



NATIONAL ENERGY FOUNDATION



Winchester Area SuperHomes

# Whole House Retrofit Plan

Our ref: **LBW000**  
Property Address  
Survey date: **date**  
Report date: 06/10/2021  
Version: **draft or final**

Your Retrofit Coordinator

xxxx@parityprojects.com



## Contents

1	SUMMARY	2
2	INTRODUCTION	3
3	METHODOLOGY	4
4	YOUR PRIORITIES	5
5	KEY FINDINGS FROM YOUR RETROFIT ASSESSMENT	6
6	MAKING SURE THE MEASURES ARE RIGHT FOR YOUR HOME	7
7	THE IMPORTANCE OF VENTILATION	8
8	UNIQUE FEATURES OF YOUR HOME	9
9	HOW WE HELP YOU	10
10	WHERE YOU ARE NOW	11
11	WHAT YOU CAN ACHIEVE	13
12	PHASING YOUR IMPROVEMENTS	14
13	RETROFIT COORDINATOR TECHNICAL REVIEW	18
14	COSTS AND FUNDING	19
15	NEXT STEPS	20
16	APPENDIX: ALL YOUR OPTIONS	21
17	GLOSSARY, REFERENCES & USEFUL LINKS	23
18	CONTACT DETAILS	25

**APPENDIX: VENTILATION** SEE ATTACHED ZIP FILE FOR SUPPLEMENTARY INFORMATION

**APPENDIX: RISK ASSESSMENT** SEE ATTACHED ZIP FILE FOR SUPPLEMENTARY INFORMATION

**APPENDIX: ASSESSMENT OF SIGNIFICANCE** SEE ATTACHED ZIP FILE FOR SUPPLEMENTARY INFORMATION

**RC:** you may need to update page numbers of this table and remove reference to the options appendices

## 1 Summary

Retrofit Coordinator to add a brief exec summary, narrative covering:

1- key outcomes (energy use, CO2, running costs)

2- brief summary of key measures proposed

3- statement about the phasing and how it fits customer's plans

4- statement on paying for it

5- statement on ventilation risk

6- whether any further surveys / investigations are needed

## 2 Introduction

Your Retrofit Plan has been produced following a home assessment carried out to collect information about your home, and how you think you would like to improve it. We have set out your options, packaged up to suit your preferred upgrade process, and shown the estimated costs and benefits of each stage.

The first version of your Plan should be regarded as a 'draft document for you to read and consider. After you have discussed the Plan with your Retrofit Coordinator it can be updated to suit any changes to packages or the implementation of other ideas. To understand what happens next after this report see Section 15, Next Steps.

Your Retrofit Plan can also be used to allow your home to be assessed under the SuperHomes Rating Scheme. This enables you to understand how your retrofit compares to benchmarks which have been set for five performance levels. You will find a summary of what your retrofit measures will achieve later in the report.

### How we help you invest in your home

#### Strategy

First, we identify all possible measures that will impact on your energy bills, comfort, and environmental impact. This **Whole House Retrofit Plan** is your strategy.

#### Specification

Each measure is designed to suit your home in a way that a contractor will be able to understand and install.

Groups of measures are selected and designed to complement each other as well as your home.

#### Futureproofing

We ensure that all future measures are not blocked by the initial work, thereby reducing work and costs in the long-term.

### 3 Methodology

We have evaluated your home by looking at your estimated

- environmental impact in Carbon Dioxide (CO<sub>2</sub>) emissions, and
- energy use in kilowatt hours (kWh)
- fuel bills in £,
- space heating demand (kWh/m<sup>2</sup>/yr)

We produce an energy model of your home based on the Government's national methodology for assessing the energy use of homes, as used to produce Energy Performance Certificates (EPCs) for homes. All the data collected in the home survey is put into this energy model so it is bespoke to your home.

We don't rely on the automated EPC recommendations: instead, using our expertise, the data we collect from your home is used to generate a range of appropriate and tailored home improvements. You can then move forward easily with your preferred upgrades.

You may find that the estimated fuel bill in the report is slightly lower or higher than your actual bill. This will be because of factors such as the number of people in your home, the pattern of your heating use, and the price of the tariff you use.

In section 10 we have recorded your current energy costs based on the information you have given us. You can then see how your costs compare to our estimate.

## 4 Your Priorities

Your Retrofit Plan has been specifically tailored to your home and what you would like to achieve from the retrofit

Here is a summary of the key items that were discussed with your Retrofit Coordinator.

### Example text

- You are concerned about climate change and would like the renovation to be as energy efficient as is possible within your budget.
- Your home suffers from excess moisture and condensation, particularly in the front bedroom.
- You are interested in installing a heat pump, potentially harnessing the nearby river.
- 
- **RC prompt – include:**
- Any future plans for renovation / extension / loft conversions / kitchen / bathroom replacement along with timescales
- Any issues the customer has highlighted such as condensation, damp, mould, defects, summer overheating, areas of the home that are hard to keep warm
- Any areas of the home that the customer does not wish to change
- Any specific points / questions raised by the customer
- Occupancy - How many people are in the home and any specific considerations related to occupancy e.g. older person at home during the way, customer working from home and wants to be able to heat a certain area, health needs meaning need for higher internal temperature

## 5 Key findings from your retrofit assessment

Add photo of the customer's home

Add photo of the customer's home

Add photo of the customer's home

- See section 6It is a three storey semi- detached house and was built around 1895.
- The ground floors are solid and uninsulated. One part sits above an unheated cellar.
- The walls are uninsulated solid limestone and average 50cm thick.
- The loft is insulated with 100mm of rockwool at the joists.
- The windows are post 2002 double glazed, and do not have trickle vents.
- There is one main heating system, an A rated conventional condensing gas boiler which is 89% efficient.
- There is additionally a wood burning stove in the living room.
- There was an extension added to the front in 1997
- There is a conservatory extension built in 2019 that is separated and independently heated and therefore not included in the modelling.
- RC prompt
- Mention any relevant building defects here
- Any areas that could not be accessed and therefore assumed details used

## 6 Making sure the measures are right for your home

Note: this is the Risk Assessment, reference a supplementary appendix document if relevant

### Introduction

While some energy efficiency measures are simple to install, others are more complex and need specialist design. This is particularly important if your home is an older property or of a more unusual type of construction.

Installing energy efficiency measures can sometimes impact on areas of your home that you may not have considered, for example by increasing the moisture level in the air or increasing the load on you roof.

To make sure the measures recommended are right for your home and deliver the outcomes you would like to see, we classify your retrofit as low / medium or high risk.

We will use this risk grading to identify which surveys are required, to highlight any key areas to consider and any specialist surveys or investigations that you may want to consider.

### Your Risk assessment

Based on the age of your home, its construction type, and the retrofit measures that are proposed your retrofit is classed as low / medium / high risk

Highlight any key risks / further investigations needed if applicable

e.g. thermographic survey, cavity inspection etc

You can find a copy of our full assessment in the appendix (include hyperlink)

### Risks Levels explained

**A** – low risk – simple energy efficiency measures

**B** – medium risk – a typical package of energy efficiency measures in homes of standard construction

**C** – high risk – a more complex package of measures needing detailed specification; high rise flats; homes that are Listed or in a Conservation area



## 7 The importance of ventilation

Note: this is the Ventilation Assessment, reference a supplementary appendix document if relevant

Retrofitting your home with additional insulation is important to reduce heat loss and therefore energy use. However, as your home becomes more airtight this can impact on both the supply of fresh air into the home, and the removal of moisture generated by everyday activities.

We have assessed the current ventilation of your home and made recommendations to upgrade this where appropriate.

Your home is currently ventilated by xxxxx

As your Retrofit Plan includes xxx insulation measures we recommend that you improve the ventilation in your home by introducing xxxxx

You can find a copy of our ventilation assessment in the appendix (include hyperlink)

## 8 Unique features of your home

can be deleted if not applicable to property. Note: this is the Assessment of Significance, reference a supplementary appendix document if relevant

For homes that are older buildings, of a more unusual type of construction, or protected in some way, there are some extra points to consider

Where the property requires an 'Assessment of Significance' (i.e. it has solid brick or stone walls, or timber frame walls) or is a protected building (Conservation Area or Listed) or where the customer has raised any particular features of the home they would like to conserve, there should be a paragraph here on any relevant issues or observations

If additional surveys or investigations are needed as a result of the assessment of significance, please list them here so it is clear for the Customer what they should do next

For standard construction types and locations this section can be deleted

Hyperlink to assessment of significance (where applicable)

## 9 How we help you

Our homes are responsible for 20% of UK emissions<sup>6</sup>, so there is no better place to start taking steps to reduce your carbon footprint and help address the Climate Emergency.

The Government's Clean Growth Strategy<sup>2</sup> sets a target to upgrade as many homes as possible to EPC Band C by 2035.

We have gone further by showing a range of measures that will get your home closer to zero energy bills and zero CO<sub>2</sub> emissions.

We have packaged these measures into phases in order to facilitate such a level of reduction, even if that work is carried out after you have moved to a different home.

<sup>2</sup>Clean Growth Strategy <sup>6</sup>BEIS (See References)

### Caveats to this analysis:

1. Costs of installation are estimated, based on the rates we experience from contractors for similar work.
2. **They are not quotations.** Savings are based on energy bill rates prevalent on the market at this time.

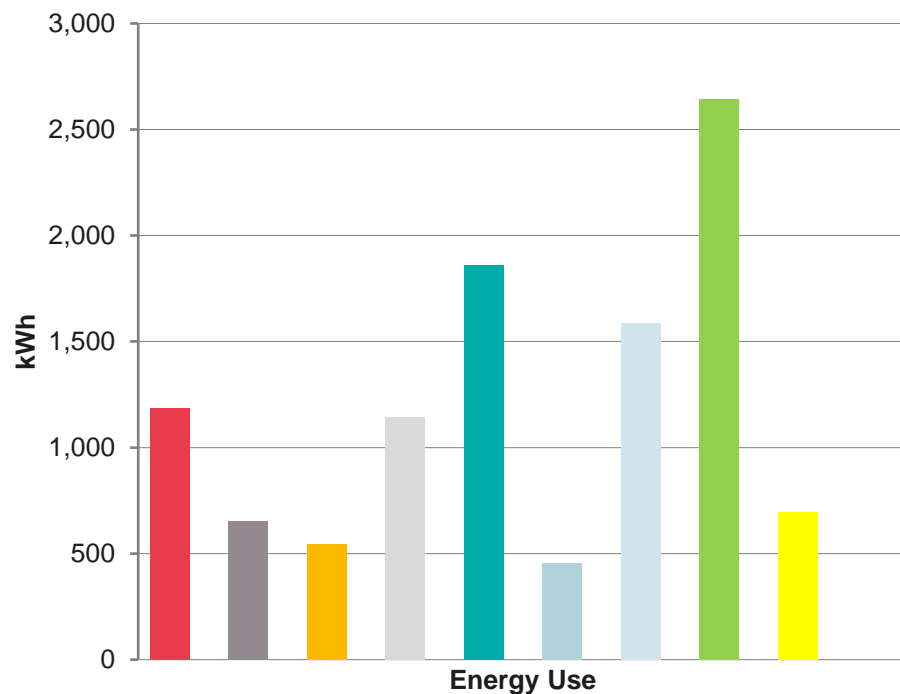


## 10 Where you are now

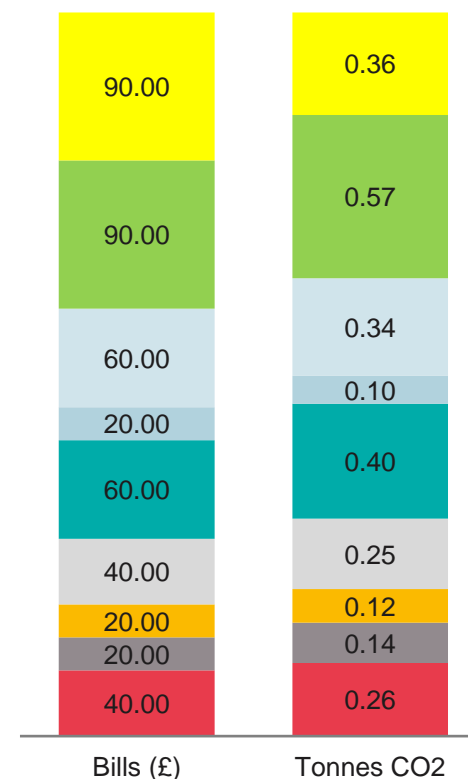
Below is the estimated baseline of your home's energy performance, from which we evaluate improvements:

<b>Energy Rating</b> 1 to 100 – higher is better	<b>Fuel Bills</b> Annual <sup>1</sup>	<b>Tonnes CO<sub>2</sub></b> Annual <sup>1</sup>	<b>kWh/m<sup>2</sup> Heat Demand</b> Annual
<p><i>A rating of your home on a scale of 1 – 100. The rating is calculated based on your home's modelled running costs.</i></p>	<p><i>Fuel bills – this estimated cost includes the energy used for heating your home, providing hot water, ventilation and lighting. It does not include energy costs for household appliances.</i></p> <p><i>When making a comparison remember that your energy bills will include costs for household appliances</i></p>	<p><i>Carbon dioxide emissions from energy use are a significant contributor to climate change.</i></p> <p><i>Fossil fuel heating systems using gas, oil or coal will have high CO<sub>2</sub> emissions. Low carbon heating systems such as heat pumps will perform well here.</i></p>	<p><i>The is the amount of energy needed to heat your home.</i></p> <p><i>Because this figure is calculated before the type of heating system and its efficiency is considered, it's a really good way to look at how good the fabric of your home is before thinking about the type of heating and renewable energy system to use.</i></p>
<p><b>72 C</b></p>	<p><b>£580</b></p>	<p><b>2.32</b></p>	<p><b>78.0kWh/m<sup>2</sup></b></p>
<p>The national target for all homes by 2035 is <b>C<sup>2</sup></b></p>	<p>Modelled using SAP<sup>3</sup>                      The UK average is <b>£1,184<sup>4</sup></b></p>	<p>The UK average per home is <b>3.50<sup>5</sup></b></p>	<p>A measure of how much heat your house loses, above 150 is typical, below 70 is excellent</p>

### Your estimated current energy use, bills & emissions



- Renewables
- Lights
- Hot Water
- Draughts
- Doors
- Windows & Fully Glazed Doors
- Floor Losses
- Walls Losses
- Roof Losses
- Heating Inefficiencies



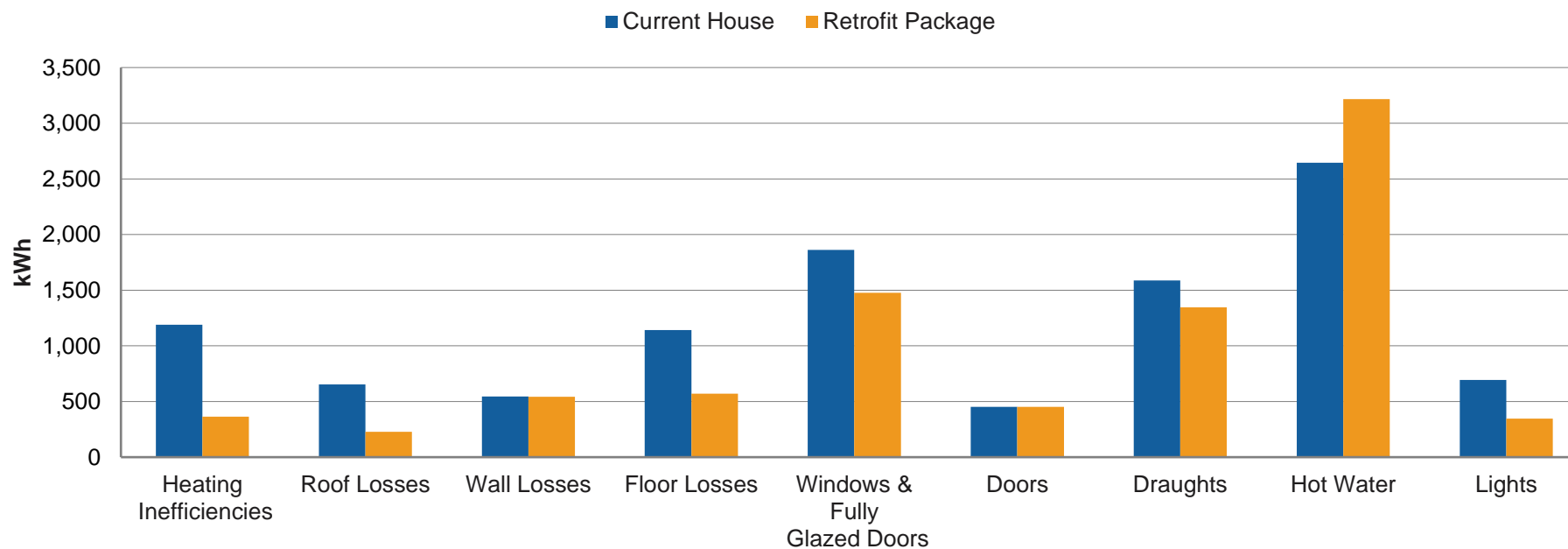
<sup>1</sup>Figure is net after revenue/adjustments from any renewables; <sup>2</sup>Clean Growth Strategy; <sup>4</sup>OFGEM; <sup>5</sup>Catapult (See References)

## 11 What you can achieve

Below are the projected energy performance improvements for your home, based on our evaluation:

Comparison	Energy Rating	Fuel Bills	tCO <sub>2</sub>	kWh/m <sup>2</sup>
Before	72 C	£580	2.32	78.01
After	91 B	£150	1.27	57.68

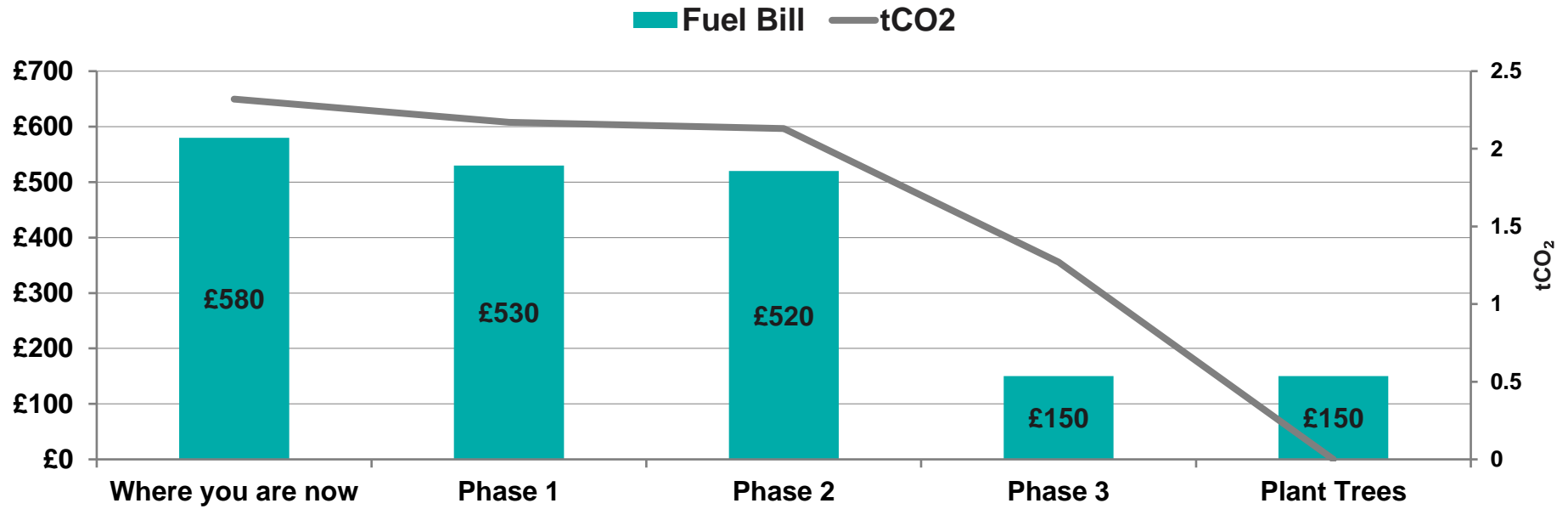
### Your potential energy use after your retrofit



## 12 Phasing your improvements

Summary of Packages	Estimated Costs Per Phase	Energy Rating	Fuel Bill	tCO <sub>2</sub>	kWh/m <sup>2</sup>
<b>Where you are now</b>		<b>72 C</b>	<b>£580</b>	<b>2.32</b>	<b>78.01</b>
Phase 1:	£650	74 C	£530	2.17	74.56
Phase 2:	£70	75 C	£520	2.13	71.23
Phase 3:	£11,880	91 B	£150	1.27	57.68
<b>Combined savings</b>			<b>£430 saving</b>	<b>1.05 saving</b>	
<b>Combined reduction</b>			<b>74%</b>	<b>45%</b>	
<b>Trees you could plant to bring the remaining 1.27 tCO<sub>2</sub> to zero: 55</b>					

## How the phasing affects your annual bills & emissions





## 12 Phasing your improvements (continued)

The measures recommended below aim to significantly reduce your energy use, annual energy costs and CO<sub>2</sub> emissions. This demonstrates a good range of the possibilities available. We can of course limit recommendations to your more immediate needs to fit within your current budget.

Phase 1 Measures	Estimated Costs	Energy Rating	Fuel Bill	tCO <sub>2</sub>	kWh/m <sup>2</sup>
<b>Where you are now</b>	<b>Per Measure</b>	<b>72 C</b>	<b>£580</b>	<b>2.32</b>	<b>78.01</b>
Low energy lighting	£300	73 C	£540	2.27	79.73
300mm loft insulation from 100mm	£350	74 C	£530	2.17	74.56
<b>After Phase 1 Measures</b>		<b>74 C</b>	<b>£530</b>	<b>2.17</b>	<b>74.56</b>
<b>Package Cost &amp; % Improvements</b>	<b>£650</b>		<b>9%</b>	<b>6%</b>	

Phase 2 Measures	Estimated Costs	Energy Rating	Fuel Bill	tCO <sub>2</sub>	kWh/m <sup>2</sup>
<b>After Phase 1</b>	<b>Per Measure</b>	<b>74 C</b>	<b>£530</b>	<b>2.17</b>	<b>74.56</b>
PCDF boiler reference from generic SAP boiler information	£0	75 C	£520	2.14	71.80
Draughtproof doors and windows	£70	75 C	£520	2.13	71.23
<b>After Phase 2 Measures</b>		<b>75 C</b>	<b>£520</b>	<b>2.13</b>	<b>71.23</b>
<b>Package Cost &amp; % Improvements</b>	<b>£70</b>		<b>2%</b>	<b>2%</b>	
<b>Cumulative Cost &amp; % Improvements</b>	<b>£720</b>		<b>10%</b>	<b>8%</b>	

Phase 3 Measures	Estimated Costs	Energy Rating	Fuel Bill	tCO <sub>2</sub>	kWh/m <sup>2</sup>
<b>After Phase 2</b>	<b>Per Measure</b>	<b>75 C</b>	<b>£520</b>	<b>2.13</b>	<b>71.23</b>
Oversized radiators from normal radiators	£2,050	75 C	£510	2.08	71.23
3.5kWp PV array south east or south west and 30 degree pitch with moderate shading	£5,320	89 B	£190	1.51	71.23
Partial new double glazing	£3,110	90 B	£180	1.43	66.94
Insulated floors (50mm) from pre-1996 suspended timber floor	£1,400	91 B	£150	1.27	57.68
<b>After Phase 3 Measures</b>		<b>91 B</b>	<b>£150</b>	<b>1.27</b>	<b>57.68</b>
<b>Package Cost &amp; % Improvements</b>	<b>£11,880</b>		<b>71%</b>	<b>40%</b>	
<b>Cumulative Cost &amp; % Improvements</b>	<b>£12,610</b>		<b>74%</b>	<b>45%</b>	

## 13 Retrofit Coordinator technical review

Each measure needs to be specified in a way that ensures it is detailed correctly so that the contractor is able to fully understand

### Insulation

As can be seen in the graph on page 5, your uninsulated solid walls are responsible for the lions share of heat losses, and therefore are a major contributor to your heating bills and carbon emissions. External insulation would be prohibited in the conservation area, leaving only internal, which can be disruptive. However, it can be done room by room to minimise disturbance.

### Sympathetic insulation materials

This refers to the ability of the structure of the home to maintain an equilibrium between the moisture in the internal air, the walls, and any rain that may fall on the wall.

Your walls are original stone, and cope with moisture changes very well. If they are lined with insulation, we need to design systems that maintain that ability. If not designed well, the wall can get very wet either from rain ingress or from an accumulation of internal moisture. This will wick heat away from the building more quickly.

**RC prompt (delete this yellow text box):**

**For each measure proposed, personalise the text to the customer. Say why the measure is suitable for this particular household and what the customer wants to achieve (per section 3), any technical installation issues and idiosyncrasies of the building, future plans for works, etc.**

**e.g. location options for measures, considerations of noise and aesthetics, reducing building disruption, links to customers plans (e.g. to buy an EV, replace the roof), any non-standard options, with suitable caveats subject to design etc**

**If the customer asked for a particular measure (see section 3) but they are not recommended here, add a para to explain why not and what issues might arise from their specification**

### Windows

Your windows are wooden framed and double-glazed post 2002.

The glazing gap is small, and ideally the U-values should be sought from the supplier to confirm that they meet building regs. They are not fitted with trickle vents. The condition is fair and therefore I have not recommended upgrading them at this time. For any future replacements, I recommend seeking triple glazed units, as many are now available that are sympathetic to the building heritage.

## 14 Costs and funding

### Costs

The costs shown in this plan are indicative. They are the current best estimate we have for those particular measures and are subject to change.

These costs only include the works pertaining to the energy efficiency measures e.g. extra loft insulation is for the materials and labour for rolling out extra insulation over the existing insulation; it does not include any costs for eaves trays, boarding out the loft, widening the loft hatch nor installing a loft ladder.

In planning for your home retrofit you should also consider potential additional costs which might include:

RC please delete, add to, and amend as applicable

- Heat loss calculations for heat pump installations
- Fees for extra assessments such as a thermographic survey or air tightness test
- Design fees
- Production of drawings and construction details
- Structural calculations
- Planning application fees
- RC: highlight any specific costs relevant to the assessment

### Funding

There are various sources of funding available for retrofit. The funding available through grants and incentives will depend on the measures that you wish to install, as well as meeting certain qualifying criteria.

As information on available funding and the qualifying criteria can change rapidly, we have put together a useful summary which you can find on the [superhomes.org.uk/winchester/](https://superhomes.org.uk/winchester/) website.

In certain circumstances there is also funding available directly through the **Winchester Area SuperHomes** project. You can find out more about this by speaking to the Project Officer and you can find their contact details at the end of the report.

## 15 Next steps

### 1: Review / Adapt

Once you've had a chance to read the report, the next step is a 30-minute phone call with your Retrofit Coordinator to discuss the report and its findings. We can answer any questions you have and revise your report if needed. We can then send you a finalised copy of the report. Please book your appointment by contacting your Coordinator directly.

This is the final stage of the service provided by your Retrofit Coordinator as part of your Whole House Retrofit Plan.

### 2. SuperHomes Assessment

If you would like to undertake a SuperHomes Assessment of your planned retrofit you can speak to your Retrofit Coordinator to find out more.

### 3. Further surveys

This report may include recommendations for further surveys that you need to undertake to help inform your retrofit design

### 4. Funding

To find out more about options for funding your retrofit you can refer to the [superhomes.org.uk/winchester/](https://superhomes.org.uk/winchester/) website or speak to the Project Officer

### 5. Managing the retrofit

You may choose to manage the retrofit yourself, or you can use the services of a Retrofit Coordinator who will guide you

through the entire process. This is an additional paid for service and you can obtain a quotation from your Retrofit Coordinator

### 5. Retrofit Design

The next stage to consider is the retrofit design. Depending on the measures you chose, you may need a more detailed specification along with design drawings. To minimise the environmental impact of your retrofit you may wish to think in more detail about type of insulation materials you specify and where products are sourced. You can find further sources of reference on this in the 'Next Steps for Retrofit' pack.

### 6: Obtain and review quotes

Once the strategy and design is confirmed you will need to seek quotations from contractors for your chosen package of works.

### 7: Installation of measures

When you have agreed a contract with your installer then work can go ahead. Make sure you ask your installer for copies of all operating instructions, guarantees and commissioning certificates.

### 8. Monitoring and evaluation

Once your retrofit is completed, we encourage you to monitor your energy use over the following year. If your home is being assessed for SuperHomes you will need to carry out monitoring for 12 months to achieve your final SuperHomes rating.

## 16 Appendix: All your options

Here is a list of everything that has been analysed.

**Please Note:** Combined measures installed together usually achieve less savings than the sum of the individual measures set out below:

Measures	Costs	Energy Rating			Fuel Bill			Kilograms CO <sub>2</sub>		
		Score	Saving	£/point	Bill	Saving	Payback years	KgCO <sub>2</sub>	Saving	£/kgCO <sub>2</sub>
Part L insulated doors - 2 external doors	£1,750	72 C	0.35	£5,000	£580	£10	241.6	2,272	44	£40.00
Triple glazing from old double glazing	£5,940	73 C	1.24	£4,790	£560	£20	238.3	2,158	157	£37.80
Partial new double glazing from more than 50pc older double glazing	£3,110	72 C	0.66	£4,712	£570	£10	227.8	2,233	82	£37.70
Oversized radiators from normal radiators	£2,050	72 C	0.46	£4,457	£570	£10	229.9	2,261	54	£38.10
Part L double glazing from partial single glazing (>50%)	£3,636	73 C	1.16	£3,134	£560	£20	154.7	2,173	142	£25.50
Part L double glazing from old double glazing	£3,636	73 C	1.16	£3,134	£560	£20	154.7	2,173	142	£25.50
A rated gas combi from C rated gas combi	£1,500	73 C	1.32	£1,136	£560	£30	56.7	2,156	160	£9.40
A rated gas combi with FGHRs from C rated gas combi	£2,800	74 C	2.48	£1,129	£530	£50	54.8	2,007	308	£9.10
Insulated floors (50mm) from pre-1900 suspended timber floor	£1,400	73 C	1.51	£927	£550	£30	48.0	2,139	176	£7.90
WWHRS in suitable wet rooms - MixerWithBath	£650	72 C	0.84	£774	£570	£20	36.3	2,207	108	£6.00
Draughtproof doors and windows	£73	72 C	0.13	£562	£580	£0	39.7	2,304	11	£6.60
300mm loft insulation from 100mm	£350	72 C	0.82	£427	£570	£20	20.5	2,212	103	£3.40
3.5kWp PV array west and 30 degree pitch with moderate shading - percentage roof 0	£5,325	84 B	12.58	£423	£290	£290	18.4	1,805	510	£10.40
3.5kWp PV array east and 30 degree pitch with moderate shading - percentage roof 0	£5,325	84 B	12.58	£423	£290	£290	18.4	1,805	510	£10.40
Spray foam insulated floor from uninsulated timber floor	£950	74 C	2.26	£420	£540	£40	22.2	2,057	258	£3.70
3.5kWp PV array south east and 30 degree pitch with moderate shading - percentage roof 0	£5,325	86 B	14.26	£373	£260	£320	16.4	1,743	572	£9.30
3.5kWp PV array south west and 30 degree pitch with moderate shading - percentage roof 0	£5,325	86 B	14.26	£373	£260	£320	16.4	1,743	572	£9.30

Measures	Costs	Energy Rating			Fuel Bill			Kilograms CO <sub>2</sub>		
		Score	Saving	£/point	Bill	Saving	Payback years	KgCO <sub>2</sub>	Saving	£/kgCO <sub>2</sub>
3.5kWp PV array south and 30 degree pitch with moderate shading - percentage roof 0	£5,325	87 B	14.95	£356	£250	£340	15.7	1,717	598	£8.90
3.5kWp PV array east and 30 degree pitch with no shading - percentage roof 0	£5,325	87 B	15.72	£339	£220	£360	14.7	1,677	638	£8.30
3.5kWp PV array west and 30 degree pitch with no shading - percentage roof 0	£5,325	87 B	15.72	£339	£220	£360	14.7	1,677	638	£8.30
3.5kWp PV array south east and 30 degree pitch with no shading - percentage roof 0	£5,325	89 B	17.82	£299	£180	£400	13.2	1,600	715	£7.40
3.5kWp PV array south west and 30 degree pitch with no shading - percentage roof 0	£5,325	89 B	17.82	£299	£180	£400	13.2	1,600	715	£7.40
3.5kWp PV array south and 30 degree pitch with no shading - percentage roof 0	£5,325	90 B	18.69	£285	£160	£420	12.6	1,568	747	£7.10
Low energy lighting	£300	73 C	1.88	£160	£540	£40	7.5	2,269	46	£6.50
PCDF boiler reference from generic SAP boiler information - (1998 or later) Condensing combi with automatic ignition	£2	72 C	0.33	£6	£580	£10	0.4	2,283	33	£0.10
ASHP with radiator central heating and hot water from C rated gas boiler	£5,000	65 D	-6.77	£-739	£730	£-140	-34.8	1,285	1,031	£4.90
Combismart on hot water supply from boiler	£75	72 C	0.00	£∞	£580	£0	∞	2,315	0	£∞
Humidity controlled kitchen extractor	£250	72 C	0.00	£∞	£580	£0	∞	2,315	0	£∞
Humidity controlled extractors per wetroom	£250	72 C	0.00	£∞	£580	£0	∞	2,315	0	£∞
Trickle vents on windows	£200	72 C	0.00	£∞	£580	£0	∞	2,315	0	£∞
Humidity controlled passive ventilation to non-wet rooms	£350	72 C	0.00	£∞	£580	£0	∞	2,315	0	£∞
Scaffolding	£1,538	72 C	0.00	£∞	£580	£0	∞	2,315	0	£∞
External insulation to timber walls U-value is >=1 & <1.7	£6,684	72 C	0.00	£∞	£580	£0	∞	2,315	0	£∞
New Kitchen House	£5,000	72 C	0.00	£∞	£580	£0	∞	2,315	0	£∞
New Bathroom small property	£2,000	72 C	0.00	£∞	£580	£0	∞	2,315	0	£∞
Redecoration by room count	£2,650	72 C	0.00	£∞	£580	£0	∞	2,315	0	£∞
EPC House or Bungalow	£80	72 C	0.00	£∞	£580	£0	∞	2,315	0	£∞

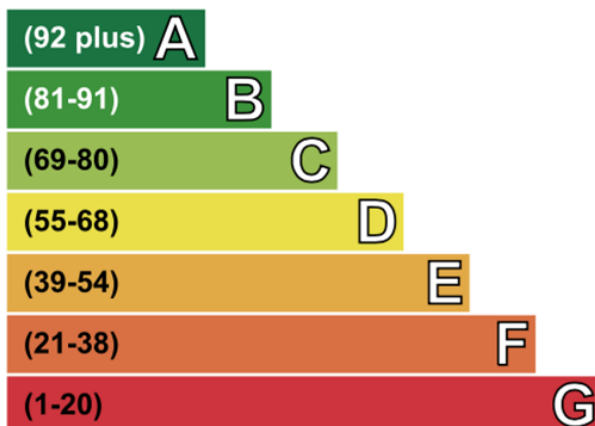
## 17 Glossary, References & Useful links

### Glossary

ASHP	Air Source Heat Pump	PV	Solar photovoltaic panels
EPC	Energy Performance Certificate	RHI	Renewable Heat Initiative
EWI	External Wall Insulation	SAP	Standard Assessment Procedure
FGHRS	Flue Gas Heat Recovery System	tCO <sub>2</sub>	Tonnes of Carbon Dioxide
GSHP	Ground Source Heat Pump	TRV	Thermostatic Radiator Valve
IWI	Internal Wall Insulation	WWHRS	Wastewater Heat Recovery System
kWh	Kilowatt hours		

### Energy Efficiency Rating

Very energy efficient - lower running costs



Not energy efficient - higher running costs

### Fuel Bill Modelling

SAP models energy use based on 'typical' occupancy (assumed number of people living in your home, based on the floor area) and behaviour (e.g. heating the property to 21C in living areas and 18C elsewhere), in a property located in the middle of England.

You may have a lower or higher occupancy than 'typical' in your home and you may prefer heating your home to a higher or lower temperature than used in the model, which means your baseline energy use can be very different to that which SAP models.

Furthermore, insulation levels are modelled on the age of the house if other evidence is not available, this will also impact on predicted energy use.



## Useful Links

Retrofit Coordinator	<a href="https://www.youtube.com/watch?v=k4nJlXpo9A&amp;feature=emb_logo">https://www.youtube.com/watch?v=k4nJlXpo9A&amp;feature=emb_logo</a>
UKCMB - Ventilation	<a href="https://www.youtube.com/watch?v=aBWIXLMnqBk">https://www.youtube.com/watch?v=aBWIXLMnqBk</a>
STBA - Solid Wall Insulation	<a href="https://www.youtube.com/watch?v=6KFC0vbxii8">https://www.youtube.com/watch?v=6KFC0vbxii8</a>
Trustmark - PAS 2035	<a href="https://www.trustmark.org.uk/ourservices/pas-2035">https://www.trustmark.org.uk/ourservices/pas-2035</a>
OFGEM - RHI	<a href="https://www.ofgem.gov.uk/environmental-programmes/domestic-rhi">https://www.ofgem.gov.uk/environmental-programmes/domestic-rhi</a>
RHI calculator	<a href="https://renewable-heat-calculator.service.gov.uk/StartCalculation.aspx">https://renewable-heat-calculator.service.gov.uk/StartCalculation.aspx</a>
CCC - Homes for the Future	<a href="https://www.theccc.org.uk/wp-content/uploads/2019/02/Homes-of-the-future-are-needed-today-Infographic-A4.pdf">https://www.theccc.org.uk/wp-content/uploads/2019/02/Homes-of-the-future-are-needed-today-Infographic-A4.pdf</a>
SAP – Standard Assessment Procedure	<a href="https://www.gov.uk/guidance/standard-assessment-procedure">https://www.gov.uk/guidance/standard-assessment-procedure</a>

## References

<sup>2</sup> Clean Growth Strategy	<a href="https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf">https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf</a> (page 13, point 12)
<sup>3</sup> Standard Assessment Procedure	<a href="https://www.gov.uk/guidance/standard-assessment-procedure">https://www.gov.uk/guidance/standard-assessment-procedure</a>
<sup>4</sup> OFGEM - Energy average UK bills	<a href="https://www.ofgem.gov.uk/publications-and-updates/infographic-bills-prices-and-profits">https://www.ofgem.gov.uk/publications-and-updates/infographic-bills-prices-and-profits</a>
<sup>5</sup> Catapult - Living Carbon Free	<a href="https://es.catapult.org.uk/wp-content/uploads/2019/06/ESC-Living-Carbon-Free-report-for-CCC.pdf">https://es.catapult.org.uk/wp-content/uploads/2019/06/ESC-Living-Carbon-Free-report-for-CCC.pdf</a>
<sup>6</sup> BEIS - 2018 UK GHG emissions	<a href="https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/863325/2018-final-emissions-statistics-summary.pdf">https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/863325/2018-final-emissions-statistics-summary.pdf</a>

## 18 Contact details

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