

# Deep Retrofit Pilot Programme 2019

**Application Guidelines**

**Version 1.8**

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## **Preface**

The Sustainable Energy Authority of Ireland (SEAI) is delighted to announce the launch of the Deep Retrofit Pilot Programme.

The following guidelines aim at helping interested parties to create the best applications for their projects by outlining the necessary criteria and documentary requirements, as well as offering helpful advice for those preparing to apply.

As the project is a Pilot, these guidelines are subject to change as required by SEAI.

## 1 About SEAI

SEAI has a mission to play a leading role in transforming Ireland into a society based on sustainable energy structures, technologies and practices. To fulfil this mission SEAI aims to provide well-timed and informed advice to Government, and deliver a range of programmes efficiently and effectively, while engaging and motivating a wide range of stakeholders and showing continuing flexibility and innovation in all activities. SEAI's actions will help advance Ireland to the vanguard of the global green technology movement, so that Ireland is recognised as a pioneer in the move to decarbonised energy systems.

SEAI is financed by Ireland's Structural Funds Programme, which is co-funded by the Irish Government and the European Union (EU).

## 2 The Deep Retrofit Pilot Programme

The existing housing stock in Ireland continues to pose one of our greatest energy efficiency challenges. A considerable portion of the current building stock performs poorly when compared against a building built to the current standards.

Deep retrofit is the significant upgrade of a building toward nearly zero energy requirements where it is practically feasible and achievable. Rather than upgrading isolated parts of the house, the whole home should be assessed as a system, looking at how energy is used and retained. All aspects of the building fabric, air tightness, ventilation and renewables should be assessed.

The Deep Retrofit Pilot Programme is a multi-annual pilot programme, which will investigate the challenges and opportunities that deep retrofit present. The learning from these pilots will inform our approach and support towards the ultimate development of a programme for the large scale deep retrofit of buildings in Ireland. The initial focus will be on the residential market.

## 3 Eligible Projects

SEAI is inviting applications for funding for deep retrofit projects in the residential market under the Deep Retrofit Pilot Programme.

A project application must include a minimum of 5 dwellings. The homes do not need to be located adjacent to each other and can be located anywhere in Ireland.

Funding will be provided to projects which demonstrate an integrated, comprehensive strategy for significantly improving home energy performance, that achieve all of the following minimum criteria:

**(i) Building Energy Rating**

- A minimum Building Energy Rating (BER) of **A3**;
- A minimum BER uplift of **150 kWh/m<sup>2</sup>/yr**;

**(ii) Heat loss indicator (HLI)**

In applying a fabric 1<sup>st</sup> approach SEAI expect a minimum heat loss factor of 2.0 W/m<sup>2</sup>K in the BER to be achieved. SEAI will consider applications with a proposed HLI of greater than 2.0 W/m<sup>2</sup>K under exceptional circumstances and in evaluation of the proposed fabric solution.

**(iii) Airtightness**

Dwellings for which funding is provided must achieve an air permeability of **5m<sup>3</sup>/h/m<sup>2</sup> @50 pa or lower**; see also page 7 regarding bonus payments for results of 3m<sup>3</sup>/h/m<sup>2</sup> or lower.

**(iv) Mechanical ventilation**

SEAI also require that **mechanical ventilation systems** are installed in order to provide adequate and controllable ventilation to ensure good indoor air quality. The system must provide a whole house ventilation solution. Systems may be in the form of mechanical extract ventilation, e.g. demand control ventilation (DCV), or mechanical ventilation with heat recovery (MVHR). Decentralised systems may also be provided where appropriate.

**(v) Data (energy) monitoring**

SEAI require metering of energy consumption upon completion of works. This includes the following:

- A whole house electricity monitor to monitor the electricity consumption;
- Where a heat pump is being installed as part of the works, metering of the heat pump consumption for both space heating and water heating separately is required;
- Where solar photovoltaic panels are being installed, metering of the electricity generated by the PV installation and what was used or exported must be provided.
- Monitoring equipment must be capable of collection hourly data at a minimum of 15 minute intervals.

Note: While the monitoring of energy consumption is mandatory, SEAI also invite other data monitoring that may inform other value proposition offerings such as health and air quality.

While SEAI does not require that the data be remotely accessible, SEAI recommends that remote access would facilitate collection of data for the Project Owner (applicant) and SEAI. As part of the pilot, Project Owners will be required to submit a biannual data report to SEAI for three years post completion of the works. SEAI will provide grant support in the case that remote access data is provided up to a maximum value of €1100 as described in section 3.1. The Project Owner is responsible for ensuring the equipment specified at applicant stage, can provide the level of metering required and also for ensuring continuous data collection.

Full details of the data monitoring requirements and the associated workbook are available on <https://www.seai.ie/grants/home-energy-grants/deep-retrofit-grant/>

Projects not meeting these minimum requirements will not be eligible for funding

Funding will also only be provided for the deployment of **renewable energy solutions**, i.e. fossil fuel technologies will not be supported.

**It is SEAI's intention to limit the value of funding to for any one project (i.e. for a minimum of 5 homes) to €500,000. SEAI will consider funding above this level, on an exceptional basis and at its own discretion.**

There are some additional mandatory requirements related to the BER and air testing:

- A representative pre-works BER and airtightness test certificate for each dwelling type must be provided with the project application. The pre-works BER must be published and must accurately reflect the current energy performance of the home when the application is submitted.
- An XML file defining how the dwellings will be upgraded to achieve the A3 (or better) must be provided with the project application. This XML should match the application form with respect to the measures to be implemented in order to achieve A3 or better.
- A pre-BER and airtightness test must be carried out on all dwellings included in a project (if not already done) once the Letter of Offer has been issued by SEAI. These must be submitted to SEAI before the works commence on site.
- All air pressure tests must be carried out by an [NSAI-registered Air Tightness Tester](#). Post-works BER and airtightness tests must be completed and provided to SEAI upon completion of works. The post-BER must also be published.
- Each BER certificate provided must be accompanied by the Eircode for the dwelling.

To maximise the learnings from the pilot, SEAI are particularly interested in projects including, but not limited to, the following aspects:

- Value for money;
- Technical innovation;
- Extent of the uplift in BER due to works;
- Contribution of renewable energy;
- Replicability of project/target market;
- Design accounting for important technical issues such as ventilation, airtightness, thermal bridging, summer overheating, etc.;
- Financial innovation;
- Robust project plan including detailed QA, commissioning plan, risk mitigation etc.;
- Project team qualifications and experience;
- Non-financial contribution from a Participating Energy Supplier (PES);
- Customer engagement, including provision of training in use of installed technologies;

- Addressing health and wellbeing of occupants, e.g. provision of appropriate ventilation, etc.;
- Demonstration of skills of proposed contractors, i.e. accreditation;

The detailed design of retrofit works is crucial to the performance of the measures. For this reason, it is important that Project Owners give due care and attention to the following issues in designing the retrofit project:

- Improving air tightness
- Provision of adequate ventilation
- Thermal bridging, especially at corners, junctions, edges and interfaces
- Ensuring that building fabric specifications do not create a risk of interstitial condensation
- Preventing summer overheating

It is recommended that the Project Owner conducts a site survey of the individual homes / dwellings included in their application to ensure that an appropriate solution is designed for each one.<sup>1</sup>

It will be at SEAI's discretion to fund projects which, in their view, will contribute most towards the longer term objectives of the pilot. Applications should provide sufficient information to demonstrate how the project proposes to meet SEAI's Deep Retrofit Pilot Programme objectives.

### 3.1 Eligible Costs

Payment of the grant is retrospective and on a reimbursement basis. Projects costs are incurred and paid initially by the grantee who will be reimbursed the grant amount by SEAI after evidence of this payment is provided. [A payment guide is published on the webpage.](#)

The Project Owner (applicant) will be required to demonstrate in all cases, and specifically at application stage, that they have the necessary funding streams in place to cover all of the project costs.

**The Project Owner (applicant) will be required to demonstrate that they have funding in place to cash flow the first 50% of the entire project, before a Letter of Offer will be issued.**

Costs eligible for grant payment include:

- **Project Management:** The maximum eligible value for Project Management support should not exceed 5% of the total capital project costs.

We will pay a bonus (1% of the total eligible project costs) where projects achieve a post-works airtightness test result 3 m<sup>3</sup>/hr/m<sup>2</sup> or lower.

**Only external Project Management fees for the coordination, management and delivery of the project, are eligible.**

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<sup>1</sup> Site surveys of homes to be included on applications are not eligible costs, as outlined in Section 3.2

- **BER A-rating Design:** The maximum eligible value for BER design and consultancy support is 2% of the total capital project costs. This support is for the involvement of a professional with BER capabilities in designing an appropriate suite of measures to achieve the BER A rating, for their ongoing involvement in ensuring that the works being delivered on site will achieve the A rating and that all the supporting documentation is in place to support the values to be input into DEAP. This person may be a registered BER assessor, architect, engineer, assigned certifier or quantity surveyor<sup>2</sup>. This payment is contingent on the achievement of an A3 rating or better following completion of works.
- **Labour:** Costs of employing an external labourer in order to implement the building upgrade.
- **Materials:** Specialised materials, equipment, hardware or control systems necessary to implement the project are an eligible expense. Second-hand equipment, including standard tool hire, will not be eligible for funding.
- **VAT:** VAT is considered eligible for grant payment **only in cases where it cannot be reclaimed from Revenue**. The Applicant will need to get a letter of confirmation from revenue to claim this from SEAI.
- **BER:** All successful applicants will be required to complete and publish a pre-works BER including a certified Air Tightness test for each dwelling in the application.

If the published pre-works BER provided for the application was already in existence and accurately reflects the current energy performance of the home when the application is submitted, then the funding will not be provided for the pre-works BER.

Where an existing pre-works BER is being submitted, the provision for the BERs in the grant offering will be reduced accordingly.

Post-BERs are required to be published and Air Tightness test certificates provided to SEAI for all upgraded homes.<sup>3</sup>

The Deep Retrofit Pilot Programme will provide financial support towards the cost of the pre- and post-works BERs and Air Tightness tests. This financial support will be aligned with the Better Energy Communities Programme support. The maximum eligible cost for a pre- and post-works BER is €250.

To be eligible for support, the work must be completed. SEAI will not support pre-works BER costs if the work is not carried out. BER costs will only be funded at the end of the project when both pre- and post-BERs have been published. The same BER assessor should complete both the pre- and post-works BERs, and a separate site visit to the home must take place prior to each BER being published.

- **Airtightness Testing:** All successful applicants will be required to complete a pre-works Airtightness test with the result input into the pre-works BER. Post-works Airtightness tests are required for all upgraded homes. The Airtightness test must be

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<sup>2</sup> The person must not be an employee of any of the contractors or organisations involved in the delivery of the project upgrades.

<sup>3</sup> The BER assessor must not be an employee of any of the contractors or organisations involved in the delivery of the project upgrades.

carried out by an Airtightness Tester registered with the [NSAI Certified Air Tightness Tester Scheme](#).

The Deep Retrofit Pilot Programme will provide financial support towards the cost of the pre- and post-works Air Tightness tests. The maximum eligible cost for both a pre- and post-works Airtightness Test is €500.

To be eligible for support, the work must be completed. SEAI will not support Air Tightness testing costs if the work is not carried out. Air Tightness test costs will only be funded at the end of the project when both pre- and post-works Air Tightness tests have been carried out and input into the published post-works BER. The same air tightness tester should complete both the pre- and post-works tests.

- **Energy Monitoring Equipment:** Metering equipment for verifying and measuring energy savings for the purpose of preparing the data monitoring reports is an eligible cost. Section 3 describes the metering required. The cost of the equipment should be noted in the Technical Workbook, on the specific project tab. Eligible equipment includes, inter alia, smart meters that record real-time electricity generation and consumption, meters that record heat pump electricity consumption for space and water heating, etc. SEAI will consider other meters that record a significant proportion of the dwelling's energy consumption, at its own discretion. Please refer to SEAI's [Data monitoring guidelines](#) for additional information. The maximum eligible cost for data monitoring equipment is €1100.
- **Wood-burning stoves:** Room-sealed wood-burning only stoves with a certified gross efficiency of no less than 70% will be considered for funding where appropriate. Multifuel stoves are not an eligible cost.

All stoves being installed under this measure must comply with the European regulation EC 2015/1185<sup>[1]</sup>. While this aspect of the Ecodesign directive is not yet a requirement in Ireland it is best practice, so is mandatory for the SEAI programmes funding installation of stoves. Stoves may be demonstrated to meet this requirement when listed on the following website: <http://www.hetas.co.uk/ecodesign-ready/>

Payments on projects is in line with the costs submitted and approved at application stage. The Project Owner must ensure that invoices submitted by the Project Owner must in line with the approved cost per measure.

### 3.2 Ineligible costs

- **Unrelated costs:** Any costs not directly related to improving the energy performance of stock through the proposed project will be considered ineligible for payment.
- **Recruitment and Application Costs:** The cost of recruiting homeowners and preparing and submitting an application is not eligible for payment.
- **Internal Staff Costs:** Internal staff costs are not eligible for payment.

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<sup>[1]</sup> Commission Regulation (EU) 2015/1185 of 24 April 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for solid fuel local space heaters (Text with EEA relevance)

- **Ongoing monitoring costs:** Ongoing monitoring costs, except those required for the data monitoring report, are not eligible for payment.
- **Pre-Project Costs:** Any costs that predate formal grant approval letter of offer will not be paid. Note cost related to BER and airtightness as submitted as part of the application will form part of the grant payment for approved projects.
- **Crossover:** The cost of measures completed in homes which have formerly received an SEAI grant for the same measure are not eligible.
- **Corrections:** The cost of remedying defective works and installations undertaken previously by others (e.g. geothermal remedial works, solar remedial works) are not eligible for payment.
- **Unexpected:** Un-commissioned equipment, and any other costs that have not been clearly outlined in the Application Form, will be considered ineligible for payment.
- **Unfinished Works:** Work that has not been completed, or 'fit for use' by the programme deadline will not be eligible for any or part grant support.
- **Energy upgrades to new buildings:** The Deep Retrofit programme aims at supporting the retrofit of existing homes.
- **Fossil fuel heating systems:** as noted in Section 3, funding will only be provided for the deployment of renewable energy solutions under the Deep Retrofit programme.

This is not an exhaustive list. If you are unsure which aspects of your project are eligible for payment, please contact the Deep Retrofit team.

## 4 Application

Applications forms can be downloaded from the Deep Retrofit Pilot Programme webpage and submitted via [info@seai.ie](mailto:info@seai.ie).

**It is important to read all of Section 9 of this document regarding the input of all data for the proposed project. Providing more detail and sufficient clarity on the specification and cost for each measure, particularly with regard to Section 9, will expedite processing of the application.** It is important to note that applications for funding of more than €250,000 must be approved by the board of SEAI and this has an impact on the submission deadline.

SEAI will review costs across all applications and in cases where a cost, or element of cost included on an application is deemed to be higher than a reasonable range, based on scope of works and market prices for work, SEAI may reduce this cost or element of cost in line with market rates as part of the application assessment process.

### 4.1 Application Deadlines

Applications can be submitted at any stage for consideration for funding in 2019 but no later than the deadline dates as set out below for full grant drawdown in 2019;

- 19<sup>th</sup> of July 2019 – for projects seeking funding below €250,000
- 3<sup>rd</sup> of June 2019 – for projects seeking funding above €250,000

It is important to ensure that you are in a position to deliver your project by the required completion date (see Section 7.2 of these guidelines) as per the project timelines indicated in the application form:

4.4: Project Timelines		
What is the estimated lead in time from receiving the letter of offer?		Weeks
What is the estimated total time to complete the works from the date work starts on sit?		Weeks
Total project timeline	0	Weeks

## 5 Evaluation

Grant applications are scored in accordance with the evaluation criteria as set out below. Applicants seeking funding will be evaluated using a fixed set of evaluation criteria. Only applications which achieve an appropriate score, to be decided by SEAI, will be offered a contract for funding.

The evaluation criteria are:

### 5.1 Value for Money (30 marks)

The project’s value for money will be assessed in terms of energy savings relative to the cost of implementation as this reflects the value of the investment to the Irish State. The assessment will also look at the level of energy savings against the baseline.

Proposals will also be assessed with respect to the target market, i.e. in relation to dwelling types and the pre-works BER ratings as this is an important aspect of the Pilot.

Points will be awarded based on the level of uplift in energy performance (kWh/m<sup>2</sup>/year) achieved and for going beyond an A3 rating.

### 5.2 Technical Proposal (35 marks)

This section of the evaluation assesses the technical solutions proposed in line with the Pilot Programme principles. Projects will be assessed on the provision of a whole house solution which includes a fabric first approach and will be assessed on the depth and effectiveness of the proposal. This will include how the various elements of retrofit will be addressed to ensure the integrity in the performance of installed solutions.

The suite of measures proposed will be assessed against the fabric first principle of the programme and should also be appropriate for the dwelling.

### 5.3 Quality and Delivery (35 marks)

The quality of the proposal with respect to the delivery of the project and how it demonstrates a commitment to ensure that the full value of the project is realised for the customer will be assessed.

Consideration will be given to the viability and robustness of the project plan through an analysis of the project management, demonstrated organisational commitment, commitment to quality assurance, evaluation of potential project risks and mitigation measures and the capacity to deliver the project to programme standards and by the deadline. Demonstration of previous experience in delivering similar projects should be provided.

Projects will be assessed on their end-to-end engagement with customers to ensure that they understand the measures being implemented and how to operate any technologies in the home to optimise their performance. The monitoring and verification element of the proposal will be assessed as it allows for the gap between design of systems and their performance to be closed. Projects proposing metering of energy consumption will score highly as it will allow for an accurate profile of energy consumption to be generated.

How the health and wellbeing of the customer is addressed will also be assessed. The provision of sufficient levels of ventilation, the prevention of summer overheating and daylighting are important elements in this regard.

SEAI will only consider multiple applications from the same applicant where subsequent applications include different technical solutions and/or different house types. SEAI will decide whether such a subsequent application offers potential learning for different technical solutions or dwelling types as such learnings are central to the Deep Retrofit Pilot Programme.

## 6 Contractor Requirements

Contractors carrying out works under the Deep Retrofit Pilot Programme must have valid Tax Clearance, Employers Liability Insurance (indemnity limit of not less than €13 million any one event) and Public/Products Liability Insurance (indemnity limit of not less than €6.5 million any one event for Public Liability and not less than €6.5 million in the aggregate for Products Liability).

While we do not yet require contractors to be on the SEAI 'Registered Contractor list', we recommend that Contractors working on the Deep Retrofit Pilot Programme register with SEAI.<sup>4</sup>

All proposed works must be in line with current building regulations. Contractors will also fully comply with the *SEAI Contractors Code of Practice* and the *Quality Assurance and Disciplinary Procedures* document, which will be provided at contract stage.

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<sup>4</sup> <https://www.seai.ie/energy-in-business/register-with-seai/contractor/>

## 6.1 Electrical Assessment

It is advised that an assessment of the electrical capacity for the installation of additional electrical technologies to the existing power supply and connection to the existing wiring system be carried out prior to the works.

## 7 Funding

SEAI will provide funding of up to 50% of the total capital costs, project management and BER design/consultancy costs combined. This is to reflect the importance of Project Management and the BER design and consultancy required to ensure the delivery of high quality projects that achieve the A rating. The application will ask to itemise the costs of the separate elements.

SEAI will provide a much higher rate of subvention, up to 95%, for voluntary housing association homes and the private homes of those that are in energy poverty, as defined in Section 7.1. However, this is only available as part of a wider project that includes non-energy poor homes and the energy poor component must make up no more than 25% of the total number of homes in each project. The 95% funding is not applicable for local authority housing.

Funding will be allocated on a first come, first served basis subject to available budget.

Support will also be provided for the mandatory pre-works and post-works BER assessments and Air Tightness tests, in line with Better Energy Communities funding.

While the involvement of a Participating Energy Supplier (see section 7.4) is not mandatory, it is recommended.

### 7.1 Energy Poverty

Private homes will be considered to be energy poor if the resident (who must be the homeowner) is in receipt of one of the following:

- Fuel Allowance as part of the National Fuel Scheme
- Jobseeker's Allowance for six months or more where the resident is the primary carer of at least one child under seven years. Jobseeker's Benefit is not eligible.
- Family Income Supplement
- "One Parent Family Payment"
- Domiciliary Care allowance payment

Proof of one of the above must be provided for each energy poor household at project completion stage in order to receive higher financial support. This takes the form of a signed letter from the Department of Social Protection dated within six months of the start date of the Grant Agreement, a payment receipt made out to the homeowner, or a Social Welfare

swipe receipt (except in the case of Jobseekers Allowance where 6 months must be proven). The name and address on the relevant correspondence must match that of the homeowner on the application. These requirements are in line with The Better Energy Warmer Homes Scheme (WHS) and any changes to qualifying criteria on WHS will be reflected in the Deep Retrofit Pilot Programme.

Applicants are required to identify the dwellings on an application where the homeowner meets the criteria above for being in energy poverty. Project Managers are required to seek the consent of homeowners to collect their personal data, maintain the necessary evidence on file for five years, and make it available to SEAI for upon request.

## 7.2 Project Timelines

The deadline for project completion for including submission of all project documentation is 11<sup>th</sup> October 2019.

Interim payments will be subject to the timely submittal of **mandatory** monthly progress reports and other specified deliverables meeting the criteria set out by SEAI. All cells in the monthly report must be populated. All photographic evidence must be provided to support the monthly report and milestone payments. These will be outlined at contract stage.

Projects will be required to be completed within agreed delivery timelines as detailed in the contract.

SEAI will withhold 5% of funding, which will be released on receipt of an acceptable year-one post works annual data monitoring within 12 months from the Project Completion Date as specified in the Letter of Offer. Monitoring equipment must be in place by the contracted date for completion of works. To streamline all reporting, SEAI will required that data monitoring reports are issued to SEAI at two intervals per year upon SEAI request.

## 7.3 Minimum Financing Requirements

The applicant will be required to demonstrate that they have available finance to implement the first 50% of the entire project. Applicants should note where these documents are not provided, the issue of a Letter of Offer will be delayed until they have been received.

## 7.4 Participating Energy Supplier (PES)

The Energy Savings achieved by a project are measured in Kilowatt hours (kWh). Each kWh is equivalent to one energy-credit, which can be traded with an Energy Supplier for either monetary or project management support. Different Energy Suppliers may offer different levels of support depending on the category of energy credit, i.e. if the homes are considered to be in energy poverty or not.

There are a number of ways for a PES to be involved in a project, e.g. project management, financial contribution, monitoring, energy audits or advice.

Applicants are encouraged to contact a number of different Energy Suppliers to negotiate the best deal for their energy credits. A project is not limited to partnering with their current energy provider or indeed just one Energy Supplier. Where energy credits are being 'sold' to a PES, the application should state clearly if and how these funds are being used to support the community.

SEAI will upload Domestic Energy Credits to SEAI's ECMS (Energy Credit Management System) once homes have been completed<sup>5</sup>.

## **8 Inspections**

The efficient administration of the Deep Retrofit Pilot Programme requires Grantees and Beneficiaries to fulfil their obligations under the Grant Agreement. Consequently, SEAI will carry out inspections, in advance and/or following completion of grant-aided works, for compliance with the Grant Agreement. Grantees/Project Managers will generally be notified by SEAI prior to such inspections. However, SEAI reserves the right to carry out inspections without notice to Grantees/ Project Managers in appropriate circumstances. Such circumstances may include, but are not limited to, where SEAI receives complaints indicating non-compliance with the Grant Agreement.

### **8.1 Advisory Inspection**

Advisory inspections are intended as a training aid to ensure Grantees/Project Managers understand relevant quality standards and technical requirements, early in the installation process.

Evidence shows that Advisory Inspections lead to improved final inspections and the timely release of payment. For this reason, Advisory inspections are not mandatory but a minimum of 2 are recommended be carried out. The upgrade measures chosen for advisory inspections should be representative of the measures to be repeated across the scheme and include any homes or measures that are technically challenging.

### **8.2 Final Inspection**

On completion of a project, an Inspection log is required to be submitted all homes. The inspection logs must contain contact details for all Beneficiaries, including individual homeowners. Where SEAI considers it appropriate, it may inspect up to 100% of properties.

### **8.3 Inspection Process**

Inspections will be undertaken during normal working hours. The Grantee/Project Managers is responsible for quality assurance on the project and will generally be notified of the properties

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<sup>5</sup> Completed means that the works have been signed off as complete to the required standard by SEAI's Inspections Unit.

selected for inspection. However, as noted above, SEAI reserves the right to carry out inspections without giving such notice in appropriate circumstances.

If notice of inspections is given to the Grantee/Project Managers by SEAI:

- The Grantee/Project Manager must provide access for SEAI's inspectors within 5 working days of being contacted to arrange an inspection. The Project Managers is not required to be present at the inspection but must assign a representative who is familiar with the layout of the site, the upgrade works completed and has access to all required certification documentation and manuals.
- The Grantee/Project Managers will be required to provide the inspector with a safe working environment and suitable access to the project area. Any representative of the Grantee/Project Managers should have all the necessary documentation and technical knowledge of the project. They may also be asked to retrieve equipment (e.g. light fittings) in areas which are difficult to access, to verify compliance with quality and safety standards.

If notice of inspections is not given to the Grantee/Project Managers by SEAI, SEAI will arrange the inspection with the relevant Beneficiaries, including individual homeowners, directly.

Poor inspection results may result in the delay or refusal of grant payments, additional inspections being conducted and re-inspection of reworks for non-compliance, as detailed further below.

## **8.4 Reworks**

Following inspection, the inspector will send a written report to the Grantee/Project Managers detailing any non-compliance identified and requesting that reworks be carried out.

Any such reworks must comply with the relevant standards for the project, as detailed above.

Reworks are required to be completed within 14 days of notification of the inspection report, and confirmation and evidence of completion provided to SEAI (e.g. photos, reports and certificates). Any non-compliance identified in the inspection report should be addressed on all other properties completed on the project.

The Grantee/Project Managers may be asked to meet SEAI to confirm the reworks being undertaken to bring the project in line with quality requirements.

If satisfactory evidence of quality and safety standards is not available, SEAI may, at its discretion, reduce the grant amount proportionally. Excessive additional inspections arising from persistent poor quality may be chargeable at the cost of such additional inspections to SEAI.

## 8.5 Post payment Inspections

SEAI may at its own discretion carry out post payment inspections to verify the quality of works performed under the Deep Retrofit Pilot Programme. Post payment inspections will normally be undertaken independently of the Grantee/Project Managers, in which case SEAI will arrange these directly with the relevant Beneficiaries, including individual homeowners.

## 8.6 Inspection results

Where the inspection identifies that grant-aided works have not been completed to the applicable standards and specifications for the works or, where completed, do not match the proposal and specification submitted and approved by SEAI, re-works will be required as noted above.

Where the inspection identifies that the grant-aided works were not completed at all, or where required reworks are not completed at all or to the applicable standards and specifications for the works, SEAI reserves the right to terminate the Grant Agreement, cease making any payments of the Grant, seek full repayment of any or all of the Grant already paid to the Grantee or any Beneficiary, withdraw the grant and/or reduce the amount of the Grant to be paid.

Inspection results can be appealed through an appeal process, as detailed on the SEAI website. Appeals must be received in writing within 7 days of the date of notification of the inspection results.

Any such appeal must be supported by appropriate supporting documentation such as sketches, photos and homeowner statements. Appeals must outline any evidence to dispute the Inspection findings and advise on any mitigating factors that may have affected the outcome of the inspection.

## 9 Communication

A key strength of SEAI's Deep Retrofit Programme is that there is one person, known as the Project Owner, who is responsible for the end to end delivery of a high quality deep retrofit from the initial application stage to completion of the deep retrofit and post works follow-up. This simplifies the process for the homeowner, who has a single point of contact for queries that might arise at any stage of the works.

While SEAI are the authority responsible for overseeing the deep retrofit pilot programme, the Project Owner is responsible for the end to end project management and day-to-day communications with the homeowner.

Other responsibilities of the Project Owner include:

- Recruiting homeowners to form part of an application to SEAI for grant funding, and communication of the scheme requirements

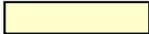
- Initial engagement with the homeowners, design and agreement on package of measures, costs and timeline for delivery
- Communication and managing delivery of the project to ensure the homeowner is clear on works and timelines at each step of the retrofit works
- Communications on completing projects in line with scheme requirements e.g. inspections
- Providing clear and simple guidance to homeowners on use of the retrofit measures to ensure optimum performance e.g. heat pump operation
- Post-works communication with homeowners to support good customer satisfaction levels
- Communication and follow up with homeowners on both qualitative and quantitative data collection, interviews etc. as part of post works data collection

## 10 The Application Process

The application workbook is to assist applicants in submitting applications for the Deep Retrofit Pilot.

It consists of a number of tabs that must be completed.

- 1) The **Application Form Tab** which contains information about the project.
- 2) The **Project Summary Tab** which contains a summary of the project, detailing the savings and cost information of all of the project components.
- 3) The **Sub Project Tab** which contains the details of the projects for each dwelling type.

Keynote:  White Cells are completed by the applicant.  
 Yellow Cells are automatically completed by the workbook  
 Green Cells are guidance notes

If an applicant requires further guidance on the completion of the application form, please contact [info@seai.ie](mailto:info@seai.ie).

**Note:** The workbook is password protected and only White Cells can be accessed by the user.

### 10.1 Application Form Tab

The application form tab must be completed by the applicant. The Application Tab is divided into 4 sections:

#### 10.1.1 Section 1: Applicant Details

In the first section (Figure 1) the applicant provides administration details of the project.

SEAI Reference				<b>seai</b> SUSTAINABLE ENERGY AUTHORITY OF IRELAND							
Deep Retrofit Pilot Programme 2017			Version	v.1	Date 01/05/2017						
Photo of Existing Building			Image/ Drawing of Proposed Building								
<div style="border: 1px solid black; height: 100%; width: 100%;"></div>			<div style="border: 1px solid black; height: 100%; width: 100%;"></div>								
						<b>Section 1 - Applicant Details</b>					
						Project Title					
						Applicant Organisation Name					
						Principal Business Activity					
						Company No.			VAT No.		
						Applicant PPSN/ Reference No.			Tax Clearance Access No.		
						Contact Details: First name			Last name		
						Address					
						Telephone			Mobile		
						E-mail			Website		
						Financial Controller's name			E-mail		

Figure 1

### 10.1.2 Section 2: Technical Details

The second section, refer to Figure 2, provides the technical details of how the energy savings will be achieved, for example fabric upgrades proposed, renewable energy included etc. Section 3.2 is autocompleted based on the inputs by the applicant in the Project Summary and Sub Project Tabs.

Section 2 - Technical Details			
2.1: Summary of Technical Proposal			
<p>Describe the approach taken to achieving the improvement in energy performance for this project.            Detail the degree of innovation in the project in terms of the technologies employed, the renewable contribution to energy demand, depth and effectiveness of measures, inclusion of measurement and verification, research, etc.            Describe how the provision of adequate ventilation has been ensured.            Describe how the design has provided for addressing thermal bridging, especially at corners, junctions, edges and interfaces.            Describe how airtightness has been designed to reduce air infiltration and air leakage. Due care and attention is required especially at corners, junction edges and service penetrations.            How have you addressed potential summer overheating?            Where fabric upgrades exceed the minimum requirements, include proposed U-values of the measures.            Is the building breathable? If not, what steps have been taken to ensure that vapour impermeable materials are used appropriately so that there is no risk of interstitial condensation?</p>			
<p style="text-align: center;"><b>2.2: Summary of Energy Savings</b></p> <p>Complete Project Summary and Sub Project Tabs.</p>			
Overview - Energy Savings		Value for Money	
Total No of Units	-	€/ kWh	#DIV/0!
Total Area of Dwellings	- m2		
Total Energy Credits for Project	- kWh/ year		
Average Reduction in Energy	- kWh/m2/ year		
Average Renewable Contribution	- kWh/m2/ year		
% Energy Savings	0%		
Overview - Costs			
	€/ Unit	€	
Funded Capital Costs	#DIV/0!	0	
Domestic BER Costs	#DIV/0!	0	
Pressurisation Test Costs	#DIV/0!	0	
Project Management Costs	#DIV/0!	0	
BER Consultancy Costs	#DIV/0!	0	
1% Airtightness bonus	#DIV/0!	0	
Eligible VAT Expenditure	#DIV/0!	0	
<b>Total Costs</b>	<b>#DIV/0!</b>	<b>0</b>	
Overview - Funding			
	%		
<b>Grant</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	
Milestone Payment - Interim 1 (25% completion)	25%	#DIV/0!	
Milestone Payment - Interim 2 (50% completion)	25%	#DIV/0!	
Milestone Payment - End of Contract (100% completion)	45%	#DIV/0!	
Data monitoring report	5%	#DIV/0!	

Figure 2

**Energy Credits:** If a Participating Energy Supplier (PES) energy supplier is a Project Partner, the Applicant may give them permission to count the energy savings achieved against their energy target. This permission may only be given before the project commences. In these cases, the SEAI will liaise directly with the energy supplier on all matters relating to the credits. The energy supplier should be identified on the Application Form as credits cannot be assigned

retrospectively. For the Deep Retrofit Pilot Programme, SEAI will upload the credits to the ECMS (Energy Credit Management System)

All of the savings and reductions are potentially eligible to be considered as energy credits. They will only be converted to credits once the relevant work is completed and verified.

### **10.1.3 Section 3: Quality & Delivery**

In the final sections (Figure 4 and 5) the applicant provides details of the Quality and Delivery of the project detailing the following:

- Project Plan and Quality Assurance
- Project Team Structure
- Demonstration of Skills & Details of proposed Contractors
- Project Timeline
- Risks and Mitigation
- Measurement and Verification – *please note that applications should provide for capturing data related to energy performance for a period of 3 years post-completion of works.*
- Customer Engagement
- PES Involvement
- Health and Wellbeing, especially ventilation, airtightness and summer overheating

Section 4 - Quality & Delivery	
<b>4.1: Project Plan &amp; Quality Assurance (QA)</b>	
<p><i>The project plan, and quality assurance are critical to the delivery of a high quality project. Please demonstrate that a robust project plan for ensuring the project is delivered as described and to a high quality. This will include financing arrangements, completion dates, mitigation of risks, tendering, etc.</i></p> <p><i>Quality assurance will be crucial to the project and the Deep Retrofit Pilot Programme. Demonstrate how quality assurance will be implemented across all elements of the project, in line with the Quality Assurance guidance.</i></p>	
<b>4.2: Project Team Structure, Project Management and Skills and Experience</b>	
<p><i>Please demonstrate organisational commitment by describing the structure of the project team. Demonstrate also the skills, capacity and relevant experience of the project management team in delivering projects of similar scale to challenging timelines. Similarly, demonstrate the skills and experience of the other identified members of the project teams, e.g. contractors, in delivering projects of this scale. Please include details of other similar projects that are being cited as relevant experience.</i></p>	
<b>4.3: Demonstration of Skills</b>	
<p><i>Where members of the project team have accreditation relating to carrying out energy efficiency works, e.g. Qualibuild certification, please include details.</i></p>	
<b>Quality Management</b>	<i>Outline Contractor proposed and Quality Assurance Approach of Contractor, or where Contractor not appointed provide details of Quality Assurance Approach that will be required by Contractor</i>
Energy Advisor / Energy Assessor	
Project Manager	
Fabric Contractor	
Ventilation Contractor	
Heating Contractor	
BER Assessor & Registration No	
Air Tightness Tester	
Renewable Contractor	
Quality Assurance Project Supervisor	

Figure 3

3.4: Project Timelines		
What is the estimated lead in time from receiving the letter of offer?		Weeks
What is the estimated total time to complete the works from the date work starts on sit?		Weeks
Total project timeline	0	Weeks
3.5: Risks and Mitigation		
Please describe any risks to the delivery of the project as described and those that affect the timeline for delivery		
Risks	Mitigation	
1)	1)	
2)	2)	
3)	3)	
4)	4)	
5)	5)	
3.6: Data Monitoring		
<ul style="list-style-type: none"> <li>- Data monitoring is required for a period of 3 years post completion of works to record the energy performance of the upgraded dwellings and to provide SEAI with data on changes in energy consumption.</li> <li>- The guidelines specify the requirement for whole house electricity monitoring, heat pump energy consumption for both space and water heating and solar PV metering, where solar PV installed.</li> <li>- Please briefly describe the monitors proposed in each instance.</li> <li>- Please describe how SEAI will be provided with access to the raw data.</li> </ul>		
3.7: Customer Recruitment		
Describe how you promoted the project, engaged with potential customers and gained a commitment from them to avail of the works		
3.8: Customer Engagement		
<ul style="list-style-type: none"> <li>- It is important for the customer to be engaged from end to end where significant energy efficiency measures and renewable energy technologies are being installed.</li> <li>- It is also important that the customers be trained to use the technologies that have been installed in order to ensure their operation is in line with the design.</li> <li>- Please describe how you intend to engage with the customers from the start of the project through to completion of works and training in the use of technologies and any other post-occupancy follow-up.</li> </ul>		
3.9: Participating Energy Supplier (PES) Non-Financial Involvement		
If a Participating Energy Supplier has a non-financial involvement in the project, please describe their involvement.		
3.10: Health & Wellbeing		
<ul style="list-style-type: none"> <li>- Ventilation, including airtightness, overheating and daylighting are elements that can have an impact on the occupants' health and wellbeing.</li> <li>- Please describe how adequate ventilation is ensured post works. Calculations may be attached.</li> <li>- Describe the designed measures for the ensuring a high level of airtightness.</li> <li>- Also provide a description of how potential summer overheating has been addressed.</li> <li>- Describe any other elements that may potentially improve the health and wellbeing of the building occupants.</li> </ul>		

Figure 4



Figure 7 imports the technical data for each sub project. It includes:

- Dwelling Type
- No of Units
- Year of Construction
- Construction Type
- Pre and Post BER Grade
- Pre and Post kWh/m<sup>2</sup>/yr
- Pre and Post Air Permeability Test
- Floor Area
- Renewable Contribution

The tool then calculates the % saving and Total Energy Credits. The applicant has no inputs in this section.

The next section (Figure 7) contains the costs of proposed upgrades.

Summary of Project Proposal - Financial										
No of Units	Total Cost per Unit €	Fraction of Eligible VAT	Domestic BER Cost per Unit €	Fraction of Eligible VAT	Pressurisation Test Cost per Unit €	Fraction of Eligible VAT	Funded Project Cost per Unit €	Eligible VAT per unit	Funded Project Cost €	Eligible VAT €
		<i>only eligible if Revenue exemption letter submitted</i>		<i>only eligible if Revenue exemption letter submitted</i>		<i>only eligible if Revenue exemption letter submitted</i>				
5	37,500	0.135	200.00	0.23	500	0.23	38,200	5,224	191,000	26,118

Figure 7

The capital cost per unit are imported from the Sub Project tabs. The applicant can then add Eligible VAT, BER Costs and Pressurisation Test Costs per unit as applicable. Note to include VAT within the grant, the beneficiary must demonstrate with a letter from the Revenue Commissioner that they cannot reclaim VAT, i.e. are not registered for VAT and/or do not have VAT recovery status for the specific costs.

The next section (Figure 8) outlines the percentage of Grant being requested and the Project Management Costs for the overall project. *(Note: this example is for a project with 5 homes).*

Project Management Costs and Grant Request					
	Cost	Eligible VAT	% Grant Request	Grant	Average Cost/unit
Funded Capital Project Cost	-	-		-	#DIV/0!
Domestic BER Cost	-	-	0.0%	-	#DIV/0!
Pressurisation Test Cost	-	-	0.0%	-	#DIV/0!
Project Management Cost			0.0%	-	#DIV/0!
BER A3 Design & Consultancy Cost			0.0%	-	#DIV/0!
1% bonus for air permeability of 3 m3/hr/m2 or better	-		100%	-	#DIV/0!
<b>TOTAL</b>	-	-		-	#DIV/0!

Figure 8

SEAI will provide funding of 50% of the total capital costs and project management (including BER consultancy and design). SEAI will provide a much higher rate of subvention, up to 95%, for voluntary housing association homes and the homes of those that are in energy poverty (see Section 6.1). However, this is only available as part of a wider project that includes non-energy poor homes and the energy poor component must make up no more than 25% of the total number of homes in each project.

The technical risk analysis allows applicants to indicate how they plan to address Thermal Bridging and Solar Overheating.

Technical Risk Analysis	Outline potential and proposed actions to address
Thermal Bridging - Shall retrofit work comply with Annex H of SR 54	Yes
Further Details of Thermal Bridging Analysis	
Has Overheating Analysis been carried out	Yes
Further Details of Overheating Analysis	

Figure 9

The applicant is required to complete the final section, Figure 12, to detail the sources of financing for the project and the proposed contribution from each source.

Finance	Details of Organisation	% of Funding from Other Sources	Funding €
Grant		54.6%	45,470.00
PES			-
Government Organisation	Local Authority	40.1%	33,379.24
EU Commission			-
Private Resources			-
Participating Energy Supplier	PES 1	5.0%	4,162.00

Figure 10

### 10.3 Sub Project Tab

A Sub Project Tab must be completed for each sub project. As outlined in Section 4, a sub project represents a change in any of the following:

- dwelling type,
- construction type,
- year of construction,
- floor area
- energy efficiency measures proposed.

The tab is divided into 2 sections:

- The **summary** section (Figure 11) details the type, construction, age and energy use.
- The **detail** section (Figure 13) details the proposed upgrades

Dwelling Type	Semi Detached House	
No of Units	6	
Year of Construction	1978-1982	
Construction Type:	Cavity Wall	
Pre Works BER No:		
Pre Works BER Grade	E1	
Pre Works BER kWh/m2/yr	325	
Pre Works Air Permeability Test m3/h/m2	12.3	
Post Works BER Grade	A3	Proposed Value that Applicant is committing to achieving
Post Works BER kWh/m2/yr	68	Proposed Value that Applicant is committing to achieving
Post Works Air Permeability Test m3/h/m2	3.9	Proposed Value that Applicant is committing to achieving
Renewable Contribution kWh/m2/yr	23	Proposed Thermal Equivalent that Applicant is committing to achieving
Floor Area of Dwelling Type (m2)	80	
Wall Area of Dwelling Type (m2)	95	Average value for this building type, excluding window and door area
Cost of Supported Measures	37,500.00	

Figure 21

1) The Dwelling Type is selected from a drop-down menu:

<b>Dwelling Type</b>	Semi Detached House
<b>No of Units</b>	Mid Floor Apartment Top Floor Apartment End of Terrace House Mid Terrace House
<b>Year of Construction</b>	Semi Detached House
<b>Construction Type:</b>	Detached House Maisonette Basement Apartment
<b>Pre Works BER No:</b>	
<b>Pre Works BER Grade</b>	E
<b>Pre Works BER kWh/m<sup>2</sup>/yr</b>	315

Figure 12

- 2) The number of units in the Sub Project is entered.
- 3) The Year of Construction and Construction Type is selected from a drop down menu.
- 4) A published Building Energy Rating is required for each sub project. Details of the BER number, grade, floor area and kWh/m<sup>2</sup>/yr is taken from the published BER and entered by the applicant.
- 5) The applicant also includes a copy of the pressurisation test results for each sub project and the applicant enters the results in the workbook in m<sup>3</sup>/hr/m<sup>2</sup>.
- 6) The post works BER grade and kWh/m<sup>2</sup>/yr are based on updating the published BER with the expected upgrades. These are not taken from a published BER as the works will not have been completed but commits the applicant to achieving the grade and energy use post works.
- 7) The Post Works Air Permeability Test again is based on a commitment to achieving a level rather than actual test results.
- 8) For the post works DEAP file, the applicant should select “New Dwelling – Final” as the Type of Rating in the DEAP software. While the dwelling is existing, this will allow the renewable contribution to be determined. In the Results tab, under Building Regulation Part L 2011 Conformance, the applicant should take the “Total thermal equivalent” renewable contribution, see Figure 14 and include in application form.

The energy savings section (Figure 13) is divided into two sections as follows:

Proposed Energy Upgrades							
Supported Measures	Description of Minimum Data Required for Existing Specification	Existing Specification	Description of Minimum Data Required for Existing Specification	Proposed Specification	Additional Information	Cost of individual elements of Total Cost (Ex VAT)	Total Cost of measure per Unit (ex VAT)
Wall Insulation	Existing U Value of each element (W/m <sup>2</sup> K) Area of each element (m <sup>2</sup> )		Proposed U Value of each element (W/m <sup>2</sup> K) Area of each element to be Upgraded (m <sup>2</sup> ) Thickness of Insulation Conductivity of Insulation				
Roof Insulation	Existing U Value of each element (W/m <sup>2</sup> K) Area of each element (m <sup>2</sup> )		Proposed U Value of each element (W/m <sup>2</sup> K) Area of each element to be Upgraded (m <sup>2</sup> ) Thickness of Insulation Conductivity of Insulation				
Windows/ Doors Upgrade	Existing U Value of each element (W/m <sup>2</sup> K) Solar Transmission through glazing Light Transmission through glazing Area of each element (m <sup>2</sup> )		Proposed U Value of each element (W/m <sup>2</sup> K) Solar Transmission through glazing Light Transmission through glazing Area of each element to be Upgraded (m <sup>2</sup> ) Proposed Heat Pump				

Figure 13

- 1) The applicant must provide details of the proposed energy upgrades.
- 2) The energy upgrades are divided into 2 types, supported measures and non-supported measures. Supported Measures include fabric upgrades, ventilation strategy, renewable technology etc.

3) It is important that the applicant details the costs of all elements of a measure in the *Cost of individual elements of Total Cost (Ex VAT)* column, e.g.:

Description of Minimum Data Required for Existing Specification	Proposed Specification	Additional Information	Cost of individual elements of Total Cost (Ex VAT)	Total Cost of measure per Unit (ex VAT)
Proposed U Value of each element (W/m <sup>2</sup> K) Area of each element to be Upgraded (m <sup>2</sup> ) Thickness of Insulation Conductivity of Insulation	Pump cavity and external wall insulation EPS to achieve 0.15 W/m <sup>2</sup> K 120mm 50mm residual cavity + 100mm EWI 0.034 / 0.033		1) CWI: €xxx 2) EWI: €xxx 3) €xxx to remove/reinstate X metres of fascia to address thermal bridge 4) €xxx to dig up ground to bring EWI 150mm+ below floor level 5) etc	€xxxxx for 1+2+3+4+5
Proposed Heat Pump Efficiency of Heat Pump for Space Heating based on DEAP Heat Pump Tool Efficiency of Heat Pump for Hot Water based on DEAP Heat Pump Tool Type of Heat Emitter kW of proposed Heat Pump Proposed Heating and DHW Controls	Make and model 375% space heating 22% heat pump Underfloor heating and radiators 6kW Time, temperature and zone		1) €xxx Removal of existing system 2) €xxx supply and fit of HP 3) €xxx to install underfloor heating 4) €xxx for manifolds, magnetic filters 5) €xxx for X no. radiators	€xxxxx for 1+2+3+4+5

4) For each category, the existing specification and proposed specification of the upgrade is also completed by the applicant. The tool gives the minimum data that must be provided for each proposed measure and it is important that the details are input for existing specification as well as well as proposed specification

Supported Measures		
Measure:	Existing Specification	Proposed Specification
Wall Insulation	Existing U Value of each element (W/m <sup>2</sup> K) Area of each element (m <sup>2</sup> )	Proposed U Value of each element (W/m <sup>2</sup> K) Area of each element to be Upgraded (m <sup>2</sup> ) Thickness of Insulation Conductivity of Insulation
Roof Insulation	Existing U Value of each element (W/m <sup>2</sup> K) Area of each element (m <sup>2</sup> )	Proposed U Value of each element (W/m <sup>2</sup> K) Area of each element to be Upgraded (m <sup>2</sup> ) Thickness of Insulation Conductivity of Insulation
Floor Insulation	Existing U Value of each element (W/m <sup>2</sup> K) Area of each element (m <sup>2</sup> )	Proposed U Value of each element (W/m <sup>2</sup> K) Area of each element to be Upgraded (m <sup>2</sup> ) Thickness of Insulation Conductivity of Insulation
Windows/ Doors Upgrade	Existing U Value of each element (W/m <sup>2</sup> K) Solar Transmission through	Proposed U Value of each element (W/m <sup>2</sup> K) Solar Transmission through glazing

	glazing Light Transmission through glazing Area of each element (m <sup>2</sup> )	Light Transmission through glazing Area of each element to be Upgraded (m <sup>2</sup> )
Heat Recovery Ventilation	Details of Existing Ventilation	Proposed System SFP Heat Recovery Efficiency No of Wet Rooms & Kitchen Controls
Whole House Extract Ventilation	Details of Existing Ventilation	Proposed System SFP No of Wet Rooms & Kitchen Controls
Heat Pump	Existing Heating System Capacity of Existing System Efficiency of Existing System Existing Heating & DHW Controls	Proposed Heat Pump Efficiency of Heat Pump for Space Heating based on DEAP Heat Pump Tool Efficiency of Heat Pump for Hot Water based on DEAP Heat Pump Tool Type of Heat Emitter kW of proposed Heat Pump Proposed Heating and DHW Controls
Certified wood burning (only) room heating stove	Existing Heating System Capacity of Existing System Efficiency of Existing System	kW output of stove % efficiency of stove (certified)
CHP	Existing Heating System Capacity of Existing System Efficiency of Existing System Existing Heating and DHW Controls	Heating Capacity (kW) Electric Capacity (kW) Heating efficiency Electric efficiency Expected run hours of CHP % of heating/hw energy served by CHP Proposed Heating and DHW Controls
Biomass Boiler	Existing Heating System Capacity of Existing System Efficiency of Existing System Existing Heating and DHW Controls	Heating Capacity (kW) Heating efficiency % of Heating/DHW energy served by Biomass Proposed Heating and DHW Controls
Photovoltaics	-	kW rating of panels No of Panels Type of Panel Orientation to be installed Angle of Panel % of Overshading
Solar Panels	Type of Existing system Efficiency of Existing system Existing Controls	Aperture area of Panel Type of Panel, (no and a1 if known) Orientation to installed Angle of Panel % of Overshading Size of DHW Tank and dedicated solar

		storage volume Insulation on Tank Proposed Controls Is the Solar Panel supplementing heating?
<b>Non-Supported Measures</b>		
Measure	Existing Specification	Proposed Specification
Non Renewable Heating Upgrade	Existing Heating System Capacity of Existing System Efficiency of Existing System Existing Heating and DHW Controls	Heating Capacity (kW) Heating efficiency Fuel Proposed Heating and Hot Water Controls
Lighting Upgrade	Existing Specification	Proposed Specification
Other	Provide technical data of existing system	Provide technical data of proposed system

