Addendum May 2015

Following a written ministerial statement published on 25 March 2015, the text of Action 1 and paragraph 2.10 on page 15 of this document was amended to replace the requirement for new dwellings to meet the Code for Sustainable Homes Level 3 standard with a requirement for new dwellings to meet a water efficiency standard of 110 litres per occupant per day.

The Written Ministerial Statement can be found at: https://www.gov.uk/government/speeches/planning-update-march-2015

Addendum October 2015

From October 1 2015 onwards, the water efficiency standard for dwellings of 110 litres per occupant per day required by Action 1 will be assessed and enforced through the building control process through the implementation of regulation 36 paragraph 2(b) of the Building Regulations 2010 (as amended) and Approved Document G2 2015 edition (often referred to as the optional building regulation for water efficiency).

It is the responsibility of the person carrying out the work to ensure that the assigned approved inspector or building control officer is aware that this building regulation is in effect.

Action 1 in this document has been updated to reflect this change.

Text from original version of the document

Action 1

ACTION 1

*The Council will require residential developments of one or more gross units to achieve as a minimum Code for Sustainable Homes Level 3.*

*Developers will be required*¹ *by planning condition to submit an initial assessment and interim certification at the design stage, and, a final assessment and certification completed after construction.*

¹*unless otherwise agreed in writing by the Council*

Paragraph 2.10

In light of the Borough’s large environmental footprint, the National Targets to significantly reduce Greenhouse gas emissions by 2050 and the Council’s commitment to reducing CO2 emissions and resource use in the Sustainable Community Strategy, we will require all new residential dwellings in the Borough to achieve at least Code for Sustainable Homes Level 3. However, we recognise that there are alternative sustainable design assessments that applicants may wish to use, such as PassiveHaus or BREEAM for communities. If an applicant wishes to use an alternative to the Code for Sustainable Homes this will need to be agreed in writing by the Council.
SUMMARY

This Supplementary Planning Document (SPD) has been prepared to support and amplify the saved policies set out in the Guildford Borough Local Plan (2003). This SPD was formally adopted as part of the Local Development Framework by the Executive on 3 March 2011 and supersedes the Council’s Sustainable Development and Construction Supplementary Planning Document (December 2005) to take account of changes to national and regional planning policy and guidance.

The document has been produced to take account of the significant policy shifts, specifically in terms of the need to deliver new build zero carbon housing and significantly reduce greenhouse gas emissions to deliver the ambitious targets set out in the Climate Change Act.

This SPD has the status of a material planning consideration in the determination of planning applications by the Council and in support of its decisions at appeal.

This Supplementary Planning Document has been prepared in accordance with the Town and Country Planning (Local Development) (England) Regulations 2004 (as amended 2008 and 2009). The draft brief was subject to Habitat Regulation Assessment, Equalities Impact Assessment and Strategic Environmental Assessment screening. The document was subject to a broad consultation with public, local groups and national organisations in accordance with Guildford’s Statement of Community Involvement 2007, prior to its adoption in 2011.

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1.0 INTRODUCTION

1.1 Sustainable development is central to land use planning. The overall aim of the Guildford Local Plan (2003) and Local Development Framework (LDF) is to promote development that meets the needs of the present without compromising the ability of future generations to meet their own needs (paragraph 3.9).

1.2 Delivering more sustainable forms of development and effectively tackling the causes of climate change in the way that we plan for new development requires new thinking and an innovative approach, especially as the Borough grows. This SPD has been developed to amplify saved Local Plan and emerging GDF policies and assist those involved in the planning, design and construction of new development within Guildford Borough.

1.3 Research by the UK Climate Impacts Programme\(^1\) indicates that South East of England is predicted to experience the greatest change in its climate of any English region over the coming century. Examples of predicted effects include:

- hotter, drier summers (by 2080 average summer temperatures could increase by 3.9°C whilst summer rainfall could decrease by 23 percent)
- milder, wetter winters
- a significant seasonal changes in levels of soil moisture deficit
- more frequent extreme high temperatures
- more frequent extreme winter precipitation

1.4 Increased summer temperatures will have a range of impacts, including:

- higher temperatures will have implications for human comfort, overheating and heat stress. Increased summer temperatures will lead to increased demand for cooling in buildings, although higher winter temperatures will decrease winter energy consumption.
- hotter temperatures will lead to greater demand for urban green space, open spaces and shading. Green space and trees offer a way to cope with hot weather (through shading and evaporative cooling), but are themselves vulnerable to decreased water availability, rising temperatures, and changing patterns of disease and pests.
- cloud cover is projected to fall meaning that there will be more exposure to sunlight and UV rays in summer. This will impact on comfort in buildings and degradation of materials.

1.5 To summarise, the impacts of climate change are likely to affect us all, and through the use of the sustainable design and construction actions set out in this SPD, new development can adapt and mitigate climate change through a range of measures such as:

- high standards to thermal performance and energy efficiency
- high standards of water efficiency incorporating sustainable drainage measures

\(^1\)UK Climate Impacts Programme - Scenarios Gateway http://www.ukcip.org.uk/
1.6 Climate Change is a challenge for us all and we need to act now. There are a growing number of pressures, for example, energy prices are rising, the potential for waste disposal through landfill is decreasing and waste disposal charges are increasing. The strain and congestion on the Borough’s roads is readily apparent. Water supply, water consumption and flooding are all current issues.

1.7 Sustainable design and construction not only has benefits in terms of mitigating climate change, constructing buildings that are energy efficient and or supplied by low or zero carbon technologies can:

- improve the energy security of the development.
- reduce fuel poverty for householders which is caused by a combination of poor energy efficiency in homes, low incomes and high energy prices.

1.8 In order to face up to these challenges and deliver national policy through the local planning system as well as the Council’s aspirations for sustainable communities and buildings, this document sets minimum standards for new build residential and non-residential developments in the Borough.

Constraints and viability

1.9 The Council acknowledges that in certain circumstances the actions set out in this document may not be achievable and we will therefore be open to negotiations if a developer considers that one of the following factors applies to their development:

i. site constraints
ii. financial viability
iii. technical viability

1.10 In instances where the Council agrees that one or more of the actions set out in this SPD will not be achievable for a development, we will provide written confirmation of the policy or policies that will not apply to the development and the alternative standard(s) that will be required. An example would be the Council agreeing for a developer not to provide any Low or Zero Carbon technologies on site where they demonstrate the development scheme is unsuitable for such technologies.

Guildford Borough’s Carbon Footprint

1.11 Greenhouse gas emissions are widely recognised as being a contributing factor towards global climate change; therefore, the Council and its Local Strategic Partnership (LSP) Partners are committed to reducing greenhouse gas emissions of their operations and of those living and working within the Borough.

1.12 Data published by the Stockholm Environmental Institute (Table 1) concludes that Guildford Borough ranks 21st out of all local authorities in the UK (435 total) for its carbon footprint and greenhouse gas emissions.

Table 1:

<table>
<thead>
<tr>
<th></th>
<th>Guildford</th>
<th>UK average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon footprint (tonnes of carbon dioxide (CO₂) per capita)</td>
<td>13.93</td>
<td>12.10</td>
</tr>
<tr>
<td>Greenhouse gas footprint (tonnes of carbon dioxide equivalent (CO₂eq) per capita)</td>
<td>18.74</td>
<td>16.24</td>
</tr>
</tbody>
</table>
1.13 Graph 1 below highlights that Boroughs housing stock and transport account for over half of the Boroughs carbon emissions. Emphasising the importance of encouraging modal shift towards more sustainable forms of transport and the importance of ensuring new build developments are built to high energy and thermal efficiency standards and that the energy and thermal efficiency of existing building are improved.

### Graph 1

![Graph 1]

1.14 Graph 2 below highlights that Boroughs housing stock and transport account for over half of the Boroughs greenhouse gas emissions.

### Graph 2

![Graph 2]

1.15 The poor rankings above can be attributed to the following factors:
- Guildford is an affluent borough with high levels of car ownership and usage.
- A sizable proportion of the existing housing stock performs poorly in terms of energy and thermal efficiency.
- The Borough is congested and contains a major arterial route (the A3) which has an impact on the boroughs cumulative transport emissions.
- The lack of existing low and zero carbon infrastructure in the Borough

1.16 The Department for Energy and Climate Change[^2] collects a range of statistical data at council level that provides a useful overview of how councils perform against others in their region.

[^2]: http://www.decc.gov.uk/
1.17 Table 2 below indicates how Guildford Borough’s energy usage compares to the South East region average:

**Table 2:**

<table>
<thead>
<tr>
<th>Consumption Measure</th>
<th>Year data collected</th>
<th>Guildford Borough Average</th>
<th>Regional Average</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Domestic Gas Consumption (KwH)</td>
<td>2008</td>
<td>19625</td>
<td>17022</td>
<td>+15.20%</td>
</tr>
<tr>
<td>Average Domestic Electricity Consumption (KwH)</td>
<td>2008</td>
<td>5030</td>
<td>4791</td>
<td>+5%</td>
</tr>
<tr>
<td>Personal Road Transport Energy Consumption (tonnes of fuel)</td>
<td>2007</td>
<td>92.9</td>
<td>60.3</td>
<td>+54.10%</td>
</tr>
</tbody>
</table>

1.18 The data highlights the need for the Borough to improve the energy efficiency of buildings (both future and existing), increase usage of alternative modes of transport to the private vehicle such as walking and cycling.

**The Government’s commitment**

1.19 The Climate Change Act 2008 was enacted by Royal Assent on 26 November 2008 and makes the UK the first country in the world to have a legally binding long-term framework to cut carbon emissions. Two key aims of the Act are to:

- Improve carbon management, helping the transition towards a low-carbon economy in the UK
- Demonstrate UK leadership internationally, signalling that we are committed to taking our share of responsibility for reducing global emissions in the context of developing negotiations on a post-2012 global agreement at Copenhagen in December 2009.

1.20 The Act will deliver these aims through the introduction of a range of measures, but of most relevance to planning policy development, is the introduction of a legally binding target to reduce greenhouse gas emissions through action in the UK and abroad by:

- at least 34 percent by 2020 against a 1990 baseline
- at least 80 percent by 2050 against a 1990 baseline

**Our commitment**

1.21 The Council has signed up the [Surrey Climate Change Strategy](http://www.surreyimprovement.info/climate/SCCS/sccs) in 2008 that has the following central objectives:

- Progressive and permanent reductions in carbon dioxide (CO2) and other climate changing emissions;
- Effective adaptation to the impacts of climate change; and
- Raising awareness of climate change impacts and solutions.
Objectives of this SPD

- To ensure that all new developments are designed to the highest achievable sustainability standards and maximise environmental gain through environmental enhancements
- To ensure that all new developments are designed to make efficient use of natural resources, particularly water and energy
- To ensure that all new development are designed to mitigate and adapt the effects of climate change
- To ensure that all new developments consider the environmental impact of materials used
- To ensure that all new developments reduce their carbon emissions and incorporate sustainable energy
- To provide guidance and supplementary policies to enable applicants to satisfy saved policies G1 (9) and G1 (10) of the Local Plan, and, identify the information that is required to be submitted with applications.

Legislative Compliance

1.22 This Supplementary Planning Document has been prepared in accordance with the Town and Country Planning (Local Development) (England) Regulations 2004 (as amended 2008 and 2009). In accordance with the Council’s Statement of Community Involvement (February 2007) a formal six week public consultation was held between Monday 25 October and 5pm Friday 3 December 2010. The draft SPD was available to view and comment on the Council’s website. Letters (636) and emails (1,096) were sent to those interested parties whose contact details we hold. Copies of the draft SPD were available to view in the Council’s main Reception and Planning Reception at Millmead, and also in the Borough’s libraries.

1.23 Eighteen representations were received. These were considered and, where relevant, the draft SPD amended accordingly.

Strategic Environmental Assessment

1.24 In accordance with the European Directive 2001/42/EC “on the assessment of the effects of certain plans and programmes on the environment” (SEA Directive), as transposed into law by The Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations), local authorities are obliged to undertake a Strategic Environmental Assessment (SEA) on any plan or programme prepared for town and country planning or land use which sets the framework for future development consent of certain projects (which includes development sites over 0.5ha).

1.25 Under Article 3(3) and 3(4) of the SEA Directive, SEA is required for plans and programmes which “determine the use of small areas at a local level” or which only propose “minor modifications to plans” to plans and programmes, and which would otherwise require SEA, only where they are determined to be likely to have significant environmental effects. In screening to consider the likely extent of the SPD effect on the environment, the screening opinion concluded that a full Strategic Environmental Assessment was not required.

Habitat Regulation Assessment

1.26 The Council is required to consider the impact of the SPD on protected Natura 2000 sites. Within Guildford Borough,
this includes Special Protection Areas (SPA) and Special Areas of Conservation (SAC). Screening was carried out in accordance with legislation and guidance, and concluded that the SPD is not directly connected with or necessary to the management of the site, and is not likely to have a significant effect on a European Site (in combination with other plans or projects).

**Equalities Impact Assessment**

1.27 All public authorities are required by the Equalities Act 2010 to specifically consider the likely impact of their policy, procedure or practice on certain groups in the society. These groups (sometimes referred to as equality stands) are defined by the 2010 Act as age, disability, gender (sex), race, sexual orientation, religion or belief, gender reassignment, marriage and civil partnership, pregnancy and maternity. It is the Council’s responsibility to ensure that our policies, procedures and service delivery do not discriminate, including indirectly, on any sector of society. In order to anticipate likely differential impact on these groups, screening of the potential differential impact was carried out. The screening opinion concluded that a full Equalities Impact Assessment was not required.

**SECTION A: Policy And Legislation**

1.28 Sustainable development remains one of the key principles of the planning system in England, and the Government views the planning system as an effective means of delivering more sustainable buildings and places through effective sustainable design and construction policies.

**National Policy**

1.29 Planning Policy Statement 1 (PPS1) sets out the overarching principle for planning to deliver sustainable development. The document highlights that planning policy needs to take account of environmental issues such as by reducing green house gas emissions and increasing the use of renewable energy to mitigate the effects of climate change.

1.30 Tackling the causes and predicted effects of climate change within the planning system has received significant attention by the Government which in 2007 published a supplement to PPS1 on ‘Planning and Climate Change’. The supplement identifies providing policy encouraging renewable and low carbon energy generation as priorities.

1.31 Planning Policy Statement 9 (PPS9) sets out the Government’s planning policies on protection of biodiversity and geological conservation through the planning system. PPS9 states that local planning authorities should ensure that appropriate weight is attached to designated sites of international, national and importance; protected species; and to biodiversity and geological interests within the wider environment.

1.32 Planning Policy Statement 22 (PPS 22) sets out the Government’s planning policies on land use and renewable energy. The document states that local development documents should contain policies to promote and encourage the development of renewable energy sources, the wider benefit of such and the design and planning implications of incorporating renewable energy onto new development schemes.

1.33 Planning Policy Statement 25 (PPS 25) sets out Government policy on development and flood risk. The aims of the document are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate...
development in areas at risk of flooding, and to direct development away from areas of highest risk. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe, without increasing flood risk elsewhere, and, where possible, reducing flood risk over.

**National legislation**

1.34 The Government department for Communities and Local Government (CLG) is responsible for setting Building Regulations which exist principally to ensure the health, safety, welfare and convenience of people in and around buildings, and the water and energy efficiency of buildings. The regulations apply to most new buildings and many alterations of existing buildings in England and Wales, whether domestic, commercial or industrial. Part L of the Building Regulations\(^5\) set out the standards for the conservation of fuel and power for developments.

**Local policy**

1.35 The Council’s adopted Local Plan (2003) provides the framework for guiding development within the Borough. We will assess all development proposals against the criteria set out in the saved Local Plan policies.

1.36 The over-arching objective of the Local Plan and emerging Local development framework is the delivery of sustainable development in the Borough. The following policies provide the Council’s over-arching policies on adapting and mitigating the impacts of climate change and this SPD will expand upon these policies and provide guidance for developers.

**Sustainable Community Strategy**

1.37 Guildford Borough Council’s Sustainable Community Strategy\(^6\) is a long-term strategy to promote the social, economic and environmental well-being of the Borough and improve the quality of life of its residents. The Guildford Local Strategic Partnership\(^7\) (LSP) has adopted the Sustainable Community Strategy for Guildford Borough for the period up to 2026. The strategy is based on a vision for Guildford Borough for 2026 developed in conjunction with a wide range of partners and sets out the key objectives that partners will seek to deliver to turn the vision into reality. The strategy identifies that significant efforts will be required to reduce the Borough’s CO\(_2\) emissions and resource use in general, including through increased use of renewable energy sources and energy conservation, reduced consumption and more recycling.

1.38 The Sustainable Community Strategy is closely linked to the emerging Guildford development framework\(^8\).

**Guildford Town Centre Sustainable Energy Feasibility Study**

1.39 The Guildford Town Centre Sustainable Energy Feasibility Study\(^9\) assesses the potential for providing CHP, renewables and other energy efficiency measures on major development sites located within the Guildford Town Centre boundary and makes recommendations on the types of renewable energy infrastructure that could be incorporated.

1.40 The study may assist developers considering their renewable energy options and in producing an energy statement as part of their planning application.

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\(^5\)http://www.planningportal.gov.uk/wales/professionals/buildingregs/technicalguidance/bcconsfppartl/bcconsfppartlappdoc/
\(^6\)http://www.guildford.gov.uk/GuildfordWeb/Community/Localstrategicpartnership/SustainableCommunityStrategy2026/
\(^7\)http://www.guildford.gov.uk/index.aspx?articleid=638
\(^8\)http://www.guildford.gov.uk/index.aspx?articleid=3951
0 SECTION B: Sustainable design and your development

2.1 Sustainable design and construction requires new buildings and places to be designed to reduce their environmental impact and effectively mitigate and adapt to climate change. Sustainability and climate change should be considered in all development. The following four key issues are of importance:

- Environmental impacts: impacts may include unnecessary carbon emissions from a development, or impacts on health as a result of development.
- Resource efficiency: making the best use of natural resources such as energy, water and waste.

Table 3

<table>
<thead>
<tr>
<th>Code for Sustainable Homes (November 2010) categories and main issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Energy and CO2 emissions</td>
</tr>
<tr>
<td>• Dwelling emission rate</td>
</tr>
<tr>
<td>• Fabric energy efficiency</td>
</tr>
<tr>
<td>• Energy display devices</td>
</tr>
<tr>
<td>• External lighting</td>
</tr>
<tr>
<td>• Low or zero carbon technologies</td>
</tr>
<tr>
<td>3. Materials</td>
</tr>
<tr>
<td>• Environmental impact of materials</td>
</tr>
<tr>
<td>• Responsible sourcing of materials</td>
</tr>
<tr>
<td>5. Waste</td>
</tr>
<tr>
<td>• Storage of non-recyclable waste and recyclable household waste</td>
</tr>
<tr>
<td>• Construction site waste management</td>
</tr>
<tr>
<td>• Composting</td>
</tr>
<tr>
<td>6. Pollution</td>
</tr>
<tr>
<td>• Global warming potential of insulants</td>
</tr>
<tr>
<td>• Nitrogen Oxide (NO emissions)</td>
</tr>
<tr>
<td>7. Health and wellbeing</td>
</tr>
<tr>
<td>• Daylighting</td>
</tr>
<tr>
<td>8. Management</td>
</tr>
<tr>
<td>• Home user guide</td>
</tr>
<tr>
<td>• Security</td>
</tr>
<tr>
<td>• Considerate Constructors Scheme</td>
</tr>
<tr>
<td>9. Ecology</td>
</tr>
<tr>
<td>• Ecological value and enhancement</td>
</tr>
<tr>
<td>• Protection of ecological features</td>
</tr>
</tbody>
</table>

- Mitigation: to mitigate the effects of climate change, buildings should aim to reduce their greenhouse gas emissions that contribute to the effects of climate change. Carbon dioxide is one of the key greenhouse gas emissions.
- Adaptation: buildings and places should be designed following climate adaption principles reflecting the predicted effects of climate change such as high temperature, flood risk and ground conditions.

2.2 There are two industry leading assessment ratings that can be used to determine the sustainability of a development’s design and construction. For new build residential the Code for Sustainable Homes is a national standard for key elements of design and construction, and for non-residential developments BREEAM standards can assess the environmental performance of buildings.
2.3 The Code for Sustainable Homes is a voluntary standard designed to improve the overall sustainability of new homes by setting a single framework within which the home building industry can design and construct homes to higher environmental standards. Whilst the Code is currently a voluntary standard for the private housing development, since April 2008 all publicly funded homes have had to meet Code Level 3.

2.4 The Code measures the sustainability of a home against nine design categories (detailed overleaf in Table 3), rating the whole home as a complete package. A Code level is awarded on the basis of achieving both a set of mandatory minimum standards and a minimum overall score. For most of the issues within the Code assessment, developers and designers can choose standards to suit a given site and development.

2.5 The Code uses a sustainability rating system - indicated by stars, to communicate the overall sustainability performance of a home. One star is the entry level and six stars is the highest level - reflecting exemplar development in sustainability terms.

2.6 The principal policy tool for achieving zero carbon development will be the progressive tightening of the Part L of the Building Regulations:

1. On the 1 October 2010 Part L1A Conservation of fuel and power in new dwellings\(^\text{10}\) came into effect which seeks to reduce CO2 emissions by 25 percent over Part L1A 2006. This broadly corresponds with the trigger point for Code for Sustainable Homes Level 3, in line with the government’s strategy for all new build dwellings to be zero carbon by 2016.

2. 2013 a 44 percent improvement in the energy/carbon performance standard set by the current (2006) Building Regulations Part L - equivalent to energy/carbon standard of Code for Sustainable Homes Level 4


2.7 The energy performance of dwellings is assessed using Standard Assessment Procedure (SAP) which is the Department for Energy and Climate Change’s (DECC) methodology for assessing and comparing the energy and environmental performance of dwellings. SAP works by assessing how much energy a dwelling will consume and how much carbon dioxide (CO2 ) will be emitted in delivering a defined level of comfort and service provision, based on standardised occupancy conditions. This enables a like for like comparison of dwelling performance. SAP quantifies a dwelling’s performance in terms of: energy use per unit floor area, a fuel cost based energy efficiency rating (the SAP rating) and emissions of CO2. These indicators of performance are based on estimates of annual energy consumption for the provision of space heating, domestic hot water, lighting and ventilation. Other SAP outputs include estimate of appliance energy use, the potential for overheating in summer and the resultant cooling load.

2.8 The SAP calculations are the used to determine the following:

- Dwelling Emission Rate (DER) - this is the CO2 emission rate for the proposed dwelling. It is expressed in terms of kg/m\(^2\)/yr. In practice two DER calculations may be needed - the first at the design stage.

\(^{10}\)http://www.planningportal.gov.uk/uploads/br/BR_PDF_ADL1A_2010.pdf
based on plans and specifications used in the submission to the Building Control. The final calculation of the DER should be based on the dwelling as constructed, including any changes made and including the results of the air permeability test.

- **Target Emission Rate (TER)** - this is the target carbon dioxide Emission Rate - this is the energy performance target that must be achieved to comply with the requirements of the Approved Document. It is expressed in terms of kg/m²/yr. The TER is calculated using the SAP software.

2.9 The Council is committed to delivering the government's programme for all new homes to be built to zero carbon standards from 2016. We recognise that the delivery of zero carbon homes is a fast moving policy area and therefore to ensure that we understand the challenges, issues and opportunities involved in developing and building low and zero carbon homes we are supporting the objectives of the Zero Carbon Hub.

2.10 In light of the Borough's large environmental footprint, the National Targets to significantly reduce Greenhouse gas emissions by 2050 and the Council's commitment to reducing CO2 emissions and resource use in the Sustainable Community Strategy, we will require all new residential dwellings in the Borough to achieve a water efficiency standard of at least 110 litres per occupant per day.

**ACTION 1**

The Council will require residential developments of one or more gross units to achieve as a minimum a water efficiency standard of 110 litres per occupant per day.

This will be assessed through the building control process¹.

¹ The 'optional requirement' of 110 litres per person per day described by regulation 36 paragraph 2(b) of the Building Regulations 2010 (as amended) is in effect.
2.11 The Building for Life (BfL) standard is the national benchmark for well-designed homes and neighbourhoods in England.

2.12 The BfL standard comprises 20 criteria that were developed by the house-building industry in conjunction with CABE and other experts and is now administered by the Commission for Architecture and the Built Environment CABE:

Environment and Community
1. Does the development provide (or is it close to) community facilities, such as a school, parks, play areas, shops, pubs or cafes?
2. Is there an accommodation mix that reflects the needs and aspirations of the local community?
3. Is there a tenure mix that reflects the needs of the local community?
4. Does the development have easy access to public transport?
5. Does the development have any features that reduce its environmental impact?

Character
6. Is the design specific to the scheme?
7. Does the scheme exploit existing buildings, landscape or topography?
8. Does the scheme feel like a place with distinctive character?
9. Do the buildings and layout make it easy to find your way around?
10. Are streets defined by a well-structured building layout?

Building for Life

Streets, Parking and Pedestrianisation
11. Does the building layout take priority over the streets and car parking, so that the highways do not dominate?
12. Is the car parking well integrated and situated so it supports the street scene?
13. Are the streets pedestrian, cycle and vehicle friendly?
14. Does the scheme integrate with existing streets, paths and surrounding development?
15. Are public spaces and pedestrian routes overlooked and do they feel safe?

Design and Construction
16. Is public space well designed and does it have suitable management arrangements in place?
17. Do the buildings exhibit architectural quality?
18. Do internal spaces and layout allow for adaptation, conversion or extension?
19. Has the scheme made use of advances in construction or technology that enhance its performance, quality and attractiveness?
20. Do buildings or spaces outperform statutory minima, such as building regulations?

Building for Life

http://www.buildingforlife.org/
2.13 The BfL standard places homes in their wider place-making context. It was designed to focus attention on the quality of a development’s integration with its surroundings in a manner that does not add cost, if it is incorporated sufficiently early in the design process.

2.14 BfL assessments are scored against the 20 Building for Life criteria that leads to an assessment which is expressed as a mark out of 20 and the scores are divided into the following grades:

<table>
<thead>
<tr>
<th>BfL Grading</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Good</td>
<td>16/20 or more</td>
</tr>
<tr>
<td>Good</td>
<td>14/20 - 15.5/20</td>
</tr>
<tr>
<td>Average</td>
<td>10/20 - 13.5/20</td>
</tr>
<tr>
<td>Poor</td>
<td>9.5/20 or less</td>
</tr>
</tbody>
</table>

2.15 We monitor the BfL status of relevant residential developments each year through the Local Development Framework (GDF) Annual Monitoring Report.

**ACTION 2**

Building for Life will inform discussions concerning design quality at the pre-application stage. Developers of major residential schemes will be expected to engage with the Council at an early stage in the design of the development to achieve at least a Good BfL standard.

1 Major residential scheme: a development where the number of dwellings to be provided is 10 or more; or the site area is 0.5 hectares or more.

BREEAM 2008 categories and main issues

<table>
<thead>
<tr>
<th>Management</th>
<th>Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Commissioning</td>
<td>Construction waste</td>
</tr>
<tr>
<td>• Construction site impacts</td>
<td>Recycled aggregates</td>
</tr>
<tr>
<td>• Security</td>
<td>Recycling facilities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Energy</th>
<th>Pollution</th>
</tr>
</thead>
<tbody>
<tr>
<td>• CO2 emissions</td>
<td>Refrigerant use and leakage</td>
</tr>
<tr>
<td>• Low or zero carbon technologies</td>
<td>Flood risk</td>
</tr>
<tr>
<td>• Energy sub metering</td>
<td>NOx emissions</td>
</tr>
<tr>
<td>• Energy efficient building systems</td>
<td>Watercourse pollution</td>
</tr>
<tr>
<td></td>
<td>External light and noise pollution</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health and Wellbeing</th>
<th>Land Use and Ecology</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Daylight</td>
<td>Site selection</td>
</tr>
<tr>
<td>• Occupant thermal comfort</td>
<td>Protection of ecological features</td>
</tr>
<tr>
<td>• Acoustics</td>
<td>Mitigation/enhancement of ecological value</td>
</tr>
<tr>
<td>• Indoor air and water quality</td>
<td></td>
</tr>
<tr>
<td>• Lighting</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Public transport network connectivity</td>
<td>Embodied life cycle impact of materials</td>
</tr>
<tr>
<td>• Pedestrian and Cyclist facilities</td>
<td>Materials re-use</td>
</tr>
<tr>
<td>• Access to amenities</td>
<td>Responsible sourcing</td>
</tr>
<tr>
<td>• Travel plans and information</td>
<td>Robustness</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water</th>
<th>Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Water consumption</td>
<td>Exemplary performance levels</td>
</tr>
<tr>
<td>• Leak detection</td>
<td>Use of BREEAM Accredited Professionals</td>
</tr>
<tr>
<td>• Water re-use and recycling</td>
<td>New technologies and building processes</td>
</tr>
</tbody>
</table>
BREEAM Assessments

2.16 Building Research Establishment Environmental Assessment Method (BREEAM) provides assessments for a range of non residential development types including offices, schools, industrial and retail units. Annex 1 provides further details on the types of developments covered by BREEAM assessments.

2.17 Environmental performance is assessed by trained assessors against a range of categories which are set out in Figure 4 below:

2.18 Points are scored against each of the categories and the result is an environmental rating of the proposal in the range of Pass, Good, Very Good, Excellent or Outstanding. The certificate awarded will form essential evidence to prove that planning conditions have been met.

<table>
<thead>
<tr>
<th>BREEAM Rating</th>
<th>% Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unclassified</td>
<td>&lt;30</td>
</tr>
<tr>
<td>Pass</td>
<td>≥30</td>
</tr>
<tr>
<td>Good</td>
<td>≥45</td>
</tr>
<tr>
<td>Very Good</td>
<td>≥55</td>
</tr>
<tr>
<td>Excellent</td>
<td>≥70</td>
</tr>
<tr>
<td>Outstanding</td>
<td>≥85</td>
</tr>
</tbody>
</table>

2.19 A BREEAM assessment can be carried out at the above stages for the following types of building project:

- Whole new buildings
- Major refurbishments of existing buildings
- New build extensions to existing buildings
- A combination of new-build and existing building refurbishment
- New build or refurbishments which are part of a larger mixed use building.

ACTION 3

The Council will require non residential developments of 1000 sqm or more (net) floorspace to achieve a BREEAM Very Good assessment rating as a minimum. Developers will be required by planning condition to submit an interim certificate at the design stage ¹, and, a final assessment and certification once construction is complete.

¹unless otherwise agreed in writing by the Council

Note: For further information on BREEAM Assessments please refer to the BREEAM Manuals (site registration required)
Figure 5: CSH and BREEAM process for new build

Promoting the principal
Planning agents and developers must take account of the requirements set out in this SPD when developing their schemes.

An assessment must be embedded at the start of the development process

Initial proposal stage
Developer instructs CSH / BREEAM Assessor to register their project with a CSH / BREEAM certification body

Pre application
Pre-assessment estimate completed by a licensed CSH / BREEAM Assessor provided by the developer to Guildford Borough Council

GRANT of planning permission
Buildings potential to meet Code for Sustainable Homes Level 3 or BREEAM ‘Very Good’ demonstrated by the pre-assessment schedule

Planning Application Validation
Pre Assessment demonstrates potential of design to meet Code for Sustainable Homes Level 3 or BREEAM ‘Very Good’ as a minimum?

Condition on planning permission
Condition requiring final certification and the Assessment Report to be submitted prior to the occupation of buildings

Condition met

NO

Planning permission likely to be REFUSED

YES

Condition met

Guildford Borough Council enter building CO2 emission data (taken from CSH / BREEAM report) into application monitoring system

Report data in Guildford Borough Councils Annual Monitoring Report. This enables the Council to review the success if policy and procedures
3.0 SECTION C: On site low and zero carbon technologies

New Build

3.1 The Code for Sustainable Homes and BREEAM Assessments provide credits for energy and CO2 efficiencies. The Council considers that new commercial and residential developments should be designed to provide reductions in carbon emissions through the installation of onsite low or zero carbon technologies.

3.2 There are a range of technologies available to deliver these requirements including; solar thermal panels, photovoltaic cells, small wind power generators, biomass heating and hot water systems, ground source heat pumps, micro combined heat and power systems (powered by a renewable fuel source) or energy efficient ventilations systems.

3.3 The Council will require detailed information on the type(s) of low and zero carbon technologies being used as part of the development. The information required is detailed in Annex 2 and should be submitted either as part of the Design and Access Statement or as part of a low and zero carbon feasibility study.

3.4 Our requirements for carbon emission reductions from on site low and zero carbon technologies (LZCTs) have been developed to align with the Code for Sustainable Homes and BREEAM assessment scoring method.

Action 4

The Council requires 1:

Residential developments of 1 or more (gross) units to achieve a 10 percent reduction in carbon emissions through the use of on site low and zero carbon technologies 1

Non residential developments of 1,000sqm or more (gross) floorspace to achieve a 10 percent reduction in carbon emissions through the use of on site low and zero carbon technologies 1

1 unless the applicant can demonstrate that LZCTs are not feasible and this is agreed in writing by the council

Retrofitting existing housing stock

3.5 The Council is keen to promote energy efficiency throughout the Borough. The Council has produced a Microgeneration on Dwelling Houses Planning Guidance Note explaining the situations in which an application for planning permission may not be needed for microgeneration developments such as solar power installations and ground source heat pumps on private dwellings.

Listed Buildings

3.6 Listed buildings represent a small percentage of the nations building stock. Opportunities for the use of renewable energy and energy efficient measures, which do not impact adversely on the character or special historic or architectural interest of these buildings, will be encouraged. However it is inevitable that some of these buildings will not be able to accommodate the same alterations that are considered appropriate on unlisted buildings.
Figure 6: On site low and zero carbon technologies process for new build

Promoting the principal
Planning agents and developers must take account of the requirements set out in this SPD when developing their schemes.
An assessment must be embedded at the start of the development process.

Initial proposal stage
Developer designs the scheme so that it will deliver a 10% reduction in carbon emissions through the use of on site renewable / low carbon technologies.
Developer instructs CSH/BREEAM assessor to register their project with a CSH/BREEAM certification body.

Pre application
Code for Sustainable Homes (CSH)/ BREEAM pre assessment estimate completed by a licensed assessor.

Planning Application Validation
CSH/ BREEAM pre assessment estimate demonstrates that the design can deliver a 10% carbon emission reduction through the use of on site renewable / low carbon technologies (unless otherwise agreed in writing).

YES
GRANT of planning permission
Condition on planning permission
Condition met

NO
Planning permission likely to be REFUSED
Report data in Guildford Borough Councils Annual Monitoring Report. This enables the Council to review the success if policy and procedures.
3.7 Listed Building Consent LBC is required for alterations to both the interior and exterior of listed buildings. Only imaginative approaches which leave the historic fabric and form of the listed building intact may be considered acceptable.

3.8 LBC will be required for all solar panel installations on listed buildings. Solar panels fixed to a listed building require LBC as they are very likely to affect the character or special historic or architectural interest of the listed building. Planning Permission may also be required.

3.9 Opportunities may exist for panels to be located elsewhere on the property. For example, consideration may be given to curtilage-listed outbuildings if the panel is concealed in valley roofs, which may still require Listed Building Consent. It may also be possible to locate solar panels discreetly at ground level where they are not visually prominent within the setting of the listed building.

3.10 If works to a listed building, curtilage listed building, or within the setting of a listed building are being considered it is advised that a Conservation Officer is consulted at an early stage to ascertain what consents may be required.
4.0 SECTION D: Further Guidance

4.1 This Section provides further guidance for developers on how they can deliver developments that are designed and constructed sustainably. The section is broken up into the following themes:

- Energy and Carbon,
- Water,
- Ventilation and cooling,
- Materials,
- Biodiversity and Climate Change,
- Transport and Access,
- Waste,
- Data Services.

D1. Energy and Carbon

4.2 When thinking about reducing the carbon emissions from a development you should apply the energy hierarchy. This will help guide decisions about which energy measures are appropriate in particular circumstances.

4.3 The previous section set out a requirement for all new homes and non residential developments of 1,000sqm or more (net) additional floorspace to reduce carbon emission through the use of low and zero carbon technologies. Annex 2 provides further detail on the types of low and zero carbon technologies that developers can incorporate into their schemes and the information that development control officers may require from applicants for new build schemes.

4.4 The inclusion of conventional air conditioning should be avoided where possible as it can increase the energy consumption of a development and produces heat that needs to be disposed of elsewhere. Both ground source heat pumps and air source heat pumps can provide energy efficient cooling solutions for new developments, in addition to the use of shutters, solar shading and natural ventilation.

Design Issues

4.5 There are a number of design issues associated with each sustainable energy technology which should be taken into consideration when assessing their feasibility and viability. Many of these are set out in Planning for Renewable Energy: A Companion Guide to PPS22. While they are usually specific to each technology, in general, design issues include:

<table>
<thead>
<tr>
<th>The Energy hierarchy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reduce the need for energy:</strong> Site layout and orientation of buildings can reduce the energy demand of buildings by capitalising on passive solar gain which utilises the energy from the sun to heat and provide light for certain rooms of a building</td>
</tr>
<tr>
<td><strong>Use energy efficiently:</strong> There are a range of measures that can be incorporated into developments to reduce energy usage. These include thermal efficient glazed windows, draught proofing, insulation, and energy efficient appliances (e.g. boilers, lighting systems)</td>
</tr>
<tr>
<td><strong>Supply energy efficiently:</strong> By using existing energy supplies more efficiently greenhouse gas emissions can be significantly reduced for example by using Combined Heat and Power networks.</td>
</tr>
<tr>
<td><strong>Use renewable/low carbon energy:</strong> Developers can incorporate technologies that obtain energy from flows that occur naturally and repeatedly in the environment - such as photovoltaics, solar thermal and biomass heating.</td>
</tr>
</tbody>
</table>
For individual buildings where micro-renewable technologies may be employed these can include siting, efficiency (e.g. pitch of solar PV panel), colour and appearance, noise, connection and potential ecological or landscape impacts.

For groups of buildings where CHP and heat networks are employed these can include access (for fuel supplies i.e. biomass), visual intrusion, location of plant, noise from traffic and plant operations, local ecology, mix of uses, adjoining developments and heat networks and potential ecological and landscape impacts.

4.6 The opportunity for development to contribute will vary, as the potential for integrating sustainable energy technologies will differ greatly between different development and sites. Suitable sustainability installations are likely to be affected by the physical nature of the development such as aspect, building height and the ecology of the area. Annex 2 provides guidance on the types of information required by the Council.

4.7 Managing and reducing the use of water safely and efficiently is an important issue for the Council and must be considered in any development. The Guildford Borough Local Plan Policy G1 (10) sets out the policy basis for conserving water and this is further emphasised in the Surrey Design Guide that states that:

- Water should be used effectively (Principle 4.2)
- All development should prevent water pollution and flooding, conserve groundwater and improve water habitats (Principle 4.4)

4.8 For all new homes in the Borough to comply with the requirement to meet at least Code Level 3, developers will need to demonstrate that all homes are designed to consume a maximum of 105 litres per person per day of portable water. If a developer were to seek a Code for Sustainable Home Rating of Level 5 or above, the water consumption of the residential units would need to be designed to consume a maximum of 80 litres per person per day of portable water.

<table>
<thead>
<tr>
<th>Code for Sustainable Homes Level</th>
<th>Maximum consumption of portable water (litres/person/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 and 4</td>
<td>105</td>
</tr>
<tr>
<td>5 and 6</td>
<td>80</td>
</tr>
</tbody>
</table>

4.9 Water efficiency measures that can be incorporated into new developments include:

- Installing showers and spray taps with low flow rates
- Installing dual flush toilets
- Installing energy and water efficient appliances
- Harvesting rain water and recycling of water (grey water) - Collecting rainwater from roofs and other surfaces for reuse (for example in flushing toilets or irrigation) or recycling greywater from sinks or showers reduces water use. By reducing the amount of water entering the drains, water reuse also reduces the risk of surface water flooding.
- Xeriscaping – Selecting drought resistant or low water use plants will greatly reduce water demands associated with landscape.

4.10 BREEAM standards issue credits for a buildings water consumption performance. For example the BREEAM Offices (2008) Assessor Manual states that credits will be awarded as follows:
4.11 We encourage developers to seek to achieve the highest level of water efficiency as possible, either by achieving the maximum level of BREEAM credits as detailed above or by embracing the best practice level of the AECB (Association for Environment Conscious Building) Water Standards.

Sustainable Drainage Systems (SuDS)

4.12 Planning Policy Statement 25 encourages councils to require developers to incorporate SuDS into the design of their development and promote the use of SUDS for local amenity and biodiversity. There are a range of SuDS techniques available including filter strips and swales; infiltration devices; filters and permeable surface materials, and, basins and balance ponds (refer to Annex 3 for further information).

4.13 The incorporation of Sustainable Urban Drainage Systems is a mandatory requirement of the Code for Sustainable Homes and therefore for all new residential developments within the Borough. However, the Code provides additional credits for developments exceeding the mandatory requirements (refer to the Code for Sustainable Homes Technical Guidance).

Flood risk reduction

4.14 The Council has produced a Flood Risk Reduction Measures document to support the approach taken in the Strategic Flood Risk Assessment (SFRA) to development in Guildford Urban Area. This work has been undertaken in partnership with the Environment Agency. To employ the approach, any proposed development within the floodplain in Guildford Urban Area must comply with the Flood Risk Reduction Measures document.

4.15 The Flood Risk Reduction Measures document provides details of flood risk reduction measures to be used in Flood Zone 3 in Guildford Urban Area, to ensure all opportunities are taken through new
development to reduce the consequences of flooding. As set out in PPS25, development in Flood Zone 3 must pass the sequential and exception tests, where required, before appropriate risk reduction measures can be considered.

D3. Ventilation and cooling

1. Ventilation

4.16 Buildings should be designed to allow and make best use of natural ventilation and that the internal layout supports the building in coping with ventilation and cooling. Ventilation should be designed so as not to compromise security, ambient noise levels and air quality. The levels of pollutants will be affected by more frequent summer temperature inversions expected in the future, while the amount of dust is likely to increase in summers, as they become hotter and drier.

4.17 Buildings should be designed to be able to maintain comfortable internal temperatures during heat waves, which are likely to become more frequent and more intense over their design life. One way to do this is to design in at the outset the use of heat exchange/groundwater cooling.

2. Cooling systems

4.18 Providing summertime thermal comfort does not mean you have to use air conditioning systems. Passive design, such as solar shading, thermal mass and the proper use of ventilation, will be instrumental in the way buildings adapt to climate change impacts.

4.19 Where air conditioning cooling systems are used, it should be recognised that they will disperse heat elsewhere. This heat has the potential to cause problems for the occupants of other developments, people in public spaces and the environment in general.

4.20 If possible, cooling systems should be powered by local renewable energy sources. For example, solar energy is most available when cooling is most needed (i.e. during daylight hours).

D4. Materials

4.21 The average person in the UK currently uses 12 tonnes of materials per annum, whilst the construction industry uses about 420 million tonnes p.a. (6 tonnes per head of population), of which only 10 percent is from re-cycled sources and less than 1 percent is reclaimed. The transport of materials in the construction industry alone accounts for 30 percent of road freight.

4.22 When sourcing materials for your development you should consider five key principles and opportunities for improving the environmental performance of materials used. These should ideally be considered early on in the design stage. These are:

1. Environmental Impact - Use materials which have low embodied energy which have been manufactured through processes which use low consumption of energy.

2. Responsible Sourcing - Using materials from sustainably managed sources.

3. Re-use of materials - Re-using uncontaminated materials from the development site and reclaimed or recycled materials for a range of uses.

4. Transport - Using local materials to reduce transportation related impacts.

5. Purchasing - When considering contractors and suppliers of materials, consider whether the supplier has an environmental policy, a track record in high environmental performance or any environmental accreditation.
D5. Biodiversity and Climate Change Mitigation

4.23 Residential and commercial developments will be required to submit a site survey to determine whether designated sites, UK and Surrey Biodiversity Action Plan (BAP) habitats and protected or biodiversity priority species and habitats will be affected by the proposal and if so how the applicant will avoid or mitigate this.

4.24 Existing planting and trees should be retained. If this is not possible the plants and trees should be replaced by UK native species derived from seeds of local provenance. The planting of non native or highly invasive plants such as Japanese Knotweed should be avoided in developments.

4.25 Landscaping should be an integral part of new developments. Landscaping should maximise the use of plants, hedges and trees, soft boundary treatment, ponds, wildlife buffer zones and links to existing wildlife corridors to introduce wildlife and biodiversity to the site.

Street Trees

4.26 Trees are an important component of a healthy neighbourhood and should be included in new development with existing trees retained, where possible. A variety of native species is best that can be incorporated into a network around the urban areas. The benefits of urban trees include:

- Saving as much as 10 percent of annual energy consumption around buildings by moderating the local climate keeping it cool in summer and warmer in winter.
- Tree canopies reducing rainstorm impact and providing a natural alternative to resource-heavy flood control systems that depend on hard engineering.
- Helping to filter harmful pollutants from the air, making areas with many trees healthier places to be than areas without trees.
- Creating vital wildlife habitats, enabling more species to thrive in their surroundings
- Reducing noise by acting as a sound barrier.

4.27 The Department for Environment, Food and Rural Affairs (DEFRA) produced a Strategy for England’s Trees, Wood and Forests (2007) that identifies the importance of:

- factoring trees and woodlands into development proposals at an early stage, and,
- choosing trees, sites and management that will give the best chance of delivering a range of benefits both now and as the climate changes.

Green Networks

4.28 Green networks are linear habitats or groups of habitats and sites that allow plants, mammals, birds and insects to move around. Green networks/corridors should be designed into large developments; small-scale developments should link with established corridors. Developments should include simple ways of assisting wildlife to move through, and thrive within, the development such as road crossing facilities.

‘Existing landscape and habitats should be retained and wildlife enhanced’
Green Roofs

There are a wide range of benefits that green roofs provide including:

- Reducing energy and CO2 emissions: Green roofs have a substantial thermal mass and so can provide moderate insulation this means that air conditioning costs can be significantly reduced. In addition, green roofs work well with solar panels, as they increase the efficiency of solar panels by regulating temperature.

- Reducing surface water run-off: Green roofs reduce the peak flow and the total volume discharged from a roof (they can intercept at least 5mm of rainfall). In addition green roofs can improve the water quality of the run-off. Research in a number of countries has shown that both nitrogen and phosphorus in run-off can be reduced.

- Improving biodiversity: Green roofs provide a habitat for wildlife, especially if you include nest boxes, logs and water features, and plant native species. Research has shown that well-designed extensive green roofs can provide an important refuge for rare invertebrates associated with brownfield sites and other dry, well-drained, low-nutrient habitats.

- Sound insulation: The combination of soil, plants and trapped layers of air within green roof systems can act as a sound insulation barrier. Sound waves are absorbed, reflected or deflected. The growing medium tends to block lower sound frequencies whilst the plants block higher frequencies. For example, noise entering the building can be reduced by up to 18 decibels. Reflective noise can be reduced by three decibels or more.

- Improved Air Quality: Green roofs can filter dust and other air pollutants airborne particles and pollutants are filtered from the atmosphere by the substrates and vegetation on a green roof.

- Additional Amenity space: In dense urban environments there is often a lack of green space for residents. Roof Gardens and roof top parks provide important green spaces to improve the quality of life for urban residents.

D6. Transport and access

4.29 Developments should create, or link to, pedestrian and cycle routes, and public transport, to maximise accessibility for people to travel by these alternative modes.

Pedestrian access

4.30 Applicants should ensure that their proposed development includes measures that provide pedestrians with priority over cars, such as wide pavements and traffic calming measures, by consulting Surrey County Council early in the design process.

Cycle infrastructure

4.31 Developers of new residential development schemes will be expected to provide cycle parking provision compliant with the requirements established in the Vehicle Parking Standards SPD. Developers of sites within urban areas are encouraged to provide greater levels of secure cycle parking than the requirements detailed in the Vehicle Parking Standards SPD to reflect the suitability of cycling for journeys within urban areas.
4.32 To promote modal shift, the Council will expect commercial and retail developments to provide secure cycle storage facilities and provide changing and showering facilities for employees and visitors to encourage sustainable travel.

**Car Clubs**

4.33 Car clubs are a method of car sharing where a group of people share access to a communal car. In a car club, you pay for how much you use the car. Joining a car club is a financial winner for low-mileage users and a good alternative for families considering buying a second car. At the time of writing Streetcar is the only car club company operating within the Borough.

4.34 Car clubs have many benefits, notably reducing the number of vehicles within urban areas as members pay the full cost of car use each time they use the car, reducing the temptation to use a car unnecessarily for short journeys.

4.35 The Council’s Planning Obligations SPD sets thresholds above which the Council will negotiate provision of allocated parking space(s) for Car Club vehicle(s).

**D7. Waste**

4.36 Internal and external storage areas, designated for recycling purposes, should be integrated into a development. The Council has produced detailed guidance on the storage and collection of household waste to clearly set out the access requirements for the Council’s refuse collection fleet and the types and size of refuse and recycling storage containers that will need to be provided.

4.37 For commercial developments, space should be allowed for the collection and storage of bulk material for recycling.

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4.38 The provision of high quality data services (such as high speed broadband) can contribute towards reducing Green House gas emissions by encouraging home based enterprise and home working so business can be conducted as if in an office. Furthermore, Intelligent Homes can exploit data service connectivity and deliver new services to residents, manage heating and energy usage automatically to help reduce carbon emissions and wasted energy.

4.39 We encourage developers to design their developments to ensure that they are future proofed for the introduction of new technologies. In addition, we will encourage developers of major residential schemes to take account the guidance contained within the Data Ducting Infrastructure for New Homes Guidance Note which considers both external and internal infrastructure.

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[13] major development -
(a) in respect of residential development, a development where the number of dwellings to be provided is 10 or more; or the site area is 0.5 hectares or more;
(b) in respect of non-residential development, a development where the new floor space to be provided is 1,000 square metres or more, or the site area is 1 hectare or more.
<table>
<thead>
<tr>
<th>Sector</th>
<th>Building Type</th>
<th>Project Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Build</td>
<td>Major refurbishment / change of use</td>
<td>Extensions</td>
</tr>
<tr>
<td>Domestic</td>
<td>Dwelling houses and flats</td>
<td>Code for Sustainable Homes</td>
</tr>
<tr>
<td>BREEAM for Domestic refurbishment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-occupation domestic</td>
<td>Other multi-residential buildings which contain a mix of residential accommoda-</td>
<td>BREEAM Multi-residential</td>
</tr>
<tr>
<td></td>
<td>tion with communal areas which make up more than 10% of the Total Net internal floor area(including student halls of residence, key worker accommodation, care homes with no extensive medical facilities and sheltered housing)</td>
<td></td>
</tr>
<tr>
<td>Non- domestic</td>
<td>Office</td>
<td>BREEAM Offices</td>
</tr>
<tr>
<td></td>
<td>Retail premises</td>
<td>BREEAM Retail</td>
</tr>
<tr>
<td></td>
<td>Light industrial and warehouse buildings</td>
<td>BREEAM Industrial</td>
</tr>
<tr>
<td></td>
<td>Education buildings (including pre-school, primary and secondary schools, colleges and universities)</td>
<td>BREEAM Education</td>
</tr>
<tr>
<td></td>
<td>Healthcare buildings (including teaching/specialist hospitals, general acute hospitals, community and mental health hospitals, GP surgeries, health centre’s and clinics)</td>
<td>BREEAM Healthcare</td>
</tr>
<tr>
<td></td>
<td>Courts</td>
<td>BREEAM Courts</td>
</tr>
<tr>
<td></td>
<td>Prisons</td>
<td>BREEAM Prisons</td>
</tr>
<tr>
<td></td>
<td>Data centres (facilities used to house computer systems and associated components such as telecommunications and storage systems)</td>
<td>BREEAM Data Centres</td>
</tr>
<tr>
<td></td>
<td>Any building not covered above (for instance, leisure centres, community centres, agricultural buildings)</td>
<td>BREEAM Other Buildings</td>
</tr>
<tr>
<td>Communities</td>
<td>All developments over 50 units</td>
<td>BREEAM Communities</td>
</tr>
</tbody>
</table>
Annex 2 - Low and zero carbon technologies

Applicants can use a range of measures to meet the Council’s requirement for carbon emissions reductions through the use of on site low and zero carbon technologies. A range of technology types and the information required by the Council is detailed below:

Solar Electricity (Photovoltaic Cells)

Solar electricity systems capture the sun’s energy using photovoltaic (PV) cells. The cells convert the sunlight into electricity, which can be used to run household appliances and lighting. PV cells are panels you can attach to your roof or walls. Each cell is made from one or two layers of semi-conducting material, usually silicon. When light shines on the cell it creates an electric field across the layers. The stronger the sunshine, the more electricity is produced.

PV cells come in a variety of shapes and colours, from grey solar tiles that look like roof tiles to panels and transparent cells that you can use on conservatories and glass.

The strength of a PV cell is measured in kilowatt peak (kWP). That’s the amount of energy the cell generates in full sunlight.

Solar power is particularly well suited to the urban environment as it is clean and silent to operate.

For more information of Solar Electricity visit the Energy Saving Trust website

Information to be included with planning applications for new build:

- BREEAM / Code for Sustainable Homes pre assessment demonstrating that the scheme will comply with Action 4 - Low and Zero Carbon Technologies.
- The design of the module or array
- Orientation/roof pitch
- Detail of the roof mounting arrangement, if applicable
- Indicative drawings of the module or array in place
- Connection details to the building or grid relevant

Solar thermal hot water systems

Solar water heating systems use free heat from the sun to warm domestic hot water. A conventional boiler or immersion heater is then used to make the water hotter, or to provide, hot water when solar energy is unavailable. Solar panels, called collectors, fitted to a roof collect heat from the sun and use it to warm water which is stored in a hot water cylinder.

A boiler or immersion heater can be used as back up to heat the water further to reach the temperature set by the cylinders thermostat when the solar water heating systems does not reach that temperature.
For more information on Solar Thermal Hot Water Systems visit the Energy Saving Trust website

**Information to be included with planning applications for new build:**

- BREEAM / Code for Sustainable Homes pre assessment demonstrating that the scheme will comply with Action 4 - Low and Zero Carbon Technologies.

- Detail of the roof mounting arrangement, if applicable

- Indicative drawings of the module or array in place

- Potential shading of module, i.e. trees, other buildings

- Connection details to the building or grid if relevant

**Ground Source Heat Pump**

- Ground source heat pumps use buried pipes to extract heat from the ground. This is usually used to warm water for radiators or underfloor heating systems. It can also be used to pre-heat water before it goes into a more conventional boiler. Beneath the surface, the ground stays at a constant temperature, so a ground source heat pump can be used throughout the year – even in the middle of winter.

- The length of the ground loop depends on the size of your home and the amount of heat you need – longer loops can draw more heat from the ground.

- Normally the loop is laid flat, or coiled in trenches about two meters deep, but if there is not enough space in your garden you can install a vertical loop to a depth of up to 100 metres.

- The efficiency of a ground source heat pump is measured by a coefficient of performance (CoP) – the amount of heat it produces compares to the amount of electricity needed to run it. A typical CoP for a ground source heat pump is around 3.2 without any reductions for the type of distribution.

- For more information on Ground Source Heat Pumps visit the Energy Saving Trust website.

**Information to be included with planning applications for new build:**

- BREEAM / Code for Sustainable Homes pre assessment demonstrating that the scheme will comply with Action 4 - Low and Zero Carbon Technologies.

- Number and location of boreholes (where known)

- Location of ground loop system

- Connection details to the building
**Air Source Heat Pumps**

- An air source heat pump extracts heat from the outside air in the same way that a fridge extracts heat from inside. It can extract heat from the air even when the outside temperature is as low as minus 15° C.

- The heat can then be used to warm water for radiators or underfloor heating systems, or to warm the air in your home.

There are two main types of air source heat pumps:

- An air-to water system uses the heat to warm water. Heat pumps heat water to a lower temperature than a standard boiler system would, so they are more suitable for underfloor heating systems that radiator systems.

- An air to air system produces warm air which is circulated by fans to heat your home.

- The efficiency of air source heat pump systems is measured by a coefficient of performance (CoP) – the amount of heat they produce compared to the amount of electricity needed to run them. A typical CoP for an air source heat pump is around 2.5.

**Information to be included with the planning applications for new build:**

- BREEAM / Code for Sustainable Homes pre assessment demonstrating that the scheme will comply with Action 4 - Low and Zero Carbon Technologies.

- Location of equipment

- Visual impact, i.e. evaporator coil on external wall

- For more information on Air Source Heat Pumps visit the Energy Saving Trust website.

**Combined Heat and Power (CHP) Systems**

- Combined Heat and Power (CHP) technology can be used in developments to improve energy efficiency. CHP utilises the waste heat generated during the production of electricity to heat or cool buildings. Overall fuel efficiency can be increased to 70-90 percent compared to 30-50 percent with conventional heating and electrical generation.

- Combined Heat and Power systems are an effective tool for improving the energy efficiency of developments of all scales. Micro-CHP systems can be introduced within individual properties which are capable of providing the households heat requirements and satisfying up to two thirds of the households electricity requirements.

- At the larger scale CHP systems can be used to provide electricity and heating/cooling demands through the provision of a central CHP facility to provide the development’s electricity and heat needs through the provision of a distribution network.

**Information to be included with the planning applications for new build:**

- BREEAM / Code for Sustainable Homes pre assessment demonstrating that the scheme will comply with Action 4 - Low and Zero Carbon Technologies.

- Map showing site size, boundary and location of infrastructure, (e.g. location of boilerhouse, CHP units and boilers).

- Connection to a distribution network (where applicable)

- Noise and visual impact
Details of operation and management of installations (if known)

**Wind turbines**

There are two types of domestic-sized wind turbine:

- **Mast mounted:** these are free standing and are erected in a suitably exposed position, often around 2.5kW to 6kW

- **Roof mounted:** these are smaller than mast mounted system and can be installed on the roof of a home where there is a suitable wind resource. Often these are around 1kW to 2kW in size.

**Information to be included with the planning applications for new build:**

- BREEAM / Code for Sustainable Homes pre assessment demonstrating that the scheme will comply with Action 4 - Low and Zero Carbon Technologies.

- Map showing site size, boundary and location of infrastructure, (e.g. location of turbines, sub-station and access tracks).

- Average site wind speed at hub height

- Grid connection

- Proximity to dwellings

- Noise and visual impact

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**Annex 3 - Sustainable Drainage Systems (SuDS)**

Planning Policy Statement 25 Development and Flood Risk advocates the use of Sustainable Drainage Systems (SuDS). There are a range of approaches to sustainable urban drainage, some of which are listed below:

- Basins and balance ponds

- **Basins** are structures which are designed to hold water when it rains and hold little or no water during dry periods. Balancing ponds contain water all or the time but are designed to hold more when necessary (i.e. during periods of heavy rain). Swales, filter drains, or pipes run-off into them.

- Filter drains and permeable surface materials

- **These** are permeable surfaces that allow water and run off to soak through into permeable material (such as a reservoir made or crushed stones) and allow discharge to the natural watercourse to be regulated. This allows water to be stored prior to discharge.

- Filter strips and swales

- **Swales** are long shallow channels, and filter strips are gently sloping areas of ground. Both are vegetated surface features that drain water evenly from impermeable areas. They can be designed into public space and road verges. Adding native grasses can increase wildlife value. They facilitate the filtration of pollutants and act as storage for storm water; they are therefore often left empty much of the time.

- Infiltration devices
These are below ground or surface structure to drain water directly into the ground. Examples include soakaways, infiltration trenches, and swales. These may be used at source or the run off may be conveyed to the infiltration area in a pipe or swale. The concept of an infiltration device is to allow water gradually to infiltrate the ground, this allows the rate of run off to slow and pollution removal through absorption, filtering and microbial decomposition in the surrounding soil.

Planning Policy Statement 25 Practice Guidance provides detail on the benefits of different sustainable urban drainage and the issues for planning. Figure A1 overleaf outlines these findings.

Note: Further technical guidance on SuDS can be accessed from the Environment Agency Website: http://www.environment-agency.gov.uk/business/sectors/36998.aspx
## Figure A1 - Benefits of SuDS and issues for planning

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefits</th>
<th>Issues for planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water butts</td>
<td>Attenuated run-off</td>
<td>Design in space for water butts.</td>
</tr>
<tr>
<td>Porous and pervious paving</td>
<td>Infiltration to promote attenuation and groundwater recharge, treatment by detention, treatment by infiltration. Can also be used as storage before discharging downstream, if infiltration not appropriate.</td>
<td>Using the right material for the use. Visual appearance. Traffic loading.</td>
</tr>
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<td>Using the right material for the use. Visual appearance. Traffic loading.</td>
</tr>
<tr>
<td>Rainwater harvesting</td>
<td>Attenuated run-off, water conservation.</td>
<td>Building design.</td>
</tr>
<tr>
<td>Filter strips</td>
<td>Green links/corridors through a development, run-off attenuation, filtering of contaminants.</td>
<td>Land take and visual integration into development. Multi-functionality. Adequate for predicted run-off.</td>
</tr>
<tr>
<td>Swales</td>
<td>Can be planted with trees and shrubs, provides green links/corridors, improved visual amenity, conveyance of storm water.</td>
<td>Land take. Multi-functionality. Adequate for predicted run-off. Health and safety. Improved amenity value.</td>
</tr>
<tr>
<td>Infiltration basins</td>
<td>Potentially compatible with dual-use e.g. sports pitches, play areas, wildlife habitat. Treatment by detention.</td>
<td>Land take. Multi-functionality - provision of opening space in development. Health and safety.</td>
</tr>
<tr>
<td>Detention basins</td>
<td>Can be designed as an amenity or wildlife habitat. Treatment by detention</td>
<td>Land take. Multi-functionality. Health and safety.</td>
</tr>
<tr>
<td>Retention ponds</td>
<td>Open water bodies which can significantly enhance the visual amenity of a development. Treatment by detention. Wildlife habitat. Can be abstract water for re-use e.g. irrigation. Fishing, boating and other water sports.</td>
<td>Land take. Multi-functionality. Health and safety. Improve amenity value, including the restoration of habitat and/or environmental enhancement.</td>
</tr>
<tr>
<td>Wetlands</td>
<td>Provide a range of habitats for plants and wildlife. Biological treatment linear wetlands can also provide green corridors.</td>
<td>Land take. Multi-functionality. Health and Safety. Strategic planning for biodiversity. Improve amenity value, including restoration of habitat and/or environmental enforcement.</td>
</tr>
</tbody>
</table>

### Safety

It is important that all SuDS are designed giving full regard to safety issues. Therefore, techniques such as heavy dense planting around the larger bodies of water such as balance ponds, and gentle slopes should be considered.
Glossary

Accredited CSH / BREEAM assessor:
A competent person licensed by a service provided to carry out CSH/BREEAM assessments and recorded on the service provider’s register of licensed assessors. Service providers can be any organisation licensed by (and including) BRE Global which offers training and accreditation to licensed assessors.

Adaptation:
Making adjustments to natural or human systems in response to actual or expected climatic stimuli or their effects that moderates harm or exploits beneficial opportunities.

Air Source Heat Pump:
Air source heat pumps are units that are located/mounted outside of a property to absorb heat from the outside air. The heat can then be used to warm water for radiators or underfloor heating systems, or to warm the air in your home.

Allowable solutions:
Allowable solutions – A range of measures available for achieving zero carbon beyond the minimum carbon compliance requirements. The Government has not yet defined what the range of allowable solutions will be. However, they are likely to include the exports of low carbon or renewable heat from the development to other developments, and investment in low and zero carbon community heat infrastructure.

Biomass:
A fuel derived from plant material or natural residues. A wide range of biomass can be used to generate electricity and/or heat and to produce transport fuel.

BREEAM standard:
The Building Research Establishment’s Environmental Assessment Method, which is used to assess the environmental performance of new and existing non-residential and mixed use buildings. It is regarded by the UK’s construction and property sectors as the measure of best practice in environmental design and management.

Carbon dioxide (CO2):
A significant contributor to global warming and climate change. A gas resulting from the combustion of fossil fuels including gas, oil and coal.

Carbon footprint:
The total greenhouse gas emissions caused by an individual or organisation, event or product measured in what?

Carbon neutral:
A development that achieves no net carbon emissions from all types (regulated and unregulated) of energy use on an annual basis. It is usual for a development to have emitted some greenhouse gas emissions, so it is necessary to use carbon offsets to achieve neutrality.

Carbon sinks:
Carbon dioxide is captured and stored in living (trees and other green vegetation) or non-living reservoirs (soil, geological formations, oceans, wood products)

Climate Change:
The variation in the Earth’s global climate or in regional temperatures. It describes changes in the variability or state of the atmosphere and weather.
Code for Sustainable Homes (CSH):
A national environmental standard for sustainable design and construction for certifying and rating new homes, to ensure new homes deliver improvements in key areas such as carbon dioxide and water use reduction.

Combined Heat and Power (CHP):
CHP is the simultaneous generation of usable heat and power in a single process, therefore producing less waste. CHP’s overall fuel efficiency is around 70-90 percent of fuel input compared to 40-50 percent efficiency in conventional generation.

Decentralised energy supply:
Energy supply from low carbon sources on a small or community scale and including electricity generation that is connected to a local distribution network rather than directly to the national grid.

Ecological Footprint:
An ecological footprint is a measure of human demand on an ecosystem, and compares human demand with the ecological capacity to regenerate it.

Emissions:
Gases released into the atmosphere

Greenhouse gases:
There are six greenhouse gases regulated by the Kyoto Protocol, which are emitted in significant quantities into the atmosphere through human activity. The six regulated gases are Carbon dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O), Hydroflurocarbons (HFCs), Perfluorocarbons (PFCs) and Sulphur Hexafluoride (SF6).

Ground source heat pumps:
Transfer the heat from the earth to a building by means of a heat exchanger. The heat can then be used for space heating and hot water. They can also be used to remove heat from a building and deposit it in the ground to cool the building in hot weather.

Kilowatt hour (kWh):
A once kilowatt power generating unit running for one hour produced one kilowatt-hour of electrical energy.

Local development framework (LDF):
A term used to describe a folder of documents, which includes all the local planning Authority’s Local Development Documents, including the Core Strategy, other Development Plan Documents, Supplementary Planning Documents, and the Statement of Community Involvement (SCI) amongst others.

Low or zero carbon technologies:
Technologies that produce energy with low or zero carbon emissions.

Mitigation:
Taking action to reduce the impact of human activity on the climate system, primarily through reducing greenhouse gas emissions.
Passive solar gain:

Refers to the siting, form, fabric and internal layout of buildings so that natural light and solar heat gains are harnessed and controlled reducing the need for artificial lighting, space heating and mechanical ventilation and cooling.

Photovoltaics (PV):

Thin silicone wafers that convert any light, not only sunlight, directly into electricity. They can be fitted to buildings including panels and roof tiles.

Regulated emissions:

Those emission included within the SAP methodology and arising from space heating, water heating, fixed lighting and ventilation.

Renewable energy:

Those energy flows that occur naturally and repeatedly in the environment – from the wind, the fall of water, the movement of the oceans, from the sun and also from biomass.

Standard Assessment Procedure (SAP):

The Government's Standard Assessment Procedure for Energy Rating of Dwellings. SAP is adopted by government as part of the UK national methodology for calculation of the energy performance of buildings. It is used to demonstrate compliance with building regulations for dwellings - Part L (England and Wales) and to provide energy ratings for dwellings.

Scoping Report:

This report details the scope and level of detail to be included within the Sustainability Appraisal (SA), including the sustainability effects and options which need to be considered, the assessment methods used, and the structure and contents of the SA report.

Standard carbon factor:

When calculating emissions from energy use it is important to know what quantity of energy was used. Standard carbon factors enable a conversion to be made from the input measure of energy to the amount of carbon dioxide emissions that will result. Defra publish the UK conversion factors for energy to CO2.

Supplementary Planning Document (SPD):

A Local Development Document that adds further detail to policies and proposals in a parent Development Plan Document. Unlike Development Plan Documents, SPDs do not form part of the Statutory Development Plan.

Sustainability Appraisal (SA):

An appraisal of the economic, environment and social effects of a plan from the outset of the preparation process to allow decisions to be made that accord with sustainable development.

Strategic Environmental Assessment (SEA):

An environmental assessment of plans and programmes, including Development Plan Documents.

Unregulated emissions:

Those emissions arising from electrical appliances, cooking and non-fixed lighting.
Wind turbine:

A machine for converting the kinetic energy in wind into electricity by using its natural power to drive a generator. Can be free standing or mounted on a building and comes in a variety of sizes.

Zero carbon:

A development that achieves no emissions of carbon from energy use on site, on an annual basis