# CN2030

*Housing Stock*

*Carbon Reduction Options*

*2022 to 2030*

Prepared for:
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## 1.0 Introduction

1.1 The delivery of future net zero energy systems will require radically different ways of doing things, including the use of novel technologies, such as smart grid technologies, tenants developing their awareness, knowledge and understanding that ensures they are able to comfortably interact with these technologies, collaborations and the adoption of new regulatory and governance frameworks into our existing strategies.

1.2 The climate and sustainability agenda, together with trends in technology, demographics and society, means we are facing unprecedented change.

1.3 Challenging established models and norms is difficult, and the way forward often uncertain. The scale of risk and opportunity this brings requires bold and innovative action, tempered by the fact that investment, commerciality, and outcomes need to be sustainable.

1.4 All Actions need to ensure greater value for customers, and SDC as a Landlord, not just financially but also in the development and application of useable technologies that are fit for purpose.

1.5 A key challenge going forward will be quantifying the uncertainty in future energy systems, along with the reduced timescale we have to deliver our climate change objectives.

1.6 Stroud has a rich history in championing environmental issues, and has an ambition to be carbon neutral by 2030.

1.7 Tenant behaviour change is growing in importance and we as a landlord realise that technical “hardware” is only part of the solution. Behaviour change forms a critical part of energy saving measures making more knowledge exchange essential. Offering tenants ongoing, high quality and easy to understand advice is critical. This also applies to frontline staff.

1.8 This document sets out a range of options for Stroud District Council’s (SDC) consideration and adoption for improving the energy performance of the Council’s Housing Revenue Account (HRA) properties. The options, align, and build on the existing approach set out within the Tenant Services Energy Strategy adopted in March 2017.

## 2.0 Background

2.1 In November 2018 Stroud District Council declared a climate change emergency and pledged to do everything within its power to make the Stroud district carbon neutral by the year 2030.

2.2 The 2030 Strategy and supporting Masterplan sets out how the Council intends to begin to implement that pledge to help the district adapt to future climate change that will occur due to the level of CO2 already in the atmosphere.

2.3 Following the update of the Tenant Services Energy Strategy provided at the February 2021 Housing Committee, members requested a fully costed range of options which could help to support the Councils CN 2030 strategy.

2.4 Improving the energy performance of the Council's housing stock presents a major challenge. This can only be achieved by targeting our resources on measures that delivers tangible, measurable outcomes for the Council, and our tenants. Measures must contribute to efficiency and affordability. Education has been identified as an important additional factor towards reaching our objectives.

2.5 In 2016 Stroud commissioned the development of an Energy Baseline and Scenario Modelling exercise with the objective of baselining the domestic portfolio using all available stock data to provide as accurate a representation as possible.

2.6 Stroud's Energy Strategy recognises that care needs to be taken not to re-invest in poor performing areas at the expense of all others, nor should high risk re-investment occur without due consideration, through an option appraisal. A balanced approach is therefore required when considering the needs of all stakeholders.

## 3.0 Methodology

3.1 We have undertaken a comprehensive exercise over the past 6months, in looking at the effects of past energy improvement measures undertaken, and through scenario modelling evaluated what other measures can be taken to further improve the stocks energy efficiency.

3.2 Existing programmes have been modelled to show the improvement in baseline since 2017 following adoption of the Energy Strategy, and to illustrate what improvements could be achievable going forward. A range of different scenarios were then modelled using the baseline as a reference point.

3.3 We have compared the data held within the Keystone Asset Management system, with the information held within Intelligent Energy, the module which collates the data used to produce our EPC certificates (Energy Performance Certificates).

3.4 We have looked at the characteristics of existing and proposed components to assess their existing thermal energy properties, and what anticipated improvements they could have in improving each property archatype.

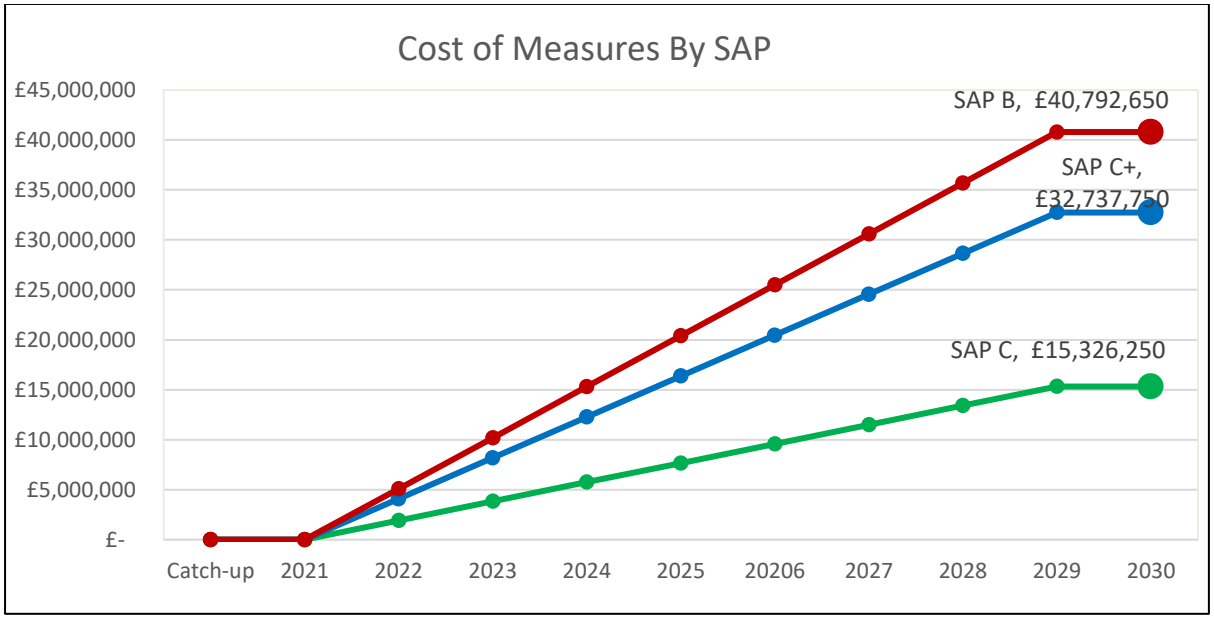
3.5 Projected costs have been compared with peer organisations undertaking similar works across the country (allowing for regional variances).

## 4.0 Options

4.1 The range of options presented have been assessed at a granular level, with each component analysed in terms of carbon, and cost. They are presented below in tabulated format, for simplicity.

4.2 It should be noted that undertaking all of the proposed measures does not ensure all properties meet the minimum suggested SAP (Standard Assessment Procedure) target. The rage indicated are an average across all stock.

**Graph 1**

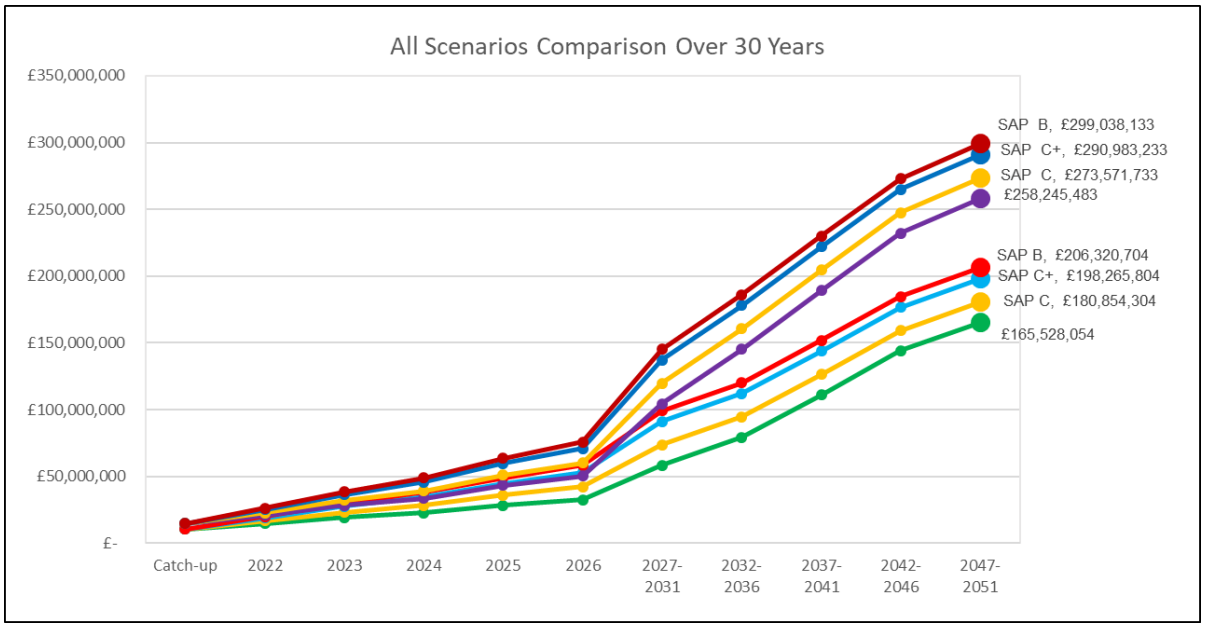



4.3 Graph 1 above indicates the cost of measures to bring properties up to the average banding across all stock.

- Sap C Minimum 69 points (£15,326,250)
- SAP C+ Minimum 75 points (£32,737,750)
- SAP B Minimum 81 points (£40,792,650)

4.4 Graph 2 shows the measures for each scenario combined with existing planned and cyclical works programmes compared to the existing baseline projection.

**Graph 2**




The graph above shows eight costed possible scenarios which are reflected in Table 1 below. We have taken line 1 to be the lowest trajectory on the graph.

**Table 1**

| Trajectory | Measure | Cost £ Million |
|---|---|---|
| | | |
| Option 1 | Existing programmes before additional measures | 165,528,054 |
| Option 2 | Undertake the existing programme combined with all of the measure required to reach SAP C | 180,854,304 |
| Option 3 | Undertake the existing programme combined with all of the measure required to reach SAP C+ | 198,265,804 |
| Option 4 | Undertake the existing programme combined with all of the measure required to reach SAP B | 206,320,704 |
| Option 5 | Undertake the existing programme combined with the replacement of all heating with a new ASHP | 258,245,483 |
| Option 6 | Undertake the existing programme combined with all of the measure required to reach SAP C, and the replacement of all heating with a new ASHP | 273,571,733 |
| Option 7 | Undertake the existing programme combined with all of the measure required to reach SAP C+, and the replacement of all heating with a new ASHP | 290,983,233 |
| Option 8 | Undertake the existing programme combined with all of the measure required to reach SAP B, and the replacement of all heating with a new ASHP | 299,038,133 |

4.5 Table 1 and Graphs 1&2 set out a range of options elementally and collectively which could be used to support the delivery of key strategic objectives.

4.6 Table 2 provides an indication of the efficiencies which could be achieved against corporate objectives as set out within the CN 2030 Strategy and the Tenant Services Energy strategy. Final measured outcomes may differ from the targets outlined as

behaviour may need to be altered post-retrofit work – especially in improving ventilation where there could be unintended moisture effects of retrofit.

**Table 2**

| SAP | Carbon Reduction | Average Increase SAP | Cost per Sap Unit | Cost CO2 Tonnes Saved (per year) | Average Tenant Savings £ |
|---|---|---|---|---|---|
| | | | | | |
| SAP C | 24.5% | 7.54 | £1,957 | £3,853 | 11.8% |
| SAP C+ | 31.4% | 9.53 | £2,336 | £4,531 | 14.0 |
| SAP B | 37.7% | 12.01 | £2,527 | £5,149 | 17.4% |

## 5.0 Findings

5.1 As a result of the work undertaken, going forward we are able to set improvement strategies based on either energy cost (SAP) or carbon reduction (CO2) so we can develop bespoke strategies to meet organisational targets, as well as regulatory requirements.

5.2 We are already investing more than £3m each year on programmes to improve thermal efficiency, and decarbonise homes. However, meeting our carbon reduction goals, and SAP targets by 2030 will require further significant investment in resources, training and development, but is achievable with a balanced approach.

5.3 We already have a range of policies and programmes to support this transition. Our approach, recognises technological uncertainty, and focuses on what we do know. Comparing the baseline information of 2017 and 2021 shows that significant progress has been made against objectives set out within the Energy and Non-Traditional Homes Strategies.

5.4 Where we have installed technology to support improvements in thermal performance of homes, we need to develop a more detailed picture of where tenants are now, in their understanding and use of those components. We need to build on the previous good work done by the Tenant Education Officer in explaining the advantages of these new types of systems.

## 6.0 Finance

6.1 Financing upgrading works is challenging and the costs and benefits need to be more visible through the establishment of a solid evidence base that can be referred to.

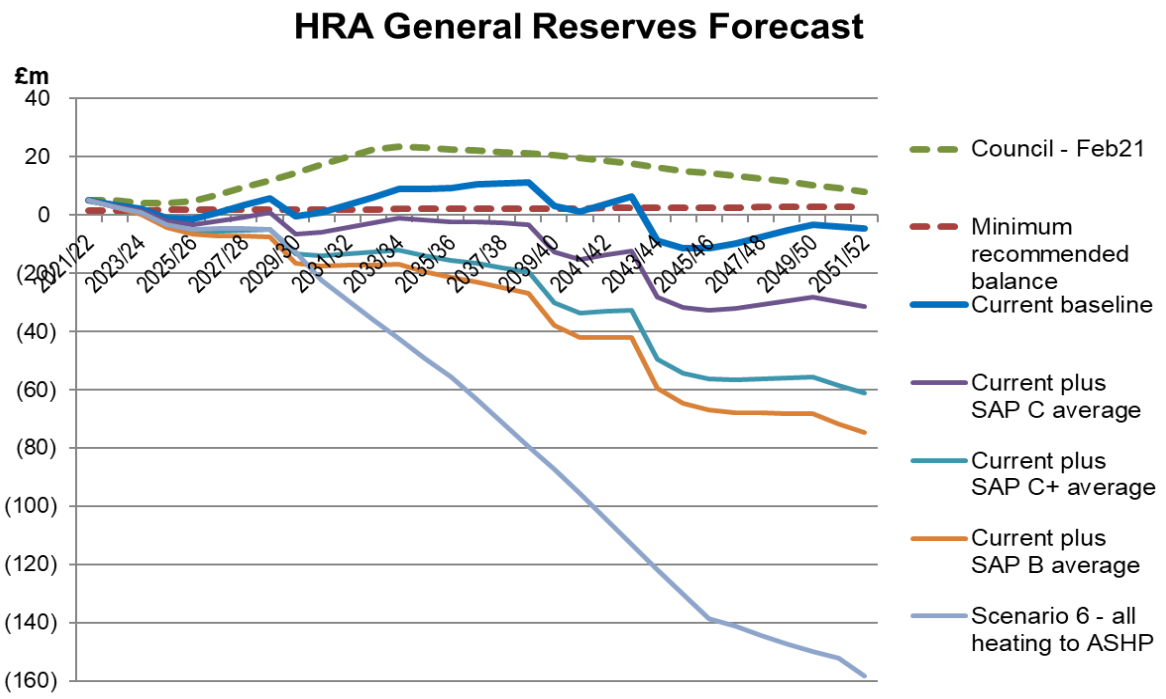
6.2 The establishment of the new energy performance baseline clearly sets out in granular detail the cost and benefit of elemental improvements.

**Table 3**

| Funding Options | Additional borrowing (over 7 years) | Annual Savings needed (indicative amount) |
|---|---|---|
| Option 1 - Current programme (baseline) | | £0.2m |
| Option 2 - Current plus SAP C average | £18m | £0.9m |
| Option 3 - Current plus SAP C+ average | £38m | £1.6m |
| Option 4 - Current plus SAP B average | £47m | £1.9m |
| Option 5 - Scenario 5 - all heating to ASHP | £51m* | £4.0m |
| * Costs continue after year 7, but additional borrowing stops | | |

6.3 Table 3 sets out the corresponding borrowing and efficiencies which would need to be made to bring back the final 30 year position to the minimum recommended balances. For options 6-8 the options for each SAP measure would need to be added to Option 5 e.g. Option 5 plus Option 2 would equal £4.9m of savings being required.

**Graph 3**



**Graph shows estimated future reserves for each of the options.**

6.4 The updated 'current baseline' shows higher cost than were previously included and already pushes the HRA into a negative balance as early as 2024/25.

6.5 All scenarios have assumed borrowing is for 7 years only, with repayments over 30 years (annuity basis – starting off smaller and increasing year on year). Other borrowing options are available.

6.6 Interest has been included at 3%. However, it should be noted it is currently lower than this, but could be higher than this by the time we take the borrowing due to uncertainty in the current economic climate ( the 'reduced' rate when self-financing loans were taken out was 3.5%).

6.7 Some of the options that could be considered to support the funding of these works include but are not limited to:

- Reduce capital spend (reduce capital replacements eg kitchens/bathrooms)
- Extending component life cycle (consideration would need to be given to Decent Homes 2)
- Charge higher rents on new build/relet
- Charge full service charges to all general needs tenants eg grounds maintenance charges

## 7.0 Conclusion

7.1 Energy reduction, climate change concerns, tenant warmth, and fuel poverty all form part of the challenges we face in delivering our CN 2030, and Energy Strategy objectives. Action and investment to address each of these will have implications for the others, as they are by no means identical and can have competing demands for investment of both capital (in the buildings) and revenue (in working with tenants to ensure they gain most from the capital investment works).

7.2 There are important and difficult judgements to be made about the value of costly capital investment in very low efficiency but difficult to insulate properties. Generally, an effectively applied Active Asset Management Strategy would consider disposal where there was no return on capital investment. However, as a Social Housing Landlord, Stroud does not require strict financial "Return on Investment" although it is important to consider value for money.

7.3 Disposal of stock which does not meet the requirements of thermal comfort range proposal set out in the Clean Growth Strategy for a social housing energy performance standard of EPC 'C' by 2030, except in circumstances where disposal was expressly linked to redevelopment would require separate consideration.

7.4 Replacing items with thermally efficient versions adds cost, both in initial outlay and ongoing maintenance. The Council will also need to bring in resources with specific

technical expertise outside their current capabilities to manage the upgraded assets long term, and or upskill existing officers and technicians to perform these tasks.

7.5 The target to improve homes by 2030 will require a holistic and collaborative approach. While the end result is desirable, it's the hurdles to getting there, starting with costs and then the process, that could be stumbling blocks to adopting energy efficiency and green heating measures across all stock.