

DPS FRAMEWORK SCHEDULE 4: LETTER OF APPOINTMENT AND CONTRACT TERMS

Part 1: Letter of Appointment

Dear [REDACTED]

Letter of Appointment

This letter of Appointment dated 5th February 2021, is issued in accordance with the provisions of the DPS Agreement (RM6018) between CCS and the Supplier.

Capitalised terms and expressions used in this letter have the same meanings as in the Contract Terms unless the context otherwise requires.

Order Number:	CR20114
From:	The Department for Business, Energy & Industrial Strategy, 1 Victoria Street, London SW1H 0ET (BEIS) ("Customer")
To:	Market and Opinion Research International Limited (trading as 'Ipsos MORI'), 3 Thomas More Square, London E1W 1YW ("Supplier")

Effective Date:	Friday, 12 th February 2021
Expiry Date:	Friday, 30 th December 2022

Services required:	Set out in Section 2, Part B (Specification) of the DPS Agreement and refined by: the Customer's Project Specification attached at Appendix A and the Supplier's Proposal attached at Appendix B of this letter of appointment;
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Key Individuals:	[REDACTED] BEIS [REDACTED], Market and Opinion Research International Limited (trading as 'Ipsos MORI')
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Contract Charges (including any applicable discount(s), but excluding VAT):	£859,435.00 excluding VAT
Insurance Requirements	Additional public liability insurance to cover all risks in the performance of the Contract, with a minimum limit of £5 million for each individual claim Additional employers' liability insurance with a minimum limit of £5 million indemnity Additional professional indemnity insurance adequate to cover all risks in the performance of the Contract with a minimum limit of indemnity of £2 million for each individual claim. Product liability insurance cover all risks in the provision of Deliverables under the Contract, with a minimum limit of £5 million for each individual claim
Liability Requirements	Suppliers limitation of Liability (Clause 18 of the Contract Terms);
Special Conditions	A contract break point will be included at the end of the 2021/22 financial year. This break point allows BEIS to manage the spend which extends into a new spending review period (from April 2022).
GDPR	As per Contract Terms Schedule 7 (Processing, Personal Data and Data Subjects.
Customer billing address for invoicing:	All invoices should be sent to should be sent to finance@services.ukpbs.co.uk or Billingham (UKPBS, Queensway House, West Precinct, Billingham, TS23 2NF).

FORMATION OF CONTRACT

BY SIGNING AND RETURNING THIS LETTER OF APPOINTMENT (which may be done by electronic means) the Supplier agrees to enter a Contract with the Customer to provide the Services in accordance with the terms of this letter and the Contract Terms.

The Parties hereby acknowledge and agree that they have read this letter and the Contract Terms.

The Parties hereby acknowledge and agree that this Contract shall be formed when the Customer acknowledges (which may be done by electronic means) the receipt of the signed copy of this letter from the Supplier within two (2) Working Days from such receipt

For and on behalf of the Supplier:

For and on behalf of the Customer:

Name and Title:

[REDACTED], Project Director

Signature:

[REDACTED]

Date: 08 February 2021

Name and Title:

[REDACTED],
Social Housing Decarbonisation Fund

Signature:

[REDACTED]

Date: 11th February 2021

APPENDIX A

Customer Project Specification

1. Background

In 2019, the UK amended the 2008 Climate Change Act – legislating the UK's commitment to a new 'net zero' target for greenhouse gas emissions by 2050. In order to meet this target, the UK will need to almost completely decarbonise its buildings by 2050. Current government strategy aims to:

- Halve energy use of new buildings by 2030 - in part by halving the cost of renovating existing buildings to a similar standard as new buildings, while increasing quality and safety (Buildings Mission, 2018);
- Have as many homes as possible at Energy Performance Certificate (EPC) band C or above by 2035 (Clean Growth Strategy, 2017); and,
- Bring as many fuel poor homes as practicable to EPC band C by 2030 (Fuel Poverty Strategy, 2015).

The delivery of these strategies and the achievement of the net zero commitment will require the retrofitting of existing buildings with a package of measures to improve their energy performance.

This research will seek to provide an independent evaluation of two programmes currently commissioned by the Department for Business, Energy and Industrial Strategy (BEIS) in the pursuit of these objectives.

The first programme, the Whole House Retrofit scheme (WHR), sits within the BEIS Energy Innovation Portfolio – a £505 million portfolio which funds innovation programmes designed to advance emissions-reducing technology innovations. WHR has awarded grants totalling £7.7M to three projects led by Local Authorities. It launched in November 2019 and is currently due to end by April 2022 (although Covid-related delays to the projects have meant that retrofit works have only commenced in recent months).

The second programme, the Social Housing Decarbonisation Fund Demonstrator (SHDF(D)), was announced in July 2020 as part of the £3.05B Short-Term Economic Stimulus Package legislated in response to the COVID-19 pandemic. SHDF(D) is a scale-up of the WHR programme, albeit with slight variations. SHDF(D) will fund 20 programmes with a combined value of £64.2m. Grants will be awarded to Local Authorities or Local Authority-led consortia. The programme will launch in January 2021 and is currently due to end by December 2021.

Taking both programmes together, a total of 23 projects, with a combined value of £71.9m, will therefore be in scope for this evaluation.

Across both programmes, projects awarded grant funding will be required to improve the energy performance of low EPC-rated social homes by trialling innovative approaches to undertaking retrofitting using the Whole House Retrofit approach, with the aim of reducing the cost of completing retrofit works.

Both programmes share a similar rationale for intervention: the current level of investment in upgrading the energy performance and energy efficiency of our homes is insufficient to meet the government's fuel poverty and carbon reduction targets and requires additional policy intervention to drive increased delivery.

Owing to its inclusion in the Short-Term Economic Stimulus Package, SHDF(D) has the additional rationale of supporting jobs and developing the supply chain to contribute to economic stimulus post-COVID-19, and is explicitly linked to the future Social Housing Decarbonisation Fund, a £3.8B manifesto pledge.

The evaluation contractor should be aware that a separate cross-cutting evaluation of Short-Term Economic Stimulus programmes, to which the outputs of this evaluation may feed, is currently being scoped – this is described in more detail in Section 2: “Aims and Objectives of the Project” below.

More information on both programmes can be found at:

- WHR: <https://www.gov.uk/government/publications/whole-house-retrofit-competition-successful-bids>
- SHDF(D): <https://www.gov.uk/government/publications/social-housing-decarbonisation-fund-demonstrator>

2. Aims and Objectives of the Project

This contract is for an evaluation of both the Whole House Retrofit (WHR) and Social Housing Decarbonisation Fund Demonstrator (SHDF(D)) programmes. Evaluation of these programmes is needed to:

- Identify the different innovations that take place in whole house retrofit, examine how these and other factors lead to performance improvement and cost reduction, and generate evidence on how and where future performance improvements and cost reductions might be found
- Provide evidence to support benefits reporting, and determine to what extent and how each programme's benefits have been delivered
- Provide evidence to understand the barriers and successes experienced during delivery of both programmes
- Provide learnings from the programmes, to support improving the design of future schemes, including the main Social housing Decarbonisation Fund.

While the two schemes are closely aligned in design, delivery model, and aims, there are some key differences; in particular, SHDF(D) has an explicit link to informing the main Social Housing Decarbonisation Fund and a focus on supporting jobs, which is not shared by WHR. There are also differences in the specific objectives of the two schemes; for example, WHR has a cost reduction aim of 5-15% compared to 5-30% for SHDF(D)¹ and the final performance specifications differ, with WHR stipulating a final thermal performance of 15-30 KW/m²/year against a lower target of 50KW/m²/year for SHDF(D). It is a priority for BEIS that each of these programmes are evaluated independently. BEIS had initially intended to commission two separate evaluations, but identified the value for money and mutual benefits in combining both evaluations into one, given the similarities in the programmes and the intended aims of each proposed evaluation. **We therefore expect that evaluation design, data collection, analysis and reporting should be conducted in such a way that BEIS can distinguish the impacts achieved and lessons learnt between the two programmes throughout the evaluation. We expect bidders to set out how they will approach this in their responses to this ITT.** A document comparing the two programmes and their evaluation designs as of October 2020 is published alongside this ITT as Annex 1.

Process evaluation aims and questions

The process evaluation will aim to understand how effectively and efficiently the projects and programmes delivered on the aims of the WHR and SHDF(D), the extent to which the

¹ Although several WHR projects are aiming to achieve greater cost saving percentages.

grant mechanisms used were successful, the ways in which decision-making processes have led to outcomes, and the ways in which the programmes act as drivers of innovation. The process evaluation focus is expected to run from evaluation start until September 2022.

The following process evaluation questions are of interest to BEIS, but the appointed contractor is responsible for reviewing the appropriateness and deliverability. BEIS also reserves the right to add and remove questions at appropriate times in line with evidence needs:

Setup and delivery of the programmes

- To what extent were the two BEIS grant competitions effective in producing viable bids for grant funding, and what were the facilitators and barriers to success?
- Why were only social housing bids successful in the Whole House Retrofit competition?
- How effective was the support provided to projects during the programmes by BEIS and the Scheme Delivery Partner (Ricardo)?
- How effectively were Local Authorities able to engage installers and ensure whole house retrofit installations take place?
- What other factors influence how Local Authorities go about setting up the delivery of these projects?
- What are the critical success factors and barriers behind the delivery of this scheme?

Identification of eligible housing stock, and engagement with tenants

- Beyond Local Authorities and social housing, what other stakeholder clusters on cost reduction in retrofitting homes are there?
- How do Local Authorities go about identifying suitable housing stock, and engaging with tenants, for whole house retrofit?
- To what extent are social housing tenants identified as eligible by Local Authorities willing or unwilling to undergo whole house retrofit, and what are the barriers and facilitators to their participation?
- Are the projects delivering a positive experience for social housing tenants, and how is this influenced by the scheme design?
- What action would Local Authorities have taken to implement whole house retrofit in social housing, in the absence of these schemes?

Innovation and cost reduction

- In what ways are installers using innovative products and methods in installations?
- For installers using innovative products and methods in installations, how was their choice of method influenced by the programmes?
- In what ways are installers managing to deliver whole house retrofit at reduced cost, and what are the facilitators and barriers to doing this?
- How are Local Authorities and the Scheme Delivery Partner (Ricardo) supporting installers to innovate and achieve cost reductions?

Installer market

- To what extent does the whole house retrofit installer market, and the market for installers of specific measures, have the capacity/willingness to participate in this project, including compliance with PAS2035 process?
- How is the PAS2035 process being adopted by delivery partners, and does it lead to more/better installations?
- To what extent has the Government's commitment to funding of whole house retrofit created confidence across the supplier market?

- To what extent do the skills and capabilities created and developed to support Social Housing Decarbonisation lend themselves to other market sectors, particularly Owner Occupier and Private Rental Sectors?

Cost effectiveness and other

- What cost is being incurred for whole house retrofit, where are those costs being incurred, and are projects on track to deliver required cost reductions?
- Does the approach to WHR reflect a deep understanding of the relative efficacy of the different measures and bring value for money into account?
- Do the projects consider through life costs effectively?

Impact evaluation aims and questions

The impact evaluation will aim to assess the extent to which benefits and objectives have been achieved at the programme and project level; and understand how the mechanisms operating within each project lead to outcomes, and how project-specific contexts influence this. Insights from the process evaluation components are expected to inform the impact evaluation. The impact evaluation is expected to run from evaluation start until December 2022.

The following impact evaluation questions have been developed, but the appointed contractor is responsible for reviewing the appropriateness and deliverability:

How effectively have the programmes promoted innovation and cost reduction in WHR technologies and applications?

- What innovative approaches have been tried, to what extent have these been successful, and what factors determined whether they were successful?
- To what extent have cost reductions for whole house retrofit been demonstrated?
- In what ways have innovation and other factors led to cost reduction?
- What parts of the supply chain are important for creating innovation?
- Has innovation led to spillover benefits for other tenures and housing types?

How effectively have the programmes delivered benefits for consumers, social landlords, and the environment?

- To what extent have energy savings, carbon emission reductions, and bill savings for tenants been achieved?
- How effective has whole house retrofit been in improving houses' thermal efficiency?
- In what ways have social housing tenants' health, comfort and wellbeing been improved by the programme?
- Have occupants of improved homes' attitudes towards whole house retrofit changed, in what ways and how?
- Have whole house retrofit measures been installed to a satisfactory quality?
- In what ways have social housing landlords benefitted from the scheme?
- Have the measures improved the aesthetic value of the dwelling and contributed to an overall improvement in the built environment?

To what extent have the supply chain for whole house retrofit, and the job market, been supported by the programmes?

- To what extent have additional jobs been created or sustained by the programmes?
- To what extent have the programmes had any impact on the numbers of companies able to produce materials?
- To what extent has the confidence of the supply chain increased as a result of the schemes?

- To what extent have the skills of installers increased, and the nature of installer jobs changed, as result of the schemes?

What learnings are there from this evaluation, and how can they be used to inform design of the main SHDF scheme and other future programmes?

- To what extent has the programme demonstrated that innovative approaches, and cost reductions, are replicable at scale?
- What findings and learning from the evaluation can be applied to future policies?

Economic evaluation

An economic evaluation is included under this contract to be conducted alongside the impact and process evaluations. The primary purposes of this aspect of the evaluation will be to compare realised costs and benefits to the economic appraisal in the programme business cases; and to compare the economic outcomes between the two programmes, and the different projects within them, to identify the most cost-effective approaches.

The primary overall evaluation question for this section of the evaluation will be: "Does BEIS's investment in these programmes represent good value for money?"

The successful bidder will be expected to scope out the key sub-questions that can be answered with the data available. However, key sub-questions may include:

- Has the process of tendering for and selecting projects led to value for money being achieved?
- Were the costs and benefits of individual projects, and the programmes as a whole, higher or lower than expected (based on assumptions in successful bids, and the appraisals in the programme business cases)?
- How efficiently have the selected projects, and the overall programmes, converted inputs to outputs of sufficient quality?
- How effective have the outputs from the interventions been at achieving the desired outcomes?
- What is the average cost of whole house retrofit across the programmes and projects, and how does this vary by region and property type?
- To what extent have cost reductions been achieved over the course of the programmes?
- What costs have been incurred by the different actors involved in the programmes and projects?
- What benefits have been achieved by the programmes and projects?
- What differences have there been in achieved costs and benefits between the different projects and programmes?

Timings and Outputs

BEIS is currently working towards the following indicative timeline (although this is subject to change):

Date	Evaluation and delivery milestones
1 st November 2019	WHR grants awarded; WHR delivery begins
18 th November 2020	Evaluation competition launch
4 th December 2020	SHD grants awarded; SHD delivery begins
Early February 2021	Evaluation contractor appointed
February 2021	Scoping work
Late February 2021	Process and impact evaluation data collection begins
Early September 2021	Emerging findings report (process and impact)
4 th December 2021	SHD delivery ends

1 st April 2022	WHR delivery ends
April-June 2022	SHD process evaluation report
June-September 2022	SHD impact evaluation report; WHR process evaluation report
September-December 2022	WHR impact evaluation report; final combined SHD & WHR report

[NB: although WHR grants were awarded in November 2019, delays due to Covid-19 have meant retrofit work has only commenced in the last few months.]

As outlined above, delivery of SHD is scheduled to end approximately four months after delivery of WHR, so the reporting schedule for each programme is staggered to mirror this. Six reports in total are expected as a result of the evaluation of both schemes, as follows:

- Early September 2021 – emerging findings report (covering both WHR and SHD)
- April-June 2022 – SHD process evaluation report
- July-September 2022 – WHR process evaluation report; SHD impact evaluation report
- September-December 2022 – WHR impact evaluation report; final combined SHD & WHR report

Plans for a separate, future cross-cutting evaluation

There is work underway under a separate contract to scope a future cross-cutting evaluation of the four Short-term Economic Stimulus schemes. The successful contractor on SHDF(D) will be expected to engage with the contractor on this scoping piece and ensure that the outcomes data collected from the SHDF(D) matches the requirements for this future evaluation.

For clarification, the Short-term Economic Stimulus schemes considered to be included in this cross-cutting evaluation are:

- Social Housing Decarbonisation Fund Demonstrator – SHDF(D)
- Green Homes Grant Vouchers scheme – GHGS(V)
- Green Homes Grant Local Authority Delivery scheme – GHG-LAD
- Public Sector Decarbonisation Scheme – PSDS²

This cross-cutting evaluation will therefore include SHDF(D), but not WHR.

The cross-cutting evaluation of the Short-term Economic Stimulus Schemes has the following aims:

- Assess the extent to which the Short-term Economic Stimulus Schemes (excluding PSDS) have delivered the impacts they set out to, including:
 - high quality installations that would not otherwise have happened.
 - energy, carbon and bills savings, in line with those expected for the schemes, and to what extent these have delivered health and well-being improvements for occupants.
 - growth in the energy efficiency and low carbon heat supply chains.
- Assess the extent to which the effectiveness in delivering impacts varies between short-term economic stimulus schemes, and why.
- Assess the value for money achieved by the short-term economic stimulus schemes.

This cross-cutting evaluation contract is not part of this procurement and is expected to be commissioned as a standalone contract in the future. However we expect the contractor

² PSDS is expected to be outside of the cross-cutting evaluation, but a separate scoping exercise is underway to confirm whether elements of the PSDS evaluation can be included.

who wins this evaluation to collect data to inform the cross-cutting impact evaluation and co-operate with the contractors delivering the scoping exercise (commissioned as part of the Green Homes Grant Local Authority Delivery evaluation) and any future contractors working on the final impact evaluation. This is expected to include activities such as:

- Implementing agreed questions or permissions processes to ensure consistency across the schemes
- Understanding the approach to obtaining smart-meter data
- Comparing sample frames to reduce duplication of contacts
- Sharing summary data to support collating of outcomes across the stimulus schemes
- Sharing barriers and successes in engaging with hard to reach groups

The cross-cutting evaluation will explore measuring the following impacts:

- Impact on jobs and markets – using existing market and business databases, and evidence from the standalone evaluations of each schemes
- Energy impacts – using smart meters data and/or the National Energy Efficiency Data Framework (NEED), and evidence from the standalone evaluations of each schemes
- Health impacts – by linking multiple cross-Whitehall datasets, and evidence from the standalone evaluations of each schemes
- Additionality of installations

Although jobs and market impacts, energy impacts and health impacts are all expected to be partially assessed in the evaluation of SHDF(D) and WHR being commissioned in this ITT, drawing on primary research and scheme monitoring data as described in Section 3: “Suggested Methodology” below, bidders should not include analysis of large existing data sets in their proposals as this will duplicate the planned work for the cross-cutting evaluation for SHDF(D). Bidders should also not include similar work for WHR as the scale of the WHR programme means that use of big data sets as part of that evaluation alone would not be proportionate.

The cross-cutting scoping report is expected to be published in September 2021, following which commissioning of the cross-cutting evaluation will be considered.

A contract break point will be included at the end of the 2021/22 financial year. This break point allows BEIS to manage the spend which extends into a new spending review period (from April 2022).

3. Suggested Methodology

Total number of Interviews (survey)	1,550 surveys in total, broken down as follows: - 150 baseline surveys with retrofit installers (as soon as possible after evaluation start) - 150 follow-up surveys with retrofit installers (at evaluation end) - 600 initial surveys with social housing tenants (conducted on a rolling basis, as soon as possible after work has been completed) - 600 follow-up surveys with social housing tenants (after the first heating season (likely to be Q2
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	2022)). - 50 phone surveys with non-participating social housing tenants
Total number of Interviews (qualitative)	785 interviews in total, broken down as follows - 300 interviews with retrofit installers (6-7 each stage per grant awarded – 150 at baseline; 150 at follow-up) - 300 interviews with social housing tenants (6-7 each stage per grant awarded – 150 at evaluation start; 150 at follow-up) - 50 one-off interviews with manufacturers and other parts of the supply chain - 92 interviews with Local Authorities and consortia (2 each stage per grant awarded – 46 at baseline; 46 at follow-up at end of delivery) - 9 interviews with the Scheme Delivery Partner (Ricardo) (3 at baseline, 3 more at each of two follow-ups during and after delivery) - 9 interviews with BEIS policy makers (3 at baseline, 3 more at each of two follow-ups during and after delivery) - 10 interviews with accreditation and installer register bodies - 10 interviews with installer training providers - 5 interviews with non-participating Local Authorities
Any other specific requirements	Secondary analysis of data collated by Scheme Delivery Partner (Ricardo), and synthesis with primary data, to support main research questions Value for money assessment Baseline cost reduction modelling

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A suggested methodology is outlined below in order to highlight the range of methods that BEIS believe are appropriate and feasible to meet the aims set out above. However, BEIS would welcome bids which propose different, or additional, methodologies.

Evaluation approach

WHR and SHDF(D) both have a strong innovation focus, albeit with WHR more focussed on driving more significant advances in the technologies and business models; and SHDF(D) focussed on volume of projects (and hence slightly lighter requirements) and on preparing the market in advance of the main, larger SHDF deployment policy. The primary purpose of the evaluation will be to understand how projects are being delivered in practice, what was successful and not successful, how performance can be improved in the future, and the mechanisms through which innovation occurs and cost reductions for whole house retrofit take place. This includes a comparison of the two programmes with their slightly different approaches.

We suggest the overall approach most appropriate to evaluating these schemes would be a theory-based process and impact evaluation with an economic evaluation element.

Project setup and initial scoping work

Independent Theories of Change have been drawn up for each of the two programmes, and have been included as part of the comparison document in Annex 1. (Bidders should note that the comparison document represents a snapshot comparison of the two policies as they were in October 2020, and small changes to each have been made since).

Part of the initial scoping work undertaken by the contractor will be to synthesise these two programme-level theories of change. The contractor will also be expected to familiarise themselves with each project and develop project-level Theories of Change based on the specific projects that have been awarded grant funding under the SHDF(D) and WHR grant competitions.

Bidders should note that WHR project-specific theories of change are included in the comparison document and WHR evaluation scoping report (see Annexes 1 and 2), but were developed without detailed project-level information and with no engagement with representatives of the projects themselves. They should therefore be refined during the scoping work. The contractor should also consider how specific projects funded across both programmes might be clustered together, where there are significant commonalities, primarily for the purposes of making qualitative data collection and analysis more efficient than the per-project quota-based approach outlined below; alternatively (particularly if there are a significant number of similar projects) a sampling-based approach may be most appropriate. Contractors should set out how they will approach these tasks in their bid.

To assist with the planned evaluation of the WHR programme, an evaluation scoping study was externally commissioned, and the resulting evaluation scoping report has been included as Annex 2 alongside this ITT. The scoping report was commissioned when BEIS's intention was to undertake a standalone evaluation for WHR only, and should be read in that context. It also reflected programme and project scope, design and timings as of June 2020, some of which have since shifted (for example, delivery timelines have been shifted owing to COVID-19 related-delays, and the scoping report makes reference to four WHR projects when there are now three projects, details of which are included in the link provided in the Background section above). Bidders are welcome to incorporate the approaches suggested in the scoping report into their response to this ITT; however, their bid should respond to the Specification and information provided in this ITT, and the need to undertake a joint-evaluation of WHR and SHDF(D). Bidders will **not** be assessed

on the extent to which their approach aligns or diverges with the suggested approaches in the scoping report.

The evaluation contractor will also be required to tailor the evaluation at a project- and/or cluster-level where appropriate.

This evaluation plan will be signed off by BEIS and will confirm the agreed workplan and timings. Bidders should plan and budget for at least two rounds of reviews by BEIS before sign-off, and therefore a minimum of three drafting rounds, in addition to the contractors' own quality assurance processes.

During the scoping stage the evaluation contractor should also review the data being collected by the Scheme Delivery Partner (Ricardo) alongside the evaluation plans, to ensure that the evaluation does not duplicate any data collection or analysis already being undertaken.

Primary data collection

The evaluation contractor will be expected to carry out the following primary research:

- Surveys and follow-up interviews with retrofit installers
- Surveys and follow-up interviews with social housing tenants
- Survey with non-participating households
- Qualitative interviews with other key stakeholders

Surveys and follow-up interviews with installers, and interviews with manufacturers and other parts of the supply chain

The evaluation contractor will carry out surveys with retrofit installers contracted by Local Authorities, supplemented by qualitative interviews. Collecting data from installers will be key to understanding innovative approaches to retrofit and how they have led to cost reductions, facilitators and barriers to the installation process, and impacts of the schemes on the installer job market.

Installers will be sampled from lists provided by Local Authorities. Further information on installers is expected to be available from installer registration bodies such as Trustmark and MCS, and this may be used as an additional sampling source if necessary, in which case contact details will be supplied by BEIS.

The baseline quantitative survey will take place with 150 installers as soon as possible after the evaluation contract begins, with a follow-up after both schemes have come to an end. Qualitative interviews will be conducted with the full survey sample, also at baseline and follow-up; we have estimated that approximately 6-7 baseline and 6-7 follow-up interviews per grant should be sufficient to gather the necessary detail (for a total of around 150 at each of baseline and follow-up), although the available sample is unlikely to map precisely on to funded projects, and a clustered or sampling-based approach (to be explored in scoping) may be more appropriate.

BEIS welcomes suggestions on the most effective way to deliver this survey. These surveys and follow-up interviews would have an expected length of up to 1 hour.

An additional 50 qualitative interviews with manufacturers and members of the supply chain should also be conducted, with similar focuses as those detailed above for the installer interviews but from a supplier perspective. Manufacturer and supply chain contacts will be sampled from lists provided by installers, and BEIS expects the length of these interviews to be up to 45 minutes.

Sampling and delivery of this survey will need to take account of surveys being conducted by other evaluations in this policy space, and coordination between these evaluations will be supported by BEIS. The Green Homes Grant schemes are expected to draw on a shared supply chain and over-burdening stakeholders with multiple surveys should be avoided.

Surveys and follow-up interviews with tenants

The evaluation contractor will also carry out surveys with social housing tenants, supplemented by qualitative interviews with a subset. Collecting data from households will

be key to understanding the positive and negative impacts of the scheme, as well as process-related barriers and facilitators from the tenants' point of view. This is especially important in the context of whole house retrofit, which previous research has shown results in good outcomes but often with significant disruption.

The sample will be provided by Local Authorities, through the Scheme Delivery Partner (Ricardo); the MoU with Local Authorities specifies that households should be asked for their consent to be re-contacted for follow-up research.

The appointed contractor will be expected to determine the most effective sample design. As large a sample of householders as possible should be used for the quantitative survey component. In all, 2,433 will be upgraded under the SHDF(D) scheme, and 346 under the WHR scheme; recent survey work in BEIS with similar groups suggests a 20% response rate is feasible, which would mean an achieved sample of up to around 600 households (depending on the number of projects funded for SHDF(D)).

The quantitative survey will consist of an initial survey, conducted on a rolling basis as soon as possible after the tenants installation, with a follow-up after the first heating season (likely in most cases to be spring 2022). Qualitative interviews will be conducted with a subset of the survey sample, also at both the first survey and follow-up; we have estimated that 6-7 initial and 6-7 follow-up interviews per grant should be sufficient to gather the necessary detail (150 at each of initial and follow-up). A clustered or sampling-based approach (to be explored in scoping, as outlined above) may be a more appropriate approach to defining the sample for this qualitative work.

In addition to questions about respondents' experience of the scheme, the household survey will be used to gather the fuel poverty status of each home. Self-reported outcome measures aimed at measuring fuel poverty have been used in other surveys administered by BEIS; the contractor may be expected to review these for appropriateness in this evaluation. Ongoing work on another project within BEIS is trialling a method to generate a fuel poverty flag by combining EPC data with household survey data; lessons from this will be shared with the evaluation contractor, but BEIS would welcome suggestions on how to measure fuel poverty.

BEIS welcomes suggestions on the most effective way to deliver this survey, although we would anticipate the appropriate mode being postal, online or telephone (or a mixture of these modes) rather than face-to-face. Contact data for tenants will be collected by Local Authorities and passed on to the evaluation contractor by BEIS.

Surveys and interviews would have an expected length of 15-25 minutes, depending on mode (for the quantitative-only surveys) to 1 hour (for the surveys and follow up interviews).

Survey with non-participating households

Households who have been identified by Local Authorities as eligible for whole house retrofit under the schemes, but do not participate, will also be invited to take part in a survey. Data from non-participating households will be key to understanding barriers to wider roll-out of whole house retrofit.

It is expected that LAs and installers will retain a list of households who are offered an installation but do not accept. The total number of non-participating households is as yet unknown; however, it is expected that a survey of 50 in total would be sought across all projects.

Households will be invited to a short (~5-minute) interview. BEIS welcomes suggestions on the most effective way to deliver this survey. Engagement with the project from this group will have been low, so response rates are expected to be lower than the participating household survey, and we anticipate that incentives may be required for this group to help boost them.

Questions will cover their motivations for not proceeding with whole house retrofit and demographic information to allow comparison to participating households.

Qualitative interviews with other stakeholders

Further qualitative insight is required to understand the impact of the schemes, inform strategic learning, and understand the ways in which innovation has contributed to cost reductions. BEIS therefore expects the contractor to design and conduct qualitative interviews with each of the following stakeholder groups (approximate sample sizes have been included as a guideline, total = 125):

- participating Local Authorities and other social landlords in consortia (2 per grant award, with one follow-up, n=92)
- the Scheme Delivery Partner (Ricardo) (3 at baseline, with two follow-ups, n=9)
- BEIS staff (3 at baseline, with two follow-ups, n=9)
- non-participating Local Authorities (who attended stakeholder engagement events but did not submit a bid, and those whose bids were rejected) (one-off, n=5)
- installer training providers (one-off, n=10)

Contact details for each of these groups will be provided by BEIS and/or the Scheme Delivery Partner (Ricardo). BEIS welcomes suggestions on the most effective way to carry out this fieldwork, but we anticipate qualitative interviews being around 45 minutes in length.

Secondary data

In addition to the primary data collection detailed above, the evaluation contractor will be expected to draw on the following secondary data sources for the evaluation, for the purposes of comparing between projects and programmes and using wider learning to assess what is driving successful delivery of outcomes.

Monitoring data from Scheme Delivery Partner (Ricardo) and Local Authority-led consortia

The Scheme Delivery Partner (Ricardo) will collate outcome monitoring data from Local Authorities, draw comparisons of the reported outcomes against expected delivery, and produce monthly programme- and project-level reports for BEIS for both schemes. The evaluation contractor will be expected to draw on this data for the evaluation in addition to the primary data collection described above, and conduct additional analysis of the outcomes data to provide further insight.

Delivery outcomes data

The Scheme Delivery Partner will be responsible for reporting on the delivery achieved under the scheme. The data they will be collating from Local Authorities includes:

- Number of homes identified as eligible for whole house retrofit
- Number of homes contacted
- Number of whole house retrofits carried out
- Number of measures installed in each home
- Time taken for each whole house retrofit
- Cost to Local Authority of each whole house retrofit
- Cost reduction for each whole house retrofit

This delivery outcomes data will be made available to the evaluation contractor for use in the evaluation.

Energy outcomes data

The Scheme Delivery Partner will also be collating data on energy outcomes. Local Authorities will state in their funding bid how they will assess energy savings; at a minimum Local Authorities will be required to state energy, bills and carbon savings, the final EPC of each property, and the methodology used to derive these.

This property-level energy outcomes data will be made available to the evaluation contractor for use in the evaluation.

As described in the relevant section above, confirming the actual level of energy savings achieved using the NEED database and/or smart meter data will be an objective of the cross-cutting evaluation currently being scoped, and is therefore out of scope for this evaluation contract.

Market outcomes data

Part of the monitoring data provided by Local Authorities and collated by the Scheme Delivery Partner will include a high-level count of:

- Number of people working (FTE) per project
- Number of businesses carrying out installations per project

This market outcomes data will be made available to the evaluation contractor for use in the evaluation.

As described in the relevant section above, using large data sets to assess the overall impact of the schemes on jobs and market growth will be an objective of the cross-cutting evaluation currently being scoped, and is therefore out of scope for this evaluation contract; the evaluation contractor should seek to answer the evaluation questions related to jobs using scheme monitoring data and/or primary research only.

Monitoring data from Trustmark/MCS

It is expected that certification bodies relating to energy efficiency (Trustmark) and low carbon heating (MCS) will provide monthly updates of raw data regarding the number of registered installers and installations under both schemes. BEIS will pass on this data to the evaluation contractor, who will also be expected to draw on it for further analysis to support an understanding of the extent to which new installers are joining the market, whether and how installers are innovating (e.g. by diversifying the measure types they install) and whether they are delivering under multiple government schemes, technologies and accreditation standards (e.g. PAS2030-2019 vs PAS2035).

Value for money assessment

A value for money (VFM) assessment of the programmes and projects should be included in the evaluation, to sit alongside the process and impact evaluations. This should contribute to determining the value for money of the scheme for the government, for society and for the participant organisations.

BEIS suggests an approach based on the “3E model” of VFM assessment³. An evaluation following this approach would draw in evidence from all of the workstreams set out in this

³

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/49551/DFID-approach-value-money.pdf

specification, rather than just economic data. For example, interview and survey data may provide insight into each of the Es which is assessed alongside traditional economic analysis. The three Es are defined as:

- Economy: are we/our agents buying inputs of the appropriate quality at the right price? (For the purposes of this evaluation, "inputs" would include: the projects chosen for grant funding by BEIS, the Scheme Delivery Partner (Ricardo) appointed by BEIS to administer both programmes, the contractors employed by Local Authorities to carry out the work, and the materials and processes used by those contractors)
- Efficiency: how well do we/our agents convert inputs into outputs of sufficient quality?
- Effectiveness: how well are the outputs from the interventions achieving the desired outcomes?

BEIS anticipates it will not be possible to monetise all of the benefits of the projects and programmes; however, BEIS anticipates that a Cost Effectiveness Analysis (CEA) will be conducted as part of the economic evaluation of "effectiveness" at a sub-programme level, with the aim of comparing the relative success of different funded projects, and/or different sub-groups within them. This could, for example, identify the cost per tonne of CO2 saved and compare this between projects, types of measure or types of housing.. The appointed contractor should also commit to working with the cross-cutting evaluation team to ensure that any value-for-money analysis can be used to enable a comparison across the economic stimulus schemes (for example a cost-effectiveness at the level of each programme).

The VFM assessment should also draw out differences between the two programmes as well as individual projects. We expect the VFM assessment will draw on other sources of data, such as the quantitative survey responses and insights from the qualitative research, and secondary data analysis.

All bids should include detailed of how value for money will be assessed, BEIS welcome alternative approaches to those listed above where the bids can demonstrate they are more appropriate.

Baseline cost reduction modelling

For the purposes of both WHR and SHDF(D), bidders for grants have been asked to demonstrate cost reduction over the course of the scheme, based on figures they provide: either from previous whole house retrofit projects or on quotes from suppliers. This initial figure will be used as the baseline from which cost reduction will be demonstrated. However, asking bidders to provide their own cost reduction baseline in this way could lead to a risk of gaming.

An alternative way of providing a baseline for cost reduction for the main Social Housing Decarbonisation Fund, and other future projects, would be for BEIS to provide a centrally-modelled estimate of costs for whole house retrofit, against which bidders would be asked to demonstrate cost reduction. A suggested way of doing so would be to use data from the demonstrator to construct a 'should-cost/would-cost' model; if prospective evaluation contractors are able to propose this or an alternative way of modelling baseline whole

house retrofit costs from the demonstrator/WHR data, and to include this in their costings, it will strengthen their bids.

Theory-based evaluation methods

The evaluation plan for WHR (published as Annex 2 alongside this ITT) recommends contribution analysis and process tracing as appropriate evaluation methods, which may be suitable for the tendered evaluation as a whole. BEIS invites bidders to make proposals including these and/or alternative theory-based evaluation methods, and expects bids to include a clear rationale for the methods proposed.

Evidence synthesis and reporting

The appointed evaluation contractors are responsible for the data collection described above, the associated synthesis and analysis, and the production of evaluation reports. These are expected to include process, impact and economic evaluation reports for both the SHDF(D) and WHR schemes, as well as a final synthesis report covering both schemes.

A priority for this evaluation is the timely provision of evidence to support the design of the main Social Housing Decarbonisation Fund, and to provide evidence of post-covid economic recovery. More detail of outputs is provided in section 4: Deliverables.

4. Deliverables

Evaluation reports

Section 2 sets out the outputs required and expected timings. BEIS recognises that this is a challenging timeline and expects all bids to confirm proposed reporting dates. Bids should be clear about what content will be included within each report. BEIS accepts that the evidence available for the interim presentation and report (in July and September 2021, respectively) may be relatively limited. At a minimum BEIS expects that these would draw on the baseline round of surveys and qualitative insights from interviews with LAs and installers.

All reports should be of a publishable standard, with technical annexes and data tables provided where appropriate. Reports should use the BEIS Microsoft Word reporting template for published reports. Bids will benefit from providing additional outputs that support dissemination across BEIS, for example presentations, slide packs, interactive dashboards or infographics.

Additional outputs

In addition to the evaluation reports, it is expected that raw datasets will be provided to BEIS to support further analysis. This will include fully disclosive data from surveys. This is especially important in the context of the delivery of the full cross-cutting evaluation which will be commissioned as a separate contract.

The provision of high-level findings from consumer and installer surveys on a regular basis, for example monthly or quarterly, throughout the scheme would be beneficial. These would likely feed into internal reporting to BEIS Ministers on the progress of the scheme. BEIS accept that provision of regular updates is dependent on the proposed survey methodology. Bids will benefit where they can provide regular updates however BEIS's priority is to commission a methodology that can demonstrate robust data collection and a reliable delivery model.

Workshops and Presentations

The evaluation is expected to start with an inception meeting with BEIS and other stakeholders to agree the key elements.

BEIS expects there to be an early findings presentation in July 2021, ahead of the interim

report, and for there to be presentations of findings alongside each of the other reports outlined in Section 2. In addition, up to two presentations per year may be required at BEIS Programme Board meetings.

Quality Assurance

All bids should state the internal quality assurance processes that will be applied to different activities and outputs. Where necessary, deliverables that provide evidence of QA should be specified.

Sign-off for quality assurance must be done by someone of sufficient seniority within the contractor organisation to be able to take responsibility for the work done. Acceptance of the work by BEIS will take this into consideration. BEIS reserves the right to refuse to sign off outputs which do not meet the required standard specified in this invitation to tender and/or the contractor's QA plan. QA should cover all aspects of the project undertaken by the contractors, including data collection, data analysis and reporting.

To demonstrate an effective process to produce high quality reporting, the contractor/s must ensure that quality assurance is done by individuals who were not directly involved in that particular research or analysis.

Outputs will also be subject to BEIS internal approvals; the more substantive the output the longer the approval time required. All outputs will require a minimum of two substantial rounds of comments, and published reports will require a minimum of three rounds of comments, which should be factored into timelines and budgets. Bidders should note that BEIS may invite the BEIS Peer Review Group to QA publishable outputs during one or more of the rounds of comments (at no additional cost to the appointed contractors).

Outputs include, but are not limited to, inception reports, evaluation plans, data collection tools and evaluation reports.

Bidders should note that BEIS will only approve invoice submissions and make payments following BEIS sign-off of an output(s). Bidders should link payment milestones throughout the contract to the delivery of evaluation outputs, and include these milestones in their bid. There will be the opportunity to adjust the timing and size of payment milestones following the scoping stage should changes be required.

Bids can propose additional peer review throughout the delivery of the evaluation, particularly where complex or innovative methods are proposed. Where necessary, this should include the use of external experts. A BEIS-appointed peer reviewer will not be expected to provide detailed quality assurance, as their role will be focused on higher level peer review.

The successful bidder will be responsible for any work supplied by sub-contractors. For primary research, contractors should be willing to facilitate BEIS research staff to attend interviews or listen in to telephone surveys as part of the quality assurance process.

Project Management

All bids should include a summary of their project management approach, proposed frequency of project management meetings and how progress will be reported to BEIS.

The successful contractor will be expected to identify one named point of contact through whom all enquiries can be filtered. A BEIS project manager will be assigned to the project and will be the central point of contact.

Where a consortium or sub-contractors are in place, BEIS expect that they are included in relevant meetings, workshops and review points to ensure their full engagement in the project. All contractors and sub-contractors are responsible for the delivery of outputs to the appropriate time and quality. It is expected that the lead contractor takes an active role in oversight of all workstreams and bears overall responsibility for the delivery of the evaluation activities and outputs.

We envisage the need for close interaction between the BEIS Project Manager and contractor throughout the process, to ensure that emerging issues are dealt with promptly and that BEIS fully understand the assumptions and approach taken. Bidders should assume that engagement with BEIS will include weekly project management phone calls,

weekly progress update reports, steering group meetings (frequency to be confirmed), and face to face meetings as required to design, and deliver the chosen methods. The contractor will be expected to chair the weekly project management calls which are expected to cover: progress over the preceding week.

Data security

The successful tenderer must comply with the General Data Protection Regulation 2016 (GDPR) and any information collected, processed and transferred on behalf of the Department, and in particular personal information, must be held and transferred securely. Contractors must provide assurances of compliance with the GDPR and set out in their proposals details of the practices and systems they have in place for handling data securely including transmission between the field and head office and then to the Department. Contractors will have responsibility for ensuring that they and any subcontractor who processes or handles information on behalf of the Department is conducted securely.

APPENDIX B

Supplier Proposal

To be determined at Call for Competition stage

A. Objectives and aims

The objective of this joint evaluation of the Whole House Retrofit (WHR) and Social Housing Decarbonisation Fund Demonstrator (SHDF(D)) programmes is to deliver a process, outcomes and economic evaluation of both programmes. The five aims of the evaluation are to: (a) provide in-depth analysis of the projects supported and the mechanisms they use to improve building energy efficiency and cost reductions in whole house retrofit; (b) measure these and other benefits and provide evidence of the programmes' contribution; (c) identify barriers and enablers to success in reaching benefits; (d) analyse in-depth the costs of the programme, projects and installations and weigh these against the evaluated outcomes; and (e) generate lessons from findings, as they emerge, to inform BEIS, Local Authorities (LAs), whole house retrofit providers and other key stakeholders as to the different values of approaches taken and to support the design of future schemes and projects.

B. Evaluation approach

Our approach to evaluation has been structured and designed to support BEIS' learning through regular and frequent reporting and through tailored learning events. We will take a case-based approach to the evaluation and propose to apply Qualitative Comparative Analysis (QCA) to understand 'what changes happen in which situations'. This approach will usefully cut across the process, outcomes and economic evaluation components of the study and will generate both separate and joint findings for WHR and SHDF, as set out in detail below.

At the programme level, we will trace how each programme is delivered (from stakeholder engagement and project selection, to monitoring, management and governance) and quantify costs and results. The role and actions of each stakeholder in the delivery and success of the WHR and SHDF(D) projects will be reviewed and assessed through a process mapping approach. We will also evaluate the diversity and effectiveness of the portfolio as a whole. We have also included approaches to consulting experts and conducting 'landscape analyses' to understand how the programmes sit within the wider context of government, industry and householder initiatives and actions to reduce carbon emissions from housing.

As the lead partner of the consortia delivering the evaluations of two other Short-Term Economic Stimulus Package programmes (including the cross-cutting evaluation scoping study), Ipsos MORI is well-placed to ensure that our data collection and analytical approaches are aligned with those being used across all Economic Stimulus evaluations. However, we also recognise that the SHDF(D) is unique from other Economic Stimulus programmes in its innovation emphasis, focus on cost efficiency/effectiveness, and in its project approach to delivery. We have tailored our evaluation approach accordingly.

The evaluation matrix in Table 1.1 overleaf sets out an initial proposal for answering the draft evaluation questions listed on pp10-12 of the Terms of Reference (ToR). In the Table, lines of inquiry marked with *** indicate questions added by Ipsos MORI. The Table introduces the evaluation and data collection methods that will be employed in the evaluation and how the components of the process, outcomes and economic evaluations will interact. The red border around the process evaluation questions on costs indicate an overlap between the process and economic evaluation. In section C of this PROJ1.1 submission, our approach to these cost questions is described as part of the 'economic evaluation methods' description.

We propose to use the same evaluation and data collection approaches for the evaluations of both programmes. Whilst we recognise (cf. Annex 1 to this ITT) that the programmes differ in the scale and diversity of some of their objectives and targets, we still see sufficient similarity between the programmes to justify measuring these aspects in both programmes (e.g. the impact of jobs of WHR). Quantitative and qualitative data will be collected at the programme level with distinct findings presented in separate programme reports, but each report will contain sections which highlight common findings. For impacts that are shared (e.g. on supply chain), we will develop formulae and ratios for estimating the proportion impacted by each programme.

Table 1.1: Draft evaluation matrix

		Line of inquiry / evaluation question	Evaluation approach	Data source
Process evaluation	Portfolio development / design	Effectiveness of competition in attracting viable bids	Portfolio analysis	Application documents (successful / unsuccessful)
		Facilitators & barriers to success	Process mapping	Programme documentation, BEIS / Ricardo interviews
		Why only social housing bids applied for WHR	Context analysis & Theory of change	BEIS interviews, WHR project lead interviews
		How scheme design influences project design	Portfolio analysis & Baseline case studies	Project documentation, Project participant interviews
		**How LAs and installers form partnerships **	Baseline case studies & how social housing retrofit is conducted outside of the programme (in the same and different LAs))	Project lead / LA interviews, Project partner / installer interviews, Non-participating LA interviews, Expert interviews, Literature review
		Criteria / process for LA selection of housing stock		
		Rationale for LA involvement in programmes		
		How LAs otherwise implement WHR in the absence of the programmes (additionality)		
	Delivery	Support provided by BEIS & Ricardo to projects	Process mapping	BEIS / Ricardo interviews, Programme documentation, Project lead / LA interviews, Project partner / installer interviews, Project documentation
		Barriers and enablers to programme delivery	Baseline case studies	
		How LAs engage installers		
		How LAs engage tenants		
		How LAs deliver the projects		
		Barriers and enablers to project delivery		
	Results Innovation	Innovative products and methods [in projects]	Cost reduction verification	Project documentation (planned vs actual results), Project lead / LA interviews, Project partner / installer interviews, Expert interviews, BEIS / Ricardo interviews, Programme documentation
		Whether / how this was influenced by the programmes	Context analysis (innovation landscape), Portfolio analysis, Baseline case studies, Endline case studies	
		Methods for cost reduction		
		Progress toward cost reduction		
		Barriers to & enablers of cost reduction		
		How LAs & Ricardo support cost reduction		
	Installer market	Influence of programmes on supplier confidence	Baseline case studies, Endline case studies, Market impact analysis, QCA	Project partner / installer interviews, Manufacturer interviews, Trustmark data, Expert interviews, Surveyor report
		Capacity & willingness of WHR market to engage in the programmes & with PAS2035		
		Role of PAS2035 in projects & installation quality		
		Skills & capabilities created / supported by SHDF(D) & their sustainability / transferability		
	[Redacted]	[Redacted]	[Redacted]	[Redacted]
		[Redacted]	[Redacted]	[Redacted]
		[Redacted]	[Redacted]	[Redacted]
		[Redacted]	[Redacted]	[Redacted]
Outcomes evaluation	Outcomes	Cost reduction results	Cost reduction verification, Cost-efficiency & economy analysis, Energy data analysis, Thematic analysis, Endline case studies, Quality verification, Market impact analysis, QCA	Project documentation, Installer data review, Installer data review, Project lead / LA interviews, Project partner / installer interviews, Monitoring & reporting data, ONS & Trustmark data, Expert interviews, Surveyor report
		Energy savings, CO2 reductions & bill savings		
		Thermal efficiency		
		Outcomes for tenants (comfort, health, well-being)		
		Outcomes for landlords		
		Retrofit quality & aesthetics		
		Market outcomes (jobs, skills, supply chain growth)		
		Spillover effects (positive / ** negative **)		
	Contribution & Lessons	The contribution of project-specific mechanisms and contexts to observed outcomes – esp. whether / how innovations & parts of supply chain have contributed	Endline case studies QCA	Project documentation, Installer data review, Project lead / LA interviews, Project partner / installer interviews
		Demonstrative value of the programme & lessons	Endline case studies Thematic analysis Learning workshops	
Economic eval	Programme & project level	Expenditure (economy) by project, region, property, actor and **installation**	Value for money analysis, including cost-effectiveness analysis. The potential for cost-benefit analysis will be scoped during the inception phase.	For costs: Project documentation, Installer data review, Project lead / LA interviews, Project partner / installer interviews For outcomes: This will be collected through the outcomes eval
		Cost efficiency (actual/planned, input:output ratio)		
		Cost effectiveness (cost:benefit ratios, effectiveness)		
		Project equity (how equitably programme benefits have been distributed amongst different types of beneficiary – by region, income, etc.)		

C. Evaluation methods

This section describes the analytical methods for evaluation that will be used for each type of

evaluation (process, outcome and economic). Our data collection methodology is described in section E ('data collection plan') and the step by step task list is outlined in section G.

Process evaluation: For the two process evaluations, we will apply the following methods:

Process mapping: A key part of the process evaluation will be to map the processes underpinning programme, project and actual retrofit delivery. The purpose of detailed mapping is to understand anticipated cause and effect, possible barriers to (and enablers of) success, definitions of 'effectiveness' (i.e. objectives and targets projects are aiming to achieve and how), opportunities for efficiency, and how costs will be incurred. We will map processes at three stakeholder 'levels': (1) BEIS and Scheme Delivery Partner (Ricardo) activity; (2) LA/project lead activity; and (3) installer/project delivery activity. We will be interested in design, delivery and results creation. We'll seek a 360° perspective by speaking to each stakeholder, as well as to tenants about their experiences and reviewing in-depth all documentation on processes, delivery challenges, complaints, redress mechanisms, etc.

Portfolio analysis: In the first weeks of the contract, a light-touch mapping of all 23 projects will be conducted in a spreadsheet to give the evaluation team a quick oversight of the breadth of projects (by innovation, location, delivery partners, value, objectives, etc.). Some weeks later, a more in-depth analysis will describe in detail each projects' activities and mechanisms for cost-reduction and outcome achievement taking information from project documentation and from the baseline interviews with project teams.

Landscape mapping and baseline market and innovation analyses: Also in the first few weeks of the contract, we will conduct a desk-based review of the 'state-of-the-art' of whole house retrofit – i.e. on which types of houses, in which contexts, and via which drivers it is currently being applied. This analysis will also cover how LAs currently upgrade their building stock and seek to meet their building efficiency targets. We will use literature recommended by our expert energy efficiency team in EST and their network of green construction experts. Within the first few months, similarly drawing upon our networks and a literature review, we will develop two baseline (qualitative) analyses of (1) the WHR market (providers, suppliers, etc.); and (2) WHR innovations. We will agree with you our search parameters and proposed sources as part of the evaluation design exercise in the first month of contract.

Theory of change review: A high quality programme Theory of Change and project-level template Theory of Change were already developed for the WHR scoping study by Matthew Bauman who is part of the team proposed for this assignment (see PROJ1.2). Additionally, work (led by proposed Project Director Laura Hayward and proposed Project Manager Sam Ridout) to develop the SHDF(D) Theory of Change was already undertaken as part of the Economic Stimulus cross-cutting scoping study event in December 2020. We propose to use these two existing outputs to further refine the programme Theories of Change and to integrate findings from the landscape mapping of contextual barriers and enablers. Project level Theories of Change will be developed as part of the baseline case studies.

Understanding project strategies – baseline case studies: The baseline case studies will comprise project level Theories of Change that set out in detail: the anticipated outcomes of the project, the mechanisms that will be used to achieve these (e.g. the technologies, management and procurement routes, engagement and incentivisation methods, etc.¹); and project strategies for achieving value for money – i.e. economy (prices paid for materials, professional time, other overheads) and strategies for cost reduction; cost-efficiency (in terms of target timescales, how these will be achieved and monitored to redress any delays and reduce timescales); effectiveness; and equity (i.e. how the project anticipates ensuring outcomes benefit the most in need /do not exacerbate existing inequalities).

Outcome evaluation: Anticipated benefits will be measured quantitatively and qualitatively and the findings triangulated to further strengthen conclusions. Through the qualitative data collection, we will also gather evidence of adverse effects and unintended effects (including spill overs). The variety of approaches to outcome measurement that we propose are described below. The main ways through which we will assess causation (through endline

¹ Pp19-25 of the WHR Scoping Study set out some examples of project-level activities for achieving results.

case studies and QCA) are described below.

Qualitative case studies: Case-based evaluation provides a framework for in-depth exploration of mechanisms and contexts that can be extremely rich in telling stories of change and identifying both common and anomalous features with strong explanatory power. Given that projects are likely to be highly varied, we expect that the 'case unit' will be a project (meaning there will be 23 case studies). Should there be analytical value in grouping projects (e.g. by approach, building type, objectives, etc.) then we could shift to supra-project cases. We propose to conduct baseline (see above) and endline case studies. The baseline Theories of Change will form the basis of the interview topic guides and enable us to test project assumptions. The endline case studies will draw conclusions on the extent to which project objectives and results were achieved as planned, unexpected outcomes, and resulting costs. It will also conclude on internal and external drivers of change.

QCA: Taking these identified 'drivers' (or 'factors'), we will develop a framework for QCA. Factors are characteristics of a project /its delivery whose presence or absence may contribute to ('cause') 'outcomes'. For QCA, qualitative evidence is summarised into a statement which can be scored as being either 'present' = score 1) or 'absent' (=0). An example factor might be: 'materials are manufactured offsite' or 'more than 75% of tenants have lived in the property for more than five years'. In 'crisp set' QCA, factors may be only scored as 0 or 1, whereas in fuzzy set QCA intervals between 0 and 1 may be used. To develop these factors, we propose holding an analytical workshop with BEIS in the first half of 2022, as endline case study evidence begins to emerge. Once the endline case studies are complete, we will hold a second workshop to score the factors together. To operationalise our approach, we have allocated evaluation specialists, trained in QCA,² with a strong track record in energy innovation and/or energy efficiency programming as dedicated leads for case studies (for more information, see PROJ1.2).

Additionally, for some outcomes, we will use other means of assessing causation:

- On delivery outcomes, we will assess the number of WHR installations completed by participating LAs against a counterfactual of those completed by LAs/HAs outside of the programmes. The aim here will be to establish the programme effect on boosting WHR /its additionality. We will also carry out a before/after analysis of numbers.
- On market impacts, we will aim to assess the effects of the programme on jobs and skills by comparing baseline and endline (before/after) figures for participating companies to non-participating companies. (The scope of this exercise will be confirmed with BEIS at the start of the contract, as we note on p14 of the ToR such counterfactual analysis may be confined to the future cross-cutting impact evaluation of the Economic Stimulus package.)
- For energy savings /thermal performance, should such data be available within this evaluation scope we could compare participating households to a counterfactual of similar social housing households receiving energy efficient upgrades (but not using the whole house approach). Should this not be available, instead, where possible, we will compare /benchmark aggregate data from WHR and SHDF(D) to the same results from non-whole-house retrofit programmes (e.g. Energy Company Obligation (ECO) and/or the Community Energy Saving Programme (CESP)).

The remainder of this section describes out methods for measuring specific outcomes.

Delivery outcomes (e.g. total number of installations, cost data) will be made available from Ricardo, and we assume that little to no data cleaning or quality assurance will be required, except in the case of cost reduction calculations (see below). The delivery outcome data will feed directly into the cost effectiveness analysis.

Energy outcomes: Data on estimated energy and bills savings, as supplied by LAs, will be collated and reviewed by our expert energy efficiency team in EST for methodology alignment, validity, and consistency, for example by looking at carbon factors and tariffs used by LAs in their calculations. We will then summarise the savings claimed, and any relevant caveats, to give an overall indication of the extent to which savings have been generated by

² Currently several members of the team, including the Project Director are trained in and/or have applied QCA in other evaluations. Any further training of team members has been costed into the team briefing and project management strands.

the retrofit projects. Carbon savings will be derived from the energy savings data and calculated using the current Government Greenhouse Gas conversion factors. Bill savings will be calculated using current, average domestic fuel tariffs.

Thermal efficiency: This will be calculated on the basis of dwelling heat requirement figures from pre- and post-retrofit EPCs. Since 2008, the European Directive on the Energy Performance of Buildings has required that any building which is sold, rented out or constructed must have an EPC. It is therefore very likely that pre-retrofit EPCs will be available for the majority of the sample that can be compared with the post-retrofit EPCs provided by Ricardo. Depending on the nature of the data provided by the Ricardo, we may take a representative sample of individual installations, identify the heating requirement improvement per unit floor area, and develop one or more factors for thermal improvement relative to energy saving, which can then be used to extrapolate thermal improvements for all properties based on the energy saving figures provided. Alternatively, if appropriate data is provided in a suitable form, we will calculate thermal improvement for each individual property. We will then summarise the improvements shown, and any relevant caveats, to give an overall indication of the extent to which thermal efficiency has been improved.

Retrofit quality: We will review monitoring data on compliance with standards and guidance (PAS2035, MCS installer standards, BBA certificate installation requirements etc.), as well as programme data on householder satisfaction and complaints. We will assess qualitative evidence of quality assurance activities collected through interviews with LAs and installers. We will also seek feedback from tenants on any quality issues relating to the retrofit work through the tenant survey and interview work. To further assess whether measures have been installed in accordance with the relevant standards, and whether premises and measures are as notified by the LA, we propose that a small amount of technical monitoring is carried out by a suitably qualified professional surveyor. A budget has been included for a sample of 15 homes. These will include a selection of sites that may have had issues or concerns raised during or after the retrofit process. As with other outcomes, quality will be assessed at aggregate programme level and at project level.

Market outcomes: Both programmes aim to generate several market effects. Whilst only SHDF(D) explicitly aims to support jobs, both have an aim to increase the robustness of the supply chain and increase the number of WHR projects taken forward outside of BEIS planning. Post-COVID, the SHDF(D) programme also has preference for growing the UK market specifically (i.e. minimising capital outflow). The WHR market comprises both large-scale 'do-everything' organisations which are unique to the WHR offering, and smaller companies which collaborate with others, such as in co-operative-style business structures, to provide a WHR offering. A market effect from the programmes could be generated on both of these business types, though we assume that the latter type of organisation will also be delivering installations under the other Economic Stimulus programmes, meaning that it might be difficult to quantitatively discern the effects from one programme to another.

To assess effects on the **supply chain**, businesses will be asked about net changes in employment and potential causes of these changes. Manufacturers, in particular, will be questioned about motivations for producing (or choosing to continue production of) retrofit products if they made such a decision after the beginning of the scheme. Additionally, installers will be asked about the suppliers and brands they use for each measure type. This will be triangulated with typical or actual costs of measures and TrustMark or scheme data on volume of measures to develop an understanding of gross expenditure on all measure types, manufacturers and potentially also products. This data will be very useful for tracking both schemes' monetary flows at key points in the value chain.

A macroeconomic approach using a simplified Business Confidence Index (BCI) will be the most appropriate to determine the impact of schemes on **business confidence**. This will entail posing business tendency questions on forward-looking expectations in areas such as business performance, pricing intentions, investment plans, workforce, and the impact of the programmes in preceding expectations. These expectations are key factor in influencing business decisions which impact employment and investment, and can collectively shape

the economic cycles of the sector. A drop or increase in business sentiments, as identified by the BCI, will be an important tool in predicting the impact of the scheme in building confidence. A skills audit will also be carried out to gain a holistic overview of the number of employees trained in installing various measure types and aspects of WHR, types of measures installed by the company, and their workforce capabilities in work and professional proficiencies (e.g. problem-solving, teamwork, customer service etc.).

Table 1.2 illustrates the market metrics we will measure at the baseline and endline to understand market size, strength, diversity and profile. We note (cf p14 of the ToR) that the evaluators are not required to use big datasets. However, if needed, Ipsos MORI has permission to access ONS Secure Research Service datasets (e.g. the Business Structure Database and Annual Business Survey) and proposed team members are ONS-accredited.

Table 1.2: Proposed market outcome indicators

Indicator	Type	Source
# WHR organisations operating	Quant	Consultation with trade bodies/experts Inter-Departmental Business Register (IDBR)
# other businesses offering aspects of WHR (as consortium /in partnership)	Quant	
Gross expenditure by measure type, brand and manufacturer	Quant	TrustMark data Installer interviews
Business Confidence Index (BCI)	Quant	Installer, manufacturers and other supply chain interviews
# employees (total/by type: project managers, procurement, engineers, installers)	Quant	Installer data review TrustMark /MCS data
# employees trained in aspects of WHR (total and by type: project managers, procurement, engineers, installers)	Quant	Installer data review PAS 2035:2019 & PAS2035 certification and training provider ³ data TrustMark data
# installation types offered per firm		
# WHR completed within the last two years (participant and non-participant)	Quant	Installer data review
Wider installer take-up /interest in WHR	Qual	Interviews with non-participating installers
Wider LA take-up /interest in WHR	Qual	Interviews with non-participating LAs

Outcomes for tenants: Outcomes for tenants will be assessed largely through the tenant survey and qualitative work. We will cover retrofit experience, perspectives on WHR (pre-/post-retrofit), self-reported energy efficiency behaviours (pre-/post-retrofit), tenants' experience of the home/perceptions of comfort/health outcomes (pre-/post-retrofit), and changes in fuel poverty risk. We will also seek tenants' views on the aesthetic value of the dwelling and effects on the overall built environment post-WHR. We will also consult with EST's network of energy efficiency and retrofitting experts to gather the perspectives of participating LAs on this topic. We will analyse the data at an aggregate programme(s) level (i.e. overall tenant experience of whole-house retrofitting) and at a project level (through case studies, subject to sample size). An analysis of programme impact on fuel poverty will also be undertaken. We note that, in another project, BEIS is currently trialling a new method of generating a fuel poverty flag, which Ipsos is helping to develop/implement through GHG(LAD) and GHG(V) evaluations. We propose discussing all possible approaches at project inception and agree on the most suitable for this project.

Outcomes for landlords: We assume that most of the housing stock covered in the programmes will be LA and/or Housing Association managed, with few private landlords participating. Participating social landlords will be consulted at baseline and endline to discuss and test assumptions around possible benefits and costs to them of (a) programme participation (free upgrade, increased knowledge /first mover advantage, increased green credentials vs. administrative /reporting costs, engagement costs); and (b) a WHR approach to meeting housing stock targets (lower cost of upgrade, achieved regulatory compliance,

³ <https://www.gov.uk/government/publications/green-homes-grant-skills-training-competition/Winning-projects>

healthier less fuel-poor tenants vs. higher delivery costs and inconvenienced tenants). Another benefit to landlords would be an improved market value of the property (indicated through e.g. insured value or adjusted value of the property as a financial asset).

Demonstration effects: The purpose of both programmes is to generate evidence on the most effective delivery models to achieve reduced cost WHR to inform (and influence) local authorities and installers/supply chain (see above), as well as BEIS in making ongoing funding decisions and programme adaptations. The outcome evaluation will assess the extent to which the projects and programmes have a wider influence on LA, installer and policymaker behaviour. It will do this through qualitative interviews, and through process mapping of dissemination activities⁴ and their scale, reach and effectiveness.

Economic evaluation: Given that a key policy aim of the WHR and SHDF programmes is to achieve value for money in whole house retrofitting, the economic evaluation will be a critical component of the evaluation. There will be five components (see below) - each of which will be conducted at the programme, project and installation level.

Cost mapping: The primary focus will be to map where costs are incurred (and the value of these) within each project. In SHDF(D) grant applications, projects are required to differentiate between total labour, overhead, material, capital equipment, subcontractor and other costs. We assume that WHR projects must provide similar data. We will begin by mapping this data⁵ against categories of project 'approach'. This will give us an assessment of where different types of projects anticipate greater /lesser costs and enable us to build lines of inquiry and theories to test through baseline consultations with project teams. Through these interviews, we will seek to obtain more granular information on costs per installation – e.g. what projects are paying for biomass installations, underfloor insulation, etc. – and other project costs (management, stakeholder engagement, contracting, contractor finding, staff costs, training). Such quantitative information will be fed into the value for money assessment of economy and the process evaluation cross-project comparison of where costs are incurred and how these vary (by region, property type, etc.).

For the cost-effectiveness analysis, we will also map programme costs and LA project costs. This is also to enable cross-programme analysis for the Economic Stimulus cross-cutting evaluation. As some aspects may be commercially sensitive (e.g. value of Scheme Delivery Partner contract), this may be provided as a lump sum. Importantly, this will include in-kind costs, e.g. BEIS project team, LA administrative costs and stakeholder engagement costs.

Understanding and evaluating cost-reduction strategies: Through these consultations, we will also dig deeper into project strategies for cost reduction (including cost-review points, cost dependencies, barriers and potential areas for future cost savings). We will review and assess project-level methodologies for calculating costs, including whether and how through life costs are calculated (e.g. maintenance costs for installations such as heat pumps). To the extent possible, we will cover through life costs in our value for money calculations. We will also use the project-level baseline interviews to explore the extent to which the project teams design their approaches around an understanding of holistic approaches to project value for money (e.g. taking into account efficiency, effectiveness and economy considerations). For example, projects may opt for more expensive materials if they are more durable (reducing replacement costs) or are quicker to install (reducing staff costs). For SHDF projects in particular, we can also explore whether market benefits and wider environmental impacts are taken into account – e.g. by opting for locally sourced materials with a lower travel impact, sustaining local jobs over those sourced overseas.

Cost-reduction validation: As part of the evaluation design stage (February-March 2021), we will discuss with BEIS and further assess the feasibility of robustly modelling cost reductions (in order to validate project estimations /check for gaming). One potential route would be to agree with BEIS a "should cost/would cost" for the aspects of WHR that projects target for cost reductions. For example, if projects aim to reduce overall timelines (and thus project management and overhead costs) by utilising dedicated multi-skilled teams who can

⁴ Examples of these are listed on p25 of the WHR scoping study.

⁵ Where projects are already at development stage, and figures have been updated, we will use the latest figures.

work in parallel at the same time, then we would calculate the “should cost/would cost” of a project not applying these innovations. That could be done in several ways: (a) by drawing upon the expertise of the Association for Environment Conscious Building (AECB) network as required. **The AECB has confirmed that they would be happy to support the delivery of the evaluation project on questions of modelling of retrofit costs;** (b) by benchmarking costs from ‘typical’ WHRs not applying this innovation (using Trustmark data); or (c) by reconstructing the cost from project data (on a project by project basis).

Cost-effectiveness analysis (CEA): We agree with the ToR, that CEA is an appropriate method for assessing the cost and benefit trade-offs within this programme context. CEA – undertaken at project level – will enable us to compare the costs per overall programme outcomes (energy savings, thermal performance, outcomes for householders, etc) across projects in order to understand in more detail which approaches are able to deliver cost savings for particular outcomes or not. A CEA approach does not assume that one approach is preferable over the other, whereas a cost-benefit analysis (CBA) implies that one approach (the one with the greatest monetised benefit to cost ratio) is preferable. We will also conduct a CEA at the programme level using the overall programme-level costs mapped (see above) per programme outcome (e.g. per CO2 reduced, KWH energy saved, houses retrofitted, houses raised to EPC rating C, etc.). However, CBA can increase the robustness of value for money (VfM) analysis and is therefore worth scoping in the initial stages of the evaluation. We consider that it would be possible to monetise outcomes such as increases in disposable income resulting from improved energy efficiency, excess benefits to resident wellbeing in terms of thermal comfort, and CO2 emission reductions.

Value for money analysis: We propose taking a ‘4e’ approach to value for money with a focus on project costs and benefits. This will involve an analysis of **economy** i.e. whether the projects could have been delivered more cheaply than was the case in reality. This will be done on a project by project basis, utilising the quantitative data on costs and qualitative data on cost reduction strategies (and validity). **Efficiency** will be assessed in terms of whether (a) the costs and benefits of the programmes and their programmes were higher or lower than expected; (b) whether the programme and projects met targets within the time and cost budgeted; and (c) whether the gross costs of the programme outcomes (i.e. number of houses undergoing WHR to a consistent quality /performance level) are equivalent to or cheaper than comparable programmes. We propose to compare efficiency between projects (i.e. internal benchmarking) and between the two programmes (WHR and SHDF(D)), but also to benchmark efficiency against comparator programmes. As the most similar programmes would be historical retrofit programmes which WHR and SHDF(D) have built upon,⁶ inflation and market changes (e.g. materials getting cheaper) would need to be accounted for. **Effectiveness** will consider cost-effectiveness and overall programme outcome effectiveness. To assess social **equity**, we will review the distributional effects of the programme in two ways: (i) by assessing the monetary value of any cost-savings for residents resulting from the projects (e.g. bill savings and monetised excess benefits (calculated by integrating ONS Life Satisfaction measures into the tenants survey)); and (ii) whether the programme has made a contribution to the delivery of the levelling-up by supporting job retention and business growth in ‘left behind’ regions. We will also conduct an analysis of the regional coverage of unsuccessful applicant projects (to see whether there was any regional bias – negative or positive – in project selection).

D. Methodological challenges and limitations

Assessing additionality: We anticipate that it will be challenging to assess additionality due to the lack of counterfactual for most of the outcome measures. However, we consider that our triangulated multi-method approach allows us to confidently assess causation and we understand that contribution and additionality will be assessed in greater detail through the cross-cutting impact evaluation currently being scoped (and being later commissioned separately).

⁶ E.g. Retrofit for the Future, Scaling up Retrofit and the Thermal Efficiency Innovation Fund.

Data accuracy: Several of the outcome measures depend upon data which will be sourced either directly through projects or via the Delivery Scheme Partner. There is a risk that some of this data may be subject to some biases in estimates – for example, the ToR highlights the risk of gaming in asking projects to calculate cost reductions. Where possible, in the methodology above, we have proposed methods for validating such data.

Data collection - considerations: A consideration across the data collection is the sample available for carrying out both quantitative and qualitative research. Whilst we concur that the numbers suggested for the surveys and interviews will provide the insights needed at a project and case study level (and we have therefore costed on this basis), a range of factors will impact our ability to achieve these and will need to be carefully monitored.

Social housing tenants: Across the projects a total of 2,779 properties will be upgraded. We assume that the sample provided will include contact details for all properties, and that permission will be gained from tenants before contact details are passed on. We have also assumed that named contacts will be provided (not only address) and telephone numbers/ email addresses, to optimise recruitment approaches, particularly for qualitative interviews. We have some concerns about our ability to recruit and interview (qualitatively or quantitatively) the numbers of tenants requested in the brief. Firstly, the requirement for only participants who consent to full attributed *survey* responses to be passed to BEIS will depress response rates (we estimate these will fall from a usual 25% to 20-22%). In addition, not all tenants participating at the first wave will be willing/able to participate at the second wave (e.g. refusing permission to recontact, tenant moves), which will reduce response for second contacts. We have suggested using incentive payments (£10 for surveys, £50 for qualitative interviews per stage) to encourage response and maintain engagement, and will also use 'keep in touch' exercises (e.g. email newsletter) between baseline and endline interviews. Our costs allow for the numbers of interviews requested in the brief (see data collection plan), but we would discuss with you potential impacts of reduced samples and other stipulations on our ability to deliver.

We suggest that qualitative interviews generally follow the survey (except a small number of up-front scoping interviews) enabling us to follow-up on topics emerging from survey findings. However, the survey will not provide sufficient contacts for the full qualitative sample (we typically need 10 contacts per recruit). We will monitor recruitment closely and quickly raise any concerns, and are likely to need to boost the qualitative sample by contacting other tenants from the supplied lists who have not participated in the survey.

Installers: We anticipate some installers will be working on multiple projects (and potentially across programmes), and this will need to be reflected in sampling. It will be important to speak to those within installer companies working with different projects, and with different roles/responsibilities. For example, we note that a total of four installers are listed across the four WHR programmes, with one installer listed across two. In some cases there will be multiple contacts per installer organisation: especially in larger organisations where responsibilities will sit with different people (e.g. bid funding, delivery, procurement, staff training/management). Where the same contact is working with a number of projects or multiple roles we would use topic guides flexibly to minimise burden on that individual while trying to gain coverage across all relevant multiple projects – because of the importance of the project-level view. For quantitative data collection, we will be seeking project-level data from each installer establishment. Throughout we will be mindful of any potential impacts related to the requirement for data to be attributed to each installer and project and shared with BEIS. This may lead to lower response rates, and incomplete data being provided.

Data processing: Where data is to be aggregated and/or cross-compared, e.g. in evaluating programme level outcomes and costs, it is essential that the data is clean and manageable. However, where data is being collected from different sources (e.g. different projects/houses) significant data cleaning may be required. In such a case we anticipate that data cleaning is conducted at source or that we review only a representative sample, as we have not budgeted for extensive secondary data cleaning.

Fuel poverty analysis: We can see real value in the consistency of the fuel poverty

modelling approach across all BEIS evaluations, and anticipate replicating/building upon the approach being developed by BRE with Ipsos (e.g. for GHG(LAD, GHG(V), C-19 tracking). BRE was unable to participate in this tender because of conflicts of interest, but EST has confirmed that their approach can build on the BRE developed approach (e.g. both are built from SAP and can use similar modelling parameters). EST feels their approach may be more appropriate to SHDF(D)/WHR because the EST model is more flexible and deals better with innovative approaches, but would be pleased to discuss in full with BRE and BEIS to ensure comparability and consistency of approach.

COVID-19: The pandemic may impact on scheme delivery and/or on evaluation delivery. While we cannot control the extent to which COVID-19 may impact on scheme delivery, we can build flexibility in to our timings and evaluation approach to enable us to provide learnings and reports at appropriate times to reflect the position of the scheme at that point⁷. All evaluation activities have been designed to be compliant to any restrictions in place (e.g. replacing in-person interviews and site visits with telephone/video interviews). All partner delivery as laid out in this proposal is possible under all tiers and lockdown levels (e.g. systems are in place to enable home working and collaboration activities for staff).

E. Data collection plan

Secondary data: As outlined under section C, several evaluation methods will involve analysis of secondary data in the form of internally-sourced programme and project data (strategy documents, project applications, project monitoring/reporting data, etc.) and externally-sourced data on the programme context (academic/grey literature, market reports, LA built environment strategies/plans). We will also collect quantitative data on participating and non-participating retrofit companies/installers through TrustMark, IMDB and MCS.

Primary data - qualitative interviews: We will conduct semi-structured interviews at the programme and project level. The key audiences, and the rationale for consulting them, are outlined in Table 1.3 alongside sampling considerations. Overall:

- Participants will be asked to take part in a telephone or video interview, fully compliant with relevant COVID-19 restrictions. For some groups (e.g. installers, LAs) some semi-structured questions will also be asked to gain quantitative feedback on key indicators.
- We propose interviews at project level (with LAs, tenants, installers) last for slightly longer than over-arching audiences, providing time to fully explore views/experiences.
- A small budget has been allocated to allow for up to 10 site visits (including 1-2 LA interviews and 1-2 social housing tenant interviews) should COVID-19 restrictions and participant preferences allow in 2022.

In addition to qualitative interviews we propose asking a cohort of 25 **social housing tenants** to take part in a 2-week **diary task** over the winter season: to explore in detail behaviours and outcomes e.g. comfort, health impacts. Participants will be recruited from the qualitative baseline interviews, and would complete the diary using Ipsos AppLife, our custom qualitative data collection app. Participants would complete tasks (4-5 a week) on mobile phones, and can respond using text, photos and/or video. Tasks will be moderated by the IM team, and could include a home tour, exploration of how the retrofit has impacted on use of individual rooms/the property, how measures are being used, any new behaviours. Participants will be incentivised and will also take part in a short introductory interview and a wrap-up interview. The diary will highlight experiences across the cohort and shape endline topic guides. Video content will generate a 3-4 minute film of tenant experiences of living with their retrofit;⁸ these are a powerful way to bring to life participant experiences.

Primary data - quantitative data collection: We will conduct a postal survey of social housing tenants (see Table 1.3). Additionally, for installers, at the end of the qualitative interviews, an installer data sheet will be placed to collect detailed project level data on costs, pricing, spend, staffing/resourcing, etc. This may be completed by multiple individuals

⁷ Please note that our costs assume delivery in the financial year allocated in the pricing schedule. If activities move into the following financial year, there may be some small cost implications.

⁸ For an example of an App-life-produced video, please see here: <https://www.youtube.com/watch?v=YWpGpadMUrc>

in the organisation (depending on responsibilities). A telephone helpline will be provided, and telephone chasing will be conducted to encourage completion.

F. Reporting

The ToR requires the contracted evaluator to produce six publishable reports. Additionally, we propose to produce a Research Plan, setting out the agreed evaluation methodology within the first 4-6 weeks, and we have also budgeted for the production of 'top-line' findings from the surveys and qualitative interviews as these emerge (should BEIS request these). All of our reports will be written in an engaging and clear manner by our experienced team and all qualitative and quantitative data presented (as well as the reports as a whole) will be quality assured by dedicated staff (see PROJ1.4 for more details).

Learning and dissemination: The WHR and SHDF demonstrator programmes have both been set up with the purpose of generating evidence and learning to support BEIS programming in retrofit innovation and to help the Government meet targets on fuel poverty and carbon emissions reductions. Early insights and continuous learning will therefore be key to this programme. We propose to support BEIS in its endeavour by offering up to four lesson-learning /themed workshops on key topics, such as 'growing a WHR market: what works in incentivising and supporting suppliers and retrofitters'; 'engaging and supporting LAs: identifying and breaking down barriers to retrofitting'; 'reducing inconveniences and increasing benefits for tenants'; 'mainstreaming cost-reductions: how to disseminate best practice in a commercial environment' and/or 'replicating WHR on social housing in other group housing contexts'. These would be attended by a variety of stakeholders including BEIS colleagues from different departments, trade bodies, retrofit experts and networks, suppliers, local authorities. They would be an opportunity to present emerging findings from the evaluation and invite expert perspectives and commentary on these. We also recognise that it will be critical for the programme to communicate findings around programme impact and cost-effectiveness to a wide audience in order to demonstrate value for public purse. A visually impactful way of doing this would be through infographics showing the (cost per) number of retrofitted houses, CO2 saved, EPC increased, increased house value, etc.

G. Task List: Below we set out our high-level task list. For more information see PROJ1.4.

Task 1 – inception meeting: The full team will meet virtually with BEIS to present our proposal, discuss any necessary changes, immediate work plan and ways of working.

Task 2 – scoping: Comprising the initial landscape review, programme documentation analysis, light-touch project documentation review and BEIS /Ricardo scoping interviews.

Task 3 – evaluation design: Comprising Theory of Change review, evaluation framework development, methodological refinement and research tool development.

Task 4 – desk-based analysis: Comprising the more in-depth portfolio analysis, baseline and endline market analysis (based on literature) and programme documentation review.

Task 5 – qualitative data collection: *Please see section D ('data collection plan').*

Task 6 – surveys: *Please see section D ('data collection plan').*

Task 7 – process evaluation: This will be an iterative activity that will draw upon emerging findings from the case studies, programme and project-level data collection and analysis.

Task 8 – case studies: These will be conducted at baseline (in the first 3-6 months of the evaluation and then at endline 3-6 months before the evaluation close).

Task 9 – outcomes analysis: Covering a range of analytical activities, including analysis of externally sourced quantitative data (on market outcomes), analysis of programme data on energy outcomes and thermal efficiency analysis, and triangulation of the different qualitative and quantitative indicators of outcomes for tenants, as well as quality.

Task 10 – economic evaluation: This will also be an iterative activity, culminating in the final analysis of cost-effectiveness and value for money in the outcome evaluation reports.

Task 11 – reporting: *Please see section E ('reporting').*

Task 12 – dissemination and learning: *Please see section G ('learning & dissemination').*

Table 1.3 Data collection plan

	Audience	Method/ length	Sampling considerations
Project level	LAs/ Consortia	46x1-hr interviews per baseline & endline	Sample provided by BEIS Two per LA/ Consortia per phase: could include different responsibilities across project design and delivery.
	Installers	150x1-hr interviews per baseline & endline.	Sample provided by BEIS/LAs. Interview numbers per project to be refined to reflect installer type, available sample, project structure and design, and ensure coverage across projects. At end of interviews, a secure online data sheet will be placed for relevant individuals through the organisation to complete. A telephone helpline and up to 8 telephone chase calls will be made to encourage completion.
	Social housing tenants	Quantitative: c.600 x16 page postal survey per baseline & endline Incentive: £10 Qualitative 150x1-hr interviews per baseline & endline	Sample provided by BEIS (assume common format) Quantitative: 22% response rate following up to 3 reminders (1 letter, 1 with second questionnaire), all closed questions. Rolling fieldwork to reflect completion of installations. Questionnaire includes details on household composition, finances, installation experiences, experiences of measures, health status measures. Weighting to database profiles (depending on information available). Outputs: tabulations, SPSS file, charted outputs. Extent of project level analysis limited by sample size. Qualitative: At least 6 interviews per project (in some instances, a paired depth may be preferred e.g. with carer present). Depending on sample, aim to include a spread of demographic profile across the interviews.
Programme-level	BEIS	For each: 3x45-min interviews per baseline, during delivery & endline	Interviews with BEIS policy makers and the Scheme Delivery Partner will be crucial to our understanding of the WHR and SHDF programmes from start to finish. We will agree key participants with BEIS and would commence baseline interviews asap to inform scoping phase.
	Ricardo		
	Manufacturers & supply chain	50x45-min interviews	Sample provided by installers and generated through EST contacts. Sample composition based on analysis of scheme data to understand volume of measure types installed and ensure representative sample across all measures. Also include relevant trade associations/overarching bodies to provide industry-level views.
	Accreditation & registration bodies	10x45-min interviews	Sample provided by BEIS and supplemented by EST contacts/ publicly available information. Sample will provide a broad spread of registration bodies across all appropriate installer sectors.
	Installer training providers	10x45-min interviews	Sample provided by BEIS and supplemented by EST contacts/ publicly available information Sample will provide a broad spread of training providers across all appropriate installer sectors.
Comparator/context	Non-participating installers	10x45-min interviews per baseline & endline	Sample identified by Ipsos MORI/ EST. Installers within the WHR market who have not taken part in the programmes will allow us to explore non-participation (e.g. willingness and capacity) and at endline will support analysis of the impact of the programmes across the market.
	Non-participating LAs	10+	We are already engaging with many non-participating LAs in work on the evaluation of GHG(LAD). As part of this engagement we investigate other actions they are taking to meet their decarbonisation and built environment objectives (including portfolio analysis, qualitative interviews).
	Experts	10x45-min interviews per baseline & endline	Sample identified by Ipsos MORI/ EST. Associations, networks and experts in retrofitting and home energy efficiency will be consulted to provide qualitative insights into the whole house retrofit market and innovations in this field at the beginning and end of the programmes.

A. Introduction to the consortium: This complex and specialist evaluation will be delivered by Ipsos MORI (IM) in partnership with Energy Saving Trust (EST) and Technopolis Group (TG). Our consortium is ideally placed to deliver this evaluation, bringing together experts across evaluation, economics, energy efficiency, innovation and research.

Box 1: Our track record in energy efficiency and energy innovation evaluations/studies

- **Energy efficiency and heating:** Boiler Plus (IM/EST), Energy Savings Opportunity Scheme (ESOS) (IM), Green Deal (IM), ECO (IM), CERT (IM), CESP (IM), Warm Front (IM), Whole House Retrofit programme scoping study (TG).
- **Smart systems evaluations:** Non-Domestic Smart-Meter Innovation Competition (NDSEMIC) (IM, TG); Smart Energy Savings (SENS) (IM, EST).
- **Renewables innovation:** ISCF Prospering from the Energy Revolution (PFER) (IM, TG); UKRI Energy Catalyst (TG); Hy4Heat (TG).
- **At scale decarbonisation:** ISCF Industrial Decarbonisation Challenge (IM); CCUS-I, CCUS-D and ACT evaluations (TG).
- **Renewables innovation:** ISCF Prospering from the Energy Revolution (PFER) (IM); UKRI Energy Catalyst (TG); Hy4Heat (TG).
- **Energy entrepreneurs and green financing:** Energy Entrepreneurs Fund (EEF) (IM); Global Climate Partnership Fund (IM); UK Climate Investments (IM); Clean Growth Fund (IM)

Our consortium draws upon: IM's strong leadership in multi-year evaluations, its large-scale research capabilities and evaluation credentials; EST's expertise in energy efficiency, the retrofit supply chain and energy data and its unique networks which will facilitate data collection; and TG's strong track in energy innovation and mixed-methods evaluation design and innovative research methods. An **established team**, IM is currently working with EST on the delivery of the Smart Energy Savings Trial Design, Evaluation and Learning project for BEIS and with TG on the evaluation of three CCUS programmes plus 'Hy4Heat' all of which fall within BEIS' Energy Innovation portfolio. These well-established partnerships give us the ability to 'hit the ground running' and deliver best value for money.

B. Skills and expertise to deliver – comprising:

A deep understanding of the UK energy policy landscape: IM has delivered several energy efficiency evaluations for BEIS and is currently delivering research for Ofgem, and EST is extremely well networked through industry (manufacturer, installer, training/accreditation). TG has led several energy innovation projects including Hy4Heat (BEIS), the Contracts for Difference scheme, and the Energy Catalyst Programme (Innovate UK). Our consortium has unparalleled familiarity with the evaluation methodologies, data availability and management and the demanding analysis and reporting requirements involved in these assignments.

Expertise designing and managing large-scale evaluations: Consortium lead IM has a strong track record of delivering multi-year, multi-stranded process and impact evaluations for BEIS. We are currently leading the evaluation of both the Green Homes Grant vouchers and local authority delivery schemes and have delivered other multi-year evaluations in energy efficiency (e.g. SENS, NDSEMIC, ESOS). IM, EST and TG all bring strong expertise in evaluation design and delivery. Most notably, TG hold the contract for evaluation scoping studies for projects in BEIS' Energy Innovation Portfolio, including WHR.

Impact and economic evaluation expertise: IM have acute expertise in the measurement of economic impacts and the application of a range of relevant methods (econometric, bibliometric, case-based and theory-based) to assess the full scope of impacts. We are currently conducting economic and impact evaluations for BEIS, UKRI, DfT, DIT, amongst others, and we have proposed a team of skilled qualitative and quantitative evaluators.

Expertise in gathering and analysing market & energy data: Many of EST's evaluations involve obtaining data from the supply chain and other stakeholders e.g. Solent Achieving Value through Efficiency Regulatory Report; Digi-label research (Scottish Govt) into impacts of retrofit standards; research into the Home renewable advice service; and Home Energy Scotland involving interviews with landlords to investigate motivations/barriers to energy efficiency improvements. EST developed and manages the £8M NISEP providing technical advice on domestic retrofitting to organisations bidding for funding, and delivers the Warmer Homes Scotland programme, involving collecting and analysing large data sets.

World-class qualitative and quantitative research capabilities and experience with key audiences: IM is one of the three largest social and market research organisations in the UK and globally, with extensive experience of all data collection methods proposed, including probability-based push to web interviews with households and work with installers, industry stakeholders and social housing tenants. EST's excellent relationship with the supply chain will facilitate data collection activities with relationships throughout the energy/retrofit sectors across key audiences, including manufacturers, installers and major trade bodies including AECB (specialists in building retrofit) - they have agreed to support the project as required.

Delivery of high-quality synthesis, reporting and communication of complex policy research: We place great importance in research utility and most of our research outputs for BEIS involve recommendations for policymakers. Examples include a [Toolkit](#) for energy companies to support energy efficiency advice during smart meter installation and [our work](#) to help Oxford City Council identify ways to reach net zero sooner than 2050.

Proven track record of delivering high quality research for BEIS on time and to budget: Collectively we have delivered numerous high-profile evaluations for BEIS, demonstrating our experience and understanding of the requirements around working with policy/analytical teams, external peer review/steering groups and provision of high-quality published outputs. Recent projects include [SM Customer Experience Study ESOS](#) and [NDSEMIC](#).

D. Team Bios and responsibilities

Project Management and Quality Team: *The primary contacts for BEIS, responsible for overall consortium coordination. They will monitor evaluation progress against time plans and regularly review the project risk register. The team includes those who will oversee our Quality Assurance (QA) with clear processes for senior-level sign off on all aspects of the study, including data collection, analysis and reporting.*

██████████ is an experienced Evaluation Director, who has led more than 40 evaluations for a range of clients including BEIS. Her key skills are theory-based evaluation (including QCA), directing consortia and client management.

██████████ is directing the GHG-Vouchers evaluation and has a well-established working relationship with EST and TG.

██████████ is an Associate Director (AD) in the Environment & Energy Team with 9 years' research and evaluation experience, who has managed several multi-year evaluations involving large consortiums, including NDSEMIC and GHG-LAD for BEIS.

██████████ is Manager of EST's Insight & Analytics team, which focuses on projects in domestic energy efficiency, renewable energy and sustainable transport. He quality assures various projects, including research for BEIS into the Boiler Plus Standards, data analysis for Warmworks on heat monitoring data, and renewables database projects delivered for Scottish Government.

██████████ is a Senior Economist with over eight years of energy consulting experience, including quantitative energy sector modelling and impact modelling of innovative energy efficiency programmes. Recent projects include NDSEMIC for BEIS and Innovate UK's Energy Catalyst Programme (ECP).

Specialist Evaluation Team: *Comprising evaluation and economic specialists who will lead specific analytical and technical strands.*

██████████ is an AD with over 10 years' experience of economic evaluations (including CBA, CEA and VfM assessments). He manages evaluations of the Superfast Broadband Programme for DCMS, which includes CBA and VfM assessments and the Energy Entrepreneur Fund for BEIS. He will have primary oversight of the value for money and cost-effectiveness analysis and design.

██████████ is a Senior Evaluation Consultant (SEC) with particular knowledge in the field of innovation. An economist by training, she is adept at applying economic thinking to impact evaluations of public programmes. She is currently managing an outcome evaluations for Innovate UK. She will support evaluation design, delivery and reporting and act as a case study lead.

██████████ is a SEC with strong competency in quantitative analysis, including econometric analysis and modelling complex data-sets. He is currently coordinating the Smart Energy Innovation Competition (SENS) for BEIS. He will coordinate all market impacts analysis and will also act as case study lead.

██████████ is a SEC with significant experience in cost-effectiveness analysis for clients such as DfT and UKRI. He will lead the cost-effectiveness analysis, support ██████████ on the VfM analysis and act as a case study lead

██████████ is the Head of the Insight and Analytics team at EST. He has been working in the field of sustainable energy consultancy and advice for 30 years and will lead on several technical analyses of outcomes for this assignment. Recent research studies have covered water labelling options for UK homes, smart meter interventions and Boiler Plus implementation.

██████████ is an Insight & Analytics Consultant at EST with substantial data analysis skills, including numerical modelling using R. He is experienced in a range of techniques relevant to energy efficiency programming (e.g. fuel poverty analysis).

██████████ APM PMQ certified Evaluation Manager, she has sixteen years' experience of evaluating energy efficiency and microgeneration policies and programmes. Her work includes Evaluation of the Energy Saving Trust's Scottish Renewable Programmes, SAVE Regulatory Report Stakeholder Research and BEIS International Review of Domestic Retrofit Supply Chain.

Project Case Studies Team: ██████████

██████████ Consultant with 25 years' experience in evaluation, including working at DECC (now BEIS), where he scoped and designed government evaluations. He brings particular expertise in theory-based evaluation. Project experience includes work on the WHR evaluation scoping study and the evaluation of the BEIS Industrial Fuel Switching and Hydrogen Storage programmes. In addition to the case studies, ██████████ will conduct literature reviews to support design.

████████████████████ Senior Consultant with 12 years' policy research experience, including evaluating decarbonisation programmes. He developed the evaluation plan for BEIS' Whole House Retrofit programme and is involved in evaluations of BEIS' EEF and Hy4Heat programmes. He brings considerable experience in designing and running economic impact models.
Specialist Research Team: <i>Leading the design and delivery of the data collection ensuring consistency and quality across interviews. Ipsos MORI will lead research amongst Local Authorities, installers, social housing tenants and stakeholders working with the specialist evaluation and case studies teams to moderate qualitative interviews. EST will lead the research among manufacturers, accreditation/installer register bodies and installer trainers. The team will be supported by a dedicated fieldwork work team bringing together qualitative specialists from our dedicated Qualitative Research Unit and our 200-strong network of fully trained qualitative researchers in our Public Affairs team.</i>
████████████████████ Director with over 15 years' experience, who has directed many major research and evaluation projects, using traditional as well as innovative quantitative and qualitative methods. Experience includes the directing of a 3-year process and impact evaluation of JAQU's Local NO2 Plans programme, involving surveys of residents and businesses in 7 case study areas, thematic case studies to explore external drivers and data collection with LAs, and directing the GHG(LAD) Evaluation.
████████████████████ Director specialising in qualitative research, who has researched uptake of Green Deal measures and experiences of fuel poverty for BEIS/DECC. She directs the qualitative research on the GHG LAD and GHG Vouchers evaluations.
████████████████████ Research Manager with significant experience of carrying out research for BEIS in the field of energy efficiency, including the Smart Meter Customer Experience Study and evaluations of ESOS and NDSEMIC. He is currently leading installer research for the GHG evaluations.
████████████████████ Research Manager experienced in engaging vulnerable households, managing large scale studies for the Home Office and using innovative methods such as AppLife to explore lived experiences.
████████████████████ Senior Researcher with experience managing qualitative and quantitative research including qualitative research with installers for Boiler Plus and with vulnerable households for DWP/HMRC.
████████████████████ Researcher whose experience includes push to-web surveys and research with vulnerable groups, including the COVID-19 Household Survey and qualitative interviews amongst installers and homeowners regarding Boiler Plus
████████████████████ Evaluation manager experienced in developing and delivering evaluation of sustainability projects and research across many areas. His work includes the Scottish Govt. Energy Efficient Scotland Customer Journeys and PAS 2035 feedback to BSI.
████████████████████ Evaluation manager with experienced in both qualitative and quantitative research. Recent projects include BEIS Boiler Plus and the OFGEM Chimella Trial.
████████████████████ Assistant Evaluation Manager experienced in qualitative research. Recent projects include research with boiler installers to understand opinions of the updated PAS 2035 in Scotland.

E. Continuity measures:

F. BEIS support will be needed in facilitating access to programme documentation, timely access to datasets and endorsing the research programme, as well as managing deduplication across studies and manage steering groups and oversight/peer review.

A. Our understanding of the project environment

The Whole House Retrofit (WHR) and Social Housing Decarbonisation Fund Demonstrator (SHDF(D)) programmes will provide grant funding to a total of 23 projects that are collectively worth £79.3m. The funding will be used to improve the energy performance of 2,779 social homes with low EPC ratings. The primary programme aims are to **foster innovation** by trialling new approaches to whole house retrofit, and through this innovation explore ways of **reducing the cost** of undertaking such work. The programmes are expected to lead to **improved energy efficiency** in beneficiary households, and to provide associated benefits for householders' health, comfort, energy bills, and in alleviating fuel poverty. The SHDF(D) – part of the Short-Term Economic Stimulus Package – also aims to **create and support jobs** in the manufacture and supply chain. The two programmes will help to meet the objectives of a number of strategies and commitments that rely on the UK to improve the energy efficiency of its building stock by 2050, including: the UK's Net Zero commitment (2008); the Clean Growth Strategy (2017); the Buildings Mission (2018); and the Fuel Poverty Strategy (2015).

Overview of the key features of the Whole House Retrofit and Social Housing Decarbonisation Fund Demonstrator programmes

	Whole House Retrofit	SHDF Demonstrator
Dates	November 2019-April 2022	July 2020-December 2021
Funds	£7.7m allocated	£64.2m
Scale	346 households across the 3 grants awarded, min. 75 per project	2,433 households across 20 grants awarded, no min.
Target EE improvement	25 SAP points, reaching at least EPC Band B	Reaching at least EPC Band C
Cost/carbon targets	5-15% cost reduction; final thermal performance of 15-30 KW/m ² /year	5-30% over project lifespan; final thermal performance of 50KW/m ² /year
Key process-related objectives	Provide evidence on sources of cost reduction from scaling WHR; evidence of replicability of approach; deliver road map to mass production.	Generate learning & innovation around WHR, to reduce costs and improve outcomes; inform main scheme design; generate interest from social landlords & supply chain to build a robust pipeline for the main fund

Whole house retrofit approaches put together a comprehensive plan for insulation, air tightness of the fabric and ventilation at each household. They often involve off-site manufacturing with properties being wrapped in pre-fabricated wall and roof panels. Deep retrofit can be done at a lower cost and much faster than the alternative of demolishing and rebuilding, is less disruptive for residents, and preserves the country's domestic architectural heritage while reducing energy demand and carbon emissions by up to 80%.¹

To date, most retrofit programmes have focused on installing single or partial retrofitting measures at individual properties. These tend to deliver lower energy efficiency savings (rarely topping 15%-20%) and can lead to issues with damp, air quality and condensation. However, there has been limited commissioning of whole house retrofit at a sufficiently large scale to offer economies, and no assessment of the effectiveness of different delivery models.² Furthermore, responses to BEIS' 'Building a market for energy efficiency' consultation highlighted that market actors perceive that current regulations prevent innovative energy efficiency products and services coming to market within the existing policy framework.³ The WHR and SHDF(D) schemes aim to support suppliers to overcome these barriers, and thereby stimulate a new whole house retrofit market. WHR and SHDF(D) build on previous programmes that aimed to stimulate innovation and/or explore ways of reducing costs, including *Retrofit for the Future*, *Scaling up Retrofit*, and the *Thermal*

¹ <https://www.ukgbc.org/wp-content/uploads/2018/10/Retrofit-for-the-future-A-guide-to-making-retrofit-work-2014.pdf>

² WHR Evaluation Plan Final Report (provided as Annex 2 in the ITT pack)

³ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/813488/building-market-for-energy-efficiency-summary-of-responses.pdf

Efficiency Innovation Fund. This national interest in large-scale whole house retrofitting has also been coupled with some local-level retrofitting programmes, historically funded by ERDF. Notable examples include the pan-London *Retrofit Accelerator*, which sought to deliver 1,600 whole-house retrofits over three years⁴; and *ZEB Cat*, a programme that aimed to help 80 Devon firms interested in whole house retrofitting to engage with the growing market for it, and to deliver the retrofit of 15 homes in the county.⁵ Other trials have run in Manchester, Bristol/Bath, London, Oxfordshire, Sussex and Cornwall.

Summaries of the three projects funded via WHR illustrate a range of fabric retrofit measures are being installed, including external wall insulation, underfloor insulation, roof board and insulated doors and windows. Other measures include heat pumps, mechanical ventilation systems with heat recovery, and solar photovoltaics.⁶ An innovative approach to retrofit is present, with the Dutch company *Energiesprong*⁷ involved in two of the projects. They will use prefabricated facades, which can significantly reduce the time needed to complete the retrofit. Prefabricated insulated rooftops containing solar panels and smart heating systems are other innovative measures that are typically installed. Other potential future innovations may include smart heating controls, energy monitoring systems, gas-electric hybrid heat pumps and space-saving storage systems for use with heat pumps. It is likely that some projects will introduce performance guarantees to help build confidence to invest in retrofit and ensure suitable comfort levels and energy bills for tenants. Logistics improvements and smart project management may also increase efficiency of staff allocation, minimise wastage, increase bulk buying savings, and reduce material storage requirements.

The programmes run in parallel with, and will interact with, the Green Homes Grant schemes that Ipsos is currently evaluating for BEIS. The WHR and SHDF(D) evaluations and data collection activities will need to reflect these overlaps. As with the GHG schemes, there is the potential for delays in the roll-out of WHR and SHDF(D), due to COVID-19 and the potential impact of Brexit on the supply of materials which may also affect evaluation activity.

Key assumptions/risks to explore in relation to the primary evaluation objectives

Ipsos' initial consultations with stakeholders on the cross-cutting evaluation of GHG and SHDF(D) highlights key assumptions and risks in achieving the primary objectives and outcomes of the SHDF(D) and WHR programmes:

- On **market stimulation**, a lack of longer-term Government commitment to WHR and EE measures may not give the market enough confidence to invest in the technology, people and training required for market transformation.
- On **innovation**, stakeholders raised concerns about LAs' capacity to facilitate innovation within SHDF(D), and Local Energy Hubs' capacity to provide technical assistance to support LAs within the delivery timeframes.
- On **cost reduction**, an unintended impact of the SHDF(D) could be to push up costs if there is a lack of new entrants to the market.
- On **jobs creation**, manufacturing of pre-fabricated materials could be done outside the UK, reducing the number of new jobs/jobs support in the UK.
- On the **supply chain** whether the installer market and supply chain have capacity to deliver all the schemes in parallel, and their willingness/interest in moving into EE when they can work across broader areas. Similarly, whether the installer market can/is willing to invest in training and skills needed.
- On **improved energy efficiency of homes**, the need for customers to learn the most effective ways of using new heating technologies to realise reduced bills/ warmer homes.

⁴ <https://www.london.gov.uk/what-we-do/environment/energy/retrofit-accelerator-homes>

⁵ <https://www.devon.gov.uk/energyandclimatechange/saving-energy/zero-energy-building-catalyst>

⁶ <https://www.gov.uk/government/publications/whole-house-retrofit-competition-successful-bids/whole-house-retrofit-grant-award-recipients-project-summaries>

⁷ <https://energiesprong.org/>

B. Our understanding of the project requirements

The evaluation will help BEIS understand how projects are being delivered, success factors and barriers, ways performance can be improved in future, and the mechanisms through which innovation and cost reductions in whole house retrofit occur. It will include process, impact and economic evaluations to explore:

- How effectively and efficiently the projects and programmes delivered on the aims of WHR and SHDF(D), and the ways in which the grant mechanism and programme design have delivered innovation and cost reductions.
- The extent to which the programmes' outcomes have been realised at the programme and project levels, and how this varies according to project-specific contexts.
- Whether BEIS' investment in these programmes represents good value for money, including a comparison of the most cost-effective approaches used across the programmes and projects.

The findings will help BEIS to identify the programme features and project delivery models that appear to be most successful in achieving the programmes' goals, and will help to inform the design of the main SHDF. The evaluations will cover each programme independently, and compare the relative effectiveness and impact of the approaches used.

Key features of our approach include:

- A case study approach to provide insights across the full spectrum of delivery models and the innovations being implemented across the funded projects.
- Developing project-level theories of change and tailored case study evaluation plans to allow us to draw conclusions about the relative effectiveness of different approaches.
- Use of counterfactuals (where possible), process mapping, contribution analysis and case-based analysis to estimate the impact of the programmes across delivery, energy, market, tenant, and landlord outcomes.
- A focus on economic evaluation, given that demonstrating cost reduction in retrofit is a primary outcome of the programmes.
- Delivering project outputs that support dissemination of learnings across stakeholders including lesson-learning/ themed workshops on key topics.

C. Meeting the project challenges to deliver the project successfully

The following aspects of our evaluation design address the key challenges in collecting high quality evidence for the evaluation, and are key to its successful delivery:

- **Scoped-out understanding of the programmes allows rapid mobilisation to generate early insights that can inform main SHDF programme design.** Members of the core team were responsible for conducting the WHR scoping study, and are currently leading on the cross-cutting evaluation of SHDF(D), GHG-LAD and GHG-V.
- **A joined-up approach to data collection to avoid respondent fatigue.** As the lead evaluation partners on GHG-LAD, GHG-V and the cross-cutting evaluation, Ipsos is well placed to design a data collection approach that will seek opportunities for efficiencies and not over-burden particular groups (e.g. installers, LAs) involved in all programmes.
- **Strong project management arrangements to deliver to tight timeframes, and the flexibility to adapt.** We anticipate timelines and requirements could be affected by COVID or changes in policy interests during the lifetime of the programmes.
- **A structured approach to gathering and analysing data so that we can effectively synthesise data across multiple strands of data collection.** Data collection and analysis will be guided by a detailed evaluation framework setting out the hypotheses and lines of enquiry to explore for each evaluation question.

A. Our project plan for high quality delivery: To ensure a high-quality delivery of this important evaluation, we have brought together a large team of specialised evaluators, economists, researchers and energy efficiency / built environment / supply chain specialists. We have ensured that the large team proposed (see Proj 1.2) covers all of the required technical inputs, but also that we have enough team members to cover team absences and busy periods when additional support is needed. The evaluation will be led from within Ipsos MORI's Public Affairs division, which houses more than 200 team members specialised in evaluation and other forms of social research. We work closely across teams to deliver our work and are confident that we will be able to provide **seamless delivery of this assignment**.

The project will be **managed centrally** by the Project Director [REDACTED] and Project Manager [REDACTED]. They will be responsible for the overall smooth delivery of the project, liaising between BEIS, other stakeholders, the Ipsos MORI internal team and our consortium partners. Additionally, EST and Technopolis Group (TG) have proposed project managers who will be central points of contact for project communications, performance management and timely delivery of partner outputs. Further, to enhance the efficiency of delivery, we have proposed leads for specific research strands requiring technical expertise and/or significant management – e.g. energy savings/thermal efficiency analysis, value for money and cost-effectiveness analysis, research with the supply chain, survey work, case studies; and have assigned leads for case studies. The team will hold **fortnightly internal meetings** to share important communications from BEIS and monitor task progress.

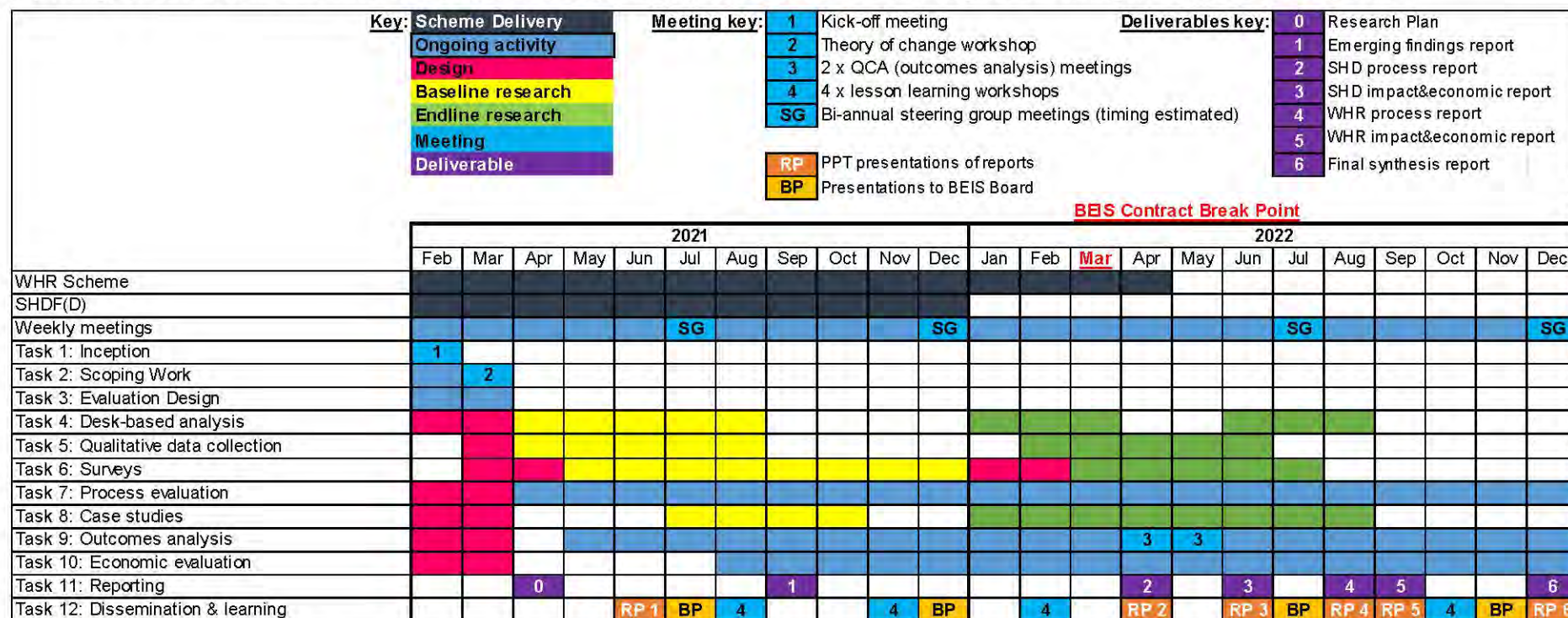
The project management team will hold **weekly meetings with BEIS** to update them on evaluation progress and receive feedback and updates from BEIS.¹ These meetings will be structured around a 'project tracker' (usually developed in Excel), which we will share with BEIS 24-48 hours before each weekly meeting, setting out: progress on each task, critical actions for the week ahead (covering contractual, team and research plan items), the risk register, monthly (and if necessary – e.g. during busy periods - weekly) timetable / Gantt. PM [REDACTED] will be the primary point of contact for all communications with BEIS, he will attend all weekly meetings alongside the Project Director. Either he, or the PD, will present at BEIS Steering Group meetings (where necessary) and they will both also lead (with inputs from evaluation strand leads) on report presentations and lesson learning events.

We understand that five out of six of the reporting outputs will be delivered in 'Year 2' (i.e. after March 2022), which means that – theoretically – a lot of the evaluation findings would not be reported until after the programmes have ended (though BEIS will need learnings sooner), and also that the majority of report-writing will be backloaded to the final eight months of the assignment (which will mean a busy time for the team). To ensure that BEIS have findings as early as possible (to support course correction where possible and ongoing policymaking and programming), we have budgeted for the provision of topline findings from primary data collection as it materialises. We have also included in our evaluation design four 'lesson learning' workshops to disseminate to and discuss with BEIS emerging evidence on key issues (see PROJ1.1). Additionally, through the early findings report and Steering Group meetings, we anticipate **sharing findings early as much as is robustly possible**.

Finally, we consider it an added value that the team proposed here is also involved in the evaluation of the GHG(LAD)/(Vouchers) schemes. Where relevant, learnings and processes from will be transferred over to speed up project set-up and deliver efficiencies throughout the project. This means: (i) where our teams will be designing research materials with similar goals and/or recruiting similar audiences, we can create efficiencies in taking common approaches; (ii) our scripting team can work from the same base survey script where there are similarities in structure and questions covered, significantly reducing set-up time; and (iii) the same sampling team can manage installer sample frames **should these overlap** for all evaluations, enabling efficiencies through deduplication and sample management.

¹ We note that the ITT refers to a single BEIS project manager, though – as this is a joint evaluation – we understand that we may need to liaise with two separate programme teams. We discuss the potential effects of this in the risk register in Table 1.1.

B. Timetable: The Gantt below sets out our draft timetable. It shows: timings for the different components (design, data collection, analysis, reporting) of each evaluation strand; milestones for reporting, presentations and meetings & the timing of the 2022 break point.



C. Key milestones: We will deliver six reports with accompanying presentations, as outlined in the Gantt, as well as a Research Plan.

Report	Deadline	Content and evidence sources
Research Plan	March 2021	Theory of Change work, scoping work, evaluation design, landscape (literature) review.
Emerging findings	Sept 2021	Portfolio analysis, baseline case studies (covering baseline interview data – all audiences),
SHDF(D) process evaluation	April 2022	Effectiveness of stakeholder engagement, project selection, programme support, skills & market development, retrofit quality and costs (efficiency) – at programme and project level
WHR process evaluation	Aug 2022	
SHDF(D) impact / economic eval	June 2022	Evidence for the achievement of: energy and thermal efficiency impacts, final retrofit quality and aesthetics, jobs and market effects, outcomes for tenants and landlords, and spillover effects (and programme contribution); cost-effectiveness and value for money; and lessons.
WHR impact / economic eval	Sept 2022	The Synthesis Report will draw out common and unique themes and utilise comparative analysis of the two programmes to further understand the drivers behind observed effects.
Final Synthesis Report covering both schemes	Dec 2022	

C. Key risks and challenges: These are set out in our draft risk register below. A more complete register will be provided at inception.

Description of risk	Impact	Probability	Controls in place / actions to reduce risk
Unable to recruit sufficient participants due to lack of interest from participants or Covid-19 effects limiting the sample for fieldwork (fewer installations taking place due to restrictions and economic downturn)	High	Possible	The consortium is highly experienced in recruiting for research. Data collection modes are flexible and varied to accommodate participant needs/preferences. Incentives and reminders will boost response, and the testing of research instruments will optimise participant experience and minimise drop-out. To mitigate for overburdening participants, we will deduplicate against samples in other scheme evaluations and use interviewer led methods to target installers and manufacturers. Qualitative appointments will be scheduled to best fit around participant availability to maximise ability to participate. Qualitative participants will be provided with clear information sheets detailing what participation in the research involves and provided contact details for the IM team should they have any questions about their participation.
Secondary data and/or sample data incomplete or low quality	High	Unlikely	There may be variation in format and quality of sample provided by Local Authorities. We assume the delivery partner (Ricardo) will clean and package the information. We will review sample at the earliest opportunity for completeness, identifying issues or omissions that may affect fieldwork or analysis and outline the impacts and suggestions of how they can be mitigated to BEIS and Ricardo. Where this is not possible / delayed, we will consider other data sources for validation and triangulation, such as TrustMark.
Inaccuracy in how energy savings (other data) from retrofitted homes is reported by Local Authorities	Medium		To ensure that an accurate overview of savings is developed we will discuss data quality, method and the format it will be supplied in with Ricardo upon project commencement. We have appointed a dedicated quantitative data & modelling QA lead [REDACTED]. Additionally, EST will sense check reported savings from a sample of each project against modelled savings calculations generated by their SAP-based model.
Participants unable to clearly recall details of measures & purpose of these at follow-up	High	Possible	During the scoping phase we will consider appropriate cut-off points for post-interviews / plan sample / fieldwork accordingly. We will ask participants to revisit paperwork ahead of the interview to remind them of expected benefits (such as lower bills) and refer to these in discussion guides, using timelines as prompts.
Scheme delivery extended or delayed: tenant/installer surveys do not represent population at current timings	High		We are flexible and plan fieldwork to ensure the full population is represented, as we have done on the other GHG evaluations following changes to delivery. If some installations are later than anticipated, fieldwork can be extended to include these households (may be resource, cost or contract implications e.g. we may be required to scale back some PM activities if the contract goes beyond Dec 2022).
Participants have questions about their installation	Low		We will work with BEIS to develop a sign-posting leaflet or links at the end of the participant surveys for those with further queries. This can also cover broader concerns e.g. fuel poverty.
Reporting requirements creates a capacity backlog & delays in delivery	Med	Unlikely	Given that five reports are to be developed in the last eight months of the assignment, alongside reporting requirements, there will be a large amount of analysis and reporting conducted within a short period. We will develop a detailed work plan to manage this so any capacity shocks can be identified and addressed as quickly as possible. However, we consider this risk is low given the size of our team & wider resources.

Part 2: Contract Terms



Contract Terms v6.0