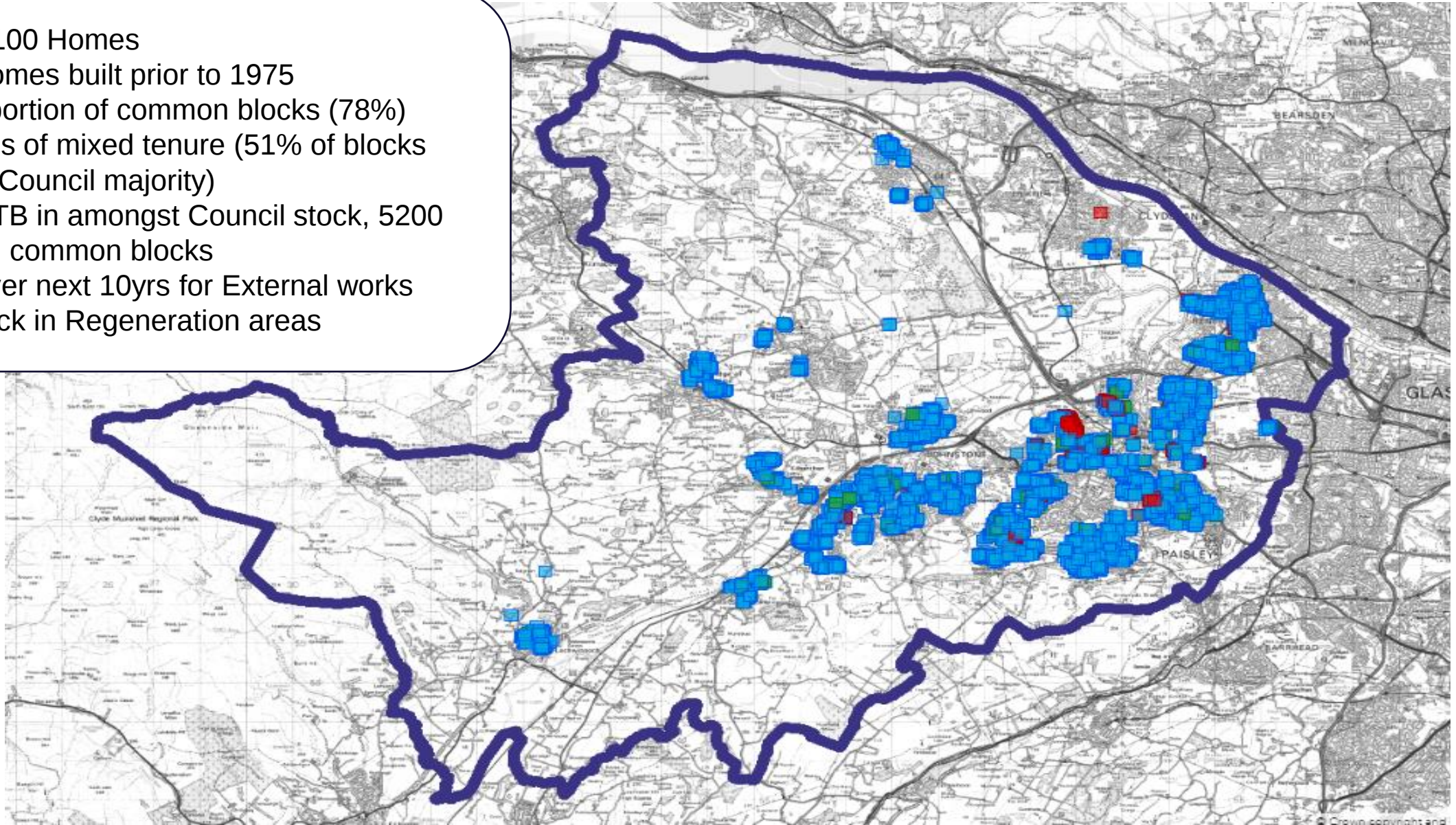


Renfrewshire Council – Choosing an Energy Standard

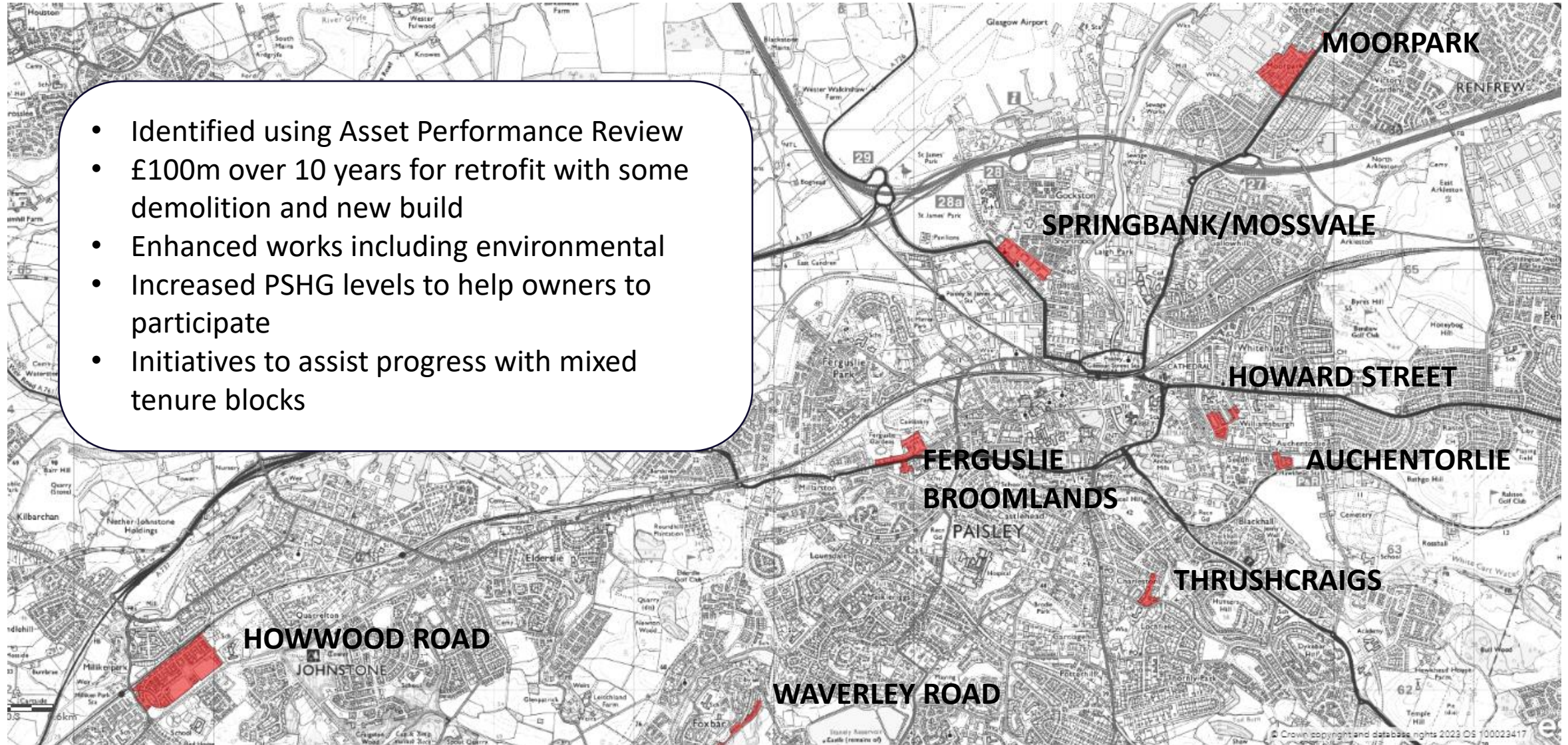


- Circa 12,100 Homes
- 90% of homes built prior to 1975
- High Proportion of common blocks (78%)
- High levels of mixed tenure (51% of blocks without a Council majority)
- 17,000 RTB in amongst Council stock, 5200 of them in common blocks
- £125m over next 10yrs for External works
- Some stock in Regeneration areas



REGENERATION AREAS

- Identified using Asset Performance Review
- £100m over 10 years for retrofit with some demolition and new build
- Enhanced works including environmental
- Increased PSHG levels to help owners to participate
- Initiatives to assist progress with mixed tenure blocks



How do we plan and design works?

ECD Architects employed in 2022 for 4 years

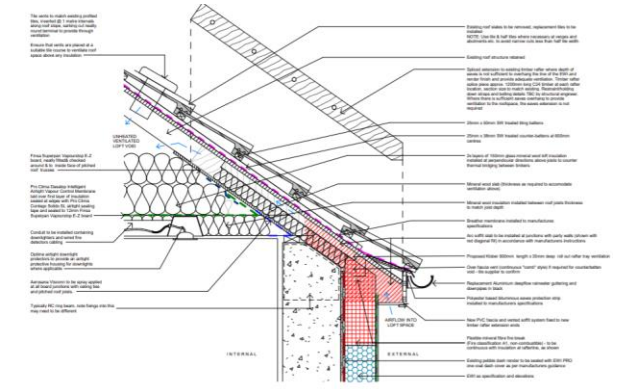
Provide survey, design and delivery support for every property or block

Using PHPP to design

Aim to achieve Enerphit compliance

Backstop of AECB Compliance

		Active						
Select the active variant here >>>>>>		1-Existing	Existing	Loft insulation & EWI & Cavity	Windows & Doors	Continuous MEV	MVHR	Floor
	Units	1	1	2	3	4	5	6
Heating demand	kWh/(m²a)	250.9	250.9	127.5	94.2	72.2	42.5	26.4
Heating load	W/m²	94.2	94.2	61.4	57.4	30.2	19.0	16.1
Cooling & dehum. demand	kWh/(m²a)							
Cooling load	W/m²							
Frequency of overheating (> 25 °C)	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PER demand	kWh/(m²a)	491.0	491.0	272.2	219.5	180.0	124.2	95.7
Passive House Classic?	yes / no	no	no	no	no	no	no	no



Standards

Enerphit

Passivhaus for existing properties

Heat Demand target of 25 kWh/m²/year using PHPP

Air tightness target of 1 ACH @ 50 Pa



AECB Carbonlite Retrofit Standard

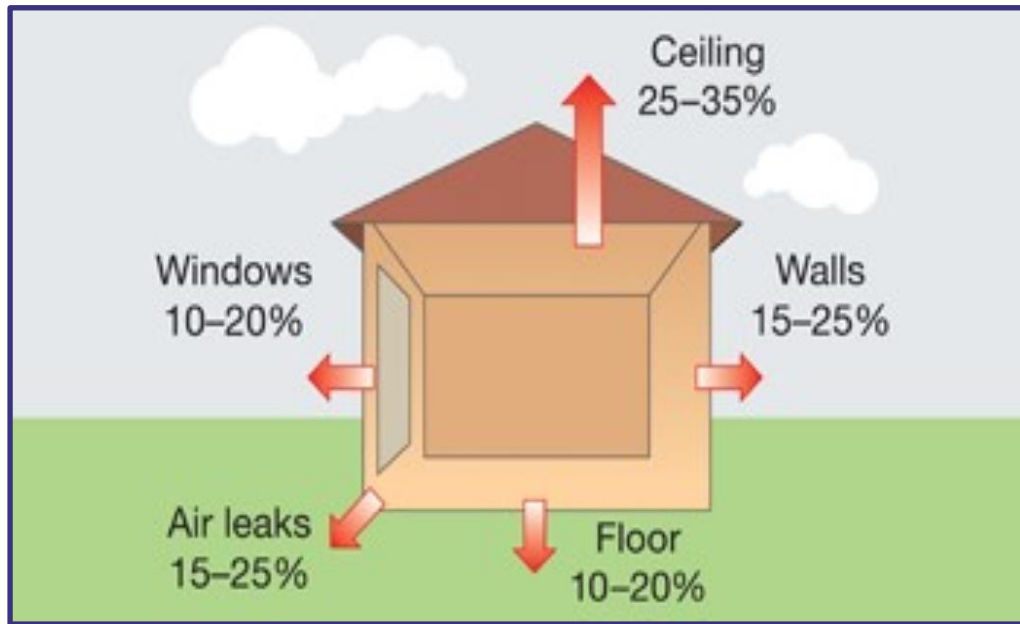
Heat Demand Target of 50 kWh/m²/year (100 kWh/m² with exemption) using PHPP

Air tightness target of 2.0 m³/m².h



Both of these standards are expensive and disruptive and not realistic

Retrofit Standard



Design contract with ECD to provide designs to meet a space heat demand of around 70-80kWh/m²/yr, air tightness under 5 and using PHPP to assess condensation/thermal bridging risks. PAS2035 Retrofit Coordination.

- Triple glazing and high-performance doors
- Loft insulation over 300mm
- Solar PV, to help reduce running costs further
- Cavity fill and/or EWI to walls
- Underfloor Insulation
- Air tightness measures at roof, walls (parge coat), floor and Windows
- D-MEV Ventilation (sometimes MVHR instead)

	PASSIVHAUS	ENERPHIT	AECB/LETI	BUILDING REGS	EXISTING STOCK	RETROFIT STANDARD
Heat Demand (kWh/m ² /year)	<15	<25	<50	Circa 50-30	Circa 200	Circa 80
Air Tightness (m ³ /hr/m ²)	<0.15	<1.0	<2.0	Circa 7	Circa 15-20	<5
Modelling Tool	PHPP	PHPP	PHPP	SAP	N/A	PHPP/RdSAP
Ventilation	MVHR	MVHR	MVHR	D-MEV	Trickle Vents	D-MEV

What is our current standard?

A compromise

Heat Demand Target of 80kWh/m²/year in PHPP

Air Tightness of 5 or under

MVHR can go in in future to assist with heating bills

£40-50k per unit

Example Measures

External Wall Insulation 100-200mm

EWI Detailing

400mm Loft Insulation

Triple Glazed Windows

Air Tightness Measures

Mechanical Ventilation

How have we got on?

Found it difficult to achieve desired air tightness levels

Can't decant 400 homes per annum, so no floor insulation done and internal 'holes' left

Some deficiency in Contractor skills and experience

Design and PAS2035 process is burdensome

Level of access required to homes was an admin burden we were not prepared for

Annoyed residents by the amount of access requested and couldn't gain Trustmark as a result for (Pre retro fit survey, architect, structural engineer, air tightness tests, asbestos surveys, contractors, post EPC, post evaluation)

Despite additional incentives, still low owner uptake

Around £30k of the costs provided by funding but owners still find remaining £10-£15k difficult to provide.

Private landlords receive less help and are major blockers

Not scalable to remaining stock outside Regen areas

Less incentives available to owners, so a cheaper standard required

Assumed Social Housing Net Zero Standard (SHNZS) (we still await actual standard)

Fabric Efficiency Rating

Heat Demand of 120kWh/m²/yr based on rdSAP by 2033

Fabric Improvement Measures

Wall, Loft and Floor Insulation

Windows and Doors

Air Tightness measures

Ventilation will need to be assessed

Install Clean Heating

Install a Clean Heating System in every home by 2045

Non-Polluting Heating Solutions

Heat Pumps

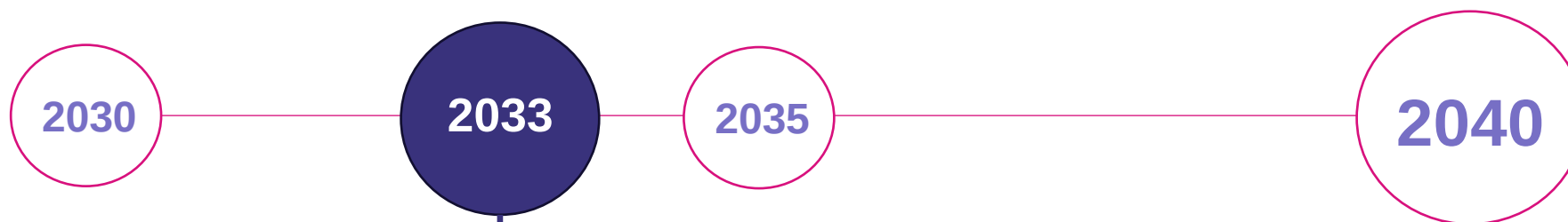
Electric Heating

Heat Networks

Likely there will be interim targets

Statutory Fuel Poverty Target

Each of the 32 Council's in Scotland have a statutory fuel poverty target to meet



SHNZS Fabric Efficiency Rating to be met

Remove poor energy efficiency of homes as a driver for fuel poverty

No more than 5% of households in Scotland are in fuel poverty

No more than 1% of households in Scotland are in extreme fuel poverty

Fuel Poverty Statistics

Based on the Scottish house condition survey in 2023 we know:

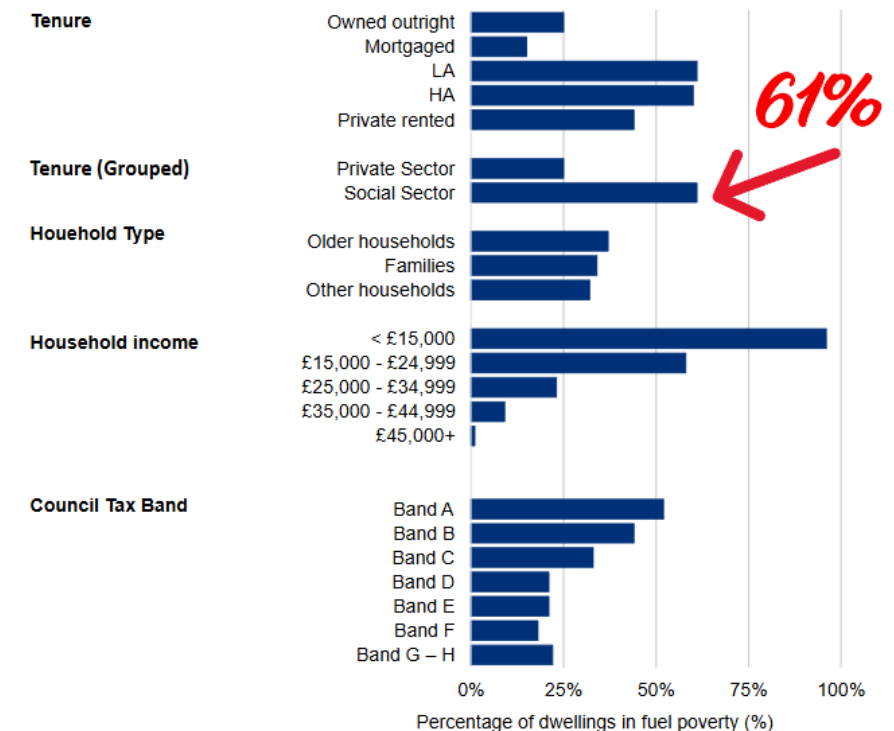
- 61% of those in fuel poverty are in the Social Sector
- 52% using electricity as their primary heating fuel are fuel poor

Scottish Housing Stock rated EPC C or above has increased from 45% in 2019 to 56% in 2023

But fuel poverty rates have gone from 31% in 2022 to 34% in 2023

Households earning under £15,000 had the highest rates of fuel poverty (96%)

Figure 3.5: Fuel Poverty Rates by Household Characteristics, 2023



Why is all this relevant?

We still need to install clean heating in around 10,000 of our own stock

- Unit of Gas is 4 times cheaper than unit of Electricity
- A Heat Pump would need to have a COP of 4 or bills will go up
- ASHP's unlikely to achieve COP of above 3 and more likely 2.5

Energy Price Cap Price per unit 1 October to 31 December 2025	
Electricity (kWh)	26.36p
Gas (kWh)	6.29p

Switch to clean heating will likely increase bills and therefore fuel poverty

What could our standard be?

Aim for the expected minimum **120kWh/m²/year** target in rdSAP

Accept that we have met our obligations in terms of compliance but that our stock is not that energy efficient, risk fuel poverty for our tenants and increased maintenance issues for our stock

Aim for **50kWh/m²/year** in rdSAP

Well above minimum rdSAP target and in principle more than half the energy demand of homes

Aim for an improved standard of **70kWh/m²/year** in rdSAP

A compromise between the two, roughly a band B in terms of an EPC

But.....

This is all based on using rdSAP

What is rdSAP?

SAP or Standard Assessment Procedure is how New Build properties are designed and measured

rdSAP is the equivalent for existing properties and the **rd** part stands for **reduced**

The level of input required is lower and a lot of assumptions are made within the calculations

It is the standard method of measuring existing properties for EPC's, home reports and;

The Scottish Government will use it for the new SHNZS standard

It has its place.....but it is not the most accurate

rdSAP v Reality



We **can** rely on rdSAP as a compliance tool



We **cannot** rely on it as an accurate measure of heat demand



We **cannot** use that heat demand to design low carbon heating systems

Solid brick 4 in a block (top floor flat)



Pre works in PHPP
Pre works in rdSAP

297 kWh/m²
106 kWh/m²

Post works in PHPP
Post works in rdSAP

158 kWh/m²
67 kWh/m²

No Fines 4 in a block with close



Pre works in PHPP
Pre works in rdSAP

312 kWh/m²
179 kWh/m²



Post works in PHPP
Post works in rdSAP

114 kWh/m²
96 kWh/m²

6 in a block Solid Brick Tenement (Regen Area)



Pre works in PHPP
Pre works in rdSAP

263 kWh/m²
88 kWh/m²

Post works in PHPP
Post works in rdSAP

78 kWh/m²
? kWh/m²

Business Plan

Business plan assumes 120kWh/m² year in rdSAP for most of the stock (EPC Band C)

Cavity wall properties

Average **£26k** per unit

Solid wall and Non-Trad

Average **£32k*** per unit

*Hard to Treat Non-Trads will likely be well above £32k

For stock in the Regen Areas

70-80kWh/m²/year in PHPP

Average **£40-£50k** per unit

What could be our standard?

Option 1 - Stick to the Business Plan of 120kWh/m² Year in rdSAP (EPC Band C)

Accept that we go for the minimum SG target but that we risk fuel poverty and higher bills for tenants

Option 2 - 70kWh/m²/year in rdSAP (EPC Band B)

Stick with rdSAP but aim for a roughly 40% reduction

Option 3 - 40-50% reduction of heat demand in PHPP (ensuring it meets 120kWh/m² in rdSAP)

Ensure we are aiming to reduce the risk of fuel poverty by 40-50% and bridging the gap between gas and electricity costs. Subsequent heating designs can be more accurate

What will this mean for Capital Costs?

Option 1 - Stick to the Business Plan of 120kWh/m² Year in rdSAP (EPC Band C)

£26k per unit for Cavities and £32k per unit for Solid and Non-Trad

Option 2 - 70kWh/m²/year in rdSAP (EPC Band B)

£36k per unit for Cavities and £42k per unit for Solid and Non-Trad

Option 3 - 40-50% reduction of heat demand in PHPP (ensuring it meets 120kWh/m² in rdSAP)

£42k per property

What about Mixed Tenure Blocks?

We are limited to what we can do in Mixed Tenure Blocks without Owner participation

- Tenants in the blocks do not benefit from works
- We do not meet our compliance or statutory targets
- We cannot fully complete an area
- Increased repair costs



Proposed MEES standard for private landlords is 120kWhm² and £10k cap on measures

Double standards

A higher standard unlikely to be widely accepted by owners due to cost and lack of regulation

Proposal to consult with owners in mixed tenure blocks with two options:

- Option 1 Measures to achieve the same target as Fully Council owned blocks/houses
- Option 2 Measures to achieve the minimum 120kwh/m²/year heat demand target

This will hopefully increase owner sign up and ensure tenants in mixed tenure blocks do not miss out

Summary

- SG draft compliance targets are low and achievable but use rdSAP
- We **cannot** rely on rdSAP as an accurate measurement
- There is no silver bullet, and each block must be designed accurately
- We need accurate heat demand to design clean heating
- Whole House approach to fabric improvements
- An optional lower standard for mixed tenure blocks
- Fuel poverty a major concern but danger of potential rent poverty

Questions or Comments