canterbury city council

SUSTAINABLE DESIGN GUIDE

Supplementary Planning Document
Consultation version March 2024

Regulations 12 and 13 of the Town and Country Planning (Local Planning) (England) Regulations 2012

Contents

Executive summary

In June 2019, Canterbury City Council declared a climate emergency. Alongside the declaration, a commitment was made to a Net Zero Carbon Emissions target of 2030 for council operations and responsibilities.

The council has also committed to a target of net zero emissions by 2045 across the full range of activities needed to support the council's work.

Following the declaration, Canterbury City Council's Climate Change Action Plan (CCAP) was developed and then adopted in May 2021, to aid progress towards the 2030 target.

The plan lists actions to mobilise activity to reduce the causes of climate change and carbon emissions across council activities and responsibilities.

The plan also includes actions which influence the reduction of carbon emissions at a wider district level for which the role of planning and transportation are major contributors.

A key action featured within the CCAP is to ensure climate action is a priority in the new draft local plan and therefore, the draft Canterbury District Local Plan (2040) includes Policy DS6 on Sustainable Design.

The draft policy sets out standards for new development to maximise energy efficiency and requires new residential and commercial developments to achieve net zero operational carbon emissions.

To support the Local Plan policy, this Supplementary Planning Document has been developed.

The purpose of the document is to provide guidance to developers and housebuilders on how to comply with draft Policy DS6.

This SPD has been developed by the council in collaboration with industry experts and takes into account representations received on previous Local Plan consultations from stakeholders and our communities.

This document will undergo a 12-week consultation period from 11 March 2024, in line with Regulations 12 and 13 of the Town and Country Planning (Local Planning) (England) Regulations 2012. It is expected the final SPD will be adopted in 2025.

1. Introduction

1.1 Purpose of the Sustainable Design Guide

The purpose of this sustainable design guide SPD is to provide the necessary tools and detailed advice to facilitate a step change in the operational carbon emissions associated with new development in the district.

It advises the user what they should consider and include within planning applications to ensure compliance with the new draft Policy DS6.

A written ministerial statement was published on 13 December 2023 titled Planning - Local Energy Efficiency Standards Update. Within the statement it was announced that, from 2025, new tighter standards are planned for new residential development. This requires new homes to be “net zero ready” i.e. once the grid is decarbonised, a home will be net zero.

Any planning policies that exceed this requirement must ensure development remains viable and they must express the additional requirement as a percentage uplift of a dwelling’s Target Emissions Rate (TER) calculated using a specified version of the Standard Assessment Procedure (SAP) and be tested for viability.

The requirement to achieve net zero operational emissions for new residential and commercial developments eliminates the need for future retrofitting works and will improve resilience against climate change.

Therefore a 100% improvement on the Target Emission Rate (TER) using SAP 10 (Part L 2021), or any subsequent published versions such as the home energy model, is proposed within this Supplementary Planning Document (SPD).

Canterbury City Council procured HDH Development to undertake a study which was published with the local plan, titled Local Plan Viability Study. The Climate Change section of this document explores the viability of net zero development and summarises that it is achievable at no greater cost than £10,100.

The council has also produced an evidence document titled Canterbury City Council Carbon Offset Review. This document researches existing carbon offset policies from other local authorities in England. It also reviews the rationale behind choosing a carbon offset value based around the Green Book by Business, Energy & Industrial Strategy (BEIS). In the Carbon Offsetting In Practice section of this evidence document, it demonstrates how much it would

cost to pay the carbon offset price based on low, central and high costs and various residual carbon scenarios. This shows that it is viable to implement our proposed carbon offset price.

This SPD reflects commitments at a local and national level. The desired outcome is to achieve a high standard of new development that helps to mitigate the effects of climate change and remains resilient in years to come.

All new residential and commercial developments in the district are required to meet a net zero operational carbon emissions standard, as per draft Policy DS6 Sustainable Design.

This document is split into chapters, ensuring all relevant aspects of the design process are considered to ensure a new development can reach net zero operational emissions.

1.2 How to use the Sustainable Design Guide

The Sustainable Design Guide is intended for development in the district, including housing units, including C3 older persons housing, and commercial development.

The design guide considers relevant aspects of sustainable design:

- Built form
- Construction Materials
- Water efficiency
- Waste and transportation
- Energy efficiency and carbon

The Sustainable Design Guide should be used to inform the evidence required in your Sustainable Design Statement. Requirements for planning applications are set out within section 9.

Please ensure all required evidence is included within your application. If any evidence is missing, you will be asked to provide this before Canterbury City Council reviews your application.

Some evidence will be required at various stages of your application. Some evidence is only required for certain applications depending on the building typology.

1.3 Sustainable Design process

Implementing high quality design ensures an efficient, air tight, resilient building. The design process should directly influence a building's potential to achieve operational net zero

carbon emissions. Complying with the Written Ministerial Statement December 2023, an improvement of 100% on the Target Emission Rate (TER) is required to achieve the desired net zero standard. We would expect that design should feed directly into the reduction of the target emission rate.

The council has prepared technical development viability evidence to support the preparation of the draft Local Plan, and has informed the development of this SPD. A full study was undertaken in May 2022, and the key assumptions and conclusions were updated in May 2023, reflecting more recent evidence.

Both studies examine the cumulative impacts of emerging policy costs on the viable delivery of development within the district, including in respect of affordable housing, infrastructure funding and delivering new homes to net-zero standards.

The May 2022 report examines the costs associated with delivering the council's emerging net-zero policies and embeds the costs of these requirements within the viability appraisals and goes on to conclude that the delivery of the emerging Local Plan would not be adversely affected by these policies.

The May 2023 report updated this analysis and also concluded that the associated policy costs of the council's net-zero requirements would not adversely affect the delivery of the emerging Local Plan.

This SPD has been split into chapters, corresponding to the requirements of the Sustainable Design Statement. The guidance provided informs the evidence required for submission with planning applications.

The chapters are as follows:

- Policy and context
- Built form
- Construction materials
- Water efficiency
- Waste and transportation
- Calculating energy efficiency and carbon
- Carbon Offset Fund
- What to submit with your planning application
- Implementation and monitoring
- Appendix

Purple boxes contain the council's requirements according to the new draft Local Plan to 2040.

2. Policy context

2.1 Draft Canterbury District Local Plan 2040

Canterbury City Council's new draft Local Plan is undergoing Regulation 18 consultation concurrently with this SPD, for 12 weeks from 11 March 2024. The Local Plan is one of the key corporate strategies produced by the council and sets the framework for how the district is expected to grow and change in the future; identifying how and where development is expected to take place and which areas need to be protected.

The draft Local Plan has eight key sections, as summarised below:

- Chapter 1 – Spatial Strategy
- Chapter 2 – Canterbury
- Chapter 3 – Whitstable
- Chapter 4 – Herne Bay
- Chapter 5 – Rural areas
- Chapter 6 – District-wide strategic policies
- Chapter 7 – Development management policies
- Chapter 8 - Carried forward policies from 2017 Local Plan

The Local Plan should be read as a whole. In most cases applications for planning permission will need to address policies across the different chapters.

Chapters 1 to 6, and 8 set out the strategic policies for the district, while Chapter 7 contains the non-strategic policies.

While the Local Plan will be considered in its entirety in relation to a planning application, there are key policies that this SPD will support.

Policy SS1 - Environmental strategy for the district this policy sets out requirements for blue and green infrastructure that ensures consideration and protection. Other important assets such as conservation areas and listed buildings are also required to be protected and enhanced where development is concerned. The policy supports climate change objectives with a requirement to accommodate growth and meet the needs of our communities in a sustainable way, which this Sustainable Design Guide SPD aims to enable. Development

must achieve 20% biodiversity net gain, having regard to Biodiversity Opportunity Areas and/or Nature Recovery Networks.

Policy SS2 - Sustainable Design Strategy for the district lays out the requirements to achieving sustainable design in the Canterbury district. This sets a standard of net zero operational carbon emissions for new development as well as connectivity and character requirements. This Sustainable Design Guide SPD can be used to ensure applications for new development meet net zero operational carbon emissions.

Policy DS6 - Sustainable Design outlines the new standards set for development in the Canterbury district, most importantly a requirement for net zero operational carbon for new residential and commercial developments. Design should be considered at the very outset of any development scheme and the Local Plan sets out a clear set of criteria which all developments must align with to be considered acceptable. Requirements vary depending on the type of development proposed.

Policy DS16 - Air Quality outlines how it is essential new development does not contribute to any further deterioration in air quality and that emissions should be assessed and mitigation identified as part of new developments.

Policy DS25 – Renewable energy and carbon sequestration provides clear support for proposals which can provide existing homes and businesses with renewable or low carbon sources of energy, provided these are appropriately located and designed.

Policy DM4 - Reducing waste and supporting the circular economy sets the expectation for effective management of waste. Through both the construction phase and its operational lifetime, development can support the improved rates of recycling and reuse of materials and contribute to a reduction in carbon emissions in the district. Major developments in the district will be expected to carefully consider how to manage waste generated through development and, where appropriate, to reuse or recycle waste generated as part of any demolition works or groundworks.

Policy DS26 - Historic environment and archaeology states that in assessing proposals which would improve the energy efficiency or contribute to the decarbonisation of a heritage asset, such as through retrofitting, the council will be supportive where a sympathetic and tailored approach to design and specification is taken. The council will prepare a separate SPD for Retrofit and Energy Efficiency for Traditional Buildings.

2.2 Other legislation/policy

Written Ministerial Statement December 2023 announced a further change to energy efficiency building regulations is planned for 2025. Energy efficiency standards that go

beyond these new standards and existing building standards must demonstrate the development remains viable and the impact on housing supply and affordability is considered in accordance with the National Planning Policy Framework. There is also a requirement for the planning authority to express the additional requirement as a percentage uplift of a dwelling's Target Emissions Rate (TER) calculated using a specified version of the Standard Assessment Procedure (SAP).

Future Homes building Standards Setting the performance requirements at a level which ensures new homes and non-domestic buildings have high fabric standards, use low-carbon heating and are 'zero-carbon ready' (meaning no further work will be needed for them to have zero carbon emissions once the electricity grid has fully decarbonised).

National Planning Policy Framework 2023 sets out the government planning policy requirements for England. Section 2 states the Environmental objective – *to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.*

Building Regulations These cover the construction and extension of buildings. The regulations are also designed to conserve fuel and power, protect and enhance the environment and enforce sustainable development.

Climate Change Act 2008 sets a target for achieving a reduction of 100% or lower carbon emissions by 2050.

Environment Act 2021 contains five principles that are internationally recognised as benchmarks for environmental protection and enhancement.

The National Design Guide contains characteristics for design. The areas of most relevance to this SPD are: Built Form, Movement, Nature Resources and Lifespan.

The Kent County Council Developer Contributions Guide states *the planning system and contributions to sustainable development through infrastructure are central to achieving specific objectives, including significantly reducing transport emissions through road space, parking, and other initiatives, and promoting sustainable flood risk management practices in development, regeneration, and land management.*

Kent County Council Framing Kent's Future Strategy 2022 sets out four key priorities for the county from 2022-2026, which includes: Levelling Up Kent, Infrastructure for Communities, Environmental Step Change and New Models of Care and Support. Environmental priorities

aim to protect and strengthen the natural environment and work with partners across the county to be net zero by 2050.

Kent County Council Energy and Low Emissions Strategy 2020 sets out Kent County Council's response to the UK Climate Emergency and its pathway to reduce carbon emissions while also improving air quality, reducing fuel poverty and promoting affordable, clean energy.

Kent Environment Strategy 2016 sought to evaluate progress against the previous iteration of the strategy and gain insight from lessons learned using the Kent State of the Environment Report. The strategy is split into three key themes: building the foundations for delivery, making best use of existing resources, avoiding or minimising negative impacts and towards a sustainable future. The Kent Environment Strategy Implementation Plan underpinned the strategy.

3. Built form

Policy DS6

All proposals for development should be designed to minimise the carbon footprint of the development and maximise energy efficiency including regulating internal and external temperatures through layout, orientation, design, materials and technologies

Projects such as rooftop solar photovoltaic power generation for domestic or business use where the primary purpose is to provide power for use on the site where the generation is proposed will be encouraged subject to other policies in this plan

3.1. Building design

All proposals for development should be designed to minimise the carbon footprint of the development and maximise energy efficiency.

Applicants must demonstrate how they intend to regulate internal and external temperatures in the building. To ensure thorough consideration, we require the following aspects to be considered and design detail to be provided for each:

3.2 Form - In the context of building design, the 'form factor' is how we describe the ratio of the internal floor area to the external surface area. Buildings with a higher form factor would consist of larger, detached houses. Buildings with a lower form factor would be smaller dwellings with reduced external surface area, such as a mid floor flat.

The form factor of a building should be considered within design. Buildings with a lower form factor are more efficient as the exposure to external weather conditions is minimised. Buildings with a higher form factor are generally less efficient as they are more exposed to external weather conditions, therefore requiring higher standards of insulation and fabric efficiency.

3.3 Orientation - The orientation of a building should be considered alongside the layout. The orientation of a building is important to sustainable design as it affects the thermal performance in relation to sunlight exposure and shading.

Buildings with more direct sunlight exposure can benefit from passive solar gain. This means that sunlight contributes to heating the building as it is absorbed into the building fabric, then released over time as temperatures cool.

While there are benefits to passive solar gain, there is also risk of overheating, resulting in uncomfortable temperatures for occupants. Orientation should be considered when deciding on the insulation of a building, which can provide resilience to overheating as well as retaining heat.

Natural methods of overheating prevention should be prioritised in the first instance, before the consideration of more energy intensive solutions such as air conditioning. The use of exterior solar shading such as trees or shutters is encouraged and should be explored in the first instance, particularly for south facing facades. Following this, natural ventilation should be utilised as mentioned in section 3.4 of this design guide.

Applicants should review and comply with Overheating: Approved Document O Building Regulations.

Orientation is a key consideration for the use of solar PV. Buildings should be oriented to provide sufficient sunlight exposure to the roof area to enable effective solar PV.

3.4 Materials

3.4.1 Fabric First approach - The fabric first approach should be followed for all building designs. This means maximising the performance of the building materials as a priority, before reviewing heat and energy sources. This ensures any energy utilised within the building is used efficiently and not wasted. Older buildings are often 'leaky', meaning

they are not airtight due to issues within the building fabric, so heat generated for these buildings escapes.

Applications should demonstrate a fabric first approach in the application.

3.5 Heating and ventilation - Getting the design of a building right from the outset is imperative. The design process should consider the layout and orientation of the building and then review the most efficient methods of sustainable heating and ventilation.

3.5.1 Heating - The Future Homes and Building Standards consultation from the government states gas boilers and other non-electric or renewable heating systems will not meet the proposed standards and should therefore not be included in the design for new homes and buildings proposed for development from 2025.

Efficient low carbon heating systems consist of the following options:

- Heat pumps are the exemplary solution for new buildings, both domestic and commercial. They can provide heating and cooling for both space and water.

- Air source heat pumps (ASHP) are up to 400% efficient, meaning they produce more heat than the electricity they use to create it. They are appropriate for buildings of various scales and should be considered for domestic and commercial buildings.

- Ground source heat pumps (GSHP) and water source heat pumps are other variations of the heat pump - working in a similar way to the ASHP but extract heat from the ground or bodies of water. They are less popular than ASHPs as they generally require large quantities of land/water which is not always practical, particularly for new domestic buildings.

As advised in the consultation for the Future Homes and Building Standards, electric heating such as direct electric or immersion heaters is not advised for new buildings. While these methods do not rely on fossil fuels, they are expensive to run and may increase bills for occupants.

An ASHP or GSHP can save over 1 tonne of CO_2e a year vs direct electric heating for the average new build dwelling. As installers and system designers become more experienced, the efficiency of ASHPs and GSHPs is expected to grow, further reducing CO_2e emissions.

The efficiency of ASHPs and GSHPs can be compared with a metric known as the Seasonal Coefficient of Performance (SCOP). This estimates how well a given heat pump uses electricity to heat a dwelling, taking into account variation in outside weather

temperature. A larger SCOP is better, and means a given heat pump uses less electricity to heat a dwelling. If a heat pump has a SCOP of 3, it uses 1 kWh of electricity to create 3 kWh. The SCOP can be used to compare how much ASHPs and GSHPs can reduce CO_2e relative to direct electric heating, as shown in the table below.

Heating appliance	Seasonal Performance Factor (SPF)	Annual electricity consumption (kWh)	Annual tonnes of CO_2e used
GSHP	3.1	2483	0.5
ASHP	2.7	2813	0.6
Direct electric	1.0	7624	1.6

The CO_2e saved shown in the table is an estimate. It takes a typical energy consumption of a new build dwelling (9414 kWh per year[1]), and assumes that 80% of energy consumption is used for heating. This is based on the OfGem's[2] data on the proportion of gas and electric consumption for a medium usage 2-3 bedroom household. However, for new builds, the proportion of energy used on heating might be lower. It then uses a Seasonal Performance Factor (SPF), of 2.7 for ASHPs and 3.1 for GSHPs based a report using data from Ofgem[3]. These calculations are based on a dataset that included heat pumps that were performing below their manufacturer stated efficiency. As installers and system designers become more experienced, the real time efficiency of ASHPs and GSHPs is expected to grow. When designed and installed correctly, these systems should achieve higher SCOPs. This would generate larger annual reductions in CO_2e emissions than those in the example table above.

3.5.2 Ventilation - A ventilation strategy should be included in the design process. The most important aspect of ventilation is air flow in the building as this affects airtightness. Ventilation is important because it can ensure the building sustains a comfortable temperature, while avoiding issues such as condensation and overheating.

Design should consider how air is able to flow through the building and ensure this is controlled. There are a variety of solutions for controlling ventilation in a building.

Natural ventilation should be prioritised in new development where appropriate. Windows should be accessible and openable to allow for purge (manually controlled) ventilation.

Some rooms and areas of a building are at higher risk of condensation, which can cause damp and mould if a ventilation strategy is not in place. Bathrooms and kitchens should include the appropriate extract ventilation.

[1] hbf.co.uk/documents/12662/Watt_Energy_Efficiency_New_Homes_finalv2.pdf
[2] ofgem.gov.uk/information-consumers/energy-advice-households/average-gas-and-electricity-use-explained
[3] https://www.recc.org.uk/pdf/performance-data-research-focused.pdf

3.5.3 Mechanical ventilation with heat recovery - Mechanical ventilation with heat recovery (MVHR) systems work by extracting and recovering heat from warmer rooms and then distributing clean air around the building. MVHR should be used where appropriate to the design. It works best in airtight buildings of varied sizes and should be considered for both domestic and commercial buildings. In areas at risk of air and noise pollution, MVHR can be a great alternative to natural ventilation.

Where MVHR is proposed in the design, applicants should demonstrate suitability for the building.

3.5.4 Heat Networks - Applications for major development are encouraged to explore the suitability of heat networks within the design process if there are existing or planned heat networks within a viable distance of the proposed site.

Heat networks work by distributing heat or cooling to multiple locations from one source. They can be used for dwellings and commercial buildings, working well in high density areas. As the networks can supply a series of buildings, they eliminate the requirement for individual boilers and other heating systems in every building. Heat networks are an effective low-carbon solution as they can utilise heat that would otherwise be wasted.

The government is working with industry and local authorities through the Heat Network Transformation Programme (HNTP) to introduce more heat networks across the UK.

3.5.5 Insulation and glazing - Applicants should demonstrate sufficient insulation and glazing standards across all developments. Insulation should be present in the main elements of the building including the roof, wall and floors.

Insulation and glazing contribute to reducing the energy requirements of the building and are important when building to operational net zero carbon standards.

Glazing should be proportionate to the build and not excessive. **The maximum glazing area should be adhered to as per the Limiting solar gains section 1.6 of Approved Document O.**

External insulation can be a good option for buildings with less space inside. It can be effective and can also protect the building from the effects of weathering.

It is important to install internal insulation correctly. Internal insulation must be breathable to reduce the risk of condensation and moisture build-up. For buildings with

limited space, aerogel can be a good solution as it is thinner than more conventional methods of insulation. However, it is more expensive.

Applicants should measure the thermal transmittance through U-Values of all elements. U-values should be provided alongside Building Regulations notional building u-values to demonstrate iImprovements.

3.6 Technology

3.6.1 Lighting - All lighting should be carefully considered, particularly outdoor lighting. All new lighting should be 100% low energy, such as LED.

3.6.2 Renewables - The use of renewable technology is imperative to reaching the councils operational net zero carbon emissions target.

Within the Sustainable Design Statement, **the applicant is required to complete a feasibility assessment for renewable energy.** This should demonstrate which technologies are suitable for the site, taking into context the building design, size, layout and orientation.

Applicants should optimise the opportunity for solar PV when considering the size and orientation of the building.

3.6.3 Solar PV guidance - Solar PV panels are generally the most straightforward way of producing renewable energy on site. They provide resilience to the occupant as they can generally produce the majority of energy required to run the building.

Energy generated from solar panels eases pressure on the grid and reduces the occupants' energy bills over their lifetime. They can be utilised by heat pumps, reducing the requirement from the grid further.

Solar arrays are typically installed on the roof of a building, where there is the most opportunity for exposure to direct sunlight. Panels can be installed on various roof types including flat and pitched roofs. They can be installed on existing buildings, and can be carefully considered and integrated into the design of new buildings. The optimum angle for solar panels is between 30-40 degrees. Battery storage should be considered alongside any solar array to provide resilience on cloudy days.

In the Sustainable Design Statement, **applicants should provide information for proposed Solar PV arrays** including the number of panels and annual energy generation. They should also include whether battery storage has been considered.

A typical solar PV system in the Canterbury district may save around 0.8 tonnes of Carbon Dioxide equivalent (CO_2e) a year compared to a dwelling without panels.

This is based on the following:

- According to the Energy Savings Trust[4], a typical domestic rooftop solar PV installation can occupy around 20 square metres of roof space, which equates to a 3.4 kWp system.
- An installation of this size, facing south in the Canterbury district, may generate around 3700 kWh a year according to calculation tool PVGIS[5].
- Using the UK Government's greenhouse gas conversion factors[6], this equates to a reduction in 0.8 tonnes of CO_2e. The Energy Saving Trust's "Solar guide July 2023"[7] also suggested a similar saving 0.8 tonnes of CO_2e can be achieved by typical domestic solar PV installations.

Although south facing installations will produce the most electricity, Energy Saving Trust states that a system facing East or West will produce only around 15-20% less energy than one facing South.

4. Construction materials

Policy DM4

Proposals for development should demonstrate the use of recycled or secondary materials.

Proposals for major development shall demonstrate how waste from the construction and lifecycle of the development has been minimised through a Construction Environmental Management Plans (CEMP) at full application or reserved matters stage.

Proposals for major development should submit a Circular Economy Statement

4.1 Waste hierarchy

As per Policy DM4, proposals for development should demonstrate the use of recycled or secondary materials. To ensure the generation of waste materials on site is kept to a

[4] https://energysavingtrust.org.uk/advice/solar-panels
[5] https://re.jrc.ec.europa.eu/pvg_tools/en/tools.html
[6] https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023
[7] https://energysavingtrust.org.uk/wp-content/uploads/2023/07/Solar-guide-July-2023.pdf

minimum, the council requires applicants to follow the waste hierarchy within their circular economy statement.

1. **Reduce:** From the outset, the intention should be to minimise materials used in the development, therefore reducing the opportunity for waste. The use of hazardous materials should be kept to a minimum.
2. **Reuse and repurpose:** In the design stage of development, applicants should identify any 'waste' generated that could be reused or repurposed later on, particularly in the context of the development of existing buildings.
3. **Recycle:** Although recycling isn't the ideal solution, it should be prioritised ahead of other methods of disposal. It increases the lifespan of the material.
4. **Recovery:** Where the above is not possible, the final stage before disposal is to recover energy from waste material. Recovery methods consist of incineration, anaerobic digestion, gasification and pyrolysis.
5. **Disposal:** The disposal of waste should be the last resort, this is when materials truly reach end of life. Methods of disposal are landfill and incineration without energy recovery.

4.2 Circular economy principles

Circular economy means to reduce waste by using materials available rather than sending them into the waste stream. In essence, 'waste' should be perceived as a resource in the first instance. The aim is to keep resources/materials in use infinitely or as much as possible by using or repurposing them, retaining some of their value. In a construction sense, the priority is to consciously consider the end of life of any materials used and therefore minimise unnecessary waste.

Where applications for development concern existing buildings, the following should be prioritised:

- ➔ retain as much of the existing building as practicable
- ➔ reuse materials from the original building that are still of value
- ➔ repurpose materials that could be used in another form

The Circular Economy Statement should either be presented as a standalone document or be included within the Construction Environmental Management Plan (CEMP).

The Circular Economy Statement should set out how materials arising from demolition and remediation works will be reused and/or recycled, and demonstrate how the design and construction of the development will reduce material demands and enable building

materials, components and products to be disassembled and re-used at the end of their useful life, following design for disassembly principles.

4.3 Construction Environmental Management Plan (CEMP)

Proposals for major development must provide a Construction Environmental Management Plan. The CEMP must address how the development will mitigate any adverse impacts associated with construction.

The CEMP should be submitted at the full application or reserved matters stage.

As a minimum the CEMP should include an outline of the approach to site waste management including dust and vehicle movements, and how construction waste will be addressed following the waste hierarchy such as through the on-site reuse of materials such as soils.

5. Water efficiency

Policy DS6

For proposals for ten or more homes, water systems should be designed to achieve a per capita consumption of 90 litres per person per day

Proposals for fewer than ten homes will be required to meet 90 litres per person per day unless it can be robustly demonstrated that this would not be technically feasible.

In all cases they must meet the design water consumption higher water efficiency standard as set out in the latest edition of the Building Regulations

Proposals should demonstrate how the design will be achieved using the methodology set out in the Building Regulations, with the design performance presented as part of the Sustainable Design Statement

When considering water efficiency, we expect the applicant to prioritise reducing the per capita consumption at every opportunity, with 90 litres per person per day being the maximum consumption.

The applicant is required to provide a water efficiency report that demonstrates a maximum consumption of 90 litres per person per day. The current guidance and calculation methodology can be found within Approved Document G - Sanitation, hot water safety and water efficiency.

Reducing demand for water in development is imperative for future resilience where resources are becoming more challenging.

Water consumption and capacity should be considered for all relevant materials and appliances used in the design, and applicants should consider technologies to control water pressure as a means to manage water demand.

The reduction in water usage associated with a 90 litres per day per capita limit can achieve annual savings of 16 kg CO2e per household, when compared with the typical water usage of UK households[8].

5.1 Calculation methodology for appliances and fixtures

Water consumption should be heavily considered when selecting appliances and fixtures for the building. The methodology for calculating the consumption of water for specific appliances and fixtures is included below.

WCs

Flushing capacity for the WC suite including consumption at full and part flush for dual flush WCs.

Taps

- Flow rate of each tap, at full flow rate in litres per minute
- For 'click taps' and other taps with a 'water break', the manufacturer's stated full flow rate should be used to perform calculations (measured as described above). Do not use the flow rate at the break point. A factor for percentage of flow rate is already assumed within the use factor for taps.
- Taps on baths should not be included in the calculation.

Baths

Total capacity of the bath to overflow, in litres (excluding displacement).

[8] https://www.energysavingtrust.org.uk/sites/default/files/reports/AtHomewithWater(7).pdf

Showers
Flow rate of each shower at the outlet using cold water, in litres per minute

Dishwashers
Litres per place setting derived from the figures quoted on the EU Energy Label.

Washing machines
Litres per kilogram of dry load derived from the figure quoted on the EU Energy Label.

5.2 Grey water use

Grey water is waste water that is considered to be 'relatively clean', such as waste water generated from rainfall, baths, sinks, and kitchen appliances.

Grey water can be utilised as a resource. **In proposals for major development, the design should demonstrate the consideration of grey water reuse for the flushing of toilets.**

5.3 Rainwater harvesting

External water usage for gardens contributes a large amount of water consumption for dwellings, particularly in periods of drought.

Integrated rainwater harvesting solutions such as water butts should be considered for developments with a garden. Occupants should be enabled to use rainwater in the first instance when maintaining their gardens.

This is not only practical and reduces bill costs for residents, it also adds resilience in periods of extreme weather.

5.4 Monitoring technology

- Water management systems can be installed to help occupants monitor and control their own consumption.
- Water metering and submetering should be installed for new development where applicable. Metering is imperative in identifying abnormalities in consumption which could be linked to underlying issues.
- Leak detection systems can alert the occupant of issues, ensuring they don't go unnoticed and result in water being wasted.

6. Waste and transportation

Policy DS6
Proposals of over 300 homes should set out strategies for energy, water, resources and waste and recycling

Ensure appropriate parking provision, including electric vehicle charging and secure cycle storage is attractive, well-landscaped and sensitively integrated into the built form, so that it does not dominate the street scene and does not compromise safe walking and cycling routes.

Policy DS15
Parking provision within the curtilage of all new homes in the district should include a suitable connection for EV charging. Within parking areas provided as part of new developments, EV charging points should be provided to a minimum of 1 in 10 spaces, with a further cable route for the remainder of the spaces. If the parking is to be allocated then each space should have access to an EV charging point. For non-residential uses with off street car parking, EV charging points to a minimum standard of 7KW wifi enabled should be provided to a minimum of 1 in 5 spaces, with a further cable route for the remainder of the spaces.

6.1 Recycling and general waste

It is the responsibility of the developer to ensure sufficient storage space is provided for each property. It is down to the developer, landlord or resident to provide the relevant bins which meet the council's specifications. The government's Simpler Recycling standards should be adhered to.

The council requires developers to provide details on what domestic waste collection is required on a site as soon as completions on a site happen. This should include the number and location of single household properties and the location of all bin stores with a list of which bin stores serve which properties. The phasing and expected timescales for occupation is also required. Domestic waste collections cannot happen until this information has been provided.

6.1.1 Single households - All bins need to be presented at the edge or the front boundary of the property clearly visible from the road on collection day.

There should be sufficient space allocated for their storage, movement to the collection and presentation, without blocking public footways etc. These locations need to be accessible by a 26-tonne RCV (Refuse Collection Vehicle).

6.1.2 Communal bin stores - Flats are generally serviced by communal bin stores.

Communal bin stores should be large enough to accommodate and manoeuvre sufficient 1,100 and 360 litre refuse and recycling wheeled bins for the number of dwellings in each block.

For commercial development, the developer will need to provide separate bin stores or collection points for commercial waste including recycling.

Commercial and household waste should not be stored together and is collected and disposed of by different organisations.

The immediate area outside the bin store should be level with the road, should not include an incline nor steps and the installation of a drop kerb where necessary is mandatory. The bin store will be visible from the road.

Car parking spaces should not be allocated immediately in front of the access to the bin store.

The maximum distance bins will be moved by collection crews should be no more than 15 metres. The path or surface needs to be hard/smooth and not loose or gravel type.

It is recommended that bin stores are fitted with a lock which is accessed via a key or a key code pad. The code or key must be provided to the council and/or their contractor.

Adequate space for signage and lighting is required inside and outside the bin stores.

Drainage and a water tap should be provided, for cleaning of the bins and the bin store areas by residents or landlord.

Where there is a building of mixed use (ie flat above shop), then separate waste provision must be made for the domestic and commercial premises.

6.2 Cycle storage

Encouraging active travel and making it more accessible to residents should be a priority in the design process.

Cycle storage should be provided for communal living areas and commercial developments where appropriate. The storage should be attractive, well-landscaped and sensitively integrated into the built form. Specific requirements for cycle storage can be found below as per the local plan appendix.

6.3 EV charging

EV charging is an essential part of sustainable infrastructure as the UK government has set out a path for all new cars to be zero emission by 2035. **Applicants should provide information on their proposed EV charging infrastructure.**

For development where parking is to be allocated, each space should have access to an EV charging point. Where parking is not allocated, EV charging points should be provided to a minimum of 1 in 10 spaces. Specifics can be found below:

Residential Uses	
Dwellings with on-plot or allocated parking	1 active charge point per dwelling, Minimum 7KW Mode 3 AC
Dwellings with unallocated communal parking	10% of spaces with active charging, minimum 7KW plus remainder of all spaces to have passive charging

For non-residential uses with off street car parking, EV charging points should be provided to a minimum of 1 in 5 spaces. Specific requirements can be found below:

Non residential uses	
All uses with off street parking	20% of spaces with active charging, minimum 7Kw, wifi enabled, plus remainder of all spaces to have passive charging

7. Calculating energy efficiency and carbon

Policy DS6

New development shall be designed to achieve a recognised calculated Net Zero operational carbon emissions standard in line with the council's Sustainable Design Guidance SPD and emissions must be verified and reported to the council at the completion stage

Proposals for major development will be required to submit a whole-life carbon assessment for the development in line with the council's Sustainable Design Guidance SPD, along with evidence that the design, selection of materials and construction methods has taken care to minimise the life cycle carbon emissions.

Proposals for the development of new business, employment or community uses should be designed to meet an A Energy Performance Certificate

Proposals for new non-residential buildings will be required to meet BREEAM 'Excellent' unless it can be robustly demonstrated that this would not be technically feasible

7.1 Energy efficiency principles

The energy efficiency principles should be followed throughout the design process to push the development to net zero operational carbon emissions.

The following principles should be followed when completing the Sustainable Design Statement:

1. **Reduce energy demand**
   Following the 'fabric first' approach is imperative for sustainable design. The first stage of creating an energy efficiency building is ensuring it is designed to reduce energy requirements. Not only does this reduce carbon emissions, it also means cheaper running costs for the resident and less pressure on the wider network.

2. **Energy-efficient technology**
   Using the most efficient technology for mechanical and electrical systems is imperative. This includes heat pumps, heat recovery and LED lighting.

3. **Maximise renewable energy**
   On-site generation of renewable energy should always be considered and prioritised within the design process. This is key for pushing the reduction of carbon emissions as far as possible. Community-led initiatives should also be explored where applicable.

7.2 How to calculate carbon emissions

This section sets the standard for how the council expects applicants to calculate their operational carbon emissions for new development.

7.2.1 To measure net zero operational carbon emissions we would expect:

- **Standard Assessment Procedure (SAP)*** for residential development
- **Simplified Building Energy Modelling (SBEM)** for commercial development

*Any subsequent published versions should be used in replacement of SAP, such as the Home Energy Model.

As instructed within the WMS of December 2023, to achieve operational net zero, a 100% improvement on the Target Emission Rate (TER) is required. This translates to a Dwelling Emission Rate (DER) of 0 or lower.

Once the relevant inputs have been plugged into the SAP or SBEM, if they do not achieve a DER of 0 or lower in the first instance, we would expect the developer to adjust the proposed elements to maximise the efficiency of the building to reach net zero.

Applications should include evidence of your calculated Net Zero operational carbon emissions standard. For residential buildings this should be in the form of the SAP and for commercial buildings this should be in the form of a SBEM.

7.2.2 Proposals for major development (more than 10 dwellings) are also required to submit a whole life carbon assessment. This must be supported by evidence that the design, selection of materials and construction methods has taken care to minimise the life cycle carbon emissions.

The industry standard method to calculate a building's embodied carbon is the RICS Whole Life Carbon Assessment for the Built Environment. The RICS method outlines the various aspects of a building that should be assessed, and divides the stages of a building's life into several stages: Production, Construction, Operation, End of Life and Beyond Asset Life.

The applicant should submit a RICS Whole Life Carbon Assessment for the Built Environment with their application.

7.2.3 Proposals for the development of new business, employment or community uses should be designed to meet an A Energy Performance Certificate.

The EPC should be provided along with the final CCC Sustainable Design Statement.

7.2.4 Proposals for new non-residential buildings will be required to meet BREEAM 'Excellent'.

Applicants should undertake a BREEAM assessment and submit this with the CCC Sustainable Design Statement.

The BREEAM assessment should be used to demonstrate that a standard of Excellent or higher can be achieved.

8. Carbon Offset Fund

Policy DS6

For development that does not achieve net zero operational emissions, the council will secure a financial contribution through a S106 agreement, in line with the council's carbon calculator, to mitigate any residual emissions. The calculation for a S106 contribution will be applied at full application or reserved matters stage

8.1 The purpose of the offset fund

In line with draft Policy DS6 the required standard for new development in the district is net zero operational carbon emissions. Applicants should demonstrate their efforts to achieve a net zero operational carbon development via their Sustainable Design Statement and accompanying supporting evidence as part of the planning application process.

The council acknowledges that, in some circumstances, a net zero operational carbon standard may not be achievable. If this is the case, the applicant must demonstrate that the standard cannot be achieved through the design process or how it is unviable to do so.

Where the required standard cannot be achieved, applicants will be required to make a payment via Canterbury City Council's carbon offset fund. Funds collected via section 106 offset payments will be paid into the Canterbury District Carbon Reduction Fund.

The council will use the Canterbury District Carbon Reduction Fund to implement energy saving and other relevant projects in the district.

The council has produced an evidence document, titled Canterbury City Council Carbon Offset Review, which reviews existing policies from fellow UK councils and establishes the rationale behind our chosen carbon offset value, based on The Green Book by Business, Energy & Industrial Strategy (BEIS).

8.2 Section 106 payments

Where it has been demonstrated that an appropriate on-site carbon reduction has been achieved, the remainder of carbon emissions should be offset.

The payment is calculated using the carbon price set by the council, multiplied by the carbon emissions of the development.

The council has initially set the price of carbon offsets at **£384** per tonne over a 30-year lifetime of the development. Applicants are required to calculate their expected carbon emissions and can contribute to the carbon offset fund as follows:

The remaining operational emissions from the use of the building should be calculated with the latest carbon factors using the latest available version of SAP or any subsequent published versions such as the Home Energy Model, and SBEM for non residential development.

The calculation to be used is: Remaining carbon x £384 per tonne x 30 years.

The carbon price is subject to change based on the council's internal review. If the carbon price changes, it will be reflected in this SPD.

The council will develop plans for the carbon reduction fund in due course, as part of the Climate Change Action Plan.

9. What to submit with your planning application

The contents of this Sustainable Design Guide should be used to complete your Sustainable Design Statement. Your statement should demonstrate compliance with the Local Plan policies, in line with the guidance in this document. The information required within your statement has been listed within this section.

As outlined in chapter 7, you must include your SAP or SBEM report alongside the Sustainable Design Statement with your application. After inputting your specifications, if the DER is any higher than 0, we would expect you to revisit the advice in chapter 3. Built Form, to reduce your DER down to zero.

To comply with policies DS6, DM4 and DM15, the Sustainable Design Statement must include information and, where specified, evidence as prescribed below:

9.1 Built form

The Sustainable Design Statement should provide narrative and relevant drawings and documents to demonstrate how you have considered each design aspect within the built form chapter. This chapter should heavily inform your Sustainable Design Statement.

- ☐ A summary of the building form(s) including the form factor
- ☐ Details of the building(s) orientation in relation to sunlight exposure and shading; explain how this will affect internal and external temperatures
- ☐ Explain how the use of solar panels has been considered in relation to building orientation
- ☐ Provide information on your fabric first approach, such as materials used and how this maximises building performance
- ☐ Demonstrate how you intend to regulate internal and external temperatures in the building in the design.
- ☐ Demonstrate compliance with Overheating: Approved Document O Building Regulations
- ☐ Proposed heating and ventilation systems
- ☐ Detail on the consideration of heat networks, if applicable
- ☐ Insulation intended for the building(s), which must include roof, wall and floors
- ☐ Details of glazing proposed for the building(s)
- ☐ U-Values proposed for the design with a comparison against building regulations notional building u-values, to demonstrate improvements
- ☐ Information on lighting proposed for the design
- ☐ Feasibility assessment for renewable energy solutions; this can be included in the Sustainable Design Statement or as a supporting document
- ☐ Details of proposed solar PV arrays

9.2 Construction materials

- ☐ CEMP. You can attach it as a supporting document. The CEMP must address how the development will mitigate any adverse impacts associated with construction
- ☐ Circular economy statement to be included within the Sustainable Design Statement; this should demonstrate that the waste hierarchy has been followed

9.3 Water efficiency

- ☐ Using the methodology set out in the Building Regulations, provide a water efficiency report, which calculates the consumption of water per person per day; either within your Sustainable Design Statement or as a separate supporting document
- ☐ Appliances and fixtures proposed, including consumption details
- ☐ Demonstrate that grey water use has been explored for the development and advise the outcome of this.
- ☐ Provide details of rainwater harvesting solutions proposed for the development
- ☐ Provide details of the water monitoring technology proposed

9.4 Waste and transportation

Any supporting drawings can be included within the Sustainable Design Statement or as an attachment, specify as necessary

- ☐ Proposals of over 300 homes should set out strategies for energy, water, resources and waste and recycling; attach this as a supporting document if required
- ☐ Demonstrate how space for bins (for single households) and bin stores (for communal development) have been allocated in the design
- ☐ Advise how active travel has been considered and encouraged in the design process
- ☐ Provide information on cycle storage for the proposed development
- ☐ Provide information on their proposed EV charging infrastructure, including number of charging points per dwelling and type(s) of charging point.

9.5 Calculating energy efficiency and carbon

- ☐ Proposals for the development of new business, employment or community uses should be designed to meet an A Energy Performance Certificate. Attach this as a supporting document if required

- ☐ For proposals for new non-residential buildings, attach a copy of your BREEAM assessment
- ☐ Proposals for major development are required to submit a whole-life carbon assessment. You can include this within your Sustainable Design Statement or attach as a supporting document. This should include evidence that the design, selection of materials and construction methods has taken care to minimise the life cycle carbon emissions
- ☐ Provide evidence of your calculated Net Zero operational carbon emissions standard. For residential buildings this should be in the form of the most recent SAP or any subsequent published version, and for commercial buildings this should be in the form of a Simplified Building Energy Modelling (SBEM)

9.6 Carbon Offset Fund

If the proposed development does not meet net zero standard upon review of the SAP* or SBEM, you are required to complete the carbon calculator exercise below, using the carbon price set by the council.

*Any subsequent published versions should be used in replacement of SAP, such as the Home Energy Model.

- ☐ If your application has to contribute to the carbon offset fund, attach your workings as a supporting document using the below methodology, titled 'Carbon Offset Fund'

The formula for the calculation of the Carbon Offset payment is:
Carbon Offset Contribution = (T- R) × Y × Z

Where:
T is the target reduction in carbon dioxide emissions (tonnes CO2)
R is the actual reduction in carbon dioxide emissions (tonnes CO2)
Y is the number of years for which the contribution is payable
Z is the cost of carbon per tonne

The proposed corresponding figures for the purpose of Carbon Offset payments for Canterbury City Council are:

T Dwelling Emission Rate (DER) of 0
R Provided by the applicant
Y 30
Z £384 per tonne of CO2

Using the above, please provide your workings below and final £ value.

10. Implementation and monitoring

10.1 Your application

To meet the requirements of this Sustainable Design Guide SPD, we require the evidence outlined in Section 9 to be included within your Sustainable Design Statement, or as a supporting document(s) if applicable, which should be submitted with your application.

Your Sustainable Design Statement and accompanying evidence will be reviewed by the council as part of the planning application. If more information is required, it will be requested before a decision can be made.

10.2 Post-application

The design features put forward within the Sustainable Design Statement and/or as part of any supporting evidence will be secured through any planning permission for development including through planning conditions and, where necessary, s106 legal agreements.

The council will use its monitoring and enforcement powers to ensure that approved developments are delivered in strict accordance with consents and will develop standard wording for conditions to ensure compliance is demonstrated post-construction.

Appendices

Written Ministerial Statement : This statement was made by the Minister of State for Housing in December 2023. It announced the changes proposed to energy efficiency building regulations which are planned for 2025.

Future Homes Building Standards Consultation : This consultation sets out the government's plans for achieving the new Future Homes Standard and Future Buildings Standard. It includes proposals for changes to building regulations and the associated documents and calculation methods.

Home Energy Model : The Home Energy Model is the planned replacement for the existing Standard Assessment Procedure (SAP) for the energy rating of dwellings. It is still under development and the first version is expected to be released alongside the Future Homes Standard in 2025.

SAP : The Standard Assessment Procedure (SAP) is the methodology currently used by the government to estimate the energy performance of dwellings.

SBEM : The Simplified Building Energy Model (SBEM) is the national calculation methodology used to assess performance in non-domestic buildings.

Government Simpler Recycling : This proposal was published in October 2023, which consists of reforms for household and business waste collections.

RICS Whole Life Carbon Assessment : The RICS whole life carbon assessment standard is a leading standard for accurate carbon measurement in relation to the built environment.

The Green Book : A document produced by Business, Energy & Industrial Strategy (BEIS). It is used to publish the annual nationally recognised non-traded price of carbon.