Bath & North East Somerset Local Plan (Core Strategy /Placemaking Plan) 2011-2029 Partial Update

Draft Plan(Reg 19) Consultation

August 2021

Topic Paper: Zero Carbon Construction

Bath & North East Somerset Council

Improving People's Lives

Zero Carbon Construction Policy Review

1. Introduction

1.1 Bath and North East Somerset has declared a climate emergency and has committed to providing the leadership for the district to be carbon neutral by 2030. This will contribute to the UK's legally binding target of net zero carbon by 2050. There are three key priorities to achieve this which are;

- Energy efficiency improvement of the majority of existing buildings (domestic and non-domestic) and zero carbon new build;
- A major shift to mass transport, walking and cycling to reduce transport emissions;
- A rapid and large-scale increase in local renewable energy generation.

1.2 As part of this work the council is seeking to update its adopted policies on climate change including net zero carbon construction.

1.3 A recent publication by the Intergovernmental Panel on Climate Change has advised that cuts in emissions can stabilise rising temperatures but that action must be taken now. The past five years have been the hottest on record with human influence very likely to be the main driver.

2. Policy Context

National Policy

2.1 Paragraph 152 of the National Planning Policy Framework states that;

The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

Future Homes Standards

2.3 The government are in the process of revising Part L of the building regulations to reduce carbon emissions. The new Part L is called the Future Homes Standard. In January 2021 the government released their response to the Future Homes Standards Consultation. The results of the consultation have confirmed that local authorities will still be able to set their own standards. The

government has stated their intention to bring in the Future Homes Standards in 2025 but the exact method of how carbon reduction will be enacted is still subject to future consultation. As an interim measure the government are now proposing an uplift of 31% above current building regulations requirements. This is due to be published in December 2021 and come into effect June 2022.

Future Buildings Standards

2.4 The government is also consulting on Part L for non-domestic buildings. This is called the Future Buildings Standards. It is not yet known what the Future Buildings Standards will be, but they are expected to be published at the end of 2021.

Local Policy

Core Strategy adopted 2014

CP1- Retrofitting Existing Buildings

CP2 – Sustainable Construction

CP3 – Renewable Energy

Placemaking Plan adopted 2017

SCR1 – On-site Renewable Energy Requirement

SCR2 – Roof-mounted/Building-integrated Scale Solar PV

SCR3 – Ground-mounted Solar Arrays

SCR4 – Community Renewable Energy Schemes

2.5 To ensure compliance with the above polices planning applications are required to be accompanied by a sustainable construction checklist as outlined in the Sustainable Construction Checklist SPD. The checklist requires information on, energy, district heating, water, overheating, and sustainable construction.

2.6 It is proposed to replace polices CP2 and SCR1 with new zero carbon construction polices for residential and non-residential buildings. A new policy will be introduced to assess the impact of embodied carbon in large scale development.

3 Evidence Base

Cost of Carbon Reduction in New Buildings, Currie and Brown, December 2018
Details the cost of implementing sustainable construction measures. Analysis

suggests that it is possible to achieve net zero regulated carbon emissions from a combination of energy efficiency, on site carbon reductions and allowable solutions for an additional capital cost of between 5-7% for homes and non-domestic buildings. Achieving net zero regulated and unregulated emissions is likely to result in a cost increase of 7-11% for homes. The costs of achieving these standards are likely to fall overtime both because of reducing technology costs but particularly because reducing carbon intensity of grid electricity means that the carbon emissions of new homes will be lower than the level estimated by current regulatory compliance methods.
West of England Cardon Reduction Requirement Study – Carbon Offsetting in the West of England, Centre for Sustainable Energy, January 2019
This report sets out how the cost of carbon offsetting would operate. The report recommends that the carbon price should be set at £95/ tonne CO2, either within the Local Plan policy itself (subject to review every 5 years), or adopting the approach of the London Plan, within Supplementary Planning Documentation. Such payments would need to be secured by way of a section 106 agreement or unilateral undertaking.
Evidence Base for WOE Net Zero Building Policy, 2021
The study will focus on the embodied carbon of buildings and the cost uplifts anticipated. Two non-domestic typologies were looked at and two domestic typologies. The study looks at, the Product Stages, the Construction Process Stages, the Replacement Stage and the end of life stage. The lifecycle of materials was analysed and compared with current building practice. The study is in draft from and anticipated to be published in September 2021.

Examples from other organisations

LETI Climate Emergency Design Guide, London Energy, Transformation Initiative,
The documents details how new buildings can reach climate change targets. In terms of operational energy it is recommended that when assessing operational energy that the metric of energy use intensity and space heating is used. Renewable energy should be maximized on site. In terms of small scale residential 100% of energy needs can be met from Solar PV. For embodied carbon the baseline for current practice is 800kg/Co2 per year. It is recommended that following best practice this can change to 300kg/CO2 per year.
Net Zero Whole Life Carbon Roadmap consultation, UK Green Building Council (UKGBC) 2021
The UKGBC have recently opened a consultation on their whole life carbon net zero roadmap. As part of this the use of space heating standards and energy use intensity metrics are recommended for use by local authorities. In terms of embodied carbon, the re use of buildings is recommended in the first

instance. The calculation of whole life carbon emissions for major developments is recommended.
Draft Climate Emergency Development Plan Document, Cornwall Council 2021
Cornwall council have published a draft DPD which includes a new policy on zero carbon construction. The council are recommending space heating and energy use intensity as the proposed metric to achieve zero carbon construction.
Zero Carbon Toolkit, Cotswold District Council 2021
Cotswold Council have released a zero carbon toolkit which includes guidance on zero carbon construction. The document proposes using the metrics of energy use intensity and space heating, but proposes to set lower parameters than Cornwall Council. The document also proposed an embodied carbon benchmark of 500kg/sqm.

4 Proposed changes to metric

4.1 In the Local Plan Partial Update Options document the Council consulted on policy options that dependent on the implementation of the Future Homes Standard sought to achieve zero carbon development based on achieving carbon reduction through fabric performance, on-site renewables and then via offsetting. Due to the uncertainty of the Future Homes Standard, it is now proposed to continue to pursue a zero carbon construction standard but to change the metric from **carbon reduction** to **energy use**. **The energy metric** has two key advantages

-firstly, it does not rely on Part L as a baseline, so won't have to be changed each time Part L changes.
-secondly, energy metrics are more technically robust and designed to lead to better building outcomes with improved focus on fabric and ability to monitor performance.

4.2 The revised energy metric will look at three things.

- **Space Heating - The energy used specifically for heating the building**
- **Energy Use Intensity – the predicted total energy use**
- **Provide enough renewable energy output to match the total energy use.**

4.3 The energy metrics have been designed through extensive work by national professional organisations such as RIBA, CIBSE (Chartered Institution of Building Services Engineers) and the UK Green Building Council and LETI (London Energy Transformation Initiative). Cornwall is proposing an energy metric in their Climate Change Development Plan Document.

4.4 The energy metric will still deliver net zero operational carbon homes. The information on energy and heating is already produced through a Part L assessment as required through the Council's sustainable construction checklist, so won't require developers to do an extra assessment, but the Sustainable Construction Checklist will need to be updated.

Non-residential Buildings

4.5 As it is currently uncertain what the new non-domestic Part L will be it is proposed to request that applicants adhere to the energy hierarchy of improving fabric first, then adding renewables and finally offsetting emissions that can't be mitigated onsite, but with no fixed targets at each stage due to the difficulty of setting targets when Part L (the baseline) is changing.

4.6 It is not proposed to switch to an energy metric for non-domestic buildings at present since the evidence is less developed than it is for residential uses due to the larger range of building types and uses. We intend to move to the more robust energy metric in New Local Plan. This approach will still achieve net zero whilst working alongside the Future Buildings Standard.

Embodied Carbon Assessment

4.7 Embodied carbon emissions are the carbon emissions resulting from the building materials, construction and the use of a building over its entire life, including its demolition and disposal. An embodied carbon assessment provides a true picture of a building's carbon impact on the environment.

4.8 Embodied Carbon Assessments have been introduced by the Greater London Authority in the London Plan. The policy in London requires a Whole Life Cycle Carbon Assessment for applications that are referred to the mayor which includes developments of over 150 dwellings.

4.9 The West of England Authorities are working towards updating the evidence base to explore the possibility of introducing Whole Life Cycle Carbon Assessments as part of future policy in each authority's New Local Plan.

4.10 As the evidence base to support the new Local Plans is still emerging the proposed policy in the partial update takes a cost neutral approach requiring an embodied energy assessment is undertaken and submitted alongside a planning application that demonstrates the total carbon of the development is of a level that is aligned with current construction industry practice. The assessments submitted can then be used as part of the evidence to support future requirements in the new Local Plan when further evidence on the cost and practicalities will be available and industry has become familiar with the assessment process.

4.11 The policy will focus on the following elements of the building - Substructure (RICS 1), Superstructure (RICS 2) and Finishes (RICS 3) elements, because:

- they are expected to have a high share of embodied carbon emissions
- they are commonly considered during early design stages
- there are satisfactory databases available today for their accurate assessment

4.12 The intention is to ratchet this policy up through the new Local Plan as practice evolves and on the basis of the evidence gathered through the response to this initial policy included in the partial update.

5 Proposed Policy Approach

5.1 As a reminder and for completeness based on the evidence base and approach outlined above the proposed policies in the Local Plan Partial Update are set out below.

SCR6 Sustainable Construction Policy for New Build Residential Development

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

New build residential development will aim to achieve zero operational emissions by reducing heat and power demand then supplying all energy demand through onsite renewables. Through the submission of a sustainable construction checklist, proposed new dwellings will demonstrate the following;

- **Space heating demand less than 30kWh/m2/annum;**
- **Total energy use less than 40kWh/m2/annum; and**
- **On site renewable energy generation to match the total energy use, with a preference for roof mounted solar PV**
- **Connection to a district heating network where available**

Major residential development

In the case of major developments where the use of onsite renewables to match total energy consumption is demonstrated to be not technically feasible (for example with apartments) or economically viable, renewable energy generation should be maximised and the residual carbon offset by a financial contribution

Applications for 50 dwellings or more are required to demonstrate that the CIBSE TM59 overheating target has been met in the current climate, and a strategy submitted to show how overheating can be mitigated in the future climate.

SCR7 Sustainable Construction Policy for New Build Non-Residential Buildings

New build non-residential major development will maximise carbon reduction through sustainable construction measures. Through the submission of a

sustainable construction checklist all planning applications will provide evidence that the standards below are met.

Major development is to achieve a 100% regulated operational carbon emissions reduction from Building Regulations Part L 2013 (or future equivalent legislation), following the hierarchy set out below.

- **Minimise energy use through the use of energy efficient fabric and services**
- **Residual energy use should be met through connection to a heat network if available.**
- **Maximise Opportunities for renewable energy to mitigate all regulated operational emissions.**
- **Residual carbon emission that cannot be mitigated on site should be offset through a financial contribution to the council's carbon offset fund**

SCR8

Large scale new-build developments (a minimum of 50 dwellings or a minimum of 5000m^2 of commercial floor space) are required to submit an Embodied Carbon Assessment that demonstrates a score of less than 900kg/sqm of carbon can be achieved within the development for the substructure, superstructure and finishes.