

Climate Change Technical Paper  
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## Introduction

The Stevenage Borough Local Plan 2011-2031 (“the local plan”) was adopted in 2019. Local planning authorities are under a duty to review their plans every five years to ensure that the policies they contain remain effective. Accordingly, the council is now in the process of carrying out a partial review and update of the local plan. This technical paper has been prepared to inform that process.

In general, technical papers explain how planning policies have been developed, bringing together the various studies in an evidence base and further analysis. The studies themselves will usually make recommendations but it is rarely appropriate to translate these directly into policy, for reasons including:

- Compliance with legislation, national policies and national guidance;
- Consideration of our residents’ views and those of other interested parties;
- The duty to cooperate with neighbouring authorities and the need to consider the impact our policies might have on them;
- Consideration of the findings of other studies, which might cover overlapping or entirely different subjects;
- Consideration of new evidence which has come to light since the study was carried out.

The purpose of a technical paper is therefore to bring all of the available evidence and other relevant considerations together to be analysed in their totality.

### The scope of this paper

This technical paper considers policies designed to mitigate and adapt to climate change. The current local plan has two such policies: a strategic policy, SP11; and a detailed policy, FP1. This paper will explain why those policies are no longer considered to be fit for purpose in the light of the most up-to-date evidence.

The emerging partial review and update of the local plan proposes a new strategic climate change policy and a new chapter of detailed policies to support it. Among the latter is Policy CC1, which sets carbon emissions targets for new developments. This paper will also explain how that policy has been formulated.

## Context

In October 2018, the Intergovernmental Panel on Climate Change (“IPCC”) reported that human activities had caused the Earth’s surface to warm by more than 1°C since the pre-industrial period<sup>1</sup>. The report made two further significant findings: that the climate impacts of 2°C warming would be much more serious than those of 1.5°C of warming; and that there were then only 12 years in which to take action to prevent global temperature rise above 1.5°C.

On 9 August 2021, the IPCC published the contribution of Working Group I to the IPCC’s Sixth Assessment Report, regarding the physical science basis of climate change. Its key findings are summarised as follows<sup>2</sup>:

- a) It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.
- b) The scale of recent changes across the climate system as a whole and the present state of many aspects of the climate system are unprecedented when compared to the globe’s climate over many thousands of years.
- c) Human-induced climate change is already affecting many weather and climate extremes in every region across the globe; evidence of observed changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical cyclones and, in particular, their attribution to human influence, has strengthened since the IPCC published its Fifth Assessment Report in 2013.
- d) Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO<sub>2</sub> and other greenhouse gas emissions occur in the coming decades.
- e) Limiting human-induced global warming to a specific level requires limiting cumulative CO<sub>2</sub> emissions, reaching at least net-zero CO<sub>2</sub> emissions, along with strong reductions in other greenhouse gas emissions<sup>3</sup>. Strong, rapid and sustained reduction in CH<sub>4</sub> (methane) emissions would also limit the warming effect and would improve air quality.

The IPCC has estimated a remaining carbon budget of 500GtCO<sub>2</sub> (from 2020) for a 50:50 chance of restricting warming to 1.5°C i.e. a little over 420GtCO<sub>2</sub> from the start of 2022<sup>4</sup>. This new budget represents just over ten years’ worth of global emissions at pre-pandemic (2019) levels.

On 17 January 2022, the UK Government published its UK Climate Change Risk Assessment 2022<sup>5</sup>. This details the effects currently being felt across the UK from impacts such as flooding, wildfires, sea level rise, coastal erosion and heating. It also sets out that, even under low warming scenarios, the UK will be subject to a range of significant and costly impacts unless accelerated further action is taken now<sup>6</sup>. For eight of the sixty-one climate risks identified, economic damage by 2050 under 2°C of warming could exceed £1 billion per annum<sup>7</sup>. It states:

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<sup>1</sup> IPCC, 2018

<sup>2</sup> IPCC, 2021

<sup>3</sup> IPCC, 2018, p. 12

<sup>4</sup> IPCC, 2021, p. 29 and 30

<sup>5</sup> DEFRA, 2022

<sup>6</sup> DEFRA, 2022, p. 3

<sup>7</sup> DEFRA, 2022, p. 4

*“The evidence shows that we must do more to build climate change into any decisions that have long-term effects, such as new housing or infrastructure, to avoid often costly remedial action in the future.”<sup>8</sup>*

In February 2022 the IPCC published the contribution of Working Group II to the IPCC’s Sixth Assessment Report, regarding climate impacts, adaptation, and vulnerability. Its key findings are summarised as follows:

- a) The extent and magnitude of climate change impacts are larger than estimated in previous assessments<sup>9</sup>;
- b) Climate change has caused increased heat-related mortality; hot extremes including heatwaves have intensified in cities, where they have aggravated air pollution events and limited functioning of key infrastructure<sup>10</sup>;
- c) Continued and accelerating sea level rise will encroach on coastal settlements and infrastructure<sup>11</sup>, and, combined with storm surge and heavy rainfall, will increase compound flood risks<sup>12</sup>;
- d) There have been irreversible losses, for example through species extinction driven by climate change<sup>13</sup>;
- e) *“The cumulative scientific evidence is unequivocal: Climate change is a threat to human well-being and planetary health. Any further delay in concerted anticipatory global action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all.”<sup>14</sup>*

In April 2022, the IPCC published the contribution of Working Group III to the Sixth Assessment Report, regarding mitigation of climate change. Its key findings are summarised as follows:

- a) Global greenhouse gas emissions have continued to rise, but the rate of growth has slowed in the last decade. However, current policies are insufficient to limit warming to 1.5°C or even 2°C.
- b) Pathways to achieve net-zero emissions by mid-century require rapid and deep reductions in emissions across all sectors, including energy, transport, buildings, industry and agriculture.
- c) Emphasises the role of technological innovations in reducing emissions, including renewable energy, energy efficiency, carbon capture and storage, and low-carbon transport solutions.
- d) Policy measures remain crucial for driving climate mitigation (e.g., carbon pricing, sector-specific regulation, international cooperation).
- e) Significant investment is needed to transition to a low-carbon economy, but also behavioural and societal changes.

On 20 March 2023, the IPCC published its Synthesis Report, which draws together conclusions and recommendations from its detailed reports produced over the last six-year reporting cycle<sup>15</sup>. It emphasises that deep, rapid, sustained, and immediate reductions in greenhouse gas emissions are needed to avoid dangerous and irreversible consequences

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<sup>8</sup> DEFRA, 2022, p. 4 and 9

<sup>9</sup> IPCC, 2022, p. 9

<sup>10</sup> IPCC, 2022, p. 9 and 11

<sup>11</sup> IPCC, 2022, p. 13

<sup>12</sup> IPCC, 2022, p. 18

<sup>13</sup> IPCC, 2022, p. 9

<sup>14</sup> IPCC, 2022, p. 33

<sup>15</sup> IPCC, 2023

for human and natural systems<sup>16</sup>. A wide range of co-benefits would accompany rapid and sweeping emissions reductions, especially in terms of air quality and public health<sup>17</sup>. The report also sets out that substantial emissions and policy gaps presently exist, with implemented policies being on track for warming of 3.2°C, with a range of 2.2°C to 3.5°C<sup>18</sup>, way above the defined thresholds. Importantly, it emphasises that even the smallest increments of warming matter<sup>19</sup>. Every fraction of a degree will increase the severity and frequency of floods, droughts, storms, heatwaves, and other extreme weather events.

Buildings are the UK's second-highest emitting sector: as at 2022, the operational greenhouse gas emissions from energy needed to heat, cool and power buildings accounted for 17% of total emissions<sup>20</sup>. In this context, to meet the UK's domestic climate commitments requires a 30% reduction in total energy demand in buildings by 2035 (compared to 2021 levels)<sup>21</sup>.

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<sup>16</sup> IPCC, 2023, p. 27

<sup>17</sup> IPCC, 2023, p. 27

<sup>18</sup> IPCC, 2023, p. 23

<sup>19</sup> IPCC, 2023, p. 15 and 18

<sup>20</sup> CCC, 2023, p. 140

<sup>21</sup> CCC, 2023, p. 143

## The Paris Agreement

The Paris Agreement, adopted by 196 countries at the Conference of the Parties (“COP”) 21 summit in 2015, is the main international framework for global climate action, setup under the United Nations Framework Convention on Climate Change (UNFCCC). The UK is a party to the Paris Agreement. Under the terms of the agreement, the parties must act to limit global warming to well below 2°C above the pre-industrial average, pursue efforts to limit the temperature increase to 1.5°C, and achieve net-zero emissions by the second half of the 21<sup>st</sup> century. The agreement has driven significant global funding for countries to reduce greenhouse gas (“GHG”) emissions and invest in low-carbon technologies.

The UK is required to communicate its contribution to meeting these objectives, in the form of detailed plans for emissions reduction targets, to the other parties. These are known as Nationally Determined Contributions (“NDCs”). Under the latest NDC, communicated in 2020, the UK committed to reducing emissions by at least 68% by 2030, compared to 1990 levels<sup>22</sup>. The next NDC, for 2035, must be communicated between November 2024 and February 2025.

However, the COP28, held in Dubai, 2023, concluded with the first global stocktake of international climate action under the Paris Agreement, revealing slow progress across all areas of climate action, and the need for a 43% reduction in global GHG emissions by 2030 from 2019 levels to stay on the 1.5°C pathway. It highlighted a clear emissions gap between current plans and what is needed, calling for accelerated climate action and a faster transition away from fossil fuels.

The COP28 also emphasised scaling up climate finance, with £9.88 billion pledged by 33 countries, including the UK, for the Green Climate Fund (2024-2027), critical for climate action in developing countries, and a historic agreement to operationalise a new fund for addressing climate-related losses and damages in vulnerable countries (over £510 million committed so far). A global pledge was also made to triple renewable energy and double energy efficiency improvements by 2030.

However, current climate finance flows fall far short of the trillions needed to support developing countries with clean energy transitions, national climate plans, and adaptation efforts.

### Net Zero statutory obligation

The United Kingdom is subject to a statutory obligation to ensure that its net carbon account for the year 2050 is at least 100% lower than the 1990 baseline, pursuant to section 1(1) of the Climate Change Act 2008, as amended by the Climate Change Act 2008 (2050 Target Amendment) Order 2019. Under sections 4 and 9 of the Climate Change Act, the secretary of state must set regular carbon budgets for each succeeding five-year period, taking into account advice from the Climate Change Committee (“CCC”), and ensure that the net UK carbon account for each budgetary period does not exceed the carbon budget.

The Fourth Carbon Budget, for the period 2023-2027, is set at 1,950MtCO<sub>2</sub>e and requires an average of a 51% reduction in UK emissions compared with 1990 levels. It was set so as to be on track for the previous target of an 80% reduction in greenhouse gas emissions by 2050. The Fifth Carbon Budget, for the period 2028-2032, set on the same basis, is 1,725MtCO<sub>2</sub>e, which requires an average of a 57% reduction.

The CCC published its Sixth Carbon Budget recommendation and report in December 2020. The government accepted the recommendation and enshrined the budget in law by the

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<sup>22</sup> BEIS, 2022, p. 1

Carbon Budget Order 2021. It sets a target of 965 MtCO<sub>2</sub>e for the period 2033–2037, which would equate to a 78% reduction in emissions by 2035, relative to the 1990 baseline<sup>23</sup>.

The adoption of the Sixth Carbon Budget has clear implications for the Fourth and Fifth Carbon Budgets, which were set in line with the previous ‘at least 80% reduction’ target for 2050 rather than the revised ‘at least 100%’ target now found in Section 1 of the Climate Change Act, legislated for in June 2021. In its December 2020 report, the CCC calculated a difference of at least 28-68MtCO<sub>2</sub>e a year in 2030 between the average emissions allowed by the Fifth Carbon Budget, and the CCC’s “Balanced Pathway”, which is a trajectory that if followed would allow the UK to meet the Sixth Carbon Budget and the 2050 Net Zero target<sup>24</sup>.

The CCC has advised that the Fifth Carbon Budget will need to be significantly outperformed to stay on track to meet the Sixth Carbon Budget and the 2050 Net Zero target<sup>25</sup>.

## National planning policy

Chapter 14 of the National Planning Policy Framework (“the NPPF”) sets out national planning policies for meeting the challenge of climate change. Paragraph 157 requires the planning system to support the transition to a low carbon future, helping to shape places in ways that contribute to “radical reductions” in greenhouse gas emissions, encourage the reuse of existing resources, and support renewable and low carbon energy.

According to paragraph 158, plans should take a proactive approach to mitigating climate change, in line with the objectives and provisions of the Climate Change Act. Paragraph 159 goes on to say that new development should be planned for in ways that can help to reduce greenhouse gas emissions but that local requirements for the sustainability of buildings should reflect the government’s policy for national technical standards.

## The Net Zero Strategy

The UK Net Zero Strategy was published in October 2021<sup>26</sup>, setting out the government’s policies and proposals for decarbonising all sectors of the UK economy to meet the 2050 net zero target. This was subsequently found to be unlawful on the basis that the secretary of state had not been briefed with sufficient information to enable him to be satisfied that the strategy would allow the UK to meet the Sixth Carbon Budget.

On 30 March 2023, the government published a revised strategy to deliver on its net-zero obligations<sup>27</sup>. Rather than a single Net Zero Strategy, a suite of 50 documents were published, including 19 policy documents. Of these, the most important is the Carbon Budget Delivery Plan<sup>28</sup>, which sets out the policies and proposals to enable the carbon budgets 4-6 to be met.

The Carbon Budget Delivery Plan sets out 191 quantified measures across all sectors of the economy<sup>29</sup> and indicates that these policies would meet Carbon Budgets Four and Five, but would only provide 97% of the carbon savings required to meet the Sixth Carbon Budget (2033-2037), amounting to a shortfall of 32MtCO<sub>2</sub>e over the budget period<sup>30</sup>. Table 6 of Appendix B of the Plan lists another 143 “unquantified” policies and proposals, where the

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<sup>23</sup> CCC, 2020, p. 5

<sup>24</sup> CCC, 2020, p. 432

<sup>25</sup> CCC, 2020, pp. 24 and 430-433

<sup>26</sup> DESNZ & BEIS, 2021

<sup>27</sup> DESNZ, 2023. Powering Up Britain: Net Zero Growth Plan

<sup>28</sup> DESNZ, 2023. Carbon Budget Delivery Plan

<sup>29</sup> DESNZ, 2023. Carbon Budget Delivery Plan, Table 5

<sup>30</sup> DESNZ, 2023. Carbon Budget Delivery Plan, Table 1



impact has not been calculated, in some cases because they are at an “early stage” or because they are very high level.

The Carbon Budget Delivery Plan also makes it clear that it delivers only 92% of the emissions cuts needed to meet the UK’s 2030 nationally determined contribution under the Paris Agreement, which is a commitment to reduce economy-wide greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels.

The main measures targeted at buildings refine existing energy efficiency support, in particular by rebranding an insulation scheme to upgrade around 300,000 of the country’s least energy efficient homes and support the rollout of heat pumps<sup>31</sup>.

## Progress to net zero

In June 2022, the CCC found, in its Progress Report to Parliament concerning the 2021 Net Zero Strategy, that either significant risks or policy gaps existed in relation to 38% of the emissions reductions required to meet the Sixth Carbon Budget<sup>32</sup>. This was particularly so in relation to land use and the energy efficiency of buildings<sup>33</sup>. The CCC also highlighted that, under the current Building Regulations, “the UK continues to build new homes to standards which do not align with the Net Zero target.”<sup>34</sup>

In a letter to Chancellor Jeremy Hunt in November 2022, the CCC recommended that the Government consider bringing forward the date for the introduction of the Future Homes Standard from 2025<sup>35</sup>. This recommendation was not followed in the Carbon Budget Delivery Plan, which still envisages regulation from 2025<sup>36</sup>. A similar recommendation made in the independent Net Zero Review, carried out by former energy minister Chris Skidmore MP<sup>37</sup>, was rejected<sup>38</sup>. The Government launched its consultation on the specification in December 2023 and intends to legislate in 2024 ahead of implementation in 2025. In March 2023, the Government indicated that it would, as part of the consultation, “*explore what transitional arrangements are appropriate to make sure that as many homes as possible are built to the new standard as quickly as possible.*”<sup>39</sup>

On 28 June 2023, the CCC responded to the Carbon Budget Delivery Plan and the new suite of Net Zero Strategy documents in its Progress Report to Parliament (“2023 Progress Report”)<sup>40</sup>. This set out that, despite new detail from Government, the CCC’s confidence in the UK meeting its 2030 NDC and the Sixth Carbon Budget had decreased. The CCC made the point that, excluding the power sector, emissions had only fallen by an average of 1% in the last eight years, but that rate of progress would need almost to quadruple in the next eight years for the UK to meet its 2030 NDC commitment. It concluded a doubling of progress on buildings is required but that policy gaps remained, particularly for energy efficiency measures, which it reported are significantly off track.

Focusing on buildings, the 2023 Progress Report recorded that most indicators are off track and that the UK need significant new policies and programmes to underpin the delivery of

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<sup>31</sup> DESNZ, 2023. Carbon Budget Delivery Plan, Table 5, Policy 104

<sup>32</sup> CCC, 2022. Progress in Reducing Emissions 2022 Report to Parliament, p. 22

<sup>33</sup> CCC, 2022. Progress in Reducing Emissions 2022 Report to Parliament, p. 14

<sup>34</sup> CCC, 2022. Progress in Reducing Emissions 2022 Report to Parliament, p. 180

<sup>35</sup> CCC, 2022. Reducing Energy Demand in Buildings in Response to the Energy Price Crisis

<sup>36</sup> DESNZ, 2023. Carbon Budget Delivery Plan, p. 78

<sup>37</sup> Net Zero Review, 2023

<sup>38</sup> DESNZ, 2023. Responding to the Independent Review of Net Zero's Recommendations

<sup>39</sup> DESNZ, 2023. Responding to the Independent Review of Net Zero's Recommendations, p. 54

<sup>40</sup> CCC, 2023

energy efficiency<sup>41</sup>. The CCC judged most of the policies in the delivery plan and net zero suite of documents to achieve emission reductions from buildings “*to be either at significant risk or with insufficient plans*”.<sup>42</sup>

## The Building Regulations

Part L of the Building Regulations requires all new developments in England to be built to a minimum standard of energy performance. This is evaluated by comparing calculations of the performance of the actual building with the performance of a theoretical building of the same size and shape with standardised properties for fabric and services, which represents the target performance that must be met or exceeded. The calculations are produced according to the Standard Assessment Procedure for the Energy Rating of Dwellings (“SAP”).

Both Part L and SAP have been updated over time. The most significant change to Part L has been to increase the performance required of buildings, with the 2021 update requiring a cut in carbon emissions of 30% for dwellings and 27% for other buildings versus the previous 2013 version. The most significant update to SAP has been to reduce the assumed carbon emissions associated with the supply of electricity, with the 2022 update reducing it by roughly 74% over the emissions assumed in the previous 2012 version.

The government is committed to further updates to the Building Regulations in the form of the Future Homes and Buildings Standards. These are expected to be introduced from 2025 and will require, among other things, a 75% to 80% decrease in emissions versus the 2013 version of Part L. Alongside the changes to Part L, it is also proposed to introduce a new method for demonstrating compliance, known as the Home Energy Model, to replace SAP.

In December 2023, the government launched consultations on these changes. It is notable that the two options for metrics on which the Building Regulations consultation focused were the least ambitious of the various options which had been presented to the government in the runup to the consultation. It also did not include various requirements identified by the CCC as necessary in its UK Housing: Fit for the future? report in February 2019<sup>43</sup>.

## Written Ministerial Statement 2023

On 13 December 2023, the Minister of State for Housing made a written ministerial statement titled “Planning – Local Energy Efficiency Standards Update” (“the WMS”). This made clear that the government does not expect plan-makers to set local energy efficiency standards that go beyond current or planned building regulations.

According to the statement, any standards which do so must be expressed as a percentage uplift of a dwelling’s target emissions rate (TER) calculated using a specified version of SAP. They must also have a well-reasoned and robustly-costed rationale, which ensures that development remains viable, and the impact on housing supply and affordability is considered in accordance with the NPPF.

Where plan policies go beyond current or planned building regulations, they should be applied flexibly to decisions on planning applications where the applicant can demonstrate that meeting the higher standards is not technically feasible, in relation to the availability of appropriate local energy infrastructure and access to adequate supply chains.

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<sup>41</sup> CCC, 2023, p. 140 and 141

<sup>42</sup> CCC, 2023, p. 151

<sup>43</sup> CCC, 2019

## Stevenage's position

The council has taken actions to mitigate climate change for a considerable period of time, with policies designed to improve the energy efficiency of buildings dating back to the Stevenage District Plan 2<sup>nd</sup> Review 2004<sup>44</sup>. In recent years, these efforts have ramped up considerably, with the council declaring a climate emergency in 2019 and committing itself to making Stevenage net-zero carbon by 2030<sup>45</sup>.

In its Corporate Plan "Making Stevenage Even Better (2024-2027)", the Council has also included tackling climate change as one of its priorities. This plan builds upon the long-term, objectives of the previous corporate plan, reflecting the Council's commitment to addressing climate change as a key priority.

## Climate Change Strategy

To direct efforts to mitigate climate change, the council developed its Climate Change Strategy, which was published in 2020<sup>46</sup>. The purpose of the strategy is mostly to provide contextual information and set out the basis for future strategies and a climate change action plan. There are eight main areas of focus, including transport, homes, business, biodiversity, construction, and energy and water. The proposed measures include using the council's powers to reduce carbon emissions from new developments and retrofitting existing homes<sup>47</sup>.

## Climate Change Action Plan

The council's Climate Change Action Plan<sup>48</sup> tracker sets out the specific actions the council is taking to meet its 2030 net zero goal. It is an online portal, which is regularly updated as actions progress, and is linked to an annual Climate Change Update Report.

The action plan has eight strategic themes, one of which relates to construction and regeneration. Action CR2 is to update the local plan with new climate change policies. According to the Climate Change Strategy, this should include a policy for zero-carbon homes on all large-scale developments<sup>49</sup>.

## Territorial greenhouse gas emissions

The latest official data on local authority territorial greenhouse gas emissions was published on 27 June 2024 and covers the period from 2005 to 2022<sup>50</sup>. Stevenage's territorial emissions within the scope of local authority influence have fallen from 579.5ktCO<sub>2</sub>e to 305.9ktCO<sub>2</sub>e over that period. This equates to a total reduction of 47% and an average year-on-year reduction of approximately 3.6%.

Meeting the council's 2030 net zero target would require emissions to reduce by 61.2ktCO<sub>2</sub>e per year for the next five years. That is roughly 15% more than the largest single year-on-year reduction seen in the data and well over three times the average annual reduction from 2005 to 2022. In other words, unprecedented cuts to emissions will be required to meet that target.

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<sup>44</sup> SBC, 2004, Policy EN38

<sup>45</sup> Extraordinary meeting of the full Council, Wednesday 12 June 2019

<sup>46</sup> SBC, 2020

<sup>47</sup> SBC, 2020, p. 15 and 16

<sup>48</sup> SBC, n.d.

<sup>49</sup> SBC, 2020, p. 11

<sup>50</sup> DESNZ & BEIS, 2024. UK Local Authority and Regional Greenhouse Gas Emissions Statistics, 2005 to 2022.

Assessing the borough's emissions against UK obligations is more challenging because the local authority data only goes back to 2005, whereas the Paris Agreement and Climate Change Act are framed in terms of reductions on 1990 emissions levels. Assuming that Stevenage's proportion of overall UK emissions<sup>51</sup> has remained unchanged over time would suggest a starting point for the borough of 670ktCO<sub>2e</sub> in 1990<sup>52</sup>.

On that basis, alignment with the UK's latest Paris Agreement NDC would require emissions of no more than 214.4ktCO<sub>2e</sub> by 2030, which equates to year-on-year reductions of approximately 4.5%. That is well above the long-term average of 3.6%.

Aligning with the Sixth Carbon Budget will require even steeper cuts in emissions to no more than 147.4ktCO<sub>2e</sub> by 2035. That would require year-on-year reductions of approximately 5.5%, which again is well above past performance.

It must also be noted that the primary driver of emissions reductions in the UK since 2008 (i.e. the start of the First Carbon Budget) has been the electricity supply sector<sup>53</sup>, making up more than half of total emissions reductions<sup>54</sup>. Reductions in this sector will offer diminishing returns over time as the grid moves towards full decarbonisation and in any event, installation rates for renewables are now off track<sup>55</sup>.

Meanwhile, emissions reductions in the buildings sector have slowed since 2014 as funding for energy efficiency schemes has been cut. There have been some modest emissions falls in recent years but this is attributable to warmer than average temperatures and high gas prices rather than targeted measures to reduce energy demand. In particular, low-carbon heating is significantly below the levels required for later carbon budgets<sup>56</sup>.

As a result, the Climate Change Committee says that emissions reductions will need to be more spread across other sectors than was seen during the first three carbon budgets, with more than three quarters coming from sectors other than energy supply. Their report states:

*“To achieve this, action in buildings, transport, agriculture and land use will need to accelerate rapidly during the next three carbon budgets. Clear policy action will be required to achieve this.”<sup>57</sup>*

In other words, the council cannot rely on previous emissions reductions driven by the energy supply sector to continue in coming years. To continue driving down emissions in line with the Climate Change Act, reductions from other sectors, including buildings, must increase significantly and this will require policy intervention.

## Carbon budgeting

The progress towards net zero is also only part of the UK's contribution to mitigating climate change. The Paris Agreement also includes a commitment to limit global warming to well

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<sup>51</sup> Calculated by taking average annual emissions for Stevenage from 2005 to 2022 (DESNZ & BEIS, 2024. UK Local Authority and Regional Greenhouse Gas Emissions Statistics, 2005 to 2022, Table 2.1) as a proportion of average annual UK emissions over the same period (DESNZ & BEIS. (2024). UK Territorial Greenhouse Gas Emissions Statistics, Table 1.1)

<sup>52</sup> This figure should be treated with caution because the rate at which local authorities have reduced emissions is by no means uniform and is influenced by a wide variety of factors (e.g. the prevalence of industry in the local economy).

<sup>53</sup> CCC, 2024, p. 35

<sup>54</sup> CCC, 2024, p. 46

<sup>55</sup> CCC, 2024, p. 56

<sup>56</sup> CCC, 2024, p. 36

<sup>57</sup> CCC, 2024, p. 46

below 2°C and to aim to limit warming to 1.5°C. Achieving this will be dependent on cumulative emissions rather than reaching net zero by a specific date.

The Tyndall Carbon Budget Tool, developed by the Tyndall Centre for Climate Change Research, presents the long term targets for Stevenage’s CO<sub>2</sub> emissions and actions that should be taken for the borough to make its fair contribution towards these Paris Agreement goals<sup>58</sup>. Their recommendations are summarised as follows:

- a) stay within a maximum cumulative CO<sub>2</sub> emissions budget of 3,300ktCO<sub>2</sub> for the period from 2018 to 2100;
- b) initiate an immediate programme of CO<sub>2</sub> mitigation to deliver cuts in emissions averaging a minimum of -12.7% per year; and
- c) reach zero or net-zero carbon no later than 2043.

The report also sets out a series of five-year carbon budgets for Stevenage<sup>59</sup>, based on the BEIS 2017 national CO<sub>2</sub> emissions estimates. To align with the national budget periods in the Climate Change Act, the budget for Stevenage for the period 2018-2022, is set at 1.6MtCO<sub>2</sub> and each subsequent budget halves in size until net zero is reached, as shown below. The combined carbon budget for 2018-2100 for Stevenage is therefore 3,300ktCO<sub>2</sub>.

National Carbon Budget	Carbon Budget Period	Recommended Carbon Budget (Mt CO <sub>2</sub> )
3 <sup>rd</sup>	2018 - 2022	1.6
4 <sup>th</sup>	2023 - 2027	0.8
5 <sup>th</sup>	2028 - 2032	0.4
6 <sup>th</sup>	2033 - 2037	0.2
7 <sup>th</sup>	2038 - 2042	0.1
8 <sup>th</sup>	2043 - 2047	0.1
9 <sup>th</sup>	2048 - 2100	0.1

The data published this year<sup>60</sup> shows that Stevenage exceeded its carbon budget for the period 2018-2022 by 212.8ktCO<sub>2</sub>. And, if the average year-on-year reduction of 3.5% is sustained, the entire budget of 3,300ktCO<sub>2</sub> for the period up to 2100 will be exceeded in 2027, as shown in Table 1 below.

CO <sub>2</sub> emissions for Stevenage (ktCO <sub>2</sub> )			
Year	Emissions	YoY Change	Cumulative
2018 (Estimated)	400.6	0.7%	400.6
2019 (Estimated)	383.2	4.3%	783.8
2020 (Estimated)	337.7	11.9%	1121.5
2021 (Estimated)	353.9	-4.8%	1475.4
2022 (Estimated)	337.4	4.6%	1812.8
2023 (Projected)	325.6	3.5%	2138.4
2024 (Projected)	314.2	3.5%	2452.7

<sup>58</sup> Kuriakose, Jones, Anderson, Broderick, & McLachlan, 2024

<sup>59</sup> Kuriakose et al., 2024, Table 1

<sup>60</sup> DESNZ & BEIS, 2024. UK Local Authority and Regional Greenhouse Gas Emissions Statistics, 2005 to 2022, Table 1.2

2025 (Projected)	303.2	3.5%	2755.9
2026 (Projected)	292.6	3.5%	3048.5
2027 (Projected)	282.4	3.5%	3330.9

Table 1 – CO<sub>2</sub> emissions for Stevenage<sup>61 62</sup>

The overall budget for Stevenage is derived from the global budget presented in the IPCC's 2018 report, which represents the best estimate we have of the cumulative amount of CO<sub>2</sub> that can be emitted globally to keep global warming well below 2°C and to have an outside chance of limiting it to 1.5°C. The figures in Table 1 show that Stevenage's emissions are well beyond what would be a fair contribution to that objective. It means that strong and immediate corrective action must be taken.

## Current local plan policies

The climate change policies currently in the local plan do not set any firm energy efficiency standards. Instead, new development is only “encouraged” to include measures to improve the energy performance of buildings, reduce energy consumption, and produce low-carbon energy. The full wording of the detailed policy, Policy FP1, is as follows:

### Policy FP1 Climate change

Planning permission will be granted for developments that can incorporate measures to address adaptation to climate change. New development, including building extensions, refurbishments and conversions will be encouraged to include measures such as:

- Ways to ensure development is resilient to likely future variations in temperature; Reducing water consumption to no more than 110 litres per person per day including external water use;
- Improving energy performance of buildings;
- Reducing energy consumption through efficiency measures;
- Using or producing renewable or low carbon energy from a local source; and
- Contributing towards reducing flood risk through the use of SuDS or other appropriate measures.

The wording of the policy means that in practice, measures to mitigate climate change are rarely secured in new developments unless they are volunteered by applicants. Where they are secured, it is usually by planning condition and with no specific requirements to be met. The typical wording of such a condition is as follows:

Prior to the commencement of the development, details of the low and zero-carbon technologies to be installed at the site shall be submitted to and approved in writing by the local planning authority. The approved technologies shall then be installed prior to occupation and permanently retained as such thereafter.

A review of applications since the local plan was adopted in 2019 reveals that of the 744 planning permissions<sup>63</sup> granted, only 30 subsequently had details of climate change

<sup>61</sup> Note that these figures exclude land use, land use change and forestry (LULUCF) and greenhouse gasses other than CO<sub>2</sub> but include emissions normally considered to be outside the scope of local authority influence, such as motorways, railways, and large industrial sites.

<sup>62</sup> Estimated figures up to 2022 taken from DESNZ & BEIS, 2024. UK Local Authority and Regional Greenhouse Gas Emissions Statistics, 2005 to 2022, Table 1.2. Projected figures up to 2027 by SBC.

<sup>63</sup> Full and outline permissions, excluding householder applications

mitigation measures approved. Of these, the majority related to minor development and provided no specific data on energy efficiency or CO<sub>2</sub> emissions.

In contrast, where details were submitted for major developments, the majority did provide specific data on CO<sub>2</sub> emissions and the average improvement against Part L of the Building Regulations then in force was 25%. It is also notable that the average improvement increased significantly following the latest changes to SAP in 2022, rising from 3% prior to the changes to 48% after.

In summary, existing local plan policies are failing to secure any climate change mitigation whatsoever in the vast majority of cases. This is considered to be largely due to the vague terms in which Policy FP1 is worded, whereby no clear expectations are placed on developers. However, where climate change mitigation measures are secured on major developments, applicants have improved on the requirements of the Building Regulations, despite there being no explicit requirement to do so.

## Proposed local plan policies

The proposed climate change policies in the draft partial review and update of the local plan do set clear energy efficiency standards for new development, in particular Policy CC1. The standards differ according to the scale of development proposed: major developments must achieve net zero operational emissions; and large-scale major developments must be whole-life carbon (“WLC”) net zero.

Householder and minor developments are entirely exempt from the standards. There is also an exemption for large-scale major developments within the town centre, such that they will be assessed against the lower standard to be net zero in operation.

In practice, both standards require a 100% improvement on the target emissions rate (TER) set by Part L of the Building Regulations 2021, as measured by SAP 10.2. The WLC net zero requirement for large-scale major developments additionally takes into account embodied carbon, which refers to the emissions associated with materials and construction processes throughout the whole lifecycle of a building. The full wording of proposed Policy CC1 is as follows:

### **Policy CC1: Energy efficiency**

Development proposals must demonstrate how they will maximise reductions in greenhouse gas emissions, with consideration for the following:

- a. The provision of demand-side energy efficiency measures;
- b. The provision of supply-side energy efficiency measures; and
- c. The adoption of ultra-low and zero carbon energy generation.

#### Major development

Major development proposals must achieve net zero regulated operational emissions.

At the application stage, an energy statement must be submitted to demonstrate how the proposal will meet the net zero target.

Post-permission, planning conditions will be used to ensure that the net zero target is met in practice.

#### Large scale major development

Outside of the town centre<sup>64</sup>, large scale major development proposals<sup>65</sup> must be whole-life carbon net zero<sup>66</sup>.

At the application stage, an energy statement, which includes a whole life-cycle carbon (WLC) assessment, must be submitted to demonstrate how the target will be met.

Post-permission, planning conditions will be used to secure an updated WLC assessment, using actual emissions figures.

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<sup>64</sup> As defined by Policy TC1.

<sup>65</sup> Defined as proposals involving the creation of more than 150 dwellings or 15,000m<sup>2</sup> of non-residential floor space.

<sup>66</sup> Defined as the total greenhouse gas emissions resulting from the construction and use of a building over its entire life.



## Carbon offsetting

Where it is clearly demonstrated that a development proposal cannot fully meet the relevant target on-site, the shortfall may be offset by an alternative off-site proposal but only where the proposal has already been identified and delivery is certain.

## Rationale

The fundamental need for CO<sub>2</sub> emissions reductions from new development is clear. As set out in previous sections of this paper, emissions from buildings make up a significant proportion of overall emissions and will need to reduce sharply for the UK to meet its obligations under the Paris Agreement and the Climate Change Act. This will require clear policy interventions and will involve reducing the emissions from new development alongside the retrofitting of existing buildings.

Local planning authorities are required by section 19(1A) of the Planning and Compulsory Purchase Act 2004 to ensure that development plan documents (taken as a whole) include policies designed to contribute to the mitigation of climate change. They are also empowered by section 1 of the Planning and Energy Act 2008 to set their own energy efficiency standards which exceed the requirements of the Building Regulations.

The NPPF requires plans to be proactive in the mitigation of climate change and to set policies which facilitate radical reductions in carbon emissions. Plan policies must also be consistent with the Climate Change Act.

Relying entirely on the planned changes to the Building Regulations to deliver emissions reductions from new development would be insufficient for the council to fulfil these duties. The government says that buildings built to the new standards will be “zero-carbon ready” on the basis that they will not require any further work to have zero carbon emissions once the electricity grid has fully decarbonised. However, the CCC have made clear that the energy supply sector cannot be relied upon to deliver the emissions reductions required to meet Carbon Budgets Four, Five and Six. Instead, they have said that additional policy action will be required, including for the buildings sector<sup>67</sup>.

The Future Homes and Buildings Standards also entirely fail to take account of embodied carbon, which will grow as a proportion of overall emissions in the sector as buildings become more operationally efficient. Total emissions needed to construct new buildings in the UK in 2018 were estimated to be 17.0MtCO<sub>2</sub>e<sup>68</sup>, which is roughly 3.5% of total emissions for that year and that only accounts for emissions up to the point of handover. A recent study has estimated that the proportion of embodied carbon is approximately 50% on average for a new energy-efficient buildings<sup>69</sup>, and as buildings move towards net zero operational emissions, the proportion will approach 100% with it.

In any case, both the Future Homes and Buildings Standards and the full decarbonisation of the electricity grid are as yet uncertain. In respect of the former, the government had announced plans to legislate in 2024<sup>70</sup> but that legislation has yet to be laid before parliament. In respect of the latter, the installation of new capacity in offshore wind, onshore wind and solar PV are all off track<sup>71</sup>.

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<sup>67</sup> CCC, 2024, p. 46

<sup>68</sup> Drewniok, et al., 2023

<sup>69</sup> Lützkendorf & Balouktsi, 2022, Figure 2(a)

<sup>70</sup> DLUHC, 2023. The Future Homes and Buildings Standards: 2023 Consultation, Section 3.1

<sup>71</sup> CCC, 2024, p. 56

The policies proposed by the council in the partial review and update of the local plan, in particular Policy CC1, will address the shortcomings in relying upon the Building Regulations to deliver emissions reductions from new development to the extent that is permissible in view of the 2023 WMS. Compliance with the WMS is considered further in the following sections of this paper.

## Viability

The proposed new policies were tested in a whole plan viability review carried out by Aspinall Verdi<sup>72</sup>. The assumed costs for Policy CC1 were taken from viability reviews commissioned by various London authorities<sup>73</sup>.

For residential development, net zero in operation (major developments) was assumed to cost 5% of base build costs, whereas WLC net zero (large-scale major developments) was assumed to cost 15% of base build costs. The various residential typologies were tested with these costs as appropriate, alongside costs introduced by other proposed policy changes in the local plan (e.g. Policy CC3 and Policy HO11), retained policy costs (e.g. Policy HO7), the CIL rates proposed in the CIL review, the Future Homes Standard, and biodiversity net gain<sup>74</sup>.

For non-residential development, none of the proposed typologies met the threshold for WLC net zero but net zero in operation was again assumed to cost 5% of base build costs. They were tested in the same way as the residential typologies but with the costs of meeting the Future Homes Standard removed and the costs of meeting BREEAM excellent added (although this is not a strict requirement of proposed Policy GD2)<sup>75</sup>.

It was not possible to source sufficient data to test the 35% improvement on Part L for minor developments as proposed in the regulation 18 version of the partial review and update. Consequently, this part of the policy was removed and minor developments are now proposed to be exempt from local energy efficiency standards.

The proposed policies were found to have an acceptable impact on viability, with the exception of the large-scale major, mixed-use typologies within the town centre. For this reason, all large-scale major development within the town centre is exempt from the WLC net zero requirement and will instead only be required to achieve net zero regulated operational emissions.

With these exemptions in place, the council is satisfied that the proposed local energy efficiency policies established by proposed Policies SP1 and CC1 ensure that development remains viable. The cost assumptions underpinning the viability testing are considered to be robust (particularly in respect of the costs of WLC net zero) and there is evidence that these costs will fall rapidly as the capability of the sector grows<sup>76</sup>. The government estimates the cost of solar PV and heat pumps will decrease by 60% and 70% respectively over the next years<sup>77</sup> and in any case, the sector has demonstrated an ability to ensure that additional future costs are factored into land valuations, negating any meaningful impact on their net cost position<sup>78</sup>.

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<sup>72</sup> Aspinall Verdi, 2024

<sup>73</sup> Aspinall Verdi, 2024, p. 75 and 82

<sup>74</sup> Aspinall Verdi, 2024, p. 74 and 75

<sup>75</sup> Aspinall Verdi, 2024, p. 81 and 82

<sup>76</sup> Sharpe, et al., 2021, p. 13

<sup>77</sup> DLUHC, 2023. Future Homes Standard Consultation Stage Impact Assessment, p. 27

<sup>78</sup> Hansard, Business, Energy and Industrial Strategy Committee Oral evidence: Energy Efficiency, HC 1730 Tuesday 12 March 2019

The viability assessment also does not take into account the potential for higher sales values to be achieved for homes and workplaces designed to higher standards of energy efficiency. In 2022, Santander concluded that this “green premium” equated to an average of £26,600 over and above the average UK house price<sup>79</sup>. On the commercial side, research by Knight Frank and BRE Group found that Central London office space which had a BREEAM Outstanding certification commanded a 12.3% rental premium when controlling for other property characteristics<sup>80</sup>. Should these or similar premiums apply to energy-efficient developments in Stevenage, then viability is likely to improve further beyond the results seen in the Aspinall Verdi report.

## Housing supply and affordability

Successive studies have shown that the additional costs of higher standards, whether concerned with climate change mitigation or otherwise, have only a small effect, if any, on housing supply.

A report by Shelter and KPMG in 2014 identified dysfunction in the land market as the primary constraint on supply. The price of development land is based on the sales value of the homes that can be built on it but unlike any other market, the price of new homes is primarily determined by the price of existing homes rather than build costs. Together with concentrated ownership and opaque pricing, this results in high risk for developers, who are then incentivised to delay construction to secure their margins<sup>81</sup>. When specifically considering the issue of planning policies, the report says:

*“Changing planning rules... may prompt short run increases in developer margins and hence build out rates, but risk entrenching the current dysfunctional model... As land is the indispensable primary input into house building, it is unsurprising that many of the systemic failings of housing supply have the origins in the land market.”<sup>82</sup>*

The government’s own analysis has identified the homogeneity of the types and tenures of the homes on offer at the largest development sites (which deliver a much greater number of new homes overall than small sites) and the limits on the rate at which the market will absorb such homogenous products to be the fundamental driver of slow rates of build out<sup>83</sup>.

Whilst both of these studies advocate for planning reform, they suggest measures to free up additional land for building and measures to promote variety rather than lowering standards of design. Such standards are a non-issue in both reports.

More recent research by the Institute for Fiscal Studies has found that historical housing density, the availability of land for development, and variations in topography are the main drivers of the ability of the housebuilding sector to respond to changes in demand for housing. In contrast, historic refusal rates (indicating tighter regulation) were shown to have only a small effect<sup>84</sup>.

In turn, supply is the key determinant of affordability. Areas where housing supply is better able to respond to demand experience lower price growth and are less sensitive to market

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<sup>79</sup> Santander, 2022

<sup>80</sup> Knight Frank, 2021, p. 6

<sup>81</sup> Jefferys, et al., 2014, Part II

<sup>82</sup> Jefferys, et al., 2014, p. 41

<sup>83</sup> HCLG, 2018, p. 6

<sup>84</sup> Drayton, Levell, & Sturrock, 2024, p. 19 and 20

shocks<sup>85</sup>. Changes in lending practices are also a relevant factor<sup>86</sup>. However, there is no evidence that climate change mitigation policies have any effect.

### Compliance with WMS 2023

In all other respects, the council considers the local energy efficiency standards proposed by Policies SP1 and CC1 in the partial review and update of the local plan to be consistent with the 2023 WMS. To support this position, the council relies upon the open legal advice to Essex County Council by Estelle Dehon KC<sup>87</sup>.

The council also notes that the WMS was challenged in the High Court and judgement in the case was handed down in July of this year. The court found that the government had acted lawfully in issuing the WMS. However, in doing so, it made clear that the WMS does not restrict local authorities' right to adopt local energy efficiency standards that go beyond current or planned building regulations but only the form that such standards may take, the evidence required for them to be found sound at examination, and the way in which they should be applied to planning applications. The council is satisfied that those requirements have been met.

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<sup>85</sup> Drayton, Levell, & Sturrock, 2024, p. 24

<sup>86</sup> Jefferys, et al., 2014, p. 24

<sup>87</sup> Estelle Dehon KC, 2024, p. 25 to 31

## Conclusion

In conclusion, taking into account the evidence presented in this paper, the council considers the local carbon emissions standards proposed in Policies SP1 and CC1 to fulfil the council's duty to set policies for the mitigation of climate change. They are considered to be consistent with the UK's obligations under the Climate Change Act and the requirements of the 2023 WMS, striking a reasonable and appropriate balance between driving up standards for development in Stevenage whilst taking into financial viability, housing supply and affordability.

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