

Consultation Memo

Air Quality and Climate Change

Date: 26 April 2023

Application No CA/23/00484

Proposal: Outline planning application for up to 300 residential dwellings (including affordable housing and older person accommodation), a new community hub, introduction of structural planting and landscaping, informal public open space and children's play area and surface water flood mitigation and attenuation.

Location: Land At The Hill Bekesbourne Lane, East Of Bekesbourne Hill
Bekesbourne Canterbury CT4 5EA

Air Quality

I am satisfied with the methodology and findings of the air quality assessment. The emissions mitigation assessment has calculated the damage costs to be £99,402 which will be spent on providing an electric car club to the development. This mitigation is welcomed and will reduce transport emissions and will help improve air quality in the district and in Canterbury's AQMA.

I expect that the development will provide active charging points to each residential dwelling in accordance with building regulations. I would also request that active EV charging points in the non-residential areas be provided to 20% of parking spaces with an appropriate amount of accessible spaces.

Climate Change

The sustainability statement states that the exact building specification is subject to any future reserved matters application; however the development has the potential to incorporate renewable and low-carbon technologies.

I welcome the fabric first approach and would request that a detailed energy assessment including SAP calculations be submitted with any detailed application to ensure the design of the dwellings achieve a building energy efficiency that surpasses the requirements of Building Regulations Approved Document L1 2021, ideally the buildings should achieve accreditation such as Passivhaus or AECB standard.

Canterbury City Council expects the highest standard of insulation, air tightness, mechanical ventilation with heat recovery and air source heat pumps instead of gas boilers as this is the standard of development that we have recently approved in other areas of the district.

The quantification of whole-life carbon emissions (lifecycle carbon assessments) for the development should also be undertaken to show how the embodied carbon from constructing the homes and the materials used will be reduced. I would recommend that this be included as a condition on any permission.

Guidance on the incorporation of climate change aspects into the design is set out below.

Kind regards,

Kelly Haynes
Principal Policy Officer (Climate and Environment)

Pre-planning advice - climate change

Domestic buildings

Version 1 / September 2020 / Nicholas Thurston, Climate Change Officer

1. Context

Construction and modification of homes is a particularly important area for climate change action under UK law to reduce carbon emissions (also called greenhouse gas emissions) to net zero by 2050. This summary and checklist is to help planners, designers, developers and homeowners ensure that:

- Measures to **reduce the emissions from the construction and operation** of homes are fundamental to their project
- Measures to make the dwelling **resilient to climate change impacts** have been incorporated into the project

2. Sustainability Outcomes

The [RIBA Plan of Work 2020](#) stresses the importance of [Sustainability Outcomes](#) defined at the start of a project (at Plan of Work Stage 1) before the concept design.

Two critical elements of the Sustainability Outcomes that relate to climate change define the whole life net carbon of the home:

- **Operational Carbon** expressed as both kWh/m².yr energy usage and tCO_{2e}/m².yr emissions - this is the amount of emissions that will be generated each year from heating and powering the home once it is completed.
- **Embodied Carbon** expressed as metric tonnes CO_{2e} emissions - this is the amount of emissions from making the building materials and from the construction process.

Setting these objectives is essential to achieving good design; the RIBA guidance provides detailed guidance on the fabric-first approach and design elements necessary to achieve reduced whole life net carbon.

A third key element of how a house-building project affects the ability to reach net zero emissions is the transport and connectivity:

- **Transport emissions** - expressed as emissions per occupant per year in kgCO_{2e}/km.person

Setting goals for transport emissions for the home will help with the prioritisation of transport infrastructure to maximise connectivity by foot, bicycle, public transport and zero emissions vehicles and restrict access using hydrocarbon-powered vehicles.

2. Checklist for climate change design

<i>What to do</i>	<i>How to do it</i>
<input type="checkbox"/> Set Sustainable Outcomes for the project and include them in all design documentation	Instruct your architect to help you using RIBA guidance. The RIBA Sustainable Outcomes guidance explains this in full detail.
<input type="checkbox"/> Include the best of the current low-carbon technologies in the project	Ask your architect or designer to use a fabric-first approach to the design so that the building can achieve the sustainability outcomes now and be ready for future improvements
<input type="checkbox"/> Make a Whole Life-Cycle Carbon Assessment	Your RICS surveyor should complete this using the mandatory professional standard before commencement of RIBA stage 4 or equivalent.

3. Key features of climate resilient developments

The following are some of the key features of housing projects that have reduced the impacts on and are ready for the impacts of climate change.

Aspect	Features include:
Building fabric and passive design - Reducing the overall energy demand required to operate the building.	<ul style="list-style-type: none"> ● energy efficient fabric and shading design to reduce heating and cooling demand ● natural daylighting to reduce artificial lighting demand ● natural ventilation to reduce Heating, Ventilation and Air Conditioning (HVAC) demand ● appropriate sizing of building systems to limit over-engineering.
Systems efficiency – Increasing the energy efficiency of the building systems.	<ul style="list-style-type: none"> ● highly energy efficient building systems – HVAC with heat recovery, ultra efficient lighting systems, lifts and other services. ● appropriate sizing of building systems to limit over-engineering ● install as much renewable energy generation as feasible ● avoid hydrocarbon-fueled systems including gas
Energy management – Implementing smart energy and home management systems.	<ul style="list-style-type: none"> ● use smart heating, ventilation and energy controls ● consider on-site battery storage for electricity from solar PV generation and an EV connection that enables two-way electricity flows
Flexible and future ready - Making the cost and hassle of further improvement as low as possible	<ul style="list-style-type: none"> ● use building elements that are as standardised as possible to allow easy modification in the future ● provide ducting that is ready for expansion of renewable energy, installation of more charge points, connection to heat networks.

For more information see [World Green Building Council Net Zero Carbon Buildings Framework](#)

4. Climate change design feature checklist

This checklist is to help look for design features that show the home is as climate change resilient as possible. This is a non-exhaustive list and is for guidance only.

<i>Feature</i>	<i>Why it matters</i>
Building fabric and passive design	
<input type="checkbox"/> Minimised emissions intensive materials	Concrete, steel and brick result in large amounts of emissions to manufacture. Low embodied carbon buildings tend to feature more wood and natural materials in their construction
<input type="checkbox"/> Thermal mass on the inside	A good thermal design is likely to have a highly insulated exterior with thermal mass on the inside of the building.
<input type="checkbox"/> Maximised insulation	The outside envelope of the building should be well insulated with low U-value walls, roof, windows and doors.
<input type="checkbox"/> Airtight construction	A well sealed building that does not leak warm air out during the winter needs much less heating energy
<input type="checkbox"/> Natural ventilation, solar gain and shading	Natural ventilation for the summer weather combined with suitable shading to avoid excessive solar gain from south facing windows is needed as Canterbury district summers become warmer
Systems efficiency	
<input type="checkbox"/> Heat recovery	Combined with airtight construction, a mechanical ventilation system that recovers heat from warm air and transfers the warmth to incoming fresh air significantly reduces heating demand in the winter
<input type="checkbox"/> No gas heating - use heat pumps	Installing gas heating should be avoided. A heat pump (ground, water or air source) or heat network connection are the UK strategic pathway to low carbon heat
<input type="checkbox"/> Maximised renewable energy generation	All the available suitable roof space for solar thermal and photovoltaic generation should be used. Solar pergolas and canopies should also be used to provide shade and for covered cycle and parking areas.
Transport	
<input type="checkbox"/> Accessible by active and public transport	It is imperative that the access routes to developments enable easy walking, cycling and public transport access in order to meet transport decarbonisation goals
<input type="checkbox"/> Cycle storage	Cycle storage should be prominent, welcoming and ample to encourage cycling (including e-cycling and e-scooting) for occupants and visitors



EV charging

EV charging points now, plus cabling routing to allow all parking points to be EV charging by 2030

Pre-planning advice - climate change

Non-domestic buildings

Version 1 / July 2020 / Nicholas Thurston, Climate Change Officer

1. Context

Construction and modification of buildings is a particularly important area for climate change action under UK law to reduce carbon emissions (also called greenhouse gas emissions) to net zero by 2050. This summary and checklist is to help planners, designers, developers and building owners ensure that:

- Measures to reduce the emissions from the construction and operation of buildings are fundamental to their project
- Measures to make the development resilient to climate change impacts have been incorporated into the project

2. Sustainability Outcomes

The [RIBA Plan of Work 2020](#) stresses the importance of [Sustainability Outcomes](#) defined at the start of a project (at Plan of Work Stage 1) before the concept design.

Two critical elements of the Sustainability Outcomes that relate to climate change define the whole life net carbon of the building:

- **Operational Carbon** expressed as both kWh/m².yr energy usage and tCO_{2e}/m².yr emissions - this is the amount of emissions that will be generated each year from heating and powering the development once it is completed.
- **Embodied Carbon** expressed as metric tonnes CO_{2e} emissions - this is the amount of emissions from making the building materials and from the construction process.

Setting these objectives is essential to achieving good design; the RIBA guidance provides detailed guidance on the fabric-first approach and design elements necessary to achieve reduced whole life net carbon.

A third key element of how a development project affects the ability to reach net zero emissions is the transport and connectivity:

- **Transport emissions** - expressed as emissions per occupant per year in kgCO_{2e}/km.person

Setting goals for transport emissions for the development will help with the prioritisation of transport infrastructure to maximise connectivity by foot, bicycle, public transport and zero emissions vehicles and restrict access using hydrocarbon-powered vehicles.

2. Checklist for climate change design

<i>What to do</i>	<i>How to do it</i>
<input type="checkbox"/> Set Sustainable Outcomes for the project and include them in all design documentation	Instruct your architect to help you using RIBA guidance. The RIBA Sustainable Outcomes guidance explains this in full detail.
<input type="checkbox"/> Include the best of the current low-carbon technologies in the project	Ask your architect or designer to use a fabric-first approach to the design so that the building can achieve the sustainability outcomes now and be ready for future improvements
<input type="checkbox"/> Make a Whole Life-Cycle Carbon Assessment	Your RICS surveyor should complete this using the mandatory professional standard before commencement of RIBA stage 4 or equivalent.

3. Key features of climate resilient developments

The following are some of the key features of new developments that have reduced the impacts on and are ready for the impacts of climate change.

Aspect	Features include:
Building fabric and passive design - Reducing the overall energy demand required to operate the building.	<ul style="list-style-type: none"> ● energy efficient fabric and shading design to reduce heating and cooling demand ● natural daylighting to reduce artificial lighting demand ● natural ventilation to reduce Heating, Ventilation and Air Conditioning (HVAC) demand ● appropriate sizing of building systems to limit over-engineering.
Systems efficiency – Increasing the energy efficiency of the building systems.	<ul style="list-style-type: none"> ● highly energy efficient building systems – HVAC with heat recovery, ultra efficient lighting systems, lifts and other services. ● appropriate sizing of building systems to limit over-engineering ● install as much renewable energy generation as feasible ● avoid hydrocarbon-fueled systems including gas
Energy management – Implementing smart energy and building management systems.	<ul style="list-style-type: none"> ● use of Building Information Modelling ● post occupancy energy audits, engagement with occupant behaviour, management ‘peak loads’, excellent heating and lighting control systems, achieving ISO 50001 accreditation ● building management systems and/ or smart metering.
Flexible and future ready	<ul style="list-style-type: none"> ● use of building elements as standardised as possible to allow low

<p>- Making the cost and hassle of further improvement as low as possible</p>	<p>carbon energy and/or low carbon heat generation schemes</p> <ul style="list-style-type: none"> ● them to be flexible, repairable and upgradable ● allowance for expansion of renewable energy, installation of more charge points, connection to heat networks.
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