), a 'turnkey' delivery partner with 20 years of experience assumed legal responsibility for all aspects—from marketing and identification to overseeing installations²⁸. The project lead appreciated the additional capacity provided by this delivery partner. The only notable issues on the project were occasional complaints from households to the council about how questions around their eligibility were assessed by the delivery partner.
- **Secondly, delivery partners varied in whether they were characterised (by project leads or themselves) as having a purely commercial focus or broader strategic priorities.** In certain cases, delivery partners functioned solely as commercial enterprises, while others embraced non-commercial organisational objectives, aiming to contribute social value at a local level. The latter category included partners with an ethical business policy, a foundational mission, charity status, or designation as Community Interest Companies (CIC). These partners were perceived differently by project leads: as not fitting the conventional contractor mould.
- **While project leads did not articulate a clear rationale for choosing a delivery partner with non-commercial objectives, strategic alignment and local expertise appeared to be factors.** For instance, South Derbyshire and Derbyshire Dales within the Nottingham consortium collaborated with the local provider Marches, based on their prior successful partnership on the Green Homes Grant. In Nottingham, Marches met criteria to qualify as one of the Midlands Net Zero Hub's (MNZH) Customer Journey Support (CJS) teams. These teams, available to consortium members, were mandated to be non-profit organisations with local

²⁸ A turnkey contract is one in which the design emanates from, or is supplied by, the Contractor and not their client. The legal responsibility for the design, suitability and performance of the work after completion will be made to rest with the contractor.

expertise that had previously supported the MNZH during the LAD1 and LAD2 energy schemes. In North Yorkshire, the consultancy overseeing delivery on behalf of the LA reported selecting a delivery partner based on its status as a CIC. The consultancy emphasised the importance of this choice in fostering a positive working relationship aligned with the LA's objectives, contrasting it with past tensions experienced with 'profit-driven' delivery partners. More commercially-focused delivery partners were generally chosen due to shared prior experience, as seen in Blackpool and Leicester, or due to internal capacity constraints, as observed in Cheshire East. Researchers did not identify a clear pattern between the use of a community-focused delivery partner and the number or rate of household installations.

- **Finally, the duration of partnerships varied, and this impacted the level of integration of delivery partners with project leads and alignment of priorities.** Notably, Plymouth, Blackpool, and North Yorkshire had longstanding relationships with their delivery partners, fostering a more embedded collaboration. In these cases, project leads and delivery partners had worked together on energy efficiency schemes before the Green Homes Grant LAD1a scheme (August 2020), facilitating a deeper connection.

In Plymouth and North Yorkshire, even though delivery partners were separate entities in governance terms, their staff primarily came from the councils they worked for. Both parties viewed this arrangement as fostering better alignment and shared working practices. Plymouth, for instance, established a service-level agreement to transfer staff from the LA to the newly founded delivery partner. In North Yorkshire, the council-owned building design consultancy APP maintained a close working relationship with the council and procured the delivery partner responsible for installing measures.

Longer relationships were associated with more frequent, in-person meetings and participation in strategic discussions, aiding issue identification and resolution. For example, in Blackpool, the delivery partner and project lead often shared an office, fostering regular communication. Additionally, projects with longer relationships had established contractual arrangements and data sharing agreements, providing a foundation for adjustments and expansions. In Blackpool, each consortium LA signed individual contracts with the delivery partner in 2018, later extended for the full delivery of the HUG1 scheme. Stakeholders believed extended relationships encouraged better alignment and collaboration, through defining delivery partners' roles. This impacted implementation outcomes, achieving faster delivery and installation authorisations to meet targets. Stakeholder feedback linked longer, embedded relationships with successful delivery. Plymouth installers credited efficiency and flexibility from the delivery partner and the council for rapidly delivering park home measures during project challenges. Blackpool attributed higher installation rates to the problem-solving that could be achieved through embedding, resulting in daily communication and ten years of close collaboration.

In contrast, project leads from GLA, Nottingham, Leicester, South Derbyshire, and Liverpool had relatively recent relationships with their delivery partners. These partnerships were established prior to HUG1, involving collaboration on recent phases of the LAD scheme or other energy efficiency initiatives. Notably, larger consortia like Nottingham, covering diverse geography, required multiple delivery partners. The MNZH, serving as the project lead, was recently formed. Consequently, there was no single delivery partner with prior

experience to rely on. Relationships were forged based on past scheme delivery, shaping roles, responsibilities, and operational approaches. For instance, Nottingham's MNZH enlisted Customer Journey Support (CJS) organizations that had previously supported members during LAD1 and LAD2 energy schemes. Delivery partners could view themselves as equal partners to project leads. In Leicester, E.ON, the delivery partner, proactively sought the LA bid for HUG1 funding when the scheme was announced.

Delivery partners for these projects represented reliable external capacity, without the level of integration and knowledge-sharing that characterised longer relationships.

Compared to newly procured partners, the delivery partners of these project leads were more likely to have undergone procurement processes and signed data agreements with the project lead. This enabled the rapid use of data gathered from previous schemes to drive awareness raising. Among these projects, Leicester highlighted a potential risk to long-term outcomes of the scheme of having an effective delivery partner. The Leicester project lead mentioned that with every project where delivery was outsourced, the opportunity to build internal expertise and experience was to some degree missed. This was felt to further reinforce a reliance on delivery partners.

In Wakefield, Cheshire East, and Liverpool²⁹, newly procured delivery partners for HUG1 lacked prior experience with the project lead. This posed a significant risk to scheme success, as revealed in case study interviews. These projects, procuring delivery partners for the first time, introduced uncertainties in working methods, expertise, choice of measures, and customer interactions. This underscores the crucial role of prior experience in selecting a delivery partner with a proven track record in driving successful implementation outcomes.

Wakefield and Cheshire East, both engaging new partners, experienced poor implementation outcomes, with project leads expressing dissatisfaction. Wakefield saw a low number of installations, while Cheshire East faced issues such as the installation of unsuitable measures and low customer satisfaction. In Cheshire East, the project lead attributed these challenges to the delivery partner's lack of household consultation, focus on low-quality, profitable measures, and an over-reliance on the new partner without sufficient oversight. The project lead struggled to hold the delivery partner accountable and believed they were given excessive control over retrofit assessments and installations.

In Liverpool, two delivery partners were utilised—one new and one existing—and the role of the newly procured partner was significantly reduced in the first year. This decision stemmed from the project lead's assessment that the new partner lacked sufficient resource capacity and local expertise³⁰. This sentiment was echoed in feedback from households, who cited difficulties in contacting the newly procured delivery partner while awaiting installations.

Of the three observations, the length of time project leads had worked with delivery partners appeared to have the greatest implications for the depth of relationship.

²⁹ Liverpool procured two delivery partners, one new and one the project lead had worked with previously.

³⁰ The delivery partner was based in Scotland had two retrofit coordinators to support 750 clients, which was judged by the project lead as insufficient resource for the needs of the project.

Projects leads from Blackpool, North Yorkshire and Plymouth, with the longest relationships with delivery partners, generally expressed more positive sentiments around delivery outcomes.

Scheme data also indicated an association between length of relationship and how embedded it was and installation rates. The three projects discussed above achieved the highest installation rates of the ten case studies. Over 25% of those planned were completed compared to a 16% case study average. This association is also explored in Chapter 7 (Service Provision).

5.3 HUG1 governance approaches

The following sections will outline four governance approaches.

5.3.1 Actively-led consortium approach

We define an ‘actively-led’ consortium as one in which the project leads managed HUG1 on behalf of consortium members and supplied resource to support or enable local delivery. Four consortia fell into this category: Blackpool, Liverpool, Cheshire East and North Yorkshire.³¹ All four had between 3 and 14 members, all constitute small or medium sized consortia.³² The length of time project leads collaborated with delivery partners varied from relatively longer associations (Blackpool and North Yorkshire) to newly procured partners (Liverpool and Cheshire East).

Each actively-led consortium was formed from a pre-existing entity used for the delivery of other projects. Project leads cited prior consortium experience, functioning as a local political unit, and leveraging Sustainable Warmth as an opportunity for capacity building as key reasons for entering as a consortium.³³ For instance, Liverpool City Region Combined Authority (LCRCA) was set up in 2014 as a strategic authority a range of local powers, which they believed Sustainable Warmth came under the remit of. Blackpool formed Cosy Homes Lancashire (ChiL) with other consortium members in 2013 after their experience from ECO indicated the importance of local coordination to deliver for households. Some potential consortium members opted out of joining consortia due to lack of eligible off-gas properties or confidence in their own level of experience to deliver independently.³⁴

Project leads within actively-led consortia saw themselves as the driving force, viewing consortium members as junior partners. This dynamic was often determined by

³¹ In the course of delivering HUG1, North Yorkshire restructured from a consortium to become a single LA. However, in practical terms, this functioned as a consortium so has been treated this way.

³² Within the typology, ‘small’ consortia were defined as those with six or fewer members. ‘Medium’ consortia were those with between seven and 19 members.

³³ Only project leads were interviewed for LAs of this size, rather than consortium members, and this feedback reflects their views.

³⁴ Within the Liverpool consortium, Liverpool Council opted out due to lack of available properties. Sefton Council delivered independently based on internal experience and sufficient capacity to deliver.

contractual agreements.³⁵ Project leads assumed roles such as monitoring, data reporting to DESNZ, overarching control and coordination of Sustainable Warmth Fund project delivery, and budget management. Data-sharing capabilities, typically defined by contracts like a 'Collaboration Agreement' in Blackpool, enabled project leads to receive and use live data on households from each LA. Members' roles focused on helping project leads understand local contextual issues, sharing household data, and, in some cases, reporting progress in semi-regular meetings.

Project leads perceived that the size and flexible management approach of actively-managed consortia enhanced scheme implementation. This flexibility allowed them to tailor their approach to members' needs and accommodate additional capacity requests during delivery. For instance, in Blackpool, during resource shortages in an LA like the Ribble Valley, the project lead assumed all responsibilities except household data collection. Conversely, LAs with dedicated energy officers, such as Blackburn, demonstrated greater self-sufficiency. In Liverpool, Sefton Council, a consortium member, independently managed the scheme through a separate installer contract based on past experiences. Liverpool highlighted that consortium delivery offered the flexibility to centrally address ad hoc requests and respond to limited capacity.

However, the experience of Cheshire East, the smallest consortium with three members, illustrates that this capacity-building approach was more challenging when resources were thinly spread across the consortium. Cheshire East can be regarded as an exception to the increased dynamism and flexibility observed for this model. In this case, the project lead heavily relied on specific local staff for delivery. When the lead contact for consortium-member Warrington left, the LA did not participate in the final four months of the scheme. This example also indicates how consortium approach intersected with use of delivery partners to shape implementation outcomes. Cheshire East reported that lack of LA capacity drove a perceived over-reliance on a new and untested delivery partner, leading to unsuitable measures and lower customer satisfaction.

Project leads attributed the success of flexible approaches to regular and close communication, fostering the sharing of issues among consortia members and delivery partners. The benefits of established personal relationships across consortium members were frequently discussed, providing opportunities to exchange advice and support. Calls emerged as the preferred method of engagement with delivery partners, with contact frequency often increasing when issues, such as customer complaints or challenges in installing complex measures like ASHPs, needed resolution. Over time, this communication dynamic led to the development of internal tools and processes to effectively handle issues, such as improved data-sharing practices and more rigorous vetting of installers, as exemplified in Blackpool.

Project leads emphasised the accountability of consortium members in reporting and supporting scheme delivery. Poor performance in terms of delivery could trigger changes in

³⁵ This was the case even in Cheshire East, the smallest consortium, where oversight of delivery of previous energy efficiency schemes had been shared between but it was judged easiest for as project lead to solely manage the budget given the small size of the scheme and that only HUG1 funding was secured, not LAD3.

fund allocation. In Liverpool, funds were reallocated based on the underperformance of specific consortium members. The team noted that partner LAs did not contest this approach, attributing it to the strong relationships among the LAs.

5.3.2 Overseeing relationships consortium approach

The 'overseeing relationships' consortium model involves day-to-day delivery managed by consortium members, while a specific local authority (LA) oversees and handles reporting responsibilities. Project leads in this setup are responsible for oversight, data consolidation, and communication with DESNZ. Unlike actively-managed consortia, different governance approaches are applied at the LA level, treating each project as a distinct entity. Two projects exemplifying this approach are GLA and Nottingham.

GLA and Nottingham LAs joined the consortium due to involvement in pre-existing political units and prior experience. The GLA, as the governance body of greater London, considered itself the natural entity for HUG1 delivery management. Nottingham's MNZH was a remnant of the previous regional delivery model used for LAD2. Consortium leads in overseeing relationships had limited control over day-to-day HUG1 delivery, potentially impeding collective capacity optimisation. Some members achieved independent success in HUG1 funding bids, causing concerns for consortium project leads.

Project leads in GLA and MNZH primarily reported on scheme uptake, shared data with DESNZ, and monitored risks. Consortium members influenced project uptake and shared data with leads. Both projects used a traffic light system to monitor member performance. GLA consortium members managed marketing activities, including social media campaigns.

GLA and Nottingham used delivery partners differently, based on local contexts. GLA employed one partner for delivery and coordination, while Nottingham, covering a larger area, used multiple partners overseen by MNZH. Feedback from Nottingham consortium members showed varied reasons for using the CJS delivery partner, with impacts on delivery varying among LAs. Derbyshire Dales District Council, a smaller entity within MNZH, highlighted the benefits of CJS teams in supporting their delivery. Specifically, they emphasised CJS's ability to address internal capacity constraints and provide technical expertise that the LA might lack naturally.

On the other hand, East Lindsey, another LA within Nottingham, chose not to use the CJS for several reasons. Operating as a 'mini-consortia' within the overseeing relationships approach, they had seven staff members with retrofit training, compared to Derbyshire's one project officer. Initial interactions with the CJS team were perceived as slow and not deemed valuable, as they already possessed internal capacity and expertise.

Project leads heavily relied on quality data on scheme performance from their large consortium memberships, a key challenge. MNZH redistributed funding based on member performance, and both GLA and Nottingham faced challenges in data sharing and management. MNZH noted that Sustainable Warmth's data collection processes were not designed for consortia, requiring additional templates. GLA struggled with data collection due to household reluctance and installer non-compliance.

5.3.3 Single LA delivery partner-led approach.

In a single LA delivery partner-led approach, a lone LA engages a delivery partner to execute the scheme. Among the four single LA case studies, three—Leicester, Plymouth, and South Derbyshire—adopted this approach. The primary driver for this decision was the past collaborative experience with the chosen delivery partner. Project leads in all three cases had prior engagements with their respective partners, spanning various LAD schemes and the Green Homes Grant. As explored above, Plymouth’s relationship with its delivery partner was the longest and most embedded of the three projects. All three project leads emphasised the insufficiency of internal resources within the LA to effectively implement a scheme of this nature. Leicester specifically cited challenges related to compliance, retrofit assessment, and managing installer procurement due to resource constraints.

Single bid project leads reported a more streamlined set of stakeholders compared to consortium projects, with varying degrees of responsibility assigned to the delivery partner, as outlined in Table 6 below.

Table 6: Extent of responsibility of delivery partner on single LA delivery partner-led project

Less responsibility		More responsibility
Specific project process stage	Range of elements	Entire delivery
South Derbyshire: delivery partner, an energy charity, was focused specifically on outreach (project uptake) and customer support.	Plymouth: the delivery partner worked closely with the project lead on a range of elements across the project process including household identification, retrofit specifying and managing installers.	Leicester: everything but monitoring and data sharing was outsourced to the delivery partner.

Project leads, regardless of their roles, generally perceived the relationship between their teams and delivery partners positively. Delivery partners were appreciated for the additional capacity they provided, as well as their technical expertise (notably in Leicester) and responsiveness (as highlighted in South Derbyshire). This positive working relationship was often attributed to prior experience collaborating together. In Plymouth, the positive dynamics were further supported by the involvement of ex-council staff at the delivery partner. Project leads believed this fostered an intensely collaborative relationship that contributed to the success of LAD3 and the relative successes of HUG1 despite numerous challenges.

However, project leads identified risks related to effective data sharing processes, which could pose various delivery challenges. In terms of data collection and sharing,

Leicester reported challenges with their delivery partner (E.ON) being responsible for data collection and management. This setup made it challenging to engage with households and address complaints promptly due to limited access to data. Additionally, pre-filtering of data by the delivery partner complicated fraud identification. For future projects, the project lead recommended using a joint CRM portal to facilitate quick access to the latest data.

In contrast, Plymouth's delivery partner managed data through their CRM system, with monthly data pulls accessible to certain LA staff. The project lead in Plymouth believed that the process had been effectively refined to establish successful working habits.

5.3.4 Single LA-led approach

Among the four single-bid projects, only Wakefield adopted what is termed an LA-led governance approach. In this approach, while a delivery partner was still necessary to appoint and manage installers, the project lead took on the responsibilities of reviewing and approving these installers, managing project uptake, publicizing the scheme, and reporting to DESNZ. The decision to forgo a delivery partner for substantial elements of the project process stemmed from two main factors: 1) the perceived complexity of GDPR regulations, posing challenges in sharing residents' details with a partner, and 2) the project lead's confidence in their ability to independently deliver, based on prior experience.

Wakefield's governance approach involved the fewest stakeholders throughout the project. A small but experienced team consisting of two full-time staff members managed the project day-to-day and were part of the council's strategic housing unit. An acknowledged challenge of relying on this limited staff was their lack of direct experience with Air Source Heat Pumps (ASHPs) as a measure, especially as this was the exclusively targeted measure with no backup measures in place.

While not explicitly stated by the project lead, Wakefield may have faced additional challenges due to limited capacity resulting from low staffing and the relatively small role of the delivery partner. Ultimately, Wakefield only delivered five measures out of their planned 75. The detailed reasons for this are explored further in the uptake and service provision sections below. Project leads discussed involvement in various complex decisions and processes before delivery that would typically be handled by a delivery partner.

6. Case study findings: Uptake

This chapter describes the approaches used by LAs and delivery partners to drive uptake on HUG1, how decisions were made and the factors which influenced them. The effectiveness of different uptake approaches from the point of view of LAs, delivery partners, and households is also discussed.

Research findings show that the uptake process is made up of two stages:

- (i) **Awareness and household identification:** This is where LAs focus on building awareness of the HUG1 scheme and identify households who might be potentially eligible for the scheme.
- (ii) **Eligibility determination through application:** This is where household characteristics are assessed against the HUG 1 criteria from information provided in an application form.

Across all case studies, project leads underlined the difficulty of the uptake process for HUG1. Many project leads found it challenging to find enough off-gas housing stock, where households also met scheme's income requirements. As such, project leads explicitly mentioned prioritising uptake for households onto the LAD3 scheme over HUG1. They expressed the view there was no one-size-fits-all solution to identification for HUG1; it required proactiveness and constant follow up, which many project leads found to be resource intensive.

6.1 Awareness raising and household identification

Project leads outlined the importance of making households aware of the scheme details and whether they would be eligible before being encouraged to apply. **This process helped households to understand the scheme objectives, target group, eligibility criteria, and measures offered.**

Across all ten case studies, project leads stressed the significance of a well-planned awareness raising process. Firstly, it was felt to serve to dispel any scepticism households may have about the scheme. Consequently, project leads emphasised the importance of approaches that enhance households' trust in the scheme, especially when delivery partners assume a leading role in household management during this phase. For instance, in Blackpool, co-branded leaflets featuring information about the scheme, alongside before-and-after photos, including space for installers' logos, were felt to be effective. Interviews revealed that CHiL branding was recalled by nearly all households, highlighting its role in distinguishing the Council's offer from other schemes. Similarly, Derbyshire Dales District Council, part of the Nottingham consortium, highlighted the significance of joint logos/advertising in authenticating their delivery partner when contacting households during the identification process.

Secondly, the process was perceived as having an important delivery benefit through clarifying the roles and responsibilities among various project stakeholders. Feedback from households

indicated that without this process, individuals could struggle to verify the legitimacy of the scheme. As one household noted:

“From my point of view, once I started the process with Marches, I had nothing from the Council, and I wouldn’t have necessarily known it was a council process if I hadn’t seen it on the Facebook” Household interview, Derbyshire Dales District Council

Across the 10 case studies, projects used two main approaches for awareness raising and household identification: (a) blanket approaches; and (b) targeted approaches. These approaches were often used in combination.

6.1.1 Blanket approaches to awareness raising and household identification

Blanket approaches typically included the following:

1. **Multi-channel marketing:** Project leads promoted the HUG1 scheme through various digital and physical channels. This included mass physical mailing to local households, local radio broadcasts, and online Facebook advertising.
2. **In-person events:** These involved events with live demonstrations of diverse energy measures, setting up stalls in marketplaces, and door-to-door engagement exercises, typically targeting older populations. In Liverpool, for instance, Sefton Council organised engagement events where the local energy company showcased various energy measures—such as ASHPs, solar panels, and insulation—envisaged for installation through the scheme.
3. **Use of referrals:** These involved referrals from other professionals, such as 'social prescribers,' was another strategy. Blackpool Council's team, for example, liaised with district social prescribers like nurses and midwives, requesting them to refer potentially eligible households to the project lead. These self-referrals were then verified for eligibility by the project leads and delivery partners. While not adopted by any project, an installer working on the GLA project suggested incentivising households with paid referrals to drive uptake.

“If there was a refer [a] friend scheme where the homeowners got compensated financially, the leads would have tripled. I can guarantee it.” Installer, GLA

It was common for project leads to combine various blanket approaches. For instance Cheshire East and their delivery partner promoted the scheme through local radio and newspaper adverts while also attempting to engage communities at local shopping centres.

Although blanket approaches effectively reached a large pool of potential applicants, they resulted in low conversion rates. For instance, North Yorkshire's physical mail-out to 18,056 households and subsequent digital marketing only passed on 368 prospective households to Yorkshire Energy Solutions, their delivery partner. Similarly, in Plymouth, out of 4,000 individuals who completed the eligibility form, only around 200 turned out to be eligible for HUG1. This reflects a conversion rate between 2-5% respectively.

Blanket approaches therefore were felt to be inefficient due to high errors made by prospective target households. This highlights the risks and time burden associated with these approaches. As the determination of eligibility is initially made by individual households, it increased the likelihood of errors and wasted time..

6.1.2 Targeted approaches to awareness raising and household identification

Blanket approaches were combined with more targeted strategies to overcome the above limitations. This was deemed crucial due to the perception that eligible households were "hard to reach".

Targeted approaches relied on data to identify eligible households, followed by direct visits. The primary data source was often the Energy Performance Certificate (EPC) data. Within the Nottingham consortium, East Lindsey Council identified households by cross-referencing EPC register data with other relevant data bases showing off-gas grid properties. They then directly contacted households believed to be eligible for the scheme.

Project leads used other publicly available data and these varied across the case studies. For example in North Yorkshire, the project lead used data on fuel poverty rates across different Lower Layer Super Output Areas (LSOAs) to identify regions with a higher proportion of fuel poverty outside main urban areas. More related to their local context, Wakefield used a database to target households currently using coal as their primary heating source, given the historical prevalence of coal mining in the region.

In a number of projects, staff leveraged their contextual knowledge of the area to pinpoint households more inclined towards specific energy measures. For example, Leicester Council targeted off-gas properties that might be more suitable to having Air Source Heat Pumps (ASHPs) installed. They specifically targeted off-gas properties with larger gardens. This was based on on-going experience from concerns among households regarding the space required for heat pumps as well as practical barriers.

6.1.3 Challenges with awareness raising and household identification

Across all ten case studies, project leads encountered challenges in identifying eligible off-gas homes, even when a combination of blanket and targeted approaches was adopted:

1. **In several projects, the pool of off-gas properties tended to be predominantly rural, and their owners frequently did not meet the scheme's income requirements.** These rural properties were often large and would have required high costs for implementing basic measures. For instance, in Nottingham, the project manager for the MNZH cited instances involving larger rural properties where the allocation of funding for a household's insulation needs would have fully exhausted the budget, yet the improvement wouldn't have significantly impacted the property's EPC.
2. **Although project leads drew on wide data sources, they still encountered significant challenges accessing accurate data for targeting households. They faced a dual data dilemma—limited data coverage coupled with occasional data unreliability.** Project leads highlighted various issues with the available data. For instance, Derbyshire Dales District Council noted a mere 64% coverage of households with up-to-date Energy Performance Certificate (EPC) ratings in their area. Blackpool Council also found that the data used was often proved out of date or inaccurate, while Leicester Council's budget constraints prevented them from acquiring more specialised data, confining their reliance to open-source data. Similarly,

North Yorkshire highlighted a technical update to EPC ratings in June 2022, resulting in certain off-gas properties achieving improved ratings, rendering them ineligible for the scheme.

3. **The project leads highlighted additional hurdles due to property improvements required before measures could be installed.** They reflected that the extent of necessary work before installations often made certain household energy upgrades unfeasible within the scheme's cost limitations. For instance, in Wakefield, the project lead encountered instances where the expense of installing Air Source Heat Pumps (ASHPs) exceeded feasibility for certain houses. This was particularly true for properties discovered to have overloaded electrical systems requiring upgrades before installing the heat pump measures.
4. **Many project leads encountered persistent challenges regarding household scepticism. LAs recognized people's ongoing fear of potential scams and felt clearer branding would have helped to address the challenge.** Household interviews indicated a need for clearer communication about the local authority's role in the scheme. Households across different LAs expressed difficulty in understanding their local council's involvement in the process. During discussions with project leads, it became evident that this aspect was not adequately addressed by LAs in their engagement planning. For instance, although the CHiL brand awareness increased across Lancashire's population, both the project lead and households reported confusion about its connection to their local council. Moreover, despite acknowledging the importance of joint advertising, the project manager at Derbyshire Dales mentioned confused messaging whereby SW promotion was grouped with adverts for free boilers or home upgrades, often perceived as illegitimate by households. Specifically, Cheshire East highlighted that households remained sceptical of the scheme even after an outreach campaign involving 20,000 letters sent to off-gas properties, attributing some of this scepticism to the absence of local authority branding in their communications. The following quotes are illustrative:

"I think a lot of people didn't engage with it [scheme offer] because they just thought it was another scam." Household interview, Cheshire East

"I received a letter in the post nearly a year ago, last September. I think it was from E.ON and they said they were working together with the council (...) You always think it's too good to be true (...) I was a bit sceptical at first." Household interview, Leicester

6.2 Application and eligibility determination

Application and eligibility determination consisted of households submitting forms and documents, such as income details and benefit receipts, to confirm their eligibility to the scheme. Concurrently, LAs conducted visits to households to assess property feasibility for energy measure installation and to determine the most suitable energy measures for each specific property.

Household experiences with the eligibility verification process varied. Some found it to proceed smoothly, often having the necessary documents readily available for verification. Additionally, these households expressed an understanding of the necessity and proportionality of the requirements within the eligibility verification process.

"Throughout the whole process absolutely everything was first class. Everybody who came was polite, efficient, worked hard. It was. It was just first class." Household interview, Sefton Council

However, other households expressed that the process could be drawn out. This was because project leads at times had to draw from inquiries from previous schemes.

“Well, it was a bit long winded, it took quite a long time. You would provide the information that they'd asked for and then there always seemed to be something missing. So, we sort of were provided with a list of what we needed to give it, and it was drawn out really. You know, we provided everything that we thought we needed to give and then there were additional stuff [on top of that]. Quite a few things I'll be honest with you, I'm struggling to remember how many months it took. But it certainly seemed like a very long and drawn out process really.”

Household interview, Blackpool

Project leads reported that use of blanket approaches to house identification could make eligibility verification process more burdensome. GLA, the only project lead that relied entirely on a blanket approach to household identification, reported being more stretched for resource in this phase. GLA relied heavily on self-referrals for household identification, and found that this approach meant that they had to spend a lot of time reviewing applications, with only a small number of these reviewed households then being eligible after review.

Project leads outlined a range of limitations in their own resources and expertise, which led delivery partners to assume a more substantial role in application and eligibility determination than in household identification. This reliance on delivery partners was evident across projects of varying sizes. Smaller LAs, like Derbyshire Dales within the Nottingham consortium, highlighted the pivotal role of their delivery partner, Marches, in this process. Similarly, larger projects such as North Yorkshire's dependency on YES and Leicester's reliance on E.ON illustrated the significance of delivery partners. Leicester stressed the value of E.ON's established contracts with retrofit assessors and installers, facilitating a swift progress from identification to delivery stages.

Where delivery partners assumed a substantial role in eligibility determination, it was still crucial for project leads to supervise their delivery partners and stay actively involved in the scheme as the accountable entity for households. For instance, Liverpool delegated eligibility verification to their delivery partner, Everwarm. Yet, due to capacity challenges faced by Everwarm, households reported a prolonged process. Even after Liverpool switched to Next Energy as their delivery partner, they encountered numerous household complaints. This emphasises the importance of project leads remaining attentive to their delivery partners' challenges to prevent potential reputational damage to both themselves and the scheme.

Reasons for drop-outs during the application and eligibility determination stage

Project leads noted that despite households being eligible for the scheme, many chose not to participate. The final uptake was influenced by four key factors.

1. **Timeframes:** A primary barrier to uptake was the time between households being identified as eligible and the commencement of energy measure installations. Project leads highlighted the

challenge posed by the scheme's shorter duration. Additionally, households perceived property inspections aimed at determining eligible measures as time-consuming from their perspective.

2. **Distrust:** The second key barrier contributing to household dropouts was the distrust some individuals had towards local and national government entities. Certain households expressed concerns about sharing personal data with their LA, despite the assurances provided regarding confidentiality. Even though a project lead made assurances that the data was essential to secure the government subsidy, some households remained apprehensive.
3. **Conflict in measure preferences:** Another barrier revolved around households preferring different energy measures than those offered, notably concerning the installation of Air Source Heat Pumps (ASHPs). Project leads observed that many households were unconvinced about the technology's capacity to reduce their energy expenses. Many households had concerns about their ability to afford energy bills following the installation of ASHPs. Moreover, the volatility of energy prices during the project delivery period influenced some households' reluctance to install measures. The fluctuating prices contributed to uncertainties regarding electricity cost projections related to heat pumps.
4. **Competition with other schemes:** Finally, project leads highlighted the influence of the HUG1 scheme running concurrently with other home upgrade schemes, which increased competition and contributed to noticeable dropouts.

7. Case study findings: Service Provision

This chapter explores project leads and delivery partners experience of the practical delivery aspect of measures under HUG1, including how installers were recruited and overseen, performance against installation targets, and household experiences.

7.1 Installer recruitment

A total of 88 installers were involved in measure delivery across the ten case study areas. The median number of installers per case study area was three. Nine out of the ten projects engaged five or fewer installers. Nottingham stood out and procured 62 installers through a dynamic purchasing system established by The Midlands Net Zero Hub (MNZH). Despite registering 62 installers in Nottingham, several were not actively involved in HUG1. This differed from other 'super-sized' consortia like GLA, which according to data returns used only one installer.

Given the tight timelines of the scheme, most project leads prioritised efficient procurement handled by experts. As a result, across various governance approaches, installers were primarily recruited through the project's delivery partner, acknowledged for their extensive experience by project leads. This trend was observed in seven of the ten case study areas. Among these, there was a spectrum in the level of responsibility delegated to delivery partners for recruitment, aligning with their varying degrees of involvement.

North Yorkshire and Liverpool granted their delivery partner full autonomy in installer recruitment. In contrast, Blackpool co-managed the process with their delivery partner, relying on a core list of previously vetted installers, supplemented by local contractors brought in by the project lead. The delivery partners, leveraging their experience from similar schemes demonstrated the ability to identify and recruit installers based on this expertise.

Three projects, South Derbyshire, Nottingham, and Plymouth, deviated from using a delivery partner for recruiting installers.

Changes made to the recruitment procedures after the implementation had started resulted in challenges in meeting the scheduled timelines for installing appropriate measures within the scheme. In South Derbyshire, the council took charge of recruiting installers directly, while the delivery partner handled outreach and triage functions. The first installer appointed, previously involved in Local Authority Delivery (LAD) schemes, lacked the capability to provide the complete array of measures necessary for HUG1 implementation. Consequently, they were replaced. Although two replacement installers were identified, delays occurred in their onboarding through the procurement process due to contractual disputes. This challenge was viewed by the local authority as a direct factor contributing to the limited number of installed measures in South Derbyshire.

In Nottingham, the MNZH implemented a dynamic purchasing system (DPS) to address the project's extensive coverage area. This system facilitated consortium members' rapid and efficient access to pre-screened installers, many of whom had prior experience working with the Hub on earlier projects. The DPS was developed in response to the lack of dedicated

energy or domestic retrofit officers in most LAs to oversee installer procurement. Through this system, LAs gained direct access to contractors, enabling them to select specific installers based on the particular measures they intended to install.

Plymouth's installer recruitment followed a grant-based model from prior schemes. The project lead attributed this approach to avoiding delays stemming from formal procurement processes. Instead, installers directly contracted households for measure installations, bypassing formal procurement procedures.

The installer recruitment process was influenced by the past experiences of either the local authority or delivery partner working with installers in similar schemes. For example, in response to previous challenges around installation quality, Blackpool implemented robust installer criteria and established a system to identify underperforming suppliers. This proactive approach aimed to ensure higher standards and better outcomes. Conversely, North Yorkshire's delivery partner relied on installers from previous positive experiences on similar projects, instilling confidence in meeting the standards expected for HUG1.

7.1.1 Recruitment challenges

Recruiting installers posed challenges across projects due to several factors, including skill gaps, reluctance among installers to engage in government-funded initiatives, administrative burdens, and the extended and intricate nature of the procurement process. It is important to note that the exact nature of the challenge were diverse and contingent on specific contexts. However, these difficulties appeared universal and were not directly linked to or influenced by specific governance approaches:

- **Project leads highlighted skills gaps among installers, particularly concerning more innovative measures, as a significant challenge in providing installations to eligible households within the scheme.** GLA and its installer observed the need for additional training and workshops to address the prevalent skills shortage faced by installers. The Wakefield project lead also explicitly noted skills gaps, specifically in the delivery phase rather than during the recruitment of installers. Both instances, backed by household feedback, emphasised noticeable shortcomings, particularly in installing Air Source Heat Pumps (ASHP). According to GLA's installer, addressing the skills shortage remained their greatest hurdle in executing large-scale schemes like HUG1. An installer from GLA noted: *"We would have done twice the amount of work if we could get more reliable workers. Without a doubt. That is and it remains our biggest challenge."* Installer, GLA
- **Project leads mentioned that certain installers showed reluctance to participate in the scheme due to past unfavourable encounters, resulting in a reduced pool of available installers.** In the case of Blackpool and its project delivery partner, they noted that installers showed a resistance towards government-funded schemes, primarily influenced by previous negative experiences, particularly the direct assumption of costs under the Green Homes Grant voucher scheme. This resistance, notably among specialist suppliers, compelled the search for alternative providers.
- **One installer pointed out the administrative challenges associated with PAS 2035.** The Plymouth-based installer expressed concerns regarding the extensive paperwork required to meet PAS requirements, often perceived as a mere 'tick-box' exercise. They

highlighted the considerable time investment necessary for compliance, which was deemed unmanageable for a small commercial enterprise. As a solution, the installer outsourced these obligations to an external specialist, incurring additional costs for the service. This process was considered burdensome and inefficient, potentially dissuading other installers from participating.

- **The South Derbyshire case study revealed that their procurement processes lacked flexibility to accommodate necessary changes during the project.** When adjustments were required, the procurement team encountered several months of delay in their efforts to include these changes within the framework. This delay was exacerbated by internal capacity limitations. Notably, an installer from a previous framework could commence work significantly faster compared to one needing to undergo the entire procurement process from inception to completion.

7.2 Installer onboarding

The approach to onboarding installers varied across projects, with some installers feeling they did not require extensive onboarding due to their experience and accreditation. However, case study examples highlight the benefits of a structured onboarding process, especially when dealing with locational specifics and regulatory requirements like planning approvals for conservation area listed buildings.

The installer's perspective in South Derbyshire emphasised the importance of accreditation and experience, suggesting that these factors could negate the need for significant onboarding. However, the experience of Derbyshire Dales indicates that even experienced installers can benefit from initial meetings to align expectations, understand locational nuances, and address specific scheme requirements.

In situations involving conservation area listed buildings such as those in Wakefield, early planning approvals were crucial, indicating that pre-installation discussions between stakeholders (such as the LA, installers, and relevant authorities) helped streamline the process and ensure compliance with regulations. While experienced installers may possess the skills required for the job, the evidence highlights the value of communication and collaboration between stakeholders to ensure a smoother and more efficient execution, especially when dealing with location-specific challenges.

7.3 Installer monitoring

Project leads recognised the importance of monitoring installers as a crucial part of oversight process to ensure the smooth progression of installations. Project leads from East Lindsey and Leicester, opted for a hands-on and direct approach to monitoring installations, with the aim to provide assurance to residents and hold installers accountable.

In East Lindsey, under the MNZH, households were given a dedicated case number and a case officer for support. Regular communication was ensured through weekly meetings and

direct contact with households to update them on installation progress and address any arising queries or concerns. This proactive engagement helped in maintaining a direct line of communication between the LA and the residents, fostering a sense of accessibility and support throughout the process.

In Leicester, a 'traffic light' monitoring system was implemented to manage installers. This system focused on detecting quality or health and safety issues. A red flag indicted a flaw in measure installation and the installer would be restricted from taking on new jobs until the issue was resolved. Moreover, formal discussions and remedial plans involving E.ON, the delivery partner, were integral to this process, ensuring a structured approach to addressing and rectifying identified flaws. This system aimed to maintain quality standards and prioritize the safety of installations.

However, concerns were raised by installers about the adequacy of this monitoring. In Plymouth an interviewed installer expressed the need for more independent post-installation examinations. They underwent examination for only 5% of their completed work, which they deemed insufficient in ensuring thoroughness.

7.4 Installation of measures against planned numbers

During the bid phase, projects had to indicate the anticipated number of measures they intended to install. The table below indicates the difference between these projections and the actual installations completed as of the data return on 23 August 2023, and then after final reconciliation at scheme closure in July 2024. The data reveals that none of the projects were close to fulfilling the planned number of installations. For instance, North Yorkshire, with the highest success rate, achieved 65% of the initially proposed measures.

Table 3. Planned vs. installed measures by case study area as of 23 August 2023 and at closure in 2024, ordered by # planned.

Project name	Consortia size	Governance approach	Planned	Installed measures Aug 2023	Installed measures closure 2024 ³⁶
Nottingham	Super-sized	Overseeing-relationships	3690	520 (13%)	1256 (32%)
Greater London Authority (GLA)	Super-sized	Overseeing-relationships	2122	75 (4%)	196 (9%)
Blackpool	Medium	Actively-managed	895	246 (27%)	253 (28%)
Liverpool	Medium	Actively-managed	567	111 (20%)	191 (34%)
Cheshire East	Small	Actively-managed	515	79 (15%)	80 (16%)
North Yorkshire	Small	Actively-managed	440	106 (24%)	288 (65%)
Plymouth	-	Delivery-partner-led	222	63 (28%)	118 (53%)
South Derbyshire	-	Delivery-partner-led	115	1 (1%)	8 (7%)
Wakefield	-	LA-led	75	5 (7%)	5 (7%)
Leicester	-	Delivery-partner-led	73	15 (21%)	38 (54%)

Higher installation rates were associated with a closer longer relationship with delivery partners. This qualitative assessment of length of relationship is described in detail in Chapter

³⁶ The latest figures at scheme closure have been included for reference.

5. Blackpool and North Yorkshire had long established relationships with delivery partners and delivered the second and third highest volumes of measures respectively³⁷. Additionally, North Yorkshire delivered the highest proportion of planned measures relative to the initial bid. While these more embedded relationships were influential on delivery volumes, other details of local delivery should be recognised. For example, the fact that Plymouth's installations were boosted through the approach to exclusively target park homes.

Nottingham delivered the largest volume of measures overall, but this 'super-sized' consortia was made up of 60 local authorities, compared to 14 for Blackpool and 5 for North Yorkshire.

The limited delivery of planned measures across case studies was influenced by several key factors: scheme timelines, expertise in planned measures, prior experience, local knowledge, and the extent of rurality in the areas involved.

- 1. The pressure of short scheme timelines significantly impacted the installation of measures, a concern echoed by all project leads, and exacerbated other challenges they encountered.** Once the initial outreach, eligibility confirmation, and house assessments were completed, a narrow window remained for actual installation. GLA, which managed to install only 9% of the planned measures, attributed this low rate to the scheme's 'short' timelines, feeling practically limited to around six months for scheme delivery post-project uptake. East Lindsey, similarly highlighted the timeframe as their most formidable challenge. They noted that it often took 4-5 months from initial contact to beginning to install measures. Despite successfully delivering measures to 172 out of 173 targeted households, they faced a significant underspend of £960,000. The constrained timeframe restricted their ability to utilize the maximum available funding per household, as they lacked sufficient time to deliver the entire intended package.
- 2. Where project leads lacked expertise on a specific measure, they reported this hampered the pace of installation.** Project leads navigated a delicate balance between leveraging previously recruited installers and adapting to the unique demands of a scheme like HUG1. Nottingham's project lead considered their dynamic purchasing system to be effective, as it facilitated the inclusion of installers based on their specialization in specific measures. However, they found managing and coordinating 62 installers across a vast area challenging. Projects in smaller geographic areas that emphasised the importance of local skills and expertise of installers (Blackpool - consortium, Plymouth - single bid), often achieved higher installation volumes relative to their initial targets (28% and 53% respectively).. For instance, Blackpool invested in training and accrediting smaller local contractors to bolster local capacity. Meanwhile, Plymouth capitalised on the expertise of park home specialists, resulting in a significant number of park home installations. These strategies underscore the value of leveraging local skills and specialised expertise to achieve better installation outcomes, especially in smaller geographic regions.
- 3. The absence of local expertise posed challenges in overcoming contextual barriers and driving community engagement and slowing down installations.** Local knowledge played a pivotal role in avoiding delays, particularly during the planning phase. Liverpool, for example, reported significant issues attributable to a newly procured delivery partner not having familiarity of local planning measures and subsequently recommended infeasible measures. A new delivery

³⁷ Nottingham delivered the largest volume of measures overall, but this 'super-sized' consortia was made up of 60 local authorities, compared to 14 for Blackpool and 5 for North Yorkshire.

partner was appointed by summer 2022 and they felt that the 34% of planned measures would not have been achieved without this change. In relation to local challenges, some project leads shifted focus towards engaging local, smaller contractors, because they believed they would be more invested in the local impacts of HUG1. For instance, Blackpool, engaged community-based installers who actively participated in distributing joint-branded leaflets and expressed a commitment to benefiting their communities. The project lead imposed strict criteria for installer recruitment, driven by previous negative experiences with subcontractors, with the aim to refine their pool of trusted local suppliers. These strategies underscore the importance of local engagement and expertise in navigating contextual barriers and fostering community involvement, ultimately contributing to higher installations.

4. **Another challenge faced by project leads was the existence of parallel schemes that ran alongside HUG1, which contributed to significant delays.** For example, the MNZH described how the existence of the parallel LAD2 and LAD 3, meant that sometimes measure installations were delayed. SWF installers also had contracts with LAs for other schemes, as a result installers were often already engaged in fulfilling a contract for a parallel scheme.

Installation rates were inhibited due to conflicting views on which measures should be installed: those proposed in the bid vs suggested by property assessments vs preferred by households. This tension among these three perspectives often resulted in situations where installations couldn't proceed due to misalignment:

- **Proposed measure selection:** Issues arose when the initially proposed mix of measures, as outlined in the bid, became too restrictive. This limitation sometimes prevented agreed-upon measures from being installed due to reaching a measure cap after installation had begun. This was mainly the case for some of the non-priority measures such as PV.
- **Retrofit assessment conflicts:** **Retrofit assessments** occasionally recommended measures that didn't align with the household's preferences or the options available in the predefined measure mix. Conflicts also emerged among different roles designated by PAS 2035. For Liverpool, there was a disparity between the measures recommended by the retrofit coordinator and by the retrofit assessor, when they worked for different companies. The coordinator would largely recommend the approach that their company were able to support, while the assessor would report the measures agreed by the coordinator and the resident were not possible.
- **Household preferences and cost discrepancies:** Some households disagreed with proposed measure costs or recommendations. Instances occurred where agreements or recommendations didn't match the household's desires. These disagreements caused delays in installations, leading to households being deferred to subsequent schemes like HUG2.
"If anything stands out [in terms of success], it's making sure that the person who's having the job done... [is] fully on board [with] what's being done to their property. And they're happy with everything that's gone ahead and with the communication between the government and the installation team, et cetera, and to the customer." Installer, Plymouth

Project leads highlighted challenges when installing recommended measures, particularly for certain property types which significantly impacted the number of measures they could successfully install. These challenges varied across LAs based on their bids and local contexts. For example, GLA highlighted the difficulty in delivering Solar PVs in London, especially for mid-storey flats with limited exterior space. Installing Solar PVs during the winter months, prevalent in most projects, presented challenges in testing their effectiveness under cloudy conditions, necessitating additional trips to properties for testing in sunny weather.

Additionally, some supporting measures faced rejection by households. Measures such as vents, door undercuts, or trickle vents, were often rejected due to their lack of awareness about their necessity in complementing the main measures. Preferences leaned towards aesthetically pleasing solutions over functionality. Additionally, both the GLA and Cheshire East project leads encountered limited availability of PAS 2035 compatible ventilation in the market, leading to increased costs when households did agree to their installation.

“It’s a big hole in my wall, an extractor fan, it opens and shuts when the winds blows. It’s supposed to [provide] ventilation. I didn’t want it but they said I had to have it.” Household Interview, Liverpool City Region Combined Authority

“When I ran the installation business at Carilion, the guys [were] doing 5-6 lofts a day because all they were doing is literally installing loft installation which is not hard. Now we’re down [to] two lofts a day because we’re undercutting the bottom of doors to allow in-house ventilation, we’re putting vents on windows, we’re installing extractor fans in all wet rooms. It’s gone from being a low skilled job (...) to actually [being] quite time-consuming [and requiring] electrical and handyman skills... But on reflection it is all for the right reasons.” Installer, GLA

7.5 Alignment with scheme objectives

The SWF HUG1 competition guidance mandated LAs to install measures that were compatible with the Standard Assessment Procedure and capable of enhancing homes rated EPC band D, E, F, or G. Additionally, specific types and combinations of measures were given priority over others. Applications meeting these criteria were assigned higher grades. Below, we examine how well projects fulfilled these core criteria during delivery.

Alignment with priority measures

The HUG1 competition guidance requires a ‘fabric first approach’.³⁸ In practice, this prioritises installing insulation. It also expected projects to focus on measures that helped lower household bills, “excluding heating systems which are solely fuelled by fossil fuels.”³⁹ These were to be made up of a combination of energy efficiency measures, such as wall, loft and under floor insulation measures, and low carbon heating, such as low temperature heat pumps. Applications that receive the highest scores would seek to install energy efficiency alongside low carbon heating in the majority of homes upgraded.

Figure 2 indicates that the 10 case study projects predominantly focused on installing energy efficiency measures rather than low carbon heating measures. As of July 2024, across the 10 case studies, project leads reported installing a total of 2,433 measures, with 482 being low carbon heating and 1149 categorised as energy efficiency measures. This pattern reflects that energy efficiency measures are lower cost and higher volume measures. The breakdown of low carbon heating measures exclusively comprised Air Source Heat

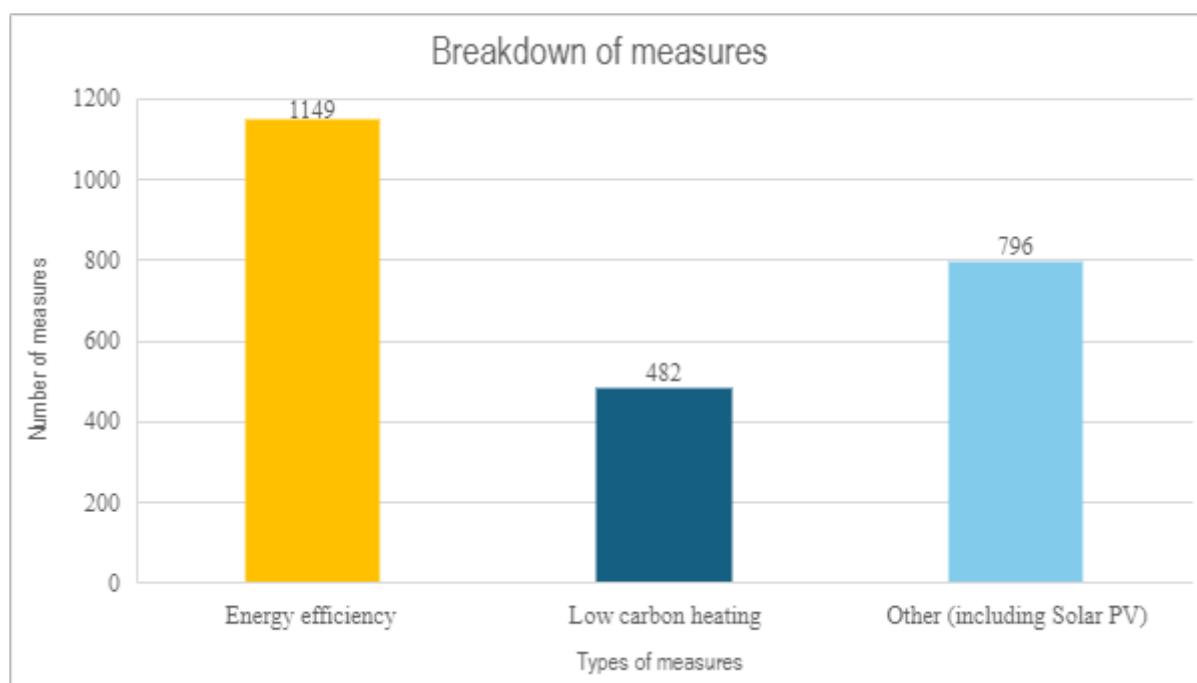
³⁸ Source: [Sustainable Warmth competition \(closed to applications\) – GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/100000/Sustainable_Warmth_competition_closed_to_applications_-_GOV.UK_(www.gov.uk).pdf), p14, 2.1.5 Eligible Measures [A ‘fabric first approach’ is one in that](#) “ensures that heat loss prevention measures are installed before other energy efficiency measures to maximise comfort and bill savings for the consumer, and to maximise the dwelling’s suitability for low carbon heating either now or in the future.”

³⁹ Ibid. p14, 2.1.5 Eligible Measures. The guidance acknowledged that due to current fuel prices there may be instances of low carbon heating resulting in higher energy bills, although it was expected that local authorities communicate with the consumers about the possibility of this.

Pumps, while none of the 10 projects installed the 'backup' measures outlined in the competition guidance, such as high-temperature heat pumps, biomass, or storage heaters⁴⁰.

Of the 'other measures' installed, the majority (726/796) were for Solar PV, 34 for heating controls and 36 unspecified 'other'. Solar PV, while not a recommended measure, was installed frequently in certain projects due to this being an easier option to install. According to the data return as of July 2024, Nottingham installed the largest number of Solar PV measures, 433, around 34% of its total measures. Other projects within the sample 10 case studies had a similar proportion of Solar PV, including Cheshire East (43%), North Yorkshire (34%), Leicester (32%), Liverpool (27%) and Blackpool (26%). In North Yorkshire, where the proportion of solar PV installations exceeded the initially planned mix, it was attributed to the suitability of solar PV for the targeted property types.

Figure 2: Breakdown of all installed measures in Case Study LAs by category.⁴¹



Alignment with cost effective measures

In the HUG1 competition guidance, measures were required to be cost-effective within the project's measure mix, and represent value for money. This applies both to energy efficiency measures and to 'other' measures that include Solar PV. The guidance states that *"applications where these less cost-effective measures represent a high percentage of total measures installed (or a high percentage of the total costs of upgrades) are likely to receive a*

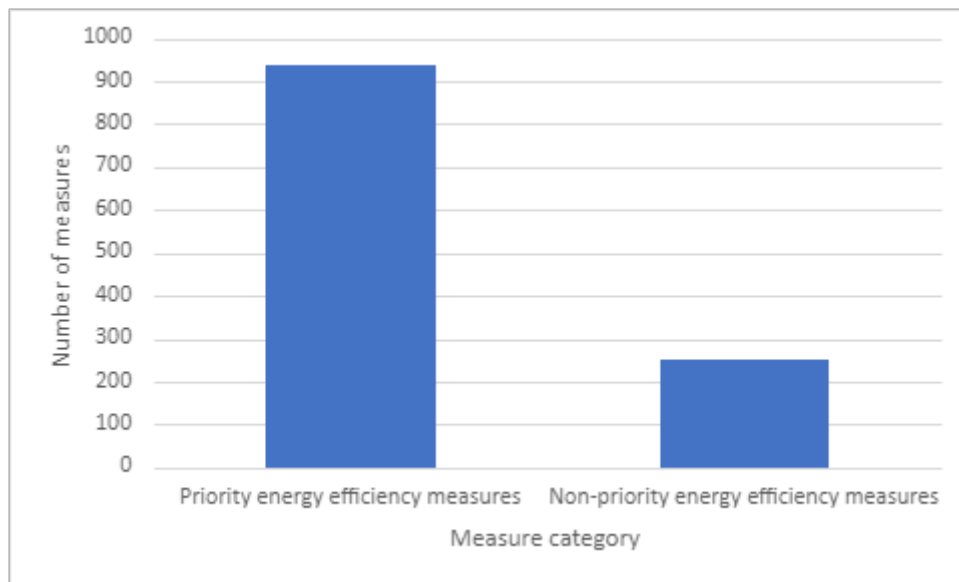
⁴⁰ Solid biomass and other alternative technologies were only to be installed in exceptional circumstances.

⁴¹ For the purposes of this categorisation: Low Carbon = Air Source Heat Pumps, Energy efficiency measures = Energy Efficient Lighting; External Energy Efficient Doors; Double or Triple Glazing; Park Home Insulation; Under-floor insulation: Suspended Floor; Room in Roof Insulation; Loft Insulation; Internal Solid Wall Insulation; External Solid Wall Insulation; Cavity Wall Insulation, Other measures = Solar PV, heating controls, "other".

low score in the ‘Value for Money’ assessment.” Guidance also states that more detail was required to be provided around installations “where the LAs plan to install measures such as solar PV or double glazing, which are typically less cost-effective.”

Figure 3 indicates that in the 10 case study projects far more priority energy efficient measures (types of insulation) were installed, compared to non-priority measures such as double or triple glazing or energy efficiency doors or lighting. These non-priority measures did not constitute the entirety of each project's measured installations. As discussed above, outside of energy efficiency measures, projects installed high numbers of Solar PV: a less cost-effective non-priority measure.

Figure 3: Breakdown of priority and non-priority energy efficiency measures delivered.⁴²



The project leads acknowledged that there was substantial uncertainty regarding the measure mix in their bids during the application stage. This uncertainty stemmed from a lack of data on off-gas properties and the specific requirements of the scheme. Consequently, little was known about the properties eligible for the scheme. For instance, in North Yorkshire, the project team were not involved in the initial bid and expressed dissatisfaction, feeling that the proposed mix was not well aligned with the area's needs.

Similarly, the Liverpool project lead expressed dissatisfaction, describing the measure mix provided during the bid stage as a speculative projection. They viewed it as a 'fiction' since the final mix was determined by the retrofit assessment, resident preferences, and overall costs rather than the initial bid's prescribed mix.

⁴² For the purposes of this categorisation: Priority energy efficiency measure = Park Home Insulation; Under-floor insulation: Suspended Floor; Room in Roof Insulation; Loft Insulation; Internal Solid Wall Insulation; External Solid Wall Insulation; Cavity Wall Insulation, Non-priority energy efficiency measure = Energy Efficient Lighting; External Energy Efficient Doors; Double or Triple Glazing.

7.6 Household experiences

The scheme primarily benefited owner-occupied households, with minimal landlord participation across case study areas. According to the SWF competition guidelines, private landlords leasing properties to tenants were required to cover one third of the upgrade costs. Local authorities noted landlords' reluctance due to the lack of immediate returns coupled with the upfront financial outlay required for installations. In contrast, owner-occupied homes were not obligated to contribute to upgrade costs.

During discussions with households, a majority of them expressed gratitude for the cost-free energy efficiency installations. Many praised the swift and trouble-free installation process. Despite minor concerns, households tended to offer positive feedback due to the no-cost installation experience. Certain project leads, like North Yorkshire, speculated that due to satisfaction with installations and the process, the scheme could cultivate community advocates, fostering support for future schemes.

Positive household experiences were largely influenced by factors tied to the measures and contextual elements, especially communication and aftercare. Household satisfaction primarily hinged on minimising technical or aesthetic issues with the measures. Additionally, the quality of communication among LAs, delivery partners, installers, and households—from initial interactions to post-installation support—significantly impacted satisfaction levels.

Instances of dissatisfaction often revolved around the technical complexity of measures. Several households mentioned an initial adjustment period to understand the functionalities of various measures which affected their levels of satisfaction. An elderly resident in Liverpool initially faced challenges with her ASHP but gradually learned to operate it effectively after contacting the installer. She ultimately expressed satisfaction with the measure and the support received. However, she noted that others in the village turned off their heat pumps due to increased bills, resulting in slow uptake of these measures.

“[The issues with the heat pumps] are all fine. It's just knowing the best way to use it...if I need anything I'll just ring [the installer] and he'll come back.” Household, Liverpool City Region Combined Authority

Certain measures, such as internal or external wall insulation, drew complaints due to visual disruption and concerns around their suitability for older properties. Households voiced concerns about losing substantial indoor space due to the thickness of the new wall insulation. For one household, they were told they would lose 5cm of internal space, however the result turned out to be 15cm which significantly impacted the property's usage and layout. The house's age and the arrangement of features led to challenges, such as difficulty in closing doors or accommodating existing furniture, arising from the increased wall thickness.

Aftercare significantly influenced satisfaction levels regarding the received measures, categorised into three types across case study areas: functional, additional, and 'end-to-end.'

'Functional' aftercare offered minimal guidance for consumers to use their measures, often limited to basic user handbooks provided by installers or brief introductions during installation. However, households with more complex measures found this support inadequate and

struggled to operate their installations. A household in Wakefield, which had an ASHP installed, felt the LA's support for optimizing the heat pumps was insufficient and resorted to self-research through online forums and YouTube to understand and fine-tune the system.

Other projects provided 'additional' aftercare in the form of clearer support materials, contact details, and direct access to further assistance. In the LCRCA consortium (Liverpool), households received a 'Cosy Completion' document post-installation, which contained guarantees, measure workings, and essential phone numbers. Similarly, under CHiL, Lancashire households received the 'Lancashire Little Book of Warm,' which was updated annually with local advice and contacts, along with technical support available for callouts.

Moreover, Nottingham's MNZH provided 'end-to-end' project support, where Derbyshire Dales District Council ensured household comfort with measures and offered retrospective assistance when needed. East Lindsey Council dispatched measure-specific information and contacted households post-installation.

Notably, aftercare was predominantly led by LAs. This oversight aimed to avoid any conflict of interest with delivery partners marking their own performance. However, smaller LAs lacked the capacity for continuous aftercare across projects.

Although most household installation experiences from the sample of 50 were positive, negative experiences were present and largely stemmed from poor communication, aftercare or technical issues with measures, sometimes a combination of the three.

8. Conclusions

8.1 Impact on future schemes

Across case studies, project leads highlighted several changes they would like to see to future schemes based on their experience with the SWF.

Future energy efficiency schemes should offer greater flexibility around household eligibility criteria. The most frequently highlighted issue which result in delivery challenges was the HUG1 eligibility criteria. This was raised in 7 out of 10 case studies: by GLA, Liverpool, Blackpool, North Yorkshire, Leicester, Plymouth and Nottingham. The combined criteria were felt to create challenges for household identification and eligibility determination, and to exclude many of the most deprived households in the area:

- **Household identification:** These project leads reported the combination of multiple types of eligibility criteria - off-gas requirement, EPC rating and income – made identification specially challenging. Some LAs found specific eligibility criteria harder to meet than others, for example the off-gas requirements in Leicester.
- **Eligibility determination:** Project leads also reported challenges could be based on the time and resource requirements required for verifying household income. This process appeared to be somewhat easier and faster in projects where more embedded relationships had been established with delivery partners.
- **Appropriateness of criteria:** Project leads questioned the accuracy and suitability of criteria, for example using income as a measure of deprivation. In London, fuel poverty was reported to outstrip the £30,000 income threshold and therefore mean many fuel - poor households were not eligible for HUG1. In Plymouth, the delivery partner similarly flagged that fuel-poor families with two earners could be excluded by the income criteria. The project lead believed that in combination, the criteria meant they had to turn away many who could have benefited from the scheme.

Energy efficiency schemes should include more holistic eligibility criteria (Plymouth), and review of the appropriateness of criteria such as income level (GLA). Project leads and delivery partners stated that income can vary significantly by region and rurality and does not take account of other costs and inequalities. GLA also suggested that DESNZ make the data it collects more widely available and facilitate future scheme implementations. Generally, LAs wanted future schemes to interact with each-other and allow for a broader, larger-scale delivery (for example based on postcodes and neighbourhoods) instead of requiring them and their delivery partners to hand-pick individual households who met strict criteria.

Scheme timelines should be extended to allow enough lead time to raise awareness locally and identify eligible households. Project leads frequently held the timelines responsible for struggling to achieve near their target number of installations. Project leads reported that barriers to delivery were caused by procurement processes, challenges identifying and engaging with the audience (especially at times of year they did not 'feel the cold') and in preparing challenging properties for installation. For example, in Blackpool at the end of the scheme, despite not having recruited since January 2023, there were 1,000 people

left on the waiting list. LAs' preferences were for longer schemes to develop a more comprehensive and holistic approach locally. The Blackpool team requested a scheme of 3-5 years in length to allow sufficient awareness raising and for households to naturally access this scheme and reduce the effort needed for household identification.

Project leads and delivery partners should be more involved in the design of energy efficiency schemes. Project leads felt highly engaged in the topic of local energy efficiency and general housing improvements but were often frustrated at not being able to bring their experience to bear on scheme design. They sought to achieve greater recognition from DESNZ as 'partners' in delivering energy efficient measures to the UK, including recognition of their own experience and expertise in driving sustainable outcomes for their communities. Project leads sought input into co-designing the scheme and to be given more flexibility around their administrative budget to adapt to local circumstances. For example, this was positioned by Cheshire East as a way to cover unexpected additional administrative costs it faced. In this case, the administrative budget for the scheme was not sufficient due to issues with the delivery partner. While in theory this could be avoided through use of a better performing delivery partner, LAs highlighted that this element of performance was unpredictable. Similarly, Plymouth suggested that an 'innovation budget' for project leads to develop new approaches would be appropriate for new schemes such as HUG1.

8.2 Lessons learned by project leads

Project leads mentioned a range of lessons they had learned from delivery of HUG1 that would inform future delivery of energy efficiency and off-gas schemes:

- **Start with a more 'realistic' measure mix in the bid.** Informed by experience of delivering HUG1, in the future, project leads would want to focus on taking into account complex measures and local property types, to avoid the risk of under-delivery. In Wakefield, the project lead claimed to be planning to focus on including a lower proportion of ASHPs in a future measure mix due to these being an especially challenging measure.
- **Reuse the most effective awareness raising and household identification techniques.** This often meant combining blanket approaches with more targeted strategies to contend with eligible households being "hard to reach".
 - South Derbyshire used in-person engagement strategies in areas identified as potentially eligible. The project lead found door knocking to be labour intensive but generated stronger levels of interest in the scheme. The project lead planned to reuse this for the HUG2 scheme.
- **Adapt existing project governance approaches to avoid a repeat of previous challenges.** In the Cheshire East consortium of three, partners agreed to split responsibility for marketing, eligibility checks and monitoring between them to avoid the workload falling on one single LA without sufficient capacity. Reflecting on this experience, the project lead is expecting greater involvement of other consortium members in areas such as marketing for future schemes. This was felt to avoid overreliance on one delivery partner and a manageable workload for the lead LA.

However, notably, no other project mentioned a desire to change governance approaches for future delivery.

- **Include a wider set of considerations in the choice of delivery partner to drive better implementation outcomes aligned with the scheme objectives.** Specifically, this meant prioritising local delivery partners and organisations that were not solely commercial entities. While this was already required for some projects, others faced major challenges due to the absence of this criteria. Liverpool ran into a range of issues due to its delivery partner's lack of local expertise. Cheshire East described wanting to appoint an independent retrofit assessor for HUG2 to avoid installed measures being motivated by profit-seeking at the expense of the right outcomes for residents.
- **Focus on clear and consistent communication with households.** In particular, the legitimacy of the scheme and the specific roles of LAs and delivery partners are important elements to communicate to households. Household and project lead feedback indicated the key elements to focus on are adequate co-branding to demonstrate the role of each partner, and clear information on the scheme details, timings and available measures. This was felt by project leads to help overcome dropouts due to scepticism, misunderstanding the scheme, or subsequent complaints.

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