

Camden Planning Guidance

# Housing

London Borough of Camden

CPG 2



July 2015



## CPG2 Housing

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# 1 Introduction

## What is Camden Planning Guidance?

- 1.1 We have prepared this Camden Planning Guidance (CPG) to support the policies in our Local Development Framework (LDF). This guidance is therefore consistent with the Core Strategy and the Development Policies, and forms a Supplementary Planning Document (SPD) which is an additional “material consideration” in planning decisions. The Council formally adopted CPG2 Housing on 6 April 2011 following statutory consultation. The Camden Planning Guidance documents (CPG1 to CPG8) replace Camden Planning Guidance 2006.
- 1.2 This document (CPG2 Housing) has been subject to two updates:
- 4 September 2013 following statutory consultation in November to December 2012, and
  - 17 July 2015 following statutory consultation in March to April 2015.
- Details on these updates and the consultation process are available at [camden.gov.uk/cpg](http://camden.gov.uk/cpg).
- 1.3 The Camden Planning Guidance covers a range of topics (such as design, sustainability, amenity and planning obligations) and so all of the sections should be read in conjunction, and within the context of Camden’s LDF.

## Housing in Camden

- 1.4 A key priority for the Council is to ensure that everyone has the opportunity to live in a decent home at a price they can afford in a community where they want to live. Camden is a very popular place to live, which means that average house prices are high and that the demand for affordable housing far outstrips supply.
- 1.5 The Local Development Framework seeks to make full use of Camden’s capacity for housing to establish a plentiful supply and broad range of homes. In addition to meeting or exceeding Camden’s housing targets, the Local Development Framework seeks to ensure that new homes are built to a high standard and provide well-designed accommodation that meets the needs of a range of occupiers.

### **What does this guidance cover?**

- 1.6 This guidance provides information on all types of housing development within the borough. It provides specific guidance on:
- Affordable housing
  - Student housing
  - Residential Space standards
  - Lifetime homes and wheelchair housing
  - Development involving net loss of homes
- 1.7 It highlights the Council's requirements and guidelines which support the Local Development Framework policies:
- CS1 – Distribution of growth
  - CS5 – Managing the impact of growth and development
  - CS6 – Providing quality homes
  - CS14 – Promoting high quality places and conserving our heritage
  - DP1 – Mixed use development
  - DP2 – Making full use of Camden's capacity for housing
  - DP3 – Contributions to the supply of affordable housing
  - DP4 – Minimising the loss of affordable housing
  - DP5 – Homes of different sizes
  - DP6 – Lifetime homes and wheelchair housing
  - DP7 – Sheltered housing and care homes for older people
  - DP8 – Accommodation for homeless people and vulnerable people
  - DP9 – Student housing, bedsits and other housing with shared facilities
  - DP26 – Managing the impact of development on occupiers and neighbours

## 4 Residential development standards

### KEY MESSAGE

Development should provide high quality housing that provides secure, well-lit accommodation that has well-designed layouts and rooms.

- 4.1 This guidance relates to Camden Core Strategy policies CS5 – *Managing the impact of growth and development*, CS6 – *Providing quality homes* and CS14 – *Promoting high quality places and conserving our heritage* plus Camden Development Policy DP26 – *Managing the impact of developers on occupiers and neighbours*. In addition, homes of all tenures should meet lifetime homes standards in accordance with Development Policy DP6 and the CPG on Lifetime homes and wheelchair housing.

### TENURE

Describes the ownership of a home and the relationship between a household and their home i.e. owner-occupied, shared ownership, private rented, social rented, etc.

- 4.2 The '**Access for all**' section in CPG6 **Amenity** sets out the Council's approach to providing buildings and spaces that are accessible to everyone. Reference should also be made to the **Design Excellence** section of CPG1 **Design** and to other sections of CPG2 **Housing**.
- 4.3 The space standards in this guide are minimum requirements and should not be taken as maxima. Housing which exceeds the minimum standards will always be encouraged.
- 4.4 This guidance applies to planning applications involving the provision of residential accommodation and residential conversions, extensions and change of use. In cases involving residential conversions of listed buildings a sensitive and imaginative approach to achieving these standards may need to be taken.

### MAYOR'S HOUSING SPG

The Mayor has prepared a draft replacement housing SPG. The Mayor's draft SPG supports the emerging replacement London Plan, which makes provision for residential standards to be applied across all tenures of development. Both the draft replacement London Plan and the draft replacement Housing SPG are expected to be adopted in autumn 2011.

In addition, we anticipate that housing with public subsidy in London will have to comply with the Mayor's London Housing Design Guide from April 2011 (published in interim form in August 2010). The Mayor is seeking to adopt the London Housing Design Guide standards for all housing tenures in London through the London Plan.

- 4.5 Camden's Core Strategy indicates that we will seek a range of self-contained homes to meet identified dwelling size priorities. These

priorities are set out in detail in our Development Policies document – see particularly policy DP5 and paragraph 5.4.

## **Guidance on residential development standards**

### **General principles**

- 4.6 All residential developments in the Borough are required to be designed and built to create high quality homes:
- All newly created dwellings for households of 2 or more people should be self-contained (applies to homes in Use Class C3, but does not apply to care homes for elderly or vulnerable people, student housing, bedsits, or other Houses in Multiple Occupation (HMOs)).
  - Each dwelling should have its own secure private entrance which leads either directly from the street or off a common entrance hall – the number of entrances off one corridor should be limited.

#### **SELF-CONTAINED**

Accommodation with its own kitchen, bathroom and toilet for the sole use of occupants behind a separate front door.

#### **HOUSES IN MULTIPLE OCCUPATION (HMO)**

HMOs are flats or houses permanently occupied by more than one household, where each household does not have exclusive access to all cooking, washing and toilet facilities behind a locked front door.

### **Layout**

- 4.7 There should usually be a permanent partition between eating and sleeping areas. Kitchens and living rooms that are permanently separated are preferable. However, combined kitchen and living areas are considered acceptable as long as the floor area is sufficient to allow for the greater range of activities that will take place in them.

### **Rooms**

- All rooms should be able to function for the purpose for the purpose for which they are intended.
- They should have an adequate size, shape, door arrangement, height, insulation for noise and vibration and natural lighting and ventilation.
- They should lead off a hallway or lobby so that it is possible to access any habitable room without passing through another habitable room, although Building Regulations Part B - Fire Safety allow inner rooms provided they meet certain criteria.

#### **HABITABLE ROOM**

A room that is capable of being used as primary living space. Generally consists of living rooms, dining rooms, large kitchen/diners and large bedrooms



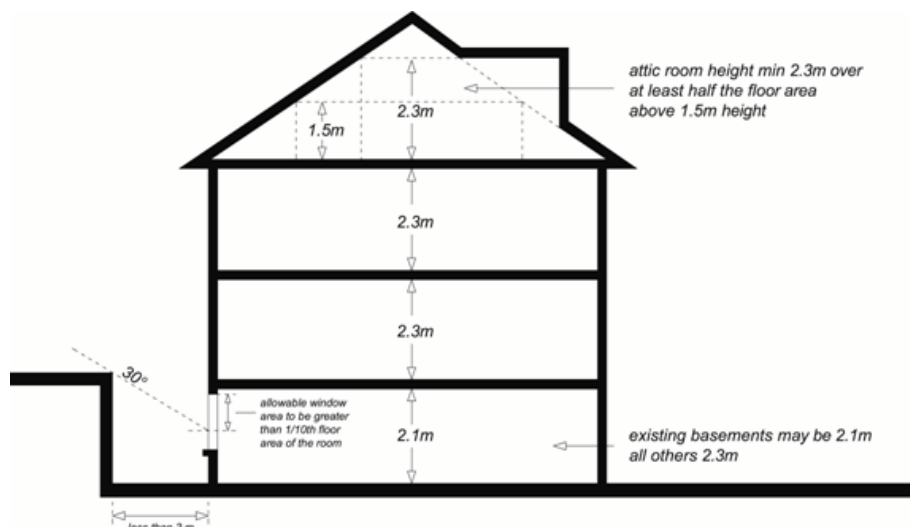
### **Flexible construction/layout**

- 4.8 In addition, wherever practical dwellings should be designed to enable greater flexibility in construction design so that they can be capable of some form of extension or adaptation in order to accommodate changing lifestyles and family needs or other social use.
- 4.9 For example design features that could be considered, include:
- open plan layouts or generic layouts/floor plans;
  - avoiding load bearing internal walls;
  - easily accessible services and utilities e.g. a central accessible core or accessible floor/ceiling cavity.
  - For further examples see: By design urban design in the planning system: towards better practice: [www.communities.gov.uk/publications/planningandbuilding/bydesignurban](http://www.communities.gov.uk/publications/planningandbuilding/bydesignurban) by DETR (2000) (accessed April 2011).

### **Internal space standards**

#### **Ceiling heights**

- 4.10 All habitable rooms should have minimum headroom of 2.3 metres. The exceptions are habitable rooms in existing basements, which may have 2.1 metres headroom, and habitable rooms in attics which should have a minimum room height of 2.3 metres over at least half of the floor area (not including any floor space where the ceiling height is less than 1.5 metres). See Figure 9.
- 4.11 Any floor area where the ceiling height is less than 1.5 metres will not count towards the habitable floorspace. We will also consider the suitability of floor to ceiling heights in relation to context of building and how size of windows and floor to ceiling heights impact design. Please also refer to CPG1 **Design** (see particularly the sections on '**Design Excellence**' and '**Roofs, terraces and balconies**') and CPG4 **Basements**.

**Figure 9. Ceiling heights and natural light for basements**

### Space and room sizes

- 4.12 Although planning cannot control the precise internal layout of individual proposals, it is important to ensure that dwellings are capable of providing a suitable layout and adequate room sizes that reflect the use and type of accommodation. The Council will be flexible in the application of these guidelines in order to respond to site-specific circumstances.
- 4.13 The Council has set minimum space standards to ensure rooms are large enough to take on varying uses. Space standards relate to the occupancy of a home rather than number of bedrooms and the developer will be required to state the number of occupants each dwelling has been designed to accommodate. The occupancy of housing at the time of its first occupation is not a reliable prediction of future levels of occupancy over the lifetime of a home. The only sensible assessment of occupancy is therefore the designed level of occupancy.
- 4.14 The overall internal floorspace in new self-contained dwellings (excluding communal lobbies and staircases) should normally meet or exceed the minimum standards set out in the following table.

Number of Persons	1	2	3	4	5	6
Minimum floorspace (sq m)	32	48	61	75	84	93

- 4.15 For dwellings designed for more than 6 people, allow approximately 10sq m. per extra person. In order to successfully to provide ease of movement and storage space for wheelchair users, the council will normally wheelchair housing dwellings to exceed the minimum floorspace standards. Please also refer to the section on 'Lifetime homes and wheelchair housing' in this CPG document.
- 4.16 The Council will expect bedrooms to meet or exceed the following minimum sizes:

- First and double bedrooms - 11.0 sq m
- Single bedrooms - 6.5 sq m

4.17 The Council's Private Sector Housing Team has produced specific minimum standards for Houses in Multiple Occupation (HMO's) and hostels which includes guidance on room sizes and facilities. Schemes for bedsits, shared houses and flats and hostels should be prepared with reference to these standards. These can be viewed on Camden's website [www.camden.gov.uk/housing](http://www.camden.gov.uk/housing) (see Private Sector Housing/ Private Housing Standards pages).

4.18 Self-contained homes providing a floorspace below the minimum standards may be considered in exceptional circumstances, for example to reduce the cost of Intermediate Housing to the occupier, however their acceptability will depend on other aspects of the development proposed. Sympathetic consideration may be given where a proposal meets a number of the criteria below:

- Dwellings are targeted at, and affordable to, groups identified by the Borough as being in need.
- External amenity space is provided
- A limited number of dwellings are accessed from each entry point and corridor (ideally 8 or fewer, unless controlled by a concierge or a CCTV system allowing clear facial identification).
- Security controlled access is provided where a larger number of units are accessed from one point.
- Where cluster flats are provided in response to a demonstrable demand (i.e. there are good indications that properties will not be hard to let to the targeted tenants), a limited number of flats are clustered into each dwelling (ideally 8 or fewer) (cluster flats are bedsits with a communal kitchen/eating area).
- A laundrette or communal laundry is provided (sufficient to cater for forecast resident demand at periods of peak usage) where individual dwellings cannot accommodate a washing machine - subject to keeping service and management charges at an acceptable level. The Council will take into account any existing commercial laundrettes that would be convenient for residents.

### **Storage and utility spaces**

4.19 All accommodation should have sufficient internal storage space to meet the likely needs and requirements of potential occupiers. Dwelling layouts should make suitable provision:

- for washing machines and drying clothes;
- a storage cupboard with a minimum floor area of 0.8 sq m should be provided for 1- and 2-person dwellings;
- for each additional occupant, a minimum of 0.15 sq m storage area should be provided;

- storage for bicycles and prams should also be provided, located at the ground or lowest level of the dwelling, preferably accessed from a hall or lobby area;
- for waste and recycling bins, reference should also be made to the section '**Waste and Recycling Storage**' in CPG1 **Design**.

### **Daylight, sunlight and privacy**

- 4.20 Residential developments should maximise sunlight and daylight, both within the new development and to neighbouring properties whilst minimising overshadowing or blocking of light to adjoining properties. Maximising sunlight and daylight also helps to make a building energy efficient by reducing the need for electric light and meeting some of the heating requirements through solar gain. The orientation of buildings can maximise passive solar gain to keep buildings warm in winter and cool in summer.

#### **PASSIVE SOLAR GAIN**

Design to optimise the amount of the sun's energy that heats and lights a building naturally.

- 4.21 All habitable rooms should have access to natural daylight. Windows in rooms should be designed to take advantage of natural sunlight, safety and security, visual interest and ventilation. Developments should meet site layout requirements set out in the Building Research Establishment (BRE) Site Layout for Daylight and Sunlight – A Guide to Good Practice (1991).
- 4.22 Overall the internal layout design should seek to ensure the main living room and other frequently used rooms are on the south side and rooms that benefit less from sunlight (bathrooms, utility rooms) on the north side. Kitchens are better positioned on the north side to avoid excessive heat gain.

#### **Minimum requirements:**

- 4.23 In particular the following minimum requirements need to be met to avoid the unacceptable loss of daylight and/or sunlight resulting from a development, including new build, extensions and conversions. For example:
- Each dwelling in a development should have at least one habitable room with a window facing within 30 degrees of south in order to make the most of solar gain through passive solar energy;
  - Rooms on south facing walls should always have windows, south facing windows and walls should be designed, sized and/or shaded in summer to prevent overheating. Appropriate shading might be achieved by:
    - mature deciduous trees located so as to shade the structure
    - eaves or overhangs that protect from sun that is high in the sky only

- external shutters or blinds that can be operated by the occupant;
- External shading should be provided for western facing windows and outdoor spaces to minimise overheating in summer. Deciduous trees provide the best shade for this purpose;
- Windows on north facing walls should be sized to prevent heat loss but allow sufficient daylight;
- All habitable rooms, including basements, must have an external window with an area of at least 1/10 of the floor area of the room;
- An area of 1/20 of the floor area of the room must be able to be opened to provide natural ventilation;
- Windows to atriums will be acceptable as external windows in exceptional circumstances only;
- Passive ventilation should be favoured where possible and mechanically assisted ventilation should be silent in operation.

4.24 For further guidance reference should be made to 'The Code for Sustainable Homes' which provides technical guidance on designing for adequate internal daylighting and requires daylight levels to be calculated using the BRE assessment method. Reference should also be made to CPG3 **Sustainability**.

### **Privacy and security**

- 4.25 House and flat developments should be arranged to safeguard the amenity and privacy of occupiers and neighbours.
- New development, extensions, alterations and conversions should not subject neighbours to unacceptable noise disturbance, overlooking or loss of security.
  - Developments should seek to improve community safety and crime prevention. This may include:
    - designing developments so that open spaces are overlooked by windows, avoiding dark secluded areas and buildings face onto streets.
    - obtaining Secured by Design certification – please refer to the '**Designing safer environments**' section of CPG1 **Design**.

### **Basements**

- 4.26 All rooms within a basement should be able to function for the purpose of which they are intended. They should have an adequate size, shape, door arrangement, and height, insulation from noise and vibration, and access to natural lighting, ventilation and privacy (similar to the standards set out above). Four key considerations are set out here.
- Natural light - to ensure that adequate natural light is provided to habitable rooms, walls or structures (including the sides of lightwells) should not obstruct windows by being closer than 3 metres. Where

this is not achievable, a sufficient proportion of the glazing should be above the point on the window(s) from which a line can be drawn at 30° above the horizontal to pass the top of obstruction. The glazed area above the point should total not less than 10% of the floor area of the room. See Figure 9.

- Forecourt parking – nearby vehicles can also restrict light to basements, and consideration should be given to any further obstruction from vehicles parked on the forecourt that may present a barrier to light serving basement windows.
- Means of escape - basements should be provided with either a door or suitably sized window allowing access to a place of safety that gives access to the external ground level, or with a protected escape route within the building leading to a final exit at ground level.
- Lightwells - stairs, ladders and gates in any railings around a lightwell that are required for means of escape should be designed to be as discreet as possible and should have regard to the character of the building and surrounding area.

4.27 Further detailed guidance on basements is contained within CPG4 **Basements**.

### **Noise and soundproofing**

4.28 The layout and placement of rooms within the building should be carefully considered at an early stage in the design process to limit the impact of external noise on bedrooms and living rooms. The impact of noise should also be considered in the placement of private external spaces. Detailed guidance is provided in the '**Noise and vibration**' section of CPG6 **Amenity** and . The following requirements must be met.

- Internal layouts of dwellings should be designed to reduce the problem of noise disturbance between adjoining properties by using 'vertical stacking', i.e. placing living room above living room and bedrooms above bedrooms etc.
- Bedrooms should not be placed above, below or next to potentially noisy rooms, circulation areas of adjacent dwellings or noisy equipment, such as lifts.
- Windows should be located away from busy roads and railway lines/tracks to minimise noise and pollution and vibration.
- The layout of adjacent dwellings and the location of lifts, plant rooms and circulation spaces should seek to limit the transmission of noise to sound sensitive rooms within dwellings.
- Party walls and floors of flats created by conversion must be adequately soundproofed.
- All housing should be built with acoustic insulation and tested to current Building Regulations standards, but acoustic insulation should not be relied upon as the only means of limiting noise.

- Minimum levels of soundproofing are set out in the Building Regulations Part E - Resistance to the passage of sound. Levels of sound insulation above the minimum are encouraged.
- Further advice is given in the London Plan SPG on Sustainable Design and Construction

### **Outdoor amenity space**

4.29 Outdoor residential amenity space can be provided in the form of private garden space, balconies, terraces, roof gardens or as communal amenity space. Where practical the following requirements should be met.

#### **Private outdoor amenity space:**

- All new dwellings should provide access to some form of private outdoor amenity space, e.g. balconies, roof terraces or communal gardens.
- Private gardens should be allocated to family dwellings.
- Where provided, gardens should receive adequate daylight, even in the winter.
- The access to private amenity space should be level and should be from the main living space.
- Balconies should have a depth of not less than 1.5 metres and should have level access from the home.
- Balconies and terraces should be located or designed so that they do not result in the loss of privacy to existing residential properties or any other sensitive uses.
- Balconies should preferably be located next to a dining or living space and should receive direct sunlight (they can be designed to project from main building line or be recessed).

4.30 In some instances, it is accepted that existing buildings may not be able to provide balconies or roof terraces, however, external amenity space i.e. access to communal gardens should still be provided where possible. See CPG1 **Design** for further guidance on '**Roofs, terraces and balconies**'.

#### **Communal amenity space:**

- Space should meet the requirements of the occupiers of the building and be wheelchair accessible. For example, if there are a large proportion of family units, child and young person's facilities should be included in the communal space. The council will use the Mayor of London's 'Providing children's and young people's play and informal recreation SPG' (March 2008) when calculating requirements: <http://static.london.gov.uk/mayor/strategies/sds/spg-children-recreation.jsp> (accessed April 2011).
- Space should be well designed so that residents have a sense of ownership of the space, which will encourage its use.

- Space should be located sensitively so that it is overlooked by surrounding development and secure for residents.
- Space should be designed to take advantage of direct sunlight.
- Space should be designed to minimise disturbance to occupiers and neighbours, e.g. by being sheltered from busy roads, by being located in the rear of the buildings, back to back, behind perimeter blocks or in courtyards.
- Landscaping and facilities provided for the space should be of a high quality and have suitable management arrangements in place.

### Further information

GLA Housing Design Guide	The Mayor's London Housing Design Guide from April 2011 (August 2010) provides detailed guidance on housing design in London <a href="http://www.london.gov.uk/who-runs-london/mayor/publications/housing/london-housing-design-guide">http://www.london.gov.uk/who-runs-london/mayor/publications/housing/london-housing-design-guide</a> (accessed April 2011)
Lifetime Homes and Wheelchair Housing Standards	In addition to the above residential standards, most residential schemes will also need to meet specific requirements for Lifetime Homes and Wheelchair Housing Standards: <ul style="list-style-type: none"> <li>• For further guidance on how to meet Camden's requirements refer to CPG on Lifetime homes and wheelchair housing.</li> <li>• For good practice guidance specifically on Lifetime Homes <a href="http://www.lifetimehomes.org.uk">www.lifetimehomes.org.uk</a></li> </ul>
Daylight and Sunlight	For good practice advice on overshadowing and providing daylight and sunlight to buildings, refer to the widely used BRE Report "Site Layout Design for Daylight and Sunlight; a guide to good practice". It provides specific guidance on: <ul style="list-style-type: none"> <li>• Providing good daylighting and sunlighting within a new development</li> <li>• Safeguarding sunlight and daylight within existing buildings nearby</li> <li>• Protection of daylighting of adjoining land for future development</li> <li>• Passive solar site layout</li> <li>• Sunlighting of gardens and amenity areas</li> </ul>
Sustainability	The Council will require all that all buildings are designed to be sustainable, thus reference should also be made to CPG3 <b>Sustainability</b> , in particular, the 'Code for Sustainable Homes' sub-section in 'Sustainability assessment tools'.



## 5 Lifetime Homes and Wheelchair Housing

### KEY MESSAGES

- All residential development should meet the 16 criteria that form the Lifetime Homes standards.
- The standards will be applied flexibly to existing buildings, but applicants should justify failure to meet any of the criteria.
- 10% of market housing development should meet wheelchair housing standards, or should meet the 13 key Habinteg wheelchair housing criteria so that they can be easily adapted to meet wheelchair housing standards.
- 10% of affordable housing development should be designed, built and fitted out to meet Wheelchair Housing standards in full.

### What does this section cover?

- 5.1 This section provides advice on how proposals can made be accessible to all by incorporating “lifetime home” standards and creating wheelchair accessible homes. It supplements Camden Development Policies policy DP6 – *Lifetime homes & wheelchair housing*, as well as DP29 – *Improving Access* and Camden Core Strategy policy CS6 - *Providing quality homes*.
- 5.2 In line with policy DP6 all new residential development will be expected to meet the following standards.

#### LIFETIME HOMES

All housing developments should meet lifetime homes standards. A lifetime home is an ordinary home incorporating 16 design features for accessible living. These make homes easier to occupy for the entire life cycle of a household, whether its members are young, old, healthy or ill.

#### WHEELCHAIR HOUSING

A minimum of 10% of new housing should either meet wheelchair housing standards, or be easily adapted to meet them. Wheelchair housing provides independence and quality of life for wheelchair users and should be tailor-made for their specific needs.

- 5.3 In addition, the following building regulations should be considered where appropriate:
- Part M of the Building Regulations (2004 edition) – this sets minimum requirements for building standards in public buildings and new dwellings only.
  - BS 8300: 2009: Design of buildings and their approaches to meet the needs of disabled people – good practice guidance that covers non-domestic buildings and details on specific building types.
- 5.4 This planning guidance is applicable to all development. It applies equally to new build, refurbished, converted, extended and altered

premises. It should also be read in conjunction with the Council's 'Camden Wheelchair Housing Design Brief 2010'.

- 5.5 The application of Lifetime Homes and Wheelchair Housing Standards varies depending on the type of dwelling as follows (see also Development Policy DP6 and supporting paragraphs 6.7 to 6.9):
- Lifetime Homes standards apply to all developments of self-contained housing (but does not apply to hotels or student housing);
  - Wheelchair Housing Standards apply to all developments providing 10 or more self-contained homes and to student housing;
  - both sets of standards apply to housing in mixed-use developments as well as purely residential developments;
  - both sets of standards apply to new build development, conversions, reconfigurations and changes of use; and
  - the requirements will be applied flexibly to take account of the circumstances of existing buildings, particularly those that are listed. English Heritage has produced guidance on "Easy Access to Historic Buildings".

### **What is the guidance on Lifetime homes?**

- 5.6 Lifetime homes are ordinary homes built incorporating 16 design features for accessible living. These features ensure a good level of accessibility from the outset, but they also allow a dwelling to be easily adapted for even higher levels of accessibility in the future should the need arise eg to cater for raising young children and declining mobility in old age.
- 5.7 Lifetime homes standards are not designed specifically for disabled people or wheelchair users but allow for accessibility features to be easily incorporated at a later date if needed. There are separate Wheelchair Housing standards to guide the design of homes to meet the specific needs of people who are long-term wheelchair users (see paragraph 5.15)
- 5.8 By planning for accessibility at the earliest stage, the Lifetime Homes features can be incorporated into the design of a dwelling without significant additional cost and can result in major cost savings to the building's occupants in the long run (for a discussion of cost benefits and savings of Lifetime Homes, refer to 'Costing Lifetime Homes' by the Joseph Rowntree Foundation.)
- 5.9 The table on the following pages gives key features of the 16 criteria forming the Lifetime Homes standards. These came into effect on 5 July 2010. We advise developers to refer to [www.lifetimehomes.org.uk](http://www.lifetimehomes.org.uk) for additional and detailed guidance on how specific requirements can be met, and also for news of any future revisions.

## Lifetime Homes – Features

LIFETIME HOMES CRITERIA	KEY OBJECTIVES	DETAILED CRITERIA
<b>1. Parking (width or widening capability)</b>	<p>Provide, or enable by cost effective adaptation, parking that makes getting into and out of the vehicle as convenient as possible for the widest range of people (including those with reduced mobility and/or those with children).</p> <p>General Note: Criterion 1 is not relevant to developments that do not contain any parking provision (for specific requirements refer to <b>Camden Development Policy – DP18 Parking standards</b> and limiting the availability of car parking - which specifically discourages on-site parking).</p>	<p>a) 'On plot' (non-communal) parking: Where a dwelling has car parking within its individual plot (or title) boundary, at least one parking space length should be capable of enlargement to achieve a minimum width of 3300mm.</p> <p>b) Communal or shared parking: Where parking is provided by communal or shared bays, spaces should be provided with a width of 3300mm and in accordance with the specification given in Appendix 2 on page 65 or <a href="http://www.lifetimehomes.org.uk">www.lifetimehomes.org.uk</a>.</p>
<b>2. Approach to dwelling from parking (distance, gradients and widths)</b>	<p>Enable convenient movement between the vehicle and dwelling for the widest range of people, including those with reduced mobility and/or those carrying children or shopping.</p>	<p>The distance from the car parking space of Criterion 1 to the dwelling entrance (or relevant block entrance or lift core), should be kept to a minimum and be level or gently sloping. The distance from visitors parking to relevant entrances should be as short as practicable and be level or gently sloping.</p>
<b>3. Approach to all entrances</b>	<p>Enable, as far as practicable, convenient movement along other approach routes to dwellings (in addition to the principal approach from a vehicle required by Criterion 2) for the widest range of people.</p>	<p>The approach to all entrances should preferably be level or gently sloping, and in accordance with the specification given at <a href="http://www.lifetimehomes.org.uk">www.lifetimehomes.org.uk</a></p>
<b>4. Entrances</b>	<p>Enable ease of use of all entrances for the widest range of people.</p> <p>Note: For the purpose of requirements d) and e) of this Criterion, main entrances are deemed to be: the front door to an individual dwelling, the main communal entrance door to a block of dwellings, plus any other entrance door associated with the approach route from parking required by Criterion 2.</p>	<p>All entrances should:</p> <ol style="list-style-type: none"> <li>Be illuminated</li> <li>Have level access over the threshold; and</li> <li>Have effective clear opening widths and nibs as specified given at <a href="http://www.lifetimehomes.org.uk">www.lifetimehomes.org.uk</a></li> <li>In addition, main entrances should also:</li> <li>Have adequate weather protection*</li> <li>Have a level external landing.*</li> </ol>
<b>5. Communal stairs and lifts</b>	<p>Enable access to dwellings above the entrance level to as many people as possible.</p>	<p>a) Communal Stairs Principal access stairs should provide easy access in accordance with the specification given at <a href="http://www.lifetimehomes.org.uk">www.lifetimehomes.org.uk</a>, regardless of whether or not a lift is provided.</p> <p>b) Communal Lifts Where a dwelling is reached by a lift, it should be fully accessible in accordance with the specification given at <a href="http://www.lifetimehomes.org.uk">www.lifetimehomes.org.uk</a></p> <p>Note: provision of a lift is not a Lifetime Homes requirement, but is recommended where dwellings are not entered at the same level as the main block entrance.</p>
<b>6. Internal doorways and hallways</b>	<p>Enable convenient movement in hallways and through doorways.</p>	<p>Movement in hallways and through doorways should be as convenient to the widest range of people, including those using mobility aids or wheelchairs, and those moving furniture or other objects. As a general principle, narrower hallways and landings will need wider doorways in their side walls. The width of doorways and hallways should conform to the specification given at <a href="http://www.lifetimehomes.org.uk">www.lifetimehomes.org.uk</a>.</p>
<b>7. Circulation Space</b>	<p>Enable convenient movement in rooms for as many people as possible.</p>	<p>There should be space for turning a wheelchair in dining areas and living rooms and basic circulation space for wheelchair users elsewhere.</p>

## Lifetime Homes – Features (continued)

LIFETIME HOMES CRITERIA	KEY OBJECTIVES	DETAILED CRITERIA
<b>8. Entrance level living space</b>	Provide accessible socialising space for visitors less able to use stairs.	A living room / living space should be provided on the entrance level of every dwelling (see Appendix 1 on page 65 or <a href="http://www.lifetimehomes.org.uk">www.lifetimehomes.org.uk</a> for definition of 'entrance level'). Note: Entrance level generally means the storey containing the entrance door to the individual dwelling. It may refer to the first storey that contains a room (habitable or non-habitable) if the entrance door leads directly to an 'easy-going' stair.
<b>9. Potential for entrance level bed-space</b>	Provide space for a member of the household to sleep on the entrance level if they are temporarily unable to use stairs	In dwellings with two or more storeys, with no permanent bedroom on the entrance level, there should be space on the entrance level that could be used as a convenient temporary bed-space (see Appendix 1 on page 65 or <a href="http://www.lifetimehomes.org.uk">www.lifetimehomes.org.uk</a> for definition of 'entrance level').
<b>10. Entrance level toilet and shower drainage</b>	Provide an accessible toilet and potential showering facilities for: a) any member of the household using the temporary entrance level bed space of Criterion 9, and: b) visitors unable to use stairs.	Where an accessible bathroom, in accordance with Criterion 14, is not provided on the entrance level of a dwelling, the entrance level should have an accessible toilet compartment, with potential for a shower to be installed – as detailed in the specification given at (see Appendix 1 on page 65 or <a href="http://www.lifetimehomes.org.uk">www.lifetimehomes.org.uk</a> for definition of 'entrance level')
<b>11. Toilet and bathroom walls</b>	Ensure future provision of grab rails is possible, to assist with independent use of toilet and bathroom facilities.	Walls in all bathrooms and toilet compartments should be capable of firm fixing and support for adaptations such as grab rails.
<b>12. Stairs and potential through-floor lift in dwelling</b>	Enable access to storeys above the entrance level for the widest range of households.	The design within a dwelling of two or more storeys should incorporate both: a) Potential for stair lift installation; and b) A suitable identified space for a through-the-floor lift from the entrance level to a storey containing a main bedroom and a bathroom satisfying Criterion 14.
<b>13. Potential for fitting of hoists and bedroom / bathroom relationship</b>	Assist with independent living by enabling convenient movement between bedroom and bathroom facilities for a wide range of people.	Structure above a main bedroom and bathroom ceilings should be capable of supporting ceiling hoists and the design should provide a reasonable route between this bedroom and the bathroom.
<b>14. Bathrooms</b>	Provide an accessible bathroom that has ease of access to its facilities from the outset and potential for simple adaptation to provide for different needs in the future.	An accessible bathroom, providing ease of access in accordance with the specification given at <a href="http://www.lifetimehomes.org.uk">www.lifetimehomes.org.uk</a> should be provided in every dwelling on the same storey as a main bedroom.
<b>15. Glazing and window handle heights</b>	Enable people to have a reasonable line of sight from a seated position in the living room and to use at least one window for ventilation in each room.	Windows in the principal living space (typically the living room), should allow people to see out when seated. In addition, at least one opening light in each habitable room should be approachable and usable by a wide range of people – including those with restricted movement and reach. Note: In kitchens areas or bathrooms with only one window situated behind kitchen units or bathroom fittings, the requirement for a potential clear approach space to that window need not apply. However, the window handle height/control requirement remains applicable. Any other window within the kitchen area or bathroom, not behind fittings, is required to satisfy both the approach and window handle/control height requirements.
<b>16. Location of service controls</b>	Locate regularly used service controls, or those needed in an emergency, so that they are usable by a wide range of household members - including those with restricted movement and limited reach.	Service controls should be within a height band of 450mm to 1200mm from the floor and at least 300mm away from any internal room corner.

**APPENDIX 1 - DEFINITION OF 'ENTRANCE LEVEL' FOR THE PURPOSE OF LIFETIME HOMES CRITERIA**

The entrance level of a dwelling for the purposes of the Lifetime Homes Criteria is generally deemed to be the storey containing the main entrance door as defined by Criterion 4. This will usually be the ground floor of a house, or the storey containing the entrance door of a flat approached a communal hall, stair, or lift.

Where there are no rooms (habitable or non-habitable) on the storey containing the main entrance door (e.g. most flats over garages, some flats over shops, some duplexes and some townhouses), the first storey level containing a habitable or non-habitable room can be considered the 'entrance level' if this storey is reached by an 'easy going' stair with maximum risers 170mm, minimum goings 250mm, and a minimum width of 900mm measured 450mm above the pitch line.

**APPENDIX 2 - COMMUNAL CAR PARKING MANAGEMENT PLANS**

Where communal parking is provided, the Council may require a Parking Management Plan to ensure that adequate parking space is available for disabled people. The parking management plan should include a mechanism to ensure that the supply and demand of wider bays / blue badge bays are regularly monitored and provision reviewed, to ensure that provision equates to any change in the demand from disabled residents and visitors and that the bays are effectively enforced to stop abuse by non blue badge holders. The needs of residents who occupy a home designated for wheelchair users and any residents who hold a blue badge and occupy any other home should be addressed.

**Key requirements for lifetime homes standards:**

- 5.10 As the Building Regulations do not currently require dwellings to be built to lifetime homes standards it is necessary to check compliance at the planning application stage. Therefore planning applications for new housing are expected to include information in the design statement and access statement showing how the proposed development addresses the 16 Lifetime Homes Criteria. Information on access statements can be found in the '**Access for all**' section of CPG6 **Amenity**.

- 5.11 Applicants should specifically submit a schedule setting out how each of the 16 criteria will be met. Plans should particularly include sufficient detail of the following key internal space criteria, such as:
- 6 - Internal doorways and hallways
  - 7 - all necessary circulation space within and between rooms
  - 8 - an entrance level living space
  - 9 – potential for an entrance level space that can be used as a bed-space
  - 10 - entrance level toilet and shower drainage at entrance level
  - 12 – stairs and potential through-floor lift in dwelling
  - 14 - an accessible bathroom
- 5.12 In the case of conversion of an existing building or other circumstances of a development may mean it may not be possible for new homes to meet all 16 criteria. In this case, the development should still seek to meet Lifetime Homes Standards as far as possible to maximise accessibility and demonstrate to the Council's satisfaction why it is not possible to meet particular criteria.
- 5.13 Applicants should include a schedule within the design and access statement for their development that sets out:
- how each of the 16 Lifetime Homes criteria will be met;
  - identifying any Lifetime Homes criteria that will not be met;
  - demonstrating that these criteria cannot be met, or otherwise justifying failure to meet them.
- 5.14 The Council will expect developments involving listed buildings to incorporate accessible features. English Heritage has produced guidance on “Easy Access to Historic Buildings”. This guidance document should be referred to for further advice.

### **What is the guidance on wheelchair housing?**

- 5.15 In addition to requiring residential development to meet Lifetime Homes standards above, policy DP6 requires a minimum of 10% of all new housing designed to be suitable for permanent occupation by wheelchair users or be easily adapted to meet them. Wheelchair housing standards go significantly beyond Lifetime Homes standards, which do not provide for permanent wheelchair occupation.
- 5.16 The 10% requirement will be applied individually to each tenure within a given development scheme (ie applied to each affordability category whether market housing, social rented housing or intermediate affordable housing).
- 5.17 We may agree to increase the percentage of social rented wheelchair homes and decrease the percentage of intermediate affordable wheelchair homes (or vice versa) where this will better enable us to meet the needs of identified future occupiers.

**For market housing:**

- 5.18 We will encourage the provision of fully fitted out Wheelchair Housing, but will accept provision of 10% homes designed to be easily adaptable to meet the standards.
- 5.19 New homes that are capable of being easily adaptable should incorporate the key space criteria set out in the Habinteg Wheelchair Housing Design Guide (see Figure 10 below) and ensure that any fittings and fixtures required at a later date can be easily provided without enlarging or structurally altering the home.

**For affordable housing:**

- 5.20 The 10% wheelchair requirement should be designed, built and fitted out to meet Wheelchair Housing standards in full. These affordable homes should comply with the Camden Wheelchair Housing Design Brief 2010 produced by the Council.
- 5.21 As far as possible, the Council will seek to identify future occupiers of affordable wheelchair housing and seek to ensure that it is tailored to their needs.
- 5.22 The Council's Housing Partnerships Team should be consulted for any specific design requirements required to meet the needs of future occupiers of affordable wheelchair housing (see Further Information at the end of this guidance).
- 5.23 The Council may use its affordable housing fund to support the creation of fully-fitted out affordable wheelchair housing.

**Habinteg Wheelchair Housing Design Guide:**

- 5.24 All wheelchair housing should be designed in accordance with the standards set out in the nationally recognised Habinteg Wheelchair Housing Design Guide (WHDG).
- 5.25 The standards include guidance for main entrances, doors, hallways, storage space, bedroom space, windows, etc. Below are the 13 key space criteria relating to the internal layouts of individual dwellings. The main entrances and common parts should be designed in accordance with the relevant guidance (WHDG p30 & 31)

**Figure 10. Summary of the 13 key Habinteg wheelchair housing criteria**

1. Dwellings should normally be designed on one level storey. Where a dwelling is arranged in two or more floors a vertical rise lift serving all floors must be provided. (WHDG p63)
2. The entrance door to the dwelling should provide a minimum clear opening width of 800mm (when accessed head on) or 825mm (when the approach is not head on). It should be weather protected and lit and be provided with a 300mm clear space to the leading edge (pull side of the door) and a 200mm clear space on the push side. (WHDG p36)
3. The entrance hallway requires a manoeuvring space 1500 x 1800mm (enabling an occupier to open and close the door and turn into the living space) (WHDG p37 & 44)
4. A space to store and charge an electric wheelchair should be provided as an extension to the circulation space of the dwelling. Care should be taken to ensure that storage of the chair does not restrict the minimum clear effective width of any corridor. Consideration should be given to how the facility is accessed and used. To guarantee sufficient manoeuvring space an overall space of 1100 x 1700mm should be provided. (WHDG p45)
5. All halls and corridors (facilitating 90° turns) should have a clear unobstructed width of at least 1200mm and internal door clear opening widths of at least 800mm. To facilitate a 180° turn a corridor width of 1500mm is required. (WHDG p57)
6. All internal doors require a 300mm clear space to the leading edge (pull side of the door) and a 200mm clear space on the push side. (WHDG p58)
7. A 1500 x 1800mm turning circle should be provided in the kitchen. (WHDG p7)
8. In all bedrooms a 1200 x 1200mm clear space should be provided to one side of the bed, 1000mm circulation is required to the other sides and the foot of each bed. In single bedrooms access to one side of the bed is acceptable. All furniture and window controls should be reachable and usable. (WHDG p88)
9. In all bathrooms space should be provided to facilitate frontal, side and oblique transfer to the toilet. The bathrooms and toilets should normally have outward opening doors or provide a clear space of 1100mm between the door swing and any fixture or fitting. (WHDG p78)
10. All bathrooms should provide a 1500 x 1500mm square manoeuvring space, clear of all fittings (WHDG p78)
11. In all bathrooms a drainage gully and services to facilitate the installation of a level entry shower (1000 x 1000mm) should be provided. (WHDG p85)
12. A clear ceiling-track hoist route (suitably constructed and with a ready power supply) should be provided between the bathroom and the main bedroom (WHDG p80 & 15)
13. Windows should be able to be opened from a seated position. Controls should be located no higher than 1000mm above finished floor level and suitable for use by people with limited manual dexterity (WHDG p99)

For the latest edition of these standards, please refer to: "Wheelchair housing design guide" edited by Stephen Thorpe and available from Habinteg Housing Association:  
[www.habinteg.org.uk/pages/whdg.html](http://www.habinteg.org.uk/pages/whdg.html) (available from BREbookshop.com ISBN 1860818978)



### **Key requirements for wheelchair housing standards**

- 5.26 Planning applications will need to show which units are wheelchair accessible and how they are wheelchair accessible or how they can be easily adapted to be suitable for wheelchair users. Full wheelchair housing standards should be met within affordable housing and will be negotiated within market housing on a case by case basis.
- 5.27 Applications for planning permission should show full details of how 10% of homes will comply with wheelchair housing standards or, in the case of market housing, design features that ensure that 10% of homes are easily adaptable to meet the standards.
- 5.28 Plans should identify all wheelchair housing (or homes easily adaptable to the standards) and applications should include drawings setting out how the 13 key space criteria identified in Figure 10 will be met.
- 5.29 Applicants should include a schedule within the design and access statement for their development that sets out:
- how each of the 13 key space criteria will be met;
  - identifying any key space criteria that will not be met;
  - demonstrating that these criteria cannot be met, or otherwise justifying failure to meet them.
- 5.30 In the case of conversion of an existing building, we will apply the 10% requirement flexibly to take into account any constraints that would prevent the inclusion of entrances and internal spaces suitable for a wheelchair user.
- 5.31 For further design guidance on wheelchair housing please refer to the Mayor of London's SPG: 'Accessible London – Achieving an Inclusive Environment' (April 2004) - [http://static.london.gov.uk/mayor/strategies/sds/accessible\\_london.jsp](http://static.london.gov.uk/mayor/strategies/sds/accessible_london.jsp) (accessed April 2011).

### **Additional considerations**

#### **Requirements in other residential buildings**

- 5.32 In general, mobility difficulties and the need to provide for wheelchair users should be considered in the design of all forms of housing. The type of provision will need to be individually tailored to suit the nature of the facility and the likely needs of future occupiers.
- 5.33 In relation to student housing there is no requirement to meet Lifetime Homes standards, however, 10% of student bedrooms/ study flats (together with supporting communal spaces) are expected to meet wheelchair standards. Suitable design layouts are included in Approved Document M (known as Part M) of the Building Regulations.

### **Key building regulation requirements**

- 5.34 The accessibility of accommodation should be considered whether the proposal is for new build, conversions or refurbishments.
- 5.35 Part M of the Building Regulations sets minimum accessibility requirements for building standards in new residential dwellings and is required in addition to Lifetime Homes and wheelchair accessible housing standards being met. They apply at the Building Regulation approval stage and, as such, are not a matter for consideration in the planning process.
- 5.36 BS 8300:2009 'Design of buildings and their approaches to meet the needs of disabled people – Code of Practice' (BSI) provides good practice guidance for various types of non-domestic buildings.
- 5.37 For further information on part M of the Building Regulations or BS 8300:2009 please contact the Council's Building Control Service or refer to the regulations on the Department for Communities and Local Government's website:  
[www.communities.gov.uk/planningandbuilding/buildingregulations/](http://www.communities.gov.uk/planningandbuilding/buildingregulations/)

### **Securing lifetime homes and wheelchair housing through conditions and legal agreements**

- 5.38 Homes need to satisfy specific layout and space criteria in order to meet Lifetime Homes and Wheelchair Housing Standards. If homes are not designed to meet these criteria from the outset, it may not be possible to accommodate the necessary spaces within the envelope of the dwelling as proposed. Consequently, if submitted applications do not show dwellings that meet Lifetime Homes and Wheelchair Housing Standards, they cannot be secured by condition.
- 5.39 Conditions may be used exceptionally in connection with Lifetime Homes Standards where:
- constraints of an existing building will prevent layout and space criteria from being met
  - key layout and space criteria can clearly be met by the proposed housing, but other Lifetime Homes criteria have not demonstrably been met by submissions with the planning application.  
In each case, a condition may be used to secure submission of additional details of how specific Lifetime Homes criteria will be met before the development is implemented.
- 5.40 Development policy DP6 requires the provision of the 10% affordable wheelchair housing to be designed, built and fitted out to meet wheelchair housing standards in full. It will always be secured through a planning obligation (also known as a section 106 agreement or legal agreement). In most cases, the terms will specify:
- all wheelchair housing in the development

- which wheelchair housing will be social rented and which will be intermediate affordable housing
- arrangements to ensure that affordable wheelchair housing is fully fitted out to the agreed specifications, including payment of a bond where appropriate
- arrangements to ensure that affordable wheelchair housing is completed and fully fitted out to an acceptable timescale.

5.41 In some cases the terms may also specify:

- arrangements for submission of revised or additional plans or schedules where key space criteria have not demonstrably been met by submissions with the planning application;
- arrangements to ensure that affordable wheelchair housing can be viewed by potential occupiers before it is fitted out;
- arrangements to ensure that affordable wheelchair housing is available to wheelchair users in the future.

5.42 Provision of 10% wheelchair housing (or easily adaptable market housing) in market schemes is required but often future occupiers will be unknown until after the homes have been fitted out - under Development policy DP6 it may be exceptionally secured through a planning obligation where submissions with the planning application do not demonstrate that 10% of market homes meet the key space criteria. In such cases, the terms will specify:

- arrangements for submission of revised or additional plans or schedules showing that 10% of market homes meet key space criteria;
- arrangements to ensure that wheelchair housing is completed to the agreed specifications.

## Further information

<p>Lifetime Homes  <a href="http://www.lifetimehomes.org.uk">www.lifetimehomes.org.uk</a></p>
<p>Mayor's guidance at <a href="http://www.london.gov.uk/strategy-policy/accessible-london-achieving-inclusive-environment">http://www.london.gov.uk/strategy-policy/accessible-london-achieving-inclusive-environment</a> (see Mayor's Priorities - Planning - Accessible London: Achieving an Inclusive Environment - July 2011):          SPG 'Accessible London: Achieving an Inclusive Environment' (April 2004)          'Lifetime Homes – case study examples' (September 2006)          Best Practice Guidance 'Wheelchair Accessible Housing' (September 2007)</p>
<p>Housing Supplementary Planning Guidance (Mayor of London, November 2012)  <a href="http://www.london.gov.uk/who-runs-london/mayor/publications/planning/housing-supplementary-planning-guidance">http://www.london.gov.uk/who-runs-london/mayor/publications/planning/housing-supplementary-planning-guidance</a>          (see Mayor's Priorities - Planning – Supplementary Planning Guidance)</p>
<p>London Housing Design Guide (Mayor of London, August 2010)  <a href="http://www.london.gov.uk/who-runs-london/mayor/publications/housing/london-housing-design-guide">www.london.gov.uk/who-runs-london/mayor/publications/housing/london-housing-design-guide</a> (accessed April 2011)</p>
<p>Building Regulations 2010 Approved Document M - Access to and Use of Buildings (known as Part M)</p>
<p>British Standard BS 8300:2009+A1: 2010 Design of buildings and their approaches to meet the needs of disabled people – Code of Practice (BSI)</p>
<p>British Standard BS 9999:2008 Code of Practice for Fire Safety in the Design, Management and Use of Buildings (BSI)</p>
<p>Camden Council Housing Adult and Social Care 'Camden Wheelchair Housing Design Brief 2013'  <a href="http://www.camden.gov.uk/ccm/content/housing/housing-policy-and-strategies/camden-wheelchair-design-guide/camden-wheelchair-design-guide.en">http://www.camden.gov.uk/ccm/content/housing/housing-policy-and-strategies/camden-wheelchair-design-guide/camden-wheelchair-design-guide.en</a></p>

Camden Planning Guidance

# Sustainability

London Borough of Camden

CPG **3**



July 2015



## CPG1 Sustainability

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# 1 Introduction

## What is Camden Planning Guidance?

- 1.1 We have prepared this Camden Planning Guidance to support the policies in our Local Development Framework (LDF). This guidance is therefore consistent with the Core Strategy and the Development Policies, and forms a Supplementary Planning Document (SPD) which is an additional “material consideration” in planning decisions.
- 1.2 The Council adopted CPG3 Sustainability on 6 April 2011 following statutory consultation. This document has been subject to two updates:
- 4 September 2013 to clarify the guidance in Section 9 related to the Code for Sustainable Homes, and
  - 17 July 2015 to update a number of sustainable design standards and targets.

Details on these updates and the consultation process are available at [camden.gov.uk/cpg](http://camden.gov.uk/cpg).

- 1.3 The Camden Planning Guidance covers a range of topics as well as sustainability (such as design, housing, amenity and planning obligations) and so all of the sections should be read in conjunction, and within the context of Camden’s LDF.

## What is this sustainability guidance for?

- 1.4 The Council is committed to reducing Camden’s carbon emissions. This will be achieved by implementing large scale projects such as installing decentralised energy networks alongside smaller scale measures, such as improving the insulation and energy performance of existing buildings.
- 1.5 This guidance provides information on ways to achieve carbon reductions and more sustainable developments. It also highlights the Council’s requirements and guidelines which support the relevant Local Development Framework (LDF) policies:
- CS13 - *Tackling climate change through promoting higher environmental standards*
  - DP22 - *Promoting sustainable design and construction*
  - DP23 - *Water*

**What does the guidance cover?**

- Energy statements
- The energy hierarchy
  - Energy efficiency – in new and existing buildings
  - Decentralised energy and combined heat and power (CHP)
  - Renewable energy
- Water efficiency
- Sustainable use of materials
- Sustainability assessment tools - BREEAM
- Green roofs, brown roofs and green walls
- Flooding
- Climate change adaptation
- Biodiversity
- Urban food growing

## 3 Energy efficiency: new buildings

### KEY MESSAGES

All new developments are to be designed to minimise carbon dioxide emissions

The most cost-effective ways to minimise energy demand are through good design and high levels of insulation and air tightness.

This guidance covers:

- Stage 1 of the energy hierarchy; and
- How to ensure new buildings are as energy efficient as possible.

- 3.1 Stage 1 involves ensuring that the design of a development includes a range of low carbon techniques that will reduce its energy consumption.
- 3.2 Stages 2 and 3 of the energy hierarchy – Decentralised energy networks and combined heat and power and renewable energy are dealt with in sections 4 and 5 of this document.
- 3.3 Core Strategy policy CS13 – *Tackling climate change through promoting higher environmental standards* encourages developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.

### WHAT WILL THE COUNCIL EXPECT?

All new developments are to be designed to minimise carbon dioxide emissions by being as energy efficient as is feasible and viable

### Energy efficient design techniques

- 3.4 Energy efficient design requires an integrated approach to solar gain, access to daylight, insulation, thermal materials, ventilation, heating and control systems. It is important you always consider these aspects in relation to each other when designing a scheme.
- 3.5 This section provides detailed guidance on all the ways you can design your building to be more energy efficient. It is split into four sections:
- Natural systems;
  - Thermal performance;
  - Mechanical systems; and
  - Other energy efficient technology.

### Natural systems

- 3.6 Designing natural systems into new buildings can make the most of naturally occurring energy, such as the heat and light from the sun.

### **Making the most of sunlight**

- Consider locating principal rooms that require warmth and daylight on the south side of buildings to benefit from the sun's heat. Within 30 degrees of south is ideal.
- Consider any overshadowing from adjoining or of adjoining buildings and spaces that will reduce the amount of solar gain.
- Consider the possibility of including renewable energy technologies, for example by including a flat or south facing roof for solar panels.

### **Making the most of daylight**

- Maximise the amount daylight while minimising the need for artificial lighting.
- Carefully design windows to maximise the amount of sunlight entering rooms to meet the needs of the intended use.
- Daylight is dependent on the amount of open, un-obscured sky available outside a window, the amount of sunshine and the amount of light reflected from surrounding surfaces.
- The size, angle and shape of openings together with room height depth and decoration determine the distribution of daylight.

3.7 More information on daylight and sunlight can be found in CPG6 Amenity.

### **Preventing overheating**

- 3.8 Some developments may experience too much sunlight in the summer, therefore you should achieve a balance between benefitting from solar gain and preventing over heating. To prevent over heating:
- Locate any spaces that need to be kept cool or that generate heat on the north side of developments.
  - Use smaller windows on the south elevation and larger windows on the north.
  - Use shading measures, including balconies, louvers, internal or external blinds, shutters, trees and vegetation. Any shading needs to be carefully designed to take into account the angle of the sun and the optimum daylight and solar gain.
  - Include high performance glazing e.g. triple glazed windows, specially treated or tinted glass.
  - Make use of overshadowing from other buildings.
  - Include green and brown roofs and green walls which help to regulate temperature. See section 9 of this guidance on brown roofs, green roofs and green walls for more information.

### **Natural ventilation**

- Natural ventilation includes openable windows, the 'stack effect' system where pressure differences are used to draw air through a building (see Figure 1) and, double layers, where one layer has

openable windows where air can flow freely. These systems allow air to be drawn through a building and can operate in tall buildings. Careful design of the space is required as air flows are impeded by walls and partitioning.

- Room layouts, shallow floor plans and high floor to ceiling heights all help the natural ventilation of buildings

### Natural cooling

- Can be created by shading, the evaporation effect from trees and other vegetation including green roofs and walls which naturally cool the environment. See section 9 for more guidance on green roofs.

#### WHAT INFORMATION DOES THE COUNCIL REQUIRE?

- A full model of the building should be carried out to ensure the building design optimises solar gain and daylight without resulting in overheating for developments comprising 5 dwellings or more or 500sq m or more of any floorspace
- Consider maximising the use of natural systems within buildings before any mechanical services are considered

### Thermal performance

- 3.9 The thermal performance of a building relates to the amount of heat that is retained inside and the amount that is lost to the outside air. Ensuring a high thermal performance is one of the most effective ways to ensure your development is energy efficient.

#### Insulation

- 3.10 A high level of insulation is the most effective way to ensure new buildings are energy efficient. Use insulation with low overall heat transfer coefficient (U-value). See the Energy Savings Trust's Insulation materials chart for details on the thermal performance of various materials.

##### U-value

The rate at which heat transfers through a building material. The lower the U-value, the better the insulator.

- 3.11 Consider how the insulation is attached to the building structure or walls. If a joint is badly insulated or if the material is penetrated by materials that conduct heat such as metal nails, it could cause cold patches and reduce the efficiency of the insulation. Ensure special attention is given to these potential heat loss areas to prevent cold bridging and potential points of condensation.

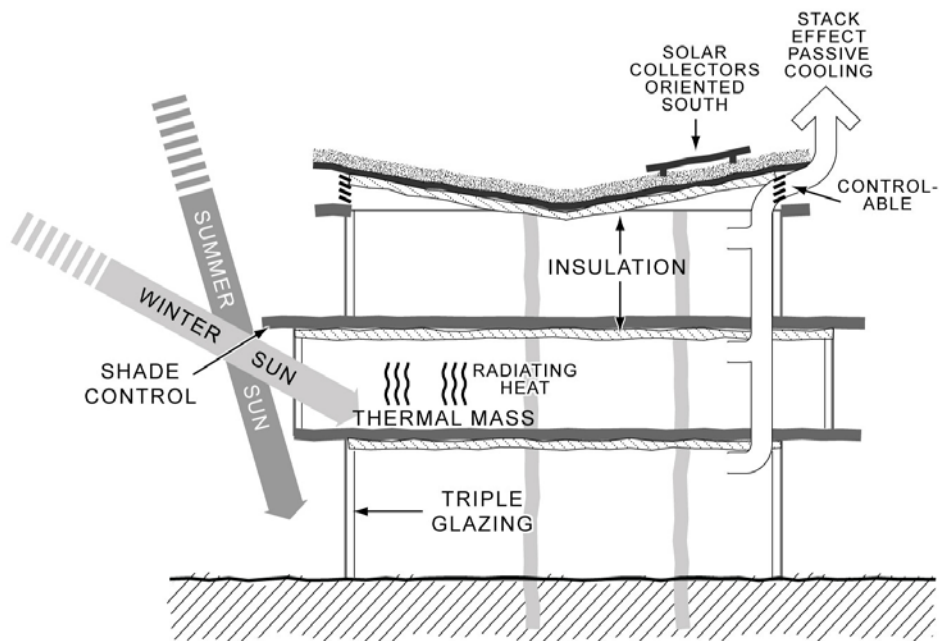
##### Cold bridging

Cold bridging occurs on a surface where one material loses heat faster than other, for example, through a concrete frame or a metal nail.

### Materials with thermal properties

- 3.12 Materials with a high thermal mass e.g. concrete absorb and retain heat produced by the sun. These materials can be used to regulate indoor temperatures, especially to keep inside spaces cool during the day. Where heat is generated from within a building, exposed areas of thermal mass within the building can be used to transmit heat out of a building as the outdoor temperature drops.
- 3.13 Figure 11 below shows how heat from the sun can be absorbed by the thermal mass material and be released over time to help keep the building warm and insulated

Figure 1. Natural system principles



### Thermal buffers

- 3.14 Porches, atriums, conservatories, lobbies and sheltered courtyards are useful 'thermal buffers'. You can design these features to prevent excessive heat loss from doors and windows by providing a transition between the cold outside and the warm inside of a building.
- 3.15 Insulation is central to low energy construction but it must be installed without any gaps to ensure a building is air tight to reduce heat loss. In some buildings around half of all heat losses are due to air leakage throughout the building materials.
- 3.16 To achieve air tightness, buildings must be designed with a continuous seal around the internal materials to eliminate unwanted draughts. Once the seals are in place, they ensure that the insulation can function to its optimum performance, saving energy and drastically reducing carbon emissions for the lifetime of the building.

**Air tightness**

Air tightness is the control of air leakage, i.e. the elimination of unwanted draughts and holes through the external materials of the building. It is measured by the rate at which air passes through a building (m<sup>3</sup>/m<sup>2</sup>/h)

- 3.17 Particularly air tight buildings may need to include a specialised ventilation system to ensure that naturally pre-heated fresh air is circulated through all the rooms without losing heat. See the section on Mechanical systems below for more information on Mechanical Ventilation with Heat Recovery (MVHR).

**Mechanical systems**

- 3.18 Mechanical systems are generally required by the Building Regulations to enable buildings to be occupied. These systems vary from simply extraction fans in kitchens and bathrooms to whole office cooling systems. The Council will expect applicants to consider the following when choosing mechanical systems:

**Efficient heating**

- Use heating systems that run using gas as they are generally more carbon efficient than systems which use electricity. Gas systems can also be designed so that they can be connected to a decentralised heating network.
- Locating plant e.g. pipes, flues, machinery, close to where the heat is required ensures a lower level of energy for pumping.
- A community heating scheme, where appropriate e.g. Combined Heat and Power (see section 4 of this guidance on Decentralised energy and combined heat and power for more information)
- Avoiding electric heating systems unless there is no access to a gas connection, or where heating is required for very short periods in isolated locations

**WHAT INFORMATION DOES THE COUNCIL REQUIRE?**

- Any development proposing electric heating (including heat pumps) will need to demonstrate the carbon efficiency of the proposed heating system. Specifications of the electric heating system and calculations will need to be provided to demonstrate that the proposed electric heating system would result in lower carbon dioxide emissions than an efficiency gas fuelled heating system.

**Efficient ventilation and cooling**

- Mechanical Ventilation with Heat Recovery (MVHR) conserves energy by recovering heat from stale warm air leaving a building and transferring the heat to the cooler incoming air.
- Water based cooling systems reduce the need for air conditioning by running cold water through pipes in the floor and/or ceiling to cool the air.

- Ground source cooling.
- Evaporation cooling which cools air through the simple evaporation of water.
- Exposed concrete slabs.
- The natural 'stack effect' which draws cool air from lower levels whilst hot air is released.

3.19 For some uses such as laboratories, where sterile conditions are essential, natural ventilation will not be required. These rooms should be located to minimise the heating or cooling required and close to the plant to limit the energy required by fans and pumps.

#### WHAT INFORMATION DOES COUNCIL REQUIRE?

- Where traditional mechanical cooling e.g. air conditioning units are proposed applicants must demonstrate that energy efficient ventilation and cooling methods have been considered first, and that they have been assessed for their carbon efficiency.
- NB: Air source heat pumps will be considered to provide air conditioning in the summer unless it can be demonstrated that the model chosen is not capable of providing cooling.

#### Other energy efficient technology

- In the average home, lighting accounts for around 20% of the electricity bill. In some developments it can be one of the highest energy consumers and can generate large amounts of heat that is wasted.
- High efficiency lighting with controlled sensors e.g. timers, movement sensors and photo sensors, which adjust the brightness of the light depending on the natural light level.
- Zoned lighting, heating and cooling with individual control.
- Specifying appliances which are A+ rated.
- Efficient mechanical services system or a building management system – computer systems which control and monitor a building's mechanical and electrical equipment. Their main aim is to control the internal environment, but in doing so can also reduce the energy consumption of a building.
- Using heat recovery systems.
- Energy monitoring, metering and controls should be used to inform and facilitate changes in user behaviour.

#### Heat recovery system

A heat recovery system uses heat leaving a building or generated as waste from mechanical operations to pre-heat fresh air entering a building



### What is considered best practice?

- 3.20 Policy 5.2 *Minimising carbon dioxide emissions* of the Draft Replacement London Plan introduces a carbon dioxide reduction target for new development to make a 35% improvement on the current 2013 Building Regulations:
- 2010 – 2013 25 per cent
  - 2013 – 2016 35 per cent
  - 2016 – 2031 Zero carbon
- 3.21 The following standards focus on improving a building's fabric to achieve best practice U-values over and above current Building Regulations. The Council considers that the standards below are feasible in all but exceptional circumstances to meet the new London Plan targets. There are other ways to reduce the energy efficiency of a building as set out in the first part of this section.
- 3.22 The table below generally relates to residential developments, however the building fabric standards are also applicable to commercial developments. For all developments a balance will need to be reached between the need to retain heat, the heat generated within a development and the need to remove excess heat.

#### Standards

External wall	0.20
Roof	0.13
Floor	0.20
Windows	1.50 British Fenestration Rating Council band B or better
Doors	1.00 (solid) 1.50 (glazed)
Air tightness	3.00 (m <sup>3</sup> /h.m <sup>2</sup> at 50 Pa)
Proportion of energy efficient lighting	100%
BREEAM	Developments will be expected to achieve 60% of the un-weighted credits in the Energy category of their BREEAM assessment. (See section 8 on sustainability assessment tools for more details relating to BREEAM.

Thermal insulation measured in U-Values (W/m<sup>2</sup>.K)

### What is carbon offsetting?

- 3.23 Where the London Plan carbon reduction target in policy 5.2 cannot be met onsite, we may accept the provision of measures elsewhere in the borough or may require a s106 financial contribution to Camden's carbon offset fund which will be used to secure the delivery of carbon

reduction measures elsewhere, in connection with projects identified in the Council's Environmental Sustainability Plan 'Green Action for Change'. A contribution may be in the form of an integral element of the development, "in-kind" provision on or off site or a financial contribution secured through a s106 agreement (in accordance with CIL regulations). What does zero-carbon mean?

- 3.24 The government has set out a timetable for residential development to be zero carbon by 2016, public buildings by 2018 and non-residential development to be 'zero carbon' by 2019. The Council has reflected these ambitions in Development Policy DP22 – *Promoting sustainable design and construction* by using a stepped approach to the requirements for achieving higher levels of the Code for Sustainable Homes. Buildings built or refurbished today will be competing with low and 'zero-carbon' buildings in the near future. For commercial buildings this could have a particular impact on their future letability and value as new commercial buildings are anticipated to be zero carbon from 2019.
- 3.25 To determine how developments should meet the 'zero carbon' standard the Zero Carbon Hub has developed an energy efficiency standard for all new homes (currently awaiting government approval). For more information see the Zero Carbon Hub website [www.zerocarbonhub.org](http://www.zerocarbonhub.org)

#### **What does PassivHaus mean?**

- 3.26 PassivHaus is a specific design and construction standard from Germany that can result in a 90% reduction in energy demand and usage. It can be applied to both commercial and residential buildings. Core Strategy policy CS13 - *Tackling climate change through promoting higher environmental standards* notes that PassivHaus is an example of energy efficiency principles.
- 3.27 To be PassivHaus buildings must meet the following criteria:
- the total energy demand for space heating and cooling is less than 15 kWh/m<sup>2</sup>/yr of the treated floor area;
  - the total primary energy use for all appliances, domestic and hot water and space heating and cooling is less than 120 kWh/m<sup>2</sup>/yr
- 3.28 PassivHaus' are designed using a special software package called the PassivHaus Planning Package (PHPP) and regional climate data.
- 3.29 The Council will be supportive of schemes that aim to PassivHaus standards, subject to other policy and design considerations. More information can be found on the PassivHaus website - [www.passivhaus.org.uk](http://www.passivhaus.org.uk)

**Further information**

The London Plan	Sustainable Design and Construction: Supplementary Planning Guidance, Mayor of London provides detailed guidance on the energy hierarchy.
The Energy Saving Trust	Provides detailed guidance on the specification of new homes to reduce energy consumption. The Energy Saving Trust has developed a range of guidance and technical documents to help meet the energy performance requirements of the Code for Sustainable Homes and assess a range of materials and technologies for their thermal and carbon dioxide emissions levels. A wide range of best practise documents and guidance can be found at <a href="http://www.energysavingtrust.org.uk">www.energysavingtrust.org.uk</a>
The Town and Country Planning Association (TCPA)	Has produced a guide titled 'sustainable energy by design'. Section 4.1 of that document focuses on the design and development process, and shows how sustainable energy can be incorporated into new development in line with the energy hierarchy. <a href="http://www.tcpa.org.uk">www.tcpa.org.uk</a>
Building Regulations	Approved Documents – Part L - Conservation of Fuel and Power. This section of the Building Regulations deals specifically with the energy efficiency of buildings. The latest version of the Regulations can be found on the Planning Portal website: <a href="http://www.planningportal.gov.uk">www.planningportal.gov.uk</a>
The Zero Carbon Hub	Has a lead responsibility for delivering homes to zero carbon standards by 2016. It has produced guidance on energy efficiency standards for new homes. <a href="http://www.zerocarbonhub.org">www.zerocarbonhub.org</a>



## 6 Renewable energy

### KEY MESSAGES

There are a variety of renewable energy technologies that can be installed to supplement a development's energy needs

Developments are to target a 20% reduction in carbon dioxide emissions from on-site renewable energy technologies.

- 6.1 This guidance covers Stage 3 of the energy hierarchy. Stage 3 involves considering how renewable energy technologies can be used to further reduce the carbon dioxide emissions of a development. You will find information in this section on the types of renewable energy technologies that are available and when they are most appropriate. Stages 1 and 2 of the energy hierarchy – energy efficiency and decentralised energy & CHP – are dealt with in sections 2, 3 and 4.
- 6.2 Core Strategy policy CS13 - *Tackling climate change through promoting higher environmental standards* encourages developments to meet the highest feasible environmental standards that are financially viable during construction and occupation. Paragraph 13.11 states that developments will be expected to achieve a 20% reduction in carbon dioxide emissions from on-site renewable energy generation unless it can be demonstrated that such provision is not feasible. The 20% reduction should only be attempted once stages 1 and 2 of the energy hierarchy have been applied.

### WHAT DOES THE COUNCIL EXPECT?

All developments are to target at least a 20% reduction in carbon dioxide emissions through the installation of on-site renewable energy technologies. Special consideration will be given to heritage buildings and features to ensure that their historic and architectural features are preserved.

When assessing the feasibility and viability of renewable energy technology, the Council will consider the overall cost of all the measures proposed and resulting carbon savings to ensure that the most cost-effective carbon reduction technologies are implemented in line with the energy hierarchy.

## Renewable energy technologies

### Solar/Thermal Hot Water Panels

#### What is it?

A system made of flat plate collectors or evacuated tubes which allow water to flow through and be heated by the sun's rays.



#### What does it do?

Uses the sun's heat to warm water - up to 85 degrees Celsius

#### What issues should I consider?

- Flat plate systems are cheaper. Evacuated tube systems are more efficient so need less space.
- Generally used for hot water where approximately 4sq m of solar panel per household is sufficient with 80 litres of hot water storage.
- Aim to minimise pipe lengths as this reduces heat losses.
- Not ideal with combined heat and power as it can reduce the efficiency of the CHP system.

#### Where might this technology be appropriate?

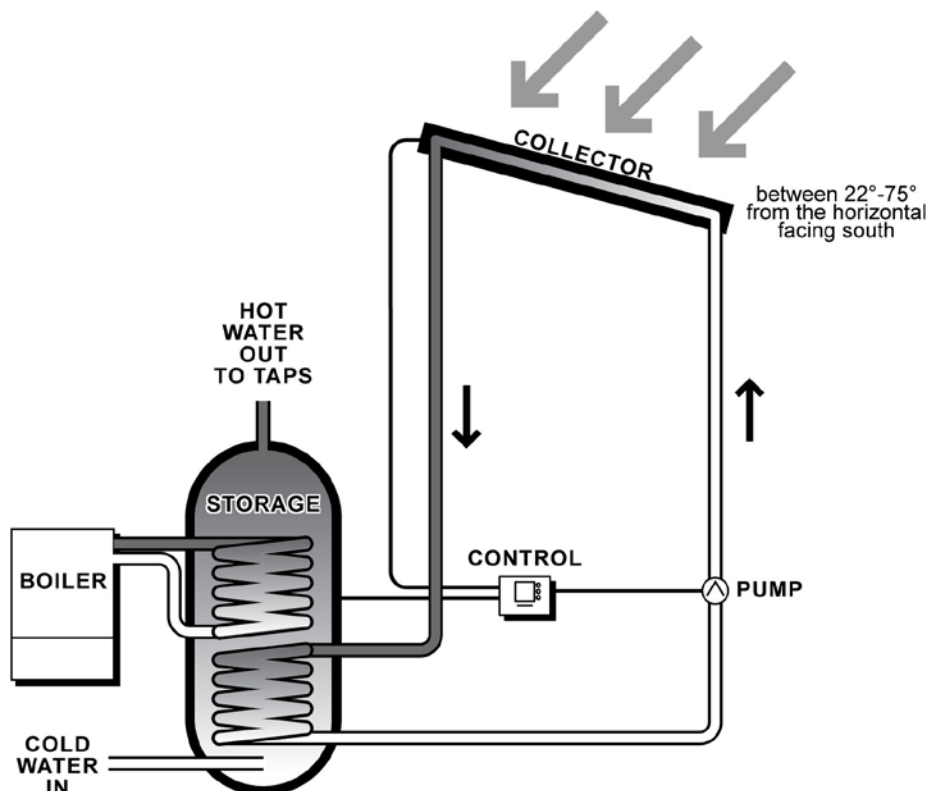
- Suitable for developments with all year hot water demands.
- South facing at 30-40 degrees is ideal, but as the panels do not rely on direct sunlight they can still be efficient at other angles.
- Can be fitted to existing buildings, but need to consider additional weight of the panels and compatibility of heating/hot water system

#### WHAT DOES THE COUNCIL EXPECT FOR THIS TECHNOLOGY?

- Where space allows, panels are to meet 100% of the site's summer hot water needs, which equates to 50-60% of the annual demand.
- Applicants are to confirm the number and size of panels or the overall square meters to be installed

- The accompanying heating system such as the top up boiler must be compatible. For example, it must include a storage tank and be able to use pre-heated water.
- Larger schemes should use a central system
- A meter is to be installed on the system for monitoring

Figure 6. Solar Hot Water Heating Schematic



## Photovoltaic (PVs)

### What is it?

Photovoltaic cells are panels you can attach to your roof or walls. Each cell is made from one or two layers of semiconducting material, usually silicon. There are a number of different types available e.g. panels, tiles cladding and other bespoke finishes.



### How does it work?

When light shines on the PV cell it creates an electric field across the layers. The stronger the sunshine, the more electricity is produced.

### What issues should I consider?

- PV works best in full sunlight.
- Consider movement of shadows during the day and over the year. Overshadowing can impact the overall performance of the PV array.
- The best commercial efficiency is 22%.
- In general 1sq m of conducting material such as crystalline array will provide an output of 90-110 kWh per year.

### Where might this technology be appropriate?

- On a roof or wall that faces within 90 degrees of south, and isn't overshadowed by trees or buildings. If the surface is in shadow for parts of the day, your system will generate less energy.
- On top of a green or brown roof is ideal because the cooler temperature created locally by the vegetation improves the efficiency of the solar panel.
- Can be fitted to existing buildings, but need to consider additional weight of the panels.

### WHAT DOES THE COUNCIL EXPECT FOR THIS TECHNOLOGY?

- Preference is for PVs to be flush to the roof or wall, but considerations will include the efficiency of the panel/s and whether they are visible
- Applicants are to confirm the number and size of panels or the overall square meters to be installed
- A meter is to be installed on the system for monitoring



## Ground Source Heat Pumps (GSHP) or geothermal

### What is it?

A network of underground pipes, which circulate a mixture of water and chemicals (to prevent freezing) through a loop and a heat exchanger.

### How does it work?

The heat from the ground is absorbed by the liquid that is pumped through the buried pipes. A heat exchanger in the heat pump extracts the heat from the liquid and transfers it the water in the building's heating system which can be used for central heating and hot water. In the summer, when the ground is cooler than the air, the system can be reversed to provide cooling.

### What issues should I consider?

- There are horizontal and vertical systems.
- Horizontal systems, also known as loop systems use trenches
- Vertical systems use boreholes which require a ground survey and a drilling license from the Environment Agency
- There are a range of permits and consents that might be required
- Generally provides heat at lower temperatures (30-50 degrees Celsius) than normal gas boilers.
- Buildings need to be well insulated for a GSHP to be effective
- The pump requires electricity to run so this technology will not be renewable or energy efficient in all developments.

### Where might this technology be appropriate?

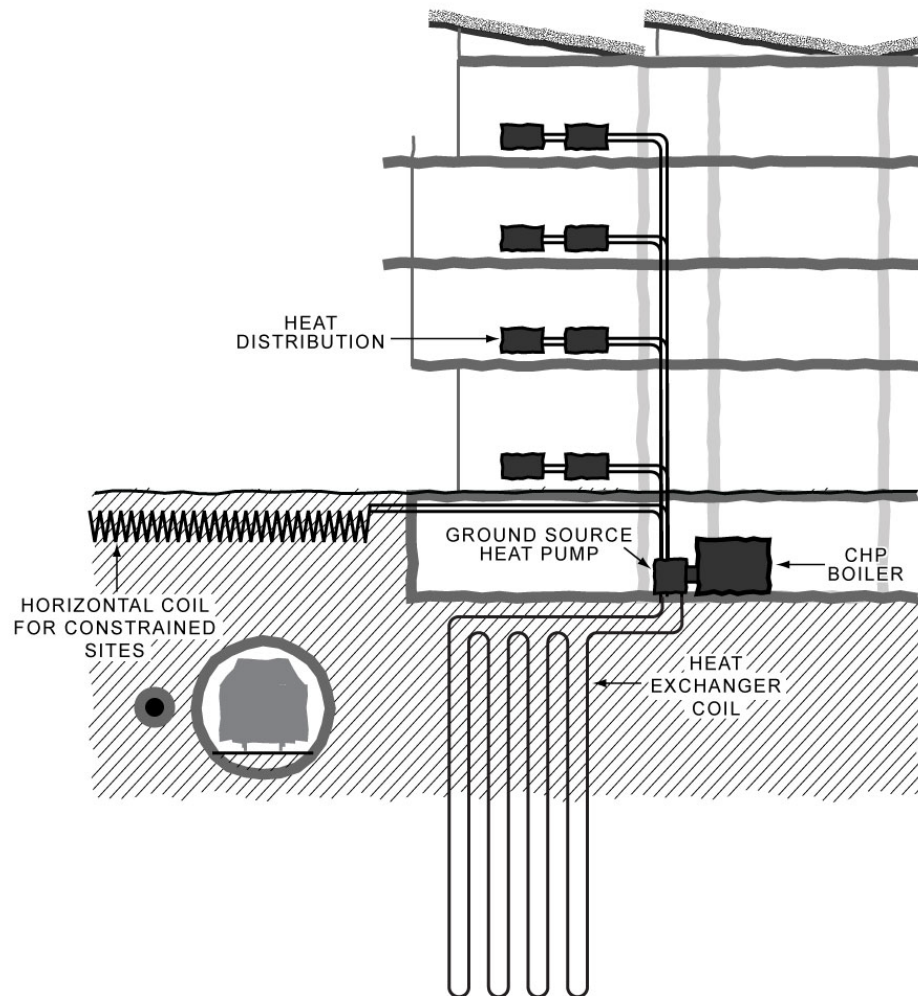
- The lower temperatures mean that GSHPs are well suited for underfloor heating
- Ideal for buildings which need heating in winter and cooling in summer

### WHAT DOES THE COUNCIL EXPECT FOR THIS TECHNOLOGY?

- Evidence is to be provided to demonstrate that the local geology can accommodate the necessary excavation
- Consider how much electricity is required to work the pump versus the energy savings of providing heat or cooling. The carbon content of the electricity required to run the pump could be higher than the gas need to run a traditional gas boiler. The ratio of heat or cooling produced to the energy used to produce the heat is called the coefficient of performance (COP). For example, a heat pump which uses 1kW of electricity to produce 4kW of usable energy has a COP of 4 and is therefore 400% efficient. GSHPs need to have a COP of 4 or more to be considered renewable.

- When considering the carbon efficiency of a heat pump system the Council will take into account research and evidence of past performance of heat pumps and the seasonal performance.
- A meter on the system for monitoring

Figure 7. Ground Source Heat Pump Schematic



## Air source heat pumps (ASHP)

### What is it?

A heat pump that extracts heat from the outside air to heat the interior of a building or to heat hot water. It can also extract the heat from inside a building to provide cooling.

### How does it work?

Air to water heat pumps operate on a similar principle to an ordinary refrigerator. Heat from the atmosphere is extracted by an outdoor unit and is absorbed by a refrigerant solution which is then compressed to a high temperature. The heat generated is used by the indoor unit to create hot water for a traditional heating and hot water system.

Air to air heat pumps work in a similar way, but instead of generating hot water, the heat from the compressed refrigerant solution is turned into hot air by an indoor unit which is used to heat the building.

### What issues should I consider?

- ASHPs need electricity to run
- Can be less efficient than GSHPs as air temperature is more variable, i.e. colder in the winter when more heat needs to be extracted from the air.
- Consider the noise and vibration impact.
- Consider the visual impact.

### Where might this technology be appropriate?

- Where there is no gas connection.
- Where the heating demand is isolated and for a short period of time.
- Can produce cool air as well as heat, so could be suitable in buildings which may otherwise require air conditioning

### WHAT DOES THE COUNCIL EXPECT FOR THIS TECHNOLOGY?

- Consider how much electricity is required to work the pump versus the energy savings of providing heat or cooling. We will expect carbon calculations to show that their use for heating is more efficient than gas. Otherwise they will not be acceptable. The calculations will be based on the co-efficient of performance (COP) and the carbon content of electricity and gas. ASHPs need to have a COP of more than 4 to be more efficient than a conventional heating system.
- When considering the carbon efficiency of a heat pump system the Council will take into account research and evidence of past performance of heat pumps and the seasonable performance.
- Noise assessment and mitigation report to be submitted
- A meter on the system for monitoring

## Biomass heating and power

### What is it?

A boiler which generates heat for central heating as well as hot water or a system which generates heat and electricity, known as a Combined Heat and Power (CHP) system.

### How does it work?

Produces heat or heat and electricity by burning organic materials (such as wood, straw, energy crops or liquid biofuels). Natural gas can also be used, however, this will be considered to be a 'low carbon technology' rather than renewable, as gas is a fossil fuel.

### What issues should I consider?

- The suitability of this technology will depend on the:
  - local air quality
  - need for air quality mitigation measures
  - source and carbon intensity of processing the fuel
  - emissions generated from transporting the fuel
  - the impact on air quality – biomass boilers releases higher levels of nitrogen oxides (NOx) and particulates than conventional gas fired boilers or CHP systems
- There are a range of permits and consents that might be required
- Space is needed for power plant and fuel store
- Servicing arrangements for fuel delivery and transfer
- Possibility of sharing the system with other developments or consider establishing of a Community Combined Heat and Power scheme (CCHP)

### Where might this technology be appropriate?

Biomass fed CHP systems are generally only proven on very large scale.

#### WHAT DOES THE COUNCIL EXPECT FOR THIS TECHNOLOGY?

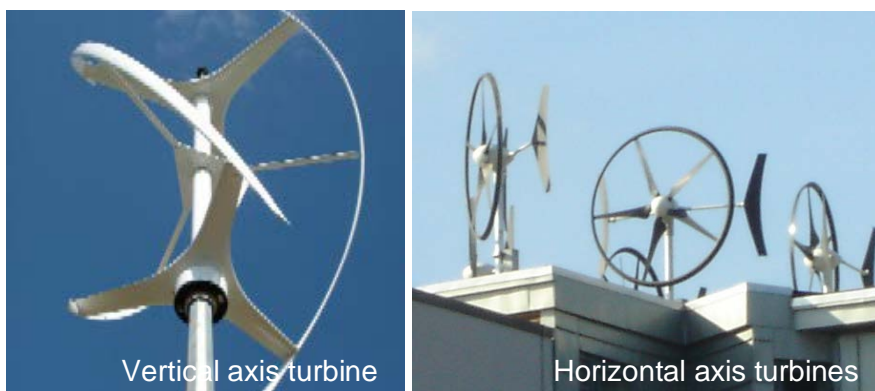
- Boilers must be accredited as 'exempt appliance' under the Clean Air Act 1999
- Technical information relating to the biomass boiler/CHP will be required
- All biomass boilers and CHP will require an air quality assessment, including location and height of flues, details of emissions and how the emissions can be mitigated

- Biomass boilers and CHP are required to be designed, operated and maintained in accordance with best practise measures to minimise emissions to air. (Please refer to the section on Air Quality in the CPG6 Amenity for more detailed information)
- Evidence of potential fuel suppliers – a local fuel source is preferable
- Fuel is to be carbon neutral. Preparation of fuels must be treated and handled appropriately to ensure there are zero carbon emissions e.g. natural drying process not one that uses energy
- A meter on the system for monitoring

## Wind turbines

### What is it?

Blades or turbines which are rotated by the power of the wind.



### How does it work?

The wind turns the blades of the turbine to produce electricity. Horizontal or vertical axis turbines are available

### What issues should I consider?

- Require a certain level of wind to make them feasible which is often difficult in London where there large obstacles such as buildings and trees which distort the flow of wind.
- If poorly located could use more energy than they generate.
- Need to be orientated towards the prevailing wind.
- Noise, vibration and flicker.

#### **Flicker:**

Rotating wind turbine blades can cast moving shadows when the sun is in a low position behind the turbine

### Where might this technology be appropriate?

Could be suitable for low density developments or those with large amounts of open space e.g. schools and playing fields.

**WHAT DOES THE COUNCIL EXPECT FOR THIS TECHNOLOGY?**

- An assessment of the impact on neighbouring properties, particularly flicker, noise and vibrations
- A wind study and feasibility report.
- A meter on the system for monitoring

**What is the feed-in tariff?**

- 6.3 The feed-in tariff is a scheme where energy suppliers make regular payments to householders and communities who generate their own electricity from renewable or low carbon sources. The scheme guarantees a minimum payment for all electricity generated by the system, as well as a separate payment for the electricity exported to grid. These payments are in addition to the bill savings made by using the electricity generated on-site.
- 6.4 When considering the viability of the installation of technologies, the financial benefits of the feed-in tariff must be considered.

**Further information**

The London Energy Partnership	<p>Has produced a toolkit which explains how renewable energy can be integrated into new developments: London Renewables Toolkit - Integrating renewable energy into new developments: Toolkit for planners, developers and consultants</p> <p>Available from the London Energy Partnership website  <a href="http://www.lep.org.uk">www.lep.org.uk</a></p>
REAL Renewable Energy Action for London	<p>A web resource run by Creative Environmental Networks which provides information on installing renewable energy for home owners, architects and developers.  <a href="http://www.cen.org.uk/REAL">www.cen.org.uk/REAL</a></p>
Environmental Protection UK and LACORS	<p>Have produced guidance on biomass and air quality. The guidance provides background material on the issues involved, and details procedures for assessing and managing the effects of biomass on air quality – specifically nitrogen dioxide (NO<sub>2</sub>) and particulates (PM<sub>10</sub> and PM<sub>2.5</sub>).</p> <p>There are a number of guidance leaflet available on their website:</p> <ul style="list-style-type: none"> <li>• ‘Biomass and Air Quality Guidance for Local Authorities’</li> </ul> <p>‘Biomass and Air Quality, Developers’ Information Leaflet’  <a href="http://www.environmental-protection.org.uk/biomass">www.environmental-protection.org.uk/biomass</a></p>
The Mayor of London	<p>Mayor's Air Quality Strategy includes emissions standards for new biomass and CHP equipment which will be implemented by the GLA  <a href="http://www.london.gov.uk/publication/mayors-air-quality-strategy">www.london.gov.uk/publication/mayors-air-quality-strategy</a></p>





## 7 Water efficiency

### KEY MESSAGES

At least 50% of water consumed in homes and workplaces does not need to be of drinkable quality re-using water

All developments are to be water efficient

Developments over 10 units or 1000sq m should include grey water recycling

7.1 Core Strategy Policy CS13 protects the borough's existing water infrastructure to ensure we have an adequate water supply as well as adequate water storage and foul water capacity. Development Policy DP23 expects all developments to be designed to be water efficient and to minimise the need for further water infrastructure.

7.2 This section outlines what measures the council will expect to ensure developments reduce the consumption of water and reduce the amount of water that is disposed of.

### WHAT DOES THE COUNCIL EXPECT?

The Council expects all developments to be designed to be water efficient by minimising water use and maximising the re-use of water. This includes new and existing buildings.

### Minimising water use

7.3 The simplest way of doing this is through installing efficient water fittings and plumbing, such as

- dual flush toilets;
- low flow taps and shower heads; and
- low water consuming washing machines and dishwashers.

7.4 Your development will need to use a range of these measures to reduce their water consumption. Specifications should be practical for the intended occupier to ensure that fittings are not simply replaced.

7.5 Your development should include meters which are visible to occupants, as this has been shown to result in reductions in water use.

7.6 We will assess the performance of water minimisation measures used against the water category in BREEAM (see section 8 on sustainability assessments for more information).

### Maximising the re-use of water

7.7 At least 50% of water consumed in homes and workplaces does not need to be of drinkable quality. For example, rain water can be water used for flushing toilets, washing laundry and watering plants and gardens.

### Collecting rain water

- 7.8 This involves collecting rainwater from a building's roof, as well as its surroundings, and storing it in a tank. Once filtered of leaves and larger objects, the water can be re-used for toilet flushing, laundry and watering plants. If used outside, the rain water harvesting system can take the form of a simple water butt. If used within the building it will need to be supplied through pipes and taps that are separate from the standard mains water supply.



Water butt

#### WHAT WILL THE COUNCIL EXPECT?

The Council will require buildings with gardens or landscaped areas that require regular maintenance to be fitted with water butts.

### Green/brown roofs and collecting rain water

- 7.9 Green/brown roofs can be designed to include rain water collection. However, more consideration needs to be given to the materials and pipe work that will go underneath the green/brown roof structure. Green/brown roofs with rainwater harvesting may also need to use extra filters to ensure the water can be re-used. See section 10 for more information on green/brown roofs.

### Re-using water

- 7.10 'Grey water' (water that has already been used in hand basins, baths and showers) can be stored, filtered and disinfected, and then reused, for toilet flushing, garden watering or laundry. It is also possible to recycle 'black water' (water used for toilet flushing and washing up) although this is more resource intensive. Both 'grey water' and 'black water' systems will require regular maintenance to ensure their ongoing quality and effectiveness. A separate standard mains supply will also always be needed in addition to provide drinking water.

The Council will require developments over 10 units or 1000sq m and/or intense water use developments, such as hotels, hostels, student housing etc to include a grey water harvesting system, unless the applicant demonstrates to the Council's satisfaction that this is not feasible.

- 7.11 When considering the feasibility of grey water systems applicants should consider
- The cost of the system;
  - Cost savings for owner/occupier over a 10 year period;
  - Projected grey water generation;
  - Projected demand for use of grey water; and

- Water savings as a result of the grey water system.

**Further information**

The Environment Agency produces a range of guidance about how to conserve and reduce water consumption.

- Conserving Water in Buildings: Fact Sheets, Environment Agency,
- Greywater: An information guide, Environment Agency, 2008
- Harvesting rainwater for domestic uses, Environment Agency, 2008

They are all available on the EA website:

[www.environmentagency.gov.uk](http://www.environmentagency.gov.uk)



## 8 Sustainable use of materials

### KEY MESSAGES

Reduce waste by firstly re-using your building, where this is not possible you should implement the waste hierarchy

The waste hierarchy prioritises the reduction, re-use and recycling of materials

Source your materials responsibly and ensure they are safe to health.

- 8.1 This guidance relates to Core Strategy policy CS13 - *Tackling climate change through promoting higher environmental standards* in design and construction. It encourages developments to be sustainable: through the choice of appropriate materials which will assist in minimising energy needs both during construction and occupation periods and by making efficient use of resources.
- 8.2 It also relates to Development Policy DP22 - *Promoting sustainable design and construction* which encourages developments to conserve energy and resources through the use of recycled and renewable buildings materials.
- 8.3 This guidance shows how you can minimise the use of resources through your choice of materials to limit the environmental impact of developments. You can achieve this by focusing on the sustainable (re)use of existing materials as far as possible before considering introducing new materials. There are 5 key measures:
1. Managing existing resources;
  2. Specifying materials using the Building Research Establishment's Green Guide to Specification;
  3. Ensuring that materials are responsibly sourced;
  4. Minimising the harmful effects of some materials on human health; and
  5. Ensuring that specified materials are robust and sensitive to the building type and age.

### Managing existing resources

- 8.4 Most development sites have existing materials which can be re-used, recycled or obtained from nearby development sites. You should always look for options to sensitively re-use, refurbish, repair and convert buildings, rather than wholesale demolition (see Camden Development Policies paragraph 22.4). This will reduce the amount of resources used and will help reduce construction waste.
- 8.5 Where the retention of a building or part of a building is not possible, you should aim to tackle the quantity of waste produced - from the demolition phase through to the construction phase – through the use of the waste hierarchy.

**WHAT WILL THE COUNCIL EXPECT?**

All developments should aim for at least 10% of the total value of materials used to be derived from recycled and reused sources. This should relate to the WRAP Quick Wins assessments or equivalent as (highlighted in the waste hierarchy information section below). Special consideration will be given to heritage buildings and features to ensure that their historic and architectural features are preserved.

Major developments are anticipated to be able to achieve 15-20% of the total value of materials used to be derived from recycled and reused sources.

**The Waste Hierarchy**

- 8.6 The 'waste hierarchy' ranks the different ways in which waste can be treated so that it limits the amount of resources used and waste generated. You are to justify the use of (existing) resources and materials in your development through the implementation of the waste hierarchy below to minimise waste generated during the demolition and construction process.

Figure 8. The waste hierarchy



- 8.7 In line with the waste hierarchy, during the construction phase, our preferred approach is:
1. the use of reclaimed materials;
  2. the use of materials with higher levels of recycled content; and
  3. the use of new materials.
- 8.8 Similarly, in demolition you should:
1. prioritise the on site reuse of demolition materials;
  2. recycle materials on site recycling, then off site recycling; and
  3. the least preferred option - disposal to landfill.

**Reduce**

- 8.9 Reducing waste is the preferred option and at the top of the waste hierarchy – this means the Council prefers you prevent waste being produced in the first place rather than recycle or dispose waste that is

produced. You should focus on opportunities for waste reduction from the outset, at the earliest stages of design, as well as through better methods of purchasing and ways of working, for example by ordering the right amount of materials for the job.

8.10 Where demolition is necessary, you and your contractors are encouraged to:

- safely remove the most valuable or more contaminating materials and fittings for later re-use or processing before work commences.
- optimise the reuse and recycling of demolition materials - the Council strongly encourages the use of the Demolition Protocol where substantial demolition is proposed (over 1000 square meters). In general the protocol is a 'demolition waste audit' - a process that describes the percentage of the materials present on a site which can be reused/recycled (either in the development site or one nearby). For further detailed guidance on the Demolition Protocol (2003), refer to: Institute of Civil Engineers (ICE) and London Remade: [www.londonremade.com](http://www.londonremade.com)
- You are to demonstrate that the most significant opportunities to increase the value of materials derived from recycled and reused content have been considered. A good way of achieving this aim at no additional construction cost is to use the Waste and Resources Action Programme (WRAP) by selecting the top ten WRAP Quick Wins or equivalent, and implement the good practice guidance highlighted: [www.wrap.org.uk](http://www.wrap.org.uk)
- Building contractors are legally required to produce Site Waste Management Plans (SWMP) for all projects with an estimated construction cost of over £300,000. A Site Waste Management Plan provides a framework for managing waste in line with the hierarchy by identifying types and quantities of materials for re-use/recycling to reduce the amount of waste produced by construction projects. For further guidance see the WRAP NetWaste tool which has a site waste management plan function: [www.wrap.org.uk](http://www.wrap.org.uk)
- The WRAP Quick Wins assessment can form part of a development's Site Waste Management Plan.
- Designing for deconstruction (rather than demolition) is strongly encouraged. Deconstruction is the dismantling of a structure in the reverse order in which it was constructed, which means that the materials that were put on last are removed first.
- From the outset, new buildings should be designed with the prospect of future deconstruction being implementable. This process will facilitate the segregation and extraction of materials that could be carefully removed intact during redevelopment, and then re-used/recycled wherever possible.
- You are encouraged to incorporate a 'material salvage phase', in which construction and surplus materials are recovered from the site. Additionally, materials should be segregated into categories, e.g.

timber waste, metal waste, concrete waste and general waste – to aid re-use or recycling.

- 8.11 Only once all the 'Reduce' options have been considered, should you consider the other waste options.

### Re-use

- 8.12 Re-using materials (either onsite/off-site) is defined as putting resources/materials to an alternative use so that they are not wasted and disposed of. This can be done during the design, procurement and construction phases of a development by, for example:
- identifying and segregating materials already on site for re-use in the new development, such as:
    - bricks, concrete
    - internal features – historic fireplaces, timber floorboards, doors
    - metal frames, plastics, granite
    - sub-soil, top soil;
  - using the BRE Smart Waste [www.smartwaste.co.uk](http://www.smartwaste.co.uk) management plan tool. This is an on line template contractors can use to input data on the amount and type of waste and have it sorted by the management tool;
  - making materials not reused on site available for reuse elsewhere. Consider the exchange/sale/donation of construction site materials to waste recovery businesses, such as: BRE Materials Information Exchange ([www.bre.co.uk](http://www.bre.co.uk)); Waste Alert North London's Waste Exchange service ([www.wastewatch.org.uk](http://www.wastewatch.org.uk)), etc. These specialists can sort the waste materials into various types and then find businesses that can reuse/recycle them.

### Recycling

- 8.13 Recycling materials (either onsite/off-site), is the preferable solution only when waste minimisation 'reduce' or reuse are not feasible. The recycling of materials enables them to be made into something new). Every opportunity should be taken to recycle materials, this can be done by, for example:
- identifying and segregating materials for recycling, such as:
    - metals and high value materials
    - timber, plasterboard, packaging
    - concrete crushed and re-used for concrete aggregate;
  - using the BRE Smart Waste [www.smartwaste.co.uk](http://www.smartwaste.co.uk), mentioned above
  - considering 'take-back' schemes with suppliers for materials and packaging. This where suppliers take back any materials not used as well as any packaging the materials are delivered in



- making materials not reused on site available for reuse elsewhere, as discussed above.

### **Disposal**

- 8.14 Disposal is the least preferred waste management approach. Developers should only consider disposal of materials and waste after all of the above approaches have been carried out. Disposal generally involves burying the materials in a landfill or burning it at high temperatures in an incinerator. Where disposal is the only option for the materials developers should:
- identify materials that are contaminated and cannot be reused and arrange for their safe and legal disposal by the authorised waste management;
  - remove all toxic and hazardous materials from a development site in accordance with any relevant legislation, unless they are integral to the structure or a feature to be retained, and any harm to environmental or public health should be mitigated;
  - limit waste disposal to minimise the amount of land fill tax that needs to be paid.

### **Using the BRE Green Guide to Specification**

- 8.15 You are encouraged to use the BRE Green Guide which provides guidance on how to make the best environmental choices when selecting construction materials and building components. The Green Guide ranks, materials and components on an A+ to E rating scale – where A+ represents the best environmental performance / least environmental impact, and E the worst environmental performance / most environmental impact.
- 8.16 In new-build and development projects with either - 500sq m of any floorspace or more or 5 dwellings or more - you should seek to achieve an area weighted average of A+ to B for the major building elements (roof, external walls, floor finishes, internal partitions and windows) in accordance with the BRE Green Guide to Specification. For further guidance see the sections on BREEAM assessments in section 9 of this guidance which sets out standards for developments to meet in the Materials category. For further guidance on BRE Green Guide to Specification: [www.bre.co.uk](http://www.bre.co.uk)

### **Responsible Sourcing**

- 8.17 You should specify materials from suppliers who participate in responsible sourcing schemes such as the BRE BES 6001:2008 Responsible Sourcing Standard. All timber specified should be sourced from schemes supported by the Central Point of Expertise for Timber Procurement such as Forest Stewardship Council (FSC) accreditation (which ensures that the harvest of timber and non-timber products maintains the forest's ecology and its long-term viability). The use of

responsible sourcing can contribute towards attaining the BREEAM credits but a clear audit trail will need to be provided to gain these credits. For further guidance on responsible sourcing of materials: <http://www.bre.co.uk/>

### **'Healthy' materials**

- 8.18 The Council recommends the use of environmentally sensitive building (non-toxic) materials and avoiding the use of materials or products that produce VOC (volatile organic compounds and formaldehyde) which can affect human health. For current controls on VOC's see the link below. The use of 'healthy' material options can contribute towards attaining the BREEAM credits but a clear audit trail will need to be provided to gain these credits.

### **Historic materials**

- 8.19 In projects that involve the refurbishment of heritage buildings (those built before 1919) or those in conservation areas, materials should be specified in line with the following hierarchy:
- Reclaimed materials should be matching and appropriate to the building type/area (original construction time/period) and sufficiently robust in their performance not to compromise building function;
  - Materials with a low environmental impact as determined by the BRE Green Guide to Specification subject to approval from Conservation Officers and provided those materials do not compromise the performance (thermal, structural or otherwise) of the existing building; and
  - When selecting insulation materials for older buildings, preference should be given to natural fibre based materials that prevent moisture retention in the building fabric.

## **How will the Council secure the sustainable use of materials?**

### **Design and Access Statement**

- 8.20 As part of the Design and Access Statement for your development, you will be expected to describe how the development has considered materials and resources. This statement should provide an explanation of the opportunities for the selection and sourcing of sustainable materials that have been considered in the proposal, and the reasons for the sourcing choices made. Your statement should also detail which existing materials on the site are to be re-used as part of your development or made available for re-use elsewhere.

### **Construction Management Plan (CMP)**

- 8.21 A Construction Management Plan will be required to support many developments and will help manage on site impact arising from demolition and construction processes. The types of schemes where a CMP will usually be appropriate include:

- major developments;
- basement developments;
- developments involving listed buildings or adjacent to listed buildings; and
- For a full list see Development Policy DP26 - *Managing the impact of development on occupiers and neighbours*, paragraph 26.10 and the relevant sections on Construction management plans in CPG4 Basements and Lightwells, CPG6 Amenity, and CPG8 Planning Obligations.

A set of minimum standards and a template Construction Management plan is available on the Council's website.

### **Site Waste Management Plan (SWMP)**

- 8.22 Where a 'site waste management plan' (SWMP) is required (in projects with an estimated construction cost of over £300,000) it should include a pre-demolition audit of materials completed by a qualified professional and submitted with an application, in accordance with the Demolition Protocol. The audit must show what materials can and will be reused. If a full audit cannot be provided with the application, it should be submitted to and approved by the Council prior to commencement of works on site. Therefore the Construction Management Plan (where required) will have to reflect that space will be required to sort, store and perhaps crush/recycle materials as part of the SWMP. This link into the WRAP NetWaste tool has a site waste management plan function: [www.wrap.org.uk/construction/tools\\_and\\_guidance/net\\_waste\\_tool](http://www.wrap.org.uk/construction/tools_and_guidance/net_waste_tool)

### **Planning obligations and Section 106**

- 8.23 Meeting the requirements for sustainable design and construction is often achieved in the detailed design or construction phases. Normally, requirements for environmental design will be dealt with using conditions, but in some circumstances a Section 106 agreement may be required to secure an environmental assessment of the proposed development carried out by an impartial assessment body or a sustainability plan to provide and maintain the highest environmental standards of development.
- 8.24 If a proposal generates a requirement for a management plan such as a SWMP or CMP (as discussed above) but cannot be implemented through the approved design or satisfactorily secured through conditions, they may be secured as part of a Section 106 Agreement. The requirements will be relevant, proportionate and related to the specific nature and potential impacts of the development proposed. The associated costs to the Council of any post-planning decision assessments, verification, or monitoring in relation to these and other related sustainability and energy plans shall be met by the developer.

### Further information

Sustainable Design and Construction	The London Plan Supplementary Planning Guidance, Mayor of London <a href="http://www.london.gov.uk">www.london.gov.uk</a>
BREEAM	BRE Environmental Assessment Method <a href="http://www.breeam.org">www.breeam.org</a>
BRE Smart Waste	An on-line site waste management plan tool. It's a template contractors can use to input data. <a href="http://www.smartwaste.co.uk">www.smartwaste.co.uk</a>
Materials	<p>For Materials Information Exchange and Architectural salvage and surplus building materials:</p> <ul style="list-style-type: none"> <li>• Architrader - <a href="http://www.architrader.com">www.architrader.com</a></li> <li>• SALVO - <a href="http://www.salvomie.co.uk/">www.salvomie.co.uk/</a></li> <li>• Waste Exchange - <a href="http://www.wasteexchange.net">www.wasteexchange.net</a></li> </ul> <p>To find out how you can use more recycled and reclaimed products and building materials see <a href="http://www.ecoconstruction.org">www.ecoconstruction.org</a>. There is a searchable database of available products on this website with information about the manufacturing processes of the products and their compositions, as well as contact details of suppliers.</p> <p>Design for deconstruction – principles of design to facilitate reuse and recycling, B Addis (2003) CIRIA Best Practice Guidance C607.</p>
Volatile Organic Compounds	<p>For current controls on avoiding VOCs and using healthy materials, see:</p> <p>British Standard (BS) regulates UFFI quality, limits the product's use and limits ingress of formaldehyde vapour into buildings (BS: 5617, 5618 (1985)).</p> <p>A BS Institution standard (BS 5669 part I (1989), BS 1142 (1989)) regulates the formaldehyde content, together with test methods that must be used to assess formaldehyde levels in particle boards and fibreboards.</p>

## 9 Sustainability assessment tools

### KEY MESSAGES

Arrangements following the Government's Housing Standards Review and withdrawal of the Code for Sustainable Homes. The creation of 5 or more dwellings from an existing building will need to be designed in line with BREEAM Domestic Refurbishment.

500sq m or more of non-residential floorspace will need to be designed in line with BREEAM.

- 9.1 A way to ensure buildings are sustainable is to use a standardised environmental assessment tool to measure the overall performance of buildings against set criteria. Buildings that achieve high ratings use less energy, consume less water and have lower running costs than those designed to building regulations alone.
- 9.2 Paragraph 13.8 of Core Strategy policy CS13 - *Tackling climate change through promoting higher environmental standards* notes that BREEAM is a helpful assessment tool for general sustainability.
- 9.3 This section explains:
- when you need to carry out a BREEAM assessment
  - arrangements following the Housing Standards Review. The standards which need to be met for each type of development. These are more detailed targets for Energy, Water and Materials than those in the Development Policy DP22 - *Promoting sustainable design and construction*.
  - The information required at each stage of the assessment

### When do you need to carry out a sustainability assessment?

Development type	What does this include?	Threshold for assessment	Appropriate assessment tool
Residential - Existing	Refurbishments, conversions and changes of use	5 dwellings or more 500sq m of floorspace or more	BREEAM Domestic Refurbishment
Non-residential	Includes offices, retail, industrial, education health	500sq m of floorspace or more	BREEAM
Mixed use schemes	If your scheme includes both residential and non-residential uses that total 500sq m of floorspace or more we will require a BREEAM assessment for the non-residential parts.		

- 9.4 This table sets out when the Council will require a sustainability assessment for all the types of development and which assessment tool to use.
- 9.5 The assessment tools are updated periodically and therefore the most recent version of the assessment tool is to be used.

### Code for Sustainable Homes – housing standards review transitional arrangements and approach

- 9.6 The Code for Sustainable Homes has now been withdrawn and the Ministerial Statement dated 25 March 2015 sets out the Government's national policy on the setting of technical standards for new dwellings.
- 9.7 The Council will continue to require new residential development to submit a sustainability statement demonstrating how the development mitigates against the causes of climate change and adapts to climate change, in line with existing policies contained in Camden's Core Strategy CS13 Tackling climate change through promoting higher environmental standards and Development Policies document DP22 Sustainable design and construction.
- 9.8 Proposals should demonstrate how sustainable design and construction principles, including the relevant measures noted in the table on page 104 of the Development Policies Document have been incorporated into the design and proposed implementation. Acceptable new residential schemes will be required to ensure that the measures stated in the Sustainability Statement are secured and implemented.
- 9.9 New residential development will be required to demonstrate that the development is capable of achieving a maximum internal water use of 105 litres per person/day, with an additional 5 litres person/day for external water use.

- 9.10 The Council is still able to apply policies which require compliance with energy performance standards until the Planning and Energy Act 2008 has been amended. The Code Level 4 equivalent in carbon dioxide emissions reduction below part L Building Regulations 2013 is 20%. New residential dwellings will be required to demonstrate how this has been met by following the energy hierarchy in an energy statement. Policy CS13 also requires that all developments (existing and new build) achieve a 20% reduction in on-site carbon dioxide emissions through renewable technologies, unless demonstrated that such provision is not feasible.

#### **Zero Carbon**

Zero carbon refers to buildings that are so energy efficient they do not release any carbon emissions. The Government is currently aiming to ensure that all new homes are zero carbon by 2016. For more information visit [www.zerocarbonhub.org](http://www.zerocarbonhub.org)

You are strongly encouraged to meet the following standards in accordance with Development Policy DP22 - *Promoting sustainable design and construction*:

#### **BREEAM**

- 9.11 BREEAM stands for Building Research Establishment Environmental Assessment Method. It is a tool to measure the sustainability of non-domestic buildings. There are specific assessments for various building types such as offices, retail, industrial, education and multi-residential. For developments that are not covered by one of the specific BREEAM assessment tools, this often applies to mixed use schemes, a tailored assessment can be created using the BREEAM Bespoke method
- 9.12 BREEAM assessments are generally made up of nine categories covering:
- Energy
  - Health and Well-being
  - Land use and Ecology
  - Management
  - Materials
  - Pollution
  - Transport
  - Waste
  - Water
- 9.13 Each of the categories above contain criteria which need to be met in order to gain credits. The higher the rating, the greater the number of specific credits needed. Some of the criteria have weighted credits which are used to reflect how important certain elements are, such as energy efficiency. All the credits are added together to produce the overall score. The development is then rated on a scale from PASS, to GOOD, VERY GOOD, EXCELLENT and ending with OUTSTANDING

You are strongly encouraged to meet the following standards in accordance with Development Policy DP22 - *Promoting sustainable design and construction*:

Time period	Minimum rating	Minimum standard for categories (% of un-weighted credits)
2010-2015	'very good'	Energy 60%
2016+	'excellent'	Water 60% Materials 40%

### BREEAM Domestic Refurbishment

- 9.14 BREEAM Domestic Refurbishment is used to assess the sustainability of existing of housing where refurbishment, conversion or a change of use is proposed. It uses the same principles as BREEAM with categories, criteria and credits.

You are strongly encouraged to meet the following standards in accordance with Development Policy DP22 - *Promoting sustainable design and construction*:

Time period	Minimum rating	Minimum standard for categories (% of un-weighted credits)
2010-2012	'very good'	Energy 60%
2013+	'excellent'	Water 60% Materials 40%

### What are the relevant stages?

#### Pre-assessment

- 9.15 The pre-assessment stage involves an initial review of the development to determine how sustainable it will be. It provides you with an early indication of the overall score your development will achieve by using the plans and drawings to estimate the number of credits that are likely to be achieved for each category. The results of the pre-assessment identify changes that need to be made to your scheme before construction begins to ensure it is as sustainable as possible. The pre-assessment stage also helps to identify if there are any experts, such as ecologists, that you need to invite to become involved in the development.
- 9.16 The results of your pre-assessment will form the basis of the condition or Section 106 planning obligation for the final development, so accuracy is crucial. In some circumstances it may be appropriate to over estimate the credits needed to achieve the final rating as some credits can be lost during the final design stages.

#### AT THIS STAGE THE COUNCIL WILL EXPECT:

- The submission of a pre-assessment report at the planning application stage. The report should summarise the design strategy for achieving your chosen level of BREEAM and include details of the credits proposed to be achieved.



- The pre-assessment report is to be carried out by a licensed assessor. The name of the assessor and their licence number should be clearly stated on the report.

### **Design stage assessment**

- 9.17 The aim of the design stage assessment is to review the detailed design specifications of your development. More detailed site specific information is generally available at this stage, in comparison to the pre-assessment stage, which allows the assessor to make a more precise estimate of the BREEAM rating. Some elements of the assessment will need to be refined once construction has begun, because some materials and appliances are not specified until after or during construction. However, the assessor will ensure that any design and/or specification changes are reflected in the final Design Stage Assessment.
- 9.18 Once the assessor has completed the assessment it is submitted to the BRE for review and certification. The BRE will then issue a BREEAM Design Stage certificate indicating what level of sustainability the development has achieved.

#### **AT THIS STAGE THE COUNCIL WILL EXPECT:**

- Submission of an early design stage assessment to the Council prior to beginning construction of the development. This is needed to discharge the relevant condition or Section 106 planning obligation
- Ensure the assessor submits the final Design Stage Assessment to BRE for certification
- Submission of a copy of the Design Stage certificate to the Council

### **Post-construction assessment**

- 9.19 The post-construction assessment reviews the design stage assessment and compares it with the completed development to ensure that all the specified credits have been achieved. It is carried out once your development has been completed and is ready for occupation. Once the assessment has been completed, it needs to be submitted to BRE for certification.

#### **AT THIS STAGE THE COUNCIL WILL EXPECT:**

- A post-construction assessment to be carried out as soon as possible after completion
- Submission of a copy of the post-construction certificate to the Council
- Submission of a copy of the Design Stage certificate to the Council, if not already submitted

- 9.20 There is often a delay between the completion of a development and the receipt of a post-construction certificate. Therefore the Council will allow occupation prior to the receipt of the final certificate. This approach will

be monitored to ensure that the design stage certificate is consistent with the final post-construction report and certificate.

### Further information

BRE (Building Research Establishment)	Provides detailed information on sustainability assessments, how to find an assessor, example assessments and how to submit your assessment: <a href="http://www.bre.co.uk">www.bre.co.uk</a>
BREEAM	Provides detailed information on all the different types of BREEAM assessments that are available, how to use them, how to find an assessor, what all the different stages are and other useful guidance: <a href="http://www.breeam.org">www.breeam.org</a>
Zero Carbon Hub	This organisation is working with the Government to implement the target towards ensuring all new homes are zero carbon. Their website provides information on what zero carbon is, how it can be achieved and case studies: <a href="http://www.zerocarbonhub.org">www.zerocarbonhub.org</a>

## 10 Brown roofs, green roofs and green walls

### KEY MESSAGES

All developments should incorporate green and brown roofs

The appropriate roof or wall will depend on the development, the location and other specific factors

Specific information needs to be submitted with applications for green/brown roofs and walls

- 10.1 As development densities increase, brown roofs, green roofs and green walls can provide valuable amenity space, create habitats and store or slow down the rate of rain water run-off, helping to reduce the risk of flooding.
- 10.2 Green and brown roofs can help to reduce temperatures in urban environments. This is particularly valuable in Camden where we suffer from increased temperatures in Central London (known as the urban heat island effect).
- 10.3 Development Policy DP22 states that schemes must incorporate green or brown roofs and green walls wherever suitable. Due to the number of environmental benefits provided by green and brown roofs and green walls, where they have not be designed into a development the Council will require developers to justify why the provision of a green or brown roof or green wall is not possible or suitable.

### WHAT WILL THE COUNCIL EXPECT?

The Council will expect all developments to incorporate brown roofs, green roofs and green walls unless it is demonstrated this is not possible or appropriate. This includes new and existing buildings. Special consideration will be given to historic buildings to ensure historic and architectural features are preserved.

### What are green and brown roofs?

- 10.4 Green and brown roofs are roofs that are specially designed and constructed to be waterproof and covered with material to encourage wildlife and to help plants grow. They can be left without planting - 'brown' or planted with a range of vegetation - 'green' depending on the depth or the soil or substrate.

#### Substrate

Substrate is a layer of material which supports the roots and sustains the growth of vegetation.

There are three main types of green and brown roof:

1. Intensive roofs
2. Semi intensive roofs
3. Extensive roofs.

**The general features of these roofs are shown below:**

	<b>Extensive</b>	<b>Semi Intensive</b>	<b>Intensive</b>
<b>Use</b>	Ecological Landscape	Garden/Ecological Landscape	Garden/Park
<b>Type of vegetation</b>	Mosses, Herbs, Grasses	Grasses-Herbs-Shrubs	Lawn, Perennials, Shrubs & Trees
<b>Depth of Substrate</b>	60-200mm	120-250mm	140-400mm
<b>Weight</b>	60-150 kg/m <sup>2</sup>	120-200 kg/m <sup>2</sup>	180-500 kg/m <sup>2</sup>
<b>Maintenance requirement</b>	Low	Periodic	High

### **Intensive roofs**

- 10.5 Intensive roofs provide the widest range of uses such as for accessible amenity space or to create ecological habitats. They are known as 'intensive' due to the high level of design, soil or substrate depth and maintenance that they require. They can also be used to manage water by including systems that process wastewater or store surplus rain water. They can also be designed specifically for food production.

### **Semi Intensive roofs**

- 10.6 Semi Intensive Roofs can provide a degree of access and the potential for the creation of habitat. Similar water management functions can be integrated into their design as outlined above.

### **Extensive roofs**

- 10.7 Extensive Roofs are generally light weight, with a thin layer of substrate and vegetations. They can be further sub divided into 3 types:

#### **1. Sedum Roofs:**

These either take the form of Sedum mats or plug planted Sedum into a porous crushed brick material. Sedum roofs are relatively light weight and demand low levels of maintenance. They can be more readily fitted on to existing roofs.

#### **Sedum**

Sedum is a type of vegetation. They are generally short plants with shallow roots and thick leaves.

## 2. Brown roofs for biodiversity:

Brown roofs should create habitats mimicking local brownfield sites by using materials such as crushed brick or concrete reclaimed from the site. However, these materials are very heavy and cannot hold water for irrigation. Therefore it is preferable to use materials of known quality and water holding capacity. The brown roof is then planted with an appropriate wild flower mix or left to colonise naturally with areas of dead wood or perches for birds.

## 3. Green roofs for biodiversity:

Green roofs are usually formed by planting a wild flower mix on an appropriate layer of material. There are various techniques for the creation of this type of roof.

## What are green walls?

- 10.8 Green Walls are walls or structures attached to walls where plants have been planted. Plants can be planted directly into a material within the wall or can be planted in the ground or a pot and encouraged to climb up a structure so that the wall is covered with vegetation.

Green walls provide a number of benefits:

- They provide useful habitat for invertebrates which in themselves provide a food source for birds and bats. Dense foliage provides nesting sites for a number of birds such as robin, wren and blackbirds
- evergreen, climbing plants provide insulation and can reduce wind chill during winter months
- climbing plants provide shade which can help to cool a building in summer, particularly when grown on south and western facing walls.
- climbing plants can also be effective in trapping airborne pollutants
- provide visual interest adding colour and texture to the wall surface



Green wall can be split into 3 main types:

4. Self clinging climbers such as Ivy, Russian Vine and Virginia Creeper. These plants are able to grow directly onto the wall surface.
5. Climbers which need support e.g. Honeysuckle and Jasmine. Supports are usually provided by trellis structures, wires etc. Well designed trellis or cable structures can become design features in themselves.

6. Vertical Systems (also known as Living Walls, Vertical Gardens). These walls are called 'systems' as they are made up of modular panels designed to support plant growth and require a feeding and watering system. The modules themselves are supported on or within a steel framework. Watering systems and a plant nutrient supply is incorporated into these systems requiring ongoing maintenance. The planted panels can be designed with a variety of plants depending on the aesthetic and habitat requirements of a project.

### **What to consider when choosing green roof or brown roof or green wall**

- 10.9 Selecting the appropriate type of green/brown roof or wall type will depend on a number of factors including:
- the type of building
  - cost
  - maintenance
  - weight of the roof or wall
  - provision of amenity space
  - provide visual interest to surrounding building occupants
  - habitat creation
  - reduction of rain water run off
  - reduction of heating and cooling energy usage of a building
  - water conservation and recycling
  - space for food production (see section 14 of this guidance on urban food production).

### **What will the Council consider when assessing applications?**

- 10.10 All developments should aim to incorporate green or brown roofs and green walls. Careful consideration needs to be given to the design of the roofs and any blank walls to enable the incorporation of these features and the need to access these areas for maintenance.
- 10.11 The Council will expect green or brown roofs and green walls to be provided in areas with low levels of vegetation, such as town centres and Central London, which are both more likely to feel the effects of climate change and developments where occupiers will be susceptible to overheating such as schools and offices. (See Camden Core Strategy policy CS15 - *Protecting and improving our parks and open spaces and encouraging biodiversity*).
- 10.12 The assessment of planning applications incorporating green/brown roofs and green walls will be made based on appropriateness for the site, the degree to which the chosen design objectives are met by the proposal and sustainable maintenance. Where green roofs are to be accessible for amenity purposes potential overlooking and loss of

privacy to adjoining properties will also be assessed (See the Overlooking, privacy and outlook section of the CPG6 Amenity)

10.13 The most appropriate green or brown roof and green wall should be incorporated into a development. We will consider the following factors when determining the most appropriate form of roof and wall:

- the loss of any biodiversity habitat on the site and the surrounding area;
- the existing need for habitat on the site and surrounding area;
- whether the site is overlooked;
- whether the site is an area that has historically suffered from surface water flooding;
- the amount of external heat generated by the development;
- whether the roof is to be accessible;
- the location of mechanical plant;
- the inclusion of areas of blank wall;
- access to walls and roofs;
- where being retro-fitted, the weight of the new roof or wall; and
- the amount of irrigation and maintenance required.

**WHAT INFORMATION WILL THE COUNCIL EXPECT?**

- a statement of the design objectives for the green or brown roof or green wall
- details of its construction and the materials used, including a section at a scale of 1:20
- planting details, including details of the planting technique, plant varieties and planting sizes and densities.
- a management plan detailed how the structure and planting will be maintained

**Further information**

The Environment Agency	The EA has a green roof toolkit that can be used to help you determine what solution is best for your development <a href="http://www.environment-agency.gov.uk/business/sectors/91967.aspx">www.environment-agency.gov.uk/business/sectors/91967.aspx</a>
“Living Roofs: Promoting green roofs, roof terraces and roof gardens across London”	GLA document which highlights the significant role that the roof space on buildings have to play in providing amenity space, increased biodiversity and improved building performance in terms of energy conservation and SUDS.
LivingRoofs.org	Provides detailed information on all the types of green and brown roofs as well as case studies, articles and research. <a href="http://www.LivingRoofs.org">www.LivingRoofs.org</a>
National Centre of Excellence for green roofs	This website has a wide range of information on green roofs, including best practice, guidance, research and case studies. <a href="http://www.greenroofcentre.co.uk">www.greenroofcentre.co.uk</a>