



# Local Authorities Leading the Way - Net Zero Planning Policy

Next steps for local authorities

How can the recent good news set a precedent for other progressive LAs?  
And what are the challenges?

Apr 2023 | Rev A



# Objectives of this presentation

Thomas Lefevre



- 1 Explain why the tide has turned for Net Zero planning policy
- 2 Identify key opportunities for high impact policies
- 3 Share ideas for areas for further development work

The tide has turned

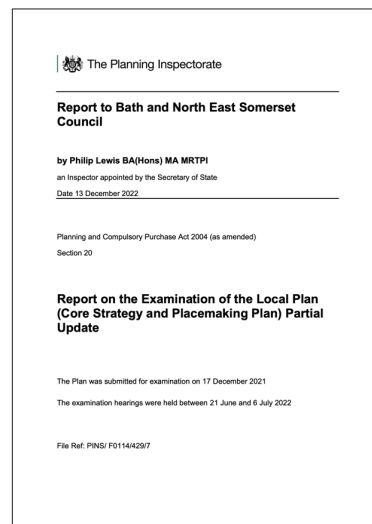
# The Written Ministerial Statement (WMS 2015) is no longer a barrier

## Policy SCR6 - New Build Residential

New build residential development will be required to meet the standards set out below.

New build residential development will aim to achieve zero operational emissions by reducing heat and power demand then supplying all energy demand through onsite renewables. Through the submission of an appropriate energy assessment, having regard to the Sustainable Construction Checklist SPD, proposed new residential development will demonstrate the following:

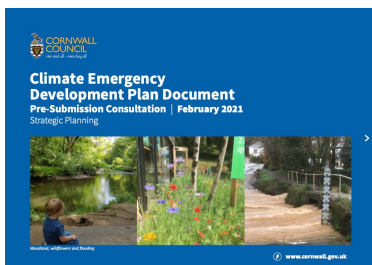
- Space heating demand less than 30kWh/m<sup>2</sup>/annum;
- Total energy use less than 40kWh/m<sup>2</sup>/annum; and
- On site renewable energy generation to match the total energy use, with a preference for roof mounted solar PV
- Connection to a low- or zero-carbon district heating network where available



*85. I therefore consider that the relevance of the WMS 2015 to assessing the soundness of the Policy has been reduced significantly. [...] For the reasons set out, that whilst I give the WMS 2015 some weight, any inconsistency with it, given that it has been overtaken by events, does not lead me to conclude that Policy SCR6 is unsound, nor inconsistent with relevant national policies.*



# Planning inspectors acknowledge the need for action against climate change



## Policy SEC1 – Sustainable Energy and Construction

Development proposals will be required to demonstrate how they have implemented the principles and requirements set out in the policy below.

### 2b. New Development – Residential

Residential development proposals will be required to achieve Net Zero Carbon and submit an 'Energy and Carbon Statement' that demonstrates how the proposal will achieve:

- Space heating demand less than 30kWh/m<sup>2</sup>/annum;
- Total energy use less than 40kWh/m<sup>2</sup>/annum; and
- On-site renewable generation to match the total energy use, with a preference for roof mounted solar PV.

Where the use of onsite renewables to match total energy consumption is demonstrated to be not technically feasible (for example with apartments) or economically viable, renewable energy generation should be maximised as much as possible; and/or connection to an existing or proposed district energy network; or where this is not possible the residual carbon offset by a contribution to Cornwall Council's offset fund.

#### Appendix 1

The Planning Inspectorate

#### Report to Cornwall Council

by Paul Griffiths BSc(Hons) BAArch IHBC  
an Inspector appointed by the Secretary of State  
Date: 10 January 2023

Planning and Compulsory Purchase Act 2004 (as amended)  
Section 20

#### Report on the Examination of the Cornwall Council Climate Emergency Development Plan Document

The Plan was submitted for examination on 8 November 2021  
The examination hearings were held between 21 and 24 June 2022

File Ref: PINS084042816

*32. While I acknowledge that there are still those who express scepticism, the scientific community and governments worldwide fully accept the dangers posed by climate change, and the need for urgent action to address it. In that context, it seems to me that it would be perverse to criticise the Council for attempting to do too much, too soon.*

*167. The WMS of 25 March 2015 has clearly been overtaken by events. [...]. In that sense, there is nothing in the Council's approach that raises issues of soundness.*

# The crucial issue of consistency with national policy: building regulations



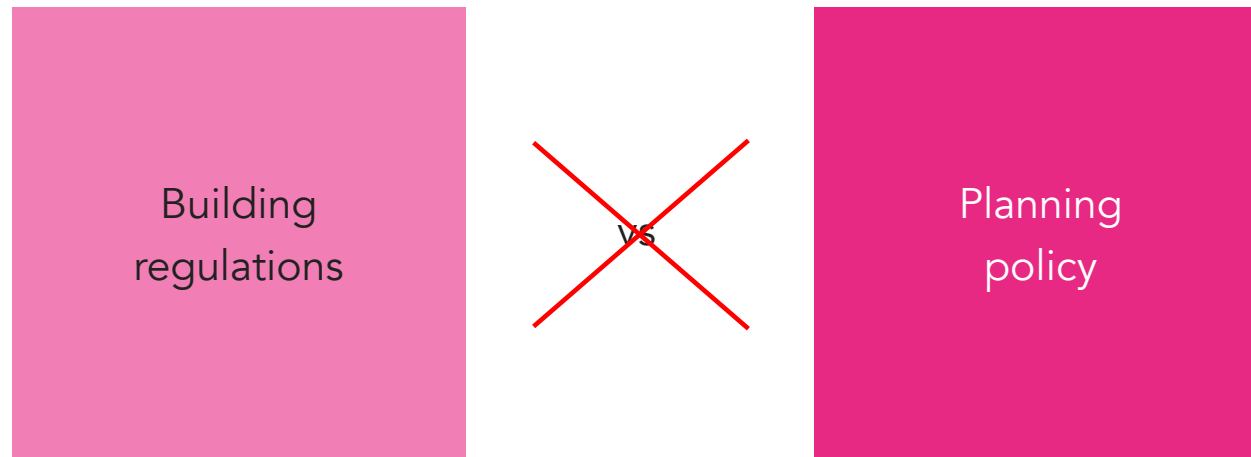
Building  
regulations

The diagram consists of two colored squares. The left square is a light pink color and contains the text 'Building regulations'. The right square is a darker magenta color and contains the text 'Planning policy'. Between the two squares, centered vertically, is the text 'vs'.

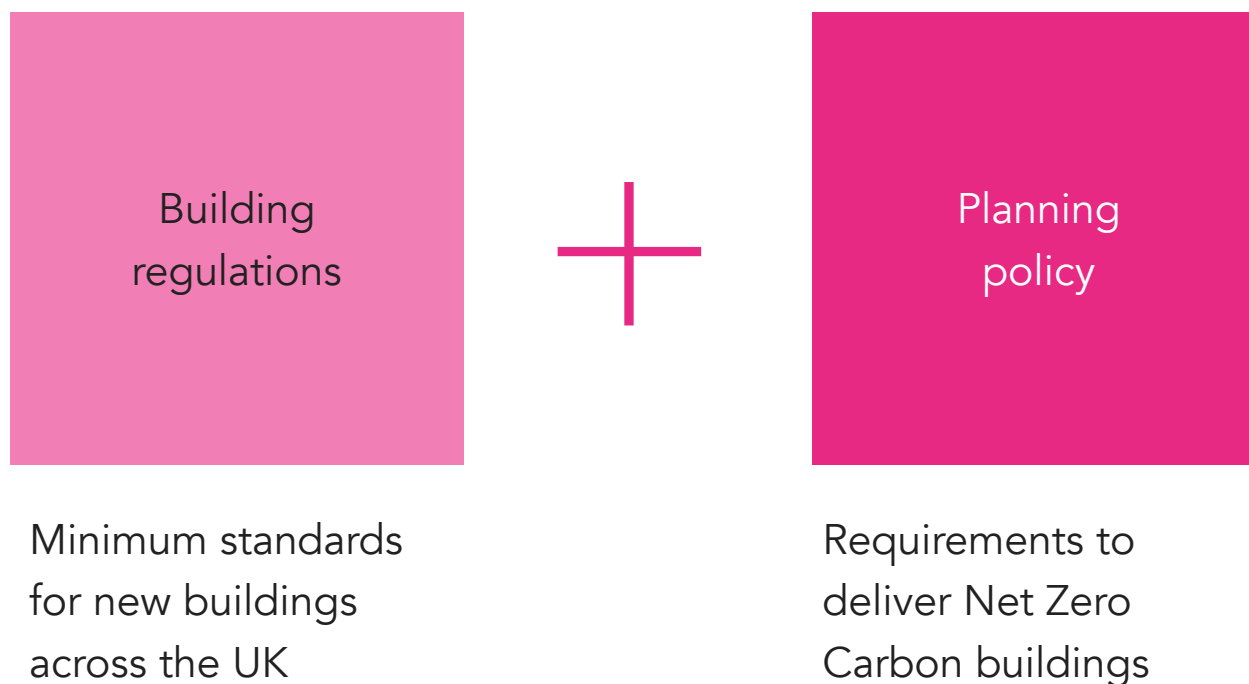
vs

Planning  
policy

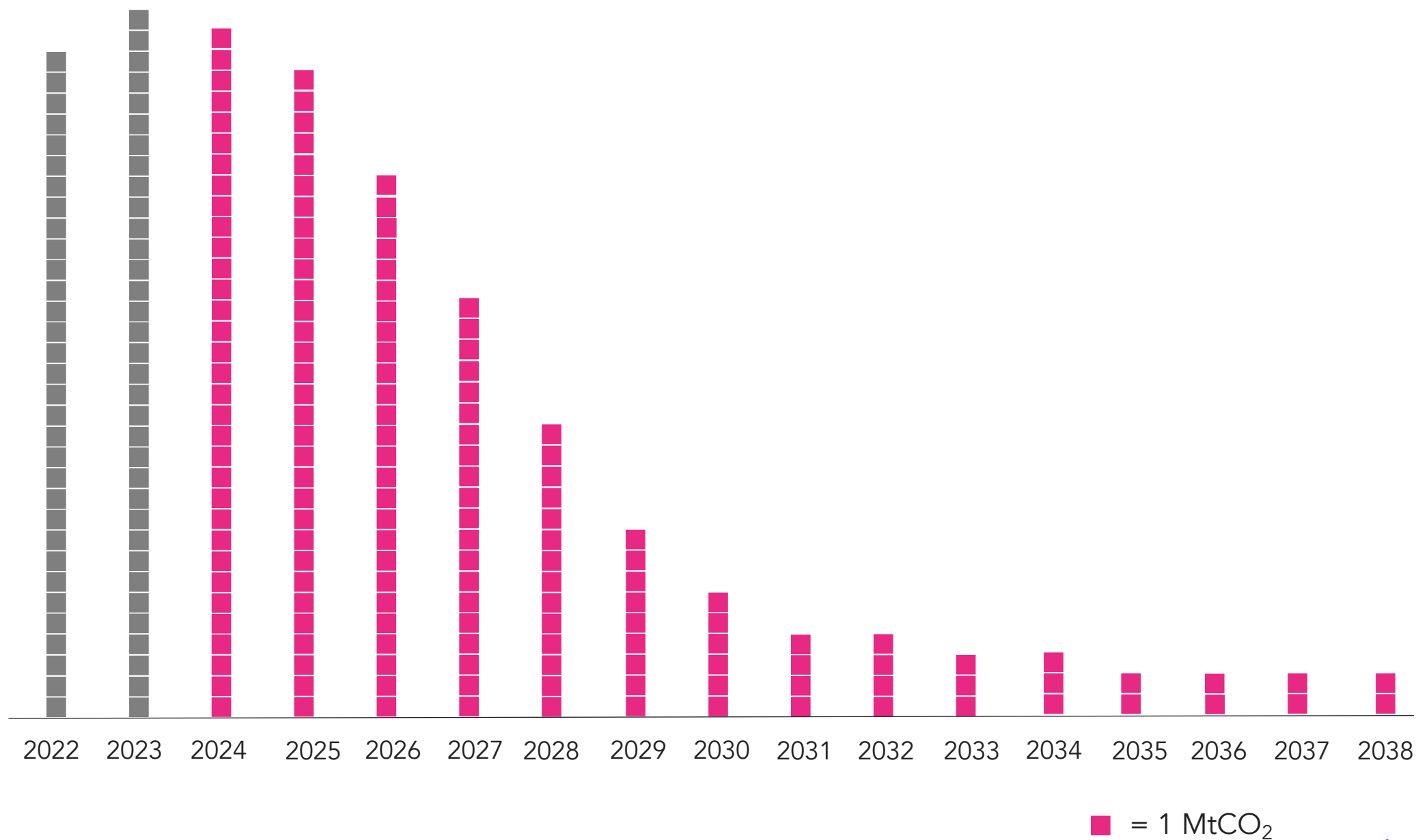
# The crucial issue of consistency with national policy: building regulations



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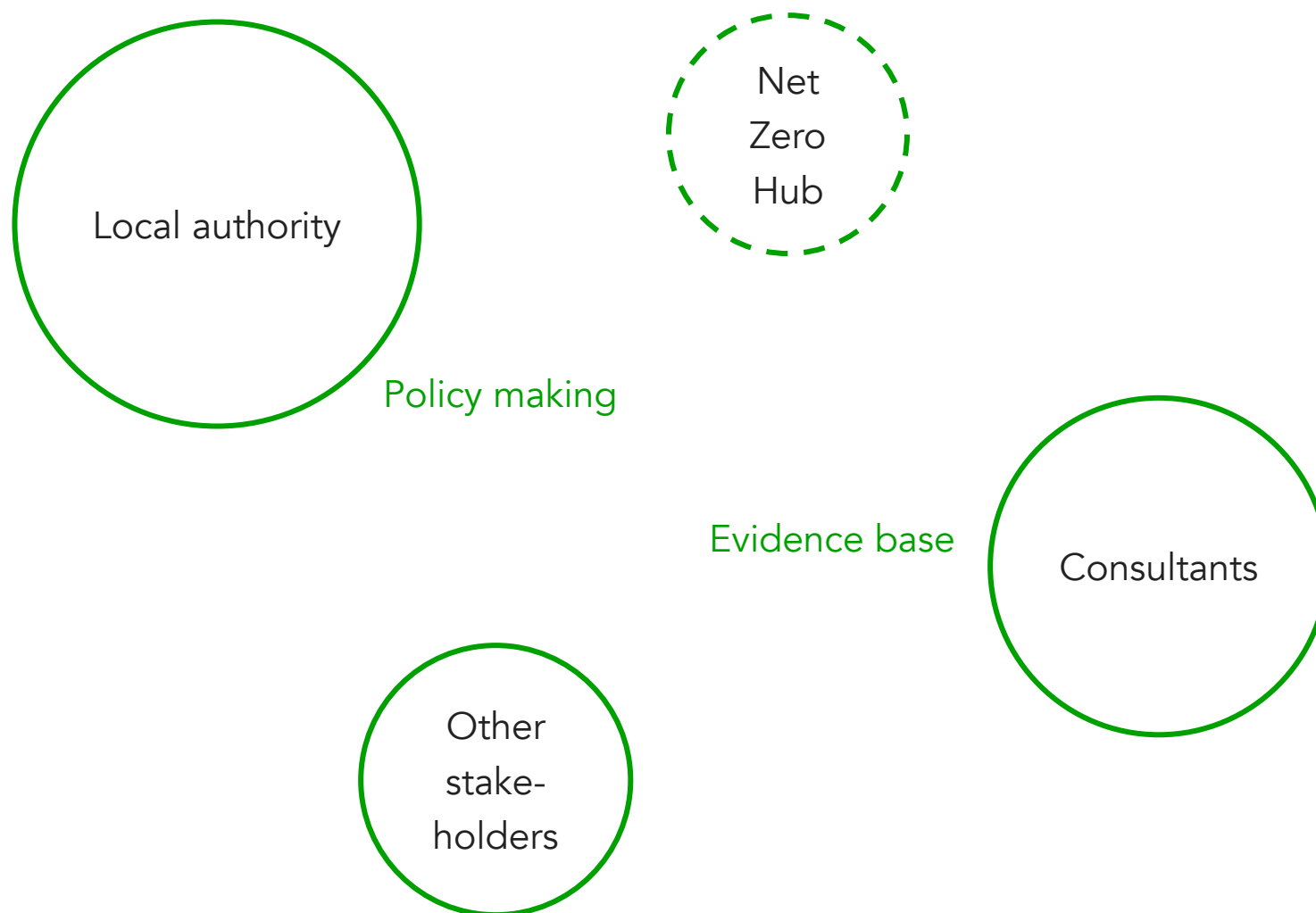


# The crucial issue of consistency with national policy: carbon budgets



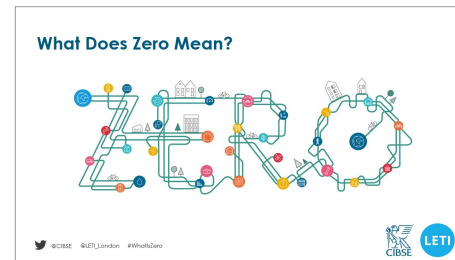
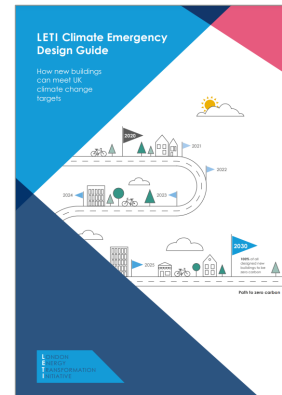
High impact policies are now possible

# The policy development process is better when it is iterative and collective



# Consistency with existing/emerging evidence and industry guidance is important

- Energy-based metrics (e.g. EUI) are becoming increasingly used for important reasons (e.g. simplicity, transparency, measurability, performance outcome).
- The body of evidence/work justifying this policy is consistently growing. It should form the foundation of any new policy being developed.
- Be wary of developing 'hybrid' approaches with no evidence behind them (e.g. EUI for regulated energy only).





# Net Zero Operational Carbon

## Ten key requirements for new buildings

By 2030 all new buildings must operate at net zero to meet our climate change targets. This means that by 2025 all new buildings will need to be designed to meet these targets. This page sets out the approach to operational carbon that will be necessary to deliver zero carbon buildings. For more information about any of these requirements and how to meet them, please refer to the: UKGBC - Net Zero Carbon Buildings Framework; BBP - Design for Performance initiative; RIBA - 2030 Climate Challenge; GHA - Net Zero Housing Project Map; CIBSE - Climate Action Plan; and, LETI - Climate Emergency Design Guide.

### Low energy use

- 1 Total Energy Use Intensity (EUI) - Energy use measured at the meter should be equal to or less than:
  - **35 kWh/m<sup>2</sup>/yr** (GIA) for residential<sup>1</sup>

For non-domestic buildings a minimum DEC B (40) rating should be achieved and/or an EUI equal or less than:

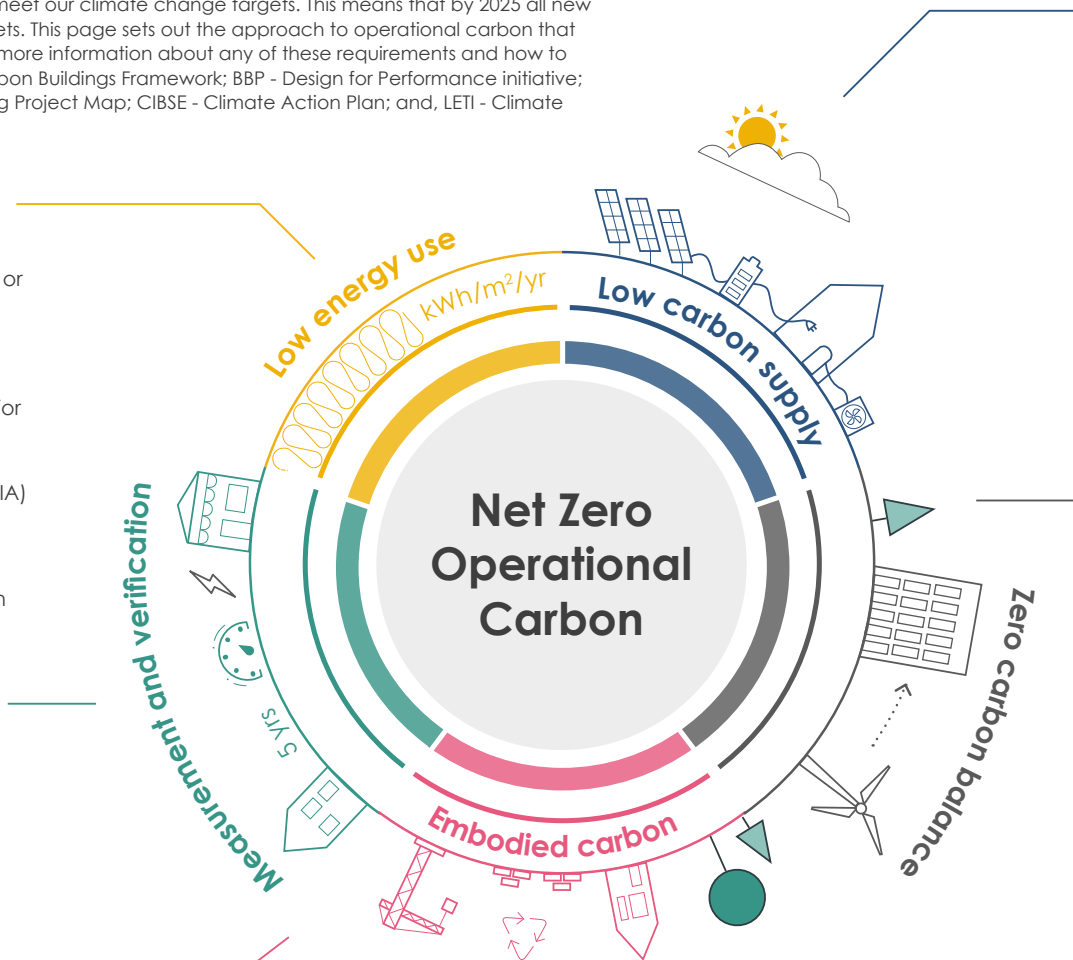
  - **65 kWh/m<sup>2</sup>/yr** (GIA) for schools<sup>1</sup>
  - **70 kWh/m<sup>2</sup>/yr** (NLA) or **55 kWh/m<sup>2</sup>/yr** (GIA) for commercial offices<sup>1,2</sup>
- 2 Building fabric is very important therefore space heating demand should be less than **15 kWh/m<sup>2</sup>/yr** for all building types.

### Measurement and verification

- 3 Annual energy use and renewable energy generation on-site must be reported and independently verified in-use each year for the first 5 years. This can be done on an aggregated and anonymised basis for residential buildings.

### Reducing construction impacts

- 4 Embodied carbon should be assessed, reduced and verified post-construction.<sup>3</sup>



### Low carbon energy supply

- 5 Heating and hot water should not be generated using fossil fuels.
- 6 The average annual carbon content of the heat supplied (gCO<sub>2</sub>/kWh) should be reported.
- 7 On-site renewable electricity should be maximised.
- 8 Energy demand response and storage measures should be incorporated and the building annual peak energy demand should be reported.

### Zero carbon balance

- 9 A carbon balance calculation (on an annual basis) should be undertaken and it should be demonstrated that the building achieves a net zero carbon balance.
- 10 Any energy use not met by on-site renewables should be met by an investment into additional renewable energy capacity off-site OR a minimum 15 year renewable energy power purchase agreement (PPA). A green tariff is not robust enough and does not provide 'additional' renewables.

#### Notes:

##### Note 1 – Energy use intensity (EUI) targets

The above targets include all energy uses in the building (regulated and unregulated) as measured at the meter and exclude on-site generation. They have been derived from: predicted energy use modelling for best practice; a review of the best performing buildings in the UK; and a preliminary assessment of the renewable energy supply for UK buildings. They are likely to be revised as more knowledge is available in these three fields. As heating and hot water is not generated by fossil fuels, this assumes an all electric building until other zero carbon fuels exist. (kWh targets are the same as kWh<sub>thermal</sub>). Once other zero carbon heating fuels are available this metric will be adapted.

##### Note 2 – Commercial offices

With a typical net to gross ratio, 70 kWh/m<sup>2</sup> NLA/yr is equivalent to 55 kWh/m<sup>2</sup> GIA/yr. Building owners and developers are recommended to target a base building rating of 6 stars using the BBP's Design for Performance process based on NABERS.

##### Note 3 – Whole life carbon

It is recognised that operational emissions represent only one aspect of net zero carbon in new buildings. Reducing whole life carbon is crucial and will be covered in separate guidance.

##### Note 4 – Adaptation to climate change

Net zero carbon buildings should also be adapted to climate change. It is essential that the risk of overheating is managed and that cooling is minimised.

Developed in collaboration with:

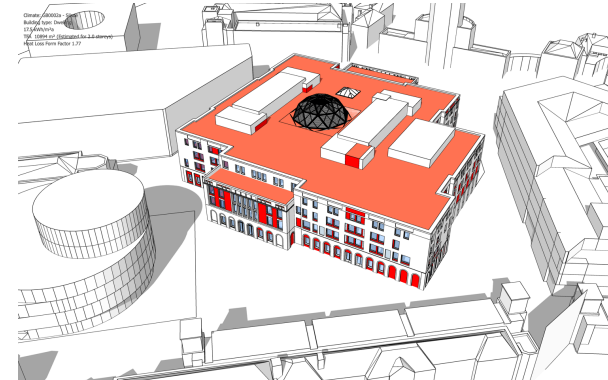


Supported by:





The best evidence base for these policies is actually being built



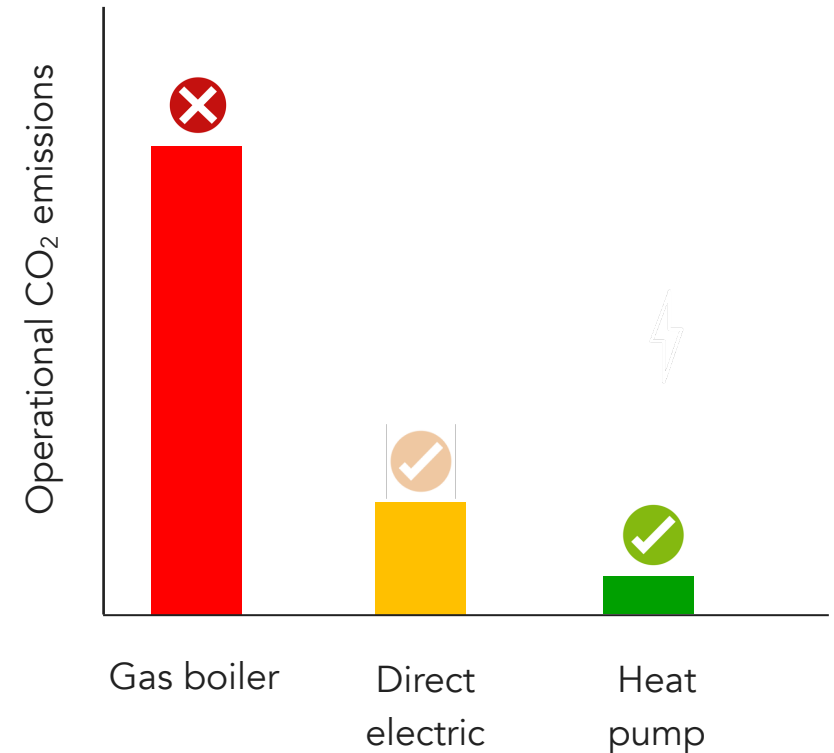
1,760,000 gas boiler installations in 2021.....



(60,000 heat pumps)

# Banning new gas and oil boilers must happen

- The on-going use of fossil fuel heating systems is not compatible with Net Zero.
- Why wait to ban them? They are already banned in other countries for new residential developments.
- Any delay in the ban of new fossil fuel heating system is effectively damaging the ability of a Local Authority to comply with its carbon budgets.



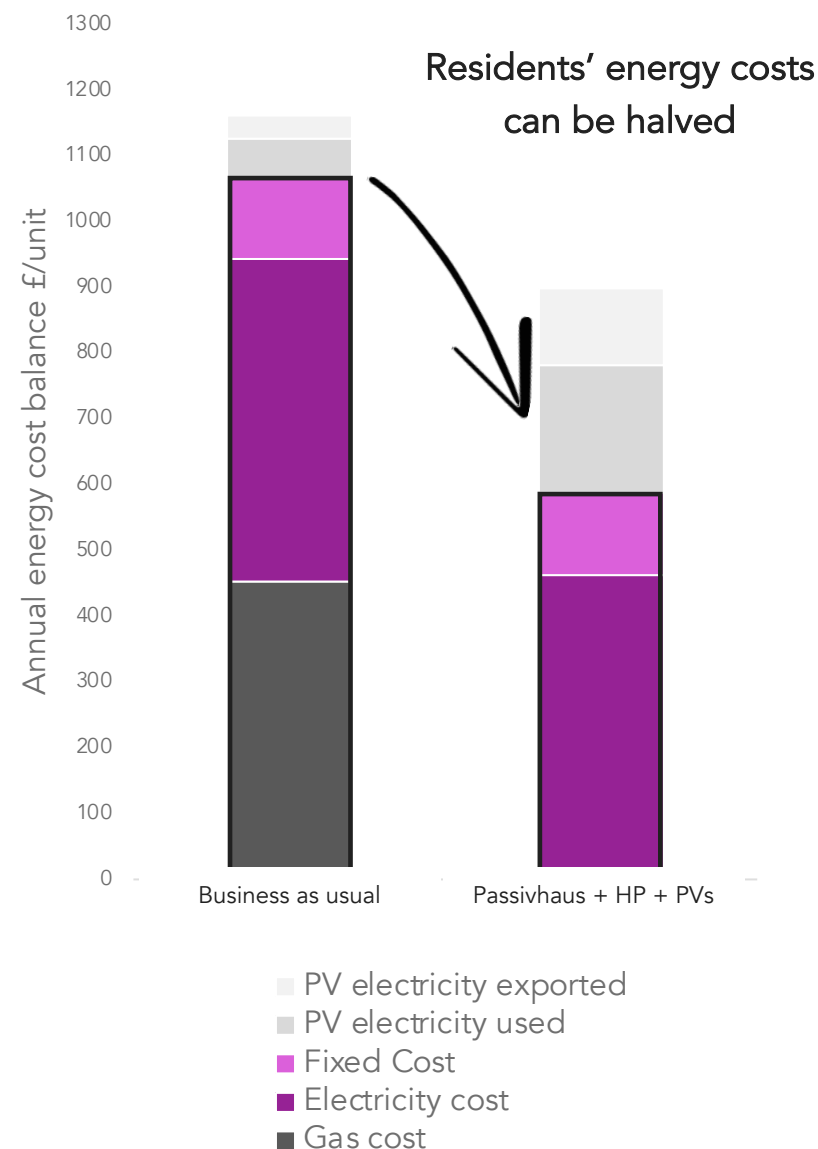
**we pledge to**

**#ENDGASNOW**

[www.endgasnow.uk](http://www.endgasnow.uk)

# Time to focus on the social impact of energy use?

- Residents are at the heart of social housing projects
- Passivhaus, combined with heat pumps and PVs, in a Net Zero strategy can deliver significantly reduced energy bills.
- The pale grey elements of the bar shows the impact of PVs which are crucial for reducing energy bills.





# Challenges and further work

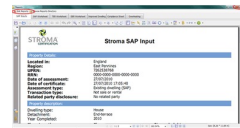

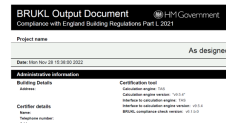

# Implementation: Part L modelling vs predictive modelling

## limitations of Part L modelling

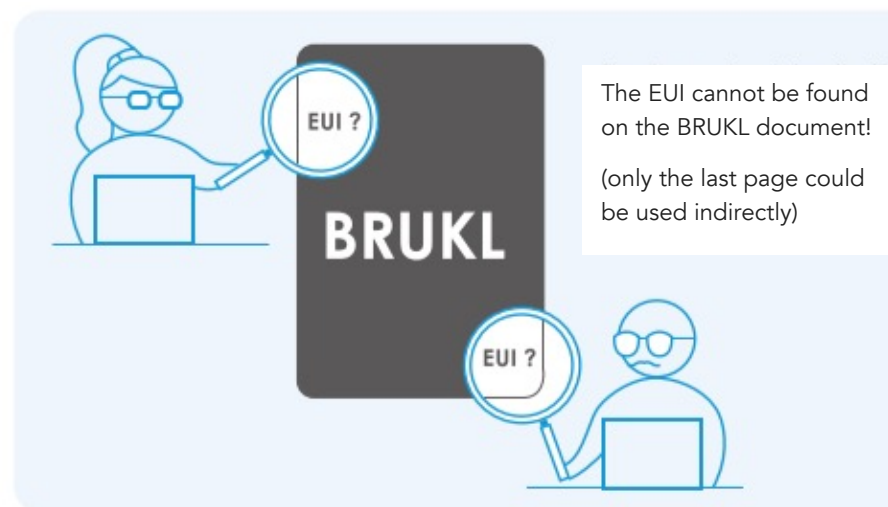
- Designed for compliance
- Never meant to predict energy use
- Excludes 'unregulated' energy uses
- Fixed assumptions for internal gains and profiles based on broad building categories (e.g. occupancy)
- Targets based on a comparison with a baseline model with the same geometry (the notional building)

## Predictive Energy Modelling

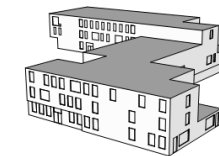
- Meant to better predict energy use
- Greater flexibility to reflect design proposals and ability to reflect key characteristics
- All building energy uses included
- EUI targets absolute (kWh/m<sup>2</sup>) and therefore measurable in-use

	Part L modelling	Predicted energy use modelling
Domestic	 <p>SAP (Part L1A)</p>	 <p>PHPP</p>
Non-domestic	 <p>NCM (Part L2A)</p>	 <p>PHPP or DSM (TM54)</p>

*There is a significant difference between Part L modelling currently used to demonstrate compliance with planning policy and predicted energy use modelling.*

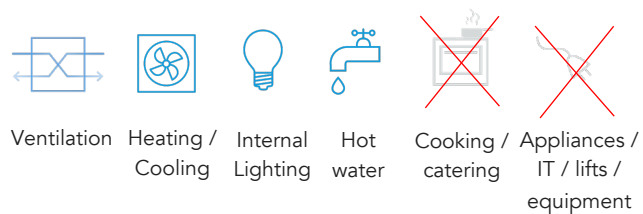


# Implementation: Part L modelling vs predictive modelling



## Part L compliance energy modelling

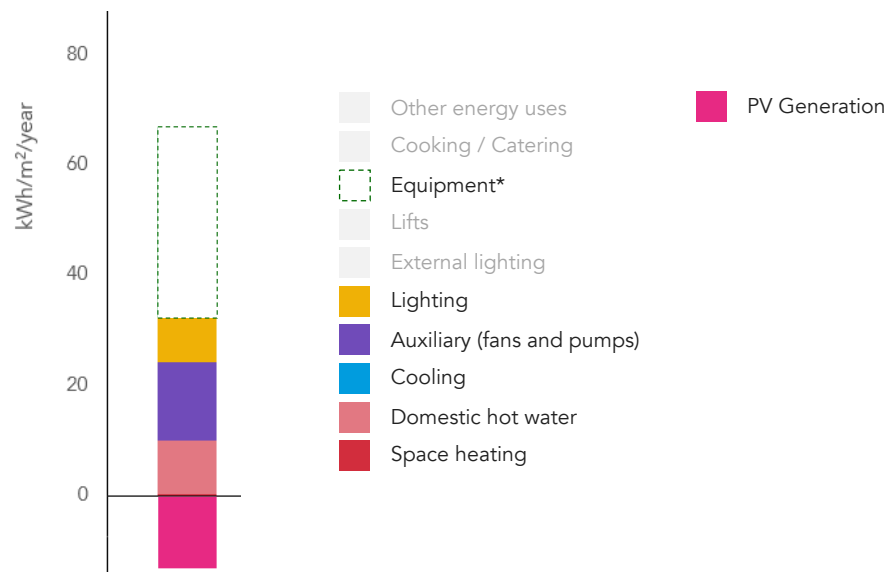
### Energy use



### Renewable generation



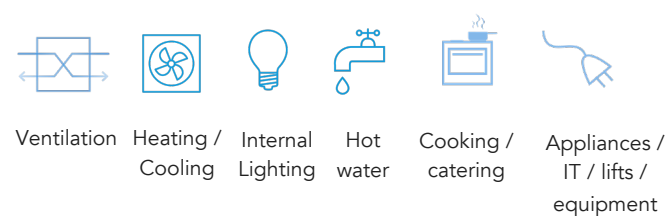
PVs



\* Equipment is described as an “unregulated” load in Part L and so is not impacted by % reduction over Part L

## Predictive energy modelling

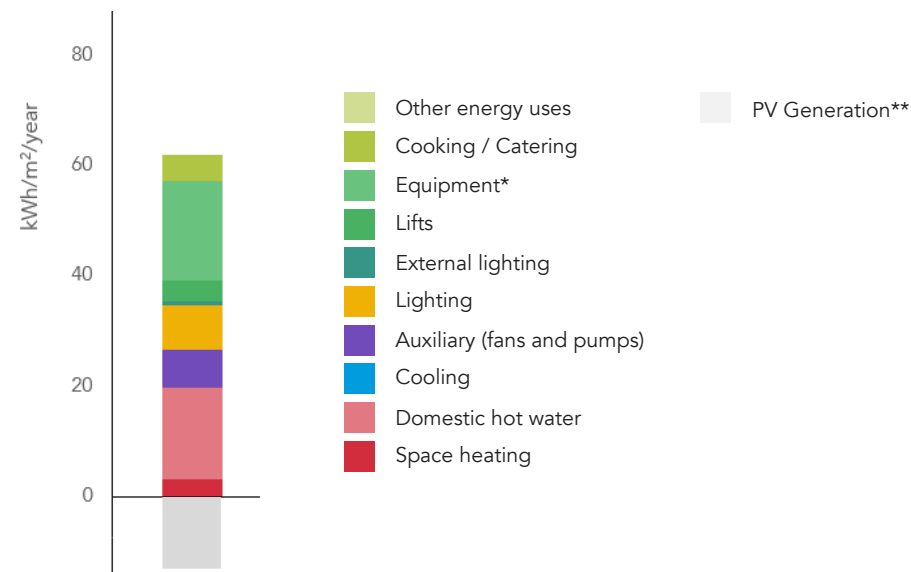
### Energy use



### Renewable generation



PVs



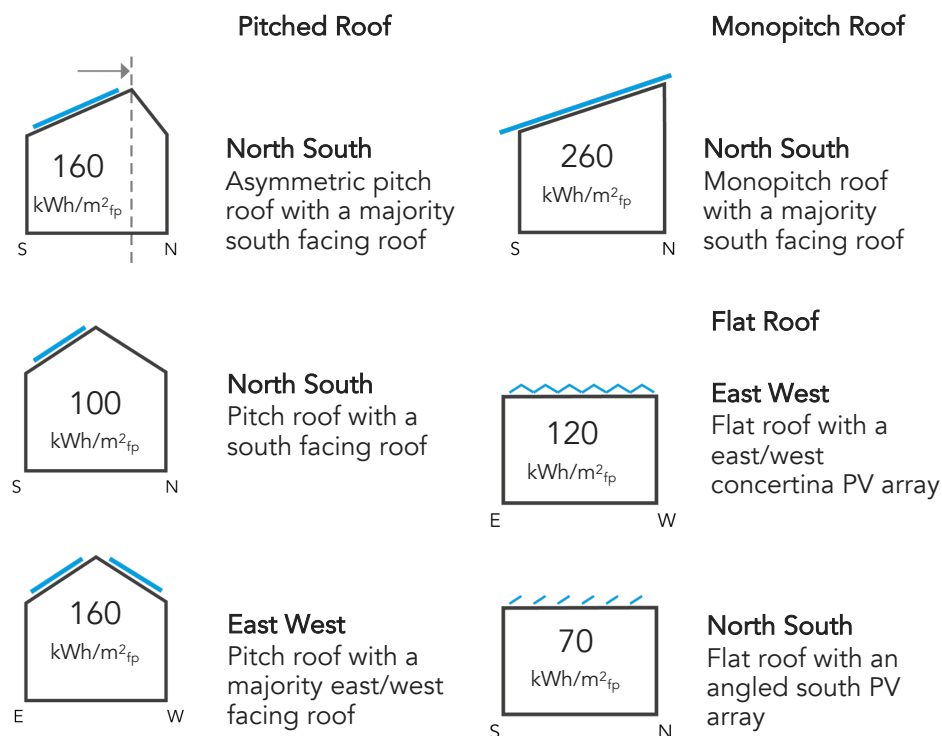
\*\* Renewable energy is excluded from Energy Use Intensities, but a separate policy can be set to encourage best practice





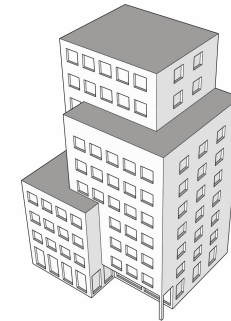
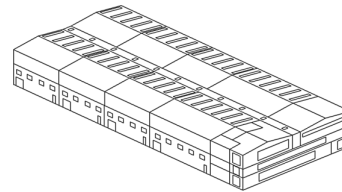
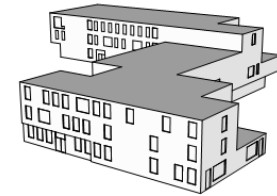
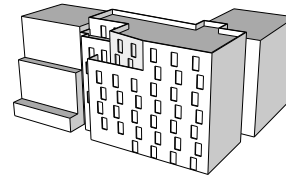
# A more specific policy for renewable energy generation

- The requirement for new buildings to generate as much renewable energy as possible needs to be given more 'strength'. It currently suffers from a lack of quantitative target.
- A detailed review of the PV renewable energy generation across different building types would represent a useful technical evidence base.



# More research into EUIs for non-domestic building typologies

- The evidence base for energy-based policies is thinner for non-domestic buildings.



# Upfront embodied carbon policy requirements

- Reporting upfront embodied carbon is not sufficient and introducing targets would be very helpful to accelerate change.
- There is a growing body of evidence to inform the level of these targets.
- The impact on viability is currently subject of debate with some suggesting that reducing embodied carbon would save costs, not increase them.

**Upfront Embodied Carbon, A1-5 (exc. sequestration)**

Band	Office	Residential (6+ storeys)	Education	Retail
A++	<100	<100	<100	<100
A+	<225	<200	<200	<200
A	<350	<300	<300	<300
B	<475	<400	<400	<425
C	<600	<500	<500	<550
D	<775	<675	<625	<700
E	<950	<850	<750	<850
F	<1100	<1000	<875	<1000
G	<1300	<1200	<1100	<1200

**Life Cycle Embodied Carbon, A1-5, B1-5, C1-4**

Band	Office	Residential (6+ storeys)	Education	Retail
A++	<150	<150	<125	<125
A+	<345	<300	<260	<250
A	<530	<450	<400	<380
B	<750	<625	<540	<535
C	<970	<800	<675	<690
D	<1180	<1000	<835	<870
E	<1400	<1200	<1000	<1050
F	<1625	<1400	<1175	<1250
G	<1900	<1600	<1350	<1450

LETI targets

Building Target	Equivalent letter banding
LETI Design 2020 Target	C
LETI Design 2030 Target	A
RIBA Built 2030 Target	B

# Ashley Road

## Path to net zero carbon

1



### Performance of the building form and fabric

The space heating demand (SHD) demonstrates the efficiency of the building. Ashley Road achieves a SHD of 13 kWh/m<sup>2</sup>/yr. This is less than the CCC recommendation of 15-20kWh/m<sup>2</sup>/yr and significantly less than a standard London Plan compliant home of 50kWh/m<sup>2</sup>/yr.

2



### Performance of the building and systems

The energy use intensity (EUI) is the total energy used in the homes per sqm and demonstrates the efficiency of the building and systems combined. Ashley Road achieves an EUI of 27kWh/m<sup>2</sup>/yr this exceeds the LETI and RIBA target of 35kWh/m<sup>2</sup>/yr. This is significantly less than a standard London Plan compliant home of 90kWh/m<sup>2</sup>/yr.

3



### On-site renewable energy generation

Renewable energy generation on-site should ideally be equivalent to the total energy use on-site. At Ashley Road 55% of the total energy demand will be met by on-site renewable energy generation. This is significantly higher than a typical London Plan compliant development which would achieve 5%.

4



### Upfront embodied carbon

The consumption of materials and resources contributes the carbon footprint of a development and therefore should be minimised. At Ashley Road the design has built-in design measures that aim to reduce the overall consumption of material. On average the scheme is expected to emit around 580kgCO<sub>2e</sub>/m<sup>2</sup> this is significantly less than a typical London Plan compliant development of 800kgCO<sub>2e</sub>/m<sup>2</sup>.

## Wider sustainability:

84%

Reduction in regulated emissions over Part L



No fossil fuel on-site



Water consumption of <105 l/ person/day



Urban greening factor is >0.4

TM59

Overheating risk assessment complete

118%

Biodiversity net gain



20% EV charging and London Plan compliant cycle spaces

