

Guildford and Town Centre Sustainability Actions and Policies

Best Practice Peer Review

Guildford Borough Council

15 September 2022

Quality information

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Table of Contents

Executive Summary	5
1. Introduction.....	9
1.1 Purpose of this Report	9
1.2 Study Scope	9
1.3 Study Approach	10
1.4 Structure of the Report.....	10
2. Context	12
2.1 Sustainability and Climate Change Drivers.....	12
2.2 Guildford Planning and Climate Change Policy Context.....	12
2.3 Masterplan Overview	13
3. Review of Policy and Actions by Theme	17
3.1 Climate Mitigation	17
3.1.1 Context	17
3.1.2 What is GBC doing on Climate Mitigation?	18
3.1.3 Guildford Masterplan on Climate Mitigation	19
3.1.4 Exemplary Approach Examples on Climate Mitigation.....	19
3.2 Climate Adaptation and Resilience	26
3.2.1 Context	26
3.2.2 What is GBC doing on Climate Adaption and Resilience?	26
3.2.3 Guildford Masterplan on Climate Adaption and Resilience	27
3.2.4 Exemplary Approach Examples on Climate Adaption and Resilience.....	28
3.3 Resource Efficiency	31
3.3.1 Context	31
3.3.2 What is GBC doing on Resource Efficiency?	32
3.3.3 Guildford Masterplan on Resource Efficiency	32
3.3.4 Exemplary Approach Examples on Resource Efficiency.....	32
3.4 Biodiversity	34
3.4.1 Context	34
3.4.2 What is GBC doing on Biodiversity?	34
3.4.3 Guildford Masterplan on Biodiversity	35
3.4.4 Exemplary Approach Examples on Biodiversity.....	35
3.5 Health	39
3.5.1 Context	39
3.5.2 What is GBC doing on Health?	39
3.5.3 Guildford Masterplan on Health	40
3.5.4 Exemplary Approach Examples on Health	40
3.6 Policy and Action - Summary of Opportunities.....	43
3.7 Sustainability Benchmarking/Appraisal Systems/Frameworks.....	44
4. Summary of Findings.....	48
4.1 Guildford's position	48
4.2 Themes comprehensively addressed by GBC.....	48
4.3 Further opportunities to address themes	48
4.3.1 Opportunities for the Masterplan.....	49
4.3.2 Other Opportunities for GBC.....	50
4.3.3 Summary of Opportunities for GBC	51
4.4 Recommended next steps	51
Appendix A Key Guidance	53
Appendix B Policy Best Practice Examples.....	62

Executive Summary

Context

Guilford Borough Council are preparing a regeneration masterplan for the Town Centre - Shaping Guildford's Future.

The scale and timeframe of the proposed regeneration provides the opportunity to define and deliver exemplary developments that are sustainable, zero carbon and resilient to the now unavoidable changes to our climate. There is an opportunity to prepare a strong framework of sustainability standards and objectives that can be embedded into the further stages of the Masterplan delivery process. These standards and objectives could be promoted through future updates to local plan policy and supplementary planning documents, a supporting area action plan, and the development agreements for those sites in GBC ownership. There are also opportunities for collaboration with the local community and stakeholders around supportive sustainability actions that could help GBC deliver its net zero and sustainability ambitions.

As a pre-cursor to developing a comprehensive sustainability framework AECOM were asked to prepare a peer review to identify examples of ambitious best practice sustainability policy initiatives and standards being promoted by other local authorities and which could be replicated by GBC for the Masterplan and more broadly.

These were identified for the following sustainability themes:

- Climate Mitigation
- Climate Resilience and Adaptation
- Resource Efficiency
- Biodiversity Net Gain
- Health and wellbeing

The review has also sought to summarise how these topics are being addressed through current GBC policy, how the Masterplan for the town centre has addressed them to date and what opportunities there may be to push ambitious standards through the further stages of delivery.

A comprehensive sustainable transport strategy and a comprehensive flood defence strategy are already at the heart of the Masterplan proposals, so these themes have not been a focus for this study.

Drivers for Action

Climate Mitigation

Through the Climate Change Act the UK has a legally binding target to cut CO₂ emissions to net zero by 2050. GBC have declared a climate emergency and set a target for the borough to reach net zero emissions by 2030. To meet these targets the UK and Guildford will need to decarbonise heating for buildings. A key part of the UK strategy is to decarbonise the electricity grid by 2035 and to convert heating away from fossil fuels to electrically fuelled heat pumps and district heating served by waste or low carbon heat. The Future Homes Standards expected to be introduced by Government in 2025 aims to promote a shift away from gas boilers and to ensure very high efficiency standards to reduce demand for energy. Reducing demand for energy will be key to help control consumer energy costs and to help manage demand for electricity as the UK shifts heating and transport to electricity. It will also help reduce likely high costs for electricity network reinforcement given existing constraints on available power to serve the Masterplan. A number of local authorities are adopting the LETI Climate Energy Design Guide Standards and Passivhaus standards for homes they are delivering to help reduce energy demand to a minimum.

Recognising that embodied carbon now makes up a significant proportion of life cycle emissions, planning authorities including the Greater London Authority now require that whole life carbon assessments are carried out for developments referable to the Mayor, and Guildford could take similar steps.

Climate Resilience

Recent heatwaves, fires and flooding around the world are all providing firm evidence of the long predicted and damaging consequences of climate change. In the UK creating resilience to climate change requires designing our towns and buildings to reduce risks from flooding, ensuring buildings and streets can be comfortable in a warming climate, and managing water demand to reduce the threats posed by prolonged draught and drier summers. Part O of Building Regulations has recently been introduced to require that overheating assessment are completed for new buildings and that these properly consider the often competing requirements of achieving good acoustic, noise and air quality performance. The Masterplan is seeking to introduce extensive green space and tree planting which will help to reduce heat absorption and provide shade, much of this an integral part of the flood defence strategy that will enable development to be delivered in the protected areas. There is an opportunity to introduce progressive standards including overheating risk assessment to ensure future development is designed to specifically reduce the risk of overheating and enhanced water efficiency requirements to minimise water use.

Resource Efficiency

In the UK construction, demolition and excavation account for 60% of material use and waste generation. The current linear economy is inefficient and wasteful and exacerbates climate change and biodiversity loss. By developing a circular economy, resources are kept in use and their resource value is retained at its highest value, with the aim of avoiding waste and further extraction of raw materials. GBC policy encourages sustainable design and construction practices and the emerging policy promotes a fabric first approach. The selected Masterplan option is reusing and repurposing rather than demolishing and rebuilding significant road infrastructure which will significantly reduce the amount of waste and energy expenditure. As the Masterplan is delivered there will be opportunities to promote circular design principles in the design of the buildings and supporting infrastructure and to explore opportunities for re-using waste materials or those with high recycled content.

Biodiversity

The UK like the rest of the world is seeing rapid declines in its biodiversity. To help reverse this the Environment Act will introduce a requirement for planning authorities to ensure that new development delivers at least a 10% net gain in bio-diversity. GBC's emerging local plan policy is already seeking to set high ambitions in this area with a target for 20% bio-diversity net gain. Recognising that opportunities may be constrained on dense urban sites there may be opportunities for policy innovation around habitat banks. The Masterplan will see the delivery of substantial areas of bio-diverse habitat created along the river edge as part of the flood defence strategy which could help to deliver BNG targets for development plots.

Health and Wellbeing

The design of communities and buildings have a considerable effect on the health and wellbeing of their residents. For instance, buildings can be designed to provide occupants with good levels of daylight, suitable views out, good indoor air quality, thermal comfort, limited noise and appropriate security measures. Masterplans, development landscaped areas and nearby natural areas can be designed to provide safe surroundings, with green, outdoor nature-rich, connected spaces that promote social and leisure activities as well as engagement with nature and the opportunity to grow food. The Masterplan aims to humanise the town centre, reducing traffic on the gyratory system and pedestrianising key links between the Town station and river. Homes are where possible being located away from major roads or in areas where traffic calming measures will reduce exposure to noise and air pollution.

Summary and Comparison of Peer Review

The study has used internet searches and discussions with AECOM's masterplanning, planning and sustainability teams who are working on local authority funded projects, to identify examples of best practice actions being taken by local authorities to respond to the drivers and themes identified above.

The following table provides a summary of this peer review. For each sustainability theme it sets out: GBCs adopted or emerging policy, the measures already being taken through the Masterplan and the opportunities for building on these through later stages of delivery and examples of exemplary sustainability initiatives, standards and approaches that have been taken by other local authorities and which could be adopted by Guildford. Further detail on these approaches is provided in section 3 of the report and section 4 sets out a summary of our findings, highlighting those areas where further action is most required.

Table 1: Summary of actions and opportunities

Issues (Theme)	GBC policy / emerging policy	Masterplan provision	Exemplary approach examples
Building energy efficiency and carbon emissions (Climate Mitigation)	Adopted Policy requires buildings to exceed Part L 2013 by 20% (superseded by Part L 2021). Emerging policy is in line with Part L 2021.	Opportunity to specify standards in excess of Building Regulations for new development.	• LETI / RIBA / UKGBC Net zero carbon, including operational and embodied carbon • Passivhaus standards for GBC sites
Renewable energy (Climate Mitigation)	Adopted Policy promotes low carbon heat networks and renewable and low carbon energy technologies.	Opportunity to develop a broad strategy on energy supply and renewables.	• Local Area Energy Planning (follow guidance by The Centre for Sustainable Energy). • Renewable Energy Resource Assessment. • Heat network zoning and power demand management.
Minimising Overheating risk (Climate Adaption and Resilience)	Emerging policy requires proposals to be designed with overheating and wildlife risk considerations.	Green infrastructure and tree planting to contribute to urban cooling. Opportunity to specify overheating assessment / standards in excess of Building Regulations for new development.	• London Plan cooling hierarchy policy. • CIBSE TM59 overheating risk modelling (now included as Part O of Building Regs) • Good Homes Alliance checklist for early stages • Passivhaus standard addresses comfort
Water Efficiency (Climate Adaption and Resilience)	Adopted policy requires proposals to achieve the highest national standard (110 litres per person per day)	Opportunity to specify water efficiency assessment / standards in excess of Building Regulations for new development.	• Code for Sustainable Homes Wat 1 minimum standard for Level 5 or 6 (80 litres per person per day) • Home Quality Mark Water Efficiency Advanced Fittings standard • BREEAM Wat 01 minimum standard for Outstanding
Operational Waste (Resource Efficiency)	Adopted Policy promotes waste minimisation.	Opportunity to develop innovative waste strategy.	• Underground Refuse Storage (URS)/ pneumatic waste collection • BREEAM waste targets
Circular Economy (Resource Efficiency)	Requires energy and waste hierarchy to be followed, waste minimisation and re-using materials. Requires developments to follow sustainable design and construction practices. County Council level policy on waste generated through construction, demolition and excavation phases of development.	Reusing existing infrastructure rather than demolishing and rebuilding and re-using any excavation waste on site. Opportunity to specify resource efficiency and waste minimisation standards.	• London Plan Policy SI7 'Reducing waste and supporting the Circular Economy'. • Emerging Cornwall Council Climate Emergency SPD will include a One Planet Development Policy.

Issues (Theme)	GBC policy / emerging policy	Masterplan provision	Exemplary approach examples
Urban Greening (Climate Mitigation, Climate Adaption, Biodiversity, Health)	Planting and landscaping schemes, and measures on building structures that support nature are encouraged.	Opportunity to develop a comprehensive urban greening strategy and targets.	• Building with Nature Standards. • GLA guidance on the Urban Greening Factor. • Cornwall Council Green Points System. • Essex County Council Green Infrastructure Strategy (Essex Green Permits).
Biodiversity (Climate Mitigation, Climate Adaption, Biodiversity, Health)	Emerging policy requires Biodiversity Net Gain of 20%.	Promoting biodiversity through introduction of connected green corridor and landscaping, particularly along river. Opportunity to specify higher biodiversity net gain. Consider what is achievable for the site.	• Biodiversity net gain of 20% (Greater Cambridge adopted Biodiversity SPD) • BNG of 25% in the emerging Salt Cross AAP. • Re-wilding or creation of habitat banks or levy. • Building with Nature Standards.
Healthy Living and Active Transport (Climate Mitigation Health)	Promote high quality design, safe streets, efficient access and inclusion. Emerging policy sets out an air quality avoidance and mitigation hierarchy.	Humanising the town centre, by reducing traffic and increasing active transport. Siting homes to reduce air quality impact on residents.	• WELL Building Standard. • NHS Healthy Towns Programme. • Emerging Salt Cross AAP sets out 10 healthy place shaping key principals. • The adopted Leeds Aire Valley Action Plan Policy AVL8 aims to improve public health.

1. Introduction

Guildford Borough Council are preparing a regeneration masterplan for the town centre - Shaping Guildford's Future (herein referred to as the Masterplan).

The emerging Masterplan is seeking to deliver modern, sustainable residential dwellings, with commercial, community, leisure and parking facilities. The emerging Masterplan could deliver in excess of 3,450 new homes, 45,000m² of new retail and office space, a 120-room hotel, and 1,350 parking spaces.

The scale and timeframe of the proposed regeneration provides the opportunity to define and deliver exemplary developments that are sustainable, zero carbon and resilient. With Guildford Borough Council taking the lead in promoting redevelopment of the town centre, innovation, sustainability, and a focus on local community will be central to the future plans.

1.1 Purpose of this Report

AECOM have been commissioned by GBC to prepare a peer review of best practice approaches being undertaken by other towns and planning authorities to develop and promote sustainability standards and net zero carbon policy in their areas. This is a preliminary study that is expected to inform subsequent development of a sustainability framework for the Masterplan and broader action to address climate change and support sustainable outcomes for the Borough as a whole.

1.2 Study Scope

AECOM were asked to undertake a short peer review setting out examples of the actions being taken by other Local Authorities to progress their sustainability and climate change agendas and to highlight GBC's position in policy and ambition compared to these. This study is intended to be a high-level review to establish opportunities for GBC relating to sustainability policy and ambition, and in particular opportunities that may help with GBC's ambition to deliver forward thinking climate change and sustainability outcomes for the town centre regeneration. The review is not intended to be an exhaustive review of local authority action and measures but instead a high level review of examples of best practice.

The review has been structured around five key sustainability themes:

- Climate Mitigation
- Climate Adaptation and Resilience
- Resource Efficiency
- Biodiversity
- Health and wellbeing.

It was agreed that less focus would be provided on sustainable transport as this has been covered by a separate strategy developed by Markides as part of the Masterplan development process¹.

For each key theme the study has sought to:

- understand GBC's current position in terms of policy and the ambition for the Masterplan;
- review examples of ambitious policies and approaches being adopted by other local authorities to identify opportunities for best practice;
- to compare GBC's policy and ambition to approaches being adopted by other comparable local authorities;
- to identify opportunities that GBC could explore to further reinforce its sustainability policy and net zero ambitions, as plans for the town centre regeneration are taken forward.

¹ Shaping Guildford's Future – Transport -Stage 2 Report. August 2022.

1.3 Study Approach

The review has been based on the following approach and data sources:

- Discussion with GBC to identify suitable data sources and agree the basis of the study.
- Review of publicly available GBC strategies, reports, planning policy etc relating to sustainability and climate change
- Review of reports and evidence prepared to support the town centre regeneration proposals
- Discussion with the GBC Masterplan team, including Leonard Design Architects and Gleeds, in order to establish the Masterplan priorities and design progress and to identify potential sustainability opportunities.
- Discussion with AECOM colleagues undertaking wider work for GBC to understand standards being promoted including those involved in planning support for Weyside Urban Village, Guildford Park Road and The Depot and the team providing Infrastructure support for the Shaping Guildford's Future masterplan.
- Discussion with AECOM colleagues undertaking work for other local authorities, aimed at addressing climate change and promoting sustainable outcomes to identify examples of best practice.
- Non-exhaustive desktop research and internet searches to identify exemplar case studies of policy and ambition from other comparable local authorities.

1.4 Structure of the Report

Section 2 provides introductory context on: the drivers for sustainability that have influenced the themes chosen in the report, summarises the current and emerging policy that is relevant to new development and provides an overview of the Masterplan and the issues it seeks to address.

Section 3 presents the review of local authority policy and action by theme. For each of the five sustainability themes the following sub-sections are included:

- Context – this seeks to frame why action is needed
- What GBC is currently doing? – a short summary of GBC adopted and emerging published policy
- Guildford town centre regeneration Masterplan – a summary of the Masterplan proposals and opportunities relevant to the theme
- Exemplary approach examples from other local authorities that might be considered by GBC.

The exemplary approach examples have been further categorised as follows, by the type of opportunity:

- Setting a clear and ambitious overarching vision
- Develop a robust, inclusive and representative decision-making process
- Building collaborative relationships to increase your impact
- Understanding the opportunities in your area
- Using your own development opportunities to drive change
- Setting ambitious policy
- Take opportunities to mobilise funding and private sector involvement

Section 4 provides a high-level summary and discussion of the findings from Section 3, drawing out the most important points from each of the themes that might assist GBC in evaluating their current position and establish areas for future focus.

As part of preparing the review a wide range of best practice guidance has been identified that could support further policy development and action, where relevant this is referenced in the report and a full summary by theme is

provided in Appendix A. Whilst Appendix B provides a summary of all the exemplar policy measures reviewed with web links and references for further information.

2. Context

2.1 Sustainability and Climate Change Drivers

Guildford Borough Council (GBC) declared a Climate Emergency on 23rd July 2019. The resolution requires the Council to evaluate and determine how and when Guildford Borough can become carbon neutral and work towards making the Council's activities net-zero carbon by 2030. The measures required to deliver against these commitments are likely to go beyond the standards currently required by the Local Plan. This reflects the rapid increase in concern around the impacts of climate change since the plan's adoption. It will be important that all schemes GBC are delivering are making their maximum contribution to both mitigating CO₂ emissions but also helping create greater resilience to the now unavoidable changes to our climate. These changes will include drier hotter summers leading to increased risk of overheating in housing and increased risk of drought. More extreme rainfall events will increase the risk of flooding, an issue key to Guildford with its river setting.

The affordability of energy for those on low incomes has always been a key consideration but is now more urgent than ever with current energy price shocks. To meet the UK's legally binding net zero target the Government has committed to decarbonising the UK electricity grid by 2035 to enable the decarbonisation of heating and transport. The Future Homes Standards expected to come into force in 2025 will drive a shift to all electric heating and cooling strategies, through the phasing out of gas boilers. Without measures to reduce energy demands these will further increase costs for consumers further impacting affordability as electricity is currently a much more expensive fuel than gas. The shift to electric heating and electrification of transport is placing greater demands on local electricity distribution networks, creating further incentive to ensure new demands are kept to a minimum.

The Environment Act became law in November 2021; and from 2023 it will require all new developments to deliver a 10% net increase in biodiversity (i.e. Biodiversity Net Gain) to help address the rapid loss of biodiversity the UK has been witnessing. There are also growing pressures to adopt circular economy principles in the design of our built environment to reduce use of resources and the carbon emissions embodied in construction materials.

The COVID-19 outbreak has highlighted the importance of good urban design for our wellbeing, in particular the importance of being able to access high quality green space and the positive benefit that access to nature has on our mental health. Furthermore, air quality improvements observed as a result of the measures taken to combat COVID-19 were widely welcomed and could help gain public support for measures aimed at enabling walking and cycling or supporting the shift to low emission vehicles. Promoting active travel is a key theme of the town centre regeneration strategy.

It is important to note that although GBC have a significant influence in many issues that determine the local performance with respect to the issues above (e.g. district-wide CO₂ emissions), the achievement of goals such as being net-zero carbon by 2030 will rely in part on actions from other stakeholders, such as central Government regulation and support, electricity grid decarbonisation, and on local companies and individuals to make sustainable choices. This study focuses on opportunities in which GBC has significant influence.

2.2 Guildford Planning and Climate Change Policy Context

In Guildford's Corporate Plan (2021)² the vision for the Borough is set out as:

'A green, thriving town and villages where people have the homes they need, access to quality employment, with strong and safe communities that come together to support those needing help'.

The GBC planning guidance consists of a series of documents that together set out the local authority's vision for Guildford and guide development in the area³. The key documents of relevance to the sustainability strategy of Guildford Town Centre include:

- Guildford Local Plan 2003 (saved policies)⁴.
- Guildford Local Plan: Strategy & Sites, 2015-2034 (adopted April 2019)⁵.

² Guildford Borough Council (2021) Corporate Plan 2021-2025.

³ Access to all the Local Planning documents <https://www.guildford.gov.uk/localplan>

⁴ Guildford Borough Council (2003) Guildford Borough Local Plan.

⁵ Guildford Borough Council (2019) Guildford borough Local Plan: strategy and sites.

- Climate Change, Sustainable Design, Construction and Energy: Supplementary Planning Document (SPD) (adopted September 2020)⁶.
- Strategic Development Framework: Supplementary Planning Document (adopted July 2020)⁷.

The 2019 Local Plan replaced some 2003 policies, and the Council is currently producing the Local Plan: Development Management Policies, which will replace the remaining 2003 policies. This emerging Plan was submitted to the Secretary of State for Independent Examination on 17th June 2022⁸.

Knowledge and social recognition of climate change impacts and the necessity for urgent action has progressed rapidly in recent years. As is the case for Local Plan Policy in many areas, Guildford's local plan policy, adopted in 2019, will not have addressed climate change to the degree that GBC's Climate Emergency Declaration would now require. The Council will need to regularly review the Local Plan documents and ensure that strong action on climate change is promoted through Supplementary Planning Documents (SPDs) and Area Action Plans (AAPs).

The Climate Change, Sustainable Design, Construction and Energy SPD (2020)⁶ notes that the Council formally declared a climate emergency and set a goal for the borough to reach net zero emissions by 2030. The SPD identifies the town centre as a heat priority area. The SPD is a material consideration for development within the borough and provides guidance on the information to be provided in Energy Statements and Sustainability Statements for major applications and the submission requirements for non-major development. It provides general guidance focused on new developments but does not set specific requirement for particular locations.

At a regional level, Surrey County Council (SCC) declared a Climate Emergency on 9th July 2019, which commits the County to be net zero carbon by 2050⁹. In response, SCC released a Climate Change Strategy¹⁰ in July 2020, setting out the County's carbon neutral pathway, and strategic priorities for transport and air quality, energy generation, infrastructure, waste, resources and the circular economy, land use and food systems, and climate adaptation. The Strategy also sets out net zero carbon targets for SCC's organisational emissions by 2030 or sooner, and for all Surrey's local authorities by 2035 or sooner.

Surrey County Council are currently developing a tool to understand the cost of infrastructure projects in combination with lifecycle carbon and climate risks, and appraisal and monitoring. This work is in the early stages of scoping.

According to the Climate Action Plan Explorer, 82% (337 of 409) of district, county and combined councils have declared a climate emergency and set net zero carbon targets; however, there are differences in what is being committed to. This mainly relates to whether the net zero target is for council activities only or whether it is for the whole borough, the latter being a far more challenging target.

Climate Emergency UK have reviewed the plans of local authorities based on the following topics: governance, development and funding, mitigation and adaption, commitment and integration, community engagement and communications, measuring and setting emissions targets, co-benefits, diversity and inclusion, education, skills and training and ecological emergency¹¹. Based on this assessment GBC scored 39%, compared to the average score across councils of 43%, however this assessment appears to have only been based only on the GBC Climate Change Sustainable Design Construction and Energy SPD¹².

2.3 Masterplan Overview

The Council are preparing an ambitious regeneration masterplan for the town centre - Shaping Guildford's Future; this is supported by policy in both the adopted Local Plan Part 1⁵ and the emerging Local Plan Part 2⁸.

Local Plan Part 1⁵ Policy S3 Delivery of Development and Regeneration within Guildford Town Centre, sets out that development within the town centre will need to be coordinated, to enable future development of potential

⁶ Guildford Borough Council (2020) Climate Change, Sustainable Design, Construction and Energy: Supplementary Planning Document.

⁷ Guildford Borough Council (2020) Strategic Development Framework: Supplementary Planning Document.

⁸ Guildford Borough Council (2022) Guildford Borough Local Plan: Development Management Policies. Submission Local Plan.

⁹ <https://news.surreycc.gov.uk/2020/04/29/surrey-county-council-launch-surreys-climate-change-strategy/>

¹⁰ Surrey's Climate Change Strategy, Surrey County Council, 2020 [Available at: https://www.surreycc.gov.uk/_data/assets/pdf_file/0003/225615/Surreys-Climate-Change-Strategy-2020.pdf]

¹¹ For additional information on the climate scorecard see <https://councilclimatescorecards.uk/>

¹² Climate Change Sustainable Design Construction and Energy Supplementary Planning Document. Guildford Borough Council. September 2020.

adjacent sites and to not undermine development potential. It advocates for the efficient use of land and acceleration of housing delivery. It requires comprehensive place shaping guided by the character and design of new development, and it specifically notes that schemes should demonstrate improved access and views to the River Wey. Policy D1 on place making notes that all new development needs to address the following topics:

- Distinct local character;
- Safe, connected and efficient streets;
- Network of green spaces and public places;
- Crime prevention and security measures; and
- Infrastructure to create smart places.

All of these topics will need to be integrated into the Masterplan to ensure conformity with the Local Plan. Similarly, the emerging Local Plan Part 2⁸ sets out requirements for developments along the corridor of the River Wey and Godalming Navigations, these include:

- Conserve and enhance the character including the visual setting, amenity, recreation and ecological value and architectural and historical interest;
- Protect and conserve landscape features;
- Establish a positive relationship with the setting and waterfront, addressing waterway as a frontage and opening up views;
- Protect and enhance key existing views, including those in the Town Centre; and
- Integrate flood risk mitigation.

It goes on to note that development proposals adjoining the river should provide direct, safe and clear public access to and along the river while promoting active and healthier lifestyles.

The main objectives of the Masterplan include:

- Opening up the riverside, creating extensive blue and green infrastructure, while mitigating against flood risk.
- Re-modelling the gyratory to reduce congestion, improve alternative, sustainable and affordable transportation, as well as providing more pedestrianised areas.
- Making the centre a more attractive place to live, work and visit, including providing better pedestrianised links between car parks, the train station, development areas and the town centre.

The Stage 1 and 2 Strategic Spatial Masterplan have been produced. Figure 1 demonstrates the identified opportunity areas. There is a significant amount of land being brought forward as development zones by GBC (who own the land freehold); this provides a unique opportunity to set higher standards in terms of sustainability for the development. GBC have the opportunity to impose forward looking sustainability and climate related standards through the development agreements for sites that they own and for these to set ambitious standards above those required by adopted Local Plan policy.

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Summary

Potential Uses

ZONE 1A - GUILDFORD PARK ROAD & BRIGHT HILL

- EXEMPLAR MARKET AND AFFORDABLE HOUSING
- GROUND FLOOR COMMERCIAL / COMMUNITY USES

ZONE 1B - MILLBROOK & MILLMEAD

- HIGH QUALITY WATERFRONT RESIDENTIAL
- RETAINED/INCREASED PUBLIC PARKING - MILLBROOK

ZONE 1C - TOWN WHARF

- EXPERIENTIAL RANGE OF RETAIL, CAFES, RESTAURANTS
- ARTS & CULTURE
- LEISURE
- VIBRANT GROUND FLOORS & PUBLIC REALM
- URBAN LIVING
- EXISTING EMPLOYMENT

ZONE 2 - BEDFORD WHARF

- HIGH QUALITY RIVERSIDE RESIDENTIAL
- HOTEL
- F&B & LEISURE OPPORTUNITIES
- OFFICE CBD
- CIVIC - COURTS & POLICE
- COMMUNITY - MEDICAL, DENTIST, ETC
- GREEN RIVERSIDE PUBLIC REALM

ZONE 3A - WOODBRIDGE MEADOWS

- NEW URBAN VILLAGE
- RESIDENTIAL
- WORKSPACE/EMPLOYMENT
- NURSERY
- SCHOOL
- LANDSCAPING & WATERSIDE AMENITY

ZONE 3B - WALNUT TREE CLOSE

- RESIDENTIAL
- WORKSPACE/EMPLOYMENT
- COMMUNITY
- LANDSCAPING & WATERSIDE AMENITY

ZONE 4 - WOODBRIDGE ROAD

- NEW URBAN VILLAGE
- RESIDENTIAL
- WORKSPACE/EMPLOYMENT
- COMMUNITY
- LANDSCAPING & WATERSIDE AMENITY

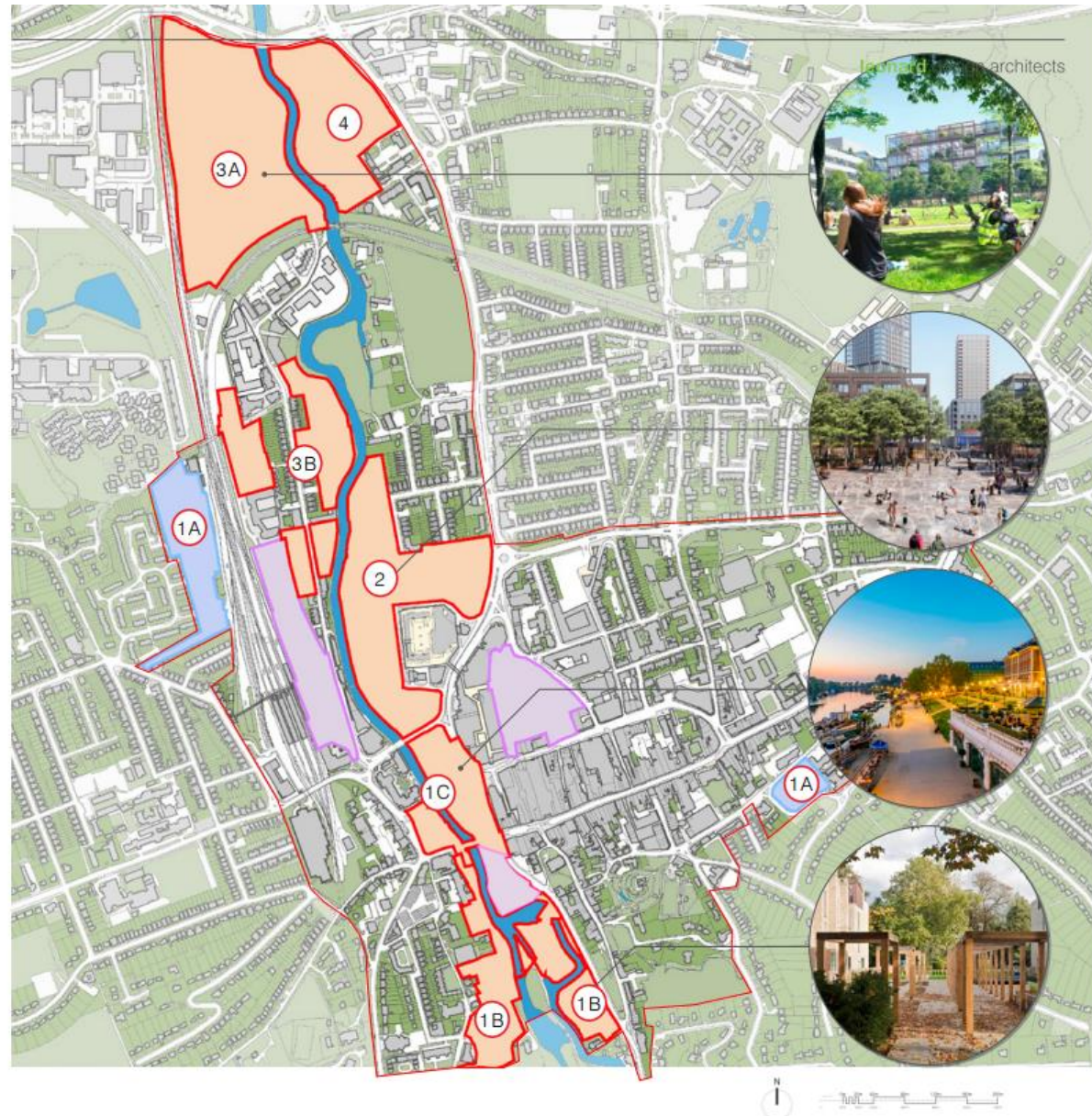


Figure 1 Stage 1 Strategic Spatial Masterplan

Resolving Guildford's existing travel issues is a key priority for Guildford's proposed regeneration and Markides Associates have produced a report to review the scope to increase the active travel mode share in Guildford¹³. Similarly, flood risk is a key constraint and driver of the Masterplan design and Arup have provided a flood risk report¹⁴. As these reports broadly cover the scope of travel and flood risk related opportunities and constraints within Guildford, it was agreed that this Sustainability Actions and Policies report would not focus on travel or flood risk but will cross reference to the Markides Associates and Arup reports. Therefore, there is less focus on best practice examples on these topics in this report.

The Masterplan Stage 2 Sustainable Drainage and Utilities Study¹⁵ has highlighted a number of key constraints relevant to the themes covered in this study. There is currently limited available power at the Woodbridge Road (A322) primary substation serving the 5 key development sites in the Masterplan and there is a risk that costly network reinforcement would be required to serve future needs. This is becoming an increasing issue nationally as the UK switches heating and transport to electricity. Adopting design standards that seek to reduce energy demands will help reduce future network reinforcement costs as well as cutting carbon emissions. Interventions at a borough level to reduce energy demands in existing buildings could also help with this issue.

Estimates have been made of the required on-plot attenuation for the five development sites in the Masterplan to meet green field run-off rates for a 1 in 100 year storm event allowing a 40% allowance for climate change. These suggest extensive on plot attenuation measures will likely be required including green roofs and podium/ground based SUDS and attenuation features.

¹³ Active Travel in Guildford, Shaping Guildford's Future, June 2022

¹⁴ Guildford Economic Regeneration Programme, Flood – Stage 2, July 2022

¹⁵ Shaping Guildford's Future Sustainable Drainage and Utilities Study. AECOM. Draft Report. 19 July 2022.

3. Review of Policy and Actions by Theme

The GBC Local Plan Part 1⁵ sets out a number of core themes. Under the core theme of Environment, it sets out a strategic objective to ensure that new development is designed and located to minimise its impact on the environment and that it mitigates and is adapted for climate change. The following section draws out the policies that address this core theme, as well as others, under 5 key sustainability topics relevant to the Masterplan:

- climate mitigation,
- climate adaption and resilience,
- resource efficiency,
- biodiversity and
- health and wellbeing.

For each theme context is provided on why action is important, a summary is provided of the current and emerging local plan policy, and the key actions being taken as part of the Masterplan and examples of ambitious best practice actions and policies being taken by other local authorities to address these themes are also outlined. Section 3.6 provides a summary comparison table of some of the key opportunities identified.

3.1 Climate Mitigation

3.1.1 Context

The UK is legally obligated, via the Climate Change Act 2008 (2050 Target Amendment Order 2019) to achieve Net Zero CO₂ emissions by 2050, with the UK's sixth Carbon Budget¹⁶ requiring a 78% emissions reduction by 2035. This is the UK's proposed contribution to international efforts to limit global temperature rise to less than 1.5°C above pre-industrial levels, which is recommended by the Intergovernmental Panel on Climate Change (IPCC)¹⁷ in order to avoid the worst future impacts of climate change.

The Committee on Climate Change (CCC) advises Government on the steps it needs to be taking to deliver its net zero target; in June 2022¹⁸, it reported that current programmes will not deliver the net zero target, that delivery must be actively managed, and that local delivery will play a key role.

The IPCC report Climate Change 2022: Mitigation of Climate Change¹⁹ emphasises that we have the necessary opportunities for climate mitigation (including many working examples and significant opportunities in urban areas) but we have limited time available for implementation.

"We are at a crossroads. The decisions we make now can secure a liveable future. We have the tools and know-how required to limit warming. I am encouraged by climate action being taken in many countries. There are policies, regulations and market instruments that are proving effective. If these are scaled up and applied more widely and equitably, they can support deep emissions reductions and stimulate innovation." IPCC Chair Hoesung Lee

It is imperative that local authorities take all available opportunities to implement climate mitigation measures across all sectors.

There are a multitude of policy interventions and progressive initiatives that could deliver benefits in this area, through strategic carbon planning. In 2021 Part L of the building regulations were updated, requiring higher levels of energy efficiency and increasing the use of renewable and low carbon technologies. The LETI Climate Emergency Design Guide²⁰ covers five key topics (operational energy, embodied carbon, the future of heat, demand response and data disclosure) and sets out carbon reductions to aim for. Similarly, UKGBC published a

¹⁶ <https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035#:~:text=In%20line%20with%20the%20recommendation,reaching%20net%20zero%20by%202050.>

¹⁷ <https://www.ipcc.ch/>

¹⁸ <https://www.theccc.org.uk/2022/06/29/current-programmes-will-not-deliver-net-zero/>

¹⁹ <https://www.ipcc.ch/2022/04/04/ipcc-ar6-wgiii-pressrelease/>

²⁰ London Energy Transformation Initiative (2020) LETI Climate Emergency Design Guide. Available at: https://www.leti.uk/files/ugd/252d09_3b0f2acf2bb24c019f5ed9173fc5d9f4.pdf

framework definition for net zero carbon buildings. CIBSE CP1 Heat networks: Code of Practice for the UK (2020)²¹ advocates for high-quality, robustly designed and effectively operated district energy systems, to address both the need to decarbonise heat and to address fuel poverty in the UK. Local government can promote the strategic vision and develop supporting policies for district energy systems, especially in relation to enabling local connections, they may also be able to help overcome land ownership issues where multiple ownership would hinder the development of a single network. At a national level the Energy Security Bill confirmed that heat network zones will be designated by 2025.

3.1.2 What is GBC doing on Climate Mitigation?

As set out in Section 1.3 evidence for the need for urgent action on climate change and the national policy context around the climate emergency is constantly evolving and at a rate which means that adopted local planning policy in many areas often lags behind. This is true in Guildford; however, the key policies are highlighted below.

Guildford Corporate Plan² notes that the Council will show leadership in their own operations by reducing carbon emissions, energy consumption and waste.

The adopted Local Plan Policy⁵ D2 on Climate change, sustainable design, construction, and energy requires:

- Development to consider low carbon heat networks;
- Provides targets for emission reductions in new buildings (Part L of Building Regulations 2021 has already gone beyond the level of Guildford policy); and
- Promotes renewable and low carbon energy technologies.

Adopted Policy ID3 Sustainable Transport for New Developments requires:

- Maximising the use of sustainable transport including walking and cycling; and
- Design of developments to allow for permeability, secure cycling parking, improvement to existing active travel routes.

The Climate Change and Sustainable Design, Construction and Energy SPD⁶ supports Policy D2 and sets out a methodology to calculate the reduction in emissions and notes where this target reduction is not possible, offsite offsetting measures in line with the energy hierarchy should be delivered.

The emerging Local Plan Part 2⁸ Policy ID10 aims to achieve a comprehensive Guildford Borough cycle network.

The emerging Policy D12 Sustainable and Low Impact Development requires:

- a fabric first approach in line with the energy hierarchy;
- a reduction in embodied carbon; and
- high energy efficiency.

The emerging Policy D14 Carbon Emissions from Buildings echoes the Part 1 Policy D2 by supporting the development of low and zero carbon and decentralised energy and targets carbon reduction in line with the recent mandatory update to Part L of building regulations (31% reduction for new dwellings and 27% for other buildings).

Guildford Corporate Plan notes that the Council will show leadership in their own operations by reducing carbon emissions, energy consumption and waste.

Guildford have prepared an active travel strategy with the aim of increasing active travel mode share for trips under 4km. It notes that within the town centre the focus should be on re-designing the gyratory and careful masterplanning of the key sites.

Surrey County Council Emerging Local Transport Plan²² is based on three main principles:

- Avoiding unnecessary travel;

²¹ CIBSE (2020) CP1 Heat networks: Code of Practice for the UK. Available at: <https://www.cibse.org/knowledge-research/knowledge-portal/heat-networks-code-of-practice-for-the-uk-cp1-2020>

²² Surrey County Council. Local Transport Plan 2022-2032 Draft for Consultation.

- Shifting travel choices to more sustainable modes of transport; and
- Improving the energy efficiency of vehicles and operational efficiency of roads through technology improvements.

The Council are in the process of reviewing their approach to Whole Life-cycle Carbon. They are yet to decide which methodology to adopt for this issue more widely.

Guilford is also part of the Surrey Energy and Sustainability Partnership, which seeks to promote collaboration and knowledge sharing between the Surrey County and District Councils²³.

3.1.3 Guildford Masterplan on Climate Mitigation

A Travel Strategy has been developed to support the Masterplan²⁴, which addresses a number of climate mitigation issues. The overarching aim is to change movement so that it is more humanised, less impactful on the environment, while encouraging more active and shared travel. This is aligned with Surrey County Councils transport plan.

The key issue in the town centre is the traffic and associated pollution from the dysfunctional gyratory system. In response the Masterplan will pedestrianise significant parts of this existing road infrastructure, particularly Bridge Road, while introducing a more efficient throughfare and increasing the pedestrian and cycle infrastructure. In addition, the car parks on the edge of the town centre will be upgraded and pedestrian links between the car parks and the centre will be created to avoid cars coming into the centre of the town.

Subject to further studies on future EV use, the town centre will deliver an appropriate amount of EV charging spaces.

In terms of existing and new development within the town centre it is expected that there will be a coherent net zero strategy to inform more detailed design of buildings. However, currently there is no broad area wide energy strategy; this could for example explore the potential for a district energy network served by low carbon energy sources.

In the Guildford Economic Regeneration Programme Stage 1 report²⁵, it was confirmed that there is minimal electrical capacity at the local substation. This could have a cost/programme risk for the Masterplan; therefore, continued discussion with UKPN is required as the Masterplan is developed further. This also highlights the need to maintain a focus on reducing energy demand for all new development, which will likely need to be electrically heated with heat pumps to enable the town's transition to net zero.

3.1.4 Exemplary Approach Examples on Climate Mitigation

This section summarises examples of policies and actions being taken by other local authorities to help reduce carbon emissions.

Setting a clear and ambitious overarching vision

The City of London sets out a clear vision for the Council, and the area named the 'square mile', on becoming net zero in their Action Strategy²⁶. The vision notes that the City of London is responsible, sustainable and competitive, through working with stakeholder groups to accelerate the transition to net zero, support SMEs to reach net zero and invest in making the square mile more resilient to extreme weather and flooding.

Develop a robust, inclusive and representative decision-making process

In accordance with the RTPI guide to planning in a climate crisis and to secure local support to address more challenging or long-term issues, opportunities for public consultation and climate assemblies of the public and in particular marginalised groups should be considered. Some national and local bodies have been using citizens' assemblies to seek guidance and engagement on climate policy and action. Members represent a diverse population in terms of gender, age, ethnicity, social class and can therefore provide an effective means of capturing ideas and opinions that are truly representative of people's concerns and priorities, as well as a diverse range of

²³ <https://www.surreycc.gov.uk/community/climate-change/what-are-we-doing/partnership>

²⁴ Markides Associates (2022) Active Travel in Guildford, Shaping Guildford's Future.

²⁵ Gleeds (2021) Guildford Economic Regeneration Programme Stage 1. Available at: https://www.guilfordsociety.org.uk/2021_5_GERP_Exec_Summary.pdf

²⁶ The City of London (2020) Climate Action Strategy 2020-2027. Available at: <https://www.cityoflondon.gov.uk/assets/Services-Environment/climate-action-strategy-2020-2027-20-10-20.pdf>

skills and experience. The UK's first Citizens' Assembly on the climate crisis was held by Camden in 2019. Members provided findings from climate researchers, scientists, environmentalists, energy consultants to solidify their proposals on how Camden should address the climate crisis which then helped inform Camden's Climate Action Plan 2020²⁷. Other councils such as Oxford and Brighton and Hove have held citizens' assemblies, in which members proposed that the council should have higher aims in terms of the net zero target and also recommended actions that could be taken to accelerate the council's path to net zero. Citizen's assemblies can also help focus on key issues for the local population. During a Brighton and Hove citizen's assembly²⁸, the main focus was the reduction of transport related emissions, members heard evidence and recommended actions that the council could take to tackle the issue. Citizen's assemblies can help ensure buy in to proposed action. The Climate Democracy Model²⁹ consists of practical, interconnected tools for a city or region to assess and analyse its progress towards climate resilience through democratic means.

Understanding the opportunities in your area

Local and national government, network operators (gas, electricity, and heat), energy suppliers, local businesses and users, will need to collaborate to deliver the required transition to a cleaner, stabler and more cost-effective UK energy system. Local Area Energy Planning (LAEP) is a process that is increasingly being adopted by local authorities to understand their local opportunities and to determine the most appropriate and cost-effective route to decarbonising their area. Delivered effectively a LAEP will engage with a broad range of energy stakeholders to gather data on the energy demands, demand management and low carbon supply opportunities specific to a local area. This can cover energy efficient retrofit of buildings, delivery of heat networks, energy storage and fuel switching and local low carbon or renewable energy supply opportunities. Energy masterplanning through the development of a LAEP can be an invaluable building block for local authorities who have committed to deliver net zero.

Greater Manchester Combined Authority is developing a LAEP across the 10 local authorities; this implements a long-term framework for transforming the local energy system by scoping decarbonisation targets to be met in a cost-effective way, whilst helping understand how the energy generated can be distributed efficiently and used in the future. In addition to guiding local authorities, LAEP can help businesses and individual households understand how to cost-effectively reduce carbon emissions. Within this framework a LAEP³⁰ has been produced for Bury. It aims to influence consumer uptake, low carbon energy supply, reducing demand for carbon intensive fuels, creation of district energy and investment in jobs and local opportunities.

In South Gloucestershire, as part of the Climate Emergency Action Plan, a Renewable Energy Resource Assessment Study³¹ was undertaken. It will be used to inform the development of local planning policy and other potential future work requiring the consideration of renewable energy resources. The study consists of a bottom up assessment of the potential for different renewable, low and zero carbon energy technologies at different scales across the district. In this study high level mapping was produced to highlight potential renewable supply opportunities. The report provides recommendations regarding policy approaches to net zero carbon scenarios, search areas for wind and solar PV farms, increased energy storage, development and connection to heat networks and development of other renewable energy resources (e.g. biomass).

At a more localised level, Greenspace Scotland have launched a project called ParkPower, which aims to generate green energy in urban green and blue spaces. This has led to the development of Scotland's first low carbon park, Saughton Park in Edinburgh, where ground source heat pump technology supports the heat demands of buildings in and around the park. Another example of progress in this area, specific to when a traditional district heat networks was not feasible, is the work Enfield Council undertook in collaboration with contractor EQUANS. They delivered England's largest shared group loop array heat programme, replacing all electric heating. The project serves 400 flats in eight tower blocks, it was completed within a year and was delivered while the flats remained occupied. These projects and studies undertaken by Energy Systems Catapult³² highlight that decarbonisation options are highly specific to local conditions, existing buildings and infrastructure, but it requires a holistic approach where spatial planning can play a considerable role.

²⁷ London Borough of Camden (2020) Camden Climate Action Plan 2020-2025. Available at: <https://democracy.camden.gov.uk/documents/s89494/Climate%20Action%20Plan%20Appendix%201%20-%20Camden%20climate%20action%20plan.pdf>

²⁸ Available at: <https://www.brighton-hove.gov.uk/brighton-hove-climate-assembly>

²⁹ Climate Democracy Model (2022), Democratic Society. Available at: [Climate Democracy Model \(demsoc.org\)](https://www.democratic-society.org/Climate-Democracy-Model)

³⁰ Greater Manchester Combined Authority (2021) Local Area Energy Plan. Available at: [Microsoft PowerPoint - Bury LAEP Client version \(greatermanchester-ca.gov.uk\)](https://www.greatermanchester-ca.gov.uk/media/10000/Client-version-greatermanchester-ca-gov-uk-2021-01-20-14-30-00.pdf)

³¹ AECOM (2021) Renewable Energy Resource Assessment Study. Available at: <https://www.southglos.gov.uk/documents/South-Gloucestershire-RERAS-Final-Report-18-11-2021.pdf>

³² More information available here: <https://es.catapult.org.uk/case-study/local-area-energy-planning/>

Take opportunities to mobilise funding and private sector involvement

Due to the scale of changes required to address climate mitigation, LPAs will need to mobilise funding and gain buy in from the private sector. Greater Manchester Combined Authority has mobilised over £78m of Government funding from the Public Sector Decarbonisation Scheme (PSDS) to support energy efficient upgrades to more than 150 public buildings across the city. Measures include the installation of air source heat pumps for heating, solar panels, insulation, LED lighting and building control systems. This will help the region meet its ambitious carbon neutral target of 2038.

New procedures are being used by councils in the UK to fund projects. Financing arrangements via a joint venture have been used in councils such as Bristol. Joint Ventures can be utilised to gain public and private sector funding through many different project functions. A joint venture is a partnership between entities that enables them to share risk and reward. In some cases, entities can share their knowledge and resources towards a common goal, with one entity providing the funding and the other their expertise and tools.

For instance, Bristol is Open (BiO)³³, was a joint venture between Bristol City Council and the University of Bristol that started in 2015. The Council obtained funding from the UK government and University of Bristol's expertise helped develop tools and Bristol's digital infrastructure, researching new technologies, smart cities, digital innovation. This joint venture, led to projects on 5G, Big Data analytics, Software defined networking, and CCTV analytics.

Other innovative investment funding procedures have been used by councils. For example, the West Berkshire Council Climate Change Bond was the first Community Municipal Investment (CMI) in the UK³⁴. These types of bonds, allow for residents to invest in their local council's green projects and overall Net Zero goal, meaning it will not only benefit them by gaining a return on their investment but also their community environment. The CMI has allowed West Berkshire Council to realise an economic saving due to the lower rate of financial interest, while enabling the council to fund a wide range of green projects related to energy, buildings, transport, and biodiversity, such as their £520k solar photovoltaic projects.

There are already mechanisms in place to fund improvements to infrastructure from new developments, namely Section 106 agreements. Waltham Forest Council have leveraged this revenue stream in aid of the 'mini Holland' scheme being implemented across the borough. For example, one of the projects has been to create a separate cycle and pedestrian path along Lea Bridge Road. An illustration is provided in Figure 2 below.



Figure 2 Illustration of the improvements to Lea Bridge Road. TFL (2020)³⁵

Setting ambitious policy

The rapid increase in concern around climate change, driven by the very visible impacts it is already having on our climate, mean that in many cases existing local plan policy has fallen behind the ambitions of councils who like Guildford have declared a climate emergency with necessarily ambitious timeframes for reaching net zero. Many local authorities recognise local planning policy as a key instrument for achieving their net zero goals with many local plans being updated or supplementary planning guidance being prepared to strengthen policy requirements.

³³ Available here: <https://tropico-project.eu/cases/administration-costs-for-bureaucracy/bristol-is-open-a-joint-venture-delivering-a-smart-city-of-the-future/>

³⁴ Available at: <https://www.westberks.gov.uk/wbcmi>

³⁵ TfL (2020) Cycling and walking improvements between Lea Bridge and Dalston Phase 1 between Dalston and Clapton Consultation Report. Available at: [08e0020592d533708ad45e9aafd836e5_eqia_and_healthy_streets.pdf \(amazonaws.com\)](https://www.amazonaws.com/08e0020592d533708ad45e9aafd836e5_eqia_and_healthy_streets.pdf)

Definitions for net zero carbon buildings continue to develop, with the most aspirational definitions including challenging targets for minimising Whole Life-cycle Greenhouse Gas (GHG) emissions on-site. UKGBC, the London Energy Transformation Initiative (LETI) and CIBSE have created definitions that are considered to be industry leading, see Appendix A for reference. Embodied carbon is the total carbon emissions associated with materials and construction processes (manufacturing, transport, construction, maintenance, demolition, recycling) throughout the whole lifecycle of a building or infrastructure. Whereas operational carbon is the total carbon emissions resulted from the in-use operation (energy for heating, cooling, ventilation, lighting, and other equipment, and provision of water) of a building (see Figure 3 below). Whole Life-cycle Carbon emissions are the total GHG emissions, both operational and embodied, that have resulted over the life cycle of a building or infrastructure. In recent years operational emissions have been reduced through energy efficiency improvements with the result that embodied carbon emissions now make up a significant proportion of lifecycle emissions.

Net Zero Operational Carbon

Ten key requirements for new buildings

By 2030 all new buildings must operate at net zero to meet our climate change targets. This means that by 2025 all new buildings will need to be designed to meet these targets. This page sets out the approach to operational carbon that will be necessary to deliver zero carbon buildings. For more information about any of these requirements and how to meet them, please refer to the: UKGBC - Net Zero Carbon Buildings Framework; B8P - Design for Performance initiative; RIBA - 2030 Climate Challenge; GHG - Net Zero Housing Project Map; CIBSE - Climate Action Plan; and, LETI - Climate Emergency Design Guide.

Low energy use

- 1 Total Energy Use Intensity (EUI) - Energy use measured at the meter should be equal to or less than:
 - 35 kWh/m²/yr (GIA) for residential¹
 For non-domestic buildings a minimum DEC B (40) rating should be achieved and/or an EUI equal or less than:
 - 45 kWh/m²/yr (GIA) for schools¹
 - 70 kWh/m²/yr (NLA) or 55 kWh/m²/yr (GIA) for commercial offices²
- 2 Building fabric is very important therefore space heating demand should be less than 15 kWh/m²/yr for all building types.

Measurement and verification

- 3 Annual energy use and renewable energy generation on-site must be reported and independently verified in-use each year for the first 5 years. This can be done on an aggregated and anonymised basis for residential buildings.

Reducing construction impacts

- 4 Embodied carbon should be assessed, reduced and verified post-construction.³

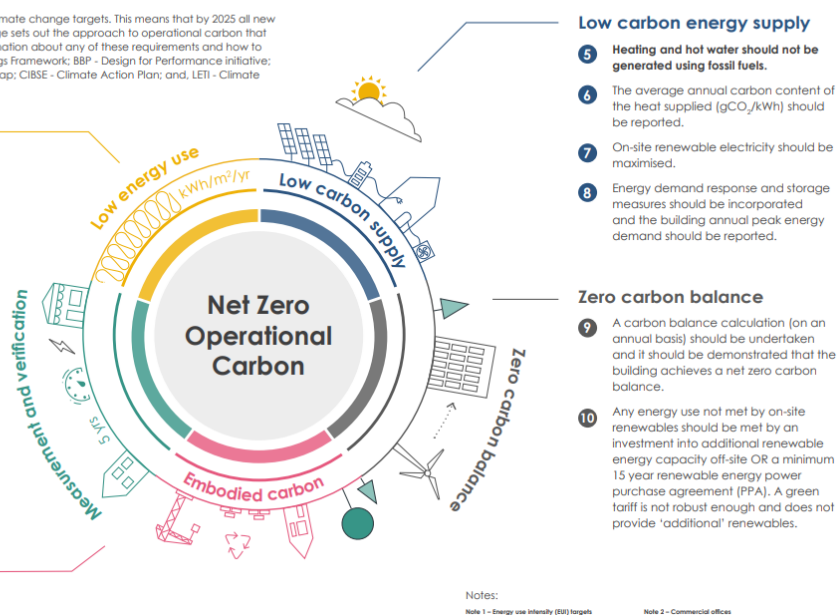


Figure 3 LETI key features of Net Zero Operational Carbon buildings³⁶

The energy hierarchy is typically considered to involve minimising the energy demand as the first step, then exploiting local energy resources and supplying energy efficiently and cleanly, and finally maximising opportunities for on-site electricity and heat production from renewable energy technologies such as solar (photovoltaic and thermal). However, a recent addition to the energy hierarchy proposed by some organisations is the requirement that developments monitor, verify and report on energy performance, in order to ensure that buildings are operating as intended. This is demonstrated in the adopted London Plan Policy SI 2 'be lean, be clean, be green, be seen'. Milton Keynes adopted Policy SC1³⁷, requires developers to show that the performance gap between the 'as designed' and 'as built' building has been closed. Policy SC1 contains the requirement for developers to carry out post-construction and post-occupancy assessments of carbon emissions, energy use, overheating risk and indoor air quality performance in 10% of the new buildings for the first five years of their occupancy, and ensure that the information recovered is provided to the applicable occupiers and the planning authority.

Most local authorities have declared a climate emergency and pledged to reach net zero with a relatively ambitious target of 2030. Net zero carbon often currently involves a contribution from offsetting, and this is often recognised in net zero planning policy: where it is clearly demonstrated that the net zero-carbon target cannot be fully achieved on-site, any shortfall may be offset, through cash in lieu contributions to the council's carbon offset fund, or in some cases off-site measures may be directly funded. Many councils use a nationally recognised non-traded price of £95/tonne of CO₂ for offset payments. However, many councils are planning to opt for a higher price in order to encourage developers to reduce on-site carbon emissions as much as possible and use offsetting as a last resort. For instance, the Greater Manchester Spatial Framework Evidence Base document sets an offset payment of £200 per residual tonne of CO₂, from 2025 that would increase through the years to meet their commitment to be carbon

³⁶ [Net Zero 1-Pager | LETI](#)

³⁷ Milton Keynes Council (2019) Plan MK. Available at: [Plan: MK 2016-2031 \(milton-keynes.gov.uk\)](#)

neutral by 2038. Additionally, some authorities are aiming to not allow offsetting, as proposed in the West Oxfordshire Salt Cross Garden Village Area Action Plan draft, which states that 100% of the energy consumption required by buildings on-site should be generated using on-site renewables. A policy such as this will be limited in its application and may not be feasible for dense or high-rise development where the available space for renewables may be insufficient.

The emerging Harlow and Gilston Garden Town Sustainability guidance & checklist SPD³⁸, sets out the sustainability indicators and policies that will apply for new major developments in the Garden Town, which will help with their goal of becoming net zero-carbon by 2030. As part of their requirements, applicants must use the LETI Heat Decision Tree during the concept and developed design stages, to guide in the decision of the heating system, where renewable systems are the preferred option over connection to district heat networks.

The Basingstoke Climate Change Study³⁹ was prepared as an evidence base to support future policy. It recommends that policy should require all new housing in the borough to be built to the LETI energy efficiency standard. While it notes that the requirement for non-residential buildings to meet the LETI requirements may cause viability issues, it still promotes these as guidelines alongside Passivhaus principles for dwellings.

The Royal Town Planning Institute (RTPI) has developed an example district wide design code based around net zero and nature recovery, and with requirements that all upfront emissions from materials and construction must be at least an 'A' for upfront embodied carbon measured using the LETI Carbon Alignment tool. It also notes that total energy use limits must be set and match to onsite generation. This idea is reflected in Cornwall Council's emerging DPD on the Climate Emergency Policy SEC1. It requires new residential development to provide on-site renewable generation to match total energy use, and also specifies a preference for roof mounted solar PV.

Similarly, the emerging Old Kent Road Area Action Plan⁴⁰ states that gas boilers will not be used in any new development (prior to the anticipated national Future Homes requirement from 2025). Warwick emerging Net Zero Carbon Development Plan Document (DPD)⁴¹ Policy NZC1 notes that zero or low carbon energy sourced should be used, and where fossil fuel sources must be used the technology incorporated should ensure proposals are 'zero carbon ready'. The Royal Borough of Kensington and Chelsea are encouraging renewables in a different way and have enacted a Local Listed Building Consent Order which removes the requirements for listed buildings to gain consent for putting solar PV on the roof. All of these examples demonstrate LPA areas which are adding nuance to existing national policy and building regulations, with such approaches outlined as potential interventions for policy makers in the UKGBC report on net zero carbon buildings.

Embodied carbon emissions are not currently regulated at a national level. A bill was proposed in Parliament in February 2022 to change this based on an industry proposed Part Z. However, until such time that embodied carbon becomes regulated, LPAs have a role to play in promoting lower embodied carbon buildings and infrastructure. For example, the City of London are pushing the boundaries of existing carbon planning and recently opened consultation on their Whole Lifecycle Carbon Optioneering Planning Advice Note⁴². This guidance sets out how new developments should go through the optioneering exercise which will allow developers to understand the most sustainable route to re-development, as well as allowing the City of London to assess planning applications through the use of standardised dashboards. Similarly, the London Plan requires developers to submit Whole Life-cycle Carbon reports with planning applications. While the commitments made in these reports are not currently being enforced, this is the direction of travel. The Whole Life-cycle Carbon component stages are outlined in Figure 4.

³⁸ HGGT (2021) Sustainability Guidance & Checklist. Available here: [FINAL_HGGT-Sustainability-Guidance-and-Checklist-Mar-2021-FINAL-02-1.pdf](#)

³⁹ WSP (2021) Basingstoke and Deane Council Climate Change Study. Available at: <https://www.basingstoke.gov.uk/content/doclib/3415.pdf>

⁴⁰ Southwark Council (2020) Old Kent Road Area Action Plan. Available at: <https://www.southwark.gov.uk/planning-and-building-control/planning-policy-and-transport-policy/development-plan/area-action-plans-section/old-kent-road-aap/current-and-previous-versions-of-okr-aap>

⁴¹ Warwick District Council (2021) Net Zero Carbon DPD Consultation Draft. Available at: https://www.warwickdc.gov.uk/downloads/file/6868/draft_net_zero_carbon_dpd

⁴² The City of London (2022) Planning Advice Note Whole Lifecycle Carbon Optioneering. Available at: <https://www.cityoflondon.gov.uk/assets/Services-Environment/whole-lifecycle-carbon-optioneering-planning-advice-note.pdf>

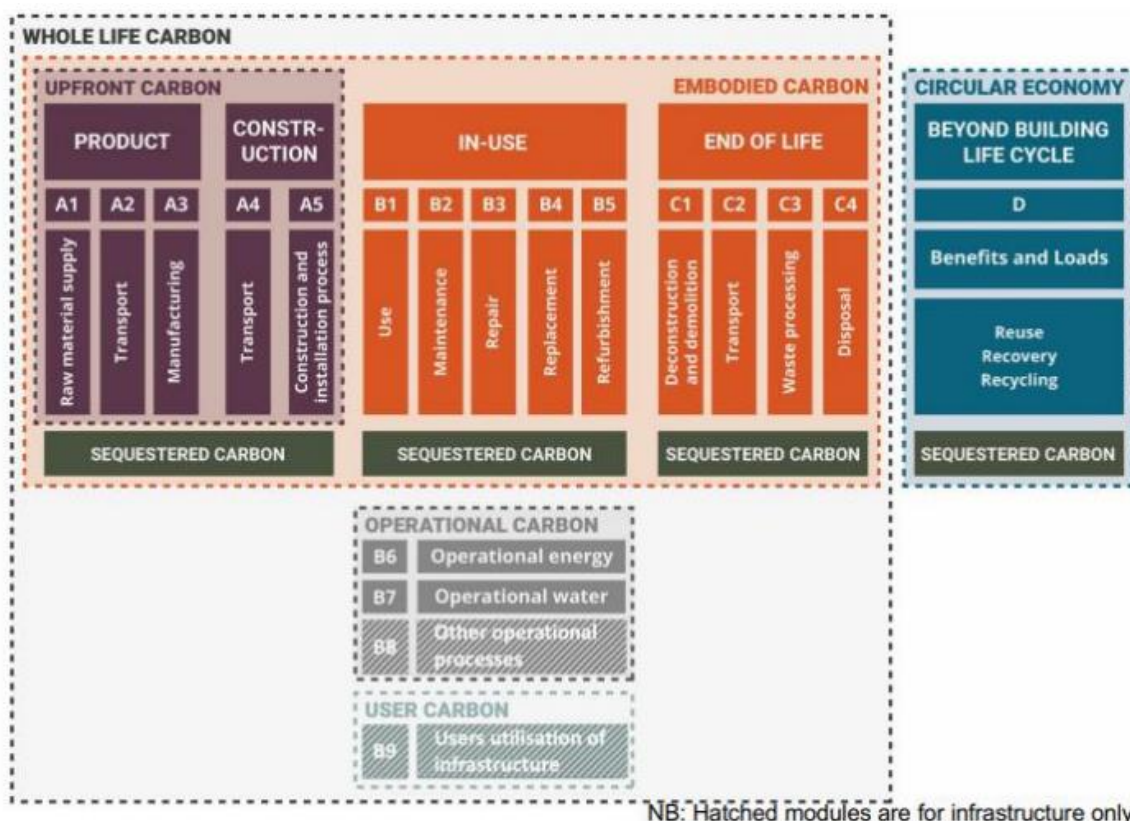


Figure 4 Whole Life-cycle Carbon Stages Diagram

Furthermore, the UKGBC report on Building the Case for Net Zero⁴³ indicates that the relative impact of embodied carbon is set to increase and will form over half of the built environment carbon emissions by 2035. It provides valuable insight into the role of masterplanning (particularly roads, utilities, and energy infrastructure) and will have a key role in the transition to net zero. Trumpington South, in south west Cambridgeshire, demonstrated that small changes in the design of a masterplan could have considerable carbon savings, such as reducing 'grey infrastructure' (roads, parking and kerbs), which made up 88% of the masterplans total embodied carbon, this was done by reducing parking areas and switching from asphalt to permeable parking for tertiary roads. In addition, extending the swale network to include primary and secondary streets reduced embodied carbon from the stormwater network, whilst also increasing the blue/green network.

Oxfordshire County Council have recently made some forward thinking transport proposals which aim to support Oxford moving towards a net zero transport system, the proposals include traffic filters, a city-wide workplace parking levy, and a wider zero-emission zone⁴⁴. Traffic filters only allow certain types of vehicles such as buses or cycles to pass on a road, leading to a reduced number of vehicles in the city whilst promoting greener ways of transport such as walking and cycling and thus improve the air quality due to less congestion. In the zero emission zone all petrol and diesel vehicles, including hybrids, incur a daily charge whereas zero emission vehicles go free of charge. There are already plans to consult on the extension of this zone. The proposals will lead to similar outcomes, improved transport infrastructures, less congestion and improved health and wellbeing for locals. Other innovative projects have taken place in Oxford to support them becoming a net zero transport city such as the Energy Super Hub Oxford project, which officially launched Europe's most powerful EV charging hub in July that will support the need for EV charging in the area for the next 30 years. The Council received £500,000 funding from the Department for Transport to help Oxford achieve their goal.

Similarly, Nottingham City Council has introduced a workplace parking levy, an annual charge to employers who provide workplace parking to tackle problems associated with traffic congestion.

⁴³ UKGBC (2022) Building the Case for Net Zero: A case study for low carbon residential developments. Available at: <https://ukgbc.s3.eu-west-2.amazonaws.com/wp-content/uploads/2022/02/23075804/08737-Masterplan-v12.pdf>

⁴⁴ Additional information available at: <https://news.oxfordshire.gov.uk/councils-announce-ambitious-updated-proposals-to-support-a-zero-carbon-transport-network/>

Using your own development opportunities to drive change

There are a number of ways local authorities are driving change, for example by proactively decarbonising their own building stock, committing to high standards in their own development sites and using their own land to sequester carbon.

Examples of pioneering schemes that have re-developed inner-city areas with climate mitigation and net zero planning at the forefront include the Climate Innovation District in Leeds South Bank (which is being part funded by the Leeds City Council Revolving Investment Fund and the Leeds City Region Enterprise Partnership (LEP) Growing Places Fund) and City of York Council who are developing 600 zero carbon homes to Passivhaus standard as part of their Climate Action Plan⁴⁵.

Passivhaus is a standard related to operational energy and occupant comfort. It adopts a whole-building approach, with rigid performance criteria including requirements to minimise heating and cooling demand, air permeability, energy consumption, and overheating risk whilst providing a high level of occupant comfort. Both Exeter City Council and Norwich City Council have made a commitment to build all Council owned social housing to Passivhaus standard. Other councils have already implemented the Passivhaus certification in their planning policies, such as Fareham Council, where 10% of dwellings are required to be built to Passivhaus standard in Welbourne Garden Village⁴⁶. Eastleigh Borough Council requires all non-residential above 500sqm to achieve Passivhaus⁴⁷. The Scottish Parliament are currently consulting on a Passivhaus bill; this would require all new housing in Scotland (whether that be developed by the Council, housing association or the private sector) to be built to Passivhaus standard (or equivalent).

Councils such as Nottingham City Council have launched retrofit programmes. The Energiesprong Nottingham City Homes 2050 Homes⁴⁸ project sees the transformation of poorly insulated houses into super insulated, low maintenance houses, improving their energy efficiency whilst lowering heating and energy costs for residents by implementing many upgrades to the homes such as removing fossil fuel boilers, highly insulating the walls and roof, replacing the doors and windows, adding solar photovoltaics panels and many more. This scheme has produced comfortable affordable homes, to help tackle fuel poverty, climate change, and furthers Nottingham's ambition to be the first UK city to become carbon neutral by 2028. South Cambridgeshire District Council has invested £1.9m as part of its Zero Carbon Strategy to retrofit its Cambourne headquarters. This is with the aim of greening the building, by installing renewable generation and energy efficient management systems. This includes ground source heat pumps, LED lights, new building management systems, more efficient fan system and 2 electric charging vehicles.

Both Cornwall Council and Telford and Wrekin Council built publicly owned solar farms, which generates income thereby helping to protect frontline services for residents and they also form part of the Councils' wider energy strategy.

Building collaborative relationships to increase your impact

Another example where effective collaboration has promoted low carbon development is in Neath Port Talbot Borough Council in Wales. The Council has a strong vision and political will which has been used to promote low carbon innovation and a local supply chain, they brought together a local university, a social housing developer and a modular housing supplier. Swansea University came up with the low carbon homes concept, which was delivered as the Active Homes Neath development using Council land by the social housing provider and modular housing developer. In addition, the Welsh Government provided innovation funding⁴⁹. The result was an innovative low carbon homes pilot project, which is the first of many intended by the stakeholders. In a similar example, Cambridge City Council identified land for community housing, Marmalade Lane⁵⁰, and provided support to an emerging co-housing group to progress development. The development comprised low carbon homes, with no gas, timber construction to reduce embodied carbon and a co-housing design.

⁴⁵ City of York Council (Unknown). Housing Delivery Programme - Design Manual. Available at: <https://www.york.gov.uk/HousingDesignManual>

⁴⁶ Fareham Borough Council (2014) Local Plan Part 3: The Welbourne Plan. Available at: https://www.fareham.gov.uk/welborne/local_plan/welbornesubmissionlibrary.aspx

⁴⁷ Eastleigh Borough Council (2022) Eastleigh Local Plan (2016-2036). Available at: <https://www.eastleigh.gov.uk/media/11234/eastleigh-borough-local-plan.pdf>

⁴⁸ Additional information available at: <https://www.housing.org.uk/our-work/climate-and-sustainability/best-practice/energiesprong-nottingham-city-homes/>

⁴⁹ Additional information available at: <https://www.poblgroup.co.uk/about-us/pobl-story/pobl-story-oct-2018/construction-underway-on-homes-that-will-generate-store-release-their-own-energy/>

⁵⁰ Additional information available at: <http://www.marmaladelane.co.uk/>

Greater Manchester Combined Authority has entered into a number of collaborations in the drive to net zero carbon. For example, they partnered with the Green Finance Institute in order to offer residents a property-linked finance scheme for energy efficient home upgrades, and they are also looking to collaborate with landlords to promote the incorporation of energy efficiency into tenancy agreements. GMCA has also formed a Strategic Place Partnership (SPP) with Homes England, which will allow both entities to collaborate on research initiatives in areas of shared strength and interest. The aim of this partnership is to test a new model working with the government's housing and regeneration agency and local authorities that would enable proposals for housing growth as part of GMCA's social, environmental, and economic vision for the area.

3.2 Climate Adaptation and Resilience

3.2.1 Context

The IPCC report Climate Change 2022: Impacts, Adaption and Vulnerability⁵¹ confirms that with a warming of 1.5°C the world faces multiple unavoidable climate hazards (e.g. increased heatwaves, droughts and floods) in coming decades and that the people and ecosystems least able to cope are being hit hardest. Earth's climate has already changed due to human greenhouse gas emissions and it will inevitably continue to change due to ongoing emissions and lags in earth's systems; climate mitigation (i.e. reducing greenhouse gas emissions) is critical to avoid the worst impacts of climate change, but robust adaption and resilience measures must also be adopted in order to address the anticipated and now unavoidable climate change impacts.

The UK Climate Change Risk Assessment (3rd version, June 2021)⁵² outlines priority risks for urgent action including climate-related power system failure and extreme heat exposure in buildings, as well as impacts to food production, supply chains and natural systems. Flooding and water scarcity are also identified as significant risks, however, current related policy is deemed to be 'well-developed'. Appropriate future-proofed built environment measures installed now can reduce or avoid the effects that such risks are predicted to have on people's health, wellbeing and property now and into the future.

"Together, growing urbanisation and climate change create complex risks, especially for those cities that already experience poorly planned urban growth, high levels of poverty and unemployment, and a lack of basic services. But cities also provide opportunities for climate action – green buildings, reliable supplies of clean water and renewable energy, and sustainable transport systems that connect urban and rural areas can all lead to a more inclusive, fairer society." IPCC Working Group II Co-Chair Debra Roberts

Given that we are already experiencing the very evident effects of climate change, with increased flooding events, droughts and wildfires, it is important that planning robustly addresses these issues to ensure places and buildings are adaptable and resilient. The NPPF⁵³ states that Plans should take a proactive approach to climate adaption, taking into account long term implications for flood risk, water supply, biodiversity and landscape and the risk of overheating from rising temperatures. Building for Life 12, Building with Nature Standards Framework, Good Homes Alliance and the Association of Directors of Environment, Planning and Transport set out guidance for policy makers when considering climate adaption and resilience. Further information on this guidance can be found in Appendix A.

3.2.2 What is GBC doing on Climate Adaption and Resilience?

The adopted Local Plan Part 1 (2019)⁵ Policy P4 Flooding, Flood Risk and Groundwater Protection Zones notes:

- Development in areas of medium or high flood risk will be permitted if the scheme incorporates flood protection, flood resilience and resistance measures; and
- Areas of 'undeveloped' flood zone 3b will be safeguarded for flood management purposes.

Adopted Policy D2 Climate Change, Sustainable Design, Construction and Energy requires all major developments to set out how they have incorporated adaptations for a changing climate and changing weather patterns, in order to avoid increased vulnerability and offer high levels of resilience to the full range of expected impacts. It also requires development to achieve water efficiency that meets the highest national standard (110 litres per person per day).

⁵¹ IPCC (2022) Report on Climate Change. Available at: <https://www.ipcc.ch/2022/02/28/pr-wgii-ar6/>

⁵² Climate Change Committee (2021) Independent Assessment of UK Climate Risk. Available at: <https://www.theccc.org.uk/wp-content/uploads/2021/07/Independent-Assessment-of-UK-Climate-Risk-Advice-to-Govt-for-CCRA3-CCC.pdf>

⁵³ MHCLG (2021). National Planning Policy Framework

Following the introduction of Part O of the Building Regulations in June 2022, a supplementary note has been prepared for the SPD which states that the Ash and Guildford Urban Areas are prone to the Urban Heat Island effect where overheating is likely to be more acute and that applicants in these areas should continue to include information on how the risk of overheating has been addressed. It notes that this requirement can be satisfied through a CIBSE TM59 assessment⁵⁴

The Climate Change SPD⁶ notes that where buildings are sold or leased fully fitted/furnished, low energy appliances should be provided, also buildings should be designed to reduce the need for appliances, such as allowing space for drying clothes.

The emerging Local Plan Part 2⁸ Policy P13 Sustainable Surface Water Management requires SuDs to be considered at the early design stage to realise the potential multifunctional benefits. In addition, the emerging Policy D12 Sustainable and Low Impact Development requires new development to incorporate measures to harvest rainwater and conserve water resources.

The emerging Policy D13 Climate Change Adaption requires proposals to:

- Be designed to cover expected climate impacts with particular regard to overheating and incorporate passive heat measures.
- Demonstrate how the heat island effect will be addressed (e.g. choice of materials, layout, massing, retention of green/blue infra).
- Demonstrate adaption for more frequent and severe rainfall events (e.g. retaining or creating water bodies, planting and landscape for surface water and permeable ground surfaces).
- In areas of high wildfire risk proposals need to be designed and managed to prevent the ignition and spread of fire.

3.2.3 Guildford Masterplan on Climate Adaption and Resilience

Guildford Town Centre has significant flood risk and therefore making provision for adaption to address current and future risk is key. GBC have been working in collaboration with the Environment Agency to design an appropriate flood defence solution. Their key aim is to create sustainable flood defences that are climate resilient.

The Local Plan policy, which requires a sequential test to build in flood risk areas, has resulted in a number of permissions in the Green Belt. It is the aim of the Masterplan to create a defensive line in the town behind landscaped areas intended to flood, to allow a number of brownfield development sites to come forward.

The working flood solution currently comprises upstream compensatory catchment areas, as well as hard and soft landscaping principles in four locations across the town centre (Bedford Wharf, Town Wharf, Mill Mead and future development zones) to protect both existing and proposed development. The solution has multiple benefits: not only does it unlock additional development sites behind the defence line but in front of this line there will be a green and blue infrastructure corridor, with biodiversity and extended public realm right at the heart of the town centre, see Figure 5 for an illustration of the proposed flood defence.

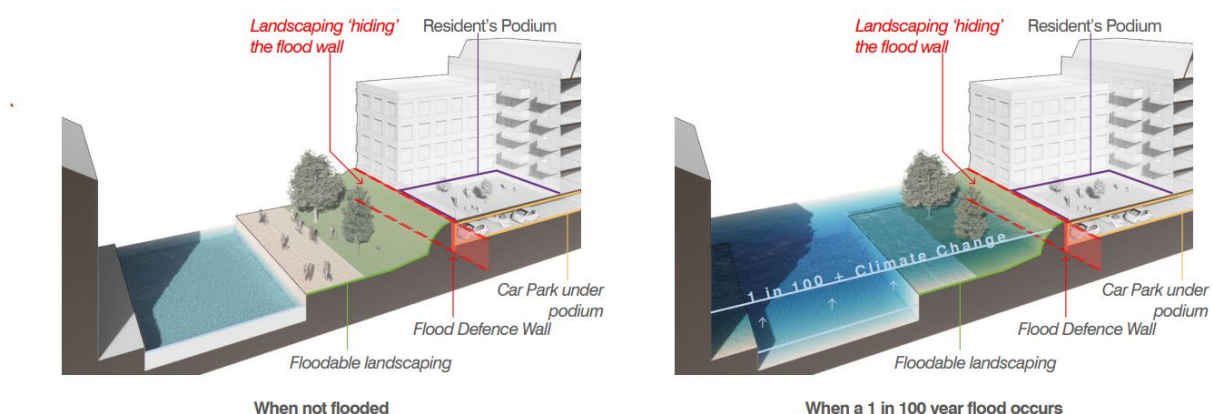


Figure 5 Illustration of flood defences

⁵⁴ Climate Change, Sustainable Design, Construction and Energy SPD Factual update. GBC. 04 July 2022

In addition, the Masterplan will require any new development to incorporate a neutral SuDs solution so there is no impact on the existing infrastructure.

The creation of new green infrastructure helps to reduce heat absorption and tree planting will create shade in the more frequent heatwaves which are expected to be a feature of our future climate.

The Guildford Economic Regeneration Programme Stage 1 report⁵⁵ confirmed that there is a risk that sufficient potable water supply is not available from Thames Water without extensive and costly reinforcement of their network. This could have a cost/programme risk for the Masterplan; therefore, continued discussion with Thames Water is required as the Masterplan is developed further. This also highlights the need to maintain a focus on reducing potable water demand for all new development, through the provision of water efficiency measures.

While the Masterplan is not focussed on detailed building design aspects, GBC's extensive land ownership presents significant opportunity to ensure that climate resilience is built into future building designs through updates to local plan policy and through development agreements for those sites where GBC have an ownership interest. This would for example include rigorous assessment of overheating risk and water efficiency and promotion of measures to address this.

Analysis has been undertaken as part of the Masterplan Sustainable Drainage and Utilities Study to identify required on plot attenuation volumes and areas for the five development sites, allowing for a 1 in 100 year storm event and a 40% additional allowance for climate change. Sensitivity analysis has also been carried out to identify what additional volumes may be required should the Environment Agency in future recommend a greater allowance for future climate change. This indicates that a combination of green roofs and podium/surface level SUDS and attenuation measures will be required.

3.2.4 Exemplary Approach Examples on Climate Adaption and Resilience

This section sets out examples of actions being taken by other local authorities to help build resilience to future climate change.

Setting a clear and ambitious overarching vision

Climate change and rising temperatures are encouraging relevant UK stakeholders to think differently about how to manage those temperatures. However, other countries have been dealing with high temperatures for much longer and we can gain inspiration on how to manage it from there. For example, the choice for white buildings (particularly roofs - often called 'cool roofs') commonly built in Greece don't only have an aesthetic value but reflect the sunlight reducing heat absorption and the urban heat island effect. Light coloured or "high albedo" materials are increasingly being specified both in buildings and landscaping to reduce heat absorption in built up areas.

Stroud District Council adopted a comprehensive strategy and masterplan in 2021⁵⁶ to drive progress on their commitment to be carbon neutral and ecologically resilient by 2030. Stroud is ahead of the game, as a sustainability pioneer, it achieved carbon neutral operations in 2015 and is taking a progressive approach to community collaboration and strategy governance. The masterplan sets out that the Council will be an exemplar through their own estates and practice, an enabler through partnerships and services and an encourager supporting community led action. The framework comprises 23 goals that provide the direction of travel across 14 themes and a total of 75 commitments. It has resulted in 17 citizen climate action neighbourhoods, a domestic energy efficiency advice service, award winning rural SuDs and canal regeneration work including 100 nesting boxes, new wetland habitat, fish and eel passes and improved nature corridors across the district. Stroud are pioneering wide reaching services and programmes that provide an avenue for them as influential partners in the climate and ecological crisis and setting an example for rural districts.

Understanding the opportunities in your area

With 80% of the buildings predicted to exist in 2050 already built, retrofitting will be a significant part of becoming more adaptable and resilient to climate change. The London Borough of Lambeth and London Southbank University conducted a research study to understand the local retrofit supply chain and workforce across both public and private projects. It involved a gap analysis and evaluation of the roles and skills needed across both

⁵⁵ Gleeds (2021) Guildford Economic Regeneration Programme Stage 1. Available at: https://www.guilfordsociety.org.uk/2021_5_GERP_Exec_Summary.pdf

⁵⁶ Stroud District Council (2021) The 2030 Strategy Masterplan. Available at: <https://www.stroud.gov.uk/media/1484239/item-9-appendix-b-the-2030-strategy-master-plan.pdf>

channels. The outputs identified what the Council and other stakeholders can do to address the gaps and barriers to optimise local benefits from the delivery of net zero retrofits. As a result, the Council is in the process of delivering a suite of stakeholder skills and training maps to help create clear, effective green job pathways.

Setting ambitious policy

Climate resilience policy needs to be reflective of the issues facing different areas. For instance, July 2022 saw record temperatures across the United Kingdom, with the highest temperatures across the south east. As summer temperatures are predicted to continue to increase, the building stock must be adapted to respond to these rising temperatures. The adopted London Plan⁵⁷ Policy 5.9 seeks to reduce the urban heat island effect, avoid overheating and excessive heat generation. Major developments are required to follow the cooling hierarchy, minimising heat generation through efficient design, reducing the amount of heat entering the building, managing the heat through exposed internal thermal mass and high ceilings, passive ventilation, mechanical ventilation, and as a last resort, active cooling systems (ensuring they are the lowest carbon options). CIBSE TM59⁵⁸ sets out a methodology for assessment of overheating risk in homes, which is also now recognised in Part O of the 2021 Building Regulations. It notes that early analysis of overheating risk is recommended so that mitigation strategies can be reviewed in design proposals.

Similarly, areas prone to flooding will require flexible and adaptive approaches to protection. Good interventions such as SuDS are noted in the GBC emerging policy; however, this is relatively high level. Whereas other examples, such as the draft Kent Drainage and Planning Policy Statement⁵⁹, sets out a specific criterion for drainage systems. Developments are required to accommodate a 1 in 100 storm, with an additional 20% allowance on this figure

(with a possibility of this increasing to 40%), to account for uncertainty in impacts and timing of rainfall patterns. Similarly, the GLA are in the process of delivering London's Sustainable Drainage Action Plan⁶⁰. This includes a SuDS opportunity map, providing funding to community based schemes that incorporate SuDS via the 'Grow Back Greener' grant scheme. Cambridge City Council have published a SuDS Design and Adoption Guide⁶¹, which is not a formally designated planning document, but provides guidance to developers on the type and design of SuDS the Council would be willing to adopt in new public areas. It outlines what types of SuDS would be recommended in different locations, landscaping requirements and four key principals – performance, high quality design, ease of maintenance and integrated approach to health and safety.

Cornwall's emerging Climate Emergency DPD⁶² Policy CC3 Reduction of Flood Risk sets out the measures required for development proposals to be designed to reduce flood risk and can be seen in Appendix B, 2.1.

Using your own development opportunities to drive change

Local authorities have an opportunity to drive effective change in resilience when delivering infrastructure. For example, Leeds City Council in collaboration with the Environment Agency designed a state of the art flood defence that uses moveable weir technology, merges the river and canal and flood walls and embankments stretching 4.5km through the city centre. It is one of the largest river flood alleviation schemes in the country and will provide more than 3,000 homes, 500 businesses and 300 acres development land with increased protection against flooding. Phase 2 of the flood alleviation scheme is being developed, using traditional engineering methods, as well as natural flood management. It will protect a further 1,048 homes and 474 businesses, between Leeds Train Station and Apperley Bridge, and provide a one in a 200 year level of protection against flooding.

Conversely, water scarcity is an increasingly an issue in south east England and is already affecting the development undertaken by Crawley Borough Council (CBC) and others. In September 2021, Natural England decided, due to water resourcing issues in the Sussex North Water Resource Zone, that local planning authorities in this area must demonstrate that any development proposed on sites supplied by Southern Water do not increase

⁵⁷ Greater London Authority (2021) The London Plan. Available at:

https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf

⁵⁸ CIBSE (2017) TM59 Design methodology for the assessment of overheating risk in homes. Available at:

<https://www.cibse.org/knowledge-research/knowledge-portal/technical-memorandum-59-design-methodology-for-the-assessment-of-overheating-risk-in-homes>

⁵⁹ Kent County Council (2019) Draft Drainage and Planning Policy Statement. Available at:

<https://democracy.kent.gov.uk/documents/s91446/Item%2007%20Appendix%201%20-%20Drainage%20and%20Planning%20Policy.pdf>

⁶⁰ GLA (2015) London Sustainable Drainage Action Plan. Available at:

https://www.london.gov.uk/sites/default/files/lisdap_final.pdf

⁶¹ Cambridge City Council (Unknown) Cambridge Design and Adoption Guide. Available at:

<https://www.cambridge.gov.uk/media/5457/suds-design-and-adoption-guide.pdf>

⁶² Cornwall Council (2021) The Climate Emergency DPD. Available at: <https://www.cornwall.gov.uk/media/1gkn3rla/sd01-cedpd-draft-master-with-edits.pdf>

demand on water resources i.e. are water neutral. CBC has subsequently piloted an initial water efficiency strategy to enable two new developments, by retrofitting existing council properties with flow-regulating devices⁶³. Waterwise suggests that a water use limit of 100 litres per person per day should be applied to future national building regulations and they provide related evidence on its feasibility⁶⁴; council development could target water-efficiency beyond the national standard and include water efficiency measures and / or rainwater or grey water recycling. Exemplar water efficiency performance has been achieved in developments such as Eddington, Cambridge⁶⁵, that are certified to Code for Sustainable Homes⁶⁶ Level 5 or 6 with its associated minimum standard of 80 litres per person per day; this required a highly water efficient sanitary specification and rainwater harvesting.

Several councils such as Essex County Council have developed and published Green Infrastructure strategies, which aim to address climate change adaptation and resilience whilst contributing biodiversity enhancements. Green infrastructure promotes carbon sequestration by planting trees and woodland which leads to improvements in air quality whilst also reducing the urban heat island effect.

The urban heat island effect is worsening as temperatures rise, which occurs because the dark surfaces of roads and building materials accumulate and absorb heat during the day. Usually this heat is released at night but with higher night time temperatures this heating impact is exacerbated. Melbourne City Council is undertaking a project to double the tree canopy cover from 22% to 40% by 2040, by planting approximately 3,000 trees a year. However, there is a general concern that too many trees may result in increased safety risks such as from wildfires. Therefore, the City of Sydney (who has committed to a 50% increase in tree canopy) are also trialling lighter coloured pavements.

Belfast City Council have committed to planting over a million native trees, which is largely to increase biodiversity but will also contribute to increasing cooling, thereby reducing the urban heat island effect. For additional information on this case study see Section 3.3.3.

As mentioned previously, certain councils have used the Passivhaus certification in some projects due to the low operational energy consumption it delivers, but also for its overheating standard which aims to ensure occupant comfort. Camden Council's Agar Grove and Norwich Council's Goldsmith Street are both schemes that used the Passivhaus standard for their developments. Passivhaus requires that internal temperatures do not exceed 25°C for more than 10% of the year. The design strategies in these schemes have aimed to optimise solar gains, reduce internal gains and use passive cooling methods by focusing on the orientation, the glazing ratio, shading, thermal mass, and ventilation systems in order to mitigate overheating. Monitored results for Agar Grove have shown that internal temperatures rarely dropped below 21°C in winter months and only reached 26 °C in peak summer months, with temperature peaks being rare⁶⁷.

Building collaborative relationships to increase your impact

Climate change often impacts the most deprived communities, it is therefore essential that climate solutions are done in collaboration with the communities it impacts most. An example of this is Hull City Council who is co-designing their flood defence and management, primarily a series of SuDs to be put in place around the city and surrounding villages, with the people whose homes are most at risk. This is in addition to a school's engagement programme, social media campaign and a resident survey. This was possible through partnering with Yorkshire Water and community groups who facilitated engagement with local people.

In north-west England, United Utilities has been offering a 90% reduction in charges to developers building water efficient homes that include measures to reduce water usage to 100 litres per person per day⁶⁸; as of July 2022, more than 86,000 plots have been registered with many of these already built, creating savings of £25m for developers. A similar reduction on wastewater charges is also available for properties that do not connect surface water drains to existing sewers. This has attracted more than 58,000 plots and generated savings of more than

⁶³ Crawley Borough Council news. Available at: <https://crawley.gov.uk/news-story/2022/council-unblocks-two-key-housing-schemes-water-neutrality-solution>

⁶⁴ Future Homes Hub – Water Efficient Buildings Roadmap – Waterwise Response (2022). Available at: https://www.waterwise.org.uk/knowledge-base/future-homes-hub-water-efficient-buildings-roadmap-waterwise-response-2022/?seq_no=2

⁶⁵ Further information available at: <https://eddington-cambridge.co.uk/about-us/sustainability>

⁶⁶ Code for Sustainable Homes Technical Guide November 2010, DCLG. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/5976/code_for_sustainable_homes_techguide.pdf

⁶⁷ Given the completion of Phase One in May 2018, it is assumed this data refers to the months following completion.

⁶⁸ United Utilities News, Water Efficient Homes, 25th July 2022. Available at: <https://www.unitedutilities.com/builders-developers/guidance/news/developer-services-news/water-efficient-homes/>

£19m. Although these schemes are utility provider led, there may be opportunities for local authorities to collaborate with utility providers to initiate or promote similar schemes in their area.

Manchester City Council in collaboration with the developer and contractor set out to regenerate three residential blocks, Tribe Apartments, all of which had been uninhabitable since 1994 and in a very poor state of repair. The City Council set a requirement for the project to achieve BREEAM 'Very Good' rating; however, it was able to achieve an 'Outstanding' rating. The Energy Council worked closely with the architect, developer and contractor teams to develop the energy and environmental proposal, and measures include new thermally efficient façade using external wall insulation, heat interface units and heat meters in each apartment, centralised biomass boiler plant and upgraded insulated roofs, amongst others. The existing blocks had incorporated balconies on two elevations, which were formed by the extension of the existing structural concrete floors at each level. This created a large thermal bridge through the structure which affected 70% of the existing flats. By extending and wrapping a new thermally efficient external façade around the existing balconies it eliminated the thermal bridge and created more habitable space. This in turn allowed the apartments to be internally remodelled to optimise the useful space creatively.

Temperature rises have other damaging impacts, including impacting how quickly waste putrefies. At Cambridge Universities Eddington Development at North West Cambridge the developer worked with the local waste authority to implement a different approach to waste management with segregated waste streams stored in an underground bin system, helping to reduce the temperature waste is stored at and reducing clutter at street level. A number of countries have adopted communal waste systems where waste is stored underground and transported to a central processing plant through pneumatic pipes. This includes a system implemented in Malmö in Sweden and the système de transfert pneumatique de déchets in France. These systems allow for waste to be kept at a constant temperature underground which reduces the process of degradation and thus reduces the risks of bad odours in warm weather. Additionally, these systems reduce the frequency of collection and the need for recycling vans to go up and down every street resulting in less noise pollution and carbon emissions. Furthermore, waste cannot overflow or be damaged by animals. With these systems, residents place their recycling and waste into sleek steel bin chutes set into the pavement outside their homes. This simple arrangement can encourage better recycling practices. These systems have been implemented successfully through effective collaboration between the developer and the Council.

In the wake of hurricane Sandy in USA a rebuilding task force coordinated the efforts of the federal state, local governments to provide a region wide approach to rebuilding. The Hurricane Sandy Rebuilding Strategy⁶⁹ notes that a regionally coordinated and resilient approach to infrastructure investment is essential. It aimed to build back smarter and stronger infrastructure by aligning federal funding with local rebuilding vision.

3.3 Resource Efficiency

3.3.1 Context

Construction, demolition and excavation account for 60% of UK material use and waste generation, according to UK Green Building Council⁷⁰ (UKGBC). In the current 'linear economy', materials are mined, manufactured, used and thrown away, which is inefficient and wasteful, exacerbates climate change and biodiversity loss and creates pollution as well as being reliant on vulnerable supply chains. By developing a circular economy, resources are kept in use and their resource value is retained at its highest value, with the aim of avoiding waste and further extraction of raw materials.

"A circular economy decouples economic activity from the consumption of finite resources. It is a resilient system that is good for business, people and the environment." The Ellen MacArthur Foundation⁷¹

For the built environment, this involves taking a regenerative approach that prioritises retention and refurbishment over demolition and new-build development. It means utilising existing material that are present on the site or in the local area and minimising the quantity of new products required. It is critical to design future-proofed buildings and infrastructure, to fit a range of future needs and considering end of life. This involves designing for future climate change, future usage change, refurbishment and plant replacement. To enable a circular approach, development must be capable of being deconstructed and reconstructed to extend its life and to allow components and materials to be salvaged for reuse or recycling. Designing for a circular economy can increase asset value by

⁶⁹ Hurricane Sandy Rebuilding Task Force (2013) Hurricane Sandy Rebuilding Strategy. Available at:

<https://archives.hud.gov/news/2013/HSRebuildingStrategy.pdf>

⁷⁰ UKGBC (2021) Circular Economy. Available at: <https://www.ukgbc.org/ukgbc-work/circular-economy/>

⁷¹ Ellen MacArthur Foundation (Unknown) Circular Economy Introduction. Available at:

<https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview>

avoiding depreciation and reducing the risk of obsolescence, whilst retaining a positive residual value at end-of-life.

3.3.2 What is GBC doing on Resource Efficiency?

The adopted Local Plan Part 1 (2019)⁵ Policy D2 Climate Change, Sustainable Design, Construction and Energy states:

- Zero carbon development are strongly supported;
- Applications should include information on how sustainable design and construction practice will be incorporated (including issues of the efficient use of mineral resources and the incorporation of recycled and or secondary aggregates, waste minimisation and reusing material, the use of landform, layout, building orientation, massing and landscaping to reduce energy consumption, water efficiency and measures to promote sustainable lifestyles); and
- The energy and waste hierarchy should generally be followed.

The Climate Change SPD⁶ highlights the usefulness of self-regulating smart meters and smart controls on heating, lighting and appliances in reducing energy waste.

The emerging Local Plan Part 2⁸ Policy D12 Sustainable and Low Impact Development requires: A fabric first approach; and minimising embodied carbon, and consideration of the lifecycle of buildings.

Guildford Corporate Plan² commits to engaging with residents and businesses to encourage them to act more environmentally sustainable ways through their waste, travel and energy choices.

The Surrey Waste Local Plan (2020)⁷² Policy 4 notes that development needs to demonstrate that waste generated during construction, demolition and excavation phase of development is limited to the minimum quantity necessary and opportunities for re-use and recycling have been maximised.

3.3.3 Guildford Masterplan on Resource Efficiency

Resource efficiency has been addressed in the Masterplan by reviewing the existing infrastructure and buildings in the town centre and analysing the feasibility of retaining those buildings rather than demolishing and rebuilding.

Historically, and at the initial modelling stage, there have been several proposed solutions for the gyratory system, many including new large-scale infrastructure such as new tunnels or bridges. However, the proposed solution sought to reduce embodied carbon and material waste by re-purposing the existing infrastructure. For example, the Onslow Street bridge is being reduced to two lanes of traffic, while the remaining land is being re purposed as pedestrian and cycle infrastructure and landscaping. Similarly, Bridge Road is being completely pedestrianised.

GBC are trying to work with existing levels where possible to reduce the need for excavation works; however, at Bedford Wharf there will be some cut and fill. This is to allow the flood defence solution to be implemented, and this will all be contained and balanced on site to eliminate the need to discard any waste.

GBC are also reviewing the future development sites and where there are existing buildings, feasibility studies will be undertaken to understand whether they could be retained and re-purposed. Where this is not possible, studies will be conducted to understand the possibility of reusing materials and new development will be developed efficiently with sustainable material procurement in mind.

3.3.4 Exemplary Approach Examples on Resource Efficiency

Understanding the opportunities in your area

It is essential to gather data on different waste streams to understand where the most significant impact can be made. As part of Amsterdam's smart city approach, they implemented a number of circular city initiatives, this started with identifying the areas for impact. The Circle City Scan of the City of Amsterdam revealed the areas most likely to demonstrate significant progress towards conversion to a circular system. It identified multiple waste streams that were viable for adopting circular models and it provided a practical roadmap for their implementation.

⁷² Surrey County Council (2020) Surrey Waste Local Plan 2019-2033.

As part of understanding where improvements can be made, collaboration with the parties generating the waste is advantageous. The London Waste and Recycling Board created the Advance London Programme of investment and free business support for London SMEs that have a circular economy business model or that want to transition to a circular economy business model, contributing to the Mayor's desire to move London towards becoming a zero-waste city⁷³. East Dunbartonshire Council are in the process of creating a circular economy strategy, to do this they are engaging with the community and businesses in particular to understand what they are already doing to become more sustainable/ circular and what plans they have for the future to reduce their environmental impact and what support could be provided by the Council⁷⁴. The strategy is currently being drafted and will be published for consultation in the near future.

Setting ambitious policy

As one of the front runners in the UK on circular economy, the Greater London Authority has set out requirements for embedding circular economy principles and designing out waste in the adopted London Plan⁷⁵. It means that all planning applications that are referable to the Mayor are required to submit a Circular Economy Statement and respond to various policy targets, namely that the development has met 95% reuse/recycle/recovery of construction and demolition waste, 95% of excavation waste is beneficial and 65% of operational waste is recycled by 2030. The Circular Economy Statement needs to explain how the proposed development has incorporated circular economy design principles. Brighton and Hove also prioritise this issue and have published circular economy route map and action plan 2022-2035⁷⁶. Within this Action Plan the Council note that they will not only raise awareness on circular economy issues across the city but embed the principles in the emerging City Plan to be incorporated by development proposals. The emerging Salt Cross Area Action Plan⁷⁷ in West Oxfordshire also intends to set policy requiring circular economy principles to be incorporated into the design and construction solution of developments, as well as effectively managed waste.

Cornwall Council have a similar approach. The emerging Climate Emergency DPD⁷⁸ encourages regenerative and low impact development through a One Planet Development policy. This policy notes that a One Planet Development should be broadly self-sufficient in terms of energy, water and waste, this promotes resource efficiency through sustainable and regenerative lifestyles.

The way waste is being approached is also adapting, with an increase in Underground Refuse Storage (URS). Examples of this as previously mentioned include the Eddington development at North West Cambridge and the 'système de transfert pneumatique de déchets' approach widely adopted in France. In addition to the carbon saving and climate resilience aspects of URS, it can also create positive behaviour change by encouraging better recycling practices.

Using your own development opportunities to drive change

There are several opportunities for Councils to retain and change use of buildings they own. A good example of this, which was designed from the outset, is the buildings on the Olympic Park in London. For example, the former athlete's village is now known as East Bank and contains pseudo public spaces⁷⁹ and housing. This demonstrates that early planning for 'legacy' in the case of the Olympic Park allows principles of circular economy to be realised through the ease of changing use of the buildings and spaces whilst minimising energy-intensive rebuilding.

Building collaborative relationships to increase your impact

To gain buy in from a number of stakeholders it is essential to disseminate waste practices across a whole area. Essex County Council plan to develop an Essex Waste Partnership which will fully engage with producers, industry

⁷³ LWARB (2021) London Waste and Recycling Board Response to the Draft London Food Strategy. Available at: <https://relondon.gov.uk/wp-content/uploads/2021/03/LWARB-Response-to-the-Draft-London-Food-Strategy.pdf>

⁷⁴ East Dunbartonshire Council (Unknown) Circular Economy Strategy. Available at: <https://www.eastdunbarton.gov.uk/residents/planning-and-building-standards/planning-policy/economic-development/circular-economy#>

⁷⁵ Greater London Authority (2021) The London Plan. Available at: https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf

⁷⁶ Brighton and Hove City Council (2022) Brighton and Hove Circular Economy Action Plan. Available at: <https://www.brighton-hove.gov.uk/sites/default/files/2022-06/CIRCULAR%20ECONOMY%20ACTION%20PLAN%20r4.1.pdf>

⁷⁷ West Oxfordshire District Council (2022) Salt Cross Area Action Plan. Available at: <https://www.westoxon.gov.uk/planning-and-building/planning-policy/salt-cross-garden-village/salt-cross-area-action-plan-examination/>

⁷⁸ Cornwall Council (2021) The Climate Emergency DPD. Available at: <https://www.cornwall.gov.uk/media/1gkn3rla/sd01-cedpd-draft-master-with-edits.pdf>

⁷⁹ Pseudo public spaces are large squares or parks that appear to be public but are actually owned and controlled by developers and corporations.

and research bodies to support a circular economy. This will involve setting up a network of community-based reuse and repair hubs by 2024, to reduce wasteful consumption and encourage upcycling of possessions.

A similar example is the creation of resource efficiency clusters, which intend to bring businesses together to create industrial symbiosis. As such, bi-products from one business (materials/heat) may be valuable to another and the cluster facilitates resource sharing. This approach is considered to be key in achieving net zero in Telford and Wrekin's manufacturing sector.

Another way Councils can drive change is to raise awareness and encourage good recycling practices. Essex County Council have launched a campaign aimed at changing the mindset of how plastic is used, reduced and recycled, named 'Love Essex Not Plastic'. It encourages residents to sign a plastic pledge and commit to changing their current behaviour, they receive information to help reduce single-use plastics and find suitable alternative, plastic-free options. Each month specific themes were focused on for the newsletter, web content and social media posts.

3.4 Biodiversity

3.4.1 Context

The world is experiencing a Biodiversity Emergency; the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) undertook a comprehensive assessment in 2019⁸⁰, with conclusions including that nature's dangerous decline is unprecedented, the species extinction rates are accelerating, one million species are threatened with extinction and transformative changes are needed to restore and protect nature.

The UK is one of the most nature depleted countries, as assessed by the Natural History Museum⁸¹; they suggest that in 2020, over two thirds of the UK is used for agriculture and another 8% has been built on, leaving little room for nature. The 2019 State of Nature report⁸² also emphasises the severe decline in UK nature, including a 41% decline in the populations of UK species since the 1970s. Rapid declines in pollinating insects threaten future food production. Contributing factors include land-use, pollution and climate change.

The IPCC report Climate Change 2022: Impacts, Adaption and Vulnerability⁸³ outlines a key role for nature in helping to reduce climate risks and also improving people's lives, while the Dasgupta Review⁸⁴ recognises that our economies, livelihoods, and well-being depend on nature.

"Healthy ecosystems are more resilient to climate change and provide life-critical services such as food and clean water. By restoring degraded ecosystems and effectively and equitably conserving 30 to 50 per cent of Earth's land, freshwater and ocean habitats, society can benefit from nature's capacity to absorb and store carbon, and we can accelerate progress towards sustainable development, but adequate finance and political support are essential." IPCC Working Group II Co-Chair Hans-Otto Pörtner.

It is critical that new development protects and restores existing habitats and creates new habitats in line with local ecological priorities, delivering a Biodiversity Net Gain (BNG)⁸⁵; this essentially means leaving the natural environment in a measurably better state than it was beforehand. The Environment Act has introduced a requirement for new development to deliver BNG.

3.4.2 What is GBC doing on Biodiversity?

Guildford Corporate Plan² notes that the Council will make every effort to protect and enhance biodiversity and natural environment.

The adopted Local Plan Part 1 (2019)⁵ Policy ID4 Green and Blue Infrastructure notes:

⁸⁰ IPBES (2019) Nature's Dangerous Decline 'Unprecedented'; Species Extinction Rates 'Accelerating'. Available at: <https://ipbes.net/news/Media-Release-Global-Assessment>

⁸¹ Natural History Museum (2021) Natural History Museum reveals the world has crashed through the 'safe limit for humanity' for biodiversity loss. Available at: <https://www.nhm.ac.uk/press-office/press-releases/natural-history-museum-reveals-the-world-has-crashed-through-the.html>

⁸² State of Nature Partnership (2019) State of Nature. Available at: <https://nbn.org.uk/wp-content/uploads/2019/09/State-of-Nature-2019-UK-full-report.pdf>

⁸³ IPCC (2022) Report on Climate Change. Available at: <https://www.ipcc.ch/2022/02/28/pr-wgii-ar6/>

⁸⁴ HM Treasury (2021) Final Report - The Economics of Biodiversity: The Dasgupta Review <https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review>

⁸⁵ Biodiversity Net Gain is summarised by the Local Government Association: <https://www.local.gov.uk/pas/topics/environment/biodiversity-net-gain-local-authorities/biodiversity-net-gain-faqs>

- GBC will maintain, conserve and enhance biodiversity and seek opportunities for habitat restoration and creation;
- New developments should aim to deliver biodiversity net gains where appropriate; and
- Ecological, landscape and recreational value of watercourses will be protected and enhanced.
- The emerging Local Plan Part 28 Policy P6/7 Biodiversity in New Developments requires proposals:
 - To seek maximum biodiversity net gain and follow the mitigation hierarchy (qualifying development proposals are required to achieve at least 20% BNG, or the advised minimum amount, whichever is greater);
 - BNG is not required on previously developed land and offsite gains will be accepted where it is not possible to achieve on site; and
 - Development proposals for the creation of biodiversity will be supported, as well as planting schemes, landscaping, measures on building structures that support nature and designing the site to create new spaces and permeability for wildlife.

The emerging Policy P8/9 Protecting Important Habitats and Species adds to this by setting out requirements for protecting important habitats and species. Emerging Policy P12 Water Quality, Waterbodies and Riparian Corridors states that for ordinary watercourses, an appropriate buffer is expected that is sufficient to protect and enhance the biodiversity and amenity value of the water course.

Furthermore, Guildford Borough Council's Strategic Development Framework SPD requires green infrastructure to:

- Be designed and managed for multiple benefits and [...] connected to the wider network of spaces by recreational routes and wildlife corridors; and
- Minimise the impact on the Borough's biodiversity and habitats and provide net gains, where possible.

The local plans parts 1 and 2 note that a Green and Blue Infrastructure SPD will be produced; however, there is no draft in the public domain currently.

At a county level, Surrey's Climate Change Strategy⁸⁶ supports the requirement of development to provide a minimum 10% BNG. The Strategy also recognises the role that green infrastructure can play in adapting to climate change, including enhancing flood resilience and in cooling the urban environment.

3.4.3 Guildford Masterplan on Biodiversity

Biodiversity and urban greening are central to the Masterplan. The design principles proposed are to create joined up green links and corridors, particularly along the river front, and then consider complementary development. For example, existing trees are being retained and the development zones and building footprints are being designed to fit around them, rather than the other way around.

Given the high level of the Masterplan at the current stage, a detailed landscaping or biodiversity strategy has not been defined to date. However, it is expected that native flora and fauna will be encouraged, and BNG targets established for the development sites.

3.4.4 Exemplary Approach Examples on Biodiversity

Setting a clear and ambitious overarching vision

Cotswold District Council has a considerable focus on biodiversity and has several guidance documents on how to incorporate wildlife into developments and biodiversity advice for anyone making a planning application. Most recently they published a draft Green Infrastructure Strategy for consultation⁸⁷ to support the ecological emergency, it was written in line with the Building with Nature (BwN) Standards⁸⁸, allowing it to gain the BwN policy award. This policy was then effectively considered and implemented into the design of the Steadings scheme (a mixed use

⁸⁶ Surrey County Council (2020) Surrey's Climate Change Strategy.

⁸⁷ Cotswold District Council (2021) Cotswold District Green Infrastructure Strategy. Available at: <https://www.cotswold.gov.uk/media/vs4j4fmf/1-draft-green-infrastructure-strategy-draft-for-consultation-june-2021.pdf>

⁸⁸ See Appendix A for further information

development of 2,350 homes, employment areas and community facilities), allowing it to gain a BwN full award. The development meets a number of core standards for maximising environmental net gains, optimising multifunctionality and connectivity, as well as bringing nature closer to people, delivering climate resilient water management and underpinning nature recovery through measures such as wildlife recovery network mapping.

Cheltenham and Tewkesbury Borough Councils adopted the Golden Valley SPD in 2020⁸⁹, the key target is to achieve a high level of environmental sustainability for a garden community. The local authorities included two key elements from the joint Garden Communities bid in the SPD, the solidifying of the Council's intentions and commitment to sustainability played a part in helping to secure the £2.4m Garden Communities Programme funding, which was awarded to the Councils in 2021. These elements also served to promote green infrastructure policies throughout the development. The first of these key elements is 'Healthy – creating a green development that enhances health and wellbeing.' The second is 'Environmentally Innovative – develop an ecologically-friendly site that restores and enhances its natural surroundings⁹⁰.' Integrating these elements of the Garden Communities bid in the SPD demonstrated an innovative way to ensure delivery of the ambitious vision, which also helped to secure funding.

Understanding the opportunities in your area

To understand the biodiversity opportunities in your area, extensive research is required to build a picture of what is there to understand how it can be improved. In Melbourne, Australia, the city council ran a citizen science programme (named BioBlitz) to help develop their first Urban Ecology and Biodiversity Strategy. Melbourne is a biodiverse city but is challenged by a combination of factors including climate change, land-use change and rapid population growth. The Strategy aim was to bring biodiversity to the forefront of urban design and planning in the city; however, without comprehensive data on biodiversity it would be difficult to set meaningful targets. To collect this amount of data by professionals would have been resource and cost intensive; therefore, they undertook the BioBlitz. This was conducted over 15 days and involved 700 citizens, who collected 3,000 biodiversity records for the city. This unique event represented Melbourne's first trial into citizen science to inform policy development and helped engage people in creating the strategy⁹¹.

Warwickshire County Council in collaboration with the Buckinghamshire and Milton Keynes Natural Environment Partnership carried out a study and produced a range of maps to help determine where in the county biodiversity offset sites should be prioritised, to support the BNG Policy. The mapping work aims to prioritise, where possible, and in consideration with other criteria, offsetting within the Biodiversity Opportunity Areas; and otherwise in areas that buffer them or provide linkages within and between them.

Setting ambitious policy

The NPPF states that there should be no net loss in biodiversity, the Environment Act has since been brought into law, it specifies a 10% net gain in biodiversity; however, this is not yet mandatory.⁹² Therefore, it is at the discretion of LPAs to set a level of BNG required for developments. The Greater Cambridge Biodiversity SPD⁹³, which was adopted in early 2022, goes beyond the future requirement of 10% and requires developments to meet 20% BNG.

There are a number of other ways to influence biodiversity over and above requiring a percentage of net gain. The adopted Harlow Town Centre Masterplan SPD⁹⁴ outlines the strategy to transform the inner ring road into boulevards, increasing accessibility and priority to pedestrians and cyclists to encourage sustainable and active travel to and from the town centre. As part of the public realm vision they will transform the area from an urban grey centre to a transformed urban forest through a comprehensive green network across the town centre. It notes that planting approaches should follow the Miyawaki method which prescribes dense planting of tiny forests using native plants and tree species. This is shown to have huge benefits to biodiversity, people's mental health and air quality.

⁸⁹ Cheltenham Borough Council and Tewkesbury Borough Council (2020) Golden Valley Development. Available at: https://www.cheltenham.gov.uk/downloads/file/8188/golden_valley_spd

⁹⁰ Building with Nature (2022) Golden Valley SPD
https://static1.squarespace.com/static/5c45e569c3c16a9eac56d244/t/62680b10b6ed905131f2b655/1650985753490/BWN-goldenvalleyspd-8pp-2022_v1.pdf

⁹¹ The Nature of Cities (Unknown) Citizen Science in the City: Lessons from Melbourne's BioBlitz. Available at: <https://www.smartcitiesdive.com/ex/sustainablecitiescollective/citizen-science-city-lessons-melbourne-s-bioblitz/1051006/>

⁹² It is expected that this will come into effect in November 2023.

⁹³ Greater Cambridge Shared Planning (2022) Biodiversity Supplementary Planning Document. Available at: <https://www.greatercambridgeplanning.org/media/2504/gcsp-biodiversity-spd-final-copy-march-2022-1.pdf>

⁹⁴ Harlow Council (2022) Town Centre Masterplan. Available at: <https://www.harlow.gov.uk/planning-and-building-control/planning-policy/harlow-local-development-plan/supplementary-planning>

The emerging Cornwall Climate Change SPD⁹⁵ also recognises the benefit of the right trees in the right places, and sets policy to retain, reduce harm and restore/replace tree canopies.

On top of net gain requirements, to support London Plan policy, the GLA published guidance on the Urban Greening Factor (UGF)⁹⁶. The urban greening factor is a tool to evaluate the quality and quantity of urban greening. It enables major developments to demonstrate how they have included urban greening as a fundamental element of site and building design. It encourages local boroughs to set urban greening factors appropriate for their area. The City of London emerging Local Plan⁹⁷ has included such targets and requires major development to meet a minimum UGF of 0.3.

Other local areas, for example Cornwall Council, have implemented a Green Points system⁹⁸ as a simpler way to deliver gains in biodiversity which are proportionate to the scale of the development being proposed. For example, the provision of bird or bat boxes, bee bricks and the planting of trees is prioritised in this scoring system. Hence, a Green Points System can be used within development to compliment the creation of green infrastructure and habitat areas, and further support and enhance local biodiversity.

The emerging Salt Cross AAP⁹⁹ sets out accessibility and quality standards for specified green infrastructure types at the outline planning stage, this provides requirements on walking distance from dwellings, as well as requirements as set out in Building for Nature and Fields in Trust. In addition, Policy 7 notes that 50% of the area will form green infrastructure (it is not confirmed whether this is total area or just public area). In addition, Policy 9 of the emerging AAP requires developments to demonstrate an overall BNG of 25% (either on or off site), which is far more ambitious than the current proposed 10% national requirement.

In France, a law has recently been passed that all new commercial buildings must at least partially cover rooftops in green roofs, or solar panels. This is the first time a country has implemented something like this nationwide, but it has been done on a city scale previously, for example in Toronto where residential and industrial buildings need to provide green roofs.

Building collaborative relationships to increase your impact

For biodiversity enhancements to be successful collaboration is required between key stakeholders and ownership of benefits should be fairly shared. Belfast City Council has plans to plant one million native trees across Belfast by 2035, which will help to sequester carbon dioxide, improve air quality, reduce flooding, increase urban cooling, support and enhance biodiversity, and improve the population's physical and mental health and wellbeing. This is being pursued through collaboration between the Council, businesses, schools, residents and community groups to identify locations.

Glasgow City Council in collaboration with a local housing association delivered a green infrastructure retrofit project around two apartment blocks named Queensland Court and Gardens. The residents were central to the design and implementation, and community feedback on priorities for investment were reflected in the final designs. The area is geographically constrained, bound by a railway and dual carriageway, but despite this, the partnership between the housing association and Council¹⁰⁰ resulted in a successful strategy being implemented, with features to manage flood risk and enhance underused open space.

Essex County Council developed a Green Infrastructure Strategy¹⁰¹ through an online collaboration platform with several partners including University of East Anglia, LPAs, government public sectors (Forestry Commission Environment Agency, Natural England), community groups and third-party organisations (RSPB and Essex Wildlife Trust). The Council created an online partnership platform to share information and live drafts of the strategy for partners to provide comment on. Residents were also involved in an extensive consultation to share their views. As part of the Strategy, the Council are planning to explore the implementation of 'Essex Green Permits', based on

⁹⁵ Cornwall Council (2021) The Climate Emergency DPD. Available at: <https://www.cornwall.gov.uk/media/1gkn3rla/sd01-cedpd-draft-master-with-edits.pdf>

⁹⁶ GLA (2021) Urban Greening Factor. Available at: https://www.london.gov.uk/sites/default/files/ugf_consultation_version_sept_2021.pdf

⁹⁷ The City of London (2021) City Plan 2036 Proposed Submission Draft. Available at:

<https://www.cityoflondon.gov.uk/assets/Services-Environment/cityplan-2036-march-2021.pdf>

⁹⁸ Draft Chief Planning Officer's Advice Note: Biodiversity Net Gain in Cornwall, March 2020 Available at

<https://www.cornwall.gov.uk/media/43031716/draft-chief-planning-officer-note-biodiversity-net-gain.pdf>

⁹⁹ West Oxfordshire District Council (2022) Salt Cross Area Action Plan. Available at: <https://www.westoxon.gov.uk/planning-and-building/planning-policy/salt-cross-garden-village/salt-cross-area-action-plan-examination/>

¹⁰⁰ Building with Nature (2022) Queensland Court and Gardens. Available at:

https://static1.squarespace.com/static/5c45e569c3c16a9eac56d244/t/6267c8fdef7e471b2b346640/1650968838729/BWN-queenslandcourt-8pp-2022_v2.pdf

¹⁰¹ Essex County Council (2020) Essex Green Infrastructure Strategy. Available at:

<https://www.placeservices.co.uk/media/325343/essex-gi-strategy-accessible-pdf.pdf>

the model rolled out in Paris. This aims to actively engage people to adopt, green up and manage land within the public realm, to green the area and make streets more attractive and biodiverse while building community and a sense of space.

Using your own development opportunities to drive change

A number of Councils have committed to re-wilding projects, with one of the most advanced projects undertaken by Isle of Wight Council who are aiming to offset at least 10% of the island's baseline carbon emissions through planting, forestry and rewilding. Similarly, Brighton and Hove City Council is rewilding a large golf course within the South Downs National Park, while Coventry City Council is designating council owned land across the city for rewilding. In the emerging Cornwall Council Climate Change SPD, they commit to creating a 'Forest for Cornwall' by planting 8,000 hectares of new woodland by 2030.

The amount of land ownership varies between local authorities, and therefore the amount of land available for projects such as re-wilding differs. However, there are also several other ways Councils can use their own opportunities to increase biodiversity.

Many Councils have been advocates for the 'no mow may' campaign which has seen grassland areas and wildflower meadows flourish, this year Wandsworth Borough Council took part in the campaign and allowed areas of grass to be left unmown across 22 sites. Milton Keynes Council ran a small-scale trial in which they only slightly altered the number and timings of grass cuts on a road verge, allowing greater variety and a larger number of flowers to grow. Similarly, Chesham Town Council undertook a project in collaboration with Chesham and District Natural History Society to alter the management of local road verges to develop areas of wildflowers, thereby increasing habitat, wildlife and biodiversity. Given the project's success it was turned from a trial to a permanent management strategy.

In south Cambridgeshire, the County Council is working with private partners to create a habitat bank from which developers can buy credits to enable them to meet the 20% BNG requirement. It is called the Lower Valley Farm BNG scheme in Fulbourn and comprises a 358-acre farm which is part of the Council's rural estate. The currently arable land will be converted to biodiverse habitats including botanically diverse grassland, native broadleaved woodland, and scrub and species rich hedgerows. The scheme plans to go beyond BNG requirements by providing public footpaths and opportunities for education. Developers will secure units through an Option Agreement which will commit the Council to delivering the associated habitat creation and management for a 30 year period.

Take opportunities to mobilise funding and private sector involvement

Derby City Council in conjunction with Nottingham City Council secured European Regional Development Funding (ERDF) for blue green infrastructure at 13 sites across Derby City and Nottingham City. These projects will endeavour to change urban spaces into open green habitat. The improvements will open up brooks, remove culverts, create new space for biodiversity, and create new rain gardens alongside a main road within the city. Work will involve wetland creation, wet grassland creation, woodland restoration and creation, river restoration, removing culverts, creating rain gardens, and new urban pathways, all of which would not be possible without the funding.

In Leeds, there is a requirement for developers to meet 10% biodiversity net gain; guidance has been published for when this level of gain cannot be achieved on site¹⁰². Where the Local Planning Authority (LPA) agree that 10% cannot be achieved on site there is potential for offsite compensation. Offsite land under the control of the applicant can be used, or alternatively a net gain biodiversity sum (credit) can be calculated for another third party Habitat Bank to take on responsibility. Leeds is in the process of identifying Habitat Banks and Delivery Partners, and credits will then be able to be purchased (at a cost of £20,000 per unit) to enable offsetting. Agreements for this second avenue of delivery can be made currently at the approval of the LPA. However, the strict requirements around offsite offsetting and significant cost per unit has driven developers to meeting BNG on site, perhaps more than would have been pursued otherwise. As a result, Leeds has seen a high level of delivery of BNG on site.

¹⁰² Leeds City Council (Unknown) Achieving net gain for biodiversity - guidance for developers. Available at: [https://www.leeds.gov.uk/planning/conservation-protection-and-heritage/achieving-net-gain-in-biodiversity-guidance-for-developers#:~:text=20%20to%2028\).-Our%20requirements,may%20involve%20off%20site%20compensation](https://www.leeds.gov.uk/planning/conservation-protection-and-heritage/achieving-net-gain-in-biodiversity-guidance-for-developers#:~:text=20%20to%2028).-Our%20requirements,may%20involve%20off%20site%20compensation).

3.5 Health

3.5.1 Context

The World Health Organisation (WHO) defines health as “a *state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity*”¹⁰³.

A person's health and well-being is influenced by a complex set of factors, both internal (e.g. motivations, aspirations, outlook) and external (e.g. the local environment and the opportunities or constraints it provides as well as social structures and inequalities) and it is underpinned by their needs being met (e.g. shelter, food, social and work opportunities). The design of the built environment has an underlying influence on many of these factors.

For instance, buildings can be designed to provide occupants with good levels of daylight, suitable views out, good indoor air quality, thermal comfort, limited noise and appropriate security measure (as rewarded by BREEAM¹⁰⁴). Masterplans, development landscaped areas and nearby natural areas can be designed to provide safe surroundings, with green, outdoor nature-rich, connected spaces that promote social and leisure activities as well as engagement with nature and the opportunity to grow food. The IPCC report Climate Change 2022: Impacts, Adaption and Vulnerability¹⁰⁵ outlines a key role for nature in improving people's lives. Opportunities for local work (influenced by available business floorspace) are important for promoting financial and mental wellbeing, while measures to avoid fuel poverty (such as energy efficient buildings designed to minimise occupant costs) are essential, particularly in the current context of swiftly rising energy costs.

The WHO recognises the significant influence of environmental factors on public health: they have labelled climate change as the single biggest health threat facing humanity¹⁰⁶ and air pollution as one of the greatest environmental risks to health¹⁰⁷. Masterplans can incorporate features to address multiple themes, such as infrastructure for active travel (e.g. walking or cycling) while workplace buildings can be designed to support and encourage this; active travel can promote public health and fitness, reduce air pollution and contribute to addressing climate change.

3.5.2 What is GBC doing on Health?

The Guildford Corporate Plan² commits to tackling inequality in Guildford's communities.

The adopted Local Plan Part 1 (2019)⁵ Policy D1 Place shaping requires:

- All new development to achieve high quality design that promotes healthy living;
- Safe, connected and efficient streets with particular emphasis on the environment for pedestrian and cyclists;
- Development to maximise the network of green spaces and public places;
- Development to be designed to reduce crime and antisocial behaviour;
- Efficient access and inclusion; and
- Infrastructure that will create smart places.

The emerging Local Plan Part 2⁸ Policy P11 Air Quality and Air Quality Management Areas notes that development proposals should have regard to the need to improve air quality and must not result in significant adverse impacts on sensitive receptors, including human health. Proposed avoidance and mitigation measures are expected to follow the Air Quality Avoidance and Mitigation Hierarchy.

Furthermore, Guildford Borough Council's Climate Change Sustainable Design, Construction and Energy SPD⁶ includes guidance on sustainable design relating to specific health and wellbeing issues, including: the use of fuels that do not negatively impact air quality; how best to maximise the use of natural light; the careful selection of materials; and the potential to support community food growing efforts.

¹⁰³ <https://www.who.int/about/frequently-asked-questions>

¹⁰⁴ Building Research Establishment Environmental Assessment Method, an industry leading sustainability assessment method for buildings. Reference to building health and wellbeing issues is found in the BREEAM UK New Construction 2018 Technical Manual: <https://files.bregroup.com/breeam/technicalmanuals/NC2018/>

¹⁰⁵ IPCC (2022) Report on Climate Change. Available at: <https://www.ipcc.ch/2022/02/28/pr-wgii-ar6/>

¹⁰⁶ World Health Organisation (2021) Climate Change and Health. Available at: <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>

¹⁰⁷ World Health Organisation (2021) Ambient (outdoor) Air Pollution [https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)

3.5.3 Guildford Masterplan on Health

One of the key aims of the Masterplan is to humanise the town centre, with the wellbeing and health of people at the centre of that. As discussed in the Climate Mitigation section, there is a focus on a modal shift away from private vehicles in the town centre, as well as measures to reduce congestion, pollution and better air quality. The gyratory system is within an Air Quality Area Management zone and is an area with a high proportion of accidents, proposed pedestrianisation, traffic calming and planting will help address these issues.

More generally the approach to the Masterplan has been to develop comprehensive and coherent landscaping, movement and green corridors as a priority, with development then fitting around this. An example of this is the new development zones which will be designed around walking routes, and connections to the river and the town centre. Every opportunity to locate greenery and planting in areas of public realm, between building and on roofs, as well as opening up of the river front is being explored, which will significantly contribute to improving air quality and amenity value.

The Masterplan is helping to deliver attractive pedestrian and cycle routes along the river corridor which will encourage active movement and increase access to greenspace and nature with associated wellbeing benefits.

The introduction of the new Part O of the 2021 Building Regulations, seeks to address the important design interface between issues of noise, air pollution and security with overheating. GBC has carefully planned the new development zones to ensure homes are not located near to areas with worse air quality or noise pollution. In the Masterplan there are only a limited number of homes proposed near main roads, and for those that are in close proximity to roads it is proposed that there will be significant traffic calming measures or access only arrangements to mitigate this issue. This is particularly important as it allows residents to open windows for thermal comfort without having a significant impact on their indoor air quality or exposure to noise.

Where possible, homes have been proposed closer to the river; traffic re-modelling around the gyratory has allowed this to happen close to the town centre. Upper Woodbridge Meadows is partially river fronting; however, it also partially fronts the railway, this has been mitigated by placing employment uses on the lower floors and residential above to reduce noise and air pollution for those residents.

All of these measures will contribute to the health and wellbeing of those living in and visiting the town centre.

3.5.4 Exemplary Approach Examples on Health

Setting a clear and ambitious overarching vision

Cherwell District Council has a strong belief in working with its communities to reduce health and income inequalities and improve community cohesion. Bicester was one of ten demonstrator sites for the NHS's Healthy New Towns Programme, and it was also the UK's first designated "Garden Town" in 2014, which made it eligible for increased central government funding. The Council's vision was to make Bicester a place where healthy behaviours are easy, fun and affordable – where being active, eating healthy food, and being a good neighbour are part of normal daily life. Achievements of the programme include walking and cycling groups, outdoor gyms in strategic locations in more deprived areas, healthy design principles for housing and planning (including estate planning for primary care), improved diets and promoting cooking skills by working with Tesco, food banks and schools. They also worked with schools to promote physical activity, pupil involvement in developing a mental health website for teenagers, developing networks for intergenerational connections, community activities to address social inclusion, providing resources and training for businesses and organisations to better communicate with staff to ensure wellbeing, as well as improving care for the most complex NHS patients and people with diabetes. This success has been attributed to close partnership working with existing stakeholders, involvement of key individuals, early engagement with local stakeholders, close alignment with partners, strong and flexible programme management and flexible funding.

The emerging Salt Cross AAP¹⁰⁸ identifies a checklist of 10 healthy place shaping key principles that should be considered in all development proposals; those of particular relevance here include:

- Creating safe environments that promote good physical and mental health, which foster social interaction;

¹⁰⁸ West Oxfordshire District Council (2022) Salt Cross Area Action Plan. Available at: <https://www.westoxon.gov.uk/planning-and-building/planning-policy/salt-cross-garden-village/salt-cross-area-action-plan-examination/>

- Providing opportunities for people to be more active, for all age groups;
- Help reduce obesity, chronic diseases and levels of inactivity by providing generous, convenient and high quality green and blue space, running and dog walking routes, playing pitches and sport and recreation facilities that are accessible to all; and
- Enable healthy food choices by providing opportunities for food growing such as allotments, roof gardens, community gardens and edible landscaping (fruit and nut trees), as well as intergenerational cooking clubs and communal barbeque areas.

The City of Mannheim in Germany has developed the 'Mannheim 2030' Mission Statement¹⁰⁹ from the 17 UN Sustainable Development Goals in a large-scale public participation process. It sets out an exemplary vision to tackle climate change while enhancing the health and lives of the residents of the city. The strategic goals include enhancing educational quality and preventing poverty with social and cultural integration of all residents, to offer an exemplary quality of life with high level of security as a basis for a healthy happy life for all people, characterised by a supportive city community, that is transparent and democratic.

2030zero is a campaign and pledge for companies working in Liverpool City Region, again, using the UN SDGs as a framework. The latest initiative is to accelerate local climate action with a specific focus on embracing net zero demands. It aims to do this by connecting climate change to local needs including poverty, COVID-19 recovery, housing and skills.

Understanding the opportunities in your area

Understanding the current and future demographics, health and place trends, helps to plan for the quantity and requirements for specialist housing, home modifications and integration of health and care services. South Cambridgeshire District Council commissioned a housing for older people supply recommendations study, this helped the systematic planning for the design code. Some interesting principles of the design code include the high density housing, all of which will be no further than 10 minutes walking and 2 minutes cycling from the town centre, stops of the guided bus, community facilities and schools, including specialist schools. In addition, there will be high quality open spaces and natural landscape areas with regular seating opportunities to allow resting points for the elderly and those with disabilities. Similarly, The Northstowe Design Code Phase 2¹¹⁰ focuses on the health and wellbeing objective around reducing obesity and improving the wellbeing of older people, the site is being jointly developed by the master developers and Homes England (who acquired the site in 2006). This development is on a former RAF base and is Government owned land being brought forward. Northstowe is classed as an NHS Healthy New Town and a Healthy Living Strategy for Northstowe was commended at the Landscape Institute awards in 2018

An example of using public sector land to address the social issue of lack of affordable housing, is the programme to deliver homes for NHS staff in Finchley, by Department for Health and Social Care, One Public Estate, The London Estates Delivery Unit and the GLA, who developed the Homes for NHS Staff Toolkit¹¹¹. The toolkit provides guidance on how surplus NHS land can provide these homes and Finchley Memorial Hospital was a pilot project. The Toolkit is intended to provide 100% Affordable Homes for NHS staff on land surplus to clinical requirements and provides a blueprint for how public sector land can be used to create new housing and support good policy outcomes.

Setting ambitious policy

The adopted Leeds Aire Valley Action Plan¹¹² Policy AVL8 aims to improve public health. Amongst other things it aims to tackle fuel poverty by promoting energy efficient homes, supporting initiatives to retrofit existing homes and promoting decentralised, lower cost energy production and distribution. It also aims to improve access to jobs to reduce worklessness and poverty, promote child friendly development and identify opportunities and sites for a retail food store to serve areas where people have limited access to fresh food.

¹⁰⁹ City of Mannheim (2019) 'Mannheim 2030' Mission Statement. Available at:

https://www.mannheim.de/sites/default/files/2020-04/Leitbild%20Mannheim%202030_%20Stand%2020.03.2019_Englisch.pdf

¹¹⁰ Tibbalds (2017) Northstowe Design Code Phase 2. Available at: <https://tibbonalds.co.uk/work/projects/northstowe>

¹¹¹ Local Government Association (2019) Homes for NHS staff toolkit. Available at: <https://www.local.gov.uk/topics/housing-and-planning/responses-briefings-and-submissions-housing-and-planning/homes-nhs#:~:text=The%20policy%20aims%20to%20improve,disposed%20by%20NHS%20estate%20owners.>

¹¹² Leeds City Council (2017) Aire Valley Leeds Area Action Plan. Available at: <https://www.leeds.gov.uk/planning/planning-policy/adopted-local-plan/aire-valley-area-action-plan>

The emerging Salt Cross AAP¹¹³ Policy 8 notes that a food strategy should accompany outline planning applications to demonstrate the approach to food growing, including an assessment of suitable areas for food growing, consideration of approaches to achieve a diversity of food outlets and the approach to incorporating edible plants within the public realm. In addition, the Policy notes that when developing schools, opportunities for co-location with a community farms or orchards should be explored to foster an early awareness of food production, origin, seasonality and healthy eating.

Using your own development opportunities to drive change

Healthcare projects are generally developed centrally by sub-divisions of the NHS; however, planning can play a role in bettering health, through raising awareness about healthy eating and providing 'healthy buildings'. Lowestoft Town Council does not have a direct statutory role in health and wellbeing; however, they have declared both a climate and health emergency in parallel to raise awareness and help the direction of travel in this area in the Town. As part of this, the Council will progress a Sustainability Strategy¹¹⁴ to reinforce the links between health and wellbeing and climate change and other sustainability issues. Other actions include expanding and enhancing green space and allotments, providing grants to food banks and other food initiatives with the emphasis being on the provision of nutritious and healthy food, providing water fountains in parks, and supporting education on food and cooking and encouraging the buying and eating of local food produce.

The WELL Building Standard is an evidence-based, third-party verified rating for all new and existing building and space types, advancing human health and well-being through science-backed policies and procedures. This includes holistic aspects of health from improved air flow, hygienic hand washing practices, reduction in hand contact of high-touch surfaces, effective cleaning protocols, robust emergency preparedness and response and more. The City of Miami recently ranked as USA's healthiest city, and it is the first city in the country to earn the WELL Building Standard Rating for Facility Operations and Management across 10 public buildings and public parks, including the city hall. The city has committed to WELL; in doing so not only is it leading by example on health and wellbeing but helping advance the movement for people-centred places.

Cheshire and West Chester Council are aiming to enhance health and tackle climate change, using the best of the County's green space assets to help tackle recognised local health inequalities. Interventions are targeted at specific conditions within the local communities, based on knowledge of what works best for locations and for differing community cohorts. For example, mindful contact with nature was targeted at isolated elderly people.

Take opportunities to mobilise funding and private sector involvement

Barnsley has significant health disparities within their area an 8 year gap in life expectancy between the east and west. To tackle this the Council and Barnsley Hospital Trust mobilised funding from NHS England for a new diagnostic clinic as part of the town centre regeneration. Its aims are to make it easier for Barnsley residents to get health scans more efficiently, to help reduce NHS waiting lists and to improve overall care. The construction of this unit was possible due to the working group including teams from the hospital, council, commissioners and the public.

Building collaborative relationships to increase your impact

Climate change is a cross boundary issue energy efficiency improvement can enable homes to achieve a greater level of comfort and help reduce pressure on health services. Joining up with neighbouring councils or building collaborative relationships with organisations can help boost climate action. For instance, Hastings Borough Council joined up with East Sussex County Council and the local Clinical Commissioning Group (CCG) to help improve the energy efficiency of low-income residents' homes by installing energy efficient lighting, improving or adding insulation and upgrading boilers to more efficient models. The collaboration between the local authorities and the health sector was critical to identifying those in fuel poverty and secure funding from a wider range of sources. This case shows how councils can take a partnered approach to improve occupants' health and wellbeing, whilst addressing climate change. This action will support Hastings Borough Council's aim to be net zero by 2030. Milton Keynes has historically used funds raised through its new development carbon offsetting policy to support the delivery of boiler upgrades in its wider community, again supporting both carbon reduction and health benefits.

¹¹³ West Oxfordshire District Council (2022) Salt Cross Area Action Plan. Available at: <https://www.westoxon.gov.uk/planning-and-building/planning-policy/salt-cross-garden-village/salt-cross-area-action-plan-examination/>

¹¹⁴ Lowestoft Town Council (2020) Sustainability Strategy. Available at: <https://lowestofttowncouncil.gov.uk/assets/Webpage-Meetings/2020-2021/Climate-Emergency-Committee/4th-August-2020/Sustainability-Strategy.pdf>

3.6 Policy and Action - Summary of Opportunities

The sections above cover a wide range of information and opportunities, Table 2 below seeks to bring out a summary of key opportunities that could be developed to support the delivery of the emerging Masterplan and supporting policy.

Table 2 Summary of actions and opportunities

Issues (Theme)	GBC policy / emerging policy	Masterplan provision	Exemplary approach examples
Building energy efficiency and carbon emissions (Climate Mitigation)	Adopted Policy requires buildings to exceed Part L 2013 by 20% (superseded by Part L 2021). Emerging policy is in line with Part L 2021.	Opportunity to specify standards in excess of Building Regulations for new development.	• LETI / RIBA / UKGBC Net zero carbon, including operational and embodied carbon • Passivhaus standards for GBC sites
Renewable energy (Climate Mitigation)	Adopted Policy promotes low carbon heat networks and renewable and low carbon energy technologies.	Opportunity to develop a broad strategy on energy supply and renewables.	• Local Area Energy Planning (follow guidance by The Centre for Sustainable Energy). • Renewable Energy Resource Assessment. • Heat network zoning and power demand management.
Minimising Overheating risk (Climate Adaption and Resilience)	Emerging policy requires proposals to be designed with overheating and wildlife risk considerations.	Green infrastructure and tree planting to contribute to urban cooling. Opportunity to specify overheating assessment / standards in excess of Building Regulations for new development.	• London Plan cooling hierarchy policy. • CIBSE TM59 overheating risk modelling (now included as Part O of Building Regs) • Good Homes Alliance checklist for early stages • Passivhaus standard addresses comfort
Water Efficiency (Climate Adaption and Resilience)	Adopted policy requires proposals to achieve the highest national standard (110 litres per person per day)	Opportunity to specify water efficiency assessment / standards in excess of Building Regulations for new development.	• Code for Sustainable Homes Wat 1 minimum standard for Level 5 or 6 (80 litres per person per day) • Home Quality Mark Water efficiency Advanced Fittings standard • BREEAM Wat 01 minimum standard for Outstanding
Operational Waste (Resource Efficiency)	Adopted Policy promotes waste minimisation.	Opportunity to develop innovative waste strategy.	• Underground Refuse Storage (URS)/ pneumatic waste collection • BREEAM waste targets
Circular Economy (Resource Efficiency)	Requires energy and waste hierarchy to be followed, waste minimisation and re-using materials. Requires developments to follow sustainable design and	Reusing existing infrastructure rather than demolishing and rebuilding, and re-using any excavation waste on site.	• London Plan Policy SI7 'Reducing waste and supporting the Circular Economy'. • Emerging Cornwall Council Climate Emergency SPD will

Issues (Theme)	GBC policy / emerging policy	Masterplan provision	Exemplary approach examples
	construction practices. County Council level policy on waste generated through construction, demolition and excavation phases of development.	Opportunity to specify resource efficiency and waste minimisation standards.	include a One Planet Development Policy.
Urban Greening (Climate Mitigation, Climate Adaption, Biodiversity, Health)	Planting and landscaping schemes, and measures on building structures that support nature are encouraged.	Opportunity to develop a comprehensive urban greening strategy and targets.	• Building with Nature Standards. • GLA guidance on the Urban Greening Factor. • Cornwall Council Green Points System. • Essex County Council Green Infrastructure Strategy (Essex Green Permits).
Biodiversity (Climate Mitigation, Climate Adaption, Biodiversity, Health)	Emerging policy requires Biodiversity Net Gain of 20%.	Promoting biodiversity through introduction of connected green corridor and landscaping, particularly along river. Opportunity to specify higher biodiversity net gain. Consider what is achievable for the site.	• Biodiversity net gain of 20% (Greater Cambridge adopted Biodiversity SPD) • BNG of 25% in the emerging Salt Cross AAP. • Re-wilding or creation of habitat banks or levy. • Building with Nature Standards.
Healthy Living and Active Transport (Climate Mitigation, Health)	Promote high quality design, safe streets, efficient access and inclusion. Emerging policy sets out an air quality avoidance and mitigation hierarchy.	Humanising the town centre, by reducing traffic and increasing active transport. Siting homes to reduce air quality impact on residents.	• WELL Building Standard. • NHS Healthy Towns Programme. • Emerging Salt Cross AAP sets out 10 healthy place shaping key principals. • The adopted Leeds Aire Valley Action Plan Policy AVL8 aims to improve public health.

3.7 Sustainability Benchmarking/Appraisal Systems/Frameworks

There are several sustainability frameworks and guidance documents available to local authorities when planning for climate change and addressing wider sustainability themes. Frameworks generally straddle several themes and provide an overarching direction for policy makers. Whereas guidance tends to be more detailed for specific issues, it often contains a checklist of specified performance measures and /or outcomes.

There is a plethora of frameworks which could inform a future sustainability framework for the Masterplan. The UN SDG goals¹¹⁵, while primarily aimed at a national, if not global scale, set out overarching goals that should have an underlying presence in planning policy. Other frameworks are more directly related to the planning context including certification and assessment schemes such as BREEAM Communities¹¹⁶. There are other frameworks produced to help local authorities plan more sustainable developments such as the Bioregional One Planet Living

¹¹⁵ UN (2015) Transforming our world: the 2030 Agenda for Sustainable Development. Available at: <https://sdgs.un.org/2030agenda>

¹¹⁶ BRE (2021) BREEAM Communities Technical Manual. Available at: <https://files.bregroup.com/breeam/technicalmanuals/communitiesmanual/>

framework (see **Error! Reference source not found.**6) and the RTPI's Planning for Climate Change (see Figure 7), shown below for the principals and tools suggested.

 Health and happiness	Encouraging active, social, meaningful lives to promote good health and wellbeing
 Equity and local economy	Creating safe, equitable places to live and work which support local prosperity and international fair trade
 Culture and community	Nurturing local identity and heritage, empowering communities and promoting a culture of sustainable living
 Land and nature	Protecting and restoring land for the benefit of people and wildlife
 Sustainable water	Using water efficiently, protecting local water resources and reducing flooding and drought
 Local and sustainable food	Promoting sustainable humane farming and healthy diets high in local, seasonal organic food and vegetable protein
 Travel and transport	Reducing the need to travel, encouraging walking, cycling and low carbon transport
 Materials and products	Using materials from sustainable sources and promoting products which help people reduce consumption
 Zero waste	Reducing consumption, reusing and recycling to achieve zero waste and zero pollution
 Zero carbon energy	Making buildings and manufacturing energy efficient and supplying all energy with renewables

Figure 6 Bioregional One Planet Living

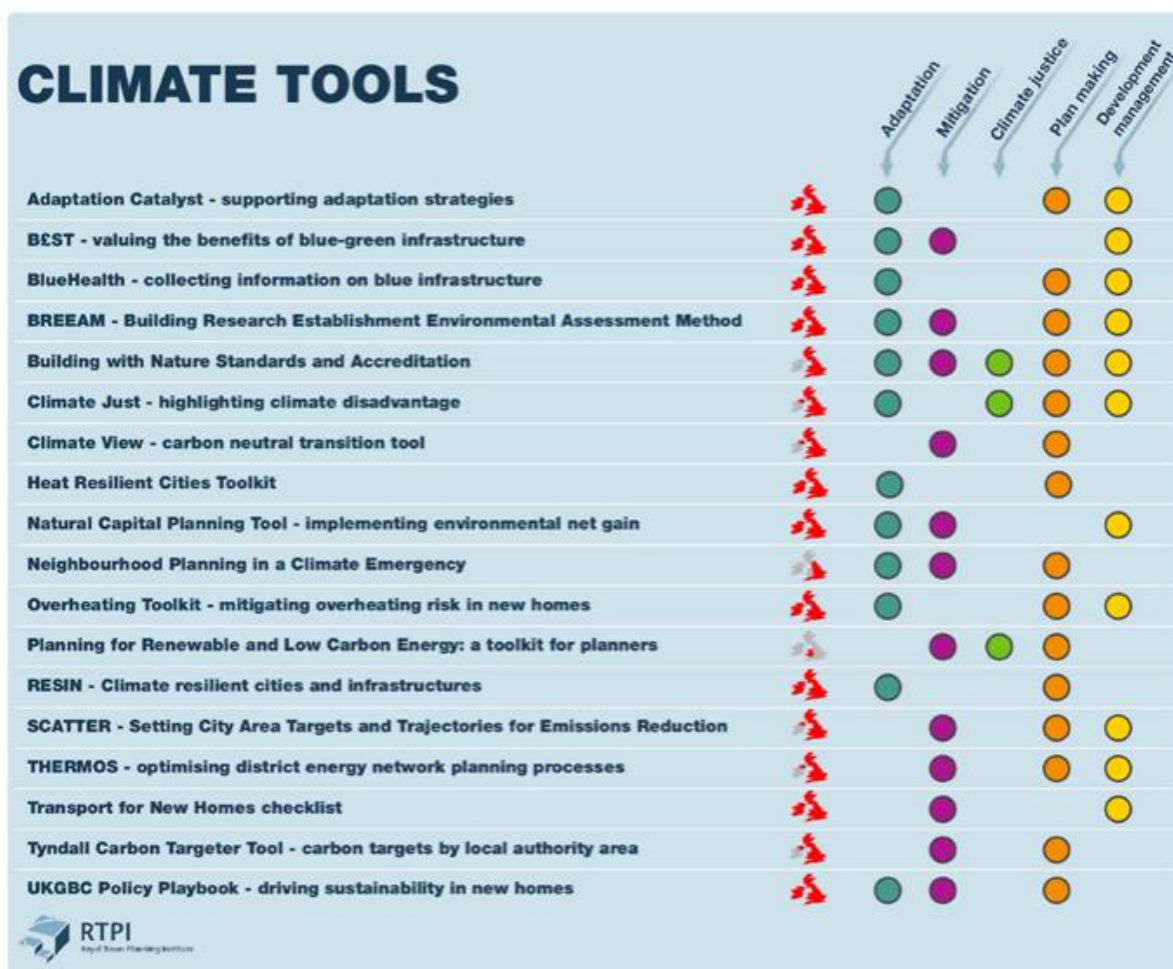


Figure 7 RTPI Planning for Climate Change

Climate Mitigation

When it comes to addressing climate mitigation there are a number of guidance documents that could be considered, key documents include the LETI Climate Emergency Design Guide which sets specific targets for energy and carbon emission reductions for a number of common building types and the CIBSE Heat Networks Code of Practice which sets out best practice guidance for development and design of local heat networks.

The Centre for Sustainable Energy has produced guidance on Local Area Energy Planning, which may be a helpful resource for any future energy planning in the Guildford area. C40 Cities have produced guidance on climate action planning which sets out the key components of a successful plan.

Climate Adaption and Resilience

The Good Homes Alliance have produced guidance on building homes with reduced overheating risk, they provide a checklist which can be used at early design stages and which accounts for geographical and local context, site characteristics, scheme characteristics and dwelling design and solar heat gains and ventilation.

Resource Efficiency

The most comprehensive guidance available currently is the GLA Circular Economy requirements.

Biodiversity

Building with Nature provides a number of standards for green infrastructure to meet, under the topics of Core, Wellbeing, Water and Wildlife, which can be used to assess development or policy. In addition, Natural England

have produced a tool to help understand national biodiversity and climate change vulnerability, it helps to highlight the vulnerability of priority habitats with the aim of building biodiversity resilience.

Health

The NHS has produced a series of documents setting out how to put health into place, they are to: plan ahead collectively; assess local health and care needs and assets; connect, involve and empower people and communities; create compact neighbourhoods; maximise active travel; inspire and enable healthy eating; foster health in homes and buildings; enable healthy play and leisure; develop health services that help people stay well; and create integrated health and wellbeing centres.

4. Summary of Findings

4.1 Guildford's position

Guildford Borough Council has a strong set of emerging guidance and policy documents, and while there are some LPAs that have more advanced policy on carbon reduction and resilience measures, there is no authority that is exemplar in all areas. The discourse around carbon reduction and climate is constantly evolving as our understanding of the state of the emergency the planet is in and low and zero carbon technology advances.

Local Plan policy often takes two years, if not more, for evidence to be gathered and adopted, which leads to policy lagging behind, as has been the case in Guildford. For example, Local Plan Policy D2 on Climate change, sustainable design, construction and energy has been superseded by the updated Building Regulations, while the emerging Policy D14 is now in line with Building Regulations and therefore Guildford's policy is now no more ambitious than the national standard requires. The most ambitious and forward-thinking initiatives are generally smaller scale, site wide, projects that have been completed with collaboration from multiple stakeholders. The examples drawn out in this report provide examples of interesting initiatives that could be considered and potentially replicated for the town centre redevelopment and Masterplan, as well as more widely.

4.2 Themes comprehensively addressed by GBC

Two main drivers for the Masterplan include transport remodelling and flood alleviation; therefore, significant work has already been undertaken and robust strategies have been produced to address these issues. In addition, within these strategies there has been a strong focus on greening; including significant planting on areas proposed for pedestrianisation and the introduction of a blue/green flood alleviation scheme. Biodiversity is also a strong policy area in the emerging Local Plan, with one of the most ambitious emerging policies requiring 20% biodiversity net gain, compared with the potential future national standard of 10% that will be required by the Environment Act. Guildford is also part of the Surrey Energy and Sustainability Partnership, which seeks to promote collaboration and knowledge sharing and which is expected to increase the rate of progress.

4.3 Further opportunities to address themes

A number of the sustainability themes which are covered by this report are generally considered at more detailed design stages than the Masterplan is currently at, and for these robust strategies are not yet in place. However, there are significant opportunities to address these as delivery of the Masterplan progresses, especially for issues that are not addressed in detail in the Local Plan. There will be opportunities for pushing higher energy standards for example, requiring developers to meet Passivhaus standards or requiring upfront evaluation of the embodied carbon of developments and promoting reductions in embodied carbon on council owned sites in the Masterplan. These requirements could be formalised as planning obligations or through development agreements. In addition, there is an opportunity to produce a robust energy strategy for the town centre; the GBC Local Plan policy encourages district heating networks which may be appropriate to the town centre and its urban form and could be explored as part of an area wide energy strategy.

The Masterplan addresses climate resilience for flooding well; however, there are opportunities to more effectively promote resilience measures. The current GBC policy mentions reducing overheating and the urban heat island effect, but further detail would add robustness, for example, a cooling hierarchy could be implemented for buildings and dynamic overheating assessment could be required to evidence performance as schemes come forward. These assessments could include assessment against future weather years.

The circular economy also presents a number of opportunities for the Masterplan to address. The current and emerging GBC policy is light touch in this area. While it recognises the need to think about the lifecycle of development and embodied carbon and sourcing of materials, the policies do not set out specific targets or parameters. GBC might provide a useful leadership role in seeking to stimulate a local circular economy alongside other local stakeholders. Similarly, there are opportunities under the topic of health. Again, GBC policy has overarching intentions around healthy living and improving air quality; however, there are several other aspects of health that could be addressed. For example, allowing space for allotments and promoting healthier food choices, as well as designing green spaces (and other spaces) with inclusivity at the forefront of the design principles.

The opportunities raised above for the Masterplan could be more widely applied to the district through incorporation into emerging policy and future updates of the Local Plan and in the interim, into SPDs and Guidance documents and any future area action plan or design codes associated with the Masterplan delivery.

4.3.1 Opportunities for the Masterplan

This report has highlighted different policies and projects that involve significantly different levels of time, funding, buy-in and collaboration. However, to make a real difference when planning for climate change it will often take a relatively long time to see the results. For example, when planting trees it often takes many years for them to grow to a significant size to impact the air quality and urban cooling. However, where the Masterplan is concerned, there are several commitments that could be explored to ensure that sustainability is at the heart of the Masterplan. Some examples include:

- Committing to no fossil fuel use, Passivhaus standards, robust overheating assessment, Net Zero Carbon, maximising renewable energy generation, minimising Whole Life-cycle Carbon, and robust in-use monitoring for all developments on Council owned land. For any buildings that the council will occupy or operate, they will gain associated benefits such as minimised fuel bills. Standards could be set using a Sustainability Framework.
- Local Area Energy Planning should be a central part of the Masterplan, having a comprehensive energy masterplan will ensure that there is sufficient capacity for sustainable development in the area. Any such plan should consider how increased electricity use for the decarbonisation of heating and transport will be delivered in the short to medium term and how demand can be reduced and managed. Plan development should involve a broad range of stakeholders including District Network Operators (DNOs) and consider emerging legislation such as the BEIS heat network zoning. It is also important to understand the constraints of an area. The Sustainable Drainage and Utilities Study prepared to support the Masterplan has identified the limited spare electrical supply capacity to serve the Masterplan and the potential high costs and long lead in times for reinforcement. An area wide strategy could seek to identify opportunities for reducing demand more broadly through efficiency improvements and retrofit of PV and exploring the potential for energy storage. Huge recent increases in energy costs will in the short to medium term create a strong investment case for energy efficiency and renewable energy retrofits.
- There is potential to mobilise Public Sector Decarbonisation Scheme (PSDS) funding to decarbonise public sector buildings (The phase 3b application window is planned to be open in September 2022¹¹⁷). This scheme provides grants for public bodies to fund heat decarbonisation and energy efficiency measures.
- Set requirements for waste management. It has been shown that Underground Refuse Storage (URS)/ communal refuse storage has multiple benefits, including better temperature management of the waste reducing the requirement to collect as frequently in summer months, improved aesthetic value, and better recycling practices by residents.
- Set aims or requirements for water efficiency, to improve upon the national standard of 110 litres per person per day and considering opportunities for rainwater or greywater harvesting.
- Creating a comprehensive planting and landscape strategy, that also increases biodiversity. The use of the Miyawaki 'mini forest' planting method could be explored. Trees planted by this method have been reported to grow quicker and to effectively create forests. This is possible on degraded land that may be previously developed and is particularly effective in the urban environment. In addition, it is reported there may be higher biodiversity in Miyawaki forests than other woodland.

There are likely to be several challenges to embedding sustainability into the Masterplan, from different agendas of the stakeholders, funding bodies, private developers, and local residents.

One of the most significant challenges when addressing climate change is often viability and the associated cost of the different initiatives. For some issues (e.g. promoting public resources such as measures to improve air quality or flood prevention measures), it can be more difficult to mobilise private sector funding, compared to public sector funding, due to the lack of direct benefit to the provider; the benefits of such measures may be longer term and at a wider scale than typical issues that affect the business of an individual house builder for example. There has been lots of progress in this area, as companies recognise the benefits including public perception and stakeholder support although there is still a long way to go. However, due to the significant amount of council owned land in the Masterplan area, this provides a unique opportunity to influence the development on those sites through development agreements and planning obligations including planning conditions and Section 106 commitments.

¹¹⁷ Salix Finance (2022) Phase 3b Public Sector Decarbonisation Scheme (PSDS) Guidance. Available at: https://www.salixfinance.co.uk/sites/default/files/Phase%203b%20PSDS%20Guidance%20Notes%20v.2%20%281%29_0.pdf

Proposed Masterplan obligations could be strengthened where they can be underpinned by a robust viability assessment. In order to further help address viability issues, a comprehensive set of funding opportunities could be reviewed, tracked and sought. For instance, the Public Sector Decarbonisation Scheme has been utilised by Greater Manchester Combined Authority and others to deliver improvements to existing buildings. The opportunity for creating a local Climate Change Bond to raise money for local sustainable initiatives could also be reviewed.

Opportunities should be considered that leverage the Masterplan in order to promote positive change in other areas. For instance, a planning related carbon offset fund linked to a net zero policy, similar to that operated by GLA or Milton Keynes, could be applied to help upgrade the existing building stock or fund other initiatives. Appropriate locations and delivery partners for a “habitat bank” could be reviewed, which could be complementary to the Masterplan, or enable BNG for Masterplan sites which may be constrained in terms of on plot opportunities. The circular economy opportunities and skills necessary to deliver on sustainability aspirations for the Masterplan could be reviewed (potentially through circular economy and skills/training mapping) along with relevant stakeholders, and could be promoted locally and stimulate a wider local “green skills” circular economy, that is fit for the future.

Linkages between the environmental themes from this report such as climate change mitigation and biodiversity, and social themes such as public health should be made where possible, and co-benefits should be emphasised. By tackling issues holistically, the case for taking action is strengthened.

4.3.2 Other Opportunities for GBC

This section provides a summary of the other opportunities available to GBC to take further action to address sustainability themes throughout the borough more widely.

Strategic Vision and Policy

The strategic vision of the council could be regularly reviewed to ensure that it adequately and holistically captures the range of key sustainability policy themes and is broadly up to date with current exemplar practice. This could be undertaken within the usual policy review cycle for the Local Plan or corporate policy but may sometimes need out of sequence update to ensure it remains suitable for the current context. Due to the extended process for policy adoption and time lag relative to the fast-moving nature of the climate and ecological emergency, it is strongly recommended that the next iteration of the Local Plan and underlying policy promotes ambitious, robust, forward thinking future-proofed policies that are aligned with GBC’s Climate Emergency declaration. If policies are too conservative, they may be superseded even prior to adoption, as with the emerging plan policy D14. The typical timescale for adopting updated or new SPDs is quicker than that for a Local Plan and hence SPDs may provide an opportunity in the interim to promote alignment with GBC’s Climate Emergency declaration.

Taking inspiration from the actions of other local authorities and considering the opportunities and constraints in the local area, the council could specify exemplary sustainability design and performance targets for its own developments borough wide. It could also use its procurement to help promote local skills and circular economy principles. As well as committing to higher standards through GBC’s own development, setting ambitious policy for developers to meet such as Net Zero Carbon, LETI standards, Passivhaus standards and embodied carbon targets could help drive this agenda more widely in the local area.

Buildings should be future-proofed for climate change impacts, for instance, policy could specify that overheating risk is minimised and that this is demonstrated by CIBSE TM59/TM52 assessment against relevant weather files. Current GBC guidance suggests CIBSE TM59 modelling as one route to compliance with its policy but does not require it.

The council could develop a clear, credible plan for decarbonisation of the borough as a whole, which aligns with their Climate Emergency declaration. Developing a credible local plan to get to Net Zero can build consensus and confidence, helping unlock both public and private investment, and forming the basis of a green industrial revolution across the area. Energy masterplanning through the development of a Local Area Energy Plan can be a valuable building block for local authorities who have committed to deliver Net Zero.

Similar to the proposed decarbonisation plan, the council could develop a clear, credible plan for promoting resource efficiency and the circular economy, following consultation with and mapping of relevant stakeholders.

More broadly, there may be further opportunities to promote biodiversity whilst saving money, such as rewilding appropriate council owned land or reducing the frequency of cutting of publicly managed green space.

Stakeholder Engagement

The council undertakes consultations as per statutory requirements but could consider whether there are opportunities for further engagement with the public and other local stakeholders. For instance, holding a climate assembly with representation from across the community (including disadvantaged groups) could provide democratic support for ambitious but considered sustainability policies/actions, and could help guide the strategy, particularly with respect to policies/actions that might be considered more challenging to implement. The Climate Democracy Model provides useful guidance on how to engage stakeholders through democratic means.

The relationships formed with other public and private organisations may unlock funding opportunities to directly support the council's work, as well as opportunities for other organisations to gain/save money for their sustainability initiatives such as council facilitated bulk purchase schemes. Conversely, a relatively minor investment from the council could in some cases provide the market with sufficient confidence for much larger private sector investment (e.g. to develop a district heating scheme). ESG funding from the private sector is increasingly available to support sustainable development.

The council could consider whether there are further opportunities for engagement and collaboration with other wider local stakeholders, such as other public bodies or businesses. A gap analysis could be undertaken if not already to identify key partners who could help deliver against key priorities. For example, GBC could identify stakeholders in the area who may have general interest or investment interests in initiatives under the different themes. For example, consultation with the relevant sub section of the NHS on significant health issues or areas of fuel poverty in the area, or compiling a resource setting out the potential different streams of funding to be able to plan for them, as well as building connections with the awarding bodies early on. There may be opportunities for collaboration with organisations to provide bulk purchasing of low carbon technology for residents or businesses or finance to enable this.

4.3.3 Summary of Opportunities for GBC

Sections 4.3.1 and 4.3.2 are summarised below in Figure 8, which outlines the opportunities for the Masterplan and other opportunities for GBC.



Figure 8 Opportunities for the Masterplan and other opportunities for GBC

4.4 Recommended next steps

Urgent action is required in order to address the Climate and Biodiversity Emergency and other linked crises. Next steps that GBC could take include:

- Review high-level corporate policy, and whether it could be improved to better reflect the linked crises.
- Consider commissioning a Sustainability Framework for the Masterplan to address many of the remaining opportunities for the Masterplan.
- Consider which other opportunities identified above currently match GBC's agenda and could be currently funded.
- Identify funding sources that would enable other opportunities to be progressed.

GBC should consider how they could drive forward this agenda using the opportunities identified in section 3, which can be summarised as:

- Setting a clear and ambitious overarching vision
- Develop a robust, inclusive and representative decision-making process
- Building collaborative relationships to increase your impact
- Understanding the opportunities in your area
- Using your own development opportunities to drive change
- Setting ambitious policy
- Take opportunities to mobilise funding and private sector involvement

The RTPI provide a six step breakdown on planning for the climate process. See Figure 9 below.

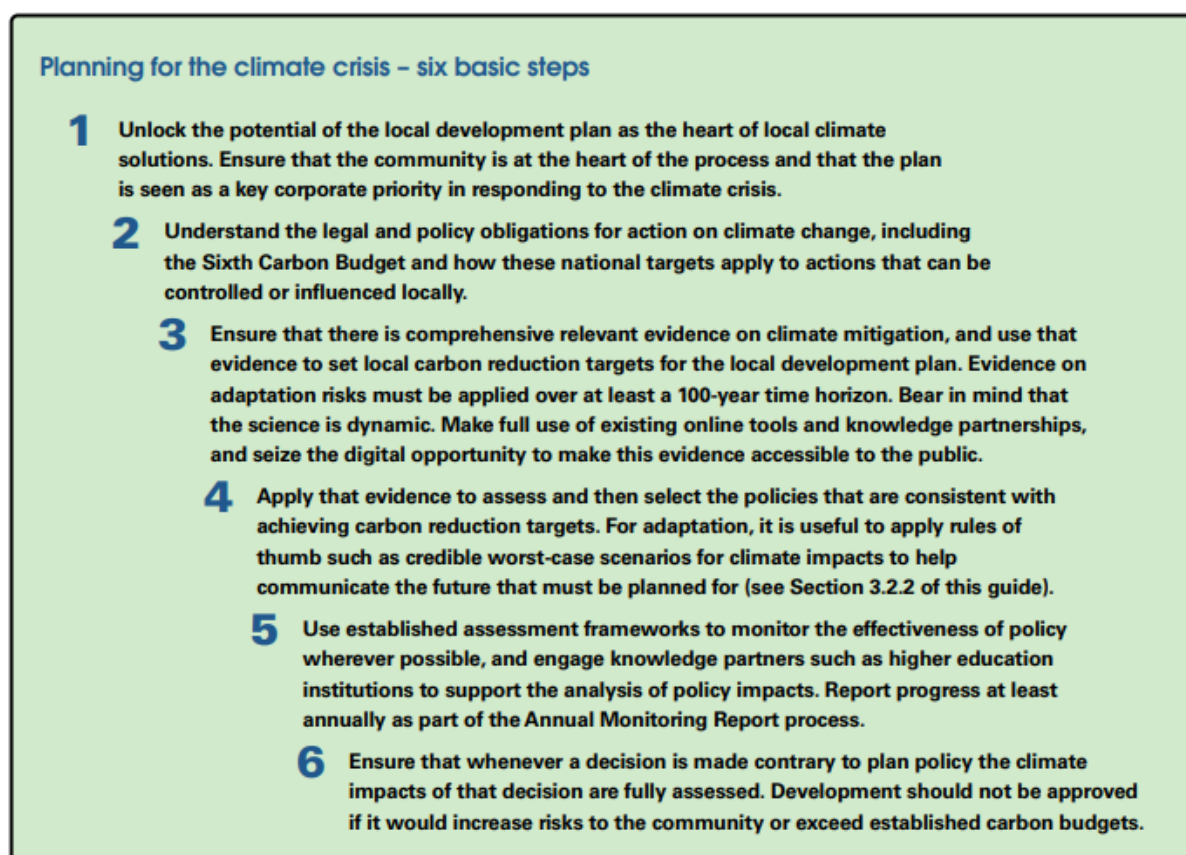


Figure 9 Planning for the Climate Crisis. RTPI 2021¹¹⁸

¹¹⁸ RTPI (2021) Climate Tools For Planners. Available at: https://tcpa.org.uk/wp-content/uploads/2021/11/tcpartpiclimateguide_oct2021_final.pdf

Appendix A Key Guidance

Key theme	Organisation	Document Name	Actions/ Policy advice for LPAs
Overarching frameworks	Ministry of Housing, Communities & Local Government	National Planning Policy Framework (February 2021)	Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure. Plans should help increase the use and supply of renewable and low carbon energy and heat by creating a positive strategy for energy from these sources, identify suitable areas for these sources and identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems. LPAs should support community led initiatives for renewable and low carbon energy.
	Town and County Planning Association	The Climate Crisis A Guide for Local Authorities on Planning for Climate Change (October 2021)	Solutions to address climate change locally include: - Consenting renewable-energy developments and preventing fossil fuel extraction. Renewable and low carbon energy studies to identify the potential for different forms of renewable and low-carbon energy generation within the area. - Determining the location, scale, mix and character of development to ensure that its density, layout, building orientation and landscaping make it resilient to climate impacts. - Encouraging a wide range of behavioural change, such as enabling people to make personal choices through, for example, the creation of green and walkable streets. Considerations: - LA's should set out how the area will be planned in the long term (100 years) to adapt to the opportunities and impacts arising from climate change. - Particularly disadvantaged people and communities should be front and centre of thinking about planning for climate change. - The input of marginalised groups into decisions about climate change policy should be consciously sought - Urban areas will need significant redesign of the wider built environment to withstand rising temperatures. Street tree planting and green infrastructure can help to mitigate the urban heat island effect and can deliver multiple other benefits.
	Local Government Association	Delivering local net zero: How councils could go further and faster (October 2021)	Deliver retrofit programmes for public buildings, local authority owned housing, this includes energy efficiency measures and installing low carbon heat sources. Through transport plans and local plans, local authorities have the powers to design and deliver a vision for local infrastructure that will enable the switch to low carbon journeys. This council-led infrastructure will unlock value by reducing carbon emissions. Councils are integral to the delivery of clean energy projects through the planning system, convening relevant local stakeholders, and offering support and information for local community groups to undertake energy projects.

Key theme	Organisation	Document Name	Actions/ Policy advice for LPAs
	United Nations	Accelerating 2030 Agenda Integration: Aligning National Development Plans with the Sustainable Development Goals (2021)	Policy recommendations: - Harness the opportunities that the SDGs provide in terms of promoting national goal-setting processes an influencing domestic policymaking. - Use the SDGs as a Platform to Advance Sustainable Development in National Policy-Making. - Strengthen National Development Plans by Promoting Approaches Relevant to the SDGs. - Comprehensively Mainstream the SDGs to Position Human, Social, Environmental, Economic, and Institutional Objectives at the Same Level. Ensure Inclusive Participation and Effective Stakeholder Engagement in Implementing NDPs and the 2030 Agenda.
	Building for Life Partnership	Building for Life 12 (2015)	Key questions to frame development (of relevance in an urban environment): - Does the scheme respond to the scale of its surroundings, respect existing view corridors (or create new ones), and reinforce existing connections and make new ones where feasible? - Does the development provide (or is it close to) community facilities, such as shops, schools, workplaces, parks, play areas, pubs or cafes? - Does the scheme have good access to public transport to help reduce car dependency? - Does the development have a mix of housing types and tenures that suit local requirements? - Does the scheme create a place with a locally inspired or otherwise distinctive character? - Does the scheme take advantage of existing topography, landscape features (including water courses), trees and plants, wildlife habitats, existing buildings, site orientation and microclimate? - Are buildings designed and positioned with landscaping to define and enhance streets and spaces and are buildings designed to turn street corners well? - Is the scheme designed to make it easy to understand the links between where people live and how you access the building, as well as how you move through it? - Does the development engage with the street so passers-by will understand the movement between the building and the street, and is there an obvious visual link between inside and outside? - Will the development be likely to support and encourage cycling by providing cycle storage which people can use with confidence? Where parking is provided, is this easy to use? Are accesses to car parking designed not to impact on those not in cars? Are entrances to car parks overengineered, visually obtrusive or obstructive to pedestrians and cyclists? - Is the purpose and use of shared space clear and it is designed to be safe and easily managed? Where semiprivate or private spaces are created, are these clearly demarcated from the public realm? Are outdoor spaces, such as terraces and balconies, large enough for two or more people to sit? Is there opportunity for personalisation of these spaces? Is waste storage well integrated into the design of the development so residents and service vehicle access it easily whilst not having an adverse impact on amenity for residents.
	Democratic Society	Climate Democracy Model	The Model provides four interconnected tools for use at a local, city and regional level to assess and analyse its progress towards climate resilience through democratic means: - Canopy for climate democracy assess the big picture of a city or region's climate resilience under the key headings of diversity of actors and knowledge, participatory culture, resourcing and competencies for climate democracy.

Key theme	Organisation	Document Name	Actions/ Policy advice for LPAs
			- Actor types and interactions requires collaboration between diverse actors. This model helps identify present actors and reveal who is missing. - Competencies model reflects the current competencies in the work programme and helps build this profile. - Landscape Analysis addresses structural barriers to change, such as identifying what is preventing the transition to low-carbon alternatives.
	Association of Directors of Environment, Planning and Transport	Preparing for a Changing Climate: Good Practice Guidance for Local Government (June 2019)	This guidance is aimed at policy makers and includes a number of areas of potential influence, initial adaptation measures, as well as more mature adaption measures alongside some examples and guidance. Under the topic land use planning and the built environment it sets out guidance on planning policy, retrofitting existing buildings stock and flood and coastal erosion risk management
	Homes England	Building for a Healthy Life (2020)	There are three umbrella themes which are then broken down into sub themes. - Integrated Neighbourhoods covers natural connections, walking, cycling and public transport, facilities and services, homes for everyone. - Distinctive places covers making the most of what is there, a memorable character, well defined streets and spaces and easy to find your way around. - Streets for all covers healthy streets, cycle and car parking, green and blue infrastructure, back of pavement, front of home.
	Kate Raworth / Oxfam	A Safe and Just Space for Humanity: Can we live within the doughnut?	The doughnut is formed by the social foundation, an inner boundary, below which are many dimensions of human deprivation. The environmental ceiling forms an outer boundary, beyond which are many dimensions of environmental degradation. Between the two boundaries lies an area, shaped like a doughnut, which represents an environmentally safe and socially just space for humanity to thrive in. It is also the space in which inclusive and sustainable economic development takes place. The social foundation is based upon food security, income, water and sanitation, health care, education, energy, gender equality, social equity, voice, jobs, resilience. The environmental ceiling includes climate change, rate of biodiversity loss, nitrogen cycle, phosphorus cycle, stratospheric ozone depletion, ocean acidification, global freshwater use, change in land use, atmospheric aerosol loading and chemical pollution. This concept can be drilled down to city level analysis using the matrix set out below.

Key theme	Organisation	Document Name	Actions/ Policy advice for LPAs
SOCIAL ECOLOGICAL LOCAL What would it mean for the people of this city to thrive? GLOBAL What would it mean for this city to respect the wellbeing of people worldwide?			
		The report of the Building Better, Building Beautiful Commission	Living with Beauty This report proposes a new development and planning framework, which will ask for beauty, refuse ugliness and promote stewardship. Policy proposition 24 encourages the recycling of buildings, through an adaptability test embedded in the planning permission process. Policy proposition 29 strives to clean urban air. Measures include re-greening, supporting National Car Free Day. Provide a denser network of air quality sensors with live monitoring, expanding cycle networks, car-pools and station e-bike hire, supporting more walking and pedestrianisation, imposing tougher emissions restrictions on cars and encouraging the restriction of lorries or highly polluting vehicles from towns and cities particularly at peak hours. Policy proposition 30 aims to increase access to greenery and 31 strives to plant two million new street trees. Policy proposition 32 is to plant urban orchards with one fruit tree per house and 33 is to regreen streets and squares.
Carbon Mitigation	C40 Cities	Climate Action Planning Programme (May 2018)	This provides guidance on the essential components of a climate action plan: - Commitment and collaboration, this focuses on the governance and coordination of the plan including the need for community and business engagement. - Challenges and opportunities, considers the evidence base and existing city conditions (baseline emissions, 2050 emissions trajectory, climate risk and socioeconomic priorities) - Acceleration and implementation, drives the transformational action, including development and prioritisation of actions and processes for monitoring, evaluation, reporting and revision.
	LETI	Climate Emergency Design Guide (January 2020)	This guidance sets out targets; - New small and medium scale housing should have reduced energy consumption to 35 kWh/m²yr and reduced space heating demand to 15 kWh/m²yr, while embodied carbon should be reduced by 40% or to less than 500 kgCO₂/m². - Commercial offices should have reduced energy consumption to 55 kWh/m²yr and reduced space heating demand to 15 kWh/m²yr, while embodied carbon should be reduced by 40% or to less than 600 kgCO₂/m².

Key theme	Organisation	Document Name	Actions/ Policy advice for LPAs
			- Schools should have reduced energy consumption to 65 kWh/m²yr and reduced space heating demand to 15 kWh/m²yr, while embodied carbon should be reduced by 40% or to less than 600 kgCO₂/m². To reduce operational energy, proposals should design for and achieve the energy-use intensity targets, the space heating demand and maximise renewable energy on site. It suggests that policymakers should: - Request disclosure of key building performance metrics prior to planning approval. Evaluate performance against LETI archetypes and request clarification where targets are not being met. - Establish expertise within planning departments that are capable of assessing adherence to the key performance metrics. - Establish requirements (such as Supplementary Planning Guidance) that directly cite the recommendations set out in this document. - Apply equal or greater weighting to building operational performance than to aesthetic considerations in the overall context of the design, pre-application and determination process. Key performance indicators for embodied carbon include meeting the upfront embodied carbon emissions targets for building elements, as well as the emissions to be verified post-construction. It suggests that policymakers should: - Adopt a policy hierarchy that advocates circular economy principles: reuse and refurbishment in preference to demolition and new construction. - Adopt a policy that mandates embodied carbon reduction strategies based on embodied carbon and whole life-cycle carbon analysis on all projects. - Adopt embodied carbon targets. - Recognise a consistent methodology and dataset for embodied and whole life-cycle carbon analysis. - Phasing in the mandatory requirement of EPDs for at least all building parts forming substructure, frame and upper floors. The future of heat will need to be fossil fuel free; the carbon content of heat should be reported in use, peak heat loss and dead legs of hot water pipework should be limited. It suggests that policymakers should: - Set locally specific overall performance criteria and avoid being prescriptive about system type. - Require the same building fabric energy standards for all buildings in anticipation of potential future change of use. This reflects continued convergence between workplace and residential small power, lighting and occupancy levels. - Prescribe the capture of waste heat (e.g. air conditioning heat rejection) to make it available to other buildings (e.g. for difficult-to-upgrade existing stock) via heat sharing (ambient loop) networks. - Prepare example planning submissions for a selection of building types demonstrating net zero carbon solutions. - Ensure all district heating networks have roadmap to 2030 zero carbon in place.
	West Oxfordshire District Council Cotswold District Council Forest of District Council	Net Zero Carbon toolkit (Oct 2021)	This guide was prepared with funding from the Local Government Housing Advisors Programme and provides guidance to local authorities, developers, contractors and their design teams on the practical measures required to deliver net zero homes. It is aimed at small to medium scale housing. It covers both new build and retrofit, setting out the targets and standards that design teams should be aiming for and the practical approaches to meeting those targets. It addresses the key aspects of designing to meet net zero carbon: including: reducing embodied carbon, energy efficiency measures to reduce operational energy, low carbon heating and renewable energy generation.

Key theme	Organisation	Document Name	Actions/ Policy advice for LPAs
Climate Resilience	Centre for Sustainable Energy	Local Area Energy Planning (July 2020)	This provides detailed guidance on a best practice approach to undertaking local area wide energy planning studies to identify effective strategies for decarbonising an area's energy systems in a cost-effective resilient way that is supported by all relevant stakeholders required to deliver the change. To engage in successful energy planning, there needs to be technical analysis including modelling approaches and scope, as well as an understanding of the wider aspects of system change that will determine success, engage stakeholders to improve understanding, shape outcomes and build commitment to act. There is also a need to plan for deliverability and ongoing governance.
	UKGBC	Net Zero Carbon Buildings: A Framework Definition (April 2019)	The framework identifies a series of policy options that local policy could influence, which are: - Modelling of whole life-cycle carbon impacts for new developments - Extension of Local Plan 'zero carbon' requirements to cover whole life-cycle carbon, including offsetting of these impacts - Carbon and energy performance beyond Building Regulations - Monitoring and reporting energy performance of new developments for first years of operation - Minimum percentage of renewable energy on-site (Merton Rule) - Off-site renewable energy solutions as a route to achieving zero carbon where on-site generation is not feasible - Consistent national framework for local offset funds to improve consistency and transparency New developments to be 'zero carbon' or 'net zero' and offset funds
	CIBSE	Heat Networks: Code of Practice for the UK (2020)	This provides best practice guidance on the design and implementation of district heating networks. This guidance notes that local government has a responsibility to promote the strategic vision and develops supporting policies, especially in relation to planning to enable local connections. Local government may also be able to overcome land ownership issues where multiple owners would hinder the development of a single network.
	Anthesis Group	SCATTER Tool	SCATTER stands for Setting, City, Area, Targets and Trajectories for Emissions Reduction The SCATTER tool: • Generates a greenhouse gas emissions inventory following the Global Protocol for City-wide Greenhouse Gas emissions for the local authority area; • Helps the understanding and development of a credible decarbonisation pathway in line with emissions reduction targets; and Provides outputs that can be used for engagement to create a collaborative carbon reduction approach for local authorities.
	Association of Directors of Environment, Planning and Transport	Strategic Flood Risk Assessments: A Good Practice Guide (November 2021)	This guide supports existing Environment Agency guidance 'how to prepare a strategic flood risk assessment' and government guidance on how to apply the sequential test and exception test. Best practice includes: - Collaborative working (between risk management authorities, between LPA teams, with other LPAs) - Considering flood risk at a strategic scale - Putting in appropriate governance in place for implementing the SFRA - Comprehensive scoping of the SFRA - Taking account of specific local flooding characteristics - Making SFRAs accessible and easy to be updated - Assessing surface water flood risk

Key theme	Organisation	Document Name	Actions/ Policy advice for LPAs
Biodiversity			- Assessing ground water flood risk - Assessing flood risk from artificial sources - Applying the sequential approach based on all sources of flooding - Assessing and managing the cumulative impact of development on flood risk - Assessing and managing the impact of climate change on flood risk - Identifying and using measures to reduce the risk of flooding - Guidance on requirements for windfall sites - Safely managing residual risk Using the SFRA to inform plans and strategies
	Good Homes Alliance	Overheating in New Homes (July 2019)	This guidance provides policy makers with a high-level tool that can be used to minimise the risk of overheating based on a number of factors including geographical and local context, site characteristics, scheme characteristics and dwelling design and solar heat gains and ventilation.
	Connecting Nature	Connecting Nature Framework Guidebook	The framework sets out seven separate elements that cities and other entities need to consider when shaping their individual nature-based solution: - Technical solutions, - Governance, - Impact assessment, - Finance, - Entrepreneurship, - Co-production; and - Reflexive monitoring
	Natural England	National Biodiversity Climate Change Vulnerability Model	The National Biodiversity Climate Change Vulnerability Model (NBCCVM) aims to provide: • a spatially explicit assessment of the relative vulnerability of priority habitats, based on established climate change adaptation principles; • a suite of map-based GIS outputs at a variety of scales, which can be used (in conjunction with other relevant spatial data) to target action to build biodiversity resilience; and • a flexible, GIS based, decision support tool that allows the user to incorporate locally specific datasets and select how adaptation principles are combined to reflect local circumstances and priorities.
	Building with Nature	Standards Framework (BwN 2.0)	The guidance sets out 12 standards that should be considered in policy making and review: - Optimises Multifunctionality and Connectivity; - Positively responds to the Climate Emergency; - Maximises Environmental Net Gains; - Champions a Context Driven Approach; - Creates Distinctive Places; - Secures Effective Place-keeping; - Brings Nature Closer to People; - Supports Equitable and Inclusive Places; - Delivers Climate Resilient Water Management;

Key theme	Organisation	Document Name	Actions/ Policy advice for LPAs
			- Brings Water Closer to People; - Delivers Wildlife Enhancement; and - Underpins Nature's Recovery.
Health	NHS	Putting Health into Place, Principles 4-8. Design, Deliver and Manage. (September 2019)	This guidance outlines how LPAs can design, deliver and manage health through effective planning. It comprises of five principals: - Create compact neighbourhoods aims to create compact and connected places, design places and services to maximise use and impact, practice inclusive design and design multifunctional green spaces; - Maximise active travel aims to embed travel from the earliest stages of planning and design active travel to meet local needs; - Inspire and enable healthy eating aims to develop a joint commitment to plan for and enable healthier eating, provide access to affordable healthy food and food growing and provide opportunities to learn about healthier eating and cooking; - Foster health in homes and buildings aims to create buildings of all types that support and facilitate good health. Provide suitable homes that are healthy and efficient, create workplaces that stimulate productivity, efficiency and resilience, provide educational settings that support growth and development and set up community hubs that support health and social outcomes; and - Enable healthy play and leisure aims to enable community activities and events and create play and leisure spaces for everyone.

Appendix B Policy Best Practice Examples

Theme	Category	Local Authority Action	Published or Emerging document	Reference	Link
Climate Mitigation					
1.1	Certification Standard	All major non-residential developments or conversions to residential are required to meet the most up to date BREEAM 'Excellent' standards, where possible; [this requires minimum standards for reduction of energy use and carbon emissions as well as water consumptions and other issues]. All minor non-residential developments or conversions to residential are required to meet the most up to date BREEAM 'Very Good' standard as a minimum.	Published	Reading Borough Council Local Plan	https://images.reading.gov.uk/2019/12/Local_Plan_Adopted_November_2019.pdf
1.2	Strategic Carbon planning	The borough to become carbon neutral by 2030.	Emerging	Appendix 1- Basingstoke Spatial Policy Proformas (June 2022)	https://democracy.basingstoke.gov.uk/documents/s28422/Appendix%201.pdf
1.3	Certification standard	All other development that is above 500 sq.m of floorspace measured externally (including extensions and conversions to existing buildings) must achieve BREEAM 'excellent' (or equivalent) or BREEAM 'very good' plus 'Passivhaus' certification including a 15% improvement in predicted carbon emissions, compared with the building regulations current at the time, through low or zero carbon energy generation on site or in a Borough location agreed by the Council.	Published	Eastleigh Borough Local Plan 2022	https://www.eastleigh.gov.uk/media/11234/eastleigh-borough-local-plan.pdf
1.4	Offsetting	Greater Manchester offset Carbon Price should be greater than HM Treasury Green Book to meet 2038 commitment	Emerging	The Greater Manchester Spatial Framework Evidence Base	PowerPoint Presentation (greatermanchester-ca.gov.uk)
1.5	Energy planning and offsetting	All proposals should embed the Energy Hierarchy within the design of buildings by prioritising fabric first, orientation and landscaping in order to minimise energy demand for heating, lighting and cooling. All proposals should consider opportunities to provide solar PV and energy storage. 2a New Development – Major Non-Residential Development proposals for major (a floor space of over 1,000m²) non-residential development should demonstrate how they achieve BREEAM 'Excellent'. 2b - New Development – Residential Residential development proposals will be required to achieve Net Zero Carbon and submit an 'Energy and Carbon Statement' that demonstrates how the proposal will achieve: • Space heating demand less than 30kWh/m²/annum; • Total energy consumption less than 40kWh/m²/annum; and • On-site renewable generation to match the total energy consumption, with a preference for roof-mounted solar PV. 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 as much as possible; and/or connection to an existing or proposed district energy network; or where this is not possible the residual is offset by a contribution to Cornwall Council's Offset Fund. Leeds: Adopt a fabric first approach by developing all new build housing to certified Passivhaus standards: • Primary energy demand less than 135 kWh/m²/annum • Primary energy renewable less than 60 kWh/m²/annum • Space heating demand less than 15 kWh/m²/annum • Primary cooling demand less than 15 kWh/m²/annum • Specific cooling load less than 10 kWh/m²	Emerging And Adopted	Cornwall's Climate Emergency Development Plan Document And City of York Council Housing Delivery Programme: Design Manual	SD01 Climate Emergency Draft Master with Edits (cornwall.gov.uk) Housing Delivery Programme - Design Manual (york.gov.uk)

Adaption and Resilience

21	Flood risk	Cornwall: Development proposals shall be designed to reduce flood risk to the application site and its surroundings. Proposals should: 1. Use the latest Flood Risk maps approved by the Environment Agency or LPA, including predictions for climate change; 2. Use the latest surface water flood risk map approved by the Environment Agency or LPA to identify and constitute existing flow exceedance routes and demonstrate how these routes are diverted and maintained as part of their Flood Risk Assessments; and 3. Be informed by an assessment of and respond to existing and proposed ground conditions, groundwater conditions and provision of natural flood management features; and 4. Demonstrate how the design of buildings and the surrounding environment (including pavements, highways, parking areas, driveways, gardens, public green spaces, planting and drainage) has been planned to be resilient to the ongoing and predicted impacts of climate change, including the design of road surfaces and drainage systems to cope with more frequent episodes of extreme heat and rain. 5. Proposals for more than 50 dwellings or non-residential structures of 1000 square metres within a Critical Drainage Area should demonstrate Natural Flood Management measures such as land management, tree planting, hedge restoration etc or exceptionally make provision for them offsite. Proposals should reduce potential overheating by following the cooling hierarchy: • Passive Design: Minimise internal heat generation through energy efficient design and reduction of the amount of heat entering the building in the summer and shoulder months through consideration of orientation, overhangs and shading, albedo, fenestration, insulation and green roofs. Where heat is to be managed within the building through exposed internal mass and high ceilings, provision must be made for secure night-time ventilation to enable night purge to take place; • Passive/natural cooling: use of outside air, where possible pre-cooled by soft landscaping, a green roof or by passing it underground to ventilate and cool a building without the use of a powered system. This includes maximising cross ventilation, passive stack and wind-driven ventilation and enabling night purge ventilation. Single aspect dwellings should be avoided for all schemes as effective passive ventilation can be difficult or impossible to achieve. Windows and/or ventilation panels should be designed to allow effective and secure ventilation. • Mixed mode cooling: with local mechanical ventilation/cooling provided where required to supplement the above measures using (in order of preference): i. low energy mechanical cooling (e.g. fan powered ventilation with/without evaporative cooling or ground coupled cooling); ii. air conditioning – not a preferred approach as these systems are energy intensive;	Emerging	Cornwall's Climate Emergency Development Plan Document	SD01 Climate Emergency Draft Master with Edits (cornwall.gov.uk)
22	Overheating	• Full building mechanical ventilation/cooling system, ensuring the lowest carbon/energy options and are only considered after all other elements of the hierarchy have been utilised. All buildings should be designed and built to meet CIBSE's latest overheating standards and give consideration to the impact of future climate scenarios. Overheating calculations should make realistic assumptions regarding window opening, particularly for units where restricted opening will be required (e.g. ground floor units). Contractors must ensure that insulation of communal heating pipework and all other primary heating pipework takes place to minimise unwanted internal heat gains; Where Mechanical Ventilation with Heat Recovery (MVHR) is to be used, the system specified and installed must include a summer bypass mode. Installation must be carried out by an approved installer (e.g. BPEC approved). Evidence of Compliance: Design reports should include a section on climate change adaptation setting out the approach to 'designing out' the risks presented from our changing climate. Any specific measures to prevent overheating, including overhangs, external shading and specific ventilation systems (e.g. wind cowls to assist stack ventilation) should be clearly shown on all drawings and information on specification and maintenance requirements provided.	Adopted	Greater Cambridge Sustainable Design and Construction Supplementary Planning Document	greater-cambridge-sustainable-design-and-construction-spd.pdf

23	Overheating	Major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy: 1) reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure 2) minimise internal heat generation through energy efficient design 3) manage the heat within the building through exposed internal thermal mass and high ceilings 4) provide passive ventilation 5) provide mechanical ventilation 6) provide active cooling systems. The GLA's Energy Assessment Guidance states that developers should undertake dynamic overheating modelling in line with the guidance and data sets in CIBSE TM69 and TM49 respectively for residential developments, and TM62 for non-residential developments taking into account the associated Approved Document O requirements. 1. CIBSE's Design Methodology for the Assessment of Overheating Risk in Homes (TM69: 2017) aims to provide a standardised approach to predicting overheating risk for residential building designs (new build or major refurbishment) using dynamic thermal analysis. 2. Approved Document O of the Building Regulations applies limits on the choices available when undertaking CIBSE TM69 assessments. Applicants should follow all limits as set out in the Approved Document O. 3. CIBSE guide TM62, entitled 'The Limits of Thermal Comfort: Avoiding Overheating in European Buildings', contains guidance on the limits of thermal comfort. The TM provides guidance on predicting overheating in buildings. It is intended to inform designers, developers and others responsible for defining the indoor environment in buildings and should be considered when carrying out dynamic thermal modelling.	Adopted	London Plan 2021 and The GLA's Energy Assessment Guidance 2022	The london plan 2021.pdf https://www.london.gov.uk/sites/default/files/gla_energy_assessment_guidance_june_2022_0.pdf
Resource Efficiency					
3.1	Waste and recycling strategy	Development proposals should provide waste and recycling facilities in accordance with the Council's Solid Waste Storage/Collection Guidance (2019) or subsequent updates which: a) Can be easily accessed and moved by occupiers and local authority/private waste collectors; b) Do not result in any adverse impact to residential or work place amenities through their siting or design; and c) Would not result in obstruction to pedestrian, cyclists or driver sight lines. (2) New development should contribute to reducing the amount of waste generated through the following measures where possible: a) Re-using materials wherever possible as part of construction (see Preferred Policy Option 13); b) Enable the sorting of waste and recycling on-site taking into account impact on residential amenities and the environment; c) Using pre-cast/pre-fabricated materials and modular construction; d) Allocating appropriate refuse and recycling storage facilities for domestic kerbside collection, composting facilities and commercial waste recycling facilities; and e) Applying a Site Waste Management Plan for relevant projects.	Emerging	Three Rivers Local Plan Regulation 18	Local Plan (threerivers.gov.uk)
3.2	Circular Economy	Referable applications should promote circular economy outcomes and aim to be net zero waste. A Circular Economy Statement should be submitted, to demonstrate: 1) how all materials arising from demolition and remediation works will be re-used and/or recycled 2) how the proposal's design and construction will reduce material demands and enable building materials, components and products to be disassembled and re-used at the end of their useful life 3) opportunities for managing as much waste as possible on site 4) adequate and easily accessible storage space and collection systems to support recycling and re-use 5) how much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy 6) how performance will be monitored and reported	Adopted	London Plan 2021	The london plan 2021.pdf
Biodiversity					
4.1	BNG	Development at Salt Cross will be required to demonstrate an overall biodiversity net gain of 25%. This will be measured using the DEFRA Biodiversity Metric Version 2.0 (or subsequent updated versions). The main focus of this biodiversity net gain approach will be the garden village site itself through on-site mitigation and enhancement and then off-site enhancements will be sought to make up the total number of biodiversity units required to deliver the full 25%.	Emerging	Salt Cross Garden Village Area Action Plan Draft	https://www.westoxon.gov.uk/media/socjcl/salt-cross-aap-pre-submission-august-2020.pdf
4.2	UGF	Major development to meet a minimum Urban Greening Factor (UGF) of 0.3.	Emerging	City of London Proposed Local Plan	City Plan 2036 March 2021 (cityoflondon.gov.uk)
4.3	Biodiversity	1) Development should result in a net gain of biodiversity value. 2) The weight given to the protection of sites will be commensurate with their position in the hierarchy: · International · National · Regional · Local	Emerging	Three Rivers Local Plan Regulation 18	Local Plan (threerivers.gov.uk)

3) Development that would affect a Site of Special Scientific Interest, Local Nature Reserve, Local Wildlife Site or protected species under UK or European law, or identified as being in need of conservation by the UK Post-2010 Biodiversity Framework or the Hertfordshire Biodiversity Action Plan, will not be permitted where there is an adverse impact on the ecological, geological or biodiversity interests of the site, unless it can be demonstrated that:

- a) The need for the development would outweigh the need to safeguard the biodiversity of the site;
- b) Alternative wildlife habitat provision can be made in order to maintain local biodiversity; and
- c) Adverse effects can be satisfactorily minimised through mitigation and compensation measures to maintain the level of biodiversity in the area.

4) The following areas have been highlighted as key areas for biodiversity within the Hertfordshire Biodiversity Action Plan: · Mid Colne Valley · Whippendell Woods and Surrounds · River Chess Valley

5) In the first instance development should seek to avoid impacts on designated sites and important habitats/species through sensitive design and consideration of alternatives. Proposals should seek to incorporate measures for biodiversity enhancement and Green Infrastructure delivery wherever possible.

6) All development must conserve, enhance and, where appropriate, restore biodiversity through:

- a) Protecting habitats and species identified for retention
- b) Providing compensation for the loss of any habitats (as a last resort)
- c) Providing for the management of habitats and species
- d) Maintaining the integrity of important networks of natural habitats, and
- e) Enhancing existing habitats and networks of habitats and providing roosting, nesting and feeding opportunities for rare and protected species.

7) Linked habitats are important in allowing species to adapt and respond to circumstances. Development must not result in fragmentation or isolation of wildlife habitats and should seek opportunities for habitat connectivity with the wider landscape.

8) When granting permission for any proposals that include measures to improve biodiversity, the Council will impose conditions or seek planning obligations that secure the delivery of biodiversity gain in perpetuity.

Health

5.1	Air quality	Development Plans, through relevant strategic, site-specific and area-based policies, should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality. To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed: 1) Development proposals should not: a) lead to further deterioration of existing poor air quality b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits c) create unacceptable risk of high levels of exposure to poor air quality. 2) In order to meet the requirements in Part 1, as a minimum: a) development proposals must be at least Air Quality Neutral b) development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures c) major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1. d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure. Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. To achieve this a statement should be submitted demonstrating:	Adopted	London Plan 2021	The london plan 2021.pdf
5.2	Active transport	All development shall be designed to maximise the impact it can make to promoting healthy communities and reducing health inequalities. In particular, regard shall be had to providing the necessary infrastructure to encourage physical exercise and health, including accessible open space, vegetation and landscaping, sport and recreation facilities, cultural facilities and safe, well promoted, walking and cycling routes.	Emerging	Three Rivers Local Plan Regulation 18	Local Plan (threerivers.gov.uk)
5.3	Transport	Charge for current Working Parking Levy licensing period is £428. A Workplace Parking Levy is a charge on employers who provide workplace parking, a type of congestion charging scheme that has been introduced in Nottingham.	Adopted	Nottingham City Council	https://www.nottinghamcity.gov.uk/information-for-residents/transport-parking-and-streets/parking-and-permits/workplace-parking-levy/

