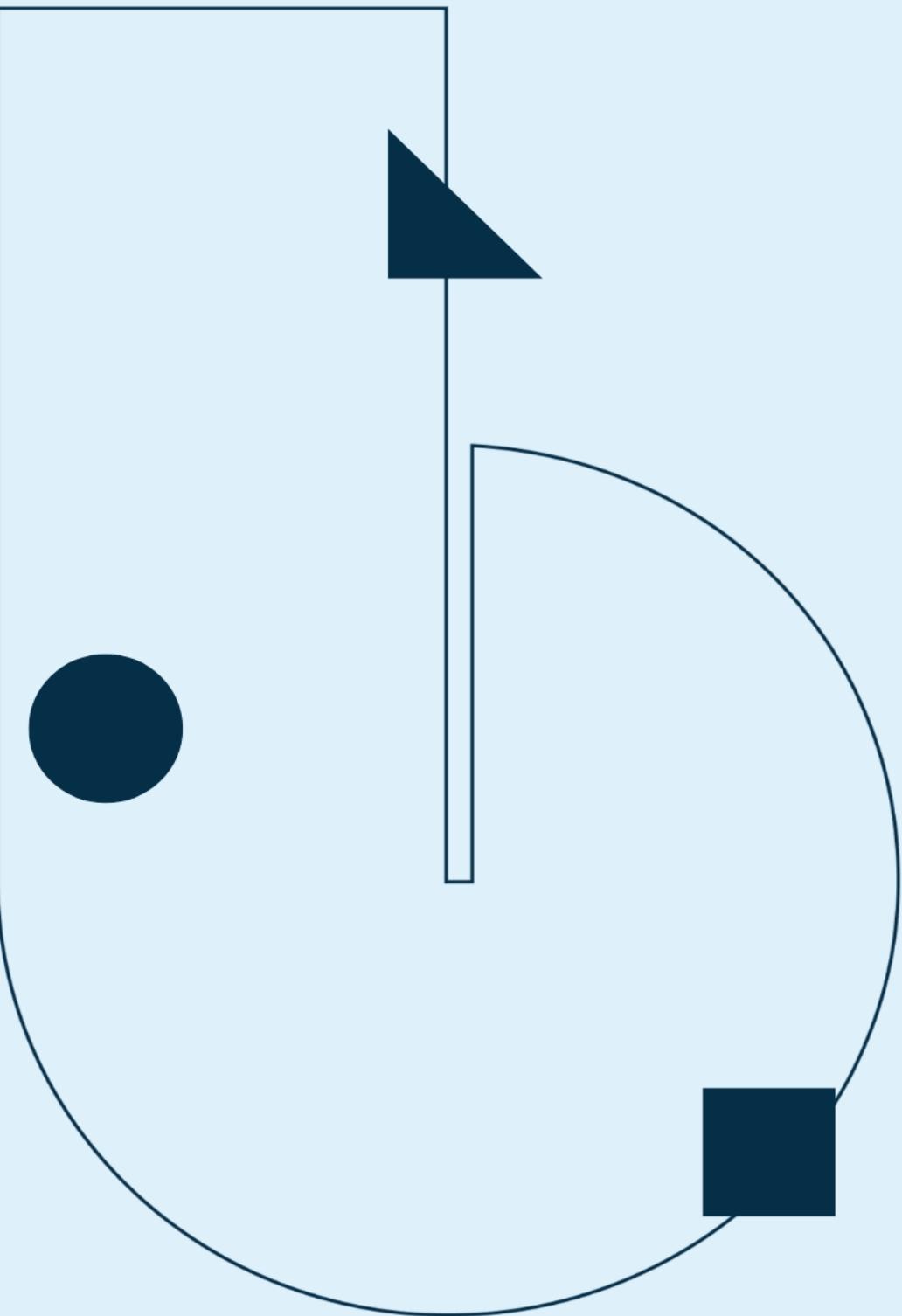




Swindon Borough Council

Topic Paper for CSE 1-5

Version 1

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0. Executive Summary

Bioregional is appointed to provide Swindon Borough Council with a review of its emerging climate change policies and identify opportunities to strengthen ambition while remaining aligned with viability evidence and national planning policy. The projects consists of five work packages:

- **Work Package 1:** Viability Review
- **Work Package 2:** Review of SBC's Draft Regulation 19 policies CSE1-CSE5
- **Work Package 3:** Topic paper drafting
- **Work Package 4:** Implementation Support
- **Work Package 5:** Renewable Energy Spatial Assessment

This report forms part of Work Package 3, Topic Paper drafting.

This topic paper provides the justification for the resulting policies, drawing on the relevant legislative and national policy framework, the wider social and economic benefits of climate action, Swindon's local emissions profile and Decarbonisation Framework, and supporting technical evidence.

Local planning authorities have a statutory obligation to ensure that development plans contribute to climate change mitigation and adaptation. The Climate Change Act 2008 establishes the wider legally binding framework of net zero greenhouse gas emissions by 2050 and successive five-year carbon budgets, while the Planning and Energy Act 2008 provides powers to establish proportionate local requirements relating to energy efficiency and renewable and low-carbon energy. The NPPF 2024 provides the principal national policy framework against which the emerging Swindon Local Plan will be examined. The Future Homes Standard and NPPF 2026 also form part of the evolving context in which the policies are expected to be implemented.

Improving the energy performance and climate resilience of development can deliver benefits beyond carbon reduction. These include warmer and healthier homes, lower energy costs, reduced exposure to energy price volatility and greater household resilience. These outcomes align with SBC's Decarbonisation Framework, particularly its priorities relating to energy and buildings, health and greenspaces. Swindon's emissions profile also demonstrates that despite reductions across several sectors since 2005, substantial emissions remain within the borough, including emissions associated with the operation of buildings.

Policies CSE1 to CSE5 provide a coherent and proportionate framework that is grounded in legislation and national planning policy, informed by relevant technical and local evidence, and considered justified and appropriate for submission as part of the emerging Swindon Local Plan.

Contents

1. Introduction 1

2. Legislative and policy context 2

2.1 Local authorities’ powers and obligations 2

2.2 Wider benefits of local energy efficiency policies 2

2.3 National policy and regulatory context..... 3

2.3.1. NPPF 2024: the examination framework 3

2.3.2. NPPF 2026 and development management implications 4

3. Local context 4

3.1 Emissions context 4

3.2 Decarbonisation plan..... 6

4. Rationale for local plan policies 7

4.1 Policy CSE1: Mitigation and Adaptation to Climate Change..... 7

4.2 Policy CSE2: Carbon Reduction and Sustainable Design 7

4.2.1. The energy hierarchy 7

4.2.2. Defining net zero carbon 8

4.2.3. Heat Networks and the Swindon Opportunity..... 8

4.3 Policy CSE3: Embodied carbon 9

4.3.1. Whole Life Carbon Assessments 9

4.3.2. The upfront embodied-carbon limit..... 9

4.4 Policy CSE4: Adaptive reuse and retrofit 10

4.4.1. The Waste Hierarchy 10

4.4.2. Pre-demolition audits..... 10

4.5 Policy CSE5: Renewable energy..... 10

4.5.1. Planning positively for renewable and low-carbon energy 10

4.5.2. Why community-led schemes and engagement are supported 11

5. Conclusion 12

Glossary 14

References 15

1.Introduction

Bioregional is appointed by Swindon Borough Council (SBC) to review climate change policies within the emerging Local Plan, with a particular focus on Policies CSE1 to CSE5. The commission seeks to ensure the proposed policy approaches are effective, implementable and supported by appropriate evidence while identifying opportunities to increase policy ambition where it can be appropriately accommodated within the viability context.

Local planning Authorities (LPA) have a legal duty to mitigate climate change (deliver carbon reductions) via the planning process, and national planning policy confirms these reductions should be in line with the Climate Change Act.

Our current appointment to support Swindon Borough Council in this effort comprises five core work packages:

- **Work Package 1:** Review assumptions made in viability assessment and interrogate whether there is any room for policies above national standards.
- **Work Package 2:** Review of Swindon’s draft Local Plan policies CSE1-CSE5 and suggest amendments.
- **Work Package 3:** Drafting of a topic paper that provides a strong justification for the SBC policies, aiding in the examination process and communication with wider stakeholders.
- **Work Package 4:** Develop a checklist for development management officers and applicants to support the implementation of SBC’s policies,
- **Work Package 5:** a Renewable Energy Spatial assessment to identify broad areas that may be suitable for renewable energy development

The current document forms the output for **Work Package 3**.

This report covers the following topics:

- Local authorities’ powers and obligations to mitigate and adapt against climate change
- The wider social and economic benefits of local energy efficiency policies;
- The national planning and regulatory context within which the emerging Local Plan will be examined and implemented;
- Swindon’s local emissions profile and decarbonisation priorities; and
- The rationale for emerging Local Plan Policies CSE1 to CSE5

2. Legislative and policy context

2.1 Local authorities' powers and obligations

Local planning authorities have a legal obligation to address climate change mitigation and adaptation through their development plans. This obligation sits within the UK's legally binding framework for achieving net zero and is supported by specific powers enabling planning policies to establish proportionate requirements for energy efficiency, as well as renewable and low-carbon energy. The three principal Acts relevant to the emerging Swindon Local Plan are considered below.

Section 19 (1A) of the Planning and Compulsory Purchase Act 2004ⁱ requires development plan documents to include policies designed to secure that development and the use of land contribute to “the mitigation of, and adaptation to, climate change” This creates a direct statutory obligation for climate mitigation and adaptation to be addressed through the Swindon Local Plan.

The duty placed on development plans through the Planning and Compulsory Purchase Act sits within a wider statutory framework created by the **Climate Change Act 2008**ⁱⁱ. The Act establishes the UK's legally binding target of net zero greenhouse gas emissions by 2050, supported by five-year carbon budgets. These interim budgets are important because they require emissions reductions throughout the Local Plan period, rather than action being deferred until 2050. It also provides a statutory framework for assessing climate change risks and preparing adaptation responses. Therefore, the Climate Change Act establishes the overarching national mitigation and adaptation framework to which the emerging Swindon Local Plan contributes.

Alongside these statutory obligations, the **Planning and Energy Act 2008**ⁱⁱⁱ grants Local Planning Authorities with specific powers to respond through development plan policies. The Act allows authorities to set “reasonable requirements” for:

- “Energy efficiency standards that exceed the energy requirements of building regulations”
- “A proportion of energy used in development in their area” to be from renewable or low-carbon sources “in the locality of the development”.

These powers must be exercised consistently with the relevant national policy.

The three statutory duties and powers listed above provide the basis for addressing climate-change mitigation and adaptation through the emerging Swindon Local Plan, including proportionate requirements for energy efficiency and renewable and low-carbon energy.

2.2 Wider benefits of local energy efficiency policies

In addition to meeting statutory climate obligations, improving energy performance of development can deliver wider social and economic benefits, including lower energy costs,

improved energy security, healthier homes and reduced fuel poverty. These benefits are reflected in recent government policy.

The Government's **Warm Homes Plan**^{iv} highlights the importance of improving energy performance of homes to reduce household energy costs, improve energy security and tackle fuel poverty. Fuel poverty remains a significant issue across England (see Figure 1) with 10.1% of households in the South West region, where Swindon is located, classed as fuel poor in 2024. Additionally, the Government's **Fuel Poverty Strategy**^v identifies energy insecurity as a key driver of fuel poverty, noting that millions of households remain exposed to volatile fossil fuel markets and high energy prices. It argues that improving the energy efficiency of homes and increasing the uptake of low carbon technologies can reduce vulnerability to future energy price shocks while supporting a more secure and affordable energy system.

The Warm Homes Plan recognises that recent rises in energy costs and volatility in energy markets have exposed the vulnerability of many households, especially since 86% of homes in England rely on gas-fired heating systems. In response, the Government has committed to upgrading five million homes by 2030 and aims to lift one million households out of fuel poverty through improvements to energy efficiency and low-carbon heating. These measures are intended to deliver warmer, more comfortable homes that are cheaper to run, while reducing exposure to future energy price shocks.

Figure 2: Proportion of fuel poor households, 2024, by region (England) ^[footnote 12]

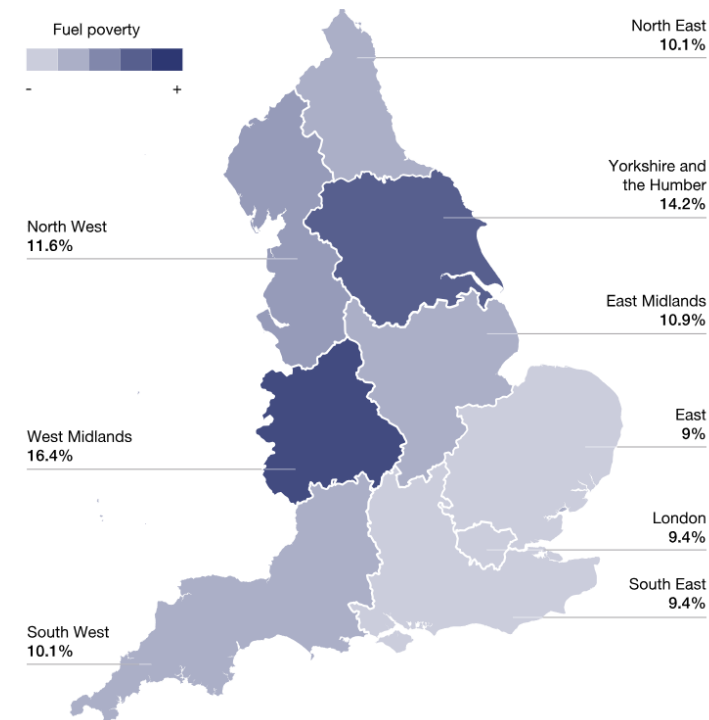


Figure 1 Geographic map of England showing the percentage of households in fuel poverty grouped by region. Source: [Warm Homes Plan \(HTML\) - GOV.UK](#)

The Government’s Warmer Homes Plan highlights the relationship between housing quality and health. For instance, it recognises the negative physical and mental health impacts of living in colder or underheated homes including the contribution to the risk of damp and mould and increased risk of respiratory and cardiovascular disease. This is further supported by the Building Research Establishment (BRE)’s estimate that the NHS spends roughly £900 million each year treating illnesses associated with living in cold or damp homes.

Improving energy performance of homes can therefore deliver wider social benefits alongside carbon reduction, including healthier living environments, reduced health inequalities, lower energy bills and greater household resilience. These statutory, environmental and socioeconomic considerations establish the case for action. The following section considers how national planning policy and building regulations shape the approach that the emerging Swindon Local Plan can take in response.

2.3 National policy and regulatory context

2.3.1. NPPF 2024: the examination framework

The legislation outlined in Section 2.1 establishes the need for the emerging Swindon Local Plan to address climate change. National Planning Policy provides the framework for translating these statutory obligations into spatial strategies and development management policies.

While the revised NPPF 2026 was published in August 2026, thus superseding previous versions, transitional arrangements for the legacy planning system means the emerging Swindon Local Plan will be examined against the NPPF 2024. The NPPF 2024^{vi} provides the principal national policy framework for Policies CSE1 to CSE5 (which will be discussed in further detail in [Section 4](#)). It establishes that:

- **161:** “The **planning system should support the transition to net zero by 2050** ... shape places in ways that **contribute to radical reductions in greenhouse gas emissions** ... [and] encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure”.
- **162:** “Plans should take a proactive approach to mitigating and adapting to climate change ... In line with the objectives and provisions of the Climate Change Act 2008”.
- **164:** “New development should be planned for in ways that ... help to reduce greenhouse gas emissions, such as through its location, orientation and design”.
- **165:** “To help **increase the use and supply of renewable and low carbon energy** and heat, plans should ... **provide a positive strategy for energy from these sources** ... consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development ... [and] identify opportunities for development to draw its energy supply from ... renewable or low carbon energy”.

These provisions establish the principal national basis for CSE1 to CSE5 including their approach to climate change mitigation and adaptation, emissions reduction through building design, retention and reuse of existing resources, and renewable and low carbon energy and heat. The requirement to act in line with the Climate Change Act should be understood in the context of both the statutory 2050 net-zero target and the successive five-year carbon budgets that establish the UK’s interim emissions-reduction pathway.

2.3.2. NPPF 2026 and development management implications

While Swindon Local Plan will be examined against the NPPF 2024, the NPPF 2026 will have implementation implications as the ‘national decision-making policies’ are applicable from the date the new NPPF was published.

Particularly relevant is DM7, which states that:

“Planning decisions should not seek to duplicate or extend controls imposed by separate regulatory regimes other than where there is a development plan policy in place applying optional technical standards for the development proposed.”

DM7 references PM13, which expressly permits local energy-efficiency standards that go beyond current or proposed Building Regulations, provided that they are supported by local circumstances, a proportionate evidence base, a clear and robustly costed rationale, and evidence that they will not adversely affect development viability or deliverability. Nevertheless, it states that higher energy-efficiency standards should be expressed as a percentage uplift against the Target Emissions Rate.

Furthermore, Annex A(2) states that plan policies that are ‘materially inconsistent’ with the national decision-making policies should be given very limited weight’.

While CSE2 encourages development to meet the UK Net Zero Carbon Building Standard, it does not set requirements. Therefore, CSE2 is compliant with the NPPF 2026 and Annex A(2) does not apply.

CSE3 sets an embodied carbon target – a matter not covered by Building Regulations. CSE3 is hence also compliant with the NPPF 2026.

3. Local context

While Section 2 establishes the statutory and national policy basis for action, the emerging Local Plan must also respond to Swindon’s local circumstances. This section therefore considers the borough’s emissions profile and the priorities established through SBC’s Decarbonisation Framework, providing the local context for policies CSE1 to CSE5.

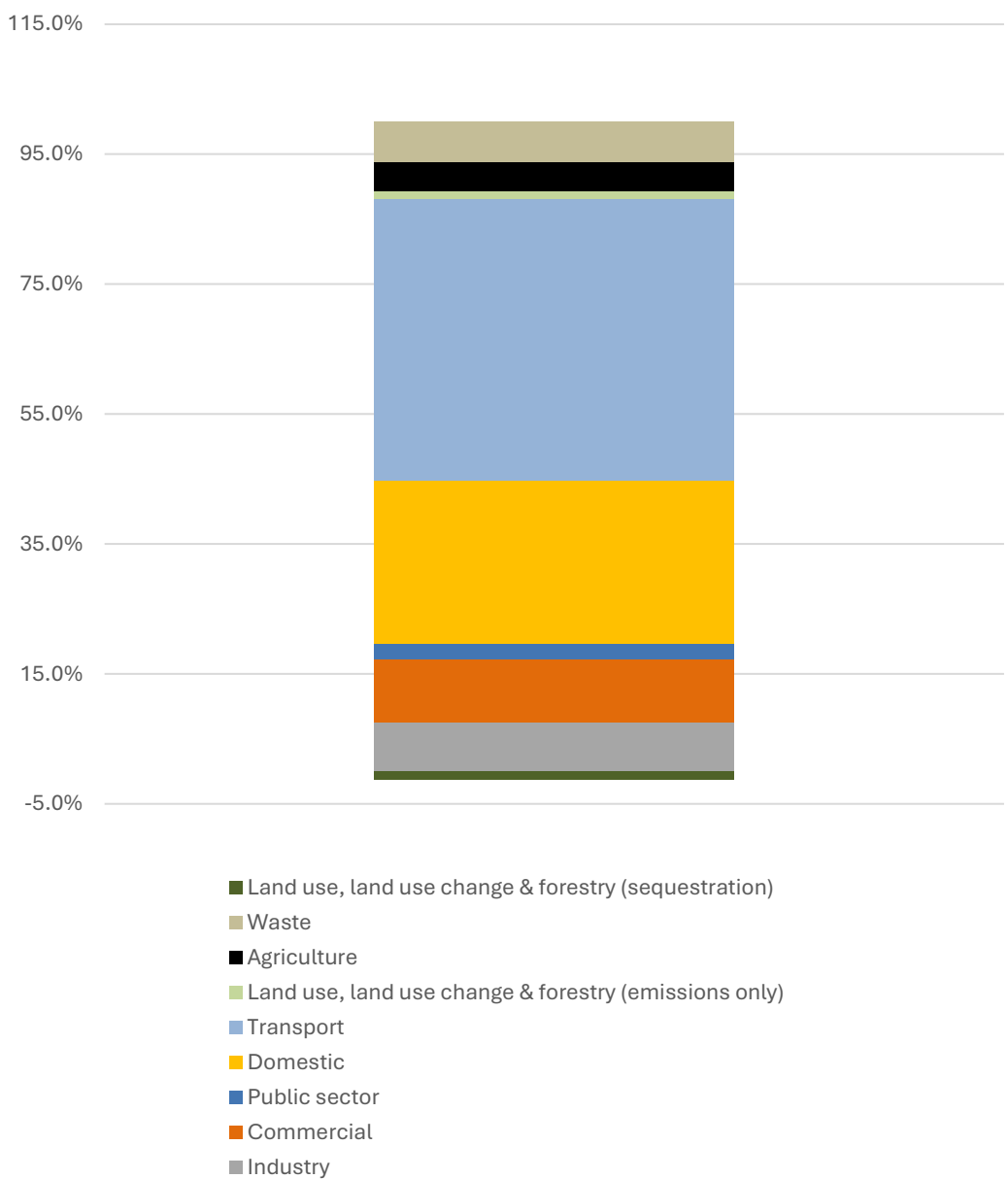
3.1 Emissions context

It is important to consider the carbon account of three key entities: the entire UK, Swindon as a geographic area, and each new building. If development is to truly mitigate (i.e. reduce overall) carbon emissions, we must consider how the building’s carbon emissions fit into Swindon’s carbon account, and how Swindon’s emissions fit within the wider UK’s carbon account which is legally bound to achieve net zero by 2050 and steep reductions in the preceding years. To this end, the Department of Energy Security and Net Zero (DESNZ) releases annual figures that break the UK’s carbon emissions down to a local level to help local authorities make decisions.

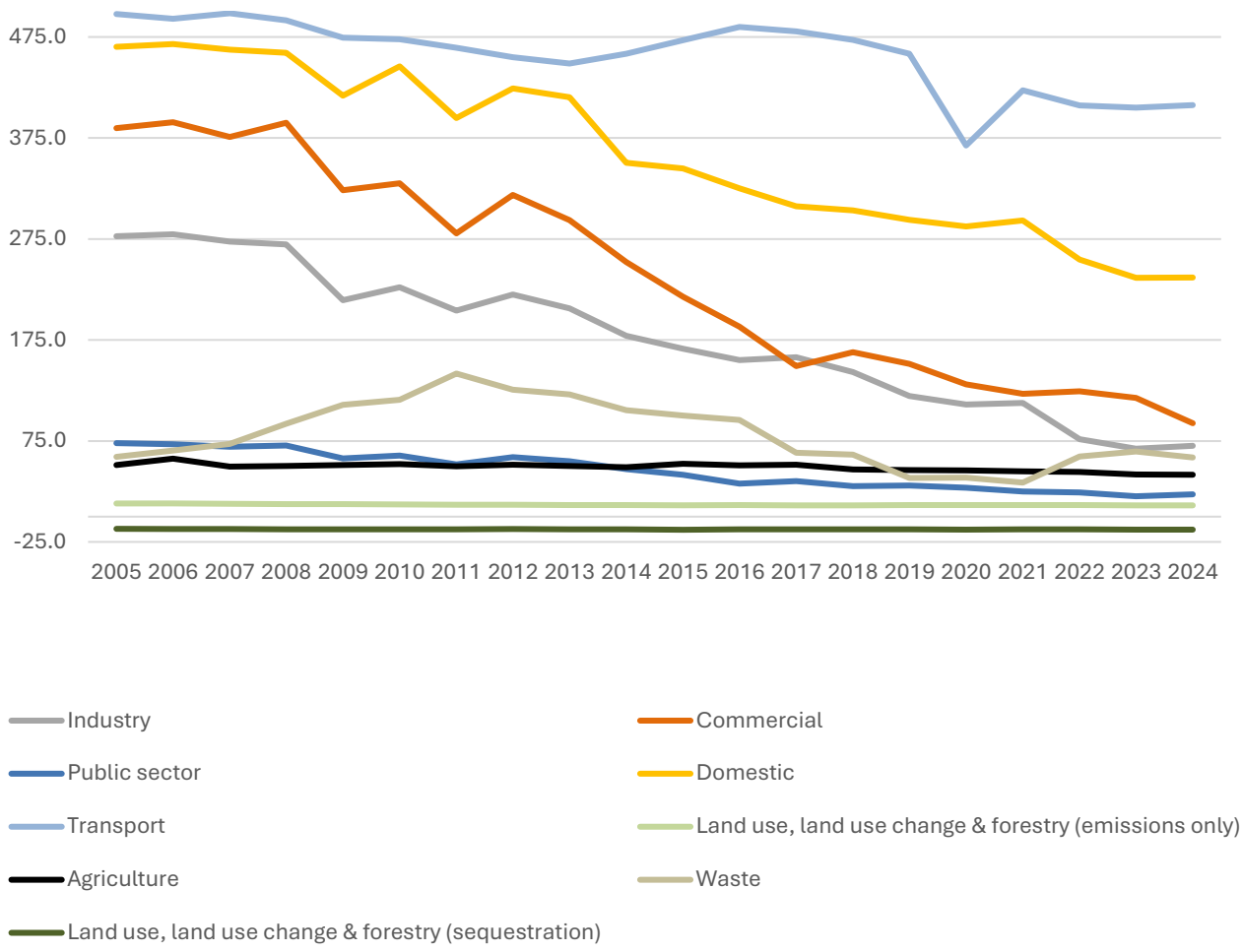
These DESNZ figures include only local direct emissions (including from land use, chemical use and waste processing, as well as fuel use) and grid energy use. They do not include consumption-based emissions (embodied emissions of goods produced elsewhere but transported to and consumed in Swindon).

The DESNZ figures are broken down into several sectors and reveal how important it is to plan for reduced car use and enable low-emissions deliveries – as transport is responsible for 43.3% of the area’s emissions (larger than any other sector followed by domestic at 25.2%).

Swindon's greenhouse gas emissions percentage of carbon emissions by sector in 2024. DESNZ 2026 release.



Swindon's greenhouse gas emissions (kilotonnes CO₂e) by sector, change over time. DESNZ 2026 data release.



Despite significant reductions in emissions since 2005, **Swindon Borough Council's Carbon Inventory 2025^{vii}**, a background paper for the new Local Plan, identifies a continued dependence on fossil fuel-based energy and motorised transport. The report also provides further local evidence on the scale of emissions reductions required across the borough. The paper modelled business-as-usual and higher ambition pathways for Swindon and concluded that a business-as-usual trajectory would fall significantly short of achieving net zero emissions by 2050. The higher ambition pathway incorporated measures including ambitious energy performance targets for new buildings, undergoing a deep retrofit programme for a proportion of existing buildings by 2050 and accelerating the deployment of renewable energy and lower-carbon transport systems.

Collectively, these findings reinforce the need for ambitious local action and provide additional context for the policy provisions discussed in [Section 4](#).

3.2 Decarbonisation plan

Swindon's **Decarbonisation Framework**^{viii} from 2025 defines decarbonisation as a holistic concept focused on improving lives, making homes warmer and more affordable to run, protecting nature for wildlife and wellbeing and securing clean energy for the future. The framework establishes how the borough will achieve these ambitions through a series of goals, objectives and tangible actions spanning both council operations and borough-wide initiatives. It is structured around five interconnected themes:

- Energy and Buildings
- Green Spaces
- Business
- Transport
- Health

Of the themes covered by the framework, Energy and Buildings, Health and Green Spaces are the most relevant to this topic paper. Together, they show how decarbonisation can reduce emissions while also delivering benefits for residents, including warmer and more affordable homes, greater resilience to extreme temperatures, cleaner energy and green spaces that support wellbeing, wildlife and climate resilience.

- **Energy and Buildings:** This theme extends beyond the energy efficiency of buildings to include reducing fuel poverty, retrofitting existing buildings, transitioning gas-powered homes to electric systems in priority areas, increasing renewable energy generation and

exploring connections to district heat networks where available. Together, these measures aim to create warmer, more energy-efficient homes that are cheaper to run.

- **Health:** This theme recognises the relationship between decarbonisation, housing conditions and residents' health. In particular, this theme build on the earlier objectives in the Energy and Buildings theme of ensuring warm and cool resilience to residents through well insulated homes and greater thermal comfort.
- **Green Spaces:** This theme recognises the role of green spaces and trees in absorbing carbon dioxide and strengthening climate resilience. The framework supports thoughtful planting that can withstand drought, while recognising that urban trees can provide cooling and shade and reduce solar glare affecting buildings. It also promotes a connected Green Infrastructure network incorporating restored habitats, wildlife corridors and pollinator pathways.

Collectively, these three themes provide the borough-wide strategic context for the matters considered in this topic paper, including improving residents' lives, reducing energy costs and creating warmer, more comfortable homes. Together, these three themes provide the borough-wide strategic context for the matters considered in this topic paper, including improving residents' lives, reducing energy costs and creating warmer, more comfortable homes. [Section 4](#) considers how Policies CSE1 to CSE5 contribute to these wider ambitions through the planning system.

In conclusion, Swindon's emissions profile, the Swindon Carbon Inventory 2025 and Decarbonisation Framework provide the local context for Policies CSE1 to CSE5, demonstrating the need to reduce emissions from development while delivering wider benefits for energy affordability, health, clean energy and climate resilience. [Section 4](#) considers how the individual policies respond to these priorities through the planning system.

4. Rationale for local plan policies

This section explains the purpose and rationale of Policies CSE1–CSE5, including the issues each policy seeks to address and the basis for its principal requirements. It should be read alongside the detailed policy wording and supporting evidence identified throughout this topic paper.

4.1 Policy CSE1: Mitigation and Adaptation to Climate Change

Policy CSE1 provides the overarching framework for Policies CSE2 to CSE5. It requires development proposals to identify relevant climate change issues and demonstrate how mitigation and adaptation have been integrated into the design of the development. The requirement for a Sustainability Statement provides a proportionate mechanism for presenting this information, with the level of detail reflecting the scale, nature and complexity of the proposal.

Addressing mitigation and adaptation together ensures that development both contribute to reducing greenhouse gas emissions and remains resilient to the effects of the changing climate. Therefore, the policy promotes measures that reduce energy use and carbon emissions while also addressing overheating, urban heat-island effects and thermal comfort through building form, orientation, layout, materials, natural ventilation and airflow.

As a strategic policy, CSE1 establishes the principles that apply across the wider policy suite, while more detailed requirements relating to operational carbon, embodied carbon, adaptive reuse and renewable energy are set out in Policies CSE2 to CSE5.

4.2 Policy CSE2: Carbon Reduction and Sustainable Design

Policy CSE2 seeks to reduce operational carbon emissions from new development through a fabric-first approach, application of the energy hierarchy, efficient energy supply and renewable energy generation. It also provides a framework for understanding net zero carbon at the building scale and for investigating appropriate opportunities for heat networks and waste-heat recovery.

4.2.1. The energy hierarchy

The energy hierarchy provides a sequential approach to reducing operational energy use and associated greenhouse gas emissions. Policy CSE2 adopts the Be Lean, Be Clean and Be Green hierarchy (see Figure 2), requiring development to:

- **Be Lean:** reduce energy demand through passive design and energy-efficient building fabric;
- **Be Clean:** supply the remaining energy demand efficiently; and
- **Be Green:** maximise renewable and low-carbon energy generation.

This hierarchy prioritises reducing energy demand through building design and fabric performance before considering how the remaining demand should be met. Applying a distinct requirement at each stage helps ensure that energy efficiency makes a meaningful contribution to a development's overall performance, rather than allowing energy supply measures alone to account for the required improvement. It also reduces reliance on generating or distributing energy that could have been avoided through better design in the first place.

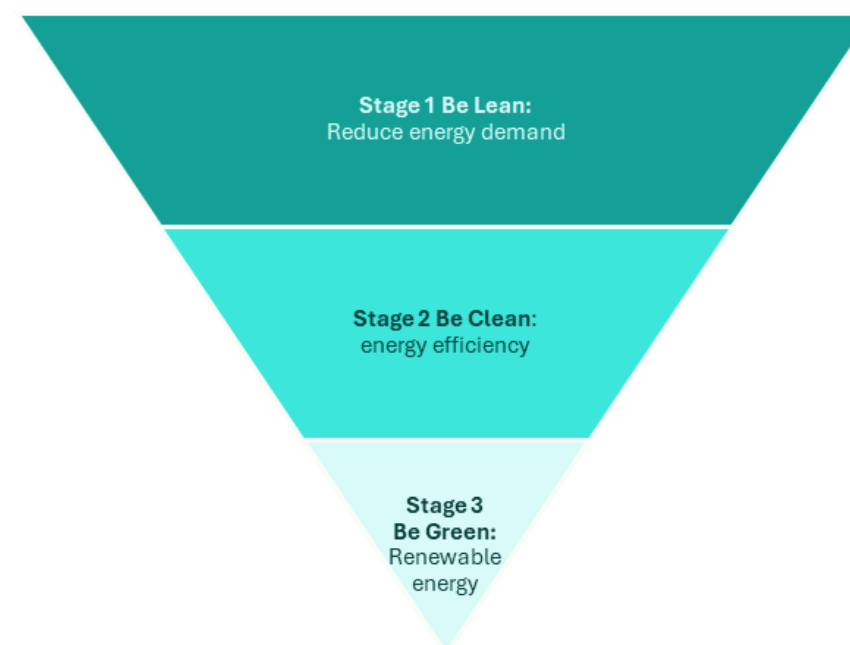


Figure 2 The energy hierarchy

Step 1: reducing energy demand

Reducing energy demand is the first stage of the hierarchy. This is of particular importance because the transition away from fossil fuels is expected to increase demand on the electricity system as heating, transport and other sectors become increasingly electrified. Expanding renewable generation and electricity-network capacity will be necessary, but will involve financial costs, infrastructure requirements and embodied carbon (discussed further in [Section 4.3](#)). Minimising avoidable demand from new development can therefore reduce the additional generation and network infrastructure required to support the transition to a zero-carbon energy system.

A fabric-first approach is central to reducing demand. Decisions relating to building form, orientation, insulation, glazing and airtightness are most effectively addressed during design and construction, helping to avoid unnecessary energy use being built into new development. This is important because retrofitting homes to tight energy standards can typically cost three to five times more than achieving equivalent performance in new construction. Higher levels of thermal

efficiency can also allow smaller heating systems to be specified and support the efficient operation of low-carbon technologies such as heat pumps^{ix}.

Step 2: efficient energy supply

The second stage of the energy hierarchy, Be Clean, considers how residual energy demand can be supplied efficiently after demand has first been reduced. This may include communal or district heat networks using low-carbon sources such as large-scale heat pumps, recovered waste heat, or heat shared between complementary uses within mixed-use development.

The suitability of these approaches is location-specific and depends on factors such as the availability of a suitable low-carbon heat source and sufficient nearby heat demand. Connection to a heat network should not automatically be assumed to provide the lowest carbon solution, particularly where the network relies on fossil fuels. This stage should therefore be applied in response to local circumstances and technological change. Heat networks and opportunities to recover waste heat from data centres are considered further in [Section 4.2.3](#).

Step 3: renewable and low carbon energy for new buildings

The third stage of the energy hierarchy, Be Green, seeks to decarbonise the supply of the remaining energy demand through renewable and low-carbon energy. Grid decarbonisation is a vital component of the transition to net zero, and on-site renewable generation can support this by bringing forward additional renewable electricity capacity while reducing the annual and potentially peak, demand placed on the electricity grid^x.

Policy CSE2 therefore requires renewable and low-carbon energy generation to be maximised after energy demand has first been reduced and supplied efficiently. This site-responsive approach supports renewable generation to the greatest reasonable extent while allowing legitimate physical constraints to be taken into account^{xi}.

Overall, the energy hierarchy provides a clear sequence for reducing operational energy use and associated emissions. By requiring development to reduce demand before considering efficient energy supply and renewable or low-carbon generation, Policy CSE2 helps ensure that technologies are appropriately sized, avoidable energy demand is not locked into new development, and renewable energy is used to meet a reduced residual demand.

4.2.2. Defining net zero carbon

Net zero means achieving a balance between greenhouse gas emissions released into the atmosphere and those removed from it, after emissions have been reduced as far as possible.

At the building scale, achieving net zero requires the consideration of both operational carbon and embodied carbon. Operationally, this means minimising energy demand before meeting the remaining demand through renewable energy. This extends beyond Building Regulations Part L,

which regulates certain operational energy uses but does not account for all operational energy consumption or the embodied carbon associated with development.

The [**UK Net Zero Carbon Buildings Standard \(UKNZCBS\)**](#) provides a common industry framework for determining whether buildings are aligned with a science-based pathway to net zero. Developed by organisations including UKGBC, LETI, BRE, RIBA, RICS and CIBSE, the Standard sets mandatory limits and targets covering operational energy, upfront carbon, on-site renewable electricity generation and fossil-fuel use. It distinguishes between buildings that meet these requirements and are Net Zero Carbon Aligned, and those that also offset their remaining emissions and are Net Zero Carbon Aligned(plus offsets). The Standard therefore provides a consistent framework for understanding and verifying what net zero carbon means at the building scale.

4.2.3. Heat Networks and the Swindon Opportunity

Heat networks can serve multiple buildings or sites from a shared energy source and may be expanded over time to serve additional development. They can also enable heat to be shared between complementary uses, where one building produces excess heat through cooling or refrigeration while another requires heat for space heating or hot water.

Data centres present a particular opportunity because the electricity consumed by their servers is ultimately converted into heat, much of which is removed through cooling systems and released into the atmosphere. Depending on the cooling technology used, this recovered heat may be available at relatively low temperatures and require a heat pump to raise it to a temperature suitable for distribution^{xii}. Its successful use therefore depends on the data centre being located sufficiently close to a concentration of compatible heat demand, together with appropriate heat-recovery and network infrastructure.

The feasibility of this approach is being demonstrated elsewhere in the UK. The government supported Old Oak and Park Royal Energy Network via the Green Heat Network Fund (GHNF) in west London. It is being developed to recover waste heat from nearby data centres and supply low-carbon heating to new homes and commercial development. The scheme is intended to connect 10,000 new homes and 250,000m² of commercial space, with heat pumps used to raise the temperature of recovered low-grade heat before it is distributed through the network^{xiii}.

This opportunity is particularly relevant to Swindon given the continued investment in the borough's data centre infrastructure. In January 2026, nLighten, a European data centre operator, announced plans to invest up to £10 million in its existing data centre at South Marston Industrial Estate, including significant upgrades, modernised technology and future expansion^{xiv}. In response to the continued investment in local data centre capacity, there is a strong case to investigate whether heat produced through cooling could be recovered for use by nearby development or other significant heat users. The requirement in Policy CSE2 for larger developments to consider

heat-network provision provides a proportionate means of investigating such opportunities, without assuming that a network will be suitable in every location.

In conclusion, the requirements of Policy CSE2 provide a coherent and proportionate approach to reducing operational emissions from new development by:

- **applying** the energy hierarchy to reduce demand before meeting the remaining energy needs efficiently and through renewable and low-carbon energy;
- **supporting consistent understanding** of net zero carbon, informed by the UKNZCBS; and
- **requiring** locally relevant opportunities for heat networks and waste-heat recovery to be investigated.

4.3 Policy CSE3: Embodied carbon

Policy CSE3 addresses embodied carbon through both assessment and reduction. It requires qualifying development, larger schemes comprising of 49 units or 4,999 m² of floorspace, to undertake a Whole Life-Cycle Assessment following the RICS Whole Life Carbon Assessments for the Built Environment Professional Standard (or any successor document) and establishes a maximum upfront embodied-carbon intensity of 600kgCO₂e/m² GIA.

4.3.1. Whole Life Carbon Assessments

Embodied carbon means the carbon that was emitted in the production and transport of building materials, and their assembly on site. It can also include the emissions associated with maintaining and eventually disposing of a building too. When emissions across all these stages are included, this is referred to as whole-life embodied carbon.

These emissions can form a significant part of a building’s overall carbon impact, particularly where carbon-intensive materials such as cement, steel and aluminium are used. A **Whole Life Carbon Assessment (WLCA)**^{xv} measures these emissions across the relevant life-cycle stages, enabling the principal sources of embodied carbon to be identified and opportunities for reduction to be considered through design and material selection. The use of the RICS professional standard provides a consistent basis for defining the assessment scope, calculating emissions and reporting results, supporting transparent and comparable assessments across qualifying developments. Although preparing a Whole Life Carbon Assessment involves a professional fee that varies with the size, type and complexity of the development, this is a project level cost rather than a cost incurred for every dwelling or building.

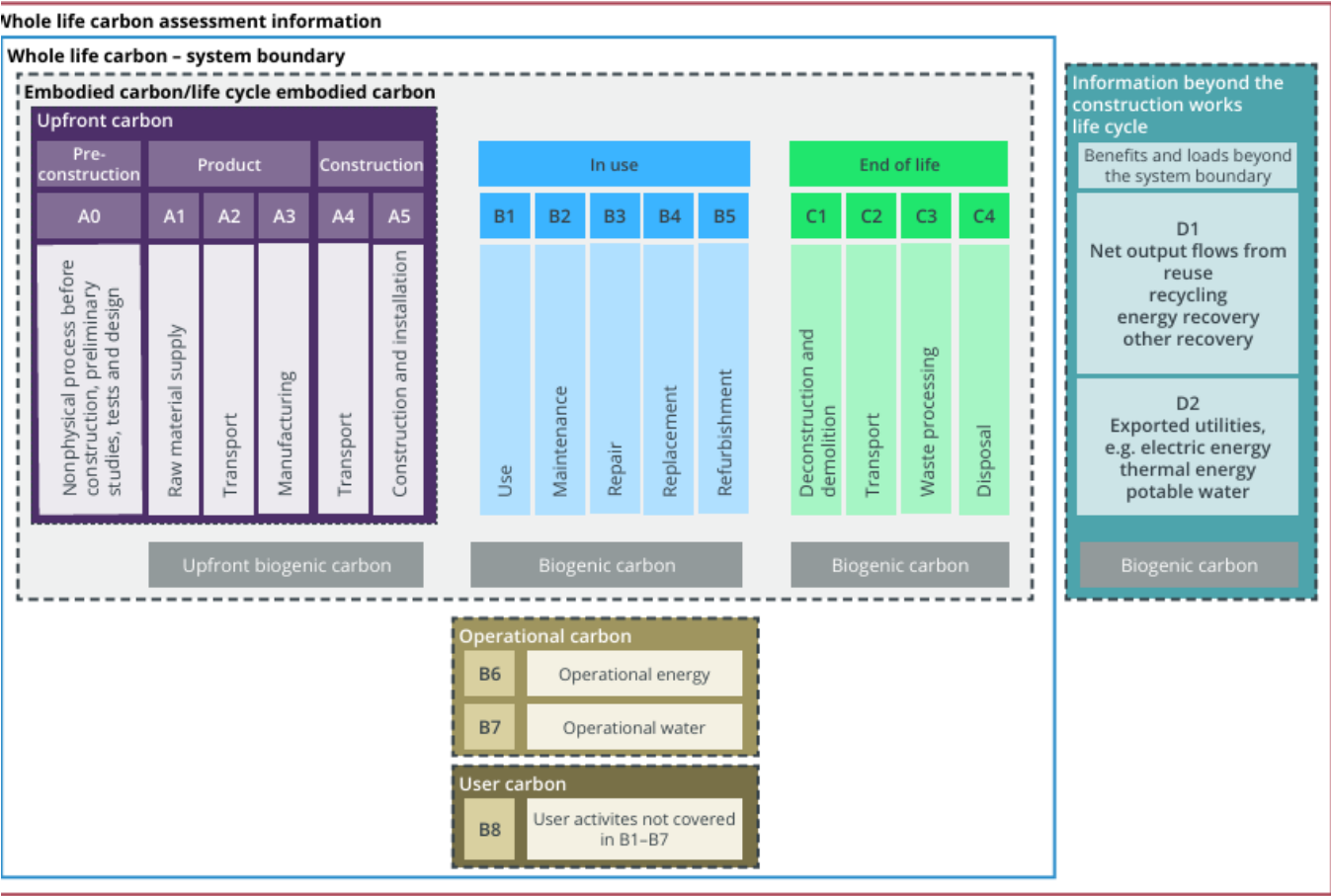


Figure 3 Diagram showing different scopes of embodied/whole life carbon. Source: RICS Whole Life Cycle Assessment for the Built Environment 2nd edition.

4.3.2. The upfront embodied-carbon limit

Upfront embodied carbon is commonly concentrated in a building’s substructure and superstructure. These emissions arise before the building is occupied and are determined principally by early design, material and construction choices. Focusing the limit on upfront carbon therefore targets emissions that can be assessed and influenced with greater certainty through the planning and design process.

The upfront embodied carbon limit that Policy CSE3 applies, 600kgCO₂e/m² GIA, covering lifecycle stages A1 to A5. The proposed limit of 600 kgCO₂e/m² GIA sits within the range of performance levels identified through LETI’s upfront embodied carbon benchmarks^{xvi}, which vary by building type (see Figure 3 below) Additionally, supporting evidence prepared for the South Oxfordshire and Vale of White Horse Joint Local Plan^{xvii} modelled upfront embodied carbon and associated costs across several residential and non-residential typologies. The analysis found that embodied carbon performance around this level reflects a ‘business as usual’ development approach.

Therefore, compliance with this threshold is not expected to require a viability uplift beyond the cost of undergoing an embodied carbon assessment.

Upfront Embodied Carbon, A1-5 (exc. sequestration)					
	Band	Office	Residential (6+ storeys)	Education	Retail
LETI 2030 Design Target	A++	<100	<100	<100	<100
	A+	<225	<200	<200	<200
	A	<350	<300	<300	<300
	B	<475	<400	<400	<425
LETI 2020 Design Target	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

Figure 4 [LETI Embodied Carbon target alignment](#): upfront embodied carbon, A1-A5, excluding sequestration.

Applicants can respond to the limit through lean design that optimises building form and material use, lower-carbon specifications and construction methods, and the selection of products with verified lower-carbon footprints.

Overall, Policy CSE3 ensures that embodied carbon is considered as an integral part of the design process and that larger developments deliver a measurable standard of performance.

4.4 Policy CSE4: Adaptive reuse and retrofit

Policy CSE4 encourages the retention, reuse and retrofit of existing buildings and structures where appropriate, applying the waste hierarchy to reduce material consumption, waste and embodied carbon. Where total or substantial demolition requires panning permission, the policy requires evidence explaining why demolition is necessary, supported by a pre-demolition audit.

4.4.1. The Waste Hierarchy

The waste hierarchy provides a sequential framework for minimising waste and making the most efficient use of existing buildings and materials. Applied to development, it prioritises:

1. **Reduce**: minimise the use of virgin raw materials and associated generation of waste
2. **Re-use (on-site first)**: re-use materials wherever suitable on-site and prepare materials for future re-use.
3. **Recycle (on-site first)**: although recycling uses additional energy, it is preferable to other forms of disposal as it enables the content of the material to be re-used.

4. **Recover**: where re-using or recycling materials is not possible, energy can be recovered from materials through processes such as incineration, anaerobic digestion, gasification and pyrolysis.
5. **Disposal**: as a last resort, where no opportunities for the above stages remain, materials are to be disposed of in landfill resulting in the end of a material’s lifecycle.

By requiring development proposals to consider retention, reuse and retrofit before demolition and replacement, Policy CSE4 applies the waste hierarchy at the stage when decisions about existing buildings and materials can still be influenced. This helps reduce demolition waste, demand for virgin materials and the embodied carbon associated with new construction (as discussed in [Section 4.3](#)).

4.4.2. Pre-demolition audits

A pre-demolition audit identifies the types, quantities and condition of materials and components within an existing building and assesses their potential for reuse or recycling, prioritising reuse on site where practicable. Undertaking the audit early allows these opportunities to inform the design and materials strategy before demolition begins, helping to maximise material reuse and minimise waste sent to landfill in accordance with the waste hierarchy^{xviii}.

Together, these requirements ensure that existing buildings and materials are treated as resources and that opportunities to retain their value are considered before they become waste.

4.5 Policy CSE5: Renewable energy

Policy CSE5 provides a positive framework for renewable and low-carbon energy development in Swindon. It supports proposals for renewable and low-carbon energy generation and associated infrastructure where their impacts can be appropriately addressed, including projects at different scales and community-led schemes. The policy is informed by the Renewable Energy Spatial Assessment, which identifies areas with potential for suitable renewable energy development while recognising that individual proposals remain subject to site-specific assessment.

4.5.1. Planning positively for renewable and low-carbon energy

The NPPF 2024 requires Local Plans to plan positively for renewable and low-carbon energy:

- **Paragraph 165 (a)**: states that plans should provide a positive strategy that maximises the potential for renewable energy and low-carbon energy and heat.
- **Paragraph 165 (b)**: includes the consideration of suitable areas for renewable and low-carbon energy sources and supporting infrastructure here this would help secure their development
- **Paragraph 165(c)**: requires plans to identify opportunities for development to draw energy from decentralised, renewable or low-carbon energy systems and to co-locate potential heat customers and suppliers

Although Swindon will be examined under the NPPF 2024, Policy W2 of the NPPF 2026 reinforces this direction of travel:

- **Plan-making policy W2:** requires development plans to plan positively for renewable and low-carbon energy and electricity-network infrastructure, including through the identification of suitable areas. It also supports the identification of opportunities for development to draw heat or energy from decentralised networks, including district heat networks.

Swindon's Renewable Energy Spatial Assessment (RESA) responds to this national policy direction by identifying broad opportunity areas for renewable and low-carbon energy development, informed by relevant planning, spatial and technical constraints. Therefore, the assessment provides an evidence-led foundation for considering the location of proposals, supporting the positive weight given by Policy CSE5 to projects within identified opportunity areas. It does not, however, allocate individual sites or determine the acceptability of applications. Proposals outside the identified opportunity areas may still be appropriate where their suitability can be demonstrated through detailed site-specific assessment.

4.5.2. Why community-led schemes and engagement are supported

Paragraph 168 of the NPPF 2024 recognises the contribution that small-scale and community led renewable and low-carbon energy projects can make to reducing greenhouse gas emissions. This is further reinforced by decision-making policy W3 in the NPPF 2026. Policy CSE5 reflects this approach by supporting schemes led by communities and community energy groups, encouraging applicants to engage with local communities.

It is important to note, general community benefits cannot be treated as material considerations unless they serve a planning purpose and fairly and reasonably relate to the proposed development. Therefore, the community-benefit provisions of Policy CSE5 should be understood as supporting engagement and encouraging locally beneficial projects, rather than allowing unrelated benefits to outweigh the planning impacts of a proposal.

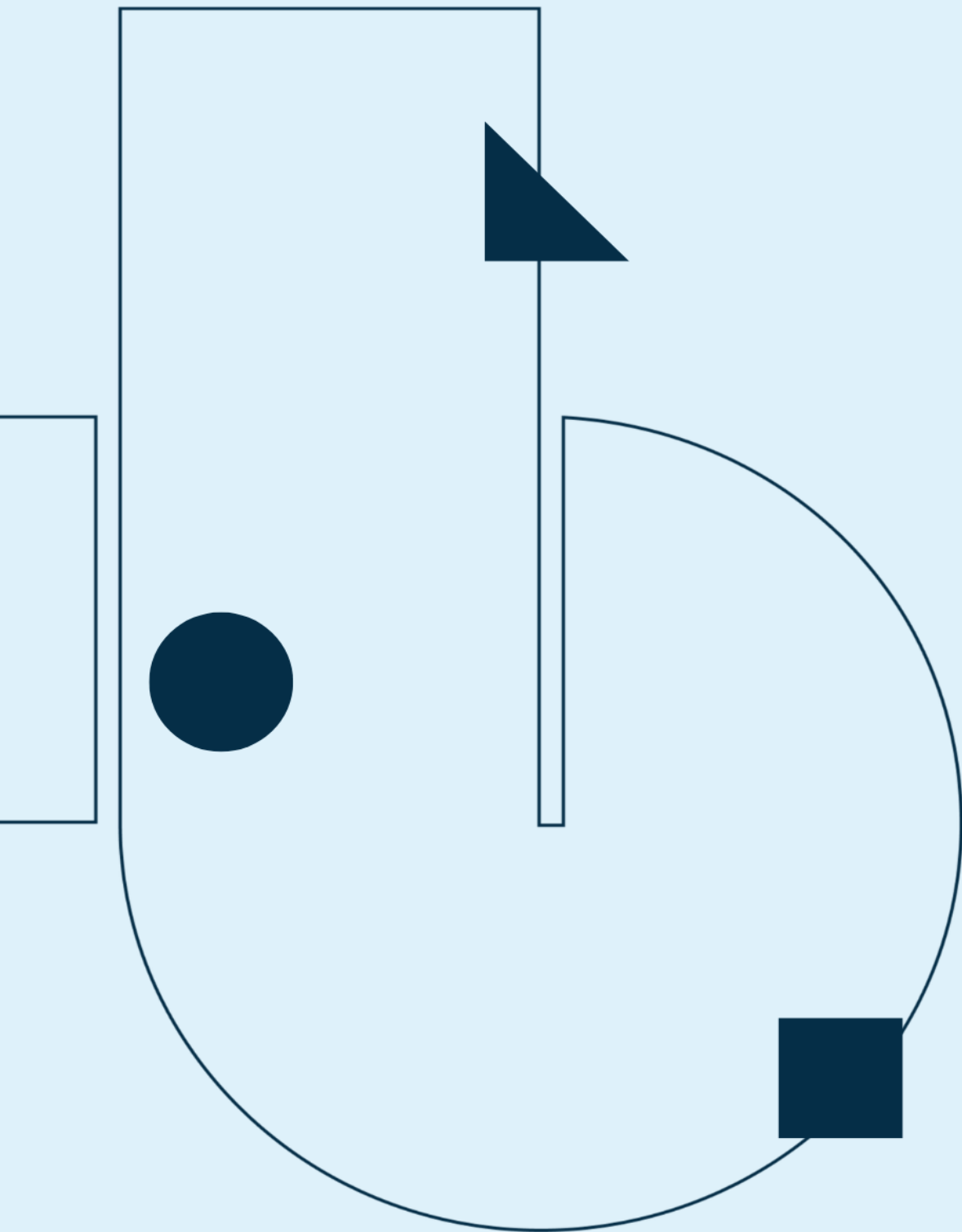
Overall, Policy CSE5 provides a positive and evidence-led framework for renewable and low-carbon energy development, using the RESA to guide proposals towards areas of identified opportunity while retaining site-specific assessment and supporting meaningful community participation.

5. Conclusion

This topic paper has considered the legislative, national policy and local evidence supporting Swindon's emerging Local Plan Policies CSE1 to CSE5. The policy approach responds to the statutory requirement for the Local Plan to contribute to climate change mitigation and adaptation, while reflecting requirements of the NPPF 2024 and the evolving national policy and regulatory context.

The policies form a complementary package.

- Policy CSE1- establishes the overarching approach to mitigation and adaptation;
- Policy CSE2- addresses operational energy and carbon through the energy hierarchy, renewable and low-carbon energy and consideration of heat network opportunities;
- Policy CSE3- requires larger developments to assess and reduce embodied carbon;
- Policy CSE4- prioritises the retention and reuse of existing buildings and materials; and
- Policy CSE5- provides a positive, evidence-led framework for renewable and low-carbon energy development.
- The approach is also relevant to Swindon's local circumstances. It supports the borough's need to secure further emissions reductions and contributes to the priorities of SBC's Decarbonisation Framework, including warmer and more affordable homes, cleaner energy, improved health and wellbeing, and greater resilience to climate change.
- On this basis, Policies CSE 1 to CSE5 provide a coherent and proportionate framework for addressing climate change through development. Their requirements are grounded in legislation and national planning policy, informed by relevant technical and local evidence, and structured to support effective implementation through the development management process. The policy package is therefore considered justified and appropriate for submission as part of the emerging Swindon Local Plan



Glossary

Glossary

Carbon, or carbon emissions	Short for ‘carbon dioxide’ but can also include several other gases with a climate-changing effect (nitrous oxide, methane, refrigerants) that are emitted to the atmosphere from human activities.
Carbon budget	Amount of greenhouse gas that can be emitted before reaching a level of atmospheric carbon that causes severely harmful climate change.
CO₂	Carbon dioxide. Often shortened to ‘carbon’.
CO₂e	Carbon dioxide equivalent. The sum of a mixture of gases, in terms of their climate-changing impact in a 100-year period expressed as the amount of CO ₂ that would have the same effect. This is also often shortened to ‘carbon’.
DESNZ	Government Department for Energy Security and Net Zero. Formerly styled the department of Business, Energy, Innovation and Skills (BEIS)
Embodied carbon	Carbon that was emitted during the production, transport and assembly of a building, infrastructure, vehicle or other product, before the product is in use. As opposed to ‘operational carbon’ which is emitted due to energy use when operating the building / infrastructure / vehicle / other product.
EUI	Energy use intensity, a measure of how much energy a building uses per square metre of floor space. Expressed in kWh/m ² floorspace/year.
Fabric-first approach	An approach that prioritises reducing a building’s energy demand through its form, orientation, insulation, glazing and airtightness before considering building services and energy generation
FEE	Fabric Energy Efficiency – a metric used in Part L of Building Regulations to represent energy demand for space heating and space cooling, per metre of floor. Based only on fabric; not affected by building services like heating system, lighting, ventilation. See also TFEE / DFEE, below.
FHS / FBS	Future Homes Standard / Future Buildings Standard
GIA	Gross Internal Area, the total floor area within a building measured to the internal face of its perimeter walls.
kWh	Kilowatt-hour. A unit of energy.
LETI	Low Energy Transformation Initiative. A coalition of green building experts working to identify and implement targets for energy use and embodied carbon that would be compatible with the UK’s climate commitments.
LPA	Local Planning Authority
Net zero carbon	A state in which greenhouse gas emissions have been reduced as far as possible and any remaining emissions are balanced by an equivalent amount of carbon removal or other recognised balancing mechanism
NPPF	National Planning Policy Framework.
Operational carbon	Greenhouse gas emissions associated with energy used during the operation of a building, including energy for heating, cooling, hot water, lighting and other uses.
Operational energy use	Energy used for the normal operation of a building. (As opposed to energy used in the production, construction or demolition of a building).
Part L	Building regulations section that sets basic legal requirements regarding buildings energy and CO ₂ .

PV	Photovoltaics: solar panels that generate electricity.
PHPP	Passivhaus Planning Package – a tool to accurately calculate a building’s energy use. It is used to design buildings that seek Passivhaus certification, but can be used without pursuing certification.
RESA	Renewable Energy Spatial Assessment
SAP	Standard Assessment Procedure – the national calculation method for homes’ energy and carbon, used to satisfy building regulations Part L. SAP is updated periodically; the most recent version available at the time of writing is SAP10.2.
SBC	Slough Borough Council
SBEM	Simplified Building Energy Model. The national calculation method for non-residential buildings’ energy and carbon, used to satisfy building regulations Part L
SHD	Space Heat Demand. A measure of one aspect of buildings’ energy efficiency: The amount of heat input needed to keep the building at a comfortable temperature. Expressed in kWh/m ² /floorspace/year.
South & Vale	South Oxfordshire & Vale of the White Horse. Two local district councils in Oxfordshire, which together prepared a joint local plan adopted in 2023. That local plan included one of pioneering new ‘net zero new builds’ policies referred to in a previous report.
Space Heat Demand	A measure of how much heat energy is needed to keep a building at the desired temperature, regardless of how that heat is delivered.
tCO₂ (or tCO₂e)	Tonne of CO ₂ (or tonne of CO ₂ equivalent). See CO ₂ and CO ₂ e, above.
TER	Target Emission Rate – limit set by Part L of building regulations on CO ₂ emissions per square metre of floor.
UKNZCBS	UK Net Zero Carbon Buildings Standard. A new emerging standard being developed by a coalition of energy and carbon expert organisations and standard-setting organisations in the built environment sector. The standard defines whether a building is sufficiently energy-efficient and low-carbon to be in line with the UK’s trajectory to net zero carbon, within a carbon budget compatible with the UK’s commitment to the international Paris Agreement. The UKNZCBS covers both operational energy (in use, including both energy use and renewable energy generation) and up-front embodied carbon (up to completion of the building; see also ‘embodied carbon’ in this glossary).
Upfront carbon	Embodied carbon emissions arising before a building is occupied, covering product manufacture, transport and construction activities in life-cycle stages A1 to A5.
WLCA	Whole Life Carbon Assessment
WMS (WMS2023)	Written Ministerial Statement. A formal statement of national policy made by a government Minister in the House of Commons or Lords. (WMS2023 refers to the specific WMS on energy efficiency made on 13 th December 2023 on energy efficiency standards in local planning.)

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