Hinckley & Bosworth Borough Council Net zero carbon local plan policy support

Evidence base:
Carbon budget assessment

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Version 2

Bioregional

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Introduction & overview

Bioregional was commissioned in 2025-26 by Hinckley & Bosworth Borough Council (HBBC) to produce an evidence base on net zero carbon policymaking, to underpin the emerging HBBC Local Plan. This report is part of that evidence base. This report's purpose is to explore, through reasoned analysis, whether the proposed HBBC emerging Local Plan Policy Option 3 (henceforth Policy Option 3) can be demonstrated necessary in order for Hinckley & Bosworth Borough to remain in line with its net zero ambition[i] of 2050 and the national net zero target date of 2050. This is part of the policy justification, as per the NPPF tests of soundness.

This is relevant to fulfilment of the following expectations laid on the local plan:

- The legal duty to mitigate climate change (Planning & Compulsory Purchase Act 2004)
- The NPPF requirement that this mitigation should entail "radical reductions in [carbon] emissions … in line with the objectives and provisions of the Climate Change Act 2008"
- The expectation that during the pursuit of sustainable development in plan-making, local circumstances should be taken into account (NPPF 2024, paragraph 9).

The Climate Change Act includes the net zero 2050 goal and the legislated carbon budgets for the UK (limits on the permissible amount of emissions in each 5 years; see Figure 1).

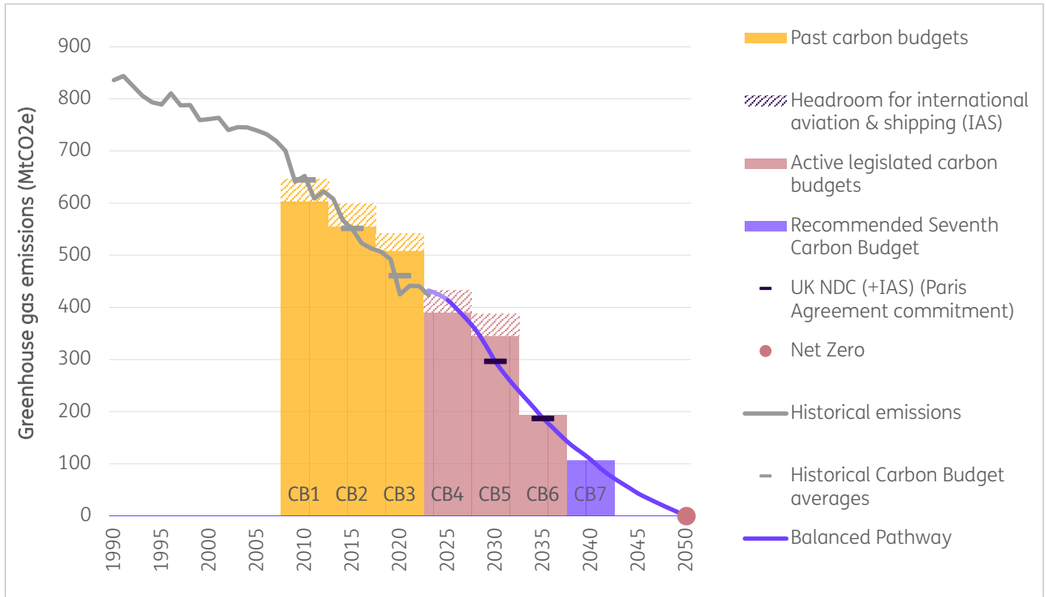


Figure 1: The UK's legislated carbon budgets (past, present and future) within the Climate Change Act. Adapted from: Climate Change Committee, 7th Carbon Budget report, 2025[1]

This report assesses the carbon impact of two broad types of policy approach for new housing:

1. An approach that is based on the Building Regulations Part L 'TER' metric, expressed as a % reduction on Part L 2021 TER calculated via Part L SAP10.2 methodology)
2. An approach that is based on the energy efficiency metrics of total Energy Use Intensity (EUI) and space heat demand (SHD), plus renewable energy provision on site sufficient to match total energy use thus reaching 'true net zero' in operation.

The impetus for this analysis is that a particular piece of national policy, the Written Ministerial Statement of 13th December 2023 (WMS2023) purports to stipulate that any local plan energy efficiency standard should be expressed in terms of % TER reduction, calculated a specific version of SAP. However, industry best practice[2] is to use metrics other than TER; specifically EUI and SHD, using a more accurate methodology than SAP. It is legally established[ii] that local plans can diverge from national policy if there are sufficient local or exceptional circumstances to justify this divergence. The current report explores whether such circumstances are extant with regards to the effectiveness of TER-based versus EUI-based standards in enabling Hinckley & Bosworth to stay within its proportionate share of legislated national carbon

[1] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/

[2] As endorsed by essentially all of the standard-setting professional bodies in the UK construction industry, both in their independent work and through their co-creation and endorsement of the UK Net Zero Carbon Buildings Standard which uses the metrics of EUI and SHD and renewable energy provision.

budgets, thus meeting the mandate to 'mitigate climate change in line with the Climate Change Act'.

To determine whether local circumstances are demonstrated, this study sets a local carbon budget for the specific scope of operational carbon of new build housing in Hinckley & Bosworth (derived from the national legislated carbon budgets). This study then models new homes' operational emissions in 2025-2050[3] in two policy scenarios:

- A 'no policy/WMS2023-compliant' scenario where any new homes built up to the end of 2026 meet Building Regulations Part L 2021, and any new homes built thereafter meet the Future Homes Standard (FHS) Option 1 (which is anticipated to pass into Building Regulations in 2027)
- Policy Option 3, which is a "True Net Zero" EUI-based approach that diverges from the WMS2023 by using more effective metrics for energy efficiency.

The carbon emissions associated with these two scenarios draw on prior energy modelling. This modelling estimated the performance that would be achieved by typical new homes in this local plan area under each policy scenario. The number of homes modelled reflects the HBBC plan period housing growth target (to 2045), plus an estimate of the number of homes that would be delivered after the end of the plan period but before the 2050 end date of the UK's national carbon budgets. The energy performance figures are translated into carbon emissions through to the UK's legislated net zero goal date of 2050, reflecting national figures for conversion of gas and electricity to emissions including future electrical grid decarbonisation.

Where the carbon budget for new build housing's operational emissions is exceeded in a particular policy scenario, this demonstrates that that policy scenario is not aligned with the Climate Change Act goals (and therefore the climate mitigation mandate in law and policy as above). While the Climate Change Act does not legislate emissions limits on individual sectors, the legislated national carbon budgets rely on steep falls in all sectors' emissions[iii] (see Figure 2), to a level that will be challenging for each sector to achieve even without trying to balance any underperformance by other sectors. It is thus most effective to pursue indicative sectoral carbon budgets to keep the national legislated mitigation target feasible. Therefore, logically, all sectors in Hinckley & Bosworth will need to stay within their reasonable share of the overall borough-wide carbon budget, in order to meet that climate mitigation mandate while avoiding a situation in which certain sectors must overcompensate for sectors that produce excessive emissions. This is therefore an appropriate and logical test to apply when determining what policies are appropriate for the local plan's climate mitigation mandate.

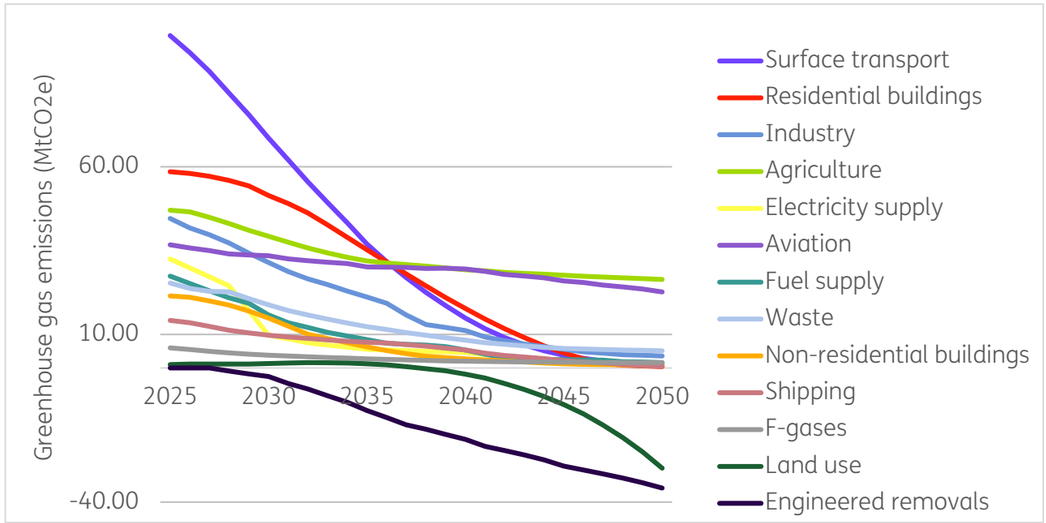


Figure 2: Chart showing how each sector's emissions must fall in the 'balanced' pathway to net zero in 2050. Adapted from: Climate Change Committee, 7th Carbon Budget report, 2025[4]

Policy Option 3 would require net zero operational emissions for new buildings, using absolute energy metrics, which diverge from the stipulations of the WMS2023[5]. This study concludes that there are demonstrated local circumstances to justify divergence from the WMS2023, as the approach set out in Policy Option 3 is necessary for Hinckley & Bosworth to align to local and national carbon reduction goals, including the national carbon budgets legislated via the Climate Change Act (thus part of the "objectives and provisions" that the NPPF instructs the local plan to pursue).

[3] It is acknowledged that the Local Plan period runs from 2024 to 2045. However, because we already have the data on UK-wide emissions in 2024 (413.67 $MtCO_2e$; CCC's 2025 Progress Report; https://www.theccc.org.uk/publication/progress-in-reducing-emissions-2025-report-to-parliament/#publication-downloads), that amount is deducted from the current national carbon budget before assigning the local share of carbon budgets remaining, and therefore this analysis defines the remaining carbon budget period as starting in 2025 and finishing at the national legislated net zero goal of 2050, as the national carbon budgets will apply all the way to that point.

[4] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/

[5] Written Ministerial Statement 2023 on local energy efficiency standards, as previously cited.

1. Comparison of policy scenarios

Scenarios tested

The first step of this study was to identify energy use data in new-build housing to reflect the situation with the proposed Policy Option 3 (True Net Zero EUI), versus an alternative policy that aligns with the stipulations of the Written Ministerial Statement 2023 (WMS). This energy use would then be converted to carbon emissions, to determine which policy scenario is best aligned to UK's legally binding carbon budgets and net zero 2050 target (and Hinckley & Bosworth's corresponding vision of net zero 2050 for their own borough).

All 'new home' energy data used in this carbon budget analysis is drawn from separate energy report performed for HBBC earlier in 2025/26 which used a highly accurate predictive energy modelling methodology to foretell the energy performance of typical new build homes in Hinckley & Bosworth in several different energy standards that a policy could follow.

To represent the emissions of a "no policy" scenario, the Option 1 specification from the Future Homes Standard latest (2023) consultation[6] was selected. The Future Homes Standard (FHS) will become the new Building Regulations Part L; this was due to have been introduced in 2025 but is still unconfirmed as of mid-February 2026[7]. Government has run two FHS consultations to date, of which the first (2020) offered only one option and the second (2023) offered two options. It is anticipated that the eventual actual FHS will most closely resemble the "Option 1" from the second consultation. This Future Homes Standard Option 1 (FHS1) includes a heat pump and on-site solar PV, but barely any fabric improvement compared to today's building regulations (Part L 2021).

Secondly, Policy Option 3 was tested. This "True Net Zero EUI" policy scenario is aligned with industry best practice absolute energy metrics and represents a 'true net zero operational carbon' policy by requiring that on-site renewable energy generation is at least equal to total energy consumption and that all of the above are calculated using accurate energy use modelling methods. This policy scenario does not wholly align with the requirements of the 2023 Written Ministerial Statement 2023 (WMS) because it does not use the Target Emissions Rate metric, but would more effectively optimise energy performance and thus assist fulfilling Hinckley & Bosworth's contribution to the UK's legislated carbon budgets and national net zero target of 2050.

- Please note: As the FHS remains unpublished as of mid-February 2026 and is expected[iv] to have a year's transition before applying to all new homes, Part L 2021 is the assumed standard for homes built until the end of 2026.
- Please note: HBBC's housing trajectory show that some of the anticipated new homes will be at developments that already have planning permission or an application in place. The new local plan's policy cannot be retrospectively applied to these, therefore these are assumed to meet the Building Regulations in place at the time (Part L 2021 for new builds until end of 2026; FHS for new builds thereafter, as above).

FHS / TER-based policy option	Policy Option 3 (True Net Zero EUI)
• Target Emissions Rate metric based on % improvement, not absolute values, which makes comparison difficult due to different baselines used • Only considers regulated energy uses (heating, cooling and lighting), not unregulated ones (plug-in appliances) • SAP is a compliance tool and does not accurately model energy use • Cannot be verified during operation to understand potential performance gap between designed and as-built building • Not fit for development of true net zero buildings, due to modelling inaccuracy • Will not deliver net-zero-carbon buildings (until the energy grid is fully decarbonised via future development of extensive standalone renewables).	• Uses absolute energy-based targets that directly limit energy consumption, which are verifiable in-use by the occupier at the meter • EUI accounts for regulated and unregulated energy use • Uses a predictive energy modelling tool (e.g. Passivhaus Planning Package) that is proven to accurately predict energy use, thus reflects real-life performance • Industry-evidenced best-practice to deliver true net zero buildings • Easier to predict impact of design and construction on resident's energy bills • Prioritises renewable energy on-site, rather than assuming that standalone renewable energy schemes will decarbonise the grid.

	FHS Option 1 (no policy)	Policy Option 3 (True Net Zero EUI)
Metrics used	Target Emissions Rate (63% reduction on today's TER) Calculate TER and TFEE with SAP or HEM[8]	Energy Use Intensity (EUI) and space heating demand, via an accurate method
Renewable energy on site (solar PV)	PV area = ~40% of ground floor	Match total energy consumption on an annual basis
Net zero building?	Not until grid is fully zero carbon	Yes, from year 1
Aligned to WMS2023?	Yes	No

[6] https://www.gov.uk/government/consultations/the-future-homes-and-buildings-standards-2023-consultation/the-future-homes-and-buildings-standards-2023-consultation

[7] On 6th June 2025, government confirmed that the Future Homes Standard will indeed include rooftop solar panels. Of the two FHS options most recently nationally consulted upon (2023-24), only Option 1 had solar PV.

[8] SAP will be nationally replaced by the Home Energy Model (HEM) once the Future Homes Standard is in force. Consultation indicates that HEM will retain the TER metric but also offer other outputs.

Establishing the energy use in each of the two policy scenarios

To reflect the energy use in each of the two respective policy scenarios, this analysis sampled data generated by energy modelling, which forms an earlier part of this evidence base. The energy modelling tested different inputs of building elements for each policy scenario (see Appendix 1 'envelope performance' and 'building services' tables). It used a highly accurate energy prediction modelling method (Passive House Planning Package; PHPP[9]) to identify the total energy use of Hinckley & Bosworth's typical new build homes under Policy Option 3 and the Future Homes Standard.

With the predicted energy use established in each policy scenario, this energy use was then combined with projected grid decarbonisation factors during 2025-2050 (period for HBBC local and national net zero target). The emissions for each policy scenario can then be compared against the available local carbon budget for new build housing, as a share of the national carbon budget (explained later).

The following section focuses on the carbon budget modelling process. For all policy scenarios, the cited energy use data came from energy modelling using PHPP, despite that the FHS1 would use SAP in implementation rather than PHPP. This is because if Policy Option 3 were tested using PHPP, whilst FHS1 and TER-based policy scenarios were tested using SAP, inconsistency between the modelling tools would result in incomparable figures. Also, SAP is inaccurate at predicting actual energy use[v,vi,vii], whereas PHPP has a track record of accuracy[10]. Instead, the use of PHPP data for all policy scenarios ensures consistent and accurate predictions of energy use (and thus of carbon).

The cited PHPP modelling data includes both regulated and unregulated energy use of each of the home types, giving a detailed picture of home energy use[11]. Our analysis uses the modelled energy use of two archetypes: an apartment block (30 dwelling units, and a semi-detached house. The same archetypes were used for all policy scenarios. (see Appendix 1).

Energy modelling results per home

Table 1: Energy and gas use and associated greenhouse gas emissions in two different home types in three different possible energy performance standards, taken from the separate energy modelling of typical new homes in this local authority area.

		Apartment (one apartment as share of total 30-apartment building)			**Semi-detached (one house)**		
Metric	Unit	Part L 2021 (today)	FHS 1 ('no policy' scenario)	Policy Option 3 (True net zero EUI)	Part L 2021 (today)	FHS 1 ('no policy' scenario)	Policy Option 3 (True net zero EUI)
Net total energy use per home, after deducting solar PV generation (same in each year)	*kWh/yr*	*4,288 gas* *460 electricity*	*0 gas* *1,393 electricity*	*0 gas* *-6 electricity*	*7,254 gas* *33 electricity*	*0 gas* *1,340 electricity*	*No gas* *-214 electricity*
Net annual carbon emissions per home in 2025	**kg CO_2e/yr**	**845 kg**	**183 kg**	**-0.79 kg**	**1,331 kg**	**175 kg**	**-28 kg**
Total operational carbon emissions per home, in the carbon budget period (2025-2050) if this home is built in Year 1 (2025), with electricity grid decarbonisation	kg CO_2e/yr	20,756 kg	1,084 kg	-4.7 kg	34,532 kg	1,042 kg	-166 kg

[9] PHPP is a modelling tool used to accurately calculate a building's energy use. This is a tool used in the design of Passivhaus buildings, but can also be used as a generic modelling tool in buildings that are not pursuing Passivhaus certification. The tool provides wide functionality through a range of input variables to predict heat loss, energy and broader comfort metrics.

[10] As acknowledged by the industry (e.g. RICS) and also by national government via its 2023 HEM consultation (https://assets.publishing.service.gov.uk/media/65e1f99a2f2b3b001c7cd879/home-energy-model-consultation.pdf#page=58), in which PHPP has been one of the validation tools during the development of that new national model HEM, thanks to PHPP being "regarded as demonstrably accurate for modelling of high-performance homes".

[11] In practice, a 2023 WMS-compliant policy would not assess unregulated energy as the metric it required – Target Emissions Rate – only considers regulated energy. However, homes built under a WMS-compliant policy would still *have* unregulated energy use and associated carbon emissions until the grid is zero carbon.

To determine the relative contribution from houses[12] and apartment archetypes to the overall carbon emissions in Hinckley & Bosworth from the two policy scenarios from 2025-2050, a % split is set based on the recent track record of new build housing types in this local authority area. According to the latest EPC data[13] for new dwellings by housing type, the latest 5 years[14] of data show that 81% of new domestic buildings in Hinckley & Bosworth are houses, whilst the remaining 19% are flats. This % split is assumed to remain constant for the delivery of new homes from now on. The average energy use and emissions figures per new-built home using that weighted average of 19% / 81% is shown below in Table 2.

Table 2: Energy and gas use per average new-build home in this local authority area, as adapted from the previous table and weighted by the identified split of new home types in this local authority area in recent years.

		Weighted average per new-build home in Hinckley & Bosworth, reflecting local split of 19% apartments vs 81% houses		
Metric	Unit	Part L 2021 (today)	FHS 1 ('no policy' scenario)	Policy Option 3 (True net zero EUI)
Net total energy use per home, after deducting solar PV generation (same in each year)	kWh/yr	6,689 kWh/year gas 114 kWh/year electricity	0 gas 1,350 kWh/year electricity	0 gas -174 kWh /year electricity
Net annual carbon emissions per home in 2025	**kg CO_2e/yr**	**1,239 kg**	**177 kg**	**-23 kg**
Total operational carbon emissions per home, in the carbon budget period (2025-2050) if this home is built in Year 1 (2025), with electricity grid decarbonisation	kg CO_2e/yr	31,906 kg	1,050 kg	-135 kg

The above 'total operational carbon emissions' rows take into account the anticipated decarbonisation of the electricity grid in the stated period, based on national projections of future grid decarbonisation[viii]. Please note that while that row is given as an illustration of what a home's total emissions to 2050 would be if the home were built in 2025, the analysis in the next steps of this work do take into account the fact that delivery of new homes will occur gradually across each year of the carbon budget period rather than all occurring in 2025.

While this study is undertaken in early 2026, 2025 is the first relevant year for carbon budget analysis purposes because the latest national emissions figures available today are for calendar year 2024, which are deducted from the available national carbon budget before assigning the local carbon budget (see later section on establishing the national carbon budget).

As expected, FHS Option 1 ('no policy' scenario) results in a considerable degree of emissions even though significantly less than today's Part L. For Policy Option 3, the modelling shows that negative emissions are produced from both the semi-detached and the apartment archetype. This is because the policy would require renewable electricity to at least equal annual energy demand. In this scenario, the energy modelling found that in some archetypes the exact amount of energy demand would require in an amount of PV provision that would not be a whole number of standard solar panels. As solar PV provision in practice would have to be a number of whole panels, the provision was rounded up to the next whole panel, and the resulting PV generation from that home becomes slightly more than the building's actual energy demand. This excess solar PV becomes 'negative' consumption as it is exported to the grid (as in apartments and semi-detached at -6kWh and -214kWh respectively as shown above; the energy modelling also identified negative energy consumption in this policy scenario in detached houses at -3kWh). All new build home archetypes addressed in the energy modelling were able to include enough PV on site to match their energy use, but in the event that they could not (e.g. due to site-specific constraints such as overshadowing), this policy would require that exact amount of shortfall to be offset via a contribution to offsite PV provision, thus zero net use and net zero emissions.

[12] Based on semi-detached houses. The energy modelling source data did not offer terraced houses, which typically constitute a modest but notable share of new houses. For the purpose of this exercise, the semi-detached archetype can be reasonably assumed to be representative of houses as a whole, as it can be considered a 'middle ground' between the various types of houses, reflecting an average house size and carbon emissions.
[13] https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fassets.publishing.service.gov.uk%2Fmedia%2F69f364504b0f7395324fbb8e%2FNB4-_New_Domestic_Properties.ods&wdOrigin=BROWSELINK
[14] At the time of conducting the analysis. This national dataset is released quarterly.

Scaling up the per-home results to reflect Hinckley & Bosworth's total new housing delivery

A housing growth trajectory was provided by Hinckley & Bosworth in January 2026, showing the estimated amount of housing to be delivered in the plan period. According to those housing projection figures, 15,604 homes should be delivered throughout the plan period of 2024-2045. The figures also showed the amount of new homes anticipated to be delivered in each year of that plan period, and the approximate sites these are thought to be delivered at. However, these trajectory figures had to be adjusted in several small ways to align with the carbon budget periods that are set nationally, as follows:

- HBBC housing trajectory was presented in financial years (e.g. 2024/25) which end in March of the latter year, whereas the national carbon budget figures are based on calendar years (as are the national emissions figures, grid carbon factors, and local-level energy use data). To ensure consistency between these datasets, the housing delivery figures were converted from financial years to calendar years. For example, the housing figure for 2025 is calculated as 3/12 of the 2024/25 delivery (January–March 2025) plus 9/12 of the 2025/26 delivery (April–December 2025). This approach is applied consistently across the carbon budget analysis to align housing delivery data with the calendar-year basis of the carbon budget.
- The use of financial years in the HBBC trajectory meant that the HBBC housing trajectory figures finished in 2044/45, which would only run to March 2045. The year 2045 was therefore extended to cover the full calendar year, resulting in an estimated total 15,862 new homes to be delivered across calendar years 2024 to 2045 inclusive.
- 2024/25 is already past, during which the HBBC trajectory figures showed that 396 of the new homes were already delivered (of which 297 homes assumed to be within calendar year 2024 and 99 in 2025, as per our method described above). Therefore, 15,565 new homes would be delivered from calendar years 2025 to 2045 inclusive. As national emissions data are available already for year 2024 which will be deducted from the available national carbon budget before allocating the local share of that budget (see later section), 2025 onwards is the relevant study period for carbon budget purposes.
    - Additionally, while the trajectory indicates delivery of 551 homes in 2025, actual delivery is estimated at 457 homes, based on national new build EPC[ix] data used as a proxy. In our adjusted trajectory (*Figure 2*), this shortfall of 94 homes is rolled over to add to the 2026 total.
- Some of the new homes would escape the new policy, because the HBBC trajectory figures revealed that within the total housing delivery trajectory there would be:
    - 99 homes already built in 2025 (part of the HBBC trajectory's 396 built in 2024/25, as above) – these would be part of the total 457 new homes actually built in 2025 according to the aforementioned national EPC figures at local level
    - 1,347 of the new homes are 'existing commitments' i.e. developments that already have permission (of which all are to be built in 2025 to 2028). Existing planning permissions – even at outline stage – cannot be retrospectively held to new energy/carbon standards set by a new local plan.
    - A further ~5,820 of the homes relate to developments for which an application has already been made and is awaiting determination. It is assumed that these will not be subject to the new policies of the emerging local plan, as they would be determined in line with the existing local plan at the time of application. The HBBC trajectory showed that delivery of these homes was spread between 2026 to 2045.
    - These 'existing commitments' and 'existing applications' are assumed to simply meet the Building Regulations in place at the time of anticipated completion.
    - This leaves 8,299 new-build homes that would be built from the start of the carbon budget period (2025) to the end of the plan period (2045) that would be subject to any new local plan policy, if there is one. The HBBC housing trajectory figures showed that these homes would start being delivered in 2028, as all homes built up to end of 2027 were associated with either existing permissions/applications, as described above. This aligns well with HBBC's latest stated anticipated date to adopt the new emerging local plan, i.e. "late 2027"[x].
- Our study needs to cover the total period through to the UK's net zero carbon date of 2050 – which is five years beyond the end of the plan period. Therefore we assume that the 2044/45 delivery rate of 344 homes/year also continues in 2046-2050. This means that the total number of new homes built *from the start of the plan period to the end of the carbon budget period* is 17,582 (of which 15,862 in the plan period). For the *remaining carbon budget period* (which excludes 2024 for reasons previously noted), these numbers are 17,285 of which 15,656 within the plan period.

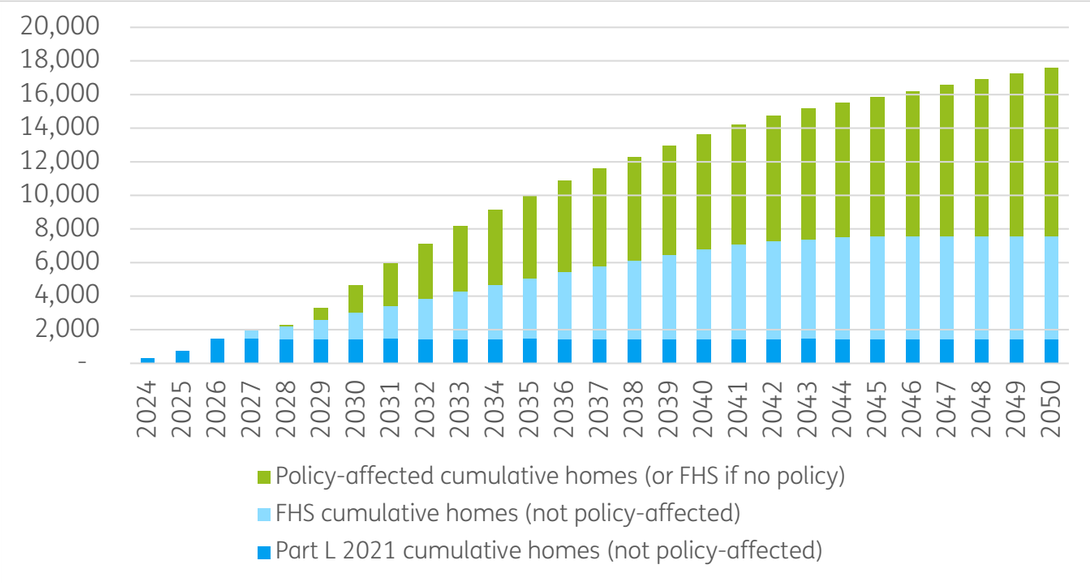


Figure 3: Illustration of HBBC housing trajectory, adapted to calendar years (instead of financial years) and continuing the same growth rate to 2050 to align with national carbon budget period

We assume that as each home is delivered, it is occupied and begins consuming energy in that year. This avoids the potential methodological error of assuming all homes are using energy from the first year of the plan period. Multiplying the cumulative number of new builds in each year with the annual energy use per home, we find the assumed total new build stock's energy use in each year of the carbon budget period (2025–2050 as previously noted). We recognise that there may also be some cases where newly completed homes may have a period of non-occupation for marketing purposes; however, such incidences should be rare and short if the housing demand is as urgent as stated by industry and government, especially given that significant proportions of new builds are sold before completion[15]. Additionally, in our ultimate comparison of Hinckley & Bosworth's total carbon emissions against carbon budgets, any unoccupied periods in new builds should be more than balanced out by the fact that the data on local areas' existing carbon emissions[16] has a 2-year data lag and therefore misses out any new builds completed between the most recently published data year (2023 at the time of this analysis) and our carbon budget start date (2026).

Up to the end of 2026, new homes are assumed to be built to Part L 2021 standards[17] and therefore have gas boilers, resulting in associated operational emissions from gas throughout future years from those homes, as well as their electricity-related emissions. Homes from 2027 onwards are assumed to be all-electric (using electric heating not gas – as this is the specification for the FHS and the 'net zero' policy scenario). Therefore:

- The total electricity use in each year (by the cumulative number of new homes completed up to that year) is multiplied by the electrical grid carbon factor for that year[18]
- The annual gas use in each year (from the cumulative number of new homes completed up to that year) is multiplied by today's latest available national carbon factor for natural gas use today[xi]. There is no national projection dataset for future gas grid decarbonisation, therefore the same gas carbon factor is used for every year. As previously noted, the only new-build homes that have gas use are those built to Part L 2021 standard (here assumed to apply to all that are built in 2024, 2025 and 2026).
- The annual electricity-related emissions and the annual gas-related emissions of all 'new build' homes are summed together to get the operational carbon emissions of the cumulative number of new homes in each year of the carbon budget period. The emissions in each year can then be summed to give the total operational carbon emissions from new builds completed within the carbon budget period.

[15] https://propertyindustryeye.com/share-of-new-homes-sold-off-plan-drops-31-year-on-year/
[16] https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-statistics
[17] This is because the Future Homes Standard has still not been published as of mid-February 2026 and is anticipated to have at least a further year's transition period to the date when it would actually come into force for all homes (as many homes that submit plans with a local authority before that date would be permitted to meet Part L 2021 instead of the FHS) (https://home-energy-model.co.uk/timeline/). Therefore, early 2027 is the earliest possible date the FHS could be in force. This is an optimistic assumption, as there is often a further delay between when new building regulations are published and when they enter force, which – in combination with the year-long transition period – could mean that the FHS may only become universally mandatory for new homes from early 2028. If that delay does occur, this would mean a further year's worth of new home delivery being built to Part L 2021 standard (with gas boilers) which have the effect of further reducing the available carbon budget for all the homes built later on (therefore even greater justification of the need for all new builds to be net zero) and/or further reduce the remaining carbon budget for the existing housing stock (which would create a need for even deeper and faster programs of retrofit, which is a far less realistic prospect than constructing new builds to net zero standards).
[18] See Appendix 2.

Table 3: Predicted carbon emissions from new-build housing in Hinckley & Bosworth in the remaining years to which Climate Change Act carbon budgets will apply (2025 to 2050).

	Unit	No policy (Part L 2021 to end 2026 and FHS thereafter)	Policy Option 3: True Net Zero EUI from 2027 (for homes that are subject to new plan policy) (and applicable Building Regulations for homes not affected by new plan policy due to holding prior permissions or applications)
Total operational carbon emissions from new housing (2025-2050) (kt CO_2e) (Estimated 17,285 new homes delivered in this period, of which 15,862 within the local plan period to 2045) Please note this is made up of: • 7,266 homes that would not be subject to the new policy due to holding existing permission or being subject to an existing application • 10,019 homes that would be subject to the new policy.	**$ktCO_2e$**	**49.7 kt** Of which: • 45.3kt from Part L 2021 homes • 4.4kt from FHS homes.	**46.9 kt** Of which: • 45.3kt from Part L 2021 homes • 2.0kt from FHS homes that escape the policy • -0.32kt from homes meeting 'true net zero' Policy Option 3.

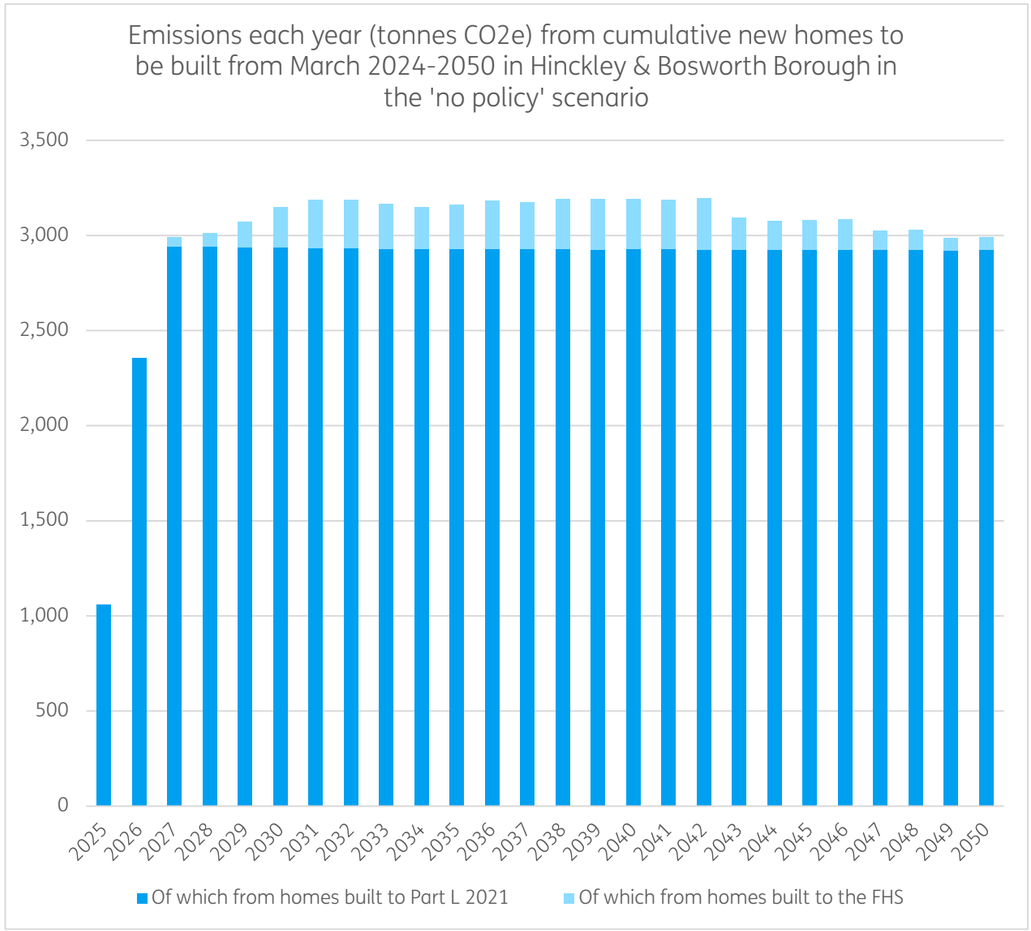


Figure 4: Emissions each year (tonnes CO2e) from cumulative homes that would be completed from March 2024 onward (cumulative homes; annual emissions) with the assumed "no policy" scenario (Part L 2021 for homes built up to end of 2026; FHS1 for homes built from 2027).

This first graph (Figure 4) shows what the annual emissions would be of all new build homes built from 2025 onwards. Dark blue sections represent homes built to Part L 2021 standard (assumed here for all homes built up to end of 2026), while pale blue bars represent homes built from 2027 onwards to the FHS. As Part L 2021 has gas heating, this means that the overall emissions are dominated by those Part L 2021 homes despite them only representing 8% of the total new-built homes represented here. This is because the Part L 2021 homes' net energy use is made up of 98% gas use and only 2% net electricity use after deducting the buildings' PV generation. There is no future projection for gas grid decarbonisation, whereas there is for the electricity grid. By contrast, the FHS is all-electric (gas-free). This graph therefore also reveals how grid decarbonisation does significantly reduce emissions of the FHS homes that would have been built up to each year, even though the cumulative number of homes built is increasing each year as previously explained.

However, the second graph (Figure 5) shows that because the annual emissions figure is not zero , this adds up to a significant cumulative amount of emissions in the total national carbon budget period (up to 2050). As previously noted, this total in the absence of any local policy would reach 49.7 kilotonnes of emissions. Although the Government has described the FHS as "net zero carbon ready" because it is all-electric and will therefore decarbonise along with the grid, the Government's own electricity grid decarbonisation projections used to perform our analysis (see Appendix 2) do not show the grid getting all the way to zero carbon in this period. Although the electricity grid carbon is projected to get very low in the mid-2030s, the fact that the homes are not zero carbon from day 1 means that their cumulative emissions do add up over time especially as the required housing delivery steadily increases the total number of homes that exist each year.

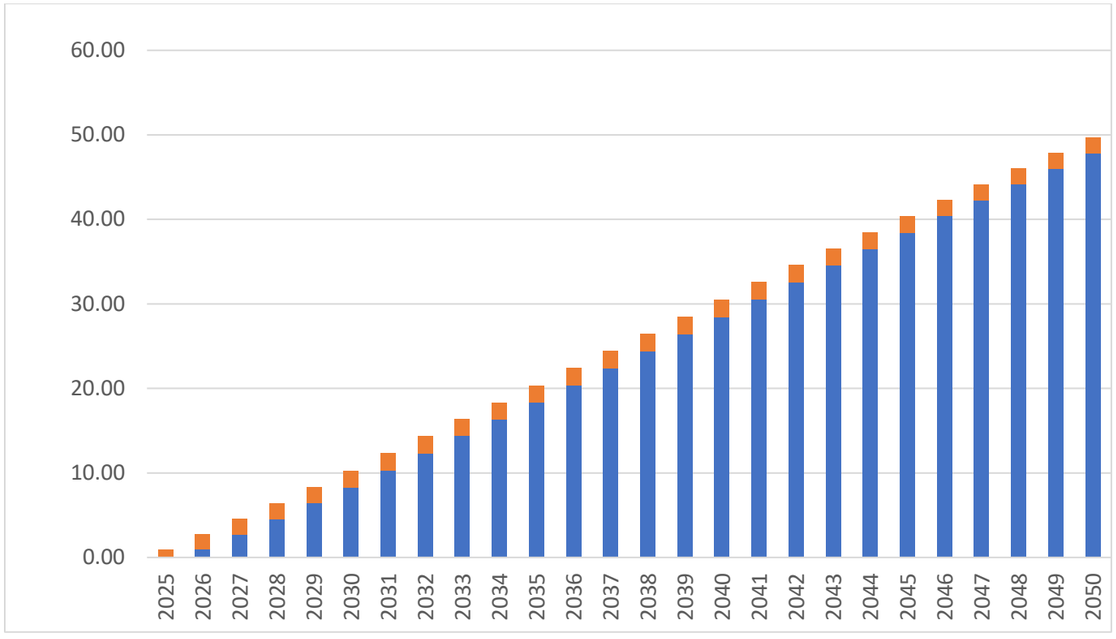


Figure 5: Cumulative emissions to date for each year, from all homes that would be built from 2025 onward (cumulative homes; annual emissions) with the assumed "no policy" scenario (that is, meeting Part L 2021 for builds completed up to end of 2026; and meeting FHS for builds completed thereafter).

In the following section, these cumulative emissions from new housing are compared against the available carbon budget that can reasonably be assigned for new housing in Hinckley & Bosworth, as a share of national carbon budgets (and eventual net zero 2050 goal) set within the Climate Change Act 2008.

2. Setting a carbon budget for Hinckley & Bosworth Borough

Importance of setting a carbon budget

The exercises in this section are crucial to determine whether Policy Option 3 is necessary for Hinckley & Bosworth to meet its local and national net zero target date of 2050 and stay within its share of the legislated national carbon budgets. These are considered the only rational tests for whether the plan will sufficiently fulfil its legal duty to mitigate climate change (set by the Planning & Compulsory Purchase Act 2004) to the extent required by the NPPF 2024 (i.e. proactively and in line with the Climate Change Act), as the Climate Change Act includes the national carbon budgets.

To fulfil the WMS2023's expectation to demonstrate local circumstances to justify the policy, the estimated emissions with and without the policy (identified in Section 1) can be compared against what carbon budget is available for the operational emissions of new build housing in Hinckley & Bosworth, as set by the carbon budget in this section, to align with local and national net zero targets.

By testing these policy scenarios against the available carbon budget, it can be determined whether Policy Option 3 is justified and required for the new build housing sector to sufficiently contribute to mitigation of climate change. If it is found that Policy Option 3 remains in line with the carbon budget, while the WMS-compliant alternative (FHS1) does not, this would demonstrate clear local circumstances to justify divergence from the WMS and retain Policy Option 3.

Net zero context for Hinckley & Bosworth

HBBC declared a climate emergency in 2019 and set a target for net zero by 2050 through the 2024 – 2028 Climate Change and Biodiversity strategy. For the specific scope of this study, net zero operational carbon in new build housing[19], it is therefore, both locally and nationally important to consider what policy requirements are aligned achieving net zero by 2050.

The Balanced Pathway to Net Zero (set out in the 6th Carbon Budget[20], which is one of the series of legally binding national carbon budgets passed into law under the aegis of the Climate Change Act 2008 that also sets the UK's 2050 net zero target), clearly states that all new build housing must be net zero from no later than 2025[xii] and prior analysis[xiii] had shown that this will need to include that new homes achieve a space heating demand of 15-20 kWh/m^2/yr. However, this deadline had not been met nationally by the time this study was undertaken. As of February 2026, the Future Homes Standard had not yet been implemented, with subsequent regulations confirming commencement from 24 March 2027. HBBC's proposed policy option 3 requires that all new housing achieves exactly these two requirements, and is therefore aligned with national legislated carbon goals and the local net zero 2050 aspiration.

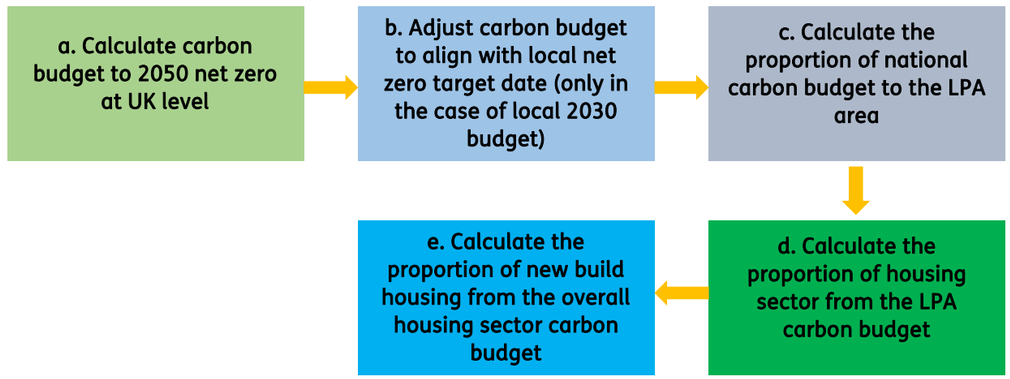
It is crucial that local plans fulfil their mandate to contribute to the national legislated Climate Change Act target of 2050 (and legislated carbon budgets). As per the NPPF (cited above), it is the responsibility of local authorities to ensure their plan *proactively* plays its fair role in this. In local areas that have the physical ability and the viability margin to carry the cost uplift of higher build standards, this would logically mean maximising policy ambitions to balance out for less progressive policies in other areas of the UK that may be less able to meet optimal standards due to local constraints on viability, supply chain or type of development that can be physically accommodated. Testing policies against the national legislated carbon budgets and net zero goal will determine whether the policy is sufficient to proactively mitigate climate change in line with those carbon budgets set via the Climate Change Act.

Carbon budget methodology

The first step in determining whether either of the policy scenarios (Policy Option 3 or a WMS-compliant policy) would ensure new build housing is compatible with local or national carbon goals is to rationally establish a specific carbon budget for new build *housing* in this local plan.

The established carbon budget will reflect both the local and national net zero 2050 goal. The policy scenarios will be compared against this budget. This local carbon budget does not assume any level of plan policy ambition. Rather, it represents the maximum allowable emissions to align Hinckley & Bosworth with the Climate Change Act.

As the WMS2023's specific scope is not relevant to embodied carbon, existing buildings nor non-residential buildings, we here derive local carbon budgets that represent only the maximum allowable emissions for energy use of new build *housing* in Hinckley & Bosworth.



[19] The 2023 WMS only applies to energy efficiency standards in new build housing (asking that this be expressed in terms of TER, which is operational carbon from regulated energy only) and does not apply to policies on embodied carbon, on-site renewable energy, existing buildings or non-residential buildings. Operational carbon is any carbon emitted during the occupancy of a building. Energy efficiency is using less energy to achieve the desired result (in this case, the desired result is homes that function well for their occupants including remaining a comfortable temperature year-round).

[20] https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf

a. Calculating remaining carbon budget to 2050 net zero at UK level

Our first step is to determine to remaining carbon budget to achieving net zero by 2050 at a national level.

We here reflect the actual legislated carbon budget figures where available (all years up to 2037) and the soon-to-be-legislated carbon budget figure for 2038-42 as that has been devised by the Committee on Climate Change and is now with parliament waiting to be legislated.

The remainder of the 4th Carbon Budget was calculated by subtracting actual UK emissions recorded in 2023 and 2024 from the total budget for the 2023–2027 period. The total 4th Carbon Budget is 1,950 $MtCO_2e$, while actual emissions in 2023 and 2024 totalled 837 $MtCO_2e$. Subtracting these emissions from the total budget gives a remaining budget of 1,113 $MtCO_2e$ for 2025–2027. As national carbon budgets are set over five-year periods, the years 2025, 2026 and 2027 represent the remaining three-fifths of the 4th Carbon Budget period.

The actual budget for the 2043-2050 period has not been defined by the CCC and won't be until the 8th Carbon Budget report in a few years. See Appendix 3 for how the figures for 2043-2050 are indicatively derived from the Balanced Pathway trajectory. In short, this reflects Climate Change Committee reports on the Balanced Pathway to Net Zero in 2043-2050, adjusted by the % by which the legislated carbon budgets have historically differed very slightly from the 'Balanced Pathway' figures.

Our resulting overall carbon budget value for the UK to reach net zero by 2050 is therefore 4,588.1 MtCO2e.

Period	Budget source	Carbon budget ($MtCO_2e$)	Average/yr ($MtCO_2e$/yr)	*% reduction from 4th CB baseline*
2025–2027	Remainder of 4th Carbon Budget (2023 to 2027 total = 1,950$MtCO_2e$; actual emissions in 2023+2024 totalled 837. 1950 - 837 = **1,113**) *(National carbon budget periods are 5 years, thus 2025+2026+2027 assumed to represent 3/5 of total)*	1,113	390/yr across whole CB; 371/yr in 2025-2027	*0%*
2028–2032	5th Carbon Budget (legally binding)	1,725	345	11.5%
2033–2037	6th Carbon Budget (legally binding)	965	193	50.5%
2038–2042	CCC's 7th Budget recommendation (2025)	535	107	72.6%
2043–2050	Not officially budgeted, but assume the following based on CCC "Balanced Pathway" annual emissions figures in each year:			
	2043*: (65.29 x 103.1%)	67.3		*82.7%*
	2044*: (54.07 x 103.1%)	55.7		*85.7%*
	2045*: (42.47 x 103.1%)	43.8		*88.7%*
	2046*: (33.33 x 103.1%)	34.4		*91.2%*
	2047*: (24.58 x 103.1%)	25.3		*93.5%*
	2048*: (16.09 x 103.1%)	16.6		*95.7%*
	2049*: (7.99 x 103.1%)	8.1		*97.9%*
	2050*: (-1.11 x 103.1%)	-1.14		*100.3%*
Total		**4,588.1**		

b. Deriving Hinckley & Bosworth's share of the total national carbon budget

This next step takes the national carbon budget value and tailors it to an equivalent reduced value for this local area. A reasonable principle is to assume that each local area's share of current national emissions will continue into the future[21].

Therefore it is necessary to identify what % this local area's current emissions contribute to current national emissions, using the DESNZ UK Local Authority GHG Emissions dataset (2025 release; 2023 latest emissions values).

For Hinckley & Bosworth, this calculation is 657 $ktCO_2e$ (Hinckley & Bosworth annual emissions total) / 356,094$ktCO_2e$ (UK annual emissions total) = **0.184%**.

0.184% is therefore applied to the previous carbon budget value stage to represent the specific carbon budget for Hinckley & Bosworth:

- Hinckley & Bosworth's carbon budget through to 2050 is: **8.46 $MtCO_2e$** (0.184% of 4,588.1 $MtCO_2e$).

c. Deriving the housing sector's share of the total local carbon budgets

This step apportions a share of the aforementioned total local carbon budget to the housing sector in Hinckley & Bosworth. As per the previous stage, here the housing sector is apportioned a share that reflects the housing sector's current proportion of total local emissions, based on DESNZ UK Local Authority GHG Emissions dataset as previously cited.

To determine the contribution from the housing sector in Hinckley & Bosworth, an average of emissions from the housing (domestic) sector over the last 10 years is taken, which is representative of the housing sector's contribution to Hinckley & Bosworth's total emissions over a recent period.

In Hinckley & Bosworth 2014-2023 average annual housing emissions were 176.1 $ktCO_2e$, whilst the average annual total emissions were 750.7 $ktCO_2e$. Thus the housing sector contributes **23.5%** to Hinckley & Bosworth's total emissions.

This 23.5% value is therefore applied to the local carbon budget value from the previous step.

- 8.46 $MtCO_2e$ total local share of national carbon budget value to net zero *2050*
    - x 23.5% = local carbon budget for housing to 2050 is **1,986 $ktCO_2e$.**

[21] This is a principle used by other local carbon budget expert analysis such as that of the Tyndall Centre, termed 'grandfathering'. It more fairly apportions emissions than alternative ways such as by population or financial indicators, because grandfathering automatically takes account of the sectors that make up the economy of each local area. For example, a location with a heavy dependence on employment in manufacturing would struggle to transition to low-carbon as rapidly as a service-based economy, while maintaining employment. Grandfathering automatically factors-in the current economic base of each area by reflecting the existing emissions profile of the area..

d. Deriving new builds' share of the overall housing sector carbon budget

The previous step separated the housing sector from the overall local carbon budget value. The final step to set the local and national carbon budget values for the operational carbon of new build housing is to separate new build housing emissions from existing housing.

Firstly, the expected emissions from existing homes and new build homes throughout the carbon budget period (2025-2050) are calculated.

The % split between the expected emissions of existing homes and new build homes from 2025 to the net zero target date will provide a % split that will be applied to the previous stage's housing sector total carbon budget value. By applying this % split, the value apportioned to new build homes (based on the expected emissions from new homes) forms the final carbon budget value to assess policy scenarios within.

Existing housing

To calculate the expected emissions from existing homes within the carbon budget periods, data from the latest year value for gas and electricity data is used, which is available at the specific local level (published in national datasets on local authority area energy use).

The latest available figures on local energy consumption reflect 2024. However, 2024 is part of the HBBC local plan period and part of the local *new* housing requirement was already delivered in that year (as previously noted) and therefore the energy use of those new homes would have impacted the local per-home average energy use in that year. These new homes built in 2024 would have been built to current building regulations (Part L 2021) therefore would have a different energy use profile than the rest of the local existing housing stock, most of which is much older and thus less efficient especially in terms of heating use. Additionally, as those new-build homes would have been delivered gradually throughout the year and not occupied from 1st Jan 2024, the 2024 energy consumption figures would not reflect the amount of energy use that these homes would have when occupied for the full year. Therefore, for year 2025 onwards, when calculating the energy use of Hinckley & Bosworth's existing housing we utilise the *per-home* consumption figures from year 2023 so as to exclude the impact of energy use of homes built in 2024, which we separately account for within our section of new builds that meet Part L 2021 standard and are unaffected by policy.

In Hinckley & Bosworth the average 2023 electricity consumption (per existing home, annual) is 3,331 kWh and gas consumption 10,221 kWh (per existing home, annual, domestic standard meters)[22]. Multiplied by local existing housing stock of 52,758 homes[23] this makes

[22] Per-home figures derived by dividing the Hinckley & Bosworth 2023 total domestic gas and total domestic electricity use by the number of homes in Hinckley & Bosworth in 2023 from MHCLG live tables on housing stock.
[23] This figure is from the MHCLG live data on housing stock for 2024. The MHCLG figures are a snapshot at March of each year, therefore most of the new housing delivery in 2024 would not have been captured in that total housing stock 2024 figure.

175,738,862 kWh of electricity use and 539,218,416 kWh of gas use per year across pre-existing housing in Hinckley & Bosworth from 2025 onwards. In this first instance, these figures are assumed to continue throughout the carbon budget period. To calculate the greenhouse gas emissions of this energy use by existing homes in each year, these consumption values are multiplied by the relevant carbon factors, using UK Government datasets for electricity (Table 1; Grid average, consumption, domestic) and gas (Fuels tab; natural gas; gross CV) for years 2025-2050. The electricity factor includes future grid decarbonisation, whereas no such decarbonisation projections exist for the gas grid[24]. By summing the emissions. As a result, the emissions of these existing homes is predicted at 121,699 tonnes in 2025, falling to 99,204 tonnes in 2050.

Summing each of the years in the carbon budget period (2025 to 2050) gives a cumulative total of **2,702,326** tonnes (2,702.33kt) of emissions from the existing housing stock of 52,758 homes. Per existing home, this is 51.22 tCO_2e (equivalent to 0.0512 $ktCO_2e$).

Crucially, this reveals that the predicted emissions from existing housing already exceed the available Hinckley & Bosworth housing sector carbon budget previously identified, by 36%:

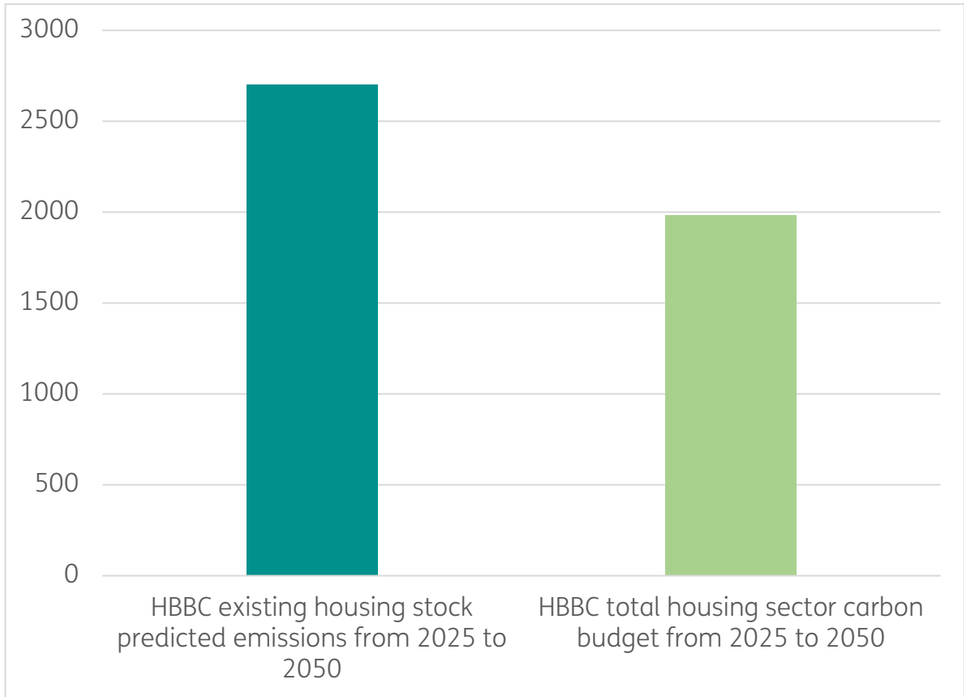


Figure 6: Comparison between predicted emissions (kilotonnes CO_2e) of existing homes and total housing sector carbon budget in Hinckley & Bosworth from 2025 to 2050

Taken at face value, this would imply that there is no room in the carbon budget for any new homes. However, these figures do not assume any future changes to existing homes (other than electricity grid decarbonisation), e.g. energy efficiency improvements or switching from gas to electric heating. Realistically it is likely this sort of retrofit will occur to some extent. Therefore, the next step allocates a share of carbon budget to *new* homes by dividing the available housing sector carbon budget between existing and new homes in proportion to what their predicted emissions would be in the absence of policy. In effect, this allocation of the available budget between the existing and new housing essentially assumes that they together *will* fit within the housing sector carbon budget. This has the effect of assuming that both the pre-2025 and post-2025 homes will undergo some degree of future improvement versus the current emissions profile, especially in pre-2025 existing housing (well beyond the electricity grid decarbonisation that has already been factored into the predicted emissions), to make room in the budget for the emissions of new homes.

[24] This means that while the emissions from electricity fall steadily in each year even if electricity use remains static, the emissions from gas are equal in each year of the carbon budget period.

New build housing

As previously described, based on Hinckley & Bosworth's housing growth trajectory from 2025 onwards, the predicted cumulative emissions for all new build homes in Hinckley & Bosworth from 2025 to 2050 in a 'no policy' scenario are **49.70kt**[25].:

Balance between existing and new build homes

Adding together predicted 'business as usual' emissions of the aforementioned *existing homes cumulative emissions* over the 2025-2050 carbon budget period to that of *new homes*, this gives a total of:

- 2,702.33 $ktCO_2e$ (existing homes) + 49.70 $ktCO_2e$ (new homes) = 2,752.03 $ktCO_2e$.

Therefore, the % contributions to overall expected housing sector emissions in the 2025-2050 carbon budget period are:

- From new build housing: 49.70 / 2,752.03 = 1.81%
- From existing housing: 2,702.33 / 2,752.03 = 98.19%

As previously mentioned, although the predicted emissions from existing housing already exceed the *available* housing sector carbon budget, the assumption is next made that room must be made in that carbon budget to allow for the new housing growth (i.e. that existing housing in Hinckley & Bosworth will not be allowed to exceed the available local housing sector carbon budget and therefore will undergo some sort of carbon performance improvement in future years). We therefore allocate that room for new housing based on new homes' % of actual predicted emissions, as above.

Applying this % contribution to the previously identified housing sector carbon budget values therefore results in final 2025-2050 carbon budgets for new housing as follows:

- **1,986** $ktCO_2e$ (total Hinckley & Bosworth housing sector carbon budget) x 1.81% = **35.86 $ktCO_2e$**

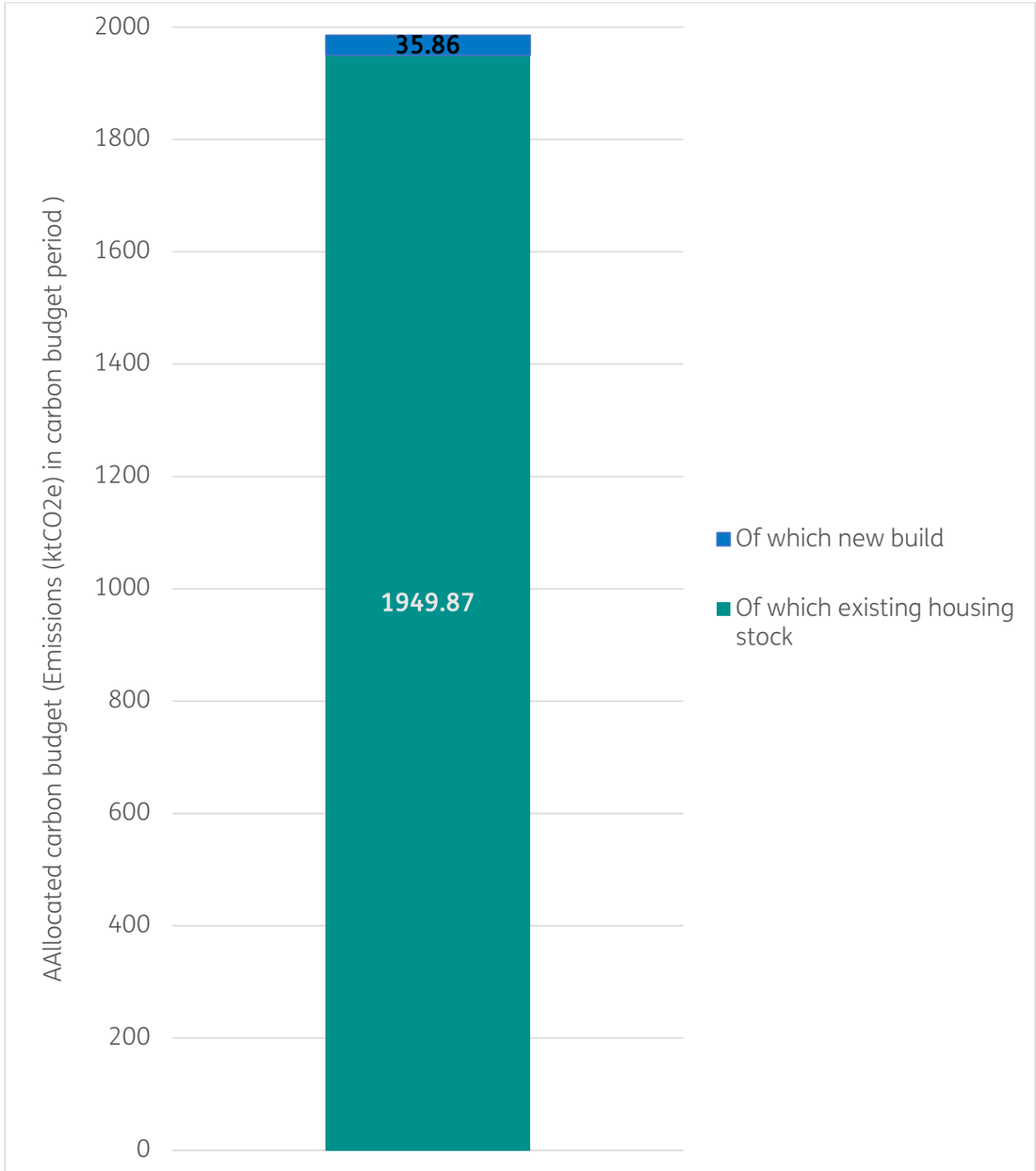


Figure 7: Available carbon budget for housing sector operational emissions from 2025 to 2050, derived from national carbon budgets as previously described (kilotonnes CO_2e).

[25] As previously noted, the majority (91%) of this predicted 49.7kt is from homes anticipated to be built to Part L 2021 (therefore with a gas boiler), even though these constitute only 8% of the total homes to be built .

3. Conclusion to determine alignment with net zero target

The aim of this report has been to determine whether either of the two policy approaches, Proposed Policy Option 3 ('true net zero EUI') or a WMS-compliant policy reflecting the FHS, would keep new homes within the remaining local carbon budget for new build housing.

- The figures for the 2050 end date are crucial to the question of whether each policy scenario will ensure that housing development in Hinckley & Bosworth will "contribute to the mitigation of climate change" as per local plan's legal duty, to the extent of being consistent with the national policy instruction to do so "proactively … in line with the Climate Change Act" and "support the transition to net zero by 2050".
- The figures for the local ambition of net zero by 2030 provide a further illustration of local circumstances that further justify policy going beyond Building Regulations.

Carbon budget period	Available carbon budget for new housing	FHS1 (WMS 2023 compliant policy)	Policy Option 3 (HBBC proposed 'true net zero' policy)
Total operational carbon emissions from new housing (2025-2050) (kilotonnes CO_2e)	**35.86 kt**	**49.70 kt** (of which 4.44 kt from FHS homes and 45.26 kt from Part L 2021 homes)	**46.94 kt** (of which -0.32kt from EUI policy compliant homes, 2.00kt from FHS homes, and 45.26 kt from Part L 2021 homes)

Crucially: This shows that the emissions just from the Part L 2021 homes (built in 2024, 2025 and 2026) on their own exceed the available amount of carbon budget available for *all* new homes that would be built through to 2050. This is a concrete example of how local policy standards are clearly justified in light of failure caused by insufficient timely national regulation – in that the gas-free Future Homes Standard was meant to have been in force for all homes built from 2025 onwards, but is still not published as of mid-February 2026.

As previously noted, draft proposed Policy Option 3 results in the lowest increase in total operational carbon emissions from new housing within the carbon budget period. It is important to note that there is negative total carbon emissions from the share of the new housing that would be subject to Policy Option 3, as the policy represents true zero carbon development and therefore is best aligned to the required carbon budget. The policy achieves this by ensuring that a home is extremely energy efficient to the point that its annual on-site renewable electricity generation meets or exceeds the *total* annual energy use. Key elements of this policy are energy efficiency metrics that cover the home's *total* energy use (not just the regulated energy use[26]) and that are demonstrated using accurate energy use prediction methods (PHPP, CIBSE TM54 or similar[27]).

These key elements for success are precisely what diverges from the Written Ministerial Statement 2023, previously outlined.

In summary: Policy Option 3 is the only policy that has even a slight negative emissions effect in the carbon budget period (although small), therefore is the only one that contributes to counteract the locked-in excess emissions that will occur from the Part L 2021 homes built in the period before the local plan policy could take effect, and from FHS homes built after 2027 that escape the policy due to having permission before the policy enters force). Policy Option 3 is therefore demonstrated to be the only policy option that 'proactively' mitigates climate change and helps deliver the objectives of the Climate Change Act as instructed by the NPPF, and helps fulfil the local plan's legal duty to mitigate climate change.

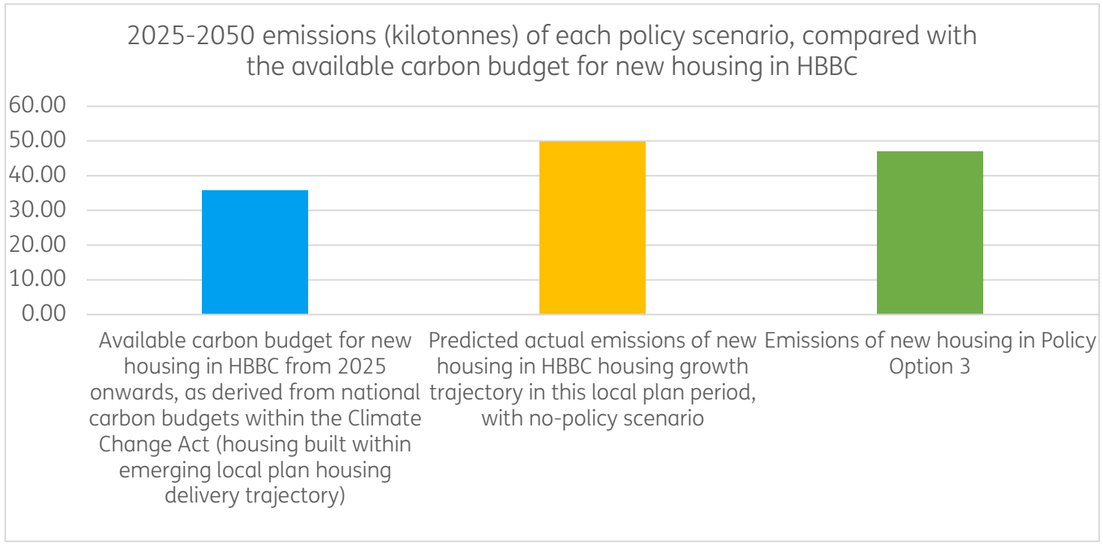


Figure 8: Chart showing the available carbon budget for new housing operational emissions in Hinckley & Bosworth (derived as share of national carbon budgets as previously described), compared to actual predicted emissions of Hinckley & Bosworth's new homes in 'no policy' scenario and Policy Option 3 scenario (which includes some new homes that escape the policy).

[26] This is in contrast to the TER metric stipulated by the Written Ministerial Statement 2023 as previously noted. The TER metric by definition can only account for regulated energy uses, which make up only approximately 25-75% of a building's total energy use, depending on type of building.

[27] Again, this is in contrast to the WMS' preferred metric of TER calculated using Building Regulations SAP methodology, which is highly inaccurate in predicting actual energy performance (see separate full evidence report for the extent of SAP's inaccuracy).

The FHS1 policy scenario (WMS-compliant / 'no policy') exceeds the available carbon budget value available for new housing in Hinckley & Bosworth, whether that carbon budget is aligned to the local ambition of net zero 2030 or the national legally binding net zero date of 2050.

This WMS-compliant policy (FHS1) is therefore not an appropriate policy approach to fulfil the local plan's mandate to proactively mitigate climate change in line with the Climate Change Act.

Discussion

Clearly, this study has not attempted to test every possible formulation of 2023 WMS-compliant policy scenario. It may be possible to design a WMS-compliant policy that makes some extent more carbon savings than shown here. However, the WMS stipulates the use of a metric (TER, calculated by SAP methodology) that by definition does not cover the total energy use of a home and does not accurately reflect homes' actual energy performance.

Therefore any WMS-compliant policy cannot ensure that homes' energy use is kept low enough that it can be met with on-site renewable energy in actual operation and therefore achieve the actual net zero carbon homes that are necessary for the achievement of national carbon budgets - at least without needing to specify excessive amounts of onsite solar PV provision to counteract SAP's dramatic underestimation of energy use, which could make housing delivery unviable and might not be compatible with electricity grid constraints in some areas. By contrast, Policy Option 3 keeps energy use so low that only small amounts of solar panels on site are needed to match (and even slightly exceed) the home's annual energy use, therefore not bringing excessive construction costs and minimising the burden that these new homes will place on the electrical grid.

Additionally, we reiterate that the carbon budget assumed 'available' to new homes in this study depends on significant reductions in the emissions of existing homes, beyond what will be delivered by electricity grid decarbonisation. It is important to focus on the fact that all the expected emissions from existing buildings significantly exceed the overall housing (existing and new build) carbon budget values in Hinckley & Bosworth.

- Those reductions will need to be delivered by significant rollout of energy efficiency improvements and electric heating (ideally heat pumps) to replace existing homes' gas boilers.
- This change in existing housing is fact a very uncertain prospect, with the 2024 national progress report[28] showing that the rollout of insulation and clean heating to existing buildings is far behind where it needs to be for the achievement of nationally legislated carbon targets under the Climate Change Act.
- If that rollout of improvements to existing housing in Hinckley & Bosworth does not occur, there will be no space for new homes available in the housing sector carbon budget, and in fact that housing sector carbon budget will be exceeded even just by the emissions of existing homes in the carbon budget period as follows:
- Overall Hinckley & Bosworth housing carbon budget of 1,986 $ktCO_2e$ will be exceeded by 717 $ktCO_2e$ just by the emissions of the existing housing stock without retrofit.

We reiterate also that these housing sector carbon budgets are derived directly from the legislated national carbon budgets via a logical series of steps previously described, this is untenable in light of the local plan's mandate to mitigate climate change in line with the objectives of the Climate Change Act. While these changes to existing buildings cannot be ensured by the local plan (which only exerts power where permission is needed, and cannot force change to happen in existing buildings), it is the responsibility of the local plan to proactively take the mitigation actions that are within its power to reduce the likelihood of these carbon budgets being breached as shown here.

Given that Hinckley & Bosworth's existing housing emissions are unlikely to remain within the available carbon budget for the entire housing sector in Hinckley & Bosworth, it is essential that new build housing adds minimal burden to remaining within the budget. It is arguably sensical that a carbon budget of zero should be apportioned to new build housing since the existing housing subsector is already expected to use up all the whole housing sector carbon budget for both local and national periods.

Local plan policy must therefore require robust targets and metrics that truly result in nearly zero carbon development, as Policy Option 3 would achieve. This is currently not achievable under a 2023 WMS-compliant policy, such as one relying on the, as the Target Emissions Rate in the Standard Assessment Procedure (sought by the WMS) ignores unregulated energy which can account for approximately 25-75% of operational carbon emissions in new buildings. The modelling found that relying on the Future Homes Standard[29] resulted in residual emissions from new build housing which resulted in a 36% exceedance of the available carbon budget for new housing, whilst Policy Option 3 (EUI-based 'true net zero') contributed less than zero emissions in the buildings that would be affected by the policy, which – even after the unavoidable emissions of homes that would be built to Part L 2021 or the FHS before the policy is in place – results in overall lower emissions from new build housing compared to any of the other policy scenarios.

It is therefore explicitly apparent that new build housing must be subject to stringent policy that genuinely achieves zero carbon development in the buildings that it can influence, in order to meet the local plan's climate mitigation mandate to the extent required by the NPPF. Expressing a policy in the way that the WMS2023 stipulates – i.e. as a percentage reduction on the TER metric calculated using SAP – would make the policy subject to the inadequacies and inaccuracies of Building Regulations metrics and SAP tool (see separate full evidence base

[28] https://www.theccc.org.uk/publication/progress-in-reducing-emissions-2024-report-to-parliament/

[29] It is also important to keep in mind that this modelling reflects Future Homes Standard Option 1, which was the more stringent of the two FHS options consulted upon by government (2023 consultation) and in fact the actual FHS that eventually forms the new Building Regulations Part L may even have worse carbon emissions than this.

report). This clearly cannot be risked in light of the carbon budget analysis presented here. This study has clearly shown that the modelled WMS-compliant policy (Future Homes Standard Option 1) are not appropriate policies to be aligned with HBBC's local net zero target nor with the UK's legally binding targets. It is only Policy Option 3 that can be considered appropriate as a proactive mitigation step in line with the net zero targets.

Thus, this study has clearly shown that local circumstances exist to justify a departure from national policy, i.e. the 2023 WMS, as Hinckley & Bosworth would exceed its remaining carbon budget for new build housing by a significant amount if a policy aligned to the 2023 WMS was implemented, whilst Policy Option 3 would actively contribute towards the climate change mitigation needed in the housing sector.

Appendix 1
Building specifications assumed in each of the two policy scenarios

These building specifications are taken from the aforementioned primary energy modelling exercise for Hinckley & Bosworth, which identified exactly what specifications would be needed in Hinckley & Bosworth to achieve the selected energy performance targets in the policy for homes. These inputs represent different specifications set for different policy scenarios, which are the key factors that influence space heating demand, energy consumption, energy generation and resulting carbon emissions of buildings.

Please see the full separate energy modelling technical report for the detail on all different house archetypes; however we here provide an extract of just apartments and semi-detached houses to illustrate the range of difference between the specifications.

Envelope performance

Building element	Part L 2021 (today's standard)	FHS	Policy Option 3 (true net zero EUI)
Roof U-value (W/(m^2.K))	0.11	0.11	0.10
External wall U-value (W/(m^2.K))	0.18	0.18	0.13
Floor U-value (W/(m^2.K))	0.13	0.13	0.08
Door U-value (W/(m^2.K))	1.00	1.00	1.00
Glazing U-value (W/(m^2.K))	1.20	1.20	0.8 – 1.00
Air permeability (m3/(h.m2) @ 50Pa)	5	4	0.57 – 1.06

Building services

	Part L 2021 (today's standard)	FHS	Policy Option 3 (true net zero EUI)
Wastewater heat recovery	Yes	Yes	No
Heat source	Gas boiler	Air source heat pump	
Ventilation	Natural with intermittent fans	Decentralised mechanical vent (dMEV)	Mechanical ventilation with heat recovery (MVHR)
Renewable energy	kWp = Ground floor area x 40% / 6.5. Apartment: 1.4kWp Semi-detached: 2.5kWp	kWp = Ground floor area x 40% / 4.5, Apartment: 2.0 kWp (4 panels 510 W) Semi-detached: 3.6 kWp (7 panels 510W)	Apartment: 3.9 kWp (8 panels 510 W) Semi-detached: 4.1 kWp (7-8 panels 510 W)

Appendix 2
Electricity carbon factor change over time

Electricity carbon factors were taken from national projections that are released within the UK Government DESNZ dataset "Green Book Valuation of Energy Use and Greenhouse Gas Emissions for Appraisal"[xiv], data tables 1-19. The relevant table is "Table 1: Electricity emissions factors to 2100, $kgCO_2e/kWh$".

This is the national estimate of the amount of greenhouse gas emissions that will occur due to each kilowatt-hour of grid electricity use. It reduces over time because national government assumes that more and more renewable energy generation will be connected to the grid to replace fossil fuels, and some extent of hydrogen use and/or carbon capture being deployed at any remaining power stations that run on fossil gas or other combustible fuels.

The Green Book dataset is updated periodically. This analysis was conducted in Spring-Summer 2025, at which time the most recent version was released in November 2023.

The Green Book provides the Table 1 data in 2 forms:

- "Long run marginal" and
- "Grid average".

These two forms are further differentiated into:

- generation-based factors
- consumption-based factors, which are further differentiated by:
    - residential,
    - industrial,
    - commercial/public sector.

The guidance within that Green Book data table download confirms that "Analysts should use consumption-based emissions factors for measuring GHG emissions per unit of final energy demand. These emissions factors include transmission and distribution losses, including significant losses due to power station inefficiency. Long-run marginal emissions factors should be used for measuring small changes in consumption or generation [whereas by contrast,] Grid average emissions factors are used for footprinting."

Therefore, as we are looking to find the carbon footprint of new housing, for our exercise the appropriate category is 'grid average, consumption-based, domestic'.

We therefore here reproduce the relevant part of Green Book Table 1 that we used.

Table 4: Relevant grid electricity carbon factors extracted from national Green Book dataset[30].

Year	$kgCO_2e$ per kWh Electricity use (Grid average, consumption-based, domestic)
2025	0.131
2026	0.098
2027	0.073
2028	0.063
2029	0.054
2030	0.049
2031	0.042
2032	0.033
2033	0.026
2034	0.021
2035	0.020
2036	0.020
2037	0.018
2038	0.018
2039	0.017
2040	0.016
2041	0.015
2042	0.015
2043	0.009
2044	0.008
2045	0.008
2046	0.008
2047	0.005
2048	0.005
2049	0.003
2050	0.003

[30] https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

Appendix 3
Forecasting an estimated carbon budget amount for years beyond the legislated and CCC-recommended budgets to date

The ultimate carbon budget for Hinckley & Bosworth needed to be derived from national carbon budgets. National carbon budgets are devised by the Climate Change Committee CCC) before being passed into law by parliament under the aegis of the Climate Change Act.

So far national carbon budgets have only been legislated up to year 2037 (the Sixth Carbon Budget), and the next carbon budget (period 2038-2042) has been devised by the CCC and is now waiting to be passed into law (it is here assumed that this will form the next legislated budget, as prior carbon budgets have followed the CCC's recommendation).

Because the NPPF 2024 instructs local plans to support the *transition to net zero* for which the date is 2050, the carbon budget in this exercise needs to cover the full period to 2050. Therefore for years from 2043 to 2050, it is necessary to make a reasonable assumption about what the carbon budget is likely to be in that period.

The last few CCC recommended budgets (which became law) closely follow what the CCC terms the "Balanced Pathway to Net Zero", which represents the most reasonable balance between ambition and feasibility.

The CCC *does* provide projections of this Balanced Pathway all the way through to the legislated net zero target date of 2050, including beyond the period for which national carbon budgets have been devised so far. The latest available version of this, from the CCC's 7th Carbon Budget Report, is as follows:

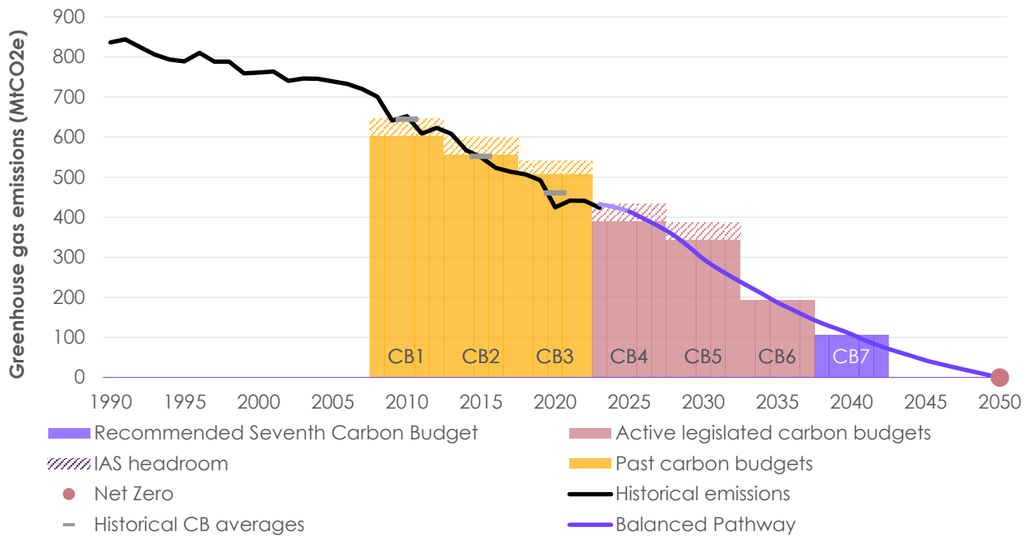


Figure 9: Legislated carbon budgets, soon-to-be-legislated 7th carbon budget, and 'balanced pathway to net zero'. "CB" = Carbon Budget. IAS = International aviation & shipping. Climate Change Committee 7th Carbon Budget, 2025

The CCC's carbon budget reports also come with downloadable spreadsheets of the data that generates these charts. From that download, we can see that the exact emissions in the Balanced Pathway in the years beyond the 7th carbon budget are, in megatonnes CO_2e:

2043	2044	2045	2046	2047	2048	2049	2050
65.29	54.07	42.47	33.33	24.58	16.09	7.90	-1.11

The sum of these is 242.61 $MtCO_2e$.

We could make an assumption that this will be the legislated carbon budget in those years.

However, the CCC's data also show the balanced pathway for years up to 2043, and the actual set carbon budgets (including those that have already been legislated and the soon-to-be-legislated 7th carbon budget). In fact, these actual carbon budgets are not precisely equal to the sum of the 'balanced pathway' annual emissions for the respective years in the period. The current 'live' carbon budget is for 2023-27. As a whole, the sum of all actual carbon budgets from today's onwards is 3.1% higher than the sum of all 'balanced pathway' annual emissions figures in the same period:

-	Total $MtCO_2e$, 2023 to 2042
Sum of all "Balanced Pathway" annual emissions:	5019.3
Sum of all actual national carbon budgets: *(including the 7th carbon budget)*	5175.0
Actual national carbon budgets total as a % of 'Balanced Pathway' total	103.1%

Therefore, a more accurate prediction of actual carbon budgets from 2043-2050 can be made by applying this difference to the Balanced Pathway figure for that period as noted above:

- 242.61 $MtCO_2e$ x 103.1% = 250.1 $MtCO_2e$.

This figure of 250.1 $MtCO_2e$ is therefore the figure we use in our assumptions of the total national carbon budget through to the final net zero legislated date of 2050:

- 4338 (budget 2025 to 2042) + 250.1 (budget 2043 to 2050) = **4588.1 $MtCO_2e$**.

All of our local and sectoral carbon budgets are subsequently derive from this national figure.

References & endnotes

[i] As expressed in Hinckley & Bosworth Borough Council Climate Change and Biodiversity Strategy 2024 to 2028. https://moderngov.hinckley-bosworth.gov.uk/documents/s33906/2Climate+Change+Strategy+2024+to+2028.pdf

[ii] Keep Bourne End Green v Buckinghamshire CC & SSHCLG [2020] EWHC 1984 (Admin) paragraph 105, cited in Estelle Dehon KC to Essex County Council and Essex Climate Action Commission (2025), *FURTHER UPDATED OPEN ADVICE. IN THE MATTER OF THE BUILDING REGULATIONS, PART L 2021 AND THE PLANNING AND ENERGY ACT 2008 Re: Ability of local planning authorities to set local plan policies that require development to achieve energy efficiency standards above Building Regulations.* https://www.essexdesignguide.co.uk/media/3129/essex-open-legal-advice-a-updated-may-2025-energy-policy-in-plans-and-building-regulations.pdf

[iii] https://www.theccc.org.uk/wp-content/uploads/2025/02/The-Seventh-Carbon-Budget.pdf. For a view of the past, current legislated and soon-to-be-legislated carbon budgets, see figure 3.2 on page 64. For a view of the steep reductions pathway in each sector, see figure 3.6 on page 72.

[iv] Smith, G. via Home Energy Model Guide (2026), *HEM & Future Homes Standard Timeline & Status*. Web page accessed 16th February 2026; web page states itself to have been last updated on 11th February 2026. https://home-energy-model.co.uk/timeline/

[v] CIBSE (no date), *Carbon Bites: The Performance Gap*. https://www.cibse.org/media/a1skdgsi/cb11.pdf

[vi] Etude, CIBSE, Levitt Bernstein, Elementa, WSP, Clarion Housing Group & UCL (2021). Making SAP and RdSAP 11 fit for Net Zero. https://www.levittbernstein.co.uk/site/assets/files/3670/making_sap_and_rdsap_11_fit_for_net_zero-full_report.pdf

[vii] RICS (2024), *Whole life carbon assessment for the built environment*. For direction on what energy modelling methods are acceptably accurate, in particular that Part L 2021 calculations (i.e. SAP and SBEM) are not, see section '5.3.1 Energy modelling for buildings', page 103. https://www.rics.org/content/dam/ricsglobal/documents/standards/Whole_life_carbon_assessment_PS_Sept23.pdf#page=103#page=103

[viii] Electricity grid carbon intensity national projections through to 2100 found in HM Government Department for Energy Security and Net Zero (2023), *Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal*, Data table 1. https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

[ix] HM Government

Ministry of Housing, Communities and Local Government (2026), Live tables on Energy Performance of Buildings Certificates. *Table NB4: Domestic Energy Performance Certificates for new dwellings by type of property*. https://www.gov.uk/government/statistical-data-sets/live-tables-on-energy-performance-of-buildings-certificates#epcs-for-all-new-domestic-properties-including-new-build-dwellings-conversions-and-change-of-use

[x] Hinckley & Bosworth Borough Council (2025), *Local Development Scheme March 2025*. Local Development Scheme (LDS) | Hinckley & Bosworth Borough Council

[xi] HM Government Department for Energy Security and Net Zero (2025), *Greenhouse gas reporting: conversion factors 2025*. Gas usage carbon factor used: Conversion factors 2025: full set (for advanced users); tab "Fuels", category "Gaseous fuels", item "natural gas". https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2025

[xii] Climate Change Committee (2020), *The Sixth Carbon Budget: The UK's path to Net Zero.* See table 3.2.c https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf

[xiii] Climate Change Committee (2019) UK Housing: Fit for the future?. *https://www.theccc.org.uk/publication/uk-housing-fit-for-the-future/*

[xiv] HM Government Department for Energy Security and Net Zero, *Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal*. https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal