Open Agenda

Environment Scrutiny Commission

Monday 29 November 2021
7.00 pm
Ground Floor Meeting Room G02A - 160 Tooley Street, London SE1 2QH

Supplemental Agenda One

List of Contents

Contact Julie Timbrell on 020 7525 0514 or email: julie.timbrell@southwark.gov.uk

Date: 26 November 2021

List of Contents

Item No.	Title	Page No.

Officer briefing on reasons for choosing the three pilot heat pump networks

Council officers were aware of the Renewable Heat Incentive (RHI) funding scheme and decided to review whether heat pump installations could be undertaken to deliver significant carbon savings in a financially neutral way. Air source heat pumps at significant scale can face noise issues and more conventional (closed loop) ground source systems require a lot of bore holes and therefore a lot of ground space. The London South Bank University had recently completed a very successful open loop ground source heat pump project, which draws water from the London aquifer. This approach is more space efficient but requires the right geology. Any ground source system carries the overhead cost of bringing drilling equipment to site and therefore works better at scale where the overhead cost is spread between a greater number of properties. With this background, officers reviewed the borough's heat networks to identify sites with:

- high heat load / lots of homes connected
- a certain amount of open space where bore holes could be sited
- not in an area anticipated for SELCHP network expansion
- not undergoing other works at the time

Eight sites were identified and site visits were undertaken to review plant room space and access and to review the space available for siting bore holes. A desk based review or geological conditions was also undertaken at this stage and based upon the visits and initial geology review, the list was whittled down to five sites – Brandon, Consort, Newington, Sydenham Hill and Wyndham. The council then commissioned one of its long-term technical consultant partners (Calford Seaden) to undertake a detailed feasibility study. This process looked deeper into the geological conditions of the site, the UKPN power availability, the space requirements and project costs. This process reduced the list down to just the three sites that were found to be suitable and therefore taken forward to installation. The other sites considered earlier in the process have not been determined as long-term unsuitable for heat pumps, and could still be brought forward for heat pump projects in future when economic and technical factors change.

Agenda Item 5

Environment Commission Briefing

Officers have been asked to provide a brief report for members of the Environment Scrutiny Commission ahead of their roundtable with stakeholders. This briefing covers:

- The council's strategy to decarbonise homes including potential funding streams.
- Improving energy and environmental standards in new developments.
- The council's strategy to increase renewable energy generation including links to heat and energy networks.

Decarbonising Homes

Southwark's approach is set out in the council's strategy and action plan which it adopted this summer. Officers are currently working through the actions in the plan to develop a programme to take this work forward. The strategy sets out the emissions pathway that the borough has to take to reach net zero. The section below summarises details from the action plan on housing and our priorities for green homes.

Within the borough 42% of all housing is social housing. The council is proud to be the largest landlord in London with over 52,500 properties and 14,500 leaseholders with a further 17,000 homes owned by housing associations.

Southwark's emissions from buildings have been modelled to an ambitious pathway of decarbonisation. This includes measures relating to building fabric, heating systems and new building development across the borough's domestic and non-domestic buildings. To deliver this, there is an urgent need to move away from gas boilers as the primary source of heating in the borough.

The council's objectives around sustainable new build developments and low-carbon technologies relate closely to these emissions. To achieve the overall reductions needed for this model, it requires:

- As many homes as possible within the borough are connected to the SELCHP network or an equivalent district heating network. This includes the 17,000 or so homes currently on district heating networks, plus around 50% of other homes. The remaining are served by heat pump systems or other electrified heating networks by 2030. Any SELCHP expansion will require detailed feasibility, including a full legal assessment of increased connection to homes.

- Improved building fabric performance to increase energy efficiency to reduce energy demand. This can be achieved through ensuring all single-glazed windows, all lofts without insulation and all unfilled cavities and solid walls are insulated.

The emissions modelling that the council has undertaken is supported by a decline in emissions because of the discontinued use of fossil fuel heating and cooling systems. As fuel consumption switches from gas to electricity, the incurred grid emissions from

additional heat pumps (across new build, retrofit and SELCHP) are also included. There are some residual emissions which are the result of the required use of the national grid to power the borough's electrified heating systems.

Work is already underway to deliver this greener buildings and homes. The themes and goals below show what we need to achieve to reach our vision together with the immediate actions that we need to take. Alongside this work, we will continue to develop new actions to ensure we stay on track to reach our goals and make the carbon saving.

Theme	**Goal**	**Progress**	**Immediate Actions**
A. Planning regulations that centre carbon neutrality	1. Policy is used to improve energy efficiency standards in existing buildings during redevelopment or retrofit when planning is required	Low carbon zone in Peckham, funded by Mayoral investment, gave support, funding and energy efficient improvements to local buildings. New carbon price of £95 per tonne for non-residential and residential development has been implemented and will be reviewed.	Explore options for energy performance standards in the early review of the New Southwark Plan
			Review planning policy to support the retrofitting of heritage buildings to reduce carbon emissions.
			Embed building technologies such as green roofs, facades and cool roofs to reduce carbon emissions and improve biodiversity and local air quality.
	2. Policy is used to drive higher energy efficiency standards in new developments		Explore options in the early review of the New Southwark Plan for encouraging the use of recycled materials in new development as a means of reducing the embodied carbon of new builds.
			Explore options for standardised measuring frameworks to ensure compliance with planning policies for improved energy efficiency in all new build properties.
			Approve the carbon offset fund within Southwark in Autumn 2021, including governance structure and approach to prioritising spend.
B. Buildings minimise their carbon	1. Guidance and support are made available to improve	Currently working with BEIS and Energy Hubs to secure funding to	Highlight best practice and leading examples of decarbonised buildings.

emissions and maximise their energy efficiency.	energy efficiency across the borough	improve some of the least energy efficient properties in the borough.	Publicise opportunities associated with improving energy efficiency standards and provide communications to owner-occupied homes.
			Target energy saving advice and support households experiencing fuel poverty.
	2. Residents and businesses improve the energy efficiency of existing buildings		Raise the minimum energy efficiency standards (MEES) from the current D up to a C for private rented properties and improve its enforcement to capture non-compliance, providing support to tenants and landlords where needed.
C. Low-carbon technologies and practices are encouraged within the borough's buildings.	1. Maximise the use of low-carbon technologies for new and existing homes	Work is already underway to expand the SELCHP network. Air source heat pumps will be installed in four libraries throughout 2021, which will replace the existing gas heating systems.	Identify households not currently serviced by district heating that can be switched onto SELCHP or equivalent district heat system. Alongside this Identify areas of the borough that cannot be served by heat networks and must look at communal ASHP, CHP or secondary source heat pumps.
			Provide specific policy and guidance to households and businesses relating to the transition onto heat pump technology and other low carbon technology.
			Develop an advocacy campaign calling on national government to establish a Green Homes Investment Fund and request changes in taxation (e,g, VAT) to make changes more affordable
D. Decarbonise operational council buildings.	1. Lead by example by making all operational buildings carbon neutral	All council buildings now run on 100% renewable electricity. We are moving to green gas for operations, and transition is underway to move communal areas in housing and schools over by 2022.	Carry out energy audits on the largest energy consuming properties in the council's portfolio to tailor support and improvements.
			Ensure all council buildings are moved to 100% renewable energy tariffs.
	2. Low-carbon technologies and practices in council-owned buildings		Start the roll out and installation of heat pumps within council-owned/affiliated properties

	3. Reducing energy demand and cutting energy waste in council-owned buildings	Street lighting team have designed and installed over 4000 LED lanterns across the borough. All future lighting will be LED. Our modern lift motors and controllers are now low energy producers that improve efficiency. The council has begun a process of consolidating operation buildings, substantially reducing energy consumption.	Replace energy inefficient appliances and lighting in council operational estate.
E. Decarbonise council housing.	1. Raise the energy efficiency of social housing with an EPC rating of D or lower	Improvements already underway including replacing gas burning boilers on the Wyndham, Consort and Newington Estates with modern water source heat pumps. The Tustin Estate has seen new insulated roofs and double-glazed windows installed to the three tower blocks, significantly improving their energy efficiency. Ann Moss Way development is an ongoing pilot project to investigate whether carbon neutral council homes can be developed to Passivhaus standard and the cost of doing so.	Prioritise energy efficiency improvements and maximise funding for the worst-performing social housing properties, i.e., those with EPC rating D or lower.
	2. Replacing gas with low-carbon technologies		Increase the number of council-owned homes to the extended SELCHP network where feasible. Continue to roll out of heat pumps within council housing stock and replacement of individual gas boilers. Work with residents to develop decarbonisation plans for every estate in the borough.

Beyond the council's own actions, there must also be a focus on what other partners and stakeholders can action themselves, from a central government to resident level. Central government need to significantly increase the level of funding available for renewable heat technology and for raising the thermal efficacy of existing buildings. Businesses can identify and maximise opportunities to install green roofs, facades and cool roofs on buildings, while residents can identify opportunities for renewable heat in properties. Both groups can also continue to engage with the council on energy efficiency standards and other behaviour change initiatives.

Sources of Funding

As the council's strategy highlights, the cost of work that needs to be delivered to make buildings in the borough carbon neutral is considerable. There is a significant capital funding gap for the required level of retrofit and new build to progress towards carbon neutral. In total, we estimate that £2.6bn of capital expenditure is required. Funding required would need to be a combination of the public sector, private sector and residents.

We estimate the required capital expenditure is:

- £603m relates to domestic insulation.
- £632m relates to domestic heating systems being added to the SELCHP network.
- A further £617m relates to domestic heating systems being updated with heat pumps.
- £710m relates to heat pumps in non-domestic buildings.

Additional revenue funding would also be required, to support the delivery of such a substantial change in how we build and heat our homes. These costs are not included above, but would help ensure enforcement of new building standards, alongside the promotion and awareness of a move away from domestic and non-domestic boilers.

There will also need to be a substantial upskilling of technical knowledge, in the building and heating industries, to allow this shift to happen. Investment in green jobs through a green new deal is therefore essential to ensure that Southwark has the skills and experience to deliver this change.

There are some sources of funding available and others which are due to come on-stream. But these fall short of what is required.

In addition to money which the council and other landlords will need to spend on their housing stock, Government will also need to find ways to retrofit private homes if boroughs like Southwark are to be carbon neutral.

Current and future funding includes the following **energy efficiency funds:**

- Energy Company Obligation (ECO3) – this covers a range of energy efficiency measures, mainly insulation. It is accessed through installers normally and has been applied to a few schemes over the last couple of years.

- Green Homes Grant (GHG) – Closed March 2021. This was for private homeowners so not applicable to LBS housing.

- GHG Local Authority Delivery (GHG LAD) – We applied for LAD2 and our proposal was accepted to carry out window replacements in tenanted street properties. The GLA, as lead member of the consortium, has just pulled out we are awaiting an update on further developments.

- Social Housing Decarbonisation Fund (SHDF) – we applied recently for our Wyndham and Comber QHIP project and should hear back by the end of December. Further rounds of SHDF funding are expected next year and the year after. This is a significant funding opportunity

Current and future funding includes the following **low carbon heating and heat network related funds:**

- Renewable Heat Incentive (RHI) – We have accessed this for our Water Source Heat Pumps projects at Consort, Newington & Wyndham

- Heat Networks Investment Programme (HNIP) – We supported a Veolia application for this for the SELCHP extension. Offer made, grant negotiation is ongoing.

- Green Heat Network Fund Transition Scheme (GHNF TS) – We supported a Veolia application recently as a backup for commercialisation funding source for SELCHP extension. Awaiting decision.

- Green Heat Network Fund (GHNF) – main scheme opens to applications from April 2022. Potential to apply for future SELCHP expansion and/or further heat pumps to serve our heat networks. Significant opportunity.

- Heat Network Efficiency Scheme Demonstrator (HNES) – We submitted applications for 5 sites last week and should hear back by end of November. We are hoping there will be a bigger ‘main scheme’ in future years but this is still to be confirmed.

- Newly announced £5,000 heat pump grant for private homeowners from April 2022 – details to be confirmed.

Energy Standards in New Developments

The New Southwark Plan (NSP) has been prepared to meet the statutory national target of reaching net carbon zero by 2050. It sets out targets for operational carbon reduction onsite for major development to 100% for residential and 40% non-residential. This goes beyond the onsite performance requirements in the London Plan (2021).

The NSP now highlights where climate change mitigation and adaptation are considered in the requirements for new development. In terms of climate change mitigation, amendments have been made to P68 Sustainability Standards to the heating and cooling hierarchy, and to P69 Energy to clarify how carbon reduction should be met on site. Both of these policies will be revisited in the NSP Early Review to secure higher carbon reduction in new development through a fabric first approach and more detailed requirements for new development. In terms of climate change adaptation, main modifications have been included to P59 Biodiversity to increase biodiversity in the borough.

In light of the council's climate emergency declaration, an Early Review of the Plan's policies has already commenced, prior to its February 2022 adoption, to address how new development must do even more to assist in achieving a 2030 net zero carbon target while delivering our target for new homes and jobs.

The objective of the Early Review will be to propose new policies and amend existing policies in the New Southwark Plan so that new development can go even further to deliver climate change mitigation and adaptation. The Planning division is working with the council's Climate Change Team to ensure that it delivers the Climate Change Strategy, as the Early Review task is also defined as an 'Action-Point' in the council's adopted Climate Change Strategy (2021). We will also explore the creation of targets for embodied carbon in construction to meet net zero targets in new developments in the NSP Early Review.

In terms of development management, planning officers negotiate improvements to the design of proposals through the planning application process to secure higher carbon reduction onsite, improved building and energy efficiency performance, increased renewable energy delivery onsite, and climate change adaptation and environmental improvements, such as flood risk, overheating, air quality, biodiversity and green infrastructure.

The Planning Division consults on planning policy documents and planning applications in line with the draft Statement of Community Involvement.

Renewable Energy Generation

The council's climate strategy outlines our approach to generating energy from renewable source to reduce our dependency on fossil fuels.

The New Southwark Plan Policy P69 Energy requires that all development minimise carbon emissions on site through energy efficient design and construction, low carbon energy supply and on-site renewable energy generation and storage. It sets out an energy hierarchy which encourages the use increase use of renewable energy, specifically PV panels on new development.

P69 Energy also sets out a requirement for new development of a certain size to connect to or futureproof a connection to a current or planned District Heat Network such as the SELCHP District Heat Network for schemes in and the Old Kent Road.

In addition:

- Major development should be carbon neutral (100%).
- Major non-residential development should meet this by aiming to achieve at least 40% carbon reduction onsite against 2013 Building Regulations Part L Standard.
- Major residential development should aim to meet 100% carbon reduction onsite against 2013 Building Regulations Part L Standard.
- For any shortfall not achieved onsite, applicants should pay a financial contribution per ton for carbon offsetting offsite of any carbon not reduced onsite.
- Proposals of less than 10 units and equivalent floorspace for non-residential are not subject to these requirements; we aim to address carbon reduction onsite for small sites in our early review of New Southwark Plan.

We have carried out emissions modelling looks at emissions from electricity consumption and local PV installations. To be carbon neutral we have considered measures such as the installation of local PV and progress towards a nationally decarbonised grid. Also considered within this projection is the improved energy efficiency of lighting and appliances, as well as a transition to electric cooking systems.

These modelled emissions relate to the local uptake of renewable energy as well as reducing energy wastage, both of which are key objectives for the borough and relate closely to action themes.

To deliver the energy savings that we require to meet our 2030 target we need:

- A rapid de-carbonisation of the national grid by 2030.
- Solar PV installations are maximised. We estimate 23,000 homes are retrofitted with 4kW systems, along with installations on non-domestic buildings equivalent to around 20% of overall floor-space.
- All gas hobs and ovens are replaced by electric equivalents, all non-LED lamps are assumed to be replaced by LED equivalents, and the average annual household consumption from appliances falls around 30% against a 2016 baseline.

We estimate the capital cost for this is £238m, however this relates to physical changes within the borough around renewable energy generation and improved energy efficiency. It does not include the broader cost of increasing the share of renewables used to power the national grid, nor does it include increased revenue costs at a local level for necessary research and feasibility, or behaviour change initiatives.

In addition to capital costs, we would expect revenue costs including research and feasibility studies and providing support for businesses and residents to access funding to carry out works.

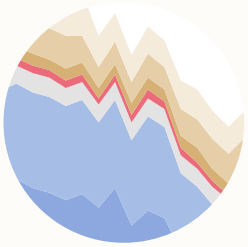
Our priority actions, as set out in the council's strategy and action plan are:

Theme	**Goal**	**Progress**	**Immediate Actions**
A. Improve renewable energy infrastructure.	1. Maximise the opportunity for renewable energy installation and storage	Initial feasibility work completed into potential for solar PV on council housing.	Review renewable potential across the borough and identify barriers and enablers through a renewable energy feasibility study.
	2. Full access to renewable energy from the nation grid		Work with the Mayor of London to lobby government on the transition to a zero-carbon national grid.
B. Move towards green energy for businesses, residents and other organisations	1. Increase proportion of residents and organisations using renewable energy	Initial feasibility work completed into community energy projects.	Promote resources which are available for residents, businesses, and other organisations which make options for grants, loans or subsidies to install renewable technology clear.
	2. Businesses use economies of scale to maximise the uptake of renewable energy		Business Forum to consider options to coordinate and aggregate investment in energy infrastructure.
	3. Installations of renewables are prioritised and encouraged by Council policy		Explore increased support of renewables within early review of New Southwark Plan.
C. Tackle fuel poverty by promoting and providing accessible energy alternatives.	1. Specialist support is provided to lower-income and fuel-poor households	Southwark and Lewisham councils are working together to provide home visits to give guidance on reducing energy and saving carbon, to help address fuel poverty.	Provide direct guidance and support to fuel poor and lower-income households to leverage funding.
			Provide guidance and support to fuel-poor and lower-income households to switch to renewable energy providers (i.e., London Power).

	2. Promote community renewable technology projects		Explore the feasibility of community renewable technology projects, such as through the co-operative ownership model, to understand if these can help tackle issues associated with fuel poverty.
D. Reduce energy demand and cut energy waste.	1. Shift to low carbon and energy efficient appliances	The council delivered a solid fuel awareness raising project last year to build up to the new Environment Act requirements.	Provide guidance and support to residents and businesses on low carbon energy efficiency.
	2. Increase use of smart controls in homes and businesses		Work with energy providers to provide smart controls for gas and electricity usage across Southwark's households.
E. Boosting renewable energy.	1. Solar PV capacity is maximised in the borough	Completed a "Heat mapping and master planning" exercise which included development of a ground source heat pump map showing potential for this technology around the borough. This information is available for developers / private sector as well as the council.	Develop a strategy to maximise the installation of solar panels on council buildings.
			Progress the feasibility of a borough solar panel park.
	2. Council operations drive the development of renewables		Increase the requirements for renewables in the Local Plan to scale with the projected increased demand for electricity.

The council is trying to link additional heat loads to the SELCHP network. This is a low carbon heat network. Most of our existing heat networks are still gas boiler led, so at present we are not working to increase the load of these networks. Longer term, if we replace gas boilers with low carbon alternatives on local heat networks, we could explore expanding these networks to increase the homes that draw heat from them.

Officers in our new homes and planning teams are working to get both Council and non-council new developments to connect to both the existing SELCHP network and the proposed extended network. This has been successful and we have a number of new developments planning to connect to the SELCHP extension when it is built. The existing SELCHP network in the Bermondsey area is also actively recruiting new connections – both Council (e.g. the new and expanding buildings on the Abbeyfield estate, and some new builds at Rouel Road) and non-Council (Grosvenor are strongly considering it for a big development, plus there is an academy looking at connecting).



Net Zero Whole Life Carbon Roadmap

Summary for Policy-Makers

November 2021

Summary for Policy-Makers

UKGBC, 2021

The Summary for Policy-Makers presents the key findings and policy recommendations for the UK Government – and devolved governments and stakeholders – from the Net Zero Whole Life Carbon (WLC) Roadmap for the UK Built Environment, as developed by the project team. The policies are intended to enable the UK to achieve its 2050 net zero target.

The WLC Roadmap aims to build a common vision and agreed actions for achieving net zero carbon in the construction, operation, demolition and reuse of buildings and infrastructure in the UK. It does this through establishing a carbon budget and trajectory for the UK Built Environment sector, as well as setting out the key policies and actions for Central Government, Local Authorities, and relevant stakeholders. While the policy recommendations were developed independently by the project team, many of the recommendations have been aligned with industry initiatives such as Construct Zero from the Construction Leadership Council, the UK's Sixth Carbon Budget, and the Construction Industry Council's Climate Action Plan. In some areas the recommendations build on existing Government policy initiatives, providing further proposals and timelines.

While the intended audience of this document is the UK Government, the Devolved Governments may also find the recommendations applicable for their net zero journeys. The Devolved Governments – and local authorities – are critical to reducing UK emissions and will also require strong climate policies on the net zero pathway to 2050.

It is acknowledged that in many cases, the Devolved Governments have already implemented ambitious policies targeting the built environment, making tangible progress on some of the recommendations set out below.

Executive Summary – Key Recommendations

1 Buildings: Operational Carbon

1A) EXISTING HOMES

- Improving the energy efficiency of our existing homes is a fundamental element of the UK's Net Zero 2050 pathway, linked to a transition from fossil fuel heating to zero carbon heating technologies, with a significant role for heat-pumps.
- There is increasing consensus that although there is a clear role for hydrogen within sectors such as industry and transport, there is limited rationale and significant uncertainty around the use of hydrogen to heat buildings (other than in areas surrounding industrial clusters).
- There can therefore be no further delay in embarking on a national programme of home retrofit, transforming UK housing to make it efficient, warm and cheaper to heat whilst phasing out fossil fuel heating.
- The government should publish a National Retrofit Strategy by 2022, setting out a clear national homes upgrade programme to 2040, fully coordinated with local government, industry, and relevant stakeholders via a Central Retrofit Agency, deploying digital building renovations plans/passports to accurately describe Net Zero pathway(s).
- Introduce mandatory minimum EPC ratings of C, for owner-occupied homes at the point of sale by 2028.
- Establish a clear trajectory for improving the Minimum Energy Efficiency Standard (MEES) for the domestic rented sector to at least EPC C by 2028.
- Reform EPCs to establish in-use energy performance as the rating metric (as opposed to cost), reducing the performance gap and also disincentivising gas usage.
- Introduce and clearly signpost a cut-off date of 2030 for the sales of gas and oil boilers.
- Introduce variable stamp duty rates adjusted in line with the energy performance of a property.
- Remove VAT on energy efficiency retrofit works (i.e. 0% VAT) where energy performance improvement targets are met (to incentivise energy efficiency improvements whilst retaining VAT revenue from general improvement works).
- Introduce direct government grants for low income households.

1B) EXISTING NON-DOMESTIC BUILDINGS

- Introduce in-use energy performance-based rating schemes for non-domestic buildings in a phased approach between 2022-2029, including mandatory energy disclosure, associated minimum performance standards and fiscal incentives.
- Retain proposals for use of MEES in the non-domestic sector in the short to medium term. Review the need for MEES as a policy lever as energy performance rating schemes become established.
- Introduce and clearly signpost a cut-off date of 2030 for the sales of gas and oil boilers.
- Remove VAT on energy efficiency retrofit works (i.e. 0% VAT) where energy performance improvement targets are met (to incentivise energy efficiency improvements whilst retaining VAT revenue from general works).

1C) NEW BUILDINGS

The Future Homes Standard (FHS) and Future Buildings Standard (FBS), and associated updates to Part L of the buildings regulations for new buildings to include:

2025

- Energy Usage Intensity (EUI) target (kWh/m^2/yr) compliance approach in place of notional building methodology for new office buildings >1,000m^2 and new homes (35-40 kWh/m^2/year for new homes).
- Thermal Energy (Space Heating) Demand limits (15 kWh/m^2/year for new homes).
- Low carbon heating for all new buildings (no fossil fuel combustion).
- Measures to limit peak demand and enable load shifting (with limits on peak demand from 2030).
- Minimum standards for currently unregulated key appliances with high influence on annual & peak demand, i.e. cooker hobs & showers.

2027-2029

- Interim amendments in 2027 and 2029 to introduce EUI target compliance approach for other sectors, aligned with mandatory energy disclosure timetable.
- Align the introduction of the EUI compliance approach per sector with the timings of confirmed mandatory energy disclosure (with timetable to be confirmed ahead of 2025).

2 Buildings: Embodied Carbon

- Use planning reforms to prioritise reuse of existing buildings and assets, and disincentivise demolition and new build.
- Introduce the regulation of embodied carbon for new buildings and major refurbishments:
  - Mandatory measurement and reporting of Whole Life Carbon by 2023 for large buildings (>1,000m2) and residential developments (≥10 dwellings).
  - Minimum standards (limits) for Upfront Embodied Carbon by 2025 for more mature sectors (i.e. those with sufficient asset level benchmark data), with associated fiscal incentives and penalties.
  - Minimum standards (limits) for Upfront Embodied Carbon by 2027 in all sectors.
  - Final phase to introduce minimum standards for all size buildings (with a suitable minimum threshold) in all sectors by 2030.
- Allow local planning authorities to set more ambitious limits on upfront carbon for new development than those introduced via Building Regulations.
- Remove VAT on refurbishment works (i.e. 0% VAT) which retain building structural frame and achieve energy performance targets to incentivise re-use over demolition.

3 Infrastructure & Industry

- Introduce the role of a National Infrastructure Integrator to enable holistic decision-making across UK infrastructure planning with full visibility of all carbon impacts.
- Demonstrate leadership within public procurement via Infrastructure and Projects Authority (IPA) commitment to the CSIC Carbon Reduction Code (which includes integrating carbon reduction targets and reporting commitments explicitly in all procurement documents from 2021).
- Work with the cement sector to identify feasible options for CCS deployment and transportation at dispersed sites.
- Support the deployment of hydrogen within industry to aid decarbonisation (i.e. for high temperature processes), and adopt a transparent and robust science-based approach to the options available for hydrogen production.
- Ensure carbon pricing policies such as UK ETS continue to drive deep industrial decarbonisation over the long-term whilst maintaining competitiveness and minimising carbon leakage. Considerations must include links with the EU ETS, the future of free allowances, and an equitable supply adjustment mechanism which keeps pace with the EU Carbon Border Adjustment Mechanism (CBAM) and, once tested, may enable the phase-out of free allowances.
- Set the UK Emissions Trading Scheme (UK ETS) cap based on the pathway to the UK Net Zero target and consider expanding the scheme to include increased coverage of materials and sectors.
- Incorporate carbon accounting into National Planning Policy Frameworks to ensure net-zero is consistently included in all areas of national planning policy.

Key Recommendations for Policy-Makers

1 Buildings: Operational Carbon

1A) EXISTING HOMES

Approximately 50% of emissions from the UK built environment relates to our existing housing stock, predominantly through fossil fuel boilers. Achieving net zero will not be possible without fundamental and urgent improvements to heating demands and heating technologies within our existing homes.

We must transition away from the current dependence on fossil fuel heating to zero carbon heating technologies, with a significant role for heat-pump technologies. There is increasing consensus that although there is a clear role for hydrogen within sectors such as industry and transport, there is limited rationale and significant uncertainty for the use of hydrogen to heat buildings (other than in areas surrounding industrial clusters).

There can therefore be no further delay in embarking on a national programme of home retrofit, transforming UK housing to make it efficient, warm, and cheaper to heat, whilst transitioning away from fossil fuel heating. It is critical that Government therefore introduce and support a large-scale, transformative domestic retrofit strategy and programme that is fully coordinated with local authorities, industry, consumers and other relevant stakeholders, and does not disadvantage lower-income households.

The Construction Leadership Council (CLC) National Retrofit Strategy (NRS) sets out a pathway for how this can be achieved, with initial focus on capacity building, supply chain readiness, skills and training, building toward an accelerated deployment of fabric energy efficiency improvements and heat pump installations from the late 2020s to the mid-2030s. The strategy plans for 97% of UK homes to undergo energy efficiency retrofit by 2040.

Key Policy Recommendations for Government

Adopt a National Retrofit Strategy by 2022, setting out a clear national homes upgrade programme, fully coordinated with local government, industry, and relevant stakeholders:

Strategy & Engagement

- Establish a Central Retrofit Agency – to coordinate policy-makers, local authorities, housing associations, community groups, local advocates, green finance and funding experts, industry bodies and regulators, private sector partners, and existing and future retrofit customers – to fund projects, track progress, share learnings, promote innovation, and broker partnerships.
- Develop a comprehensive engagement plan to ensure all households are aware of the funding and the benefits of taking action early.

Policy

- A clear trajectory and regulatory framework to introduce mandatory minimum EPC rating of C (or equivalent under updated EPC methodology), for owner-occupied homes at the point of sale (with suitable caveats e.g. historic building considerations) by 2028.
- A clear trajectory for improving the Minimum Energy Efficiency Standard (MEES) for the domestic rented sector to at least EPC C (or equivalent under updated EPC methodology) by 2028.
- Introduce and clearly signpost a cut-off date of 2030 for sales of gas and oil boilers.

Fiscal incentives

- Variable stamp duty rates adjusted in line with the energy performance of a property. House buyers would receive a reduced rate if a property is above a certain energy efficiency rating, and an increased rate for less efficient properties, designed to be fiscally neutral.
- Remove VAT on refurbishment work (i.e. 0% VAT) where energy performance improvement targets are met (to incentivise energy efficiency improvements whilst retaining VAT revenue from general improvement works).
- Council tax reform considering variable rates / rebates dependant on energy performance.

- Direct government grants for low-income households to support both energy efficiency improvements and the installation of low carbon heating.
- Incentivise banks and lenders to offer low interest mortgage extensions and loans for retrofit for landlords and homeowners, where energy performance improvement targets are met.
- Adjust the gas and electricity tax regime (which currently strongly favours gas) for domestic customers, to incentivise the shift to heat-pump technology, whilst mitigating risks to those in fuel poverty.

Enablers

- Reform EPCs to establish in-use energy performance as the rating metric (as opposed to cost), reducing the performance gap and also disincentivising gas usage, and enabling EPC ratings to be used as a meaningful regulatory driver in reducing emissions, by 2023.
- Accelerate SMETERS project working towards incorporation of actual measured energy data into the EPC methodology.
- Support the development of digital building renovation plans or 'passports' (in conjunction with industry) that inform evidence-based, retrofit pathways for existing building stock varieties and are held within a central property database.
- Support the development of the right market framework to enable financial incentives for individual consumers to trade energy flexibly and improve the route to market for pricing solutions such as flexible tariffs (e.g. Time of Use (ToU)).

Skills & Business

- Create a national retrofit training and skills strategy, scaling up rapidly to meet emerging demand, working with trade associations within the home repair, maintenance and improvements (RMI) market, local skills partnerships, and informed by the Government's Green Jobs Taskforce and the CITB work on Building Skills for Net Zero.
- High profile promotion throughout the country with communications programme to inspire and recruit, targeting school leavers, those reskilling for career change in declining sectors and existing construction workers in need of upskilling.
- Leverage public procurement to build demand for skills and supply chains by providing a guaranteed pipeline to enable the transition away from traditional approaches and rapid expansion of market delivery capability. Incentivise and support firms to take on new apprentices.
- Update apprenticeship and training standards to align with the required retrofit delivery programme, optimising digital skills.

1B) EXISTING NON-DOMESTIC BUILDINGS

Non-domestic building stock currently represents approximately 20% of Built Environment carbon emissions. Significant improvements in the pace of energy efficiency deployment are required as progress in recent years has been slow, and a shift in approach towards mandatory energy disclosure and performance-based metrics is required to galvanise markets. A significant proportion of emissions are from heating, predominantly via fossil fuel heating systems, and therefore enabling a shift to low carbon heating systems is also critical.

Key Policy Recommendations for Government

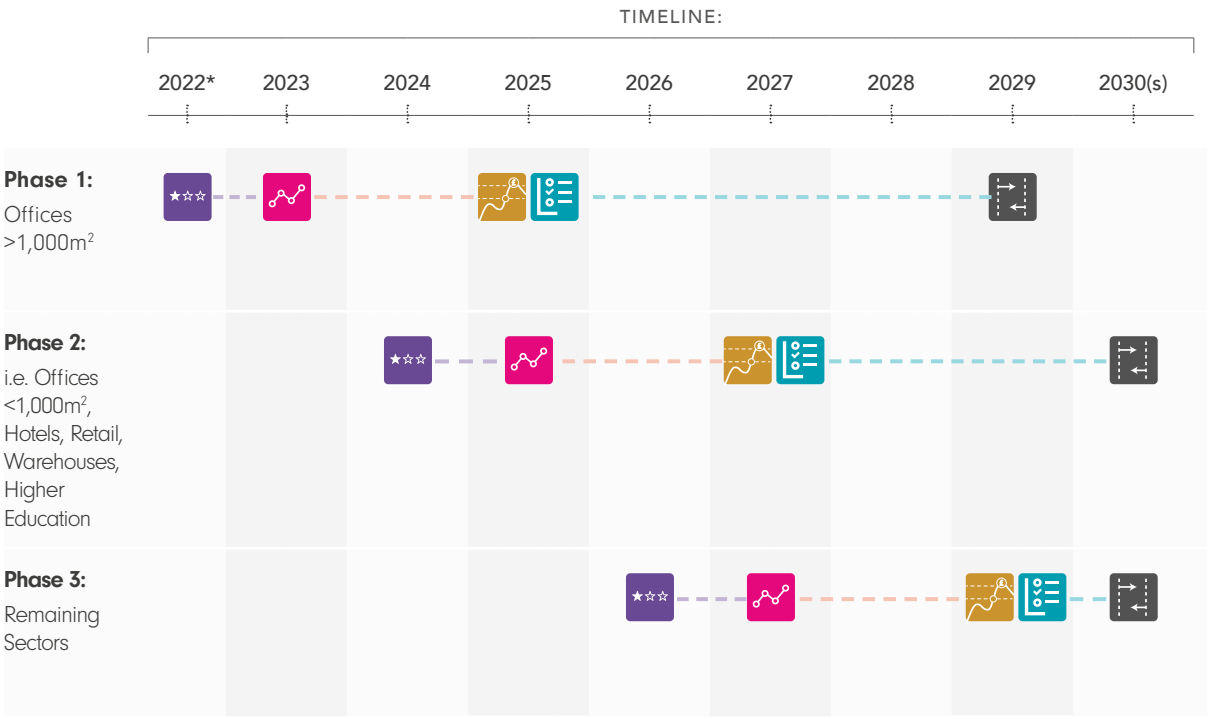
Energy Performance Disclosure

Introduce performance-based rating schemes for existing non-domestic buildings via a phased approach:

- Introduce the planned **performance-based rating system** for **large office buildings (>1,000m²)** by May 2022, including **mandatory energy performance disclosure.**
- Introduce **minimum standards** and **fiscal incentives** for **large office buildings** by **2025**, including **separate minimum standards for new buildings** (with suitable transitional arrangements).
- Fiscal incentives could take the form of penalties or discounts linked to existing or new taxation mechanisms.
- Introduce performance-based rating systems in **other non-domestic sectors (and small office buildings)** by **2025**, followed by minimum standards and fiscal incentives for both new and existing buildings.
- By 2028 establish performance-based rating systems in remaining non-domestic sectors.

Policy and Fiscal incentives

- Retain proposals for use of MEES in the non-domestic sector in the short to medium term. Review the need for MEES as policy lever as performance rating schemes become established.
- Review Landlord & Tenant Act 1954 to require by law that all new business leases include green lease clauses, the standards of which should be developed with industry.
- Remove VAT on refurbishment work (i.e. 0% VAT) where energy performance targets are met (to incentivise energy efficiency works whilst retaining VAT revenue from general improvement works)
- Introduce and clearly signpost a **cut-off date of 2030** for the sale of **gas and oil boilers.**



Reading this timeline

- Performance Rating Scheme Launch
- Minimum Standards & Fiscal Incentives introduced
- Progressive tightening of Minimum Standards & Fiscal Incentives
- Mandatory Energy Disclosure
- Part L compliance for New Buildings based on EUI
- (2021: Part L 2021 introduces mandatory EUI Forecast for all buildings >1,000m²)

1C) NEW BUILDINGS

Current building regulations (Part L) and energy rating mechanisms (EPCs) do not adequately predict or represent the actual performance of buildings in practice. In addition to the use of compliance tools and methodologies to predict performance at the design stage, a significant "performance gap" exists between design intent and building performance outcomes, due to multiple factors, including insufficient attention towards building handover.

Building Regulations must therefore shift from the "notional building" comparison approach to in-use energy performance metrics (Energy Usage Intensity EUI – kWh/m^2/year), to drive an industry shift towards an outcomes-led "design for performance" approach.

To enable the transition to Net Zero, additional metrics will require focus, including measures to limit peak demand. Buildings designed in the coming years must also be equipped to deliver the energy performance levels required for Net Zero by 2050, to avoid the need for future retrofitting, and the risk of unnecessary future occupant disruption, cost and embodied carbon.

Key Policy Recommendations for Government

Update the regulatory and policy framework for new homes:

- Update the National Calculation Methodology (NCM, as underpinned by SAP) and the EPC methodology to create a fit-for-purpose predictive methodology for energy performance of dwellings, that better reflects in-use energy performance.
- 2025 Future Homes Standard and associated Building Regulations Part L 2025 update to introduce:
  - Energy Usage Intensity (EUI) targets inc. regulated and unregulated loads (kWh/m^2/yr).
  - Thermal energy demand limits (kWh/m^2/yr).
  - Low carbon heating for all new buildings (no fossil fuel combustion).
  - Measures to limit peak demand and enable load shifting (with limits on peak demand from 2030).
  - Minimum standards for currently unregulated key appliances with high influence on annual & peak demand, i.e. cooker hobs & showers.
- Stamp duty rates should be adjusted in line with the energy performance of a property (as part of wider policy across the market – see Existing Homes).
- Increased availability of green mortgages with reduced interest rates for the most efficient homes to stimulate market demand for future building efficiency standards (as part of wider policy across housing market – see Existing Homes).
- Enable accelerated planning approval for early adopters of future energy efficiency levels (with disclosure of performance on completion).
- Local planning authorities' ability to set more ambitious targets for new development should be retained until suitable EUI targets consistent with Net Zero are established within building regulations (i.e. 2025).

Update Building Regulations for new non-domestic buildings to include:

- Part L 2021 final statutory guidance to include mandatory provision of Energy Usage Intensity (EUI) forecasts (regulated and unregulated loads) for all buildings >1,000m^2.
- 2025 Future Buildings Standard and associated Building Regulations Part L 2025 update to introduce:
  - For office buildings >1,000m^2: EUI target (kWh/m^2/year) compliance approach in place of notional building methodology.
  - Thermal Energy Demand limits (kWh/m^2/year) for different building typologies.
  - Low carbon heating for all new buildings (no fossil fuel combustion).
  - Peak Load assessment (and ability for load shifting).
- Interim amendments to 2025 Building Regulations Part L to introduce EUI target compliance approach for additional sectors, aligned with mandatory energy performance disclosure dates (see section 1b):
  - 2027 amendments: Phase 2: Potential sectors: Offices <1,000m^2, Hotels, Retail, Warehouses, Higher Education.
  - 2029 amendments: Phase 3: Remaining sectors.
- Align the introduction of the EUI compliance approach per sector with the timings of a confirmed mandatory energy disclosure timetable (with timetable to be confirmed ahead of 2025).
- 2030 Building Regulations to include:
  - Peak load limits demand limits (W/m^2) for different building typologies.
- Local planning authorities' ability to set more ambitious targets for new development should be retained until suitable EUI targets consistent with Net Zero are established within building regulations per sector (i.e. 2025 onwards).

2 Buildings: Embodied Carbon

Embodied carbon from new construction and refurbishment of buildings makes up approximately 19% of built environment emissions, but as operational emission levels from buildings are ratcheted down, the embodied component will become an increasing proportion of the total, with no simple mitigation option. By 2035, the trajectory results indicate that embodied carbon will form over half of all built environment emissions, with the domestic retrofit programme putting pressure on cumulative carbon budgets in the early 2030s.

Since 1990, the industry has only achieved a meaningful reduction in total embodied carbon emissions in the period following the financial crisis of 2008. Given the emissions reductions required in the coming years, the early 2020s is the period when regulation of embodied carbon of buildings will need to be introduced, to embed consistent measurement and then introduce emission limits. This will act as a demand reduction policy mechanism, in tandem with industrial decarbonisation measures on the materials supply side.

Key Policy Recommendations for Government

Embodied Carbon Regulation

Implement a regulatory policy framework for upfront embodied carbon in new buildings, with clear signposting of a phased pathway:

- **Mandatory measurement and reporting** of Whole Life Carbon by **2023** for large buildings (>1,000m^2) and residential developments (≥10 dwellings).
- **Minimum standards** (limits) for Upfront Embodied Carbon by 2025 for more mature sectors (i.e. those with sufficient asset level benchmark data), with associated **fiscal incentives and penalties**.
- **Minimum standards** (limits) for Upfront Embodied Carbon by **2027** in all sectors.
- Final phase to introduce minimum standards for all size buildings (with a suitable minimum threshold) in all sectors by **2030.**

Regulation must be supported with suitable data management and collection systems, tools, and incentives for industry to reduce embodied carbon. Building on progress already made within industry, Government will need to provide adequate support to areas such as embodied carbon data management, Environmental Product Declarations (EPDs), and circularity. Supporting recommendations include:

Data Management

- Develop a freely available national embodied carbon assessment tool.
- Utilise existing industry resources to establish a national asset and product embodied carbon database, such as the Built Environment Carbon Database (www.becd.co.uk).
- Recognise and support the development of existing embodied carbon standards and benchmarks.
- Publish embodied carbon benchmarks (using industry standard methodology & carbon factors) and voluntary best practice standards by 2023.
- Support the industry in developing competency standards and QA processes for the assessment of embodied carbon.

EPDs

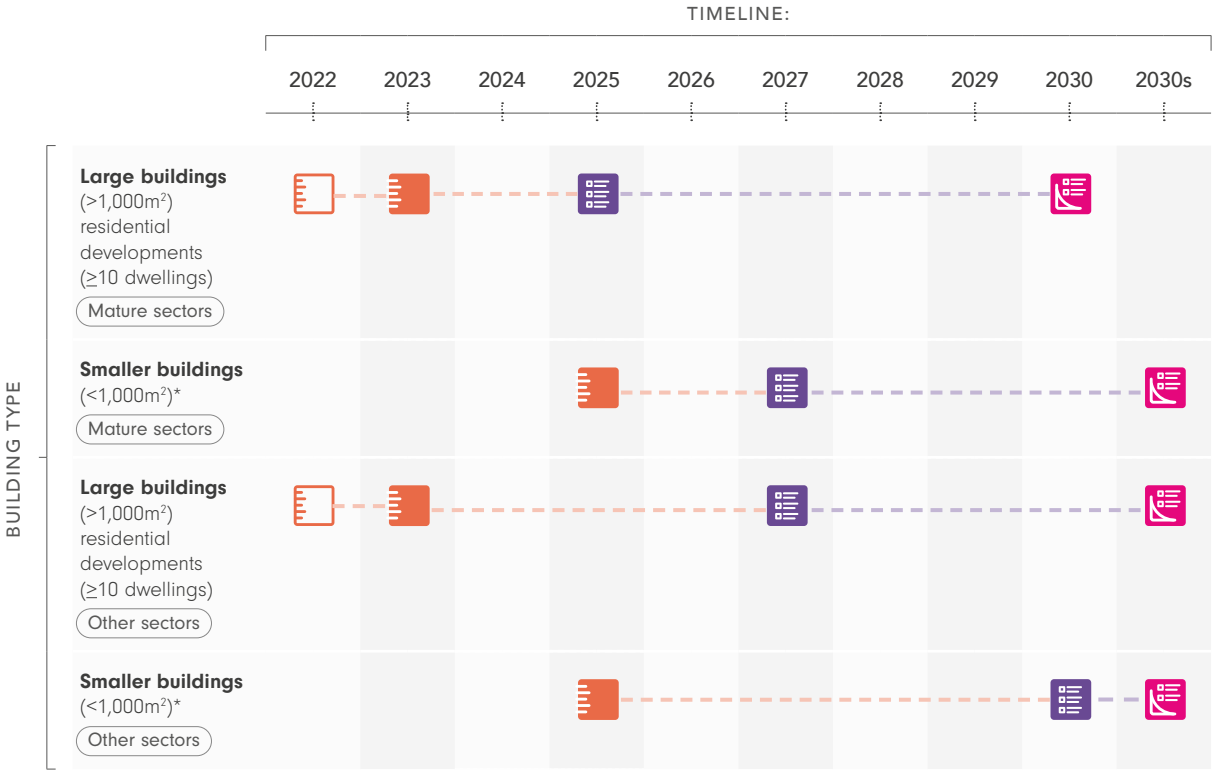
- Support the industry to develop EPDs (to EN15804 & 3rd party verified) at the scale and quality required.
- Incentivise and eventually require manufacturers to declare the impacts of their products.
- Provide financial support to SMEs for EPD development.

Circular Economy

- Remove VAT on refurbishment works (i.e. 0% VAT) which retain building structural frame and achieve energy performance targets (to incentivise re-use over demolition) – while proportionally increasing the VAT on new builds to make this change fiscally neutral.
- Establish a nationwide second-hand materials database, building on city-level networks.
- Update National Planning Policy Frameworks to require evaluation of embodied carbon impacts of new build before permitting demolition.

Local Planning Requirements

- Enable local planning authorities to set more ambitious limits on upfront carbon for new development than those introduced via Building Regulations.



Reading this timeline

Mandatory measurement & disclosure of whole life carbon introduced into Building Regulations at the earliest opportunity

Mandatory measurement and disclosure of Whole Life Carbon comes into force

* With suitable minimum size threshold. Area thresholds and sector maturity criteria to be refined.

Progressive tightening of standards for Upfront Embodied Carbon in line with carbon budget trajectories

Minimum standards (limits), fiscal incentives, and penalties for Upfront Embodied Carbon

3 Infrastructure & Industry

Operational and embodied emissions from infrastructure make up approximately 5% of UK built environment emissions. Infrastructure spans economic, environmental, and social systems to form the country-wide foundations that enable society to function. While the WLC Roadmap programme constraints required that the scope of the modelled trajectory exclude emissions from surface transport, the difficulty of decoupling the different emissions sources related to infrastructure (embodied carbon, surface transport, etc) is evident when conceptualising infrastructure as an integrated system.

If surface transport is included within the scope of the built environment, the total share of UK emissions increases from approximately 27% to 40%. The decarbonisation of the infrastructure sector therefore requires a systems-thinking approach, balancing embodied carbon impacts of infrastructure investment with emission reductions delivered in other sectors such as transport, through the use of those infrastructure assets.

Strategic infrastructure investments are also required in the industrial sector to enable the decarbonisation of construction material supply chains.

Key Policy Recommendations for Government

Integrated Decarbonisation of Infrastructure Systems

- Introduce the role of a National Infrastructure Integrator to enable holistic decision-making across UK infrastructure investment with full visibility of all carbon impacts.
- Demonstrate leadership within public procurement via Infrastructure and Projects Authority (IPA) commitment to the CSIC Carbon Reduction Code (which includes integrating carbon reduction targets and reporting commitments explicitly in all procurement documents from 2021).
- Set a requirement for all regulators to develop an explicit first-order objective to support the transition to Net Zero by 2050.
- Mandate for PAS 2080 to be fully implemented across all Infrastructure projects by 2025.

Industrial Decarbonisation

- Drive and support 'low regrets' energy efficiency and fuel switching measures within industry to enable the decarbonisation of construction supply chains.
- Support the development of Carbon Capture and Storage (CCS) for use in industry, to deal with hard-to-abate emissions for which there are no alternative mitigation options, e.g. process emissions from cement production. Deliver on plans for initial CCS deployment in two industrial clusters by 2025 with two more by 2030.
- Work with concrete and cement sector to identify feasible options for CCS deployment and transportation in dispersed sites.
- Support the deployment of hydrogen within industry (i.e. for high temperature processes) to aid decarbonisation , and adopt a transparent and robust science-based approach to the options available for hydrogen production.

Carbon Pricing

- Ensure carbon pricing policies such as the UK ETS continue to drive deep industrial decarbonisation whilst maintaining competitiveness and minimising carbon leakage.
- Considerations must include increased carbon prices, links with the EU ETS, the phase-out future of free allowances, and an equitable supply adjustment mechanism which keeps pace with the EU Carbon Border Adjustment Mechanism (CBAM) and, once tested, may enable the phase-out of free allowances.
- Set the UK Emissions Trading Scheme (UK ETS) cap based on the pathway to the UK Net Zero target and consider expanding the scheme to include increased coverage of materials and sectors.

National Planning Policy Framework

- Incorporate carbon accounting into National Planning Policy Frameworks to ensure net-zero is consistently included in all areas of planning policy.

Environment Scrutiny Commission

MUNICIPAL YEAR 2021-22

AGENDA DISTRIBUTION LIST (OPEN)

NOTE: Original held by Scrutiny Team; all amendments/queries to Fitzroy Williams Tel: 020 7525 7102

Name	No of copies	Name	No of copies
Councillor Margy Newens	1	Julie Timbrell, Scrutiny Team SPARES	10
		External	
Electronic Copy **Members** <u>Councillors:</u> Councillor Adele Morris Councillor Tom Flynn Councillor James Coldwell Councillor Graham Neale Councillor Leo Pollak Councillor Leanne Werner <u>Coopted member:</u> **Reserves Members** Councillor Peter Babudu Councillor Jack Buck Councillor Maggie Browning Councillor Richard Leeming Councillor Vikki Mills Councillor Damian O'Brien Councillor Daniel Whitehead		**Total: 11** **Dated: October 2021**	