Climate change mitigation

8.1 The Council aims to tackle the causes of climate change in the borough by ensuring developments use less energy and assess the feasibility of decentralised energy and renewable energy technologies.

8.2 Green Action for Change: Camden's environmental sustainability plan (2011-2020) commits Camden to a 27% borough wide Carbon Dioxide (CO2) reduction by 2017 and a 40% borough wide CO2 reduction by 2020 (London carbon reduction target). Over 90% of Camden's carbon dioxide emissions are produced by the operation of buildings.

8.3 Any new development in Camden has the potential to increase carbon dioxide emissions in the borough. If we are to achieve local, and support national, carbon dioxide reduction targets, it is crucial that planning policy limits carbon dioxide emissions from new development wherever possible and supports sensitive energy efficiency improvements to existing buildings.

Policy CC1 Climate change mitigation

The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.

We will:

a. promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;
b. require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met;
c. ensure that the location of development and mix of land uses minimise the need to travel by car and help to support decentralised energy networks;
d. support and encourage sensitive energy efficiency improvements to existing buildings;
e. require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building; and
f. expect all developments to optimise resource efficiency.

For decentralised energy networks, we will promote decentralised energy by:

g. working with local organisations and developers to implement decentralised energy networks in the parts of Camden most likely to support them;
h. protecting existing decentralised energy networks (e.g. at Gower Street, Bloomsbury, King's Cross, Gospel Oak and Somers Town) and safeguarding potential network routes; and

i. requiring all major developments to assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible establishing a new network.

To ensure that the Council can monitor the effectiveness of renewable and low carbon technologies, major developments will be required to install appropriate monitoring equipment.

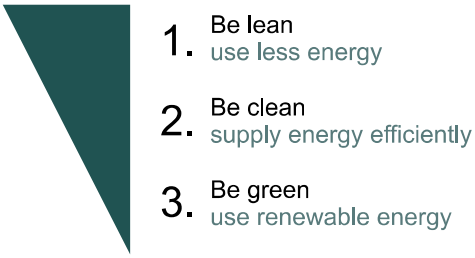
8.4 The Council commissioned two borough wide carbon reduction studies to ensure that local planning policy appropriately responds to the carbon emissions reduction challenge. Our first study, 'Delivering a low carbon Camden', considered carbon reduction scenarios to 2050 to align with the long-term national 80% carbon dioxide reduction target within the Climate Change Act 2008. Our later 2010 study focused specifically on the challenges of achieving a carbon dioxide reduction target of 40% by 2020.

8.5 Both studies concluded that meeting borough carbon dioxide reduction targets depends on the growth of Combined Heat and Power (CHP) led decentralised energy networks; the extensive thermal improvement of existing housing stock; behavior change; the significant deployment of appropriate renewable technologies; and the steady decarbonisation of the national electricity grid.

The energy hierarchy

8.6 The Council's Sustainability Plan 'Green Action for Change' commits the Council to seek low and where possible zero carbon buildings. New developments in Camden will be expected to be designed to minimise energy use and CO2 emissions in operation through the application of the energy hierarchy. It is understood that some sustainable design measures may be challenging for listed buildings and some conservation areas and we would advise developers to engage early with the Council to develop innovative solutions.

8.7 The energy hierarchy is a sequence of steps that minimise the energy consumption of a building. Buildings designed in line with the energy hierarchy prioritise lower cost passive design measures, such as improved fabric performance over higher cost active systems such as renewable energy technologies. The following diagram shows a simplified schematic of the energy hierarchy, which is explained further in supplementary planning document Camden Planning Guidance on sustainability.



8.8 All developments involving five or more dwellings and/or more than 500 sqm of (gross internal) any floorspace will be required to submit an energy statement demonstrating how the energy hierarchy has been applied to make the fullest contribution to CO2 reduction. All new residential development will also be

required to demonstrate a 19% CO2 reduction below Part L 2013 Building Regulations (in addition to any requirements for renewable energy). This can be demonstrated through an energy statement or sustainability statement.

Be lean

8.9 Proposals should demonstrate how passive design measures including the development orientation, form, mass, and window sizes and positions have been taken into consideration to reduce energy demand, demonstrating that the minimum energy efficiency requirements required under building regulations will be met and where possible exceeded. This is in line with stage one of the energy hierarchy 'Be lean'.

Be clean

8.10 The second stage of the energy hierarchy 'Be clean' should demonstrate how the development will supply energy efficiently through decentralised energy. Please refer to the section below on decentralised energy generation.

Be green

8.11 The Council will expect developments of five or more dwellings and/or more than 500 sqm of any gross internal floorspace to achieve a 20% reduction in carbon dioxide emissions from on-site renewable energy generation (which can include sources of site related decentralised renewable energy), unless it can be demonstrated that such provision is not feasible. This is in line with stage three of the energy hierarchy 'Be green'. The 20% reduction should be calculated from the regulated CO2 emissions of the development after all proposed energy efficiency measures and any CO2 reduction from non-renewable decentralised energy (e.g. CHP) have been incorporated.

8.12 All major developments will also be expected to demonstrate how relevant London Plan targets for CO2 reduction, including targets for renewable energy, have been met. Where it is demonstrated that the required London Plan reductions in carbon dioxide emissions cannot be met on site, the Council will require a financial contribution to an agreed borough wide programme to provide for local low carbon projects. The borough wide programme will be connected to key projects identified in the Council's Green Action for Change.

8.13 In cases where standards change or are superseded, the Council will use the equivalent replacement standards.

Sustainable patterns of development

8.14 The location of development and mix of land uses have a significant influence on the amount of energy used for transport, as well as whether we can generate or supply local energy efficiently. The Council will seek to make the most efficient use of Camden's limited land and steer growth and uses that will generate a large number of journeys to the most accessible parts of the borough. Development will be focused in Camden's growth areas, with other highly accessible locations, such as Central London and most of our town centres, also considered suitable for development that significantly increases travel demand. Please also refer to "Policy G1 Delivery and location of growth".

Resource efficiency, demolition and retrofitting existing buildings

Resource efficiency and demolition

8.15 Given the significant contribution existing buildings make to Camden's CO2 emissions, the Council will support proposals that seek to sensitively improve the energy efficiency of existing buildings. Further guidance on how the energy performance of existing homes in conservation areas can be improved without harming the character and appearance of the area can be found in our supplementary planning documents ('Energy efficiency planning guidance for conservation areas' and 'Retrofitting planning guidance'). "Policy D2 Heritage" further explains that the Council will take into consideration the public benefits gained from the improved energy efficiency of existing buildings.

8.16 The construction process and new materials employed in developing buildings are major consumers of resources and can produce large quantities of waste and carbon emissions. The possibility of sensitively altering or retrofitting buildings should always be strongly considered before demolition is proposed. Many historic buildings display qualities that are environmentally sustainable and have directly contributed to their survival, for example the use of durable, natural, locally sourced materials, 'soft' construction methods, good room proportions, natural light and ventilation and ease of alteration.

8.17 All proposals for substantial demolition and reconstruction should be fully justified in terms of the optimisation of resources and energy use, in comparison with the existing building. Where the demolition of a building cannot be avoided, we will expect developments to divert 85% of waste from landfill and comply with the Institute for Civil Engineer's Demolition Protocol and either reuse materials on-site or salvage appropriate materials to enable their reuse off-site. We will also require developments to consider the specification of materials and construction processes with low embodied carbon content.

8.18 We will expect all developments, whether for refurbishment or redevelopment, to optimise resource efficiency by:

- reducing waste;
- reducing energy and water use during construction;
- minimising materials required;
- using materials with low embodied carbon content; and
- enabling low energy and water demands once the building is in use.

Embodied carbon

8.19 Embodied carbon is the carbon impact associated with the production, transport, assembly, use and disposal of materials. This will include consideration of maintenance and repair but does not include the carbon emissions associated with the energy used for heating, lighting or cooling in the completed building (please see "Policy T4 Sustainable movement of goods and materials"). Additionally, the Council will expect developers to consider the service life of buildings and their possible future uses to optimise resource efficiency. The durability and lifespan of the buildings' components should be matched to its likely service life, and where appropriate the building should be designed to be

flexible in terms of adaptation to future alternative uses in order to avoid the need for future demolition.

8.20 As part of the assessment of resource efficiency, all developments involving five or more dwellings and/or more than 500 sqm gross internal floor space are encouraged to assess the embodied carbon emissions associated with the development within the energy and sustainability statement. Where such an assessment has been completed we would encourage that the results are logged on the WRAP embodied carbon database in order to contribute to the embodied carbon knowledge base.

8.21 Further guidance on resource efficiency and embodied carbon assessment can be found in supplementary planning document Camden Planning Guidance on sustainability.

Decentralised energy generation

8.22 Decentralised energy systems generate and supply electricity, heating or cooling close to where it is used, rather than at a large plant elsewhere and sent through the national grid. This method reduces transmission losses and lowers carbon emissions. Given the key role decentralised energy is expected to play in borough-wide carbon dioxide reduction, the Council shall expect new developments to play a pivotal role in their growth. Existing decentralised energy networks operate in Gower Street, King's Cross, Bloomsbury, Gospel Oak and Somers Town. It is important that Transport for London is consulted on proposals for energy networks which have the potential to impact upon London Underground infrastructure.

8.23 The Council's borough-wide Heat Demand and Heat Source Mapping (2015) identified that new decentralised energy networks are most likely to begin in, and expand out from, areas to the south of Euston Road (Russell Square and Great Ormond Street), areas in the centre of the borough (South Camden and Camley Street), Kentish Town and Kilburn. This is due to the scale and mix of developments in these locations.

8.24 Combined Heat and Power (CHP) led decentralised energy networks typically involve a CHP led energy centre supplying heat and electricity to nearby buildings. Cooling can also be incorporated in such systems where there is appropriate demand. Within the context of the energy hierarchy, gas fired networks are considered to sit within stage two, 'Be clean'. However, it is important to note that there are serious air quality implications for the use of CHP plants and biomass boilers. The use of biomass as a renewable energy source will be the Council's least preferred option for the provision of renewable energy and further information on this issue can be found in "Policy CC4 Air quality".

8.25 New developments are considered to be the most effective catalysts for decentralised energy network growth. The Council will therefore require all new major developments to assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible establishing a new network. Developments will be required to follow the steps below, in the order

listed, to ensure that energy from an efficient source is used where possible:

- **Connect immediately:** where feasible, development will be required to connect immediately to existing networks;
- **Connect in immediate future:** where networks do not currently exist, developments will be required to assess feasibility of connecting to identified future decentralised energy network opportunities in the vicinity of the site, having regard to "Map 5: Energy Networks" on page 232, area specific feasibility studies, energy plans and site allocations. Where shown to be feasible, development proposals must provide on-site infrastructure for connection and agree a timescale for connection where possible;
- **Provide a site wide low carbon network:** all major developments that cannot immediately connect to an existing or planned network should evaluate the feasibility of a site wide network using low carbon energy sources such as CHP or other low carbon technologies and examine the feasibility of extending the system beyond the site boundary to other sites within a 500m radius, prioritising communally heated Council buildings.

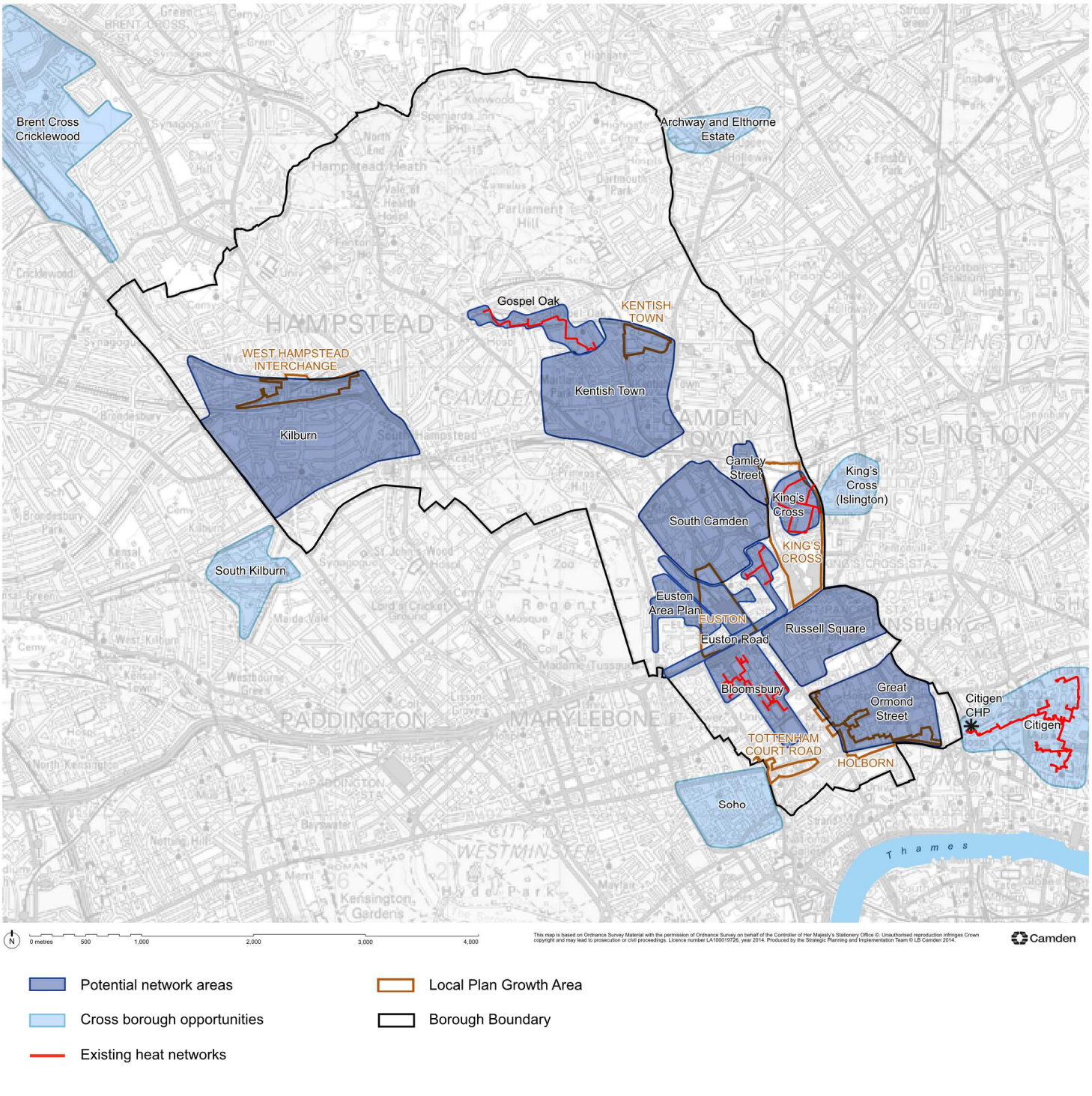
8.26 All major developments should incorporate communal heat distribution systems to facilitate a single point of connection to decentralised energy networks unless it can be clearly demonstrated that it is not applicable due to local circumstances. Major developments that do not connect to a network and are located within areas identified (see "Map 5: Energy Networks" and supplementary planning document Camden Planning Guidance on sustainability) will be required to make a financial contribution towards Council-led decentralised energy feasibility and delivery within these areas. Developers in these areas may also be expected to collaborate with the Council in the production of such studies and install heating infrastructure in accordance with the study conclusions.

8.27 The Council does not support the installation of stand-alone CHP units in small developments where there is neither the potential nor the intention for that development to form part of a wider network. The administrative burden of managing small scale CHP electricity sales, and the low unit price available for small volumes of exported CHP electricity, means it is generally uneconomic for developers to pursue. This can lead to CHP being installed but not operated.

Monitoring

8.28 Energy performance software, used to inform energy statements, is evolving but does have limitations. The installation of monitoring equipment in all major developments will provide important information showing actual energy performance and will aid the Council's and developers' understanding of the effectiveness of measures implemented in the borough. Such data would also inform the Council as to whether policy requirements are being met. Monitoring shall include any renewable or low carbon technology that contributes to meeting London Plan Policy 5.2. A contribution will be sought towards monitoring. The cost of this should be no greater than the cost of metering equipment that is required to be installed through industry standard regulations.

Map 5: Energy Networks



Adapting to climate change

8.30 Climate change adaptation involves changing the way we do things to prepare for the potential effects of climate change. We need to ensure that buildings and people can adapt to changes already evident within the climatic system.

8.31 Adapting to a changing climate is identified in Camden's environmental sustainability plan, Green Action for Change (2011-2020). The three key risks which require adaptation measures are flooding, drought and overheating. Specific design measures and 'green infrastructure' such as green roofs, green walls and open spaces can help mitigate some of these risks.

8.32 Changes to our climate could also lead to:

- subsidence, due to increased shrinking and expanding of Camden's clay base;
- poorer air quality;
- a hotter microclimate;
- increased summer electricity use due to increased demand for cooling; and
- threats to the quantity and quality of our water supply.

8.33 Such risks impact upon the health and wellbeing of Camden residents, have financial implications and can have impacts upon whether plant and animal species thrive or decline. Ensuring new developments are designed to adapt to these risks should be a key consideration when assessing applications for development in the borough.

Policy CC2 Adapting to climate change

The Council will require development to be resilient to climate change.

All development should adopt appropriate climate change adaptation measures such as:

a. the protection of existing green spaces and promoting new appropriate green infrastructure;
b. not increasing, and wherever possible reducing, surface water run-off through increasing permeable surfaces and use of Sustainable Drainage Systems;
c. incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and
d. measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.

Any development involving 5 or more residential units or 500 sqm or more of any additional floorspace is required to demonstrate the above in a Sustainability Statement.

Sustainable design and construction measures

The Council will promote and measure sustainable design and construction by: