**Waverley Borough Council**

# Climate Change and Sustainability Supplementary Planning Document

**Draft final report**
Prepared by LUC
March 2022

**Waverley Borough Council**

# Climate Change and Sustainability
## Supplementary Planning Document

| Version | Status | Prepared | Checked | Approved | Date |
|---|---|---|---|---|---|
| 1. | Draft Report | K Kaczor<br>G Low<br>C Peachey | C Peachey | P Smith | 01.03.2022 |
| 2. | Draft Final Report | K Kaczor | C Peachey | P Smith | 10.03.2022 |

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# Chapter 1
# Introduction

## Background

**1.1** Climate change is leading to more extreme weather events such as heat waves, flooding, wildfires and droughts. In 2019, Waverley Borough Council (WBC) declared a climate emergency, committing the Council to becoming carbon neutral by 2030 as well as doing everything in its power to ensure that Waverley is a carbon neutral Borough by 2030.

**1.2** WBC's Climate Change and Sustainability Strategy (2020) stated our intention to use legislation, Local Plans and Supplementary Planning Documents to ensure developments are sustainable, energy efficient, use renewable energy and Passivhaus standards where possible.

**1.3** In relation to WBC's own actions, the document includes the following aims:

- Implement Waverley's Carbon Neutrality Action Plan 2020-2030.
- Promote reduction and re-use as well as recycling to achieve Borough's targets on household waste and recycling.
- Promote pedestrian-friendly and cycle-friendly transport network.
- Take action on air quality issues, especially those caused by vehicle emissions, and encourage zero-carbon buses and taxis.
- Work with partners to ensure the environmental stewardship of open spaces are of the highest quality including the promotion of biodiversity, rewilding, and the phasing out of pesticide use other than in exceptional and defined circumstances.
- Making WBC a zero-carbon organisation, including the offices and other assets, by working with staff and partners to implement carbon reduction schemes and other projects.

### Purpose of this SPD

**1.4** This SPD is part of the Council's response to the climate emergency. It supports the current Waverley Borough Local Plan Part 1, which sets out strategic policies relating to land use and development proposals for strategic allocated sites.

**1.5** This SPD is a material consideration in the determination of planning applications. However, it also provides useful guidance for development permitted under a General Permitted Development Order, such as residential extensions.

**1.6** The Local Plan policies most relevant to climate change and sustainability are:

- **ST1: Sustainable Transport**, which sets out a number of criteria including requirements to ensure that opportunities for sustainable transport modes are exploited and that the necessary transport infrastructure is delivered.

- **CC1: Climate Change**, which sets out requirements for development in order to move to a low carbon future and promotes development that seeks to mitigate and adapt to climate change through renewable and low carbon energy supply, ensuring flood storage capacity, ensuring resilience to climate risks, provides green infrastructure, SUDs and habitat networks.
- **CC2: Sustainable Construction and Design**, which sets out requirements for development to contribute to reducing Greenhouse Gas (GHG) emissions by ensuring minimising energy, waste, and water use, taking advantage of natural lighting and ventilation, encouraging active travel, providing higher housing density, and enhancing biodiversity.
- **CC3: Renewable Energy Development**, which sets out requirements for new renewable energy developments to ensure that they avoid any potential negative impacts on landscape, wildlife, heritage assets and amenity.

**1.7** The SPD provides guidance on the implementation of these policies. It is structured around six key topics that relate to policies **ST1**, **CC1**, **CC2**, and **CC3**, which are as follows:

1. Minimising energy use in new developments
2. Sustainable site layout, landscaping, layout, and orientation of buildings
3. Climate change resilience and adaptation
4. Use of sustainable resources and materials and sustainable management of waste
5. Water efficiency
6. Design to encourage use of sustainable forms of transport

**1.8** The purposes of this SPD are to:

- Provide guidance on how to apply policies and what the applicants are required to deliver.
- Clarify what information should be provided with planning applications.
- Demonstrate what is possible and appropriate for developments in Waverley.
- Provide best practice / exemplar developments.
- Provide links to latest guidance and codes of practice.

### Requirements Introduced by this SPD

This SPD introduces a requirement for policy CC1, CC2, CC3 and ST1 and the SPD itself to be considered at the earliest stage of the development process.

Applicants should demonstrate this by:

- Ensuring requests for pre-application advice, provide a summary of how this SPD and the corresponding policies have been considered.
- Submitting a completed Climate Change and Sustainability checklist as part of planning applications.
- Demonstrating in the checklist that a number of different measures have been considered that result in energy use reductions and enhancing climate resilience and why chosen measures have been selected or reasons why they have not been taken up.

## Building Regulations

**1.9** The 2025 Future Homes Standard will introduce Building Regulations which ensure that an average home will produce at least 75% lower $CO_2$ emissions than one built to current energy efficiency requirements. Homes built under the Future Homes Standard will also be 'zero carbon ready', which means that in the longer term, no further retrofit work for energy efficiency will be necessary to enable them to become zero-carbon homes as the electricity grid continues to decarbonise.

**1.10** Applicants should be aware that an interim uplift to Building Regulations is expected to come into force in June 2022. This will apply to developments (including householder applications) where an initial notice, or full plans for building work are submitted to a local authority after 15 June 2022. The Government published new Approved Documents for the interim changes in December 2021[1].

[1] UK Government (n.d.) Building Regulations and Approved Documents. [online] Available at: https://www.gov.uk/government/collections/approved-documents

## Biodiversity Net Gain

**1.11** Biodiversity net gain delivers measurable improvements for biodiversity by creating or enhancing habitats in association with development. Biodiversity net gain can be achieved on-site, off-site or through a combination of on-site and off-site measures.

**1.12** In July 2018, the revised National Planning Policy Framework strengthened planning policy on biodiversity net gain by making it clearer that all development in scope should deliver biodiversity net gains.

**1.13** Section 98 of the Environment Act applies a new general condition to all planning permissions granted in England, subject to exceptions. This condition requires that a biodiversity net gain plan must be submitted and approved before development may lawfully commence.

**1.14** Applicants should be aware that biodiversity net gain is expected to become mandatory in 2023 following publication of detailed BNG Regulations.

## The Waverley context

### Natural environment

**1.15** Located within Surrey in the southeast of England, Waverley Borough is predominantly rural and 61% lies within the Metropolitan Green Belt. Additionally, 31% of the Borough is designated as Countryside Beyond the Green Belt, and 77% as an Area of Outstanding Natural Beauty (AONB) and/or Areas of Great Landscape Value (AGLV)[2].

**1.16** The Borough contains all or part of 15 Sites of Special Scientific Interest (SSSIs) and there are three Special Protected Areas (SPAs) designated under the European Birds Directive as being of importance for their populations of the woodlark, nightjar, and Dartford warbler[3]. Woodlands cover about 32% of the Borough's total area, and 12% of that woodland is classified as ancient woodland[4].

### Transport

**1.17** There are good north-south road connections in Waverley, but relatively poor ones between the east and the west of the Borough.

**1.18** Similarly, there are no east-west railway links within the Borough. The north-south railway services are heavily used and there are already concerns about their future capacity.

**1.19** Bus services are relatively frequent within urban areas, however there are limited services within rural areas, especially at evenings and weekends. Limited bus services are having an impact on accessibility for residents and is one of the key factors determining high levels of car dependence in the area[5]. Recently, bus services in Surrey have been significantly reduced due to driver shortages, which further exacerbates the issue[6].

**1.20** Transport is the key source of carbon emissions in Waverley and is also contributing to poor air quality in some areas. Farnham and Godalming have Air Quality Management Areas, mainly as a result of traffic[7]. 64% of Surrey's population in employment uses a private vehicle for work commute. In Waverley, the proportion is slightly higher, as 65.1% of workforce travels using a private car to get to work, which is also higher than the national average of 63.4%. Only 13.2% of the work commuters use public transport, which is above the regional average of 12.1% and below the national average of 16.9%. Walking and cycling have a very limited uptake and account for only 0.7% of the total workforce commute[8].

### Housing

**1.21** Waverley is an affluent area with high house prices, high incomes, households with more than two cars, and a relatively high proportion of children who attend private schools. However, there are areas of relative deprivation and a need for genuinely affordable housing and an accelerated build programme for extant permissions[9].

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[2] Waverley Borough Council (2018) Waverley Borough Local Plan Part 1: Strategic Policies and Sites. [online] Available at: https://www.waverley.gov.uk/Portals/0/Documents/services/planning-and-building/planning-strategies-and-policies/local-plan/LPP1_July_2019_web.pdf?ver=M4C0VK_SH7V54tLWEaTftA%3d%3d
[3] Ibid.
[4] Ibid.
[5] Ibid.
[6] SurreyLive (2021) Shortage of bus drivers 'worse than previously thought'. [online] Available at: https://www.getsurrey.co.uk/news/uk-world-news/shortage-bus-drivers-worse-previously-22303616
[7] Ibid.
[8] Surrey-I (2011) Method of travel to work. [online] Available at: https://www.surreyi.gov.uk/2011-census/method-of-travel-to-work/
[9] Waverley Borough Council (2018) Waverley Borough Local Plan Part 1: Strategic Policies and Sites. [online] Available at: https://www.waverley.gov.uk/Portals/0/Documents/services/planning-and-building/planning-strategies-and-policies/local-

## Climate Change

**1.22** The Met Office UK Climate Projections 2018 study (UKCP18) provide up-to-date information on how the UK's climate is expected by the end of this century. In the highest emissions scenario (Representative Concentration Pathways (RCP8.5)), summer temperatures in the UK could be 5.4°C warmer by 2070 than the average summer temperature between 1981 and 2000. Average summer rainfall would, however, fall by 47% in this scenario. Winters could be up to 4.2°C warmer, with up to 35% more rainfall. The greatest warming in the UK is likely to be experienced in the South East England where summer temperatures may increase by another 3 to 4°C relative to the present day[10] and which is already recognised as being an area of water stress[11].

**1.23** Changes to the climate will bring new challenges to the Borough's built and natural environments. Hotter, drier summers may have adverse health impacts and further worsen adverse environmental effects of air and water pollution. A changing climate may place pressure on some native species and create more suitable conditions for new species, including invasive non-native species.

**1.24** Climate change presents a global risk, with a range of different impacts that are likely to be felt within Waverley. The 2018 Intergovernmental Panel on Climate Change (IPCC) report[12] identified a reduced timeframe to act to ensure limiting world temperature rises to 1.5℃ before 2050 in line with the Paris Agreement.

**1.25** The Tyndall Centre calculated the 'fair contribution' of WBC towards the Paris Agreement, and it recommended the following:

- The Borough should stay within the recommended carbon budget of 3.6 $MtCO_2$ by achieving mitigation rates of $CO_2$ from energy of around -13.4% per year and reach net zero no later than 2041.
- The Borough should seriously consider strategies for significantly limiting emissions growth from aviation.
- Waverley should promote the deployment of low carbon electricity generation within the region and where possible influence national policy on this issue.
- The Land Use, Land Use Change and Forestry (LULUCF) sector should be managed to ensure $CO_2$ sequestration where possible. The management of LULUCF could also include action to increase wider societal and environmental benefits[13].

**1.26** Across the county, transport has consistently accounted for majority of emissions. In Waverley up until 2015 domestic heating has been responsible for most emissions. With improved energy efficiency in buildings, this figure has gradually decreased, and from 2015 transport has been the key source of emissions. Due to the improvements in energy efficiency in buildings, GHG emissions in Waverley have decreased from 753 kt of $CO_2$in 2005 to 502.5 kt $CO_2$ in 2019. Tree coverage across the Borough is relatively high and accounts for 33% of land use, however, it offers limited potential to further reduce emissions[14]. Surrey County Council is currently preparing the Local Transport Plan 4 (LTP4) which will aim to reduce carbon emissions currently generated by transport in the county[15].

## Flood risk

**1.27** Waverley features a large number of "ordinary watercourses"[16], which make some areas at risk from flooding.

**1.28** Lying within the River Wey catchment, parts of the Borough are within Flood Zone 1, but most of the Borough is

plan/LPP1_July_2019_web.pdf?ver=M4C0VK_SH7V54tLWEaTftA%3d%3d

[10] Met Office (2018) UKCP18 Factsheet: Derived projections [Online] Available at: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-fact-sheet-derived-projections.pdf

[11] ATKINS (2020) Sustainability Appraisal of Waverley Borough Local Plan Part 2: Sustainability Appraisal Report – Regulation 19. [online] Available at: https://www.waverley.gov.uk/Portals/0/Documents/services/planning-and-building/planning-strategies-and-policies/local-plan/Waverley_SA_Final_Report_v3.0__2020_.pdf?ver=WF4lHzjCdY4bX1NrOmX7uQ%3D%3D

[12] Intergovernmental Panel on Climate Change (2018) Global Warming of 1.5 degrees of C. [online] Available at: https://www.ipcc.ch/sr15/

[13] Tyndall Centre (2021) Setting Climate Commitments for Waverley: Quantifying the implications of the United Nations Paris Agreement for Waverley [online] Available at: https://carbonbudget.manchester.ac.uk/reports/E07000216/

[14] Waverley Borough Council (2020) Climate Emergency Action Plan 2020 -2030. [online] Available at: https://www.waverley.gov.uk/Portals/0/Documents/services/environmental-concerns/conservation-and-sustainability/Climate_Emergency_Action_Plan_2020_2030___Draft_Feb_2020.pdf?ver=etJy687FqjQDs8nlPRpcvw%3D%3D

[15] Surrey County Council (n.d.) Surrey Transport Plan consultation on the plan. [online] Available at: https://www.surreycc.gov.uk/roads-and-transport/policies-plans-consultations/transport-plan/consultations#:~:text=Local%20Transport%20Plan%204%20(LTP4,LTP3%20following%20adoption%20in%202022.

[16] This includes "all rivers and streams and all ditches, drains, cuts, culverts, dikes, sluices (other than public sewers within the meaning of the Water Industry Act 1991) and passages, through which water flows" according to the Land Drainage Act 1991.

within Flood Zones 2, 3a and 3b. Settlements with areas in Flood Zones 2 and 3 include north Farnham (Blackwater), central and southeast Farnham (North Wey and Farnham Bourne), west Elstead (River Wey), south and central Godalming (the Ock, River Wey), Cranleigh (Cranleigh Waters, Nuthurst Stream, Littlemead Brook), Chiddingfold (River Lox) and Bramley/Wonersh (Cranleigh Waters and Hascombe Stream)[17].

**1.29** Historically, the area has been flooded on multiple occasions. The most recent and extensive flooding events have occurred in July 2007, winter of 2008 and 2009 and winter of 2013 and 2014[18]. It is expected that with the progressing climate change these events may become even more frequent and severe.

### Water resources

**1.30** The Waverley Borough Local Plan aims to deliver up to 11,200 new homes from 2013 to 2032. The growth areas are spread across six Water Framework Directive (WFD) water bodies, predominantly located in the Thames River Basin District (RBD), with Chiddingfold being located in the South East RBD. In 2015, all water bodies were at less than 'Good' Ecological Status although water quality was generally found to be compliant with an exception for phosphates which was a 'Moderate' or 'Poor' Status in all water bodies[19]. The Waverley High Level Water Cycle Study found that greater capacity will be necessary to accommodate additional wastewater from future development. However, there is potential to use technologies which will reduce environmental impact, for example in Dunsfold Park[20].

**1.31** The Wey Abstraction Management Strategy highlights that the Tillingbourne area (which covers the northern edge of the Borough south of Chilworth) has a 'water not available for licencing' status, and the Guilford area (which covers Godalming, Milford, and the eastern part of Farnham) has a 'restricted water available for licencing' status. It is because there was more water removed from these catchments than the amounts available. These parts of the Borough lie within areas of water stress where consumption is greater than production[21]. Water suppliers have taken measures to reduce water use and leaks. However, there may be reduced water availability in the area, particularly during the summer, which will lead to more frequent water use restrictions and water shortages[22].

### Pattern of development (Local Plan Part 1 Strategic Sites)

**1.32** The formulation of this SPD will apply to both allocated sites in the Local Plan and developments proposed for other sites.

**1.33** For the new settlement at Dunsfold Aerodrome, the Council has produced a separate Dunsfold Garden Village SPD which contains requirements for sustainable development and climate change that are specific to that site. However, developers will also have to consider this SPD when preparing applications for development at Dunsfold Aerodrome.

**1.34** The 9 strategic sites allocated in the Local Plan Part 1 are:

- SS1: Strategic Housing Site at Coxbridge Farm, Farnham – allocated for around 350 dwellings.
- SS2: Strategic Housing Site at Land West of Green Lane, Farnham – allocated for 105 dwellings.
- SS3: Strategic Mixed-Use site at the Woolmead, Farnham – allocated for a mix of uses including around 100 dwellings and 4,200 sqm of replacement retail floorspace.

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[17] AECOM and Waverley Borough Council (2018) Waverley Borough Council Level 1 Strategic Flood risk Assessment. [online] Available at: https://www.waverley.gov.uk/Portals/0/Documents/services/planning-and-building/planning-strategies-and-policies/local-plan/WBC%20Level%201%20SFRA%20Report-Appendix%20A%20and%20Figures%201-2.pdf?ver=o_qbW3wg84MwsLz9OcS6ng%3D%3D

[18] Ibid.

[19] Waverley Borough Council, Amec Foster Wheeler Environment & Infrastructure UK Limited (2017) Waverley Borough Water Quality Assessment. [online] Available at: https://www.waverley.gov.uk/Portals/0/Documents/services/planning-and-building/planning-strategies-and-policies/local-plan/ERea008i3R_Final.pdf?ver=3lDFtzxZRXbEZJh82D7PgA%3D%3D

[20] Waverley Borough Council (2016) Waverley Borough Council High Level Water Cycle Study. [online] Available at: https://www.waverley.gov.uk/Portals/0/Documents/services/planning-and-building/planning-strategies-and-policies/local-plan/WBC_High_Level_Water_Cycle_Study__wastewater___Final_18_August_2016_ISSUEDM.pdf?ver=wwxAx_EYatq6ln7NjYoXxw%3D%3D

[21] Environmental Agency (2019) Wey Abstraction Licensing Strategy: A strategy to manage water resources sustainably. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/796089/Wey-Abstraction-Licensing-Strategy.pdf

[22] ATKINS (2020) Sustainability Appraisal of Waverley Borough Local Plan Part 2: Sustainability Appraisal Report – Regulation 19. [online] Available at: https://www.waverley.gov.uk/Portals/0/Documents/services/planning-and-building/planning-strategies-and-policies/local-plan/Waverley_SA_Final_Report_v3.0__2020_.pdf?ver=WF4lHzjCdY4bX1NrOmX7uQ%3D%3D

- SS4: Strategic Housing Site at Horsham Road, Cranleigh – allocated for around 250 dwellings.
- SS5: Strategic Housing Site at Land South of Elmbridge Road and the High Street, Cranleigh – allocated for around 765 dwellings and a country park.
- SS6: Strategic Housing Site at Land opposite Milford Golf Course – allocated for around 180 dwellings.
- SS7: New settlement at Dunsfold Aerodrome – allocated for around 2,600 dwellings, mixed use strategic development to accommodate housing, employment and associated supporting uses.
- SS8: Strategic Mixed-Use Site at Woodside Park, Godalming – allocated for around 100 dwellings, community and employment uses.
- SS9: Strategic Employment Site on Land off Water Lane, Farnham – allocated for Class B employment uses.

# Chapter 2
# Minimising energy use in new developments

**2.1** In 2018, domestic sector emissions have accounted for 43% of the total Waverley Borough's emissions and were estimated to be 227.2kt $CO_2$[23]. Median energy efficiency of all dwellings in Waverley Borough for 2021 was 65, on a scale ranging from 0 to 103 (0 being the worst)[24]. The score reflects the pattern of housing stock across the Borough, where 41.5% of the dwellings in Waverley are detached houses, which is higher than the national average of 22.4%. Detached houses are also considered to be the least energy efficient[25].

## Link to Key Local Plan Policy Criteria

- **CC1: Climate Change** - development will be supported where it contributes to mitigating and adapting to the impacts of climate change, including measures that:
  - use renewable and low carbon energy supply systems.
- **CC2: Sustainable Construction and Design** – the Council will seek to promote sustainable patterns of development and reduce the level of greenhouse gas emissions by:
  - Ensuring all new development, including residential extensions, include measures to minimise energy and water use through its design, layout, landscape and orientation.
- **CC3: Renewable Energy Development** - renewable energy development should be located and designed to avoid significant adverse impacts on landscape, wildlife, heritage assets and amenity. Appropriate steps should be taken to mitigate any adverse impacts, such as noise nuisance, flood risk, shadow flicker and interference with telecommunications, through careful consideration of location, scale, design, and other measures. The Council particularly encourages applications from community-led projects.

**2.2** Supporting text for policy CC3 provides additional detail on what additional aspects the Council will take into consideration including:

- The contribution the development will make towards achieving national, regional, and sub-regional renewable energy targets and carbon dioxide savings.

[23] UK government (2020) UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2018. [online] Available at: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2018

[24] ONS (2021) Energy efficiency of housing in England and Wales: 2021. [online] Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/housing/articles/energyefficiencyofhousinginenglandandwales/2021

[25] Ibid.

- The potential to integrate the proposal with existing or new development.
- The potential benefits to host communities and opportunities for environmental enhancement.
- The proximity of biomass combustion plant to fuel source and the adequacy of local transport networks.
- Availability of a suitable connection to the electricity and gas distribution network.
- The visual impact of the development on the character and appearance of the surrounding area.
- The effect of the proposal on the amenities of any nearby residential properties.

**2.3** The Local Plan states that the Council will adopt a **"fabric first"** approach to maximise the performance of the building's components and materials and minimise the need for expensive technologies reducing capital and operational costs. However, consideration to the locations and orientation of buildings should be considered prior to the building's fabric. The Council also requires developers to provide appropriate evidence in support of any planning application if they consider it not possible to achieve the standards required by this policy.

## Requirements and Guidance

**2.4** The Government's Heat and Buildings Strategy (2021)[26] guides the transition to high-efficiency low-carbon buildings. It focuses on improving building energy performance and lists relevant current and planned activities for the 2020s including:

- **Future Homes Standard**: a 75 – 80% reduction in carbon emissions from new homes compared to current standards, from 2025, with low-carbon heating and very high fabric standards.
- **Future Building Standard**: pathway to highly efficient new non-domestic buildings which use low-carbon heat.
- **Building Regulation Part L and F Interim Standards**: increase of energy performance standards for domestic and non-domestic buildings ahead of the Future Homes Standard and Future Buildings Standard, effective from June 2022.
- **Consultation on ending new gas connections in new dwellings**: consulting as to whether it is appropriate to end gas grid connections to homes constructed from 2025, in favour of alternative low-carbon heat sources.

### Guidance on minimising energy use by applying renewable low carbon technologies suitable for the Borough

#### Energy efficiency in new developments

**2.5** The 'Fabric first' approach to building design involves maximising the performance of the components and materials that make up the building fabric, before considering the use of mechanical or electrical systems of the building. In medium to long-term scales, such an approach can help to reduce capital and operational costs, improve energy efficiency, reduce carbon emissions and ongoing maintenance costs.

**2.6** Some of the key 'fabric first' approach measures include:

- Maximising airtightness (with a Mechanical Ventilation with Heat Recovery);
- Increased levels of insulation;
- Optimising solar gain through the provision of openings and shading;
- Optimising natural ventilation;
- Using the thermal mass of the building fabric.

**2.7** Applicants should demonstrate a 'fabric first' approach has been considered for the development by implementing solutions such as maximising airtightness of the building (with a Mechanical Ventilation with Heat Recovery), increasing levels of insulation, optimising solar gain through the provision of openings and shading, optimising natural ventilation, using the thermal mass of the building fabric, and triple glazing.

**2.8** Applicants must ensure that appropriate ventilation will be installed to prevent accumulation of moisture. This includes ventilation systems that should be energy efficient and adequate to the size and function of a room (most important ones are in kitchen and bathroom) and also installing openable windows at both sides of the building.

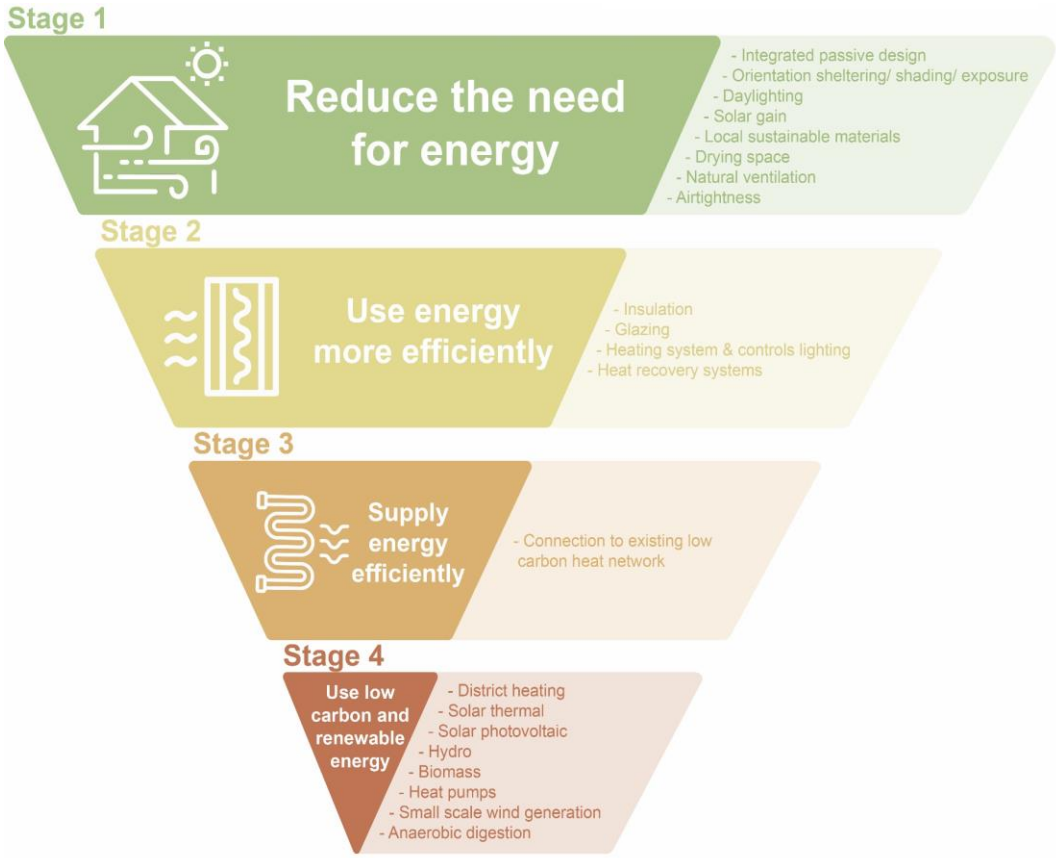
[26] HM Government (2021) Heat and Buildings Strategy. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1036227/E02666137_CP_388_Heat_and_Buildings_Elay.pdf

**2.9** Applicants must demonstrate that appropriate levels of insulation are being considered for the building, especially for loft areas and for the floors to prevent heat loss.

**2.10** Applicants must demonstrate that at least double-glazed windows are considered for the building. Energy efficiency measures can significantly reduce the energy use within a building leading to reduced costs for the resident over medium- to long-term. If supported by renewable and low carbon energy supply systems, they can enable net zero housing.

**2.11** The Energy Hierarchy (Figure 1) presents an approach for selecting energy efficiency measures. It encourages to prioritise measures to reduce the overall need for energy.

*Figure 1: The Energy Hierarchy.*



- Applicants should demonstrate how the energy hierarchy has been considered within the planning application to minimise carbon dioxide emissions across the development (orientation, fabric first approach, passive building design, energy efficiency, and fabric performance, renewable energy generation), and that the development will be cost effective allowing for recovery of investment costs through operational savings. If certain measures are not viable for a development, applicants should provide evidence to show that all possible measures have been included and why certain measures in this SPD are not viable.

**2.12** Some of the key energy efficiency measures, in no particular order, include (Figure 2).

1. Thick curtains
2. Double/triple glazing
3. Draught strips on doors
4. Rain garden
5. Permeable paving
6. Electric car charging point and battery power pack
7. Motion sensor lighting
8. Low energy lighting (LED bulbs)
9. Chimney balloon
10. Wood burner / biomass boiler
11. Loft and roof insulation (using recycled paper insulation)
12. Solar hot water panels
13. Sun pipe
14. Heat exchanger
15. Low flow toilet (double flush)
16. Rainwater harvesting
17. Under floor insulation (drought proofing of floors)
18. Smart meter and boiler
19. A+++ white goods and boiler
20. Cavity wall installation
21. Ground source heat pump (for communal solutions) / air or water source heat pump (where communal not possible)
22. Hot water cylinder insulation
23. Solar photovoltaic panels
24. Sustainable food growing (composting/wormery)

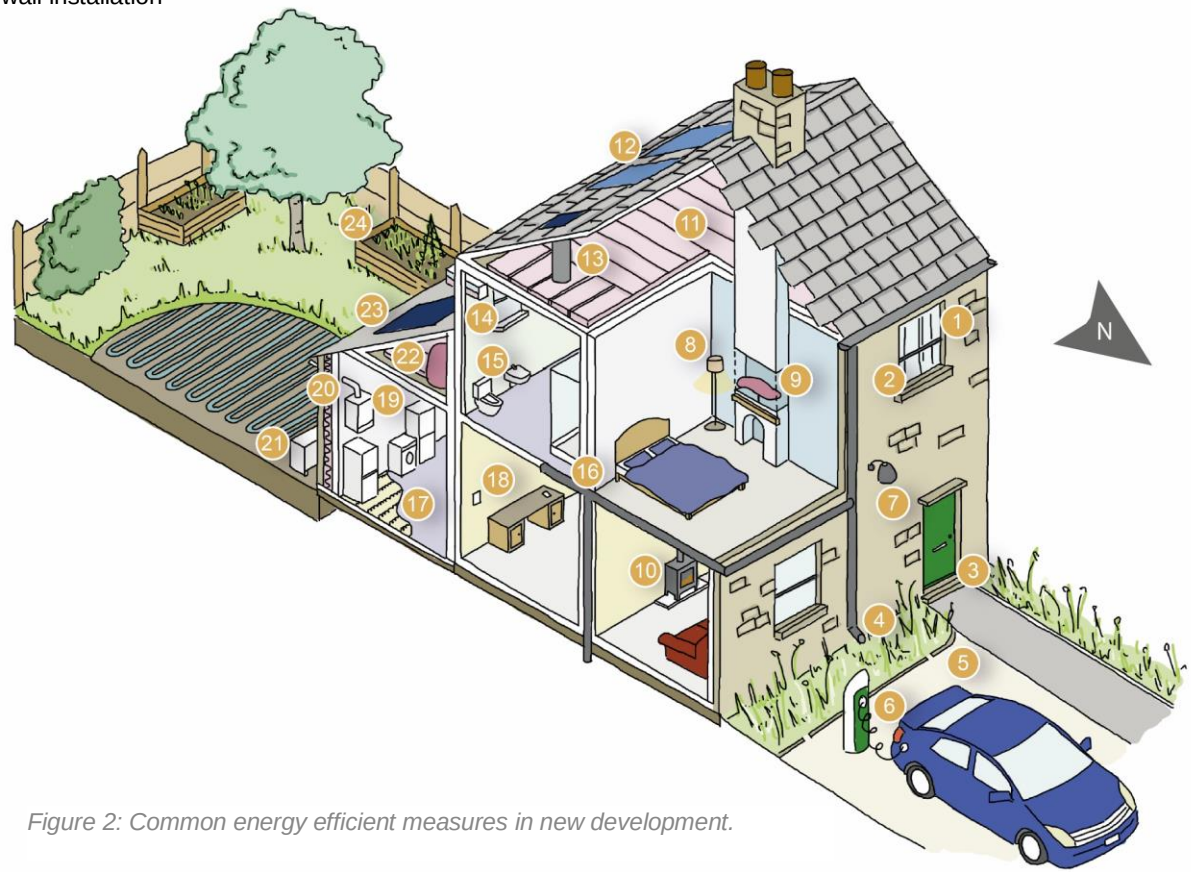



*Figure 2: Common energy efficient measures in new development.*

- Green roof vegetation serves multiple purposes, it enhances biodiversity, provides cooling during summer months and helps to store heat during cold months improving the overall thermal performance of the building. Applicants could implement measures such as green roof or green wall vegetation to improve the overall energy performance of the building.
- Issues with strong northern winds and heat loss can be solved through provision of shelters in a form of vegetation or arranging buildings in irregular street patterns to avoid channelling of wind. Applicants could include measures that reduce impacts from strong northern winds and improve the overall energy efficiency of a building.

### Consideration of embodied carbon

**2.13** Applicants should use materials that have lowest embodied carbon (e.g., lime-based products or timber) and which have been manufactured through processes with low consumption of energy. Applicants could demonstrate how embodied carbon has been reduced at the design stage of the development. Applicants could also prioritise the use of materials from sustainably managed sources (such as FSC certified timber[27], Concrete Sustainability Council certificate[28] and zero carbon steel production).

**2.14** The use of low carbon and environmental impact materials (including those with recycled content) helps minimise the impact of the resources used. Re-use of materials from the development site and the use of reclaimed or recycled materials should be prioritised and considered where possible.

**2.15** Where possible, applicants should prioritise the use of local materials to reduce transportation costs and related carbon emissions.

**2.16** It is encouraged that applicants engage with the council at the pre-application stage to ensure that embodied carbon is considered at the design stage of a development.

## Latest technologies and links to guidance

### Heating

**2.17 Heat pumps** – if designed, selected and installed correctly provide opportunities to significantly reduce the carbon footprint of a building in comparison to conventional fossil fuel systems (e.g., gas boilers). Heat pumps use the natural warmth from the air, water, or ground to heat a building using a compressor powered by a relatively small amount of electrical energy. Air Source Heat Pumps require a heat exchanger located outside of a building, and location should be optimised taking account of practical constraints, conservation issues and noise. Ground Source Heat Pumps tend to be more expensive than Air Source Heat Pumps and require pipes of at least 2m in length to be buried in the ground. During design stage, consideration needs to be given to potential effects on landscape and biodiversity. For Water Source Heat Pumps, heat can come from the bottom of a pond, reservoir, river, lake, or borehole, and therefore, impacts on biodiversity also need to be considered.

**2.18** There are two main categories, individual heat pumps for single dwellings and communal heat pumps for larger developments. Heat pumps must be sized correctly to meet the heat and hot water load. It is important to choose heat pumps with a refrigerant that has a low Global Warming Potential (GPW) for example propane. Moreover, minimising pipe lengths will reduce heat losses. Further reductions can be made by choosing a heat pump with a high efficiency (Coefficient of Performance or COP). The COP is the ratio between the heat energy delivered and the electrical input. On average, a heat pump would have a COP of 2 – 4, meaning that for every 1 unit of energy, 2 units of heat are provided, which is better than gas or oil boilers which deliver less heat for each energy input. In order to make the most efficient use of a heat pump, radiators need to be larger, as heat pumps run best at lower temperatures (around 35 – 45℃) or under flood heating can be installed (with temperatures around 25 – 30℃).

**2.19 District heat networks** – supply heat to a number of buildings from a central heat source with a low carbon energy source through a network of insulated pipes and heat exchangers. Newly built district heating networks should provide potential to switch to a low carbon source (e.g., communal heat pumps) in the future. District heating networks should be designed to achieve the best practice standards of the ADE & CISBE Code of Practice for the UK (2020)[29].

[27] Forestry England (n.d.) Certification. [online] Available at: https://www.forestryengland.uk/certification
[28] Concrete Sustainability Council (n.d.) Who we are. [online] Available at: https://www.concretesustainabilitycouncil.com/
[29] CIBSE (n.d.) CPI Heat networks: Code of Practice for the UK (2020). [online] Available at: https://www.cibse.org/knowledge/knowledge-items/detail?id=a0q3Y00000IMrmGQAT

**2.20** Where possible, homes and buildings should connect to an existing or planned local carbon district heat network or a new network with neighbouring energy demand requirements. One of the key challenges linked with district heating is the estimation of a sufficient heat demand density. However, tools such as Thermos can be used to guide this process. Thermos is a free online user-friendly tool with open-source software that has address-level mapping and built-in demand estimations[30].

**2.21** Considering the construction requirements for district heating, such solutions are most viable for new developments. Different solutions for heat source technology can be used for district heating include combined heat and power engines (CHP), biomass boilers or heat pumps. Pipeline installations and networks must be considered carefully to avoid any potential impact on landscape and biodiversity.

**2.22** District heating schemes are, however, more viable in new developments due to the lower cost of civil works on new sites. Depending on the heat source technology, this can be a carbon efficient means of energy supply, compared to individual heating systems. The most efficient heat source technologies include combined heat and power engines (CHP), biomass boilers or heat pumps. District heating is beneficial for new development sites and in areas where there is a high energy demand. However, consideration needs to be given to the installation of the pipe networks and other wider development plans in the area and the potential impact on local landscape and biodiversity. Moreover, due to the scale of works required, consideration with wider development plans of areas needs to be taken to reduce disruption.

**2.23 Thermal storage** – thermal storage can be used to manage peaks in district heating or cooling. Thermal energy storage refers to storage of cold or hot water in insulated tanks to use when demand is increasing.

### Renewable Energy

**2.24** The Council encourages the use of renewable energy technologies in appropriate context providing availability of suitable grid connection, and in accordance with the energy hierarchy. Considering that much of the Borough is located within an Area of Outstanding Natural Beauty (AONB), large scale renewable energy schemes such as wind farms may not be appropriate for many locations. However, there is potential for smaller scale renewable energy generation through solar thermal and photo voltaic, heat pumps, and small-scale wind technologies.

**2.25 Solar technologies** – such as photovoltaic (PV) panels and solar thermal units can be easily installed on new and existing buildings across the Waverley. For listed and more traditional in character buildings there are solutions such as solar roof tiles, which work as PV panels however they completely neutralise the potential visual impact. PV panels produce electricity from sunlight and can either be mounted or integrated on roofs or façades of buildings or used freestanding on the ground (e.g., PV farms).

**2.26** Solar thermal units heat water which is integrated to a building's hot water system using a heat exchanger or co-location[31]. To extract the most energy from the sunlight, solar panels should ideally be located anywhere between south east and south west to ensure that a direct sunlight reaches the panel.

**2.27** Installation of solar panels on a residential dwelling may require compliance with Building Regulations. Consideration should be given to:

- Electrical safety.
- Structural loading and stressing, including snow loading.
- Wind uplift which may affect wind pressure influencing the roof.
- Resistance to moisture, ensuring water tightness of the roof.

**2.28 Wind turbines** - wind turbines use wind power to rotate blades and generate electricity. Macro wind turbines usually comprise a tower, blades, a generator, and a transformer. Whereas micro wind turbines suitable for application at the building scale comprise of blades, rotor, gearbox, and generator. Wind turbines can be grid-connected or off-grid. Off-grid systems require battery storage to store surplus electricity, providing a more stable electricity supply. Their application is particularly useful in rural and more remote areas, where grid power is not available. Building-integrated turbines can be mounted to new and existing buildings. Micro wind turbines are being designed to be more visually attractive, without compromising their performance. Moreover, using low-noise blades design, vibration isolators and sound absorbing materials around the gearbox and generator

[30] Thermos (n.d.) Thermos Tool. [online] Available at: https://www.thermos-project.eu/home/

[31] Co-location combines a battery storage with another form of intermittent generation.

majority of noise can be eliminated. Consideration should be given to available wind speed and direction, as well as impacts in terms of noise, trees, local ecology and impact on local landscape and historic environment.

**2.29 Hydropower** – harnesses energy from falling or fast-flowing water in rivers and streams. Opportunities for small scale hydropower generation may exist on the River Wey, wherever a stream runs down a hillside, a river passes over a waterfall or weir, or reservoir discharges back into a river. However, careful assessment of potential impacts of a hydropower development on the local landscape, ecology and historic environment should be carried out.

**2.30 Biomass boilers** - Biomass boilers and wood fuelled heating systems use logs, woodchip, and wood pellets as a fuel alternative to oil and gas. Consideration needs to be given to potential disturbance to protected species (e.g., bats in chimneys/roofs), the impact of chimneys or flues, storage of fuel, and the impact on local air quality.

**2.31 Anaerobic digestion** - is a process through which natural matter (e.g., agricultural manure, wastewater biosolids, and food waste) is broken down in a sealed tank (without oxygen) to produce biofuel which can then be used as a fuel for heating or to generate electricity. There is scope for small scale anaerobic digesters which could be used by small scale farmers. Key considerations include access, storage of natural matter, and the potential for impacts on landscape, ecology, and the historic environment. There is also potential to inject biomethane from anaerobic digestion process into the national gas grid, as in the case of the anaerobic digestion facility at Dunsfold Park.

## Existing buildings

**2.32** Retrofitting of existing buildings plays a significant role in reducing their carbon footprint, as it ensures that existing buildings stay in use for a longer period of time and reduce demand for virgin materials. There is a range of energy efficiency solutions and micro-generation of renewable energy that can be installed without planning permission on existing buildings.

**2.33** Where an existing building has a degree of historic significance, planning permissions are required. Applicants should discuss with the Council's Conservation Team, where measures are being considered including:

- Maintenance of the roof and gutters
- Improved ventilation
- Insulating of the loft
- Energy efficient lightbulbs (LED bulbs)
- Refurbishing of the single glazed windows, secondary glazing
- Installation of a heat pump
- Installation of solar panels to generate power

**2.34** For traditional buildings, a 'whole building approach' to energy efficiency should be taken to ensure improvements are effective and will not cause damage harm to the building or harm its occupant's health and to ensure that improvements are cost and time effective. Traditional buildings may not need expensive or intrusive measures to improve their energy performance. There are a range of low-cost measures compatible with most buildings of traditional construction including:

- Understanding the building's original heating, cooling and ventilation measures before additional measures are considered.
- Ensuring that damp and draught issues are addressed using appropriate materials.
- Reducing the overall energy demand by optimising natural lighting, ensuring better use of rooms, and adding thick curtains, blinds, and carpets etc.
- Implementing draft proofing measures where possible, for suspended wooden floors, open chimneys, and gaps around windows to minimise heat loss.

## Dunsfold Park

**2.35** Dunsfold Park is a new garden village planned in the south-east of the Borough, and it aims to support sustainable rural living. The proposals included in the Dunsfold Garden Village SPD align with the advice provided within this SPD and require applicants to demonstrate:

- How energy hierarchy principles and suggestions have informed the approach to design and construction; and
- How the proposals have employed 'fabric first' principles including well considered orientation of the building, window placement, planting for shade, air-tight and well-insulated buildings, dual aspect homes with openable windows on both sides to allow for cross ventilation, avoidance of excessive solar heat gain, active demand responsive appliances, enable achieving Passivhaus certification.

# Chapter 3
# Sustainable site layout, landscaping, and orientation of buildings

**3.1** Due to the changing climate, Waverley Borough will have hotter and drier summers and warmer and wetter winters. The area is already prone to flooding, and flood risk is likely to intensify further with the changing climate[32]. Therefore, appropriate site layout, landscaping and orientation of buildings, green infrastructure, Sustainable Drainage Systems (SuDs) and other water retention solutions will not only reduce risk of flooding but also minimise the risk of overheating.

## Link to Key Local Plan Policy Criteria

- **CC1: Climate Change** - development will be supported where it contributes to mitigating and adapting to the impacts of climate change, including measures that:
  - use of green infrastructure and SuDs to help absorb heat, reduce surface water runoff, and support habitat network.
  - Ensuring all new development, including residential extensions, include measures to minimise energy use through its design, layout, landscape and orientation.
  - encouraging the use of natural lighting and ventilation.
  - incorporating measures that protect and, where possible, enhance the biodiversity value of the development.
- **CC2: Sustainable Construction and Design** - the Council will seek to promote sustainable patterns of development and reduce the level of greenhouse gas emissions by:

## Requirements and Guidance

### Optimising Development Orientation and Density

**3.2** **Passive solar design** – orientation of buildings should take advantage of and maximise solar gain during the high summer and low winter sun angles on southern exposures, whilst minimising excessive solar gain on east and west exposures from low sun angles. Such orientation of a building can significantly reduce the overall energy consumption of a building. Applicants must demonstrate how orientation of the building/s has been considered (Figure 8).

**3.3** **Overheating** – provision of natural shading through building overhangs, balconies, grouping, green walls and trees, should be encouraged to reduce the risk of overheating

[32] DEFRA, DBEIS, Met Office, EA (2019) UKCP18: Factsheet: Derived Projections. [online] Available at: (https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-fact-sheet-derived-projections.pdf

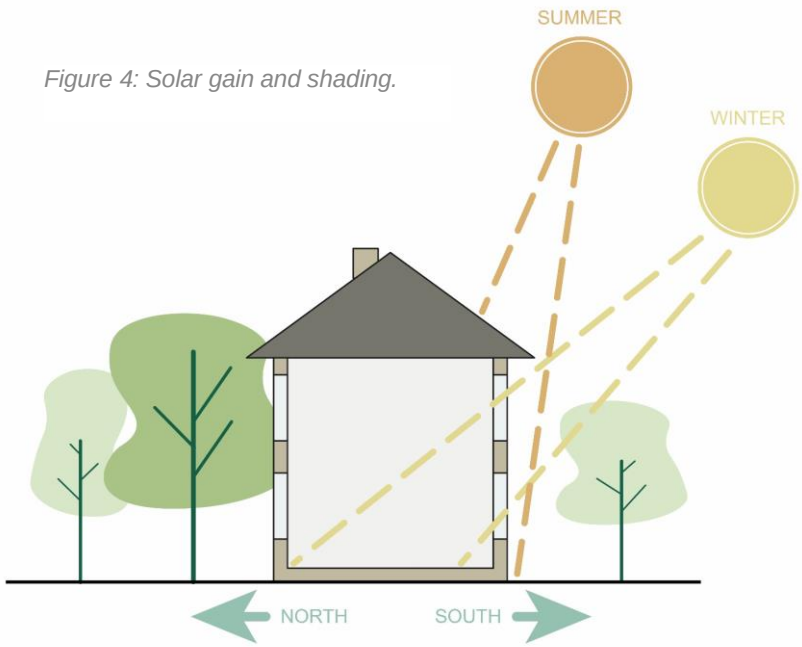



*Figure 4: Solar gain and shading.*

during the summer and minimise heat loss in the winter. Secondary measures include internal blinds and thick curtains. Applicants should demonstrate what measures are taken to reduce overheating of buildings.


*Figure 5: Benefits of Green Infrastructure.*

## Use of green and blue infrastructure and SuDs

### Requirements and guidance for trees, landscaping, local food growing and green and blue infrastructure

**3.4** Green and blue infrastructure include parks, open spaces, green roofs and walls, rivers, canals, and open water, and it is key to the Borough's climate resilience. By improving habitats and species it can also help to reduce flood risk.

**3.5** There is also a range of other benefits to be gained through Green Infrastructure (GI) networks such as improved opportunities for walking and cycling, reduced carbon emissions and improved health and well-being of local communities.

**3.6** Considering that the Borough has a relatively low uptake of active travel and in particular cycling, there are opportunities to ensure that new and existing developments are well connected and provide safe and convenient opportunities for walking, cycling, and wheeling along green corridors.

- Green and blue infrastructure (GBI) must be considered at the design stage of the development. Applicants should consult representative stakeholders to identify, appraise and agree actions for the project that will optimise the benefits of green and blue infrastructure.
- Applicants must identify what contribution GBI can make to flood prevention, cooling buildings during summer months, sustainable transport, active travel, and biodiversity.
- Applicants must demonstrate how the development protects, enhances, and prevents from fragmentation of existing green infrastructure. Also, applicants should demonstrate how existing and new natural features will be integrated into a multifunctional green infrastructure network to deliver a range of benefits and ecosystem services. Green corridors in particular can be used to extend and enhance existing ecosystems extending habitat networks.
- Proposals for green and blue infrastructure should ensure that the location, materials, scale, and use complement the Borough's landscape character. This can be achieved by for example increasing the mosaic of habitats including grasslands and woodland. Applicants should prioritise native planting (following 'the right tree in the right place' approach) that provides habitat for local wildlife. Where possible, transitional habitats should be created between woodland and grasslands to increase the diversity of microclimates and habitats for species, which is an important feature for climate change adaptation.
- Consideration should be given to the location, landscape character and heritage significance of conservation areas, historic parks and gardens, archaeological features and important trees and hedgerows.
- Green infrastructure will require management and maintenance after installation if long-term benefits and ecosystem services are to be delivered. Provision of funding will be required, and this should be factored into the design and implementation, balancing the costs with the benefits. Applicant should also liaise with the Council to agree on the management of verges for wildlife.
- Proposals should specifically include planting of deciduous trees to provide shade to buildings, helping to limit direct exposure to sunlight in the summer months, and to provide shade for public open space and outdoor seating.
- Applications should demonstrate how street trees and other street planting will be planted to soften the impact of car parking, help improve air quality and contribute to biodiversity (Figure 11). Moreover, provision should be made to ensure long-term maintenance of street trees and protecting key utilities.
- Other forms of multi-functional green infrastructure could be included such and natural play areas alongside GBI, SuDS and the use of formal and native hedging instead of fences or walls, for example around public open space, play and picnic table areas.
- Applicants could also demonstrate how growing spaces will be incorporated into the design of the development (Figure 10).

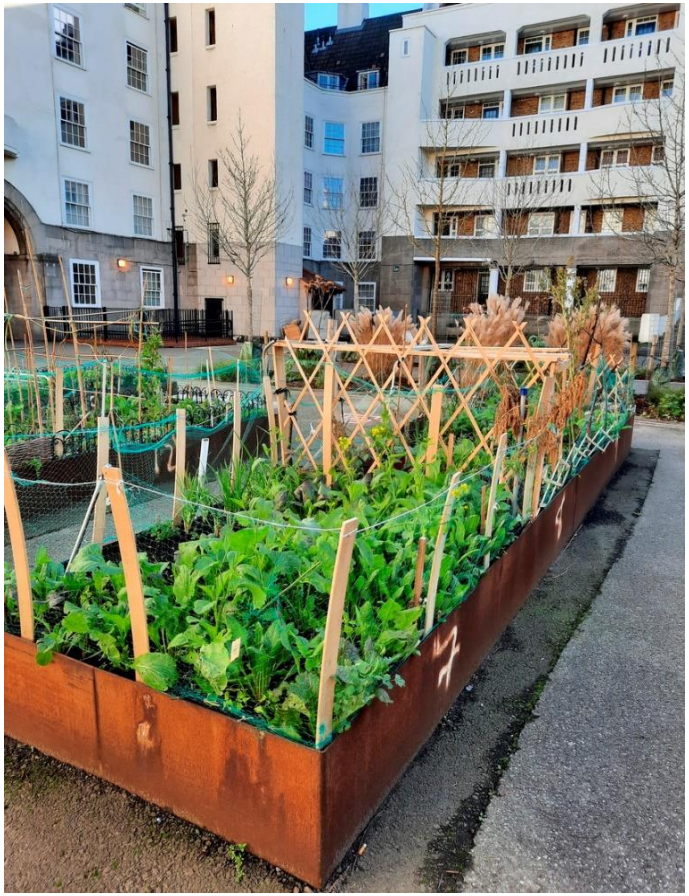


*Figure 6: LUC owned image*

### Guidance on integrating green infrastructure into development

- When integrating green infrastructure into a development, consideration of the site context for green infrastructure is important and the linking of green space to create wildlife corridors. Applicants should demonstrate how site's context have been accounted for in designing green infrastructure.
- The council encourages that for every felled tree, two tree are planted, following 'the right tree in the right place' approach and ensuring long-term suitability of a tree type for the changing climate[33].

[33] Forest Research (n.d.) Urban Tree Manual. [online] Available at: https://www.forestresearch.gov.uk/tools-and-resources/fthr/urban-tree-manual/

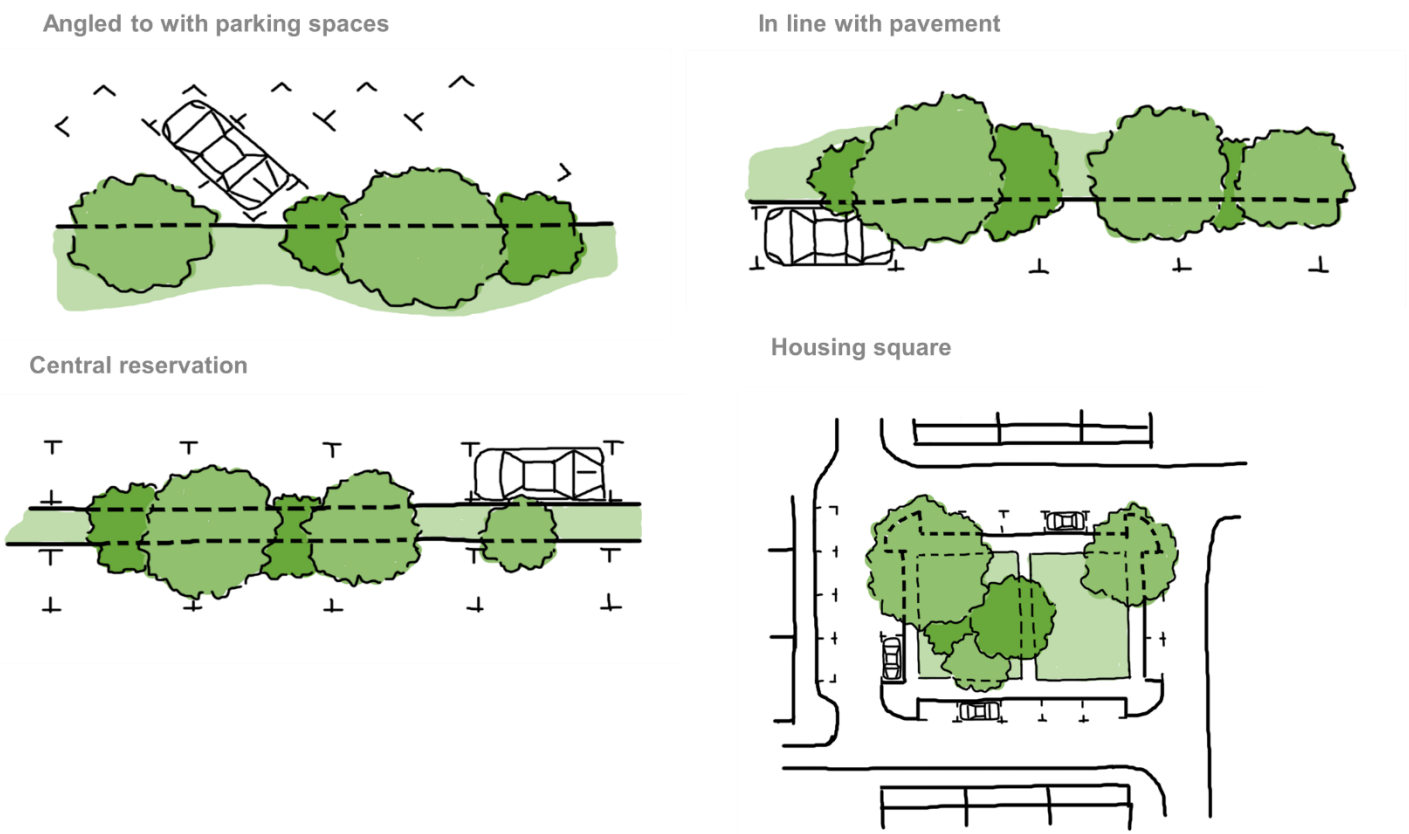



*Figure 11: Planting incorporated into parking*

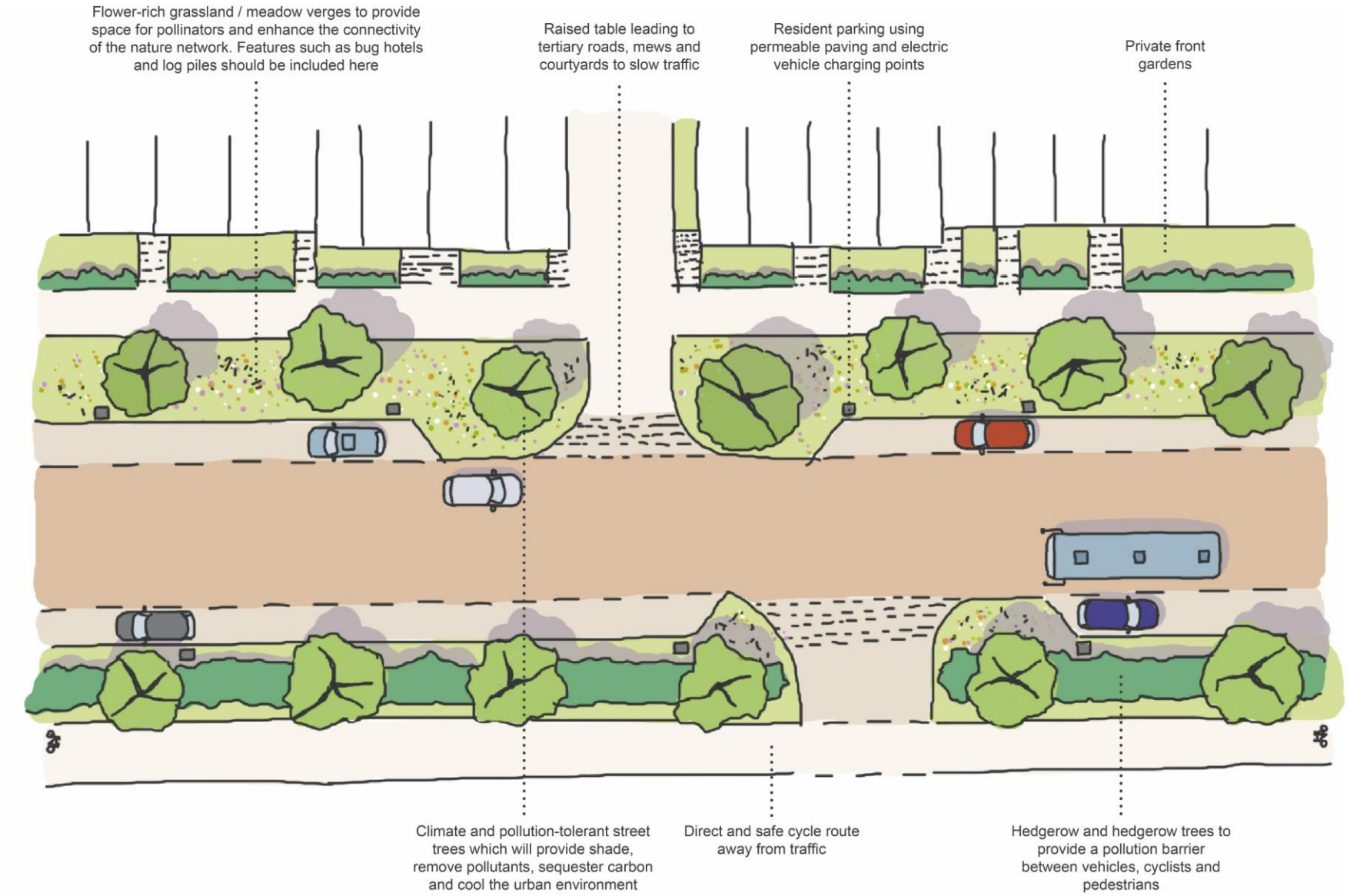



*Figure 7: Incorporating green infrastructure and active travel features into a primary residential street.*

### Applying sustainable drainage principles to new streets in development

- Traditionally, the approach to removing excessive water from flush flooding off the site focused on installation of pipes which would push the water off the site quickly. Currently, SuDS try to mimic natural drainage systems and retain water on or near the site, reducing the rate of surface water run-off even at times of peak rainfall. SuDS ensure ground water recharge, improve water quality, improve amenity, and help to reduce the frequency and intensity of floods if the capacity of sewers is exceeded. Well-designed SuDS schemes can also enhance biodiversity and habitats. There is a whole range of SuDS solutions enabling any development to install solutions most suitable to its context. Applicants should demonstrate what SuDS solution is the most suitable for the development and how it will be incorporated. Moreover, applicants should make arrangements for the ongoing maintenance of the SuDS schemes over the lifetime of the development (through the use of planning conditions or planning obligations where appropriate).

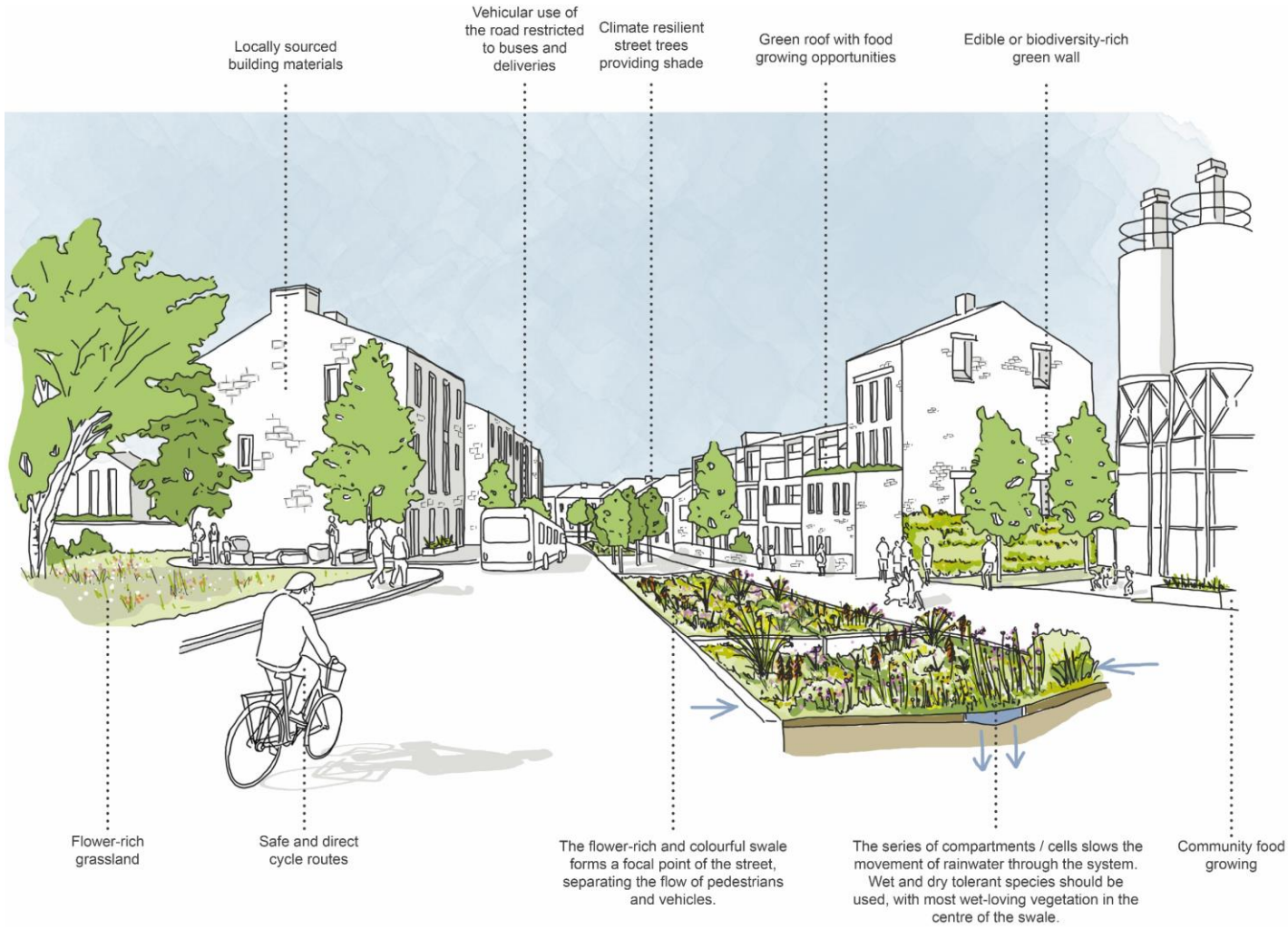



*Figure 8: Applying sustainable drainage principles to new streets in development.*

**The Drainage Hierarchy**

1. Rainwater used as a resource (for example rainwater harvesting, blue roofs for irrigation).
2. Rainwater infiltration to ground at or close to source.
3. Rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens, swales).
4. Rainwater discharge direct to a watercourse (unless not appropriate).
5. Controlled rainwater discharge to a surface water sewer or drain.
6. Controlled rainwater discharge to a combined sewer.

- Applicants should demonstrate how the drainage hierarchy is respected within the development.
- Applicants should ensure appropriate pollution presentation and water treatment measures are designed and installed in drainage systems in accordance with C753 The SuDS Manual and the National Standards for Sustainable Drainage Systems. Examples of SuDS include swales, permeable surfaces, wetlands, rainwater harvesting systems and green roofs.

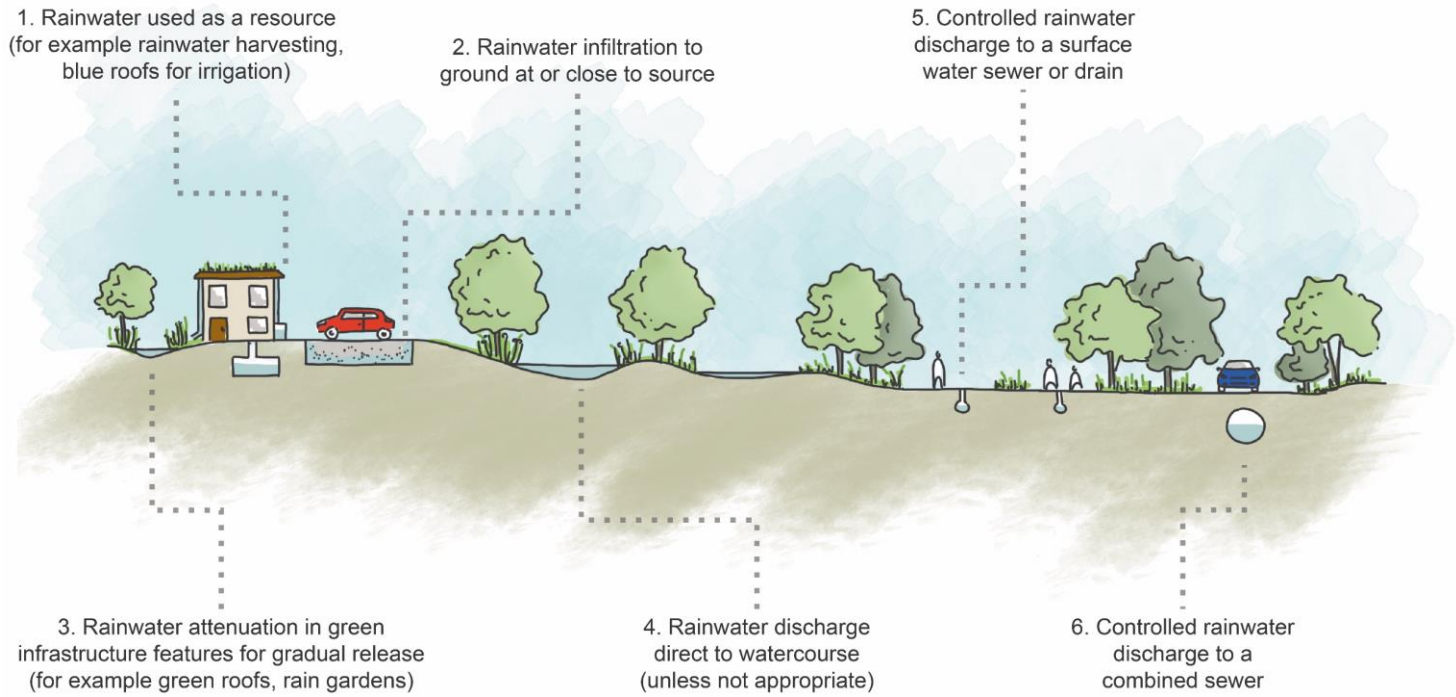



*Figure 9: The Drainage Hierarchy.*

- Figure 15 provides an example of incorporating large-scale retention basins into the public open space adjacent to residential development. Although a large proportion of the area is taken up by sustainable drainage features, a variety of recreation and ecosystem services are provided whilst also ensuring the new development is climate resilient.


*Figure 10: How large-scale retention basins can be incorporated into the design of residential schemes.*

## Incorporating measures that protect and where possible, enhance the biodiversity value of the development

### Guidance on achieving Biodiversity Net Gain

- Development should aim to provide a minimum of 10% net gain in biodiversity ahead of the mandatory requirement coming in 2023, and applicants who go beyond the 10% of BNG will be supported. Measures to achieve this should reflect Biodiversity Net Gain (BNG) guidance[34] and following BNG principles:
  - Apply the mitigation hierarchy – first avoid, then minimise any potential impact on biodiversity.
  - Avoid losing biodiversity that cannot be offset elsewhere.
  - Be inclusive and adaptable – engage stakeholders early and involve them in designing, implementing, monitoring, and evaluating.
  - Address risk – mitigate uncertainty and other risks to achieving net gain.
  - Make a measurable net gain contribution – achieve a measurable, overall gain for biodiversity and ecosystem services.
- Proposed green walls and rooftops should enhance biodiversity of the area by including suitable and varied plant species that include a mix of native and ornamental species.
- Proposed planting could include nectar and pollen-rich plants to encourage pollinators.
- Proposals could include wildlife infrastructure such as swift bricks, bat boxes, beehives, and hedgehog tunnels under the streets and fences.

### Linking of green spaces to make wildlife corridors

- Applicants should demonstrate how the existing and new green infrastructure will link with the wider wildlife corridors in the area. This also includes highlighting the role of gardens in wildlife corridors.
- Green spaces could include biodiversity corridors, trees, shrubs and hedges and greenways.

## Dunsfold Park SPD

**3.7** The proposals included in the Dunsfold Garden Village SPD align with the advice provided within this SPD and will require applicants to demonstrate:

- How a design process has sought to achieve getting maximum natural light into dwelling spaces and outdoor spaces.
- That all homes are dual aspect, unless exceptional circumstances justify otherwise, Spatial Daylight Autonomy of 300 lux for 50% of occupied hours over a minimum of 50% floor area, generous floor to ceiling heights (in excess of 2.3m) with large window sizes to living areas and smaller windows to bedrooms and kitchens, layouts that all windows should be openable on the quieter side of the home, and positive outlook onto gardens, courtyards, streets and open spaces avoiding servicing, parking or enclosed areas.
- Undertake a Life Cycle Assessment (LCA) achieving an upfront embodied carbon target of < 300kg CO2/m2 for residential buildings.
- Design and choose materials that limit embodied carbon, demonstrating how a target of 30% of re-used materials have been utilised, local materials sources transported sustainably.
- Ensure longevity of materials to limit maintenance and replacement over time.
- Design for flexibility and adaptability so buildings require less energy for alternation and modification.
- Design for a circular economy using Modern Methods of Construction.
- Plant species should include nectar and pollen rich plants and other native species for the new landscaping scheme and planted rooftops should improve biodiversity and building environmental performance.

[34] CIEEM (2019) Biodiversity net Gain. Good practice principles for development: A practical guide. [online] Available at: https://cieem.net/wp-content/uploads/2019/02/C776a-Biodiversity-net-gain.-Good-practice-principles-for-development.-A-practical-guide-web.pdf

# Chapter 4
# Climate change resilience and adaptation

Flood risk within Waverley is expected to intensify with the changing climate.

## Link to Key Local Plan Policy Criteria

- **CC1: Climate Change** - development will be supported where it contributes to mitigating and adapting to the impacts of climate change, including measures that:
  - provide appropriate flood storage capacity
  - provide high standards of sustainable design and construction with built-in resilience to climate change (e.g., from flood risk, storms, higher temperatures and drought)

## Requirements and Guidance

**4.1** The Surrey Local Flood Risk Management Strategy[35] sets out a long-term vision for reducing the impact of flooding in Surrey at a catchment scale. It aims to enable partnership working to mitigate the risk of flooding in the county and encourages sustainable flood risk management through planning and development. It focuses on utilising measures such as SuDS and environmentally beneficial measures.

- Reflecting national policy, a development's location should avoid flood risk areas. If this is impossible, the development should ensure it is safe throughout its lifetime and it is not increasing flood risk elsewhere. Buildings and their surroundings should be secured from flooding by for example raising them above the design flood level. As set out in the Planning Practice Guidance[36], flood resistance and resilience measures cannot be used to justify development in locations with a flood risk.
- For sites which require site-specific flood risk assessment, all current and future sources of flooding and climate change should be considered, following the Environmental Agency's (EA) guidance[37].

### Consider an adaptive approach: measures to manage flood risk now and in the future

**4.2** An adaptive approach allows to better plan for and adapt to future climate risks. Such an approach enables practitioners and policy makers to plan, monitor and review how the adaptation measures are fit for future flooding. Adaptive

[35] Surrey County Council (n.d.) Surrey Local Flood Risk Management Strategy 2017 – 2032. [online] Available at: https://www.surreycc.gov.uk/__data/assets/pdf_file/0005/136724/Surrey-Local-Flood-Risk-Management-Strategy-FINAL_v2.pdf

[36] UK Government (2021) Flood Zone and flood risk tables. [online] Available at: https://www.gov.uk/guidance/flood-risk-and-coastal-change#flood-zone-and-flood-risk-tables

[37] UK Government (2021) Flood risk assessment: climate change allowances. [online] Available at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

approaches should be proportionate and appropriate to particular places and circumstances, ranging from simple no regret actions (such as avoiding inappropriate development in high flood risk zones or incorporating drainage into the design on new development) to more complex activities (e.g., developing adaptive pathways plans to manage future flooding over large geographies)[38].

### Guidance on increasing resilience to flooding in building design

- The Department for Communities and Local Government's *Improving the Flood Performance of New Buildings: flood resilient construction* (2007)[39] details how to achieve flood resilience for new properties using suitable materials and construction methods. The key principle refers to flood resilient design which uses durable materials which are water resistant. Moreover, the guidance advises to rely on construction methods and materials that will allow for easy draining and drying, and appropriate drainage system and management of surface water runoff. Some other solutions include using boundary walls and fencing that can have a dual purpose and protect people and property from flood risk. This can be ensured by using solid gates with discreet waterproof seals if viable, integral drains, or fencing. Guidance includes actions that can be taken to avoid flooding from occurring such as ensuring the threshold levels into property to be above the design flood level. Another solution is to ensure that the design of the internal layout of the property to ensure that living accommodation, essential services, storage space for key provisions and equipment to be above predicted flood level[40].
- To increase the resilience and resistance of the development to flooding, the planning applicant should ensure that (Figure 16):
  - The ground level of all habitable parts of the home and access to both the site and homes, are designed to be at least a 600mm[41] threshold above the design flood level of the flood zone in which the development site is located. In areas where short duration flooding outside with water depths of 0.6 metres or less occurs. However, construction in such areas should be delivered with caution and ensured by resilience measures[42].
  - The design of the building and the wider site follow the recommendations made by an appropriately qualified professional in accordance with BS 8552000:2015[43].

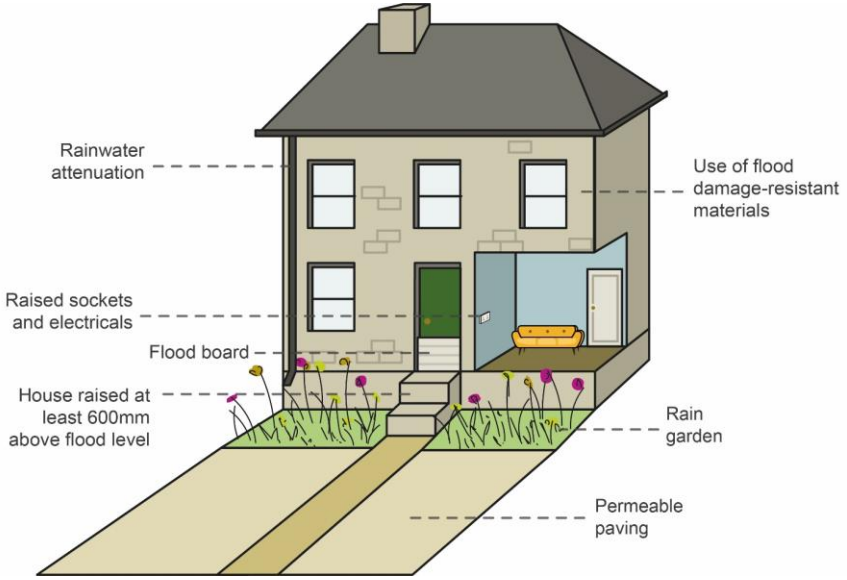



*Figure 11: Flood resilient dwelling.*

  - The process of selection and installation of property flood resilience measures should comply with the

[38] EA (2021) Delivering benefits through evidence: literature review on an adaptive approach to flood and coastal risk. [online] Available at: https://assets.publishing.service.gov.uk/media/606ef21fe90e076f5589bb7d/Evidence_to_support_an_adaptive_approach_to_flood_and_coastal_risk_management_-_report.pdf

[39] Environment Agency (2007) Flood resilient construction of new buildings. [online] Available at: https://www.gov.uk/government/publications/flood-resilient-construction-of-new-buildings

[40] Ibid.

[41] Ibid.

[42] Planning Practice Guidance Paragraph: 059 Reference ID: 7-059-20140306

[43] Home Quality Mark (2018) Technical Manual. [online] Available at: https://www.homequalitymark.com/wp-content/uploads/2018/09/HQM-ONE-Technical-Manual-England.pdf

Property Flood Resilience Code of Practice[44] to ensure the suitability of the measures and their correct installation.

- Applicants should ensure that permeable surfaces, which allow for infiltration and reduce surface water runoff, are considered at the design stage (Figure 16).
- A Landscape Management Plan should be provided for applications that include a landscaping scheme. Such plans should also be prepared for any developments that host important habitats, greenspaces or are public facing. Appropriate land management can enhance water infiltration, reduce surface water run-off, and diffuse pollution from agricultural additives.
- Other flood risk reduction solutions include ensuring that layout and form of development is flood resilient, safeguarding land for flood risk management, designing off-site works required to protect and support development.
- Traditional buildings in flood risk areas tend to be constructed using materials which absorb and release water, but the drying process is slow. In most cases, historic materials and finishes can be retained after flooding, if treated carefully. However, it is important to ensure that appropriate measures are taken during retrofitting to ensure that drying processes will be secured. Therefore, it is discouraged to apply solutions such as cement-based coatings or injected damp-proof courses[45].
- Water basins and swales can be incorporated into a development. Swales are grassed depressions which help to drain water from for example roads or pavements. They have relatively low maintenance costs. Whereas basins are designed to help hold back storm runoff for a period of time, providing a temporary storm water storage and reduced peak flows to receiving waters.

### Reference to codes of practice

**4.3** CIRIA C790 – Making your property more flood resilient[46] sets a benchmark for those installing or constructing property flood resilience and includes six standards specifying what should be achieved when delivering property flood resilience.

### Dunsfold Park SPD

**4.4** The proposals included in the Dunsfold Garden Village SPD align with the advice provided within this SPD and will expect applicants to:

- Take a comprehensive approach to water management through the integration of Sustainable Drainage Systems with reference to the Surrey Local Flood Risk Management Strategy or the updated version of the document.
- Consider flood risk management at early stages and should promote and protect green and blue corridors.

[44] Ciria (n.d.) Code of practice for property flood resilience (C790). [online] Available at: https://www.ciria.org/Resources/Free_publications/CoP_for_PFR_resource.aspx

[45] Historic England (2015) Flooding and Historic Buildings. [online] Available at: https://historicengland.org.uk/images-books/publications/flooding-and-historic-buildings-2ednrev/heag017-flooding-and-historic-buildings/

[46] Ciria (n.d.) Code of practice for property flood resilience (C790). [online] Available at: https://www.ciria.org/Resources/Free_publications/CoP_for_PFR_resource.aspx

# Chapter 5
# Use of sustainable resources and materials and sustainable management of waste

**5.1** In 2018 England generated 61.4 million tonnes of non-hazardous construction and demolition waste, of which 93.8% was recovered. Even though the recovery rate is high, the process requires a lot of energy and is costly[47]. Therefore, applying more sustainable approaches to the use of resources and materials is important to both reducing the amount of virgin materials required and reducing the overall carbon footprint of a building.

## Link to Key Local Plan Policy Criteria

- **CC1: Climate Change** - development will be supported where it contributes to mitigating and adapting to the impacts of climate change, including measures that:
  - provide high standards of sustainable design and construction with built-in resilience to climate change (e.g., from flood risk, storms, higher temperatures and drought).
- **CC2: Sustainable Construction and Design** - the Council will seek to promote sustainable patterns of development and reduce the level of greenhouse gas emissions by:
  - minimising construction and demolition waste and promoting the reuse and recycling of building materials.
  - requiring the design of new development to facilitate the recycling and composting of waste.

**5.2** Supporting text for policies CC1 and CC2 states that the Council will adopt a "fabric first" approach. This will help to maximise the performance of the building's components and materials and minimise the need for expensive technologies reducing capital and operational costs. Developers must submit evidence as how they have considered 'fabric first' approach.

## Requirements and Guidance

### Requirements for Site Waste Management Plan

**5.3** A Site Waste Management Plan should be prepared and adopted for the construction phase of the development to design waste out from the lifecycle of the building or at least minimise it (minimal waste during construction, operation,

[47] Chau, W. Y. Ng. (2015) New Life of the Building Materials – Recycle, Reuse and Recovery. Energy Procedia. [online] Available at: https://www.sciencedirect.com/science/article/pii/S1876610215013491

deconstruction, next life of the built asset), and to divert as much waste as possible from landfill.

**5.4** All developments should provide the necessary space to facilitate recycling, including glass, cans, cardboard, paper, plastics, aerosols, cartons, and batteries, in accordance with Waverley Borough waste collection services. This also includes food and garden waste for households and can be accomplished by:

- Adopting community composting schemes; and
- Providing in-built compost heaps within the gardens of individual properties or shared amenity space.

### Re-use of materials

- The demolition of buildings should be minimised as far as possible to make the best use of 'embodied energy'. Materials derived from any demolition should be re-used on site, and if this is not feasible, opportunities for off-site refurbishing/repurposing should be considered. Applicants should demonstrate how material waste minimisation has been considered at the design stage.

### Modular design

**5.5** Modular construction, where structures are built using prefabricated parts and manufactured offsite, can result in more efficient use of materials and more control over the quality of elements such as insulation. It is also easier to manage energy and material use in a factory setting than in an open construction site. Modular construction techniques are now able to incorporate materials which complement traditional settings. Standardised element or modular designs can also reduce construction waste and facilitate reuse at the end of its first life.

### Use of low carbon and environmental impact materials

**5.6** The use of low carbon and environmental impact materials (including materials with recycled content) throughout the lifecycle helps minimise the impact of the resources consumed, and such approach should be prioritised.

**5.7** The use of locally sourced building materials not only helps to maintain local character of the Borough, but also reduces the carbon impacts of transport over longer distances and are strongly encouraged. Guidance on locally appropriate materials can be found in Surrey Design Guide SPD[48] or within Neighbourhood Plans that include policies on local design.

**5.8** Building materials should also be chosen to be resilient and withstand the expected changes in climate, including warmer summers and wetter winters. Resilient building materials will minimise the need to replace materials, thus reducing embodied carbon and reducing waste.

### Principles of a 'circular economy'

**5.9** Applicants should demonstrate how the planned development will conserve resources, increase resource efficiency and sustainable sourcing of materials.

**5.10** Developments which will design waste out from the lifecycle of a building will be prioritised.

**5.11** Applicants should demonstrate how sustainably construction and operational waste will be managed and ensure that it is managed at the highest value.

**5.12** Structural elements should last as long as the building does, whenever possible. If this is not possible due to for example anticipated change in requirements (e.g., IT infrastructure), those elements should be reusable, recyclable or dismountable.

**5.13** Development should ensure preventing of demolishment of premature building by encouraging a new design culture, through anticipating changes in requirement and enabling adaptations.

**5.14** Considering development lifecycle, including how buildings could be adapted to meet changing community needs and how products and materials can be designed for assembly, deconstruction, reuse, or recycling at the end of their lifetime will help to reduce embodied carbon and waste in the long term.

## Dunsfold Park SPD

**5.15** The proposals included in the Dunsfold Garden Village SPD align with the advice provided within this SPD and will promote measures such as:

- All materials should be attractive, high quality, robust, and require limited maintenance.

[48] Surrey County Council (2002) Surrey Design: A strategic guide for quality-built environments. [online] Available at: https://www.surreycc.gov.uk/__data/assets/pdf_file/0008/66887/Surrey-Design.pdf

- Locally sources materials should be used where possible to reduce transportation distances and carbon emissions.

# Chapter 6
# Water efficiency

**6.1** Water resources are becoming scarcer across England, but in particular in the south. Some areas of Waverley are already experiencing water stress during summer months including Godalming, Milford, Haslemere, Cranleigh and the eastern part of Farnham. In 2013, the Environment Agency confirmed that all three water companies serving Waverley have serious water stress issues[49]. Ensuring water efficiency in new development will be crucial for future water security.

## Link to Key Local Plan Policy Criteria

- **CC2: Sustainable Construction Design** - the Council will seek to promote sustainable patterns of development and reduce the level of greenhouse gas emissions by:
  - ensuring all new development, including residential extensions, to include measures to minimise water use through its design, layout, landscape, and orientation.
  - ensuring that new dwellings shall meet the requirement of 110 litres of water per person per day.

## Requirements and Guidance

### Guidance on water efficiency measures – water efficient toilets, taps, showers, and domestic appliances

**6.2** The Building Regulations (Part G)[50] has a mandatory standard of 125 litres/person/day for all new homes. However, further water savings and reductions in carbon emissions are required by the Council as reflected in policy CC2: Sustainable Construction Design.

- Applicants must demonstrate how the development will implement water efficiency measures, what type of appliances will be installed in bathrooms, kitchens and gardens and water recycling schemes in order to meet the 110 litres per person per day requirement, the Council will encourage applicants who can reduce this requirement even further. Other water efficiency measures include:
  - Ensuring correct water pressure levels.

[49] ATKINS (2020) Sustainability Appraisal of Waverley Borough Local Plan Part 2. [online] Available at: https://www.waverley.gov.uk/Portals/0/Documents/services/planning-and-building/planning-strategies-and-policies/local-plan/Waverley_SA_Final_Report_v3.0__2020_.pdf?ver=WF4lHzjCdY4bX1NrOmX7uQ%3D%3D

[50] UK Government (2016) Sanitation, hot water safety and water efficiency: Approved Document G. [online] Available at: https://www.gov.uk/government/publications/sanitation-hot-water-safety-and-water-efficiency-approved-document-g

- Water-saving water-fittings and appliances (such as dual-flush toilets, water-saving shower heads).
- Low-water-use washing and dishwashing machines.
- Devices that measure water consumption in a household.
- Insulated water tanks and hot water thermostat.

### Grey water recycling

- The Council supports development that promotes water efficiency measures and incorporates water conservation techniques, including rainwater harvesting and grey water recycling.
- The use of recycled rainwater or greywater can considerably reduce demand for non-potable water from the mains supply for applications such toilet flushing and irrigation. This can be achieved by the installation of separate wastewater drainage systems for toilets and grey water resources.
- Rainwater collection and grey water recycling facilities such as communal rainwater tanks and water butts should be installed in residential development where feasible. For non-residential developments of 1,000 sqm or more, the BREEAM 'Very Good' standard[51] is encouraged which requires a minimum level of water consumption improvements over baseline usage.

### Guidance on the application of water efficiency measures in different types of development

- The Council encourages development that promotes a fittings-based approach[52] to determine the water consumption for different types of development (residential, commercial, industrial, institutions e.g., schools). This approach is compatible with the emerging Water Label[53] which the Government and many water suppliers are supporting.
  - For commercial and industrial operations, water efficiency measures may require rethinking parts of the production process that require water and install water efficiency or recycling systems or upgrading existing solutions. Measures may also require detecting and preventing any leaks and delivering staff/student training to raise awareness on how water can be saved.
  - For certain commercial and industrial process rainwater harvesting and greywater recycling can deliver significant savings on water use.

## Dunsfold SPD

**6.3** The proposals included in the Dunsfold Garden Village SPD align with the advice provided within this SPD and will promote measures such as:

- Grey water recycling systems can make use of wastewater from kitchen and bathroom sinks, showers, baths, and dishwashers.
- Rainwater harvesting systems uses water tanks or butts to collect rainwater or redirect this for storage and reuse.
- On-site water management technology using sensors will monitor and anticipate extreme weather conditions.
- Permeable surfacing and vegetation can increase rainwater infiltration and direction towards natural watercourses, reducing surface water run-off.

[51] BREAM (n.d.) Scoring and Rating BREEAM assessed building. [online] Available at: https://www.breeam.com/BREEAM2011SchemeDocument/Content/03_ScoringRating/scoring.htm

[52] Fitting's approach is based on water efficiency calculator methodology. More details provided in https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/504207/BR_PDF_AD_G_2015_with_2016_amendments.pdf

[53] Waterwise (n.d.) Advice on water efficient new homes. [online] Available at: https://waterwise.org.uk/wp-content/uploads/2019/10/Advice-on-water-efficient-homes-for-England061118.pdf

# Chapter 7
# Design to encourage use of sustainable forms of transport

**7.1** The majority of Waverley's population (69%) lives within the four main settlements of Farnham, Godalming, Haslemere and Cranleigh. Access to sustainable transport is variable within the Borough and this is reflected in the mode share used when travelling to work or higher education, as recorded by the 2011 Census, with 79.7% of Waverley residents commuting by car. This is only marginally reduced for the main settlements (77.7%) and is noticeably higher than the 74% average recorded across the south-east of England.

**7.2** National data confirms that in 2018 transport produced 48.2% of carbon emissions in Waverley, a significant increase from the 34.7% recorded in 2005. The Borough also compares poorly in relation to the rest of England where transport emission equated to 37.6% of the total in 2018[54].

**7.3** Department for Transport statistics extracted from the National Travel Survey[55] confirm that a quarter of trips are under a mile in length, with almost half (46%) of trips under 2 miles in length. There is therefore good opportunity for an increased proportion of trips to be made on foot or by bicycle within Waverley's main settlements.

**7.4** Whilst the car will still have a role to play for residents living in rural areas, there is opportunity to encourage more sustainable travel practices through the introduction of measures including local and demand responsive bus services to provide access to the main settlements and the area's two main rail lines supporting access to a range of settlements including into the centre of London. The implementation of additional local bus services could reduce the existing demand on station parking by capturing rural trips and encourage a shift from the private car to more public transport for longer trips.

**7.5** Waverley's current transport emissions highlights that there is a need to change travel habits through promoting home working and encouraging the use of sustainable transport modes, in addition to promoting the use of electric / hydrogen vehicles if it is to tackle the climate emergency. This section of the SPD provides advice and guidance to support future development to promote the use of sustainable transport modes to reduce carbon emissions and improve air quality.

## Link to Key Local Plan Policy Criteria

**7.6** **ST1: Sustainable Transport -** The Council will work in partnership with Surrey County Council (SCC), neighbouring

[54] UK Government (2020) UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2018. [online] Available at: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2018

[55] UK Government (2021) Mode of travel. [online] Available at: https://www.gov.uk/government/statistical-data-sets/nts03-modal-comparisons

authorities, town and parish councils, transport providers and other key stakeholders to ensure that development schemes:

1. are located where opportunities for sustainable transport modes can be maximised, reflecting the amount of movement generated, the nature and location of the site and recognising that solutions and measures will vary from urban to rural locations;
2. make the necessary contributions to the improvement of existing, and provision of new, transport schemes that lead to improvements in accessibility and give priority to the needs of pedestrians, cyclists, users of public transport, car sharers and users of low and ultra-low emission vehicles;
3. include measures to encourage non-car use such as on-site cycle parking;
4. ensure development proposals are consistent with, and contribute to the implementation of the Surrey Local Transport Plan;
5. require the submission of Transport Assessments and Travel Plans and other appropriate measures in new developments that generate significant traffic volumes or have significant impact on the Strategic Road Network;
6. contribute to transport infrastructure improvements, where appropriate and viable;
7. are consistent with the objectives and actions within the Air Quality Action Plan;
8. encourage the provision of new and improved footpaths, bridleways, and cycleways, provided there would be no significant effect on SPAs and other areas of importance for nature conservation (Policies NE1 and NE3); and
9. make appropriate provision for car parking, having regard to the type of development and its location, in accordance with local standards.

**7.7 CC2: Sustainable Construction and Design** - The Council will seek to promote sustainable patterns of development and reduce the level of greenhouse gas emissions by:

1. being designed to encourage walking, cycling and access to sustainable forms of transport.
2. building at higher densities where appropriate and supporting mixed-use development.
3. requiring that all new buildings are provided with the highest available speed broadband infrastructure.

**7.8** Paragraph 7.26 of the Waverley LLP1 states that new development that generates a high number of trips will be directed towards previously developed land in sustainable locations or will be required to demonstrate that it can be made sustainable to reduce the need to travel and promote travel by sustainable modes of transport. All new development should be appropriately located in relation to public transport and the highway network.

**7.9** Supporting text for Policy ST1 specifies that in relation to Criterion 5, a Transport Assessment will be required to demonstrate:

- Safe and suitable access for all people;
- opportunities for sustainable transport modes have been taken up; and
- the highway/transport infrastructure improvements required to mitigate significant impacts of the development.

**7.10** Paragraph 7.8 of the Waverley LPP1 confirms that Parking Guidelines were published in 2013, based on 2012 Surrey County Council Parking Guidelines.

**7.11** Supporting Paragraph 7.7 of the Waverley LPP1 confirms that the Council will, where appropriate, require the use of Travel Plans by new development and promote their use within other areas. Paragraph 7.22 states that Surrey County Council has published good practice guidance on the thresholds for and preparation of Travel Plans.

**7.12** Paragraph 7.27 of the Waverley LPP1 confirms that the Council will support and promote measures to reduce reliance on travel by car both in providing for new development and in supporting measures promoted through the Surrey Local Transport Plan (LTP3). Surrey County Council is currently preparing Local Transport Plan 4 (LTP4) which will aim to further reduce emissions from transport[56].

**7.13** Paragraph 7.25 of the Waverley LPP1 confirms that the Council will, in conjunction with Surrey County Council, seek to

[56] Surrey County Council (n.d.) Surrey Transport Plan consultation on the plan. [online] Available at: https://www.surreycc.gov.uk/roads-and-transport/policies-plans-consultations/transport-plan/consultations#:~:text=Local%20Transport%20Plan%204%20(LTP4,LTP3%20following%20adoption%20in%202022.

improve the existing network of pedestrian and cycle routes where opportunities arise through development proposals.

**7.14** Paragraph 7.9 of the Waverley LPP1 confirms that improvements in the extent and quality of pedestrian and cycle routes can contribute to providing sustainable access to services, facilities, and jobs. Preferred cycle routes are set out within Waverley Cycling Plan Supplementary Planning Document (SPD). The County Council's Rights of Way Improvements Plan sets out improvement projects that could encourage users onto the PRoW network, whether for recreation or commuting purposes. Moreover, the Surrey Council is currently preparing the Waverley Local Cycling and Walking Infrastructure Plan (LCWIP) which is going to provide investment for walking and cycling paths[57].

**7.15** Paragraph 7.24 of the Waverley LPP1 confirms that, where appropriate and justified, contributions will continue to be sought from new development to produce improvements to the transport network.

**7.16** Paragraph 7.11 of the Waverley LPP1 confirms that the Council will encourage travel choice in the rural areas through initiatives such as demand responsive bus services, although it is accepted that there is unlikely to be a single model given the diverse needs of the rural areas.

## Requirements and Guidance

### Reducing the need to travel by vehicle

**7.17** In accordance with Policy ST1 of the adopted Local Plan, major developments should be located in an accessible location to provide opportunity for residents to access local facilities in addition to education and employment opportunities on foot, by bicycle or by public transport rather than by car. Locating employment developments close to established residential areas can also provide opportunity for commuting using active travel modes.

**7.18** Large-scale residential developments should be supported by a range of convenience retail and community uses in addition to providing local employment opportunities where possible, to reduce the need for residents to travel outside the site.

**7.19** The recent pandemic has demonstrated that more agile working practices can be adopted when supported by appropriate technology. This reduces the need to travel and with this, the emissions generated by the travel mode, but must be supported through the implementation of high-speed broadband as supported by Local Plan Policy CC2.

**7.20** The provision of local office hubs as part of larger residential developments can also support agile working practices and reduce the need for travel by car.

**7.21** Any major residential or commercial development should implement a delivery and servicing plan to determine the potential impact of deliveries to properties once in use. For residential properties this should consider online shopping and provisions for missed collections (with the potential for unattended locker box drop stations). For commercial properties, the obligation should be on the tenant of the buildings to implement a detailed delivery and servicing plan aimed at reducing traffic and emissions associated with business operations. Freight consolidation centres could be introduced on the edge of sites, with goods transferred to low emission vehicles for the final part of the journey to both reduce the number of vehicles accessing the site and with this, benefit the area's air quality.

### Promotion of sustainable travel modes

**7.22** Major developments should be planned with respect to existing active travel and public transport networks. They should seek to mandate provision of active travel infrastructure (segregated where possible) throughout the site, and importantly link to the existing external network and / or enhance the existing network wherever possible.

**7.23** The Council is implementing a programme of infrastructure improvements across the Borough's pedestrian and cycle networks and any new development should assist in the delivery of these measures where possible. The Council is working with SCC to develop a Local Cycle and Walking Infrastructure Plan (LCWIP) which will map out:

- Core Walking Zones in the centre of the Borough's towns and villages;

[57] Surrey Country Council (n.d.) Plans to improve walking and cycling. [online] Available at: https://www.surreycc.gov.uk/roads-and-transport/cycling-and-walking/plans

- Networks of walking routes radiating out from the Core Walking Zones; and
- A network of cycle routes linking settlements and residential areas both across the Borough and to adjacent boroughs and districts.

**7.24** The provision of safe, secure, visible, and convenient cycle parking as part of new residential and non-residential developments can assist with the promotion of cycling. The level of cycle parking should be in excess of the minimum parking standards set out within the Council's Parking Guidelines document,[58] with showers and changing facilities provided within non-residential developments. Improving technologies have resulted in an increased use of e-bikes and charging stations should be provided to accommodate these in larger developments.

**7.25** Cycle infrastructure design (LTN 1/20)[59] provides guidance and sets out good practice in relation to the design of cycling infrastructure to ensure that it is accessible to all. The document has the aim of promoting cycling as a means of everyday transit and confirms that networks and routes should be Coherent, Direct, Safe, Comfortable and Attractive to help to achieve this.

**7.26** The Department for Transport sets a vision for cycling and walking within its Gear Change document[60] setting the following nine key principles

- Cyclists must be separated from volume traffic, both at junctions and on the stretches of road between them.
- Cyclists must be separated from pedestrians.
- Cyclists must be treated as vehicles, not pedestrians.
- Routes must join together; isolated stretches of good provision are of little value.
- Routes must feel direct, logical and be intuitively understandable by all road users.
- Routes and schemes must take account of how users actually behave.
- Purely cosmetic alterations should be avoided.
- Barriers, such as chicane barriers and dismount signs should be avoided.
- Routes should be designed only by those who have experienced the road on a cycle.

**7.27** The layout of new developments should align with LTN 1/20 and Gear Change by providing highly legible transport networks and segregated cycling facilities where possible.

**7.28** Convenient pedestrian access should be provided to the nearest public transport facilities to promote the use of sustainable transport modes. Major developments should be located within a 5 minute (400m) walk of the nearest bus stops to promote public transport use in accordance with local and national planning policy. Where available, major developments should be located within a 10 minute (800m) walk of the nearest rail station.

**7.29** Site accessibility reviews should be undertaken using actual walking distances rather than relying on radius measurements, with commitment provided to implementing improvements to the local pedestrian network where required to support convenient access to local bus stops and rail stations.

**7.30** Consideration should also be given to the diversion of existing, or provision of new bus services in association with large-scale sites to ensure that developments are accessible by public transport, to reduce the level of trips generated by car. These local services could be demand responsive if appropriate and be supported by low emission or emission-free vehicles.

**7.31** Any improved or new bus services must be convenient and attractive to use, being integrated with the wider public transport network as far as possible.

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[58] Waverley Borough Council (2013) Parking Guidelines. [online] Available at: https://www.waverley.gov.uk/Portals/0/Documents/services/planning-and-building/planning-strategies-and-policies/Waverley%20Parking%20Guidelines%20October%202013.pdf?ver=VdM6DGQxSckAJbqXFKXGFw%3D%3D

[59] Department for Transport (2020) Cycle Infrastructure Design. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951074/cycle-infrastructure-design-ltn-1-20.pdf

[60] Department for Transport (n.d.) Gear Change: a bold vision for cycling and walking. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/904146/gear-change-a-bold-vision-for-cycling-and-walking.pdf

**7.32** Travel Plans should be developed in accordance with the SCC Travel Plan Good Practice Guide[61]. Meaningful and achievable targets should be identified to provide a sufficient level of information to those accessing a site to enable an informed travel choice to be made. Commitment should be provided to monitoring the travel plan, with additional measures and incentives implemented if required to support sustainable travel.

**7.33** Whilst residential developments should seek to minimise the level of general parking to encourage sustainable travel, spaces should be allocated for car club vehicles to support the use of a car by residents for longer journeys. SCC have negotiated a discounted rate for Surrey residents to join a car

[61] Surrey County Council (2018) Travel Plans – a good practice guide for developers. [online] Available at: https://www.surreycc.gov.uk/__data/assets/pdf_file/0008/192635/TP-Good-Practice-Guide-July18-v5.pdf

club scheme[62] and information can be provided about this within the development's travel plan.

**7.34** Car sharing can also offer a sustainable means to commute and Surrey Liftshare[63] has a number of members throughout the county. Parking spaces should be allocated within employment developments for those who car share to encourage multiple occupant car journeys.

### Walkable and Low Car Neighbourhoods

**7.35** As previously highlighted, the national travel survey confirms that a quarter of trips are under a mile in length. The promotion of 15-minute neighbourhoods as part of larger residential or mixed-use developments can support walkable neighbourhoods and reduce the number of shorter trips being made by car to day-to-day facilities including convenience shops, education, and healthcare facilities.

**7.36** The removal of a need for vehicles to undertake these shorter trips enables space to be allocated to providing attractive and convenient walking and cycle routes to further encourage active travel for shorter trips.

**7.37** Residential development design should align with the Surrey Design Guide[64] which was produced jointly between Surrey County Council, all eleven Surrey districts, the Home Builders' Federation, the Royal Institute of British Architects, the Landscape Institute, the Surrey Access forum, and Surrey Police. The guide provides a range of advice including

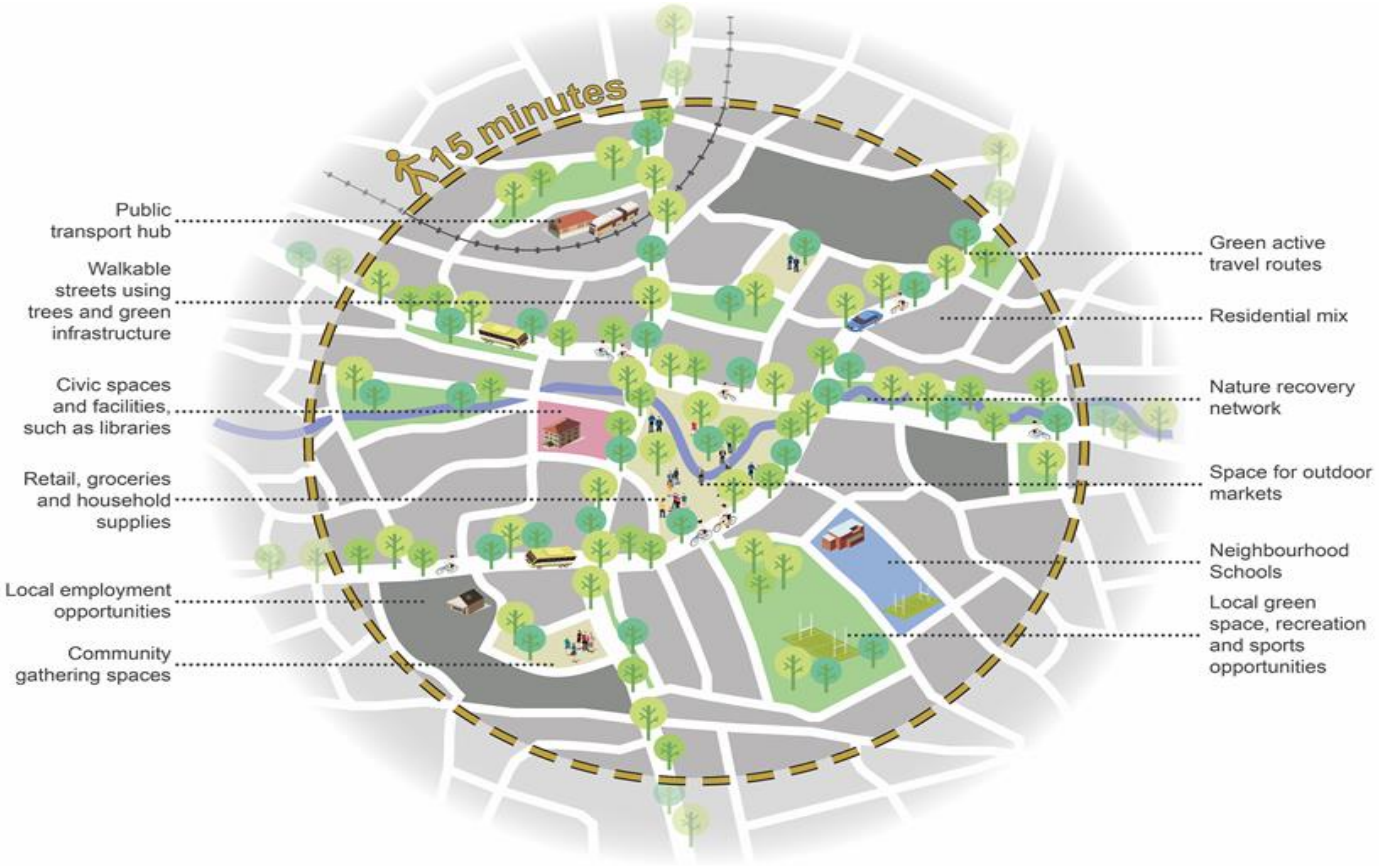


*Figure 12: 15-minute neighbourhood.*

[62] Surrey County Council (n.d.) Car Clubs. [online] Available at: https://www.surreycc.gov.uk/roads-and-transport/sustainable-driving/car-clubs

[63] Liftshare (n.d.) Liftshare. [online] Available at: https://liftshare.com/uk/community/surrey

[64] Surrey County Council (n.d.) Surrey Design: A strategic guide for quality-built environments. [online] Available at:

supporting the objective '*to create places for people that are safe and easy to move through and are accessible to all*.' This includes the promotion of a street network which encourages low vehicle speeds through the provision of measures including:

- Tight bends rather than sweeping curves;
- More frequent junctions;
- Reduce straight lengths of road for building up speed; and
- Buildings, walls, trees, and hedges close to the road.

**7.38** In accordance with the guidance, a well-connected and highly legible network of pedestrian and cycle facilities should be provided to encourage local trips to be made on foot or by bicycle.

**7.39** In the new town of Houten, in the Netherlands, sustainable travel options have been prioritised alongside restricted through-highway movements. As a result, walking and cycling are the most direct and convenient options for most local journeys, resulting in nearly 60% of trips being by these modes, despite car ownership being comparable to UK levels[65].

**7.40** A new garden village is planned for Dunsfold Park in the south-east of the Borough and aims to support sustainable rural living[66]. The proposals align with the advice provided within this SPD and will promote the following measures to support sustainable transport modes to, from and within the development:

- Provision of direct and attractive walking and cycling routes to promote active travel for all internal journeys.
- Provision of pedestrian and cycle linkage to adjacent areas.
- Introduction of enhanced bus services to connect the site with nearby settlements and ensure that every new residential dwelling is within a convenient 5 minute (400m) walk of a bus stop.
- Promote electric vehicle and car club use in addition to car sharing to accommodate an anticipated future reduction in car ownership levels.
- Provision of a range of uses within the garden village to reduce the need to travel outside the site.
- Issue of welcome packs and sustainable travel incentives to new residents and employees along with the offer of personal travel planning advice.

## Role of Transport Statements / Assessments and Travel Plans

**7.41** Transport Statements and Assessments should demonstrate that a development proposal complies with local and national transport policy. The Council confirms within Policy ST1 of the adopted Local Plan, that there is a requirement to submit '*Transport Assessments and Travel Plans and other appropriate measures in new developments that generate significant traffic volumes or have significant impact on the Strategic Road Network*'.

**7.42** Transport Statements and Assessments should be prepared with reference to the Waverley LCWIP, identifying where the development will support the implementation of local active travel infrastructure. They should also include an assessment of the propensity to cycle as a proportion of commuter and school journeys using the DfT sponsored Propensity to Cycle tool[67].

**7.43** SCC provide guidance on what should be provided to support planning applications within its Transportation Development Planning Good Practice Guide. The document includes guidance on the preparation of Transport Assessments with further available via the Government's website[68].

**7.44** As previously highlighted, SCC provide a Travel Plan Good Practice Guide[69] which confirms that the '*aim of all travel plans is to reduce the amount of vehicular traffic generated by a site, which in turn will both improve local air quality and site users' health, as well as reduce safety issues associated with higher levels of traffic*'.

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https://www.surreycc.gov.uk/__data/assets/pdf_file/0008/66887/Surrey-Design.pdf

[65] Folette, N. and Henderson, J. (2016). *Low Car(bon) Communities: Inspiring car-free and car-lite urban futures.* Routeledge

[66] Dunsfold Park (n.d.) Masterplan. [online] Available at: https://www.dunsfoldparkmasterplan.com/masterplan

[67] PCT (n.d.) Cycling to work. [online] Available at: https://www.pct.bike

[68] UK Government (2014) Travel Plans, Transport Assessments and Statements. [online] Available at: https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements

[69] Surrey County Council (2018) Travel Plans – a good practice guide for developers. [online] Available at: https://www.surreycc.gov.uk/__data/assets/pdf_file/0008/192635/TP-Good-Practice-Guide-July18-v5.pdf

**7.45** The guide identifies the following example objectives which could be included within a Travel Plan:

- the number of staff cars being driven to and from the office will be reduced;
- staff parking to cease along Acacia Avenue;
- all parking associated with the care home to be accommodated within the car park and not on neighbouring roads;
- the amount of single occupied vehicles entering/leaving the site during peak periods will be reduced; and
- the number of passengers using the bus service through Rose Bush Gardens will increase.

**7.46** Where possible, the objectives should be Specific, Measurable, Achievable, Relevant, and Time-Bound (SMART).

### Promotion of Electric Vehicles

**7.47** With the Government's plans to stop the sale of petrol and diesel cars by 2030, there is a clear requirement to accommodate low or zero emission vehicles within new developments. Whilst Hydrogen cars are likely to become more prevalent in the future, they do not require any local infrastructure to support their use. Electric vehicles will, however, require a significant investment in additional infrastructure to support their increased use, with charging points installed as part of all developments. Technology is constantly advancing, and further advice is provided at the Office for Low Emission Vehicles' website[70] to support the delivery of infrastructure to promote electric vehicle usage.

**7.48** The Council are working to install electric vehicle chargers across the Borough's public car parks and are reviewing the potential to install chargers to support on-street parking[71].

**7.49** SCC's Electric Vehicle Strategy[72] forms part of the Surrey Transport Plan and aims to '*Develop a Surrey-wide approach to encourage the transition from petrol and diesel vehicles to electric vehicles as part of a sustainable, integrated transport system*'. The strategy recognises that Surrey has the potential for a significant electric vehicle market due in part to existing levels of second car ownership and commuting distances.

**7.50** SCC's Vehicular and Cycle Parking Guidance[73] is constantly under review to ensure that it remains up to date in relation to emerging technologies and highlights the level of parking required to support different land uses. New developments should align with the guidance which identifies the following requirements for residential and commercial developments:

- Residential Developments:
  - Houses - 1 fast charge socket per house.
  - Flats / Apartments, Care / Nursing Home or Sheltered Housing - 20% of available spaces to be supported by a fast charge socket and a power supply to a further 20% of spaces to support future installation of fast charge sockets.
- Commercial Developments:
  - 10% of available spaces to be supported by a fast charge socket.
  - a further 20% of spaces to be provided with a power supply to support future installation of fast charge sockets.

**7.51** The charge points are to be supported by a minimum of 7kw Mode 3 with Type 2 Connector supported by a 230v AC 32 Amp Single Phase dedicated supply. As highlighted within the strategy document, it is the developer's responsibility to ensure that there is sufficient capacity in the electrical supply to meet future demands with power balancing technology installed if required.

**7.52** Charge points should not encroach on pedestrian and cycling infrastructure and be implemented into lampposts where possible. Consideration should be given to installing all new lighting columns as electric vehicle charge points, enabled to allow for later retrofitting.

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[70] UK Government (n.d.) Office for Zero Emissions Vehicles. [online] Available at: https://www.gov.uk/government/organisations/office-for-low-emission-vehicles

[71] Waverley Borough Council (n.d.) Electric Vehicle (EV) charging points in Waverley. [online] Available at: https://www.waverley.gov.uk/Services/Environmental-concerns/Sustainability-and-conservation/Electric-Vehicle-EV-charging-points-in-Waverley

[72] Surrey County Council (n.d.) Electric Vehicle Strategy: surrey Transport Plan. [online] Available at: https://www.surreycc.gov.uk/__data/assets/pdf_file/0008/189107/Electric-Vehicle-Strategy_p1.pdf

[73] Surrey County Council (2018) Vehicular and Cycle Parking Guidance. [online] Available at: https://www.surreycc.gov.uk/__data/assets/pdf_file/0005/155660/January-2018-Parking-Guidance-for-Development_p1.pdf

**7.53** The use of any spaces dedicated to electric vehicle use in commercial developments, should be managed to prevent use by other vehicles at any point during the day.

### Rural Travel Measures

**7.54** As previously highlighted, whilst the majority of Waverley's population lives within its four main settlements, a large proportion of the Borough is rural in nature and 31% of residents live outside the four main settlements. A number of the concepts identified within this document can also be applied to smaller-scale developments and developments in rural areas.

**7.55** By their nature, rural areas are generally less accessible by sustainable modes of transport although there are a number of rural rail stations provided in the west of Waverley, with bus services operating throughout the Borough. The level of provision reflects the rural nature of the area which they serve, nevertheless, there will be opportunity to promote future demand responsive bus services or existing car share schemes to occupiers of a future development.

**7.56** There may also be opportunity to provide a financial contribution to the enhancement of existing local services or to support the continued operation of the existing Hoppa service which currently serves Farnham, Godalming, Haslemere, Cranleigh and the surrounding villages[74]. The services should be highlighted within Travel Plans along with confirming the benefits associated with using the services which can provide a low-cost sustainable travel option.

**7.57** The promotion of car sharing schemes[75], provision of electric vehicle charging infrastructure[76] and ensuring that new developments have high speed broadband is essential to supporting sustainable rural development and guidance is provided with regard to these measures within this chapter.

[74] Hoopa (n.d.) About us. [online] Available at: https://www.hoppa.org.uk/
[75] Liftshare (n.d.) Lifeshare. [online] Available at: https://liftshare.com/uk/community/surrey
[76] Surrey County Council (2018) Vehicular and Cycle Parking Guidance. [online] Available at: https://www.surreycc.gov.uk/__data/assets/pdf_file/0005/155660/January-2018-Parking-Guidance-for-Development_p1.pdf

# Chapter 8
# Exemplar Development

**The Wintles, Bishops Castle, Shropshire**

*Figure 13: The Living Village Trust*[77]

**8.1** The development comprises of 12 eco-homes and achieves many energy efficiency objectives through:

- Settlement includes 12 acres of shared woodland and allotments for food production.
- Buildings are largely made of timber.
- Homes are insulated using warmcel recycled paper and have large windows placed on the southern side to harness sun light.
- Solar panels are installed for energy generation and heating of water.

**BedZED, South London**

*Figure 14: Bioregional*[78]

**8.2** Development includes 100 homes, offices, a college, and community facilities.

[77] The Living Village Trust (n.d.) [online] Available at: http://www.thelivingvillagetrust.com/the-wintles/

[78] Bioregional (n.d.) BedZED – the UK's first major zero-carbon community. Bioregional. [online] Available at: https://www.bioregional.com/projects-and-services/case-studies/bedzed-the-uks-first-large-scale-eco-village

- Built using locally sources materials (at least 50% come from within a 35-mile radius of the site).
- Buildings use reclaimed products such as steel – up to 15% of the total build amounting to 3,400 tonnes.
- Development was delivered on a derelict land (brownfield land).
- Homes are fitted in biomass boilers, solar panels, and energy efficient lighting.
- Roofs are well insulated with roof cowls to enable air circulation.
- Water saving appliances include dual flush toilets, aerated flow taps and shower heads and water efficient washing machines.

**TY Eco Homes, Pembrokeshire**

*Figure 15: TY Solar*[79]

- Buildings are powered by solar energy, using 15kW PV integrated solar roof systems with a 13.8 kWh Tesla Powerwall battery storage.
- Buildings were finished with local Douglas Fir tree classing and insulated using warmcel recycled paper insulation.
- Used a low carcinogen Swedish painting system that does not trigger reactions at asthma sufferers.
- Houses are south facing to take advantage of natural light and space heating.
- Homes provide EV charging for electric cars.

**East Village, London**

*Figure 16: East Village, Newham, Hidden London*[80]

**8.3** This development includes 2,818 urban residential housing:

- Development contains an onsite biomass power station, with 90% efficient heating systems.
- 90% of construction waste was saved from landfill.
- Each dwelling and common areas are fitted with LED lighting.
- Buildings have roof gardens installed.

**Primrose Hill Passivhaus, Plymouth**

*Figure 17: Passivhause Trust*[81]

**8.4** The development included 72 homes that are:

- Highly energy efficient and airtight, with triple glazed windows and doors.

[79] TY Solar (n.d.) Our Story: Towards a greener future. [online] Available at: https://tysolar.co.uk/ty-solar-story/

[80] Hidden London (n.d.) East Village, New Village, Hidden London. [online] Available at: https://hidden-london.com/gazetteer/east-village/

[81] Passivehaus Trust (n.d.) Primrose Park claims UK's largest residential Passivhaus title. [online] Available at: https://www.passivhaustrust.org.uk/news/detail/?nId=786

- Each house has a small gas boiler and just two radiators.

# Appendix A

## Climate Change and Sustainability Checklist

**Figure A.1: Climate Change and Sustainability Checklist**

| Relevant Local Plan Policy | Topic | Measures | Has this been considered in the planning application submission? (Yes/No/not Applicable) If No or Not Applicable please state reasons for this | If Yes, please signpost to relevant information within planning application submission |
|---|---|---|---|---|
| Minimising energy use in new developments (Chapter 2) | | | | |
| CC1: Climate Change<br>CC2: Sustainable Construction and Design<br>CC3: Renewable Energy Development | Energy Hierarchy | Adherence to the energy hierarchy. | | |
| | | Others (please state): | | |
| | Energy Efficiency measures | Demonstrate what energy efficiency measures are included in the planning application for the development (double glazing, EV charging points, etc.). | | |
| | | State what renewable and/or low carbon energy generation technologies are included. | | |
| | | Demonstrate that low energy internal and external lighting (e.g., LED lightbulbs) is provided. | | |
| | | Draft proofing (strips on doors, proofing of floors). | | |
| | | Heating systems and controls (heat pumps, solar hot water panels, etc.). | | |
| | | Heat recovery systems. | | |
| | | Connection to existing low carbon heat network. | | |
| | | A+++ standard white goods and boiler, smart meters | | |
| | | Cavity wall insulation, loft, and roof insulation, under floor insulation. | | |
| | | Other (please state): | | |

| Relevant Local Plan Policy | Topic | Measures | Has this been considered in the planning application submission? (Yes/No/not Applicable) If No or Not Applicable please state reasons for this | If Yes, please signpost to relevant information within planning application submission |
|---|---|---|---|---|
| Sustainable site layout, landscaping, and orientation of buildings | | | | |
| CC1: Climate Change<br>CC2: Sustainable Construction and Design | Design, layout, landscape, and orientation | Plot and dwelling orientation to maximise solar gain. | | |
| | | Window positioning to maximise solar gain. | | |
| | Overheating | Demonstrate how the development will provide natural shading to avoid overheating | | |
| | Fabric first measures | Ventilation systems are energy efficient and adequate to the size and function of a room. | | |
| | | Insulation of floors and loft areas. | | |
| | | High-capacity gutters. | | |
| | Embodied carbon | Use of materials with the lowest embodied carbon possible. | | |
| | | Re-use of materials from the development site and use reclaimed or recycled materials. | | |
| | | Use of local sustainable materials. | | |
| | Green and blue infrastructure | Protect and enhance existing green and blue infrastructure, such as green spaces and watercourses. | | |
| | | Demonstrate how selected green infrastructure will enable cooling of the building. | | |
| | | Reinstate areas of floodplains and riverside meadows, restoring the natural course of rivers. | | |

| Relevant Local Plan Policy | Topic | Measures | Has this been considered in the planning application submission? (Yes/No/not Applicable) If No or Not Applicable please state reasons for this | If Yes, please signpost to relevant information within planning application submission |
|---|---|---|---|---|
| | | Ensure that any new green and blue infrastructure is connected to the wider habitat network. | | |
| | | Long term maintenance of green and blue infrastructure. | | |
| | | Provide food growing spaces. | | |
| | | Integrate green infrastructure into parking design. | | |
| | | Other (please state): | | |
| | SuDs | Achieve greenfield run-off rates and manage surface water run-off as close to its source as possible, in line with the drainage hierarchy. | | |
| | | Demonstrate how the drainage hierarchy has been considered. | | |
| | | Use of blue roofs and rainwater harvesting including private and communal rainwater collection and reuse points/water butts. | | |
| | | Use of soakaways. | | |
| | | Use of landscape features - swales, wetlands, raingardens. | | |
| | | Use of natural water courses (unless not appropriate). | | |
| | | Other (please state): | | |

| Relevant Local Plan Policy | Topic | Measures | Has this been considered in the planning application submission? (Yes/No/not Applicable) If No or Not Applicable please state reasons for this | If Yes, please signpost to relevant information within planning application submission |
|---|---|---|---|---|
| | Biodiversity Net Gain | Specify how BNG principles have been applied to the development. | | |
| | | Existing and new green infrastructure links with the wider green infrastructure network. | | |
| | | Demonstrate how biodiversity has been enhanced at the site. | | |
| Climate change resilience and adaptation | | | | |
| CC1: Climate Change | Flood risk | Demonstrate that development is located away from a river and floodplains. | | |
| | | Provide a site-specific flood risk assessment. | | |
| | | Describe measures taken to minimise flood risk. | | |
| | | Demonstrate how the development is flood resistant. | | |
| | | Demonstrate what permeable surfaces will be implemented. | | |
| | | Provide a Landscape Management Plan (for large-scale sites). | | |
| | | Integrate flood risk solutions (e.g., safeguarding land for flood risk management, designing off-site works required to protect and support development). | | |
| | | Other (please specify): | | |
| Use of sustainable resources and materials and sustainable management of waste | | | | |

| Relevant Local Plan Policy | Topic | Measures | Has this been considered in the planning application submission? (Yes/No/not Applicable) If No or Not Applicable please state reasons for this | If Yes, please signpost to relevant information within planning application submission |
|---|---|---|---|---|
| CC1: Climate Change<br>CC2: Sustainable Construction and Design | Waste management | Provide a Site Waste Management Plan. | | |
| | | Provide facilities for waste sorting and recycling. | | |
| | | Provide facilities for food waste and garden waste composting. | | |
| | Re-use of materials | Re-use materials derived from any on-site demolition. | | |
| | Modular design and circular economy principles | Use of modular prefabricated parts. | | |
| | | Demonstrate how construction and operational waste will be managed. | | |
| | Circular economy | Demonstrate how the planned development conserved resources, increased resources efficiency, and adhered to sustainable sourcing of materials. | | |
| | | Demonstrate how the development prevented premature demolishment of existing buildings. | | |
| | | Demonstrate how the while lifecycle of the building has been considered. | | |
| Water efficiency | | | | |
| CC2: Sustainable Construction and Design | Water efficiency measures | Demonstrate how the development minimises the water efficient appliances (A+++ white goods and boilers). | | |
| | | Demonstrate how grey water recycling has been integrated. | | |

| Relevant Local Plan Policy | Topic | Measures | Has this been considered in the planning application submission? (Yes/No/not Applicable) If No or Not Applicable please state reasons for this | If Yes, please signpost to relevant information within planning application submission |
|---|---|---|---|---|
| | | Demonstrate how rainwater harvesting has been integrated. | | |
| Design to encourage use of sustainable forms of transport | | | | |
| ST1: Sustainable Transport | Reducing the need to travel | Development is accessible and provides an access to local facilities (concept of 15-minutes neighbourhood). | | |
| | | Provides a hub for remote working. | | |
| | | A Delivery and Servicing Plan (for major developments). | | |
| | | Provide segregated active travel routes within the development and connections to wider networks. | | |
| | | Provided cycle and walking paths are safe, secure, visible, and convenient. | | |
| | | Provision of cycle parking excesses the minimum parking standard set out within the Council's Parking Guidelines document. | | |
| | | Charging stations for e-bikes are provided. | | |
| | | Development is within 5 minutes (400m) walk of the nearest bus stop with frequent and multiple bus services. | | |
| | | Large development is located within 10 minutes (800m) walk from a railway station. | | |
| | | Provide a Travel Plan (in accordance with the SCC Travel Plan Good Practice Guide). | | |

| Relevant Local Plan Policy | Topic | Measures | Has this been considered in the planning application submission? (Yes/No/not Applicable) If No or Not Applicable please state reasons for this | If Yes, please signpost to relevant information within planning application submission |
|---|---|---|---|---|
| | | Provides a car club scheme. | | |
| | | Development is mixed-use. | | |
| | | Residential development design aligns with the Surrey Design Guide. | | |