Water and flooding

8.51 Our built environment plays a significant role in the way water is consumed, distributed and disposed of. The way water is used in a building and the pollutants it picks up running across a site affect the quality of the water that reaches the combined storm water and sewer system. In addition, the location of a development, and any flood mitigation measures used, can have an impact on local and downstream surface water flooding. Camden is a Lead Local Flood Authority, which means the Council has responsibility for managing flood risk from surface water and groundwater in the borough.

8.52 Areas at risk of flooding in Camden are identified in the Council's Surface Water Management Plan and Strategic Flood Risk Assessment. These areas are shown on "Map 6: Historic flooding and Local Flood Risk Zones" on page 241.

8.53 Camden experienced significant flooding in 1975 and 2002 and the probability of such events recurring is likely to increase as a result of climate change. As noted in "Policy CC2 Adapting to climate change", flooding and drought are key risks which require mitigation and adaptation measures in the borough. Changes to our climate can also threaten the quantity and quality of our water supply. Such risks impact upon the health and wellbeing of Camden residents.

Policy CC3 Water and flooding

The Council will seek to ensure that development does not increase flood risk and reduces the risk of flooding where possible.

We will require development to:

a. incorporate water efficiency measures;
b. avoid harm to the water environment and improve water quality;
c. consider the impact of development in areas at risk of flooding (including drainage);
d. incorporate flood resilient measures in areas prone to flooding;
e. utilise Sustainable Drainage Systems (SuDS) in line with the drainage hierarchy to achieve a greenfield run-off rate where feasible; and
f. not locate vulnerable development in flood-prone areas.

Where an assessment of flood risk is required, developments should consider surface water flooding in detail and groundwater flooding where applicable.

The Council will protect the borough's existing drinking water and foul water infrastructure, including the reservoirs at Barrow Hill, Hampstead Heath, Highgate and Kidderpore.

Water supply and quality

8.54 London has lower rainfall than the national average while having a very high population density. This combination of limited water resources and high demand has resulted in London being declared an area of serious water stress

and this trend is likely to be exacerbated by climate change. The Council will protect the borough's existing water infrastructure to ensure there is adequate supply, storage and foul water capability.

8.55 Developments must be designed to be water efficient. This can be achieved through the installation of water efficient fittings and appliances (which can help reduce energy consumption as well as water consumption) and by capturing and re-using rain water and grey water on-site. Residential developments will be expected to meet the requirement of 110 litres per person per day (including 5 litres for external water use). Refurbishments and other non-domestic development will be expected to meet BREEAM water efficiency credits. Major developments and high or intense water use developments, such as hotels, hostels and student housing, should include a grey water and rainwater harvesting system. Where such a system is not feasible or practical, developers must demonstrate to the Council's satisfaction that this is the case.

8.56 Camden has Groundwater Source Protection Zones (see "Map 6: Historic flooding and Local Flood Risk Zones" on page 241). The inner zone is located within the south west of Primrose Hill Park and the outer zone covers a section of South Hampstead from Prince Albert Road to Swiss Cottage. These zones are to signal that there are likely to be particular risks posed to the quality or quantity of water obtained, should certain activities take place nearby. These zones should be taken into account when considering the environmental impact of a development.

8.57 Water can pick up pollutants running across a site, which in turn enters our combined storm water and sewer system. Developments are required to utilise Sustainable Drainage Systems (SuDS), following the drainage hierarchy (see below), to ensure that development does not harm water quality.

Drainage hierarchy

1. store rainwater for later use
2. use infiltration techniques, such as porous surfaces in non-clay areas
3. attenuate rainwater in ponds or open water features for gradual release
4. attenuate rainwater by storing in tanks or sealed water features for gradual release
5. discharge rainwater direct to a watercourse
6. discharge rainwater to a surface water sewer/drain
7. discharge rainwater to the combined sewer

Areas at risk of flooding

8.58 The key flood risk to Camden is from surface water flooding. This arises following periods of intense rainfall when the volume and intensity of a rainfall event exceeds the capacity of the drainage system, resulting in localised flooding. Areas considered at risk from flooding are: Local Flood Risk Zones; and previously flooded streets (shown on "Map 6: Historic flooding and Local Flood Risk Zones"). Reference should also be made to Environment Agency surface water maps.

8.59 Thames Water identified that the south east of the borough discharges storm flow into the highly sensitive Counters Creek drainage catchment, where flooding to property already occurs. Changes in land use and rising population in

this catchment area has resulted in larger volumes of water entering the system. There are also twelve Local Flood Risk Zones (LFRZs) in Camden. LFRZs are defined as discrete areas of flooding that do not exceed the national criteria for a 'Flood Risk Area' but still affects houses, businesses or infrastructure (refer to "Map 6: Historic flooding and Local Flood Risk Zones" on page 241).

8.60 Camden also has a small risk of groundwater flooding, which takes two principal forms. The most common form of groundwater flooding in Camden is from 'perched' groundwater, water that becomes lodged between the top layer and the impermeable London clay layer. The risk of this type of flooding is difficult to model but has been recorded in parts of the borough, notably Kilburn, Fortune Green and West Hampstead, and will need to be considered and mitigated against in any new development. Aquifer based groundwater flooding is relatively rare in Camden, but it is possible in areas around Hampstead Heath and in the very south of the borough. This occurs when the water table rises due to prolonged heavy rain.

8.61 Development can have an impact on the water environment beyond the site where it takes place by altering the flow of water both above and below ground and changing where water is absorbed or rises to the surface. Changing water movements can alter soil conditions in the wider area. All developments should refer to the Council's Strategic Flood Risk Assessment (SFRA) to determine the likely impact the development will make to flood risk.

Site specific Flood Risk Assessments

8.62 Flood Risk Assessments (FRA) are carried out to identify the main flood risks to a development site, whether a development will increase flood risk, and recommendations for mitigating measures to reduce the impact of flooding at the site and surrounding area.

8.63 The Council will require Flood Risk Assessments for:

- all sites of 1 hectare or greater;
- all major planning applications in areas at high risk to flooding; and
- all basement development on streets identified as being at flood risk or in an area where historic underground watercourses are known to have been present, or in areas where there is an elevated risk of groundwater flooding.

8.64 A Flood Risk Assessment should identify how a development will be designed to cope with flooding and how the risk will be mitigated without increasing the risk elsewhere. Recommendations in the FRA will be secured by planning condition.

Mitigating flood risk

8.65 By decreasing the amount of permeable surfaces into which rainwater can be absorbed and by changing the direction of surface water flows, new development can increase stress on the drainage network and increase risk of flooding to properties downstream which were not previously at risk. Development located within areas at risk of flooding should not place additional pressure on the existing drainage infrastructure.

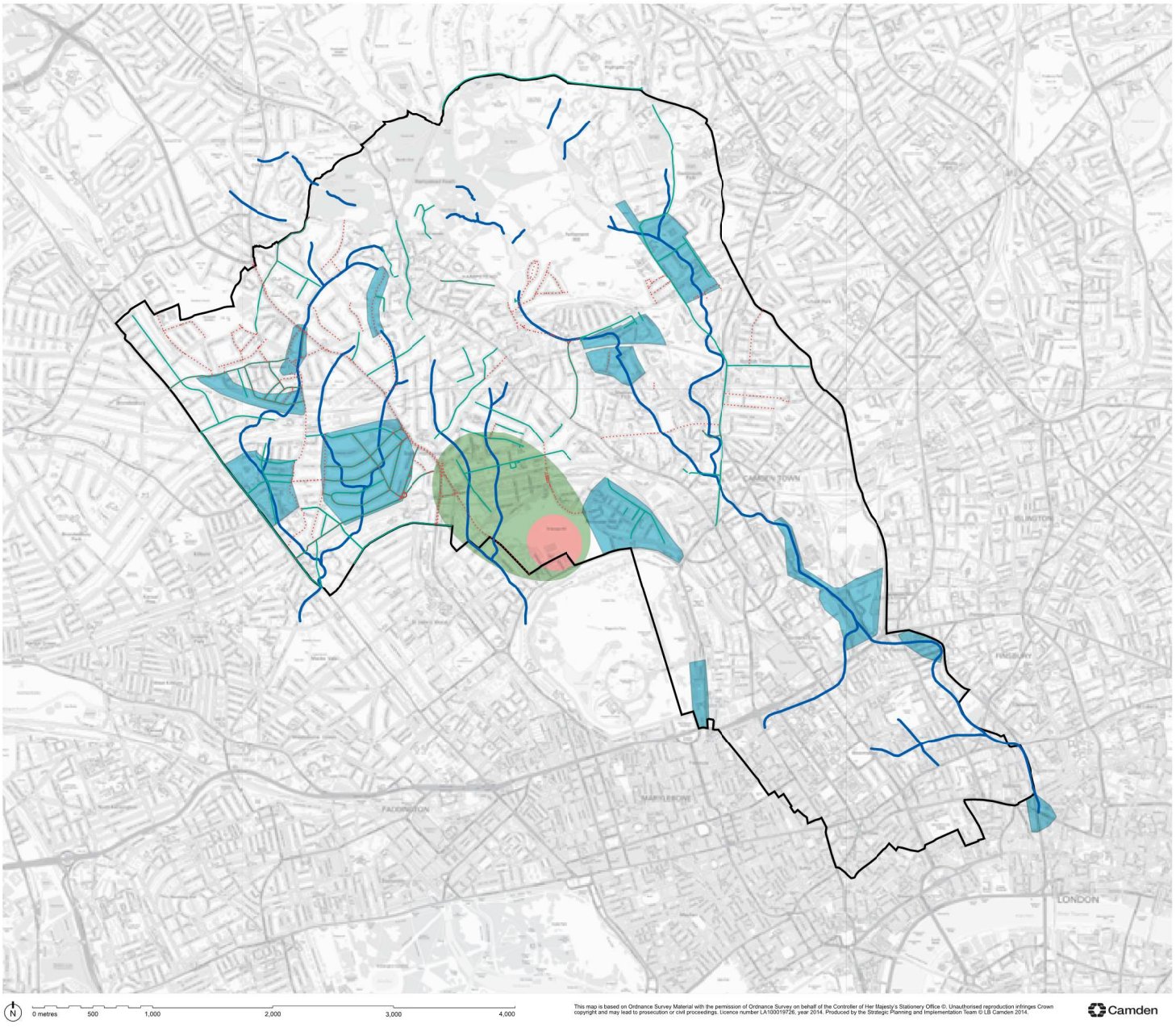
8.66 The Council will require developments to utilise Sustainable Drainage Systems (SuDS), to achieve greenfield run-off rates, unless demonstrated that this is not feasible. Surface water should be managed as close to its source as possible,

in line with the drainage hierarchy in the London Plan. Where it is not possible to achieve greenfield run-off rates it should be as close to this as possible (a greenfield run-off rate is one that reflects the natural rate of water run-off from a site before it was developed). Major developments will be required to constrain runoff volumes for a 1 in 100 year, 6 hour rainfall event, where feasible.

8.67 A drainage report should be submitted with all major applications, basement developments and other vulnerable development in areas identified at risk of flooding. This should include:

- identification of flood risk;
- assessment of existing run-off rates;
- calculation of greenfield run-off rates;
- identification of measures, in line with the drainage hierarchy, to reduce run-off rates; and
- calculation of proposed run-off rates.

Map 6: Historic flooding and Local Flood Risk Zones



8.68 Camden's Strategic Flood Risk Assessment includes information as to the suitability of SuDS in the borough and this should be used alongside other local information held by Camden and the Environment Agency. Where appropriate, SuDS measures will be secured by planning condition or by legal agreement. The Environment Agency published in 2016 updated climate change allowances including those for peak rainfall, which should be factored into any flood risk assessments.

8.69 Development should also demonstrate how it will mitigate the potential flooding of other properties. When determining the suitability of SuDS, vulnerability and the importance of local ecological resources, such as water quality and biodiversity should be considered.

Vulnerable development

8.70 Basements can affect the ability of the ground to absorb rain when soil is replaced by an impervious structure and can be particularly susceptible to flooding. The Council will not permit basement schemes which include habitable rooms and other sensitive uses for self-contained basement flats and other underground structures in areas prone to flooding ("Policy A5 Basements"). The Council shall require all new basement developments whether domestic or non-domestic to conduct a Basement Impact Assessment (please see "Policy A5 Basements") which considers both groundwater and surface water flooding. A Basement Impact Assessment (BIA) should demonstrate that the impacts of the proposed development are acceptable, or that appropriate mitigation measures will be adopted.

Regent's Canal

8.71 The Regent's Canal (which is a branch of the Grand Union Canal) runs through the centre of the borough. The Canal forms part of London's Blue Ribbon Network, which has its own set of policies within the London Plan. Please refer to "Policy A2 Open space" for further information on the value of Regent's Canal in Camden.

8.72 The quality of the Regents Canal is of 'moderate' status, it is not reaching 'good' as mitigation measures still need to be implemented. The Council will have regard to the Thames River Basin Management Plan which contains the actions needed to tackle the main issues of the water environment.

Air quality

8.73 Improving local air quality, mitigating the impact of development on air quality and reducing exposure to poor air quality in the borough is vital in safeguarding public health and the environment. The focus of Policy CC4 is to mitigate the impact of development on air quality and to ensure exposure to poor air quality is reduced in the borough.

8.74 It is recognised that parts of Camden have some of the poorest air quality levels in London and since 2000 the whole of the borough has been declared an Air Quality Management Area (AQMA) for both NO2 (Nitrogen Dioxide) and PM10 (Particulate Matter). Camden is also working to assess and address PM2.5 (the smallest fraction of particulate) because despite Camden meeting EU limit values for PM2.5, research suggests that particulates of this size have the worst health impacts. Air pollution is associated with a number of adverse health impacts, and it particularly affects the most vulnerable in society.

8.75 A key challenge is to make our local environment better by reducing air pollution. In addition to Policy CC4, this Plan also actively supports the improvement of air quality in Camden by:

- requiring all new development in the borough to be 'car-free' (see "Policy T2 Parking and car-free development");
- maintaining and increasing green infrastructure (see "Policy A2 Open space");
- reducing emissions associated with new development (see "Policy CC1 Climate change mitigation"); and
- supporting and encouraging sensitive energy efficiency improvements to existing buildings (see "Policy CC1 Climate change mitigation").

Policy CC4 Air quality

The Council will ensure that the impact of development on air quality is mitigated and ensure that exposure to poor air quality is reduced in the borough.

The Council will take into account the impact of air quality when assessing development proposals, through the consideration of both the exposure of occupants to air pollution and the effect of the development on air quality. Consideration must be taken to the actions identified in the Council's Air Quality Action Plan.

Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact. Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact.