

# Proposed Approach to EFDC's Housing Energy Efficiency Retrofit Programme

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## 1 INTRODUCTION

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### 1.1 Asset Management Strategy

EFDC's Housing Asset Management Strategy for the period 2024/25 to 2028/29 commits us to:

*Develop and put in place a Retrofit Energy Efficiency Strategy designed to meet our EPC and other related targets, prioritising a combination of 'easy wins' and the worst performing properties so all homes meet EPC C by 2030, with a plan for making the homes we provide ready for 'net zero' by 2050*

### 1.2 Our Progress So Far

We have started our programme of energy efficiency retrofit. Working with E.ON, we are delivering energy efficiency retrofit measures to 132 homes. These are mostly homes in rural areas with many off the gas grid. The works will enable the properties to achieve a SAP rating of at least band C. The project is part-funded by Wave 2.1 of the Social Housing Decarbonisation Fund (SHDF). The project is due to complete by April 2025.

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## 2 WHERE ARE WE NOW?

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### 2.1 Current Energy Efficiency

With the support of Parity Projects, we have estimated the energy efficiency of all homes in our stock. The estimates are based on:

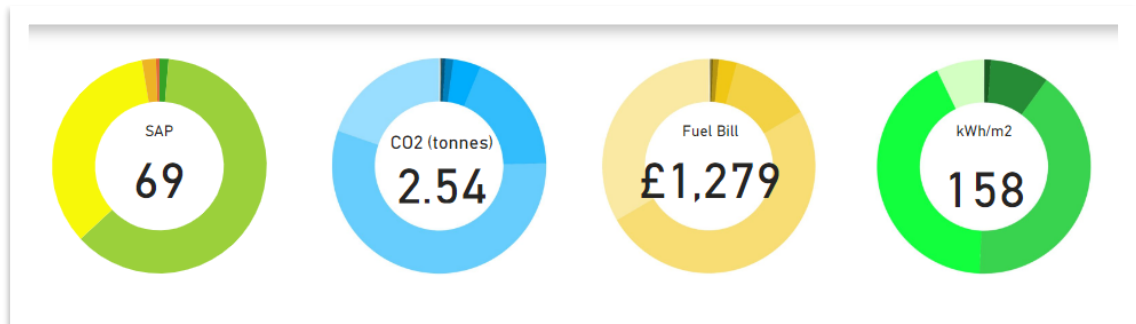
- Energy Performance Certificates we hold – We have EPCs for 4,002 of our properties. The older EPCs are less reliable because there are likely to have been changes to the property.
- Additional data that EFDC hold on the properties including, the age, building type, heating system, insulation levels and window specification

Each energy efficiency score is accompanied by a confidence score according to the reliability of the data. Parity projects deliberately make a pessimistic assessment of energy efficiency.

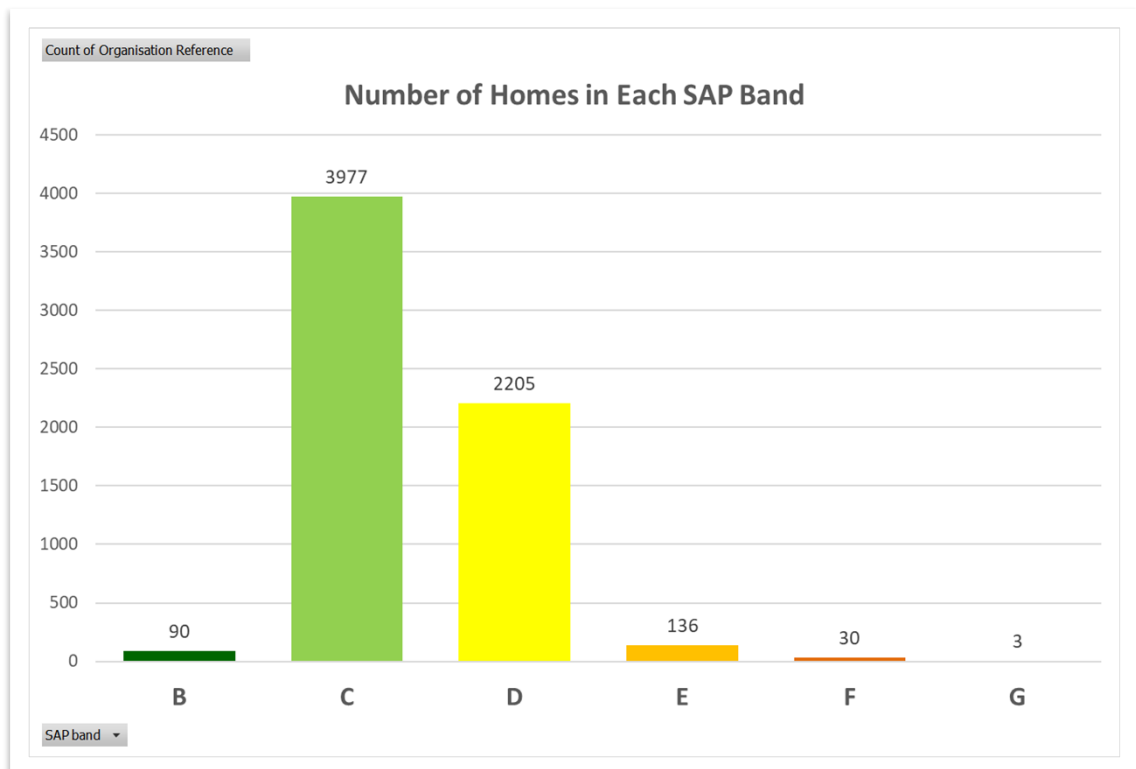
The estimated scores are sufficient to enable us to develop our programme. However, we will confirm the SAP score of a property prior to determining which measures are required.

## Approach to the EFDC's Retrofit Programme

The analysis indicates that 2,374 homes have a SAP score that is in band D or lower. The mean SAP score is 69.4. This is slightly better than the average for social housing in England and Wales (68.4). It is significantly higher than the average for all tenures (60). The following diagram shows the banding of SAP scores. To achieve band C or better, the SAP score must be at least 69.



*Figure 1 - Current Averages*



*Figure 2 - Profile of the energy efficiency of EFDC's housing stock*

Improving the SAP score will reduce fuel bills:

SAP Band	No. Homes	Estimated Average Annual Fuel Bill
B	90	£788.67
C	3977	£1,112.67
D	2205	£1,499.73
E	136	£2,427.22
F	30	£2,980.53
G	3	£6,036.13

Figure 3 - Estimated average annual fuel bill for properties in each SAP band

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### 3 WHERE DO WE WANT TO BE?

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#### 3.1 By 2030 (Phase 1)

**PHASE 1: By the end of 2030/31, all housing properties will be in SAP band C or above**

We estimate 2,374 homes are in SAP bands D to G. In line with the government target that all social housing is to achieve SAP band C, we will implement retrofit measures to ensure all the homes we provide are in SAP band C or better.

Whatever other measures we install during retrofit works, we will incorporate cost effective measures such as loft insulation top ups and low energy lights.

The work will include improvements to property ventilation as necessary to prevent damp and mould and maintain good indoor air quality.

#### 3.2 By 2050 (Phase 2)

**PHASE 2: We will be ready for net zero by 2050. All the homes we provide will be affordable to heat using decarbonised energy**

Our long-term aim is for all the homes we provide to be affordable to heat when the energy supply is fully decarbonised. Presently, the average energy required to heat the homes we provide is 158 kWh/m<sup>2</sup>/year.

Fossil fuels, most notably gas, will be phased out by 2050. The government have indicated that gas boilers will not be available to purchase from 2035.

The most likely replacement source of energy will be electricity. Hydrogen is unlikely to be cost effective or available at scale. The cost of electrical energy is currently three to four times more than gas.

Our homes need to be made much more energy efficient to be affordable to heat with electricity.

## **4 PHASE 1 – ALL PROPERTIES TO SAP BAND C**

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### **4.1 EFDC's Principles to Improving the Energy Efficiency of our Homes**

#### **Our priority is to minimise the fuel bills for our customers**

Most retrofit measures will reduce carbon emissions and reduce energy bills. However, some measures offer a reduction in emissions but could result in higher bills. As an example, low carbon heating, such as an air source heat pumps, can be more expensive to install and more expensive to run than gas fired heating. However, over time, we expect low carbon heating products to improve and their cost reduce.

Where we have a choice, EFDC will prioritise minimising energy bills. When replacing the heating system of a property with gas heating, it is likely we will replace it with efficient gas heating. This approach will continue until the sale of new gas boilers ceases (expected 2035), or when heat pumps become sufficiently viable.

The SAP rating of a home is the assessment of its energy efficiency. The cost per SAP point improvement will therefore be a key consideration in prioritising the measures we install.

#### **Healthy indoor air quality is a key part of this energy efficiency programme**

Ensuring good indoor air quality will be central to EFDC's approach to meeting energy efficiency targets. Poor indoor air quality, such as high levels of humidity, can manifest itself as mould growth, dust mites and other allergens that affect the health and wellbeing of our customers.

There is a risk that retrofit measures, such as increasing airtightness, will make indoor air quality worse. Inadequate ventilation can result in increased relative humidity and poor air quality.

We will check the ventilation provision in all the homes included in retrofit projects. Where necessary we will upgrade ventilation systems. As a minimum, kitchens and bathrooms will be provided with modern, continuous running extract fans with a humidistat operated boost.

#### **We will make the fabric suitable before fitting low carbon heating**

If the insulation and airtightness of a home is not adequate, a heat pump can consume a lot of electrical power and still may not be able to get the home to a comfortable temperature. Where we do fit low carbon heating, we will improve the fabric as necessary.

#### **We will incorporate energy efficiency into other planned work programmes**

Where properties are due planned component replacements (such as windows, roofs or heating), we will take the opportunity to make improvements to the property's energy efficiency.

We will specify products that are more energy efficient. This will include the new windows, replacement heating systems and upgrading insulation when we replace roofs.

Our design will ensure we are ready for future energy efficiency retrofit works such as facilitating future installations of heat pumps (e.g. identifying space for heat pumps and hot water cylinders) and wall insulation (e.g. windows that facilitate external wall insulation).

This will apply to all our properties, not just those below SAP band C.

#### **We will look at options if retrofit is not viable**

If the cost of retrofit (because of challenges of construction type or planning restrictions) is particularly high, we will consider options.

We will retain a property and carry out appropriate retrofit works if our data shows the property is a popular place to live and its net present value (including the cost of retrofit works) means the property will be financially viable.

If a property does not meet our performance threshold, we will carry out an appraisal on the options. This may include selling the property (and reinvesting the proceeds) and redeveloping the site.

#### **We will evaluate the outcomes of our retrofit works**

We will check the retrofit work we have done has achieved the intended benefits.

We will compare before and after SAP ratings.

We will survey all customers to understand their satisfaction with the experience of the retrofit works and the difference the works have made to the comfort and affordability of their home. We will use this information to make continual improvements to the design of the retrofit measures and the installation process.

We will use remote sensors at a sample of homes to assess the improvement made by retrofit works. The sensors will monitor energy use, temperature, relative humidity and carbon dioxide levels. Ideally, we will monitor homes for a full year before the retrofit works and a full year after. In some cases, we may only be able to monitor post works. However, this will still enable us to confirm the effectiveness of the heating and the indoor air quality.

We may undertake sample airtightness tests and thermal images to provide further assurance of the effectiveness of the retrofit measures.

## **4.2 Choice of Measures in Phase 1**

The following is a list of measures we prefer, and measures we will tend to avoid, during the first phase of EFDC's retrofit programme (to get all properties up to EPC band C at least).

### ***Preferred Measures***

#### **Low cost, low disruption measures**

This can include loft insulation, hot water cylinder insulation, low energy lighting and improved heating controls.

#### **Fabric improvements**

Fabric improvements (insulation and airtightness) will make a noticeable difference to the thermal comfort in a home. We favour loft, cavity wall and external wall insulation. Under floor and internal wall insulation can be very disruptive.

Fabric improvements can have a relatively high initial cost but, if properly installed, the ongoing costs will be very limited.

#### **Photovoltaic (PV) panels**

PV panels offer a cost-effective means to improve the SAP rating of a home and can reduce electric bills by hundreds of pounds. The work is mostly external and can be completed within a few days, so the disruption is limited.

Where PV is installed at houses, the electricity generated can be used in the home. Where PV is installed at blocks or schemes, the electricity may be used for the communal areas with a consequent saving in service charges. Alternatively, we may provide metered supplies to flats within a block.

We will not generally fit battery storage in houses due to the initial cost and the lifecycle cost of replacements. If the home has a hot water tank, we may divert excess power to heat the water. Otherwise, excess energy will be diverted to the grid to generate income for the tenant or for EFDC.

We may fit battery storage at blocks or schemes to keep service charges as low as possible.

#### **Ventilation improvements**

The Retrofit Assessment (made prior to retrofit works) will include a review of the ventilation provision in the home and produce a ventilation strategy. The retrofit works will ensure the ventilation of the home is adequate to prevent condensation and mould and provide good indoor air quality.

### ***Measures We Prefer to Avoid***

#### **Low carbon heating at properties that currently have gas heating**

Low carbon heating (such as heat pumps and modern storage heaters) is likely to cost more to run than gas-fired heating. When a gas boiler reaches the end of its life, we will replace it with a modern efficient gas boiler.

If low carbon heating technology improves or there are restrictions on gas fired heating products or if the cost of electrical energy reduces relative to gas, we will review this preference.

### **Solar thermal water heating**

Solar thermal panels can be fitted to the roof. Water is pumped through an array of pipes where the sunlight increases its temperature. This means less energy is used to get hot water to the required temperature. However, solar thermal heating is not very effective in the UK, it is a heavy load on the roof structure and is a maintenance liability.

### **Under floor insulation**

Installing floor insulation in an occupied home is usually very disruptive. However, it may be considered for void properties or where it is possible to install the insulation without it causing disruption.

### **Internal wall insulation**

Installing internal wall insulation in occupied properties would be disruptive to the tenants. It will make room areas smaller and requires consequential work to skirting boards, fitted furniture (such as kitchen units) and carpets. There is a manageable risk that internal wall insulation will create a 'dew point' within the wall where vapour can condense (e.g. at the interface between the insulation and original wall). However, internal wall insulation may be the only option for some heritage buildings or properties built to the boundary line. In these cases, the internal wall insulation must be designed carefully.

### **Measures with a high cost per SAP point improvement**

This will include new innovations that are not yet accredited for inclusion in the government's SAP calculations.

## **4.3 Customer Experience**

Successful delivery of our programme to retrofit energy efficiency measures relies on positive customer engagement. Installing measures can be disruptive so we want to make the process as painless and as worthwhile as possible.

Each tenant has their own needs. To help us design the retrofit package we have to understand the energy use in their home – temperature settings, hot water usage, indoor air quality, energy costs.

Once we are on site, we will contact our tenant regularly to check on how they feel about the experience and keep them updated on what works to expect for the remaining days. If plans change, we will ensure they are kept up to date.



When selecting equipment for installation (e.g. a new heating system), we prefer products that are easy to operate and supported by smart technology where appropriate. As well as keeping the controls as simple as possible, we will explain how to get the most from the new measures. We will also provide this explanation to subsequent tenants when the property is relet.

***What's going to happen and when?***

We will communicate a provisional improvement plan for each tenant's home indicating which year we are likely to undertake retrofit works at their home. Whilst we cannot be specific about which measures we will install until the retrofit assessment, we will give as much information as possible on what they can expect.

***Tenant choice and refusals***

We understand that some tenants will be reluctant to have the works done. We will discuss any concerns explaining how we will minimise disruption and explain the benefits they can expect of thermal comfort and fuel savings. Our aim is to bring all our social housing to the target energy efficiency standard. We are determined that all the homes EFDC provides achieve a minimum level of energy efficiency. We may defer properties to later in the programme if there is a reason the works cannot be done at that time.

***Leaseholders***

Where we are installing energy efficiency measures to blocks, we will include leasehold flats where appropriate (e.g. external wall insulation). Where the lease allows, we will recharge a proportion of the cost. If the lease does not allow recharge of improvements, there will be no charge to the leaseholder.

Where we are installing measures within homes (e.g. ventilation, draught proofing or low energy lights), we will offer the improvement to leaseholders at cost plus an administration fee.

**4.4 Workstreams for Phase 1**

## Phase 1 - SAP band C by the end of 2030/31

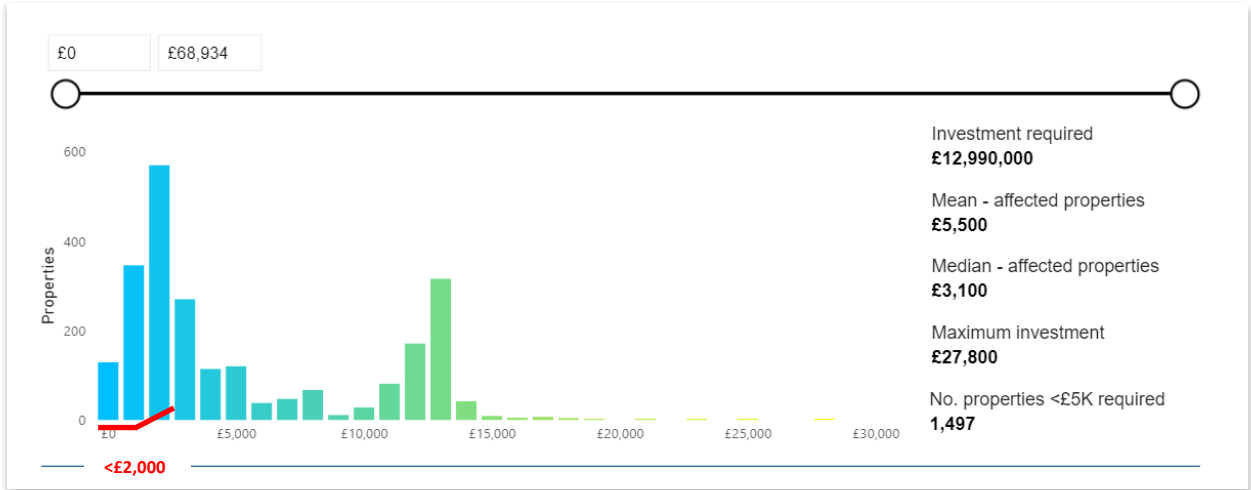
**Workstream A - Easy Wins**

- about 1,000 homes can achieve C for less than £2,000 investment
- low cost and low disruption measures such as loft insulation top ups, improved heating controls or low energy lighting

**Workstream B - Grant Funded**

- about 1,300 properties require more significant measures to achieve C
- bid for grant funding
- follow the PAS2035 process using Trustmark accredited contractors

The government target is for all social housing to achieve at least SAP band C by 2030. According to the analysis carried out by Parity Projects, 2,374 (36.9%) EFDC homes are in SAP band D or below. Of these, 1,045 are estimated to require less than £2,000 investment to achieve SAP band C.



**Workstream A - Easy Wins (under £2,000)**

This workstream will focus on the estimated 1,045 homes that require less than £2,000 investment to achieve SAP band C. We expect to be able to reach band C with low cost and low disruption measures such as loft insulation top ups, improved heating controls or low energy lighting.

We will confirm the SAP rating with a domestic energy assessment. There will be three possible outcomes:

Outcome of SAP Assessment	Action
The home is in band C already	No further action required
The home can achieve SAP band C with less than £2,000 investment	Identify and carry out the measures required
The home requires more than £2,000 investment to achieve SAP band C	Refer the property to Workstream B

Workstream A will comprise low-cost and relatively simple measures. We will not seek grant funding. We will use competent contractors. However, they do not necessarily need to PAS2030 accredited (as would be required by grant funders).

### ***Workstream B – Grant Funded Retrofit Programme***

This workstream will cover the 1,329 properties estimated to require more than £2,000 investment to achieve SAP band C. These properties will require more significant and expensive, measures. The design and installation will follow the process set out in PAS2035 to ensure the work completed correctly and with no unintended consequences.

We will bid for grant funding to contribute to the cost of these works. Funders will require that we follow the PAS20235 process and use PAS2030 accredited contractors.

We will develop a programme that allocates these properties to a year between 2026/27 and 2030/31.

Prior to the works we will undertake a Retrofit Assessment (in accordance with PAS2035). This will confirm the SAP score of the property and recommend the measures required to achieve band C. The retrofit assessment will also identify measures required to make the property ready for net zero.

Outcome of SAP Assessment	Action
The home is in band C already	No further action required
The home can achieve SAP band C with less than £2,000 investment	Refer the property to Workstream A
The home requires more than £2,000 investment to achieve SAP band C	Confirm inclusion of the property in Workstream B

### ***Outcomes of Phase 1***

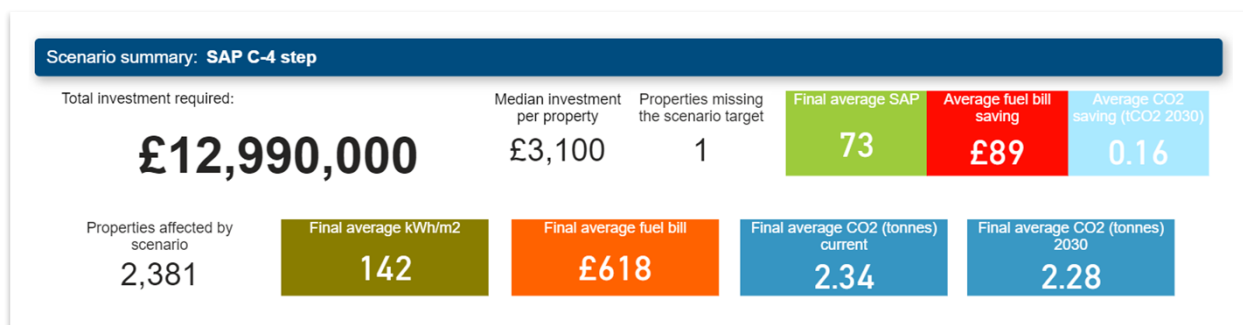
Of homes included in Phase 1:	Before	After	Improvement
Mean SAP	63.1	74.1	11.0
Mean energy demand (kWh/m <sup>2</sup> )	190	148	42
Mean fuel bill	£1,586	£1,152	£434
CO <sub>2</sub> (tonnes/year)	7,200	5,900	1,300

#### 4.5 Estimated Cost of Phase 1

Analysis by Parity Projects estimates the works cost of improving properties to achieve at least SAP band C is £12,99,000. This equates to an average cost of £3,100 for each of the homes requiring improvement.

This cost includes ventilation improvements and cost-effective fabric improvements (insulation and airtightness) at each home included in the programme.

The total works cost is estimated at:



#### Workstream A (Quick Wins)

Cost Item	Estimate ('000)
Retrofit assessments for properties (@ £300ea)	£313
Works (@ £1,250/property)	<u>£1,300</u>
Sub-total	£1,613
Fees (10%)	£160
Contingency (10%)	£160
Less grant	£nil
<b>Total (Workstream A)</b>	<b>£1,933</b>

Workstream A will be fully funded by EFDC

**Workstream B (Grant Funded Retrofit Programme)**

Cost Item	Estimate ('000)
Retrofit assessments for properties (@ £300ea)	£400
Works (£12,990k less £1,300k)	<u>£11,690</u>
Sub-total	£12,090
Fees (10%)	£1,209
Contingency (10%)	£1,209
Less grant (assume 45%*)	-£6,530
<b>Total (Workstream B)</b>	<b>£7,978</b>

*\*based on grant contribution to current project*

Workstream B will be co-funded by EFDC supported by grant funding. The grant funding provided for our first retrofit project is approximately 45%.

#### 4.6 Sources of Grant for Energy Efficiency Measures to Social Housing

There are currently two sources of grant funding available to improve the energy efficiency of existing social housing:

**Social Housing Decarbonisation Fund (SHDF)**

SHDF funding is released in waves. Wave 2.1 provides £778 million of government funding. Wave 2.2 will add a further £80m. Wave 3, which is expected to run from April 2025 to March 2028, will provide £1.25 billion of government funding.

Our current project to improve 132 homes is part funded with approximately £1.5m from SHDF Wave 2.1.

Social housing below SAP band C is eligible for SHDF. Homes must reach SAP band C, or SAP band D where this is not possible for properties starting in SAP band F or G.

SHDF is likely to be our major source of grant funding over the next few years.

**Energy Company Obligation 4 (ECO4)**

Social housing properties in SAP band E or below are eligible and can receive insulation measures, first time central heating and renewable heating. Properties in SAP band D are eligible only if they are receiving innovation measures. Target is for properties starting in SAP band D or E must be improved to SAP band C. Properties starting in SAP band F or G must be improved to SAP band D.

We only have 169 properties that would be eligible for ECO4 funding. We will investigate the options of applying for ECO4 funding to improve these properties or to include them in bids we make for SHDF funding, or other sources of funding that become available.

## 4.7 Procurement

### *General Objectives*

The objectives for contracts we procure for our retrofit works are:

- Cost effectiveness - we get the greatest improvement in energy efficiency for the funding we have available
- Ability – Suitably accredited
- Customer service - our tenants are satisfied with both the completed product and their experience of the delivery process
- Community benefits - the process of delivering retrofit works is a catalyst for developing and sustaining the local economy and communities including training and jobs for local people
- Continuous improvement - we have performance management mechanisms to enable us to make improvements during projects and project-by-project

## 4.8 Delivery Structure for Workstream A (Quick Wins)

### *Retrofit Assessors*

We will appoint independent Retrofit Assessors who will undertake a full assessment of each property allocated to Workstream A. The scope of the retrofit assessment is mandated by PAS2035. It is a detailed survey of the property and advice on measures to bring the property to the target standard. It will also provide a medium-term plan to make the property ready for net zero.

The Retrofit Assessors must be suitably qualified and demonstrate a track record of reliable assessments and customer service.

### *Installers*

We may appoint Qualis to deliver the energy efficiency improvement measures. Qualis will need to demonstrate they have the skills and quality assurance necessary to install the measures in accordance with best practice. We may appoint other Installers to provide additional capacity and additional skills.

## 4.9 Delivery Structure for Workstream B (Grant Funded Retrofit Programme)

### *Retrofit Assessors*

As above.

### *Installers*

The Installers we use must be Trustmark accredited (i.e. meet the requirements of PAS2030).

Our preference is to appoint one or two Installers for the duration of Workstream B under a term contract. However, the timetable for the next wave of grant funding (SHDF Wave 3) has not yet been published. If the grant funding requires an early appointment of an Installer, we may expedite the procurement process for the next project to secure the grant funding. In this case the Installer will be appointed for a single project. During the project we will run a procurement process for term contract(s) to deliver the remainder of the Phase 1 programme.

The Installers we appoint will have the competency and capacity to deliver the programme. They must also have a track record of excellent customer service and offer competitive prices.

The advantages of appointing Installers under a term contract, rather than tendering each project, include:

- Long term contracts will be more attractive to the market, so prices are likely to be more competitive
- Once the term contracts are in place, there will be less delay in starting work on each project
- There will stability in the team delivering the programme of projects
- It will enable continuous improvement from project to project
- It will provide the basis for effective community benefits such as local employment and apprenticeships

#### **4.10 Resource Requirements for Phase 1**

##### ***Retrofit Programme Manager***

The Retrofit Programme Manager will be responsible for coordinating the works that make up Workstream A and project management of Workstream B.

This will be a new post partly funded by grant.

##### ***Resident Liaison Officer***

EFDC's Resident Liaison Officer will have a critical role in ensuring a positive customer experience including working closely with tenants who have concerns about the proposed works. They will liaise with the Installers in adapting work plans around the needs to the tenants.

There is already a Resident Liaison Officer in post.

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## **5 PHASE 2 – ALL PROPERTIES READY FOR NET ZERO**

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### **5.1 Affordable to Heat with Decarbonised Electricity**

Fossil fuels, most notably gas, will be phased out by 2050. The government have indicated that gas boilers will not be available to purchase from 2035.

The most likely replacement source of energy will be electricity. Hydrogen is unlikely to be cost effective or available at scale. The cost of electrical energy is currently three to four times more than gas.

Our homes need to be made much more energy efficient to be affordable to heat with electricity. Following Phase 1, our starting point will be that all EFDC's housing properties will be at least SAP band C.

## **5.2 Budget-led Approach**

Phase 1 will have used the most cost-effective measures to increase SAP scores. As we move into Phase 2, the cost of measures to make equivalent energy efficiency improvements is likely to be greater - the law of diminishing returns.

Our approach will be to achieve the highest level of minimum energy efficiency for the amount EFDC can allocate within the constraints of a sustainable business plan.

**John Taphouse**

**Interim Head of Asset Management**


**June 2024**



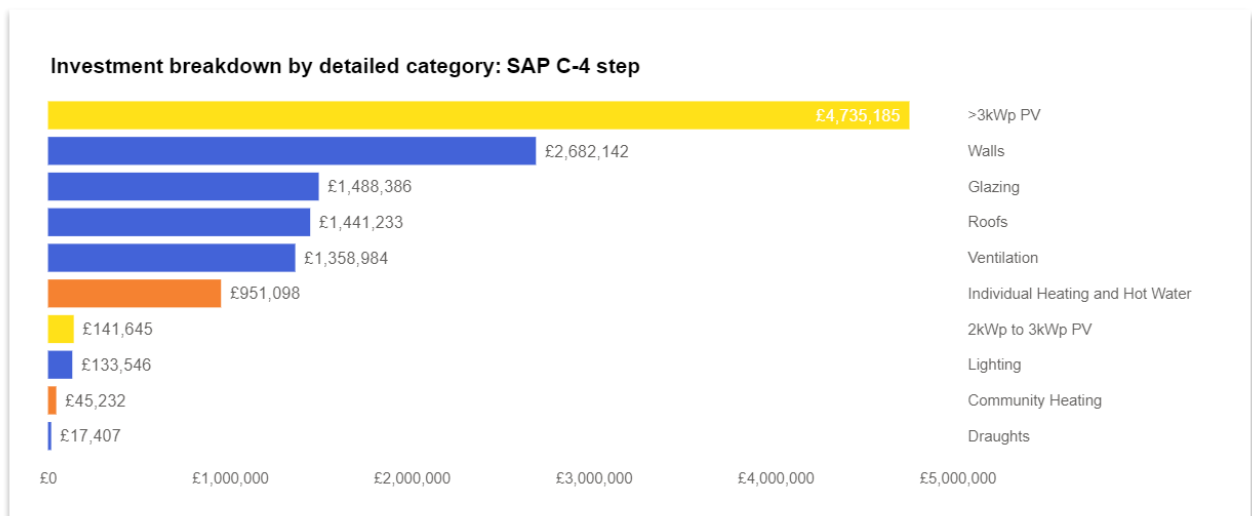
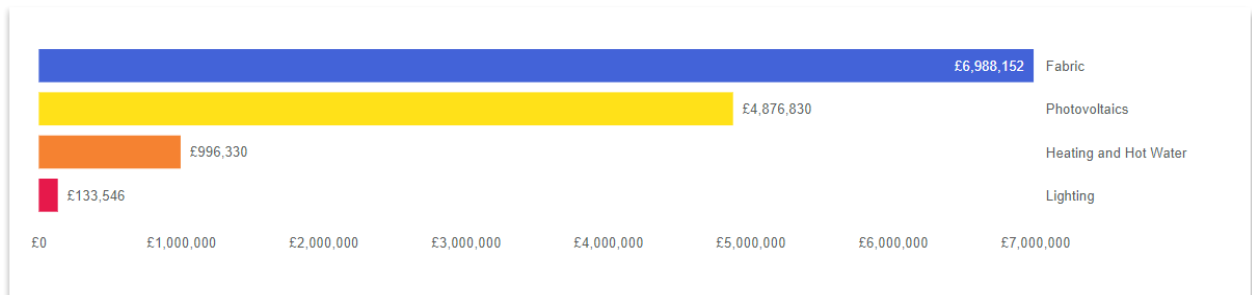
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## APPENDIX 1 – SAP BANDS

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Energy Efficiency Rating		
	Current	Potential
<i>Very energy efficient - lower running costs</i>		
(92-100) <b>A</b>		
(81-91) <b>B</b>		
(69-80) <b>C</b>		
(55-68) <b>D</b>		
(39-54) <b>E</b>		
(21-38) <b>F</b>		
(1-20) <b>G</b>		
<i>Not energy efficient - higher running costs</i>		
<b>England, Scotland &amp; Wales</b>	EU Directive 2002/91/EC	

## APPENDIX 2 – MEASURES BREAKDOWN FOR PHASE 1



	Investment	No. Measures	Average Cost
>3kWp PV	£4,735,185	611	£7,750
Walls	£2,682,142	1557	£1,723
Glazing	£1,488,386	860	£1,731
Roofs	£1,441,233	1036	£1,391
Ventilation	£1,358,984	3966	£343
Individual Heating and Hot Water	£951,098	427	£2,227
2kWp to 3kWp PV	£141,645	23	£6,158
Lighting	£133,546	2158	£62
Community Heating	£45,232	14	£3,231
Draughts	£17,407	70	£249
<b>Total</b>	<b>£12,994,858</b>	<b>10722</b>	<b>£1,212</b>

# Approach to the EFDC's Retrofit Programme

Fabric 3518 £5,619,325	Walls 1548 £2,669,215	Cavity 1384 £2,192,315	Cavity Insulation 853 £1,236,591	Insulate Party Wall 711 £955,724	
		Solid 4 £41,559	External to Solid 4 £41,559		
		System 14 £143,867	External to System 14 £143,867		
		Other 187 £291,474	Alternate Wall 187 £291,474	Internal to Alternate Wall 53 £207,396 Cavity Insulation to Alternate Wall 114 £84,078	
	Roofs 1038 £1,441,233	Loft Insulation 884 £1,237,811	Virgin to 300mm 288 £419,043	Top Up to 300mm 718 £818,768	
		Flat Roof Insulation 52 £203,422			
	Glazing 890 £1,488,386	Double 4 £28,818	A+ rated 4 £28,818		
		Doors 568 £1,459,568			
	Draughts 70 £17,407	Chimneys 82 £14,872			
		Doors and Windows 8 £2,535			
	Ventilation 1 £3,084	Add Mechanical Ventilation 1 £3,084			
	Heating and Hot Water 433 £996,330	Community Heating 14 £45,232	Community Heating Controls 8 £5,144		
			Community Heating System 8 £39,088	Gas Community 4 £20,960	Gas Community CHP 4 £18,128
Heating System 315 £905,519		Radiator System 240 £575,251	Gas 87 £260,505	Oil 6 £23,250	Gas with FGHRs 138 £291,496
			Electric Storage System 82 £190,365		
			Heat Pump System 8 £119,143	55 Degree ASHP 2 £30,066	45 Degree ASHP 1 £15,033
		Individual Heating and Hot Water 418 £951,098	Extend Heating System 2 £2,112		
			Underfloor Heating 2 £18,648		
		Hot Water 38 £9,922	Hot Water Cylinder 2 £186		
			Cylinder Thermostat 31 £2,139		
Secondary Heating 20 £920		Switch from Alternative 8 £7,597			
		Remove Secondary Heating 20 £920			
Controls 18 £7,492		Standard 16 £6,772			
		Zoned 1 £720			
WWHRs 16 £22,605					
Tariff Switch 14 £4,640	Single to Dual 10 £4,000				
	Dual to Single 4 £640				
Lighting 2168 £133,546					
Photovoltaics 834 £4,876,830	Install PV 834 £4,876,830	Horizontally 21 £165,375			
		On a pitched roof 813 £4,711,455			
Data 8 £	Heating Data 8 £				
Non SAP Non-Energy Works 3866 £1,355,900					

