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# **Camden Flood Risk Management Strategy: Public Consultation Draft**

## **Strategic Environmental Assessment Report**

Prepared by LUC  
December 2012

**Project Title:** SEA of Camden's Flood Risk Management Strategy

**Client:** The London Borough of Camden

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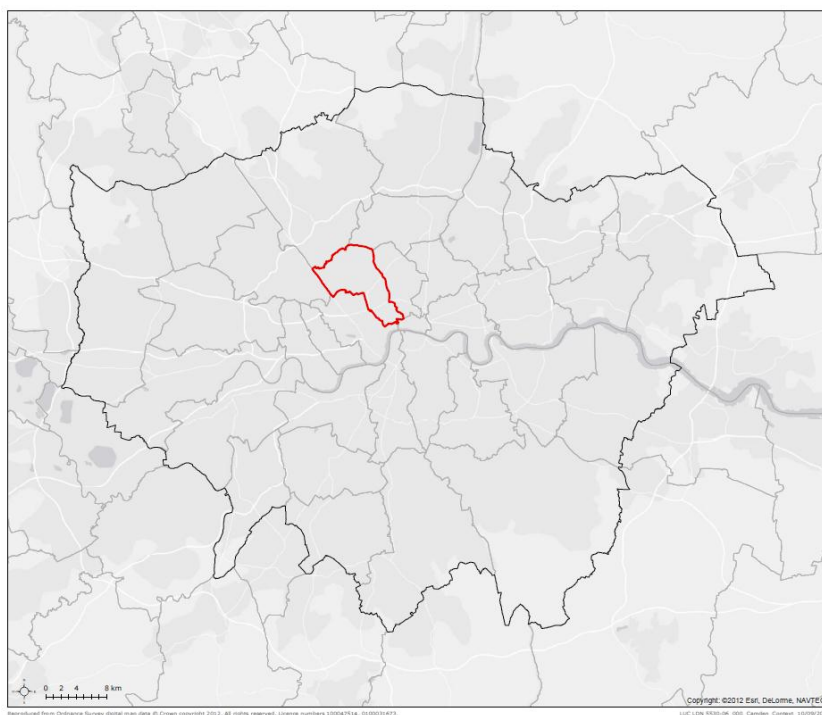
# 1 Introduction

- 1.1 The London Borough of Camden commissioned LUC in July 2012 to undertake Strategic Environmental Assessment (SEA) of its emerging Flood Risk Management Strategy (FRMS). The SEA process is concerned with assessing the potential environmental effects that may arise from the implementation of the FRMS. This report ('the Environmental Report') presents the SEA of the Public Consultation Draft version of Camden's Flood Risk Management Strategy (February 2013) and it should be read in conjunction with that document.

## The Study Area

- 1.2 The London Borough of Camden covers an area of 21.8km<sup>2</sup> and is one of the inner London boroughs. It extends from Hampstead Heath in the north to central London in the south, incorporating Euston, King's Cross and Holborn. Camden is home to a population of over 200,000 people from a variety of cultural backgrounds and has the largest student population of any London borough. The economic profile of the Borough is very mixed, with areas of relative affluence sitting alongside areas of relative poverty<sup>1</sup>.
- 1.3 Camden includes two of London's arterial roads (Euston Road and Tottenham Court Road) and a number of railway stations (both underground and overground) which provide links to other parts of London, the UK and mainland Europe. Regents Canal runs from east to west through Camden while the River Fleet originates from two springs on Hampstead Heath and is the largest subterranean river in London<sup>2</sup>.
- 1.4 **Figure 1.1** below shows the location of Camden within London.

**Figure 1.1 Location of the London Borough of Camden**



<sup>1</sup> London Borough of Camden (2012) Camden Profile 2012

<sup>2</sup> Mouchel (2008) North London Strategic Flood Risk Assessment

## Camden's Flood Risk Management Strategy

- 1.5 The Flood and Water Management Act 2010 ('the Act') gave local authorities a new role to manage local flood risk in their area. The Act requires Lead Local Flood Authorities (LLFAs), which include the London Borough of Camden, to produce a Local Flood Risk Management Strategy. These strategies must be consistent with the National Flood and Coastal Erosion Risk Management Strategy. They will set out a vision for the management of flood risk and although the Act specifies some of the key elements that must be included in the strategies, it is intended that they will be locally specific, reflecting key local issues and enabling communities to be more involved in decision-making regarding flood risk management.
- 1.6 The Act defines local flood risk as flood risk from:
- Surface runoff.
  - Groundwater.
  - Ordinary watercourses (those that do not form part of a 'main river'<sup>3</sup>).
- 1.7 The Act requires Local Flood Risk Management Strategies to specify:
- The risk management authorities within the authority's area (in Camden these are the London Borough of Camden, Thames Water, the Environment Agency and Transport for London).
  - The flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area.
  - The assessment of local flood risk for the purpose of the strategy.
  - The objectives for managing local flood risk (including any objectives included in the authority's flood risk management plan prepared in accordance with the Flood Risk Regulations 2009).
  - The measures proposed to achieve those objectives.
  - How and when the measures are expected to be implemented.
  - The costs and benefits of those measures, and how they are to be paid for.
  - How and when the strategy is to be reviewed.
  - How the strategy contributes to the achievement of wider environmental objectives.
- 1.8 Each LLFA must consult risk management authorities that may be affected by the strategy as well as the general public about its Local Flood Risk Management Strategy.
- 1.9 The objectives for Camden's Flood Risk Management Strategy, as set out in the Public Consultation Draft (February 2013) are:
- To understand and explain the level of risk affecting the residents and businesses of Camden.
  - To provide an action plan for areas at particular risk from surface water flooding.
  - To highlight the actions that all partners, businesses and residents in Camden should be taking to manage flood risk.
  - To take a sustainable and holistic approach to flood management, seeking to deliver wider environmental and social benefits.
- 1.10 A glossary of technical terms is provided in Section 3 of the Public Consultation Draft FRMS.

## Strategic Environmental Assessment

- 1.11 SEA is a statutory assessment process, required under the Environmental Assessment of Plans and Programmes Regulations (the SEA Regulations, Statutory Instrument 2004, No 1633) which

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<sup>3</sup> Main rivers are defined as watercourses marked as such on a main river map. Generally main rivers are larger streams or rivers, but can be smaller watercourses.

provide the legislative mechanism for transposing into UK law the European Directive 2001/42/EC 'on the assessment of the effects of certain plans and programmes on the environment' (the SEA Directive). The SEA Directive and Regulations require formal strategic environmental assessment of plans and programmes which are likely to have significant effects (either positive or negative) on the environment.

- 1.12 SEA should be undertaken iteratively, as the plan is progressed, and involves evaluating the likely significant environmental effects of implementing the plan. The aim is that environmental considerations can be integrated into the production of the plan in order to improve its overall sustainability performance.
- 1.13 Guidance on the production of Local Flood Risk Management Strategies<sup>4</sup> refers to the need for them to be subject to SEA, stating that "*the Local FRM Strategy is likely to require statutory SEA, but this requirement is something the LLFA must consider*". The London Borough of Camden considers that its emerging FRMS does require SEA. It is also noted that the guidance recognises that "*LLFAs should take a proportionate approach to applying SEA to local strategies particularly when environmental effects are not evident in the early stages of plan development. As the detail of plans develops, SEA should be reviewed*".

## Compliance with the SEA Regulations

- 1.14 This report has been prepared in accordance with the SEA Regulations. The reporting requirements of the SEA Directive are set out in **Table 1.1** below, which also indicates where in this SEA Report the relevant requirement has been met.

**Table 1.1 Requirements of the SEA Directive and where these have been addressed in this SEA Report**

SEA Directive Requirements	Where Covered
Preparation of an environmental report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and geographical scope of the plan or programme, are identified, described and evaluated. The information to be given is (Art. 5 and Annex I):	
An outline of the contents, main objectives of the plan or programme, and relationship with other relevant plans and programmes;	Chapter 3 and Appendix 2.
The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;	Chapter 3 and Appendix 3.
The environmental characteristics of areas likely to be significantly affected;	Chapter 3 and Appendix 3.
Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC.;	Chapter 3 and Appendix 3.
The environmental protection, objectives, established at international, Community or national level, which are relevant to the plan or programme and the way those objectives and any environmental, considerations have been taken into account during its preparation;	Chapter 3 and Appendix 2.

<sup>4</sup> Local Government Association (2011) Framework to Assist the Development of the Local Strategy for Flood Risk Management.



SEA Directive Requirements	Where Covered
The likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors. (Footnote: These effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects);	Chapter 5
The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme;	Chapter 5
An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;	Chapter 2.
a description of measures envisaged concerning monitoring in accordance with Art. 10;	Chapter 6.
a non-technical summary of the information provided under the above headings	A non-technical summary has been produced to accompany this report.
<b>Consultation:</b> authorities with environmental responsibility, when deciding on the scope and level of detail of the information which must be included in the environmental report (Art. 5.4)	The SEA Scoping Report was subject to consultation with the statutory consultees between September and October 2012. Appendix 1 details the responses received and how they have been addressed.
authorities with environmental responsibility and the public, shall be given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan or programme and the accompanying environmental report before the adoption of the plan or programme (Art. 6.1, 6.2)	This SEA Report is being published for consultation alongside the Public Consultation Draft version of Camden's FRMS between February and March 2013.
other EU Member States, where the implementation of the plan or programme is likely to have significant effects on the environment of that country (Art. 7).	Not applicable.
<b>Taking the environmental report and the results of the consultations into account in decision-making (Art. 8)</b>	

SEA Directive Requirements	Where Covered
<p><b>Provision of information on the decision:</b> When the plan or programme is adopted, the public and any countries consulted under Art.7 must be informed and the following made available to those so informed:</p> <ul style="list-style-type: none"> <li>the plan or programme as adopted</li> <li>a statement summarising how environmental considerations have been integrated into the plan or programme and how the environmental report of Article 5, the opinions expressed pursuant to Article 6 and the results of consultations entered into pursuant to Art. 7 have been taken into account in accordance with Art. 8, and the reasons for choosing the plan or programme as adopted, in the light of the other reasonable alternatives dealt with; and</li> </ul> <p>the measures decided concerning monitoring (Art. 9)</p>	To be addressed at a later stage.
<p><b>Monitoring</b> of the significant environmental effects of the plan's or programme's implementation (Art. 10)</p>	Chapter 6.
<p><b>Quality assurance:</b> environmental reports should be of a sufficient standard to meet the requirements of the SEA Directive (Art. 12).</p>	Details of how this SEA report meets the requirements of the SEA Directive are set out above.

## Structure of the SEA Report

- 1.15 This chapter (**Chapter 1**) has described the background to the production of Camden's FRMS and the requirement to undertake SEA. The remainder of this report is structured into the following sections:
- Chapter 2** describes the approach that is being taken to the SEA of the FRMS and outlines the tasks involved.
  - Chapter 3** presents the updated review of plans policies and programmes, baseline information and key sustainability issues for Camden.
  - Chapter 4** presents the SEA framework that is being used for the SEA of the FRMS.
  - Chapter 5** summarises the findings of the SEA of the Public Consultation Draft FRMS.
  - Chapter 6** details the approach that will be taken to monitoring the effects of the FRMS as it is implemented.
  - Chapter 7** summarises the conclusions of the SEA and describes the next steps to be undertaken.
- 1.16 The information in the main body of the report is supported by a number of appendices:
- Appendix 1** lists the consultation comments received in relation to the SEA Scoping Report and describes how each one has been addressed.
  - Appendix 2** presents the full review of plans, policies and programmes of relevance to the SEA. This has been updated since it was originally presented in the SEA Scoping Report, in light of the consultation comments received.
  - Appendix 3** presents the baseline information for Camden, which has also been updated since the Scoping stage.



## 2 Methodology

- 2.1 The approach that is being taken to the SEA of Camden's FRMS is based on current best practice and the following guidance:
- A Practical Guide to the SEA Directive, (September 2005) Office of the Deputy Prime Minister, Scottish Executive, Welsh Assembly Government, Department of the Environment for Northern Ireland.

### SEA Stages and Work Undertaken

- 2.2 **Table 2.1** below sets out the main stages of SEA. Each stage is then discussed in more detail in the subsequent sections.

**Table 2.1 Stages in the SEA Process**

SEA Stages
<b>SEA Stage A: setting the context and objectives, establishing the baseline and deciding on the Scope</b>
A1: Identifying other relevant plans, programmes and sustainability objectives
A2: Collecting baseline information
A3: Identifying sustainability issues and problems
A4: Developing the SEA Framework
A5: Consulting on the Scope of the SEA
<b>SEA Stage B: Develop options, taking account of assessed effects</b>
B1: Testing the project objectives against the SEA Framework
B2: Developing the options
B3: Predicting the effects of the LFRMS
B4: Evaluating the effects of the LFRMS
B5: Considering ways of mitigating adverse effects and maximising beneficial effects
B6: Proposing measures to monitor the significant effects of implementing the LFRMS
<b>SEA Stage C: Preparing the SEA Report</b>
C1: Preparing the SEA Report
<b>SEA Stage D: Consulting on the Project and the SEA Report</b>
D1: Public participation on the draft project and SEA report

## SEA Stages

D2: Assessing significant changes

### SEA Stage E: Monitoring the significant effects of implementing the LFRMS

E1: Finalising aims and methods for monitoring

E2: Responding to adverse effects

### Stage A: Setting the context and objectives, establishing the baseline and deciding on the scope

- 2.3 An SEA Scoping report<sup>5</sup> was prepared and consulted upon with the three statutory consultees (Natural England, the Environment Agency and English Heritage) between September and October 2012. While not a statutory consultee, Thames Water was also included in the consultation because, due to the nature of the FRMS, it was considered to be in a good position to comment on the scope of the SEA.
- 2.4 The SEA Scoping exercise involved the following main tasks:
- Identification and review of other relevant policies, plans and programmes, strategies and initiatives which may influence the FRMS.
  - Characterisation of the plan area (i.e. describing its economic, social and environmental character).
  - Development of a framework of SEA objectives against which the FRMS measures and any reasonable alternatives would be appraised.
  - Identification of the key environmental and sustainability issues of relevance to the FRMS.
- 2.5 A list of the comments received from the consultees, along with a description of how each one has been addressed, is provided in **Appendix 1**. Each of the comments received was reviewed and certain elements of the Scoping Report have been updated as necessary. The revised and updated baseline information and review of plans, policies and programmes are summarised in **Chapter 3** and are presented in full in **Appendices 2 and 3** respectively. The updated key environmental and sustainability issues are set out at the end of **Chapter 3**.

### Stage B: Developing and refining alternatives and assessing effects

- 2.6 A number of potential alternatives to the actions in the Public Consultation Draft FRMS have been identified by the London Borough of Camden. These alternatives mainly relate to the four flood alleviation schemes proposed in the Borough, and for each scheme the options considered are:
- Option A: Do nothing.
  - Option B: Deliver flood alleviation scheme using capital funding.
  - Option C: Provide soft measures such as awareness raising and creation of a flood warden scheme or community.
- 2.7 The actions set out in the Public Consultation Draft FRMS in relation to the flood alleviation schemes are a combination of Options B and C. The FRMS commits to investigating the potential for flood alleviation schemes in four areas, and in each case specifies that 'soft' measures will be investigated as well as harder engineering-based solutions. However, at this stage the FRMS does not provide details of the scheme that will be pursued in each area as the required background studies have not been completed. As such, the appraisal in **Chapter 5** has considered the effects of a combination of both Options B and C, and under each objective an assessment of the effects of Option A is also summarised.

<sup>5</sup> Strategic Environmental Assessment of Camden's Local Flood Risk Management Strategy: Scoping Report. Prepared by LUC (September 2012).

- 2.8 In addition, alternatives have been identified for the way in which the following two actions in the FRMS might be implemented (i.e. the detail of the action):
- Produce flood investigation reports
    - Option A: Produce Flood Investigation Reports only when five or more properties have been flooded internally.
    - Option B: Produce Flood Investigation Reports when one property floods internally.
    - Option C: Produce Flood Investigation Reports when a property has been flooded internally or externally.
  - Asset Register
    - Option A: All flood assets in the Borough are significant.
    - Option B: The Council deems an asset to be significant if it is of such significant size that its failure could cause drainage problems on its own OR if it is located within a key risk area OR it is identified as impacting on the flood risk of a key risk area.
    - Option C: The Council deems an asset to be significant if it is identified within a Project Appraisal Report as being crucial OR is a registered reservoir.
- 2.9 The assessment of effects set out in **Chapter 5** has therefore also summarised any differences in the effects that may occur from each of the above two options, depending on which criteria are used to implement the actions. The assessment recognises, however, that any such differences will be very minor as the fundamental effects of producing flood investigation reports or compiling an asset register will not vary significantly depending on the specific criteria options outlined above.

### Stage C: Preparing the SEA Report

- 2.10 This report is the output of Stage C.

### Stage D: Consulting on the FRMS and the SEA Report

- 2.11 A consultation on the Public Consultation Draft FRMS is taking place between February and March 2013, with the document being made available to the statutory environmental bodies as well as a range of other consultees and the general public. This SEA Report is being published alongside the FRMS during the consultation.
- 2.12 Comments received will be taken into account as the FRMS is finalised. Any comments relating specifically to the SEA will be taken into account and addressed as necessary if the SEA Report is updated to reflect the final version of the FRMS (this may not be required, depending on the extent of any changes made to the measures within it and the consultation comments received).

### Stage E: Monitoring the significant effects of implementing the FRMS

- 2.13 Proposals for monitoring the significant effects of implementing the FRMS are set out in **Chapter 6** of this report.

## Difficulties encountered and data limitations

- 2.14 During the SEA it was difficult to reach detailed judgements regarding the likely effects of the proposed flood alleviation schemes on one or more of the SEA objectives, because of a lack of information regarding the detail of those schemes. As such, there is uncertainty attached to many of the potential effects (as described in **Chapter 5**). It is assumed that those schemes will be subject to further more detailed environmental assessment as they are progressed and at that stage the likely effects will be able to be predicted in more detail. However, this SEA has sought to identify the key issues relating to each SEA objective, and to highlight where further assessment will be required.



### 3 Review of Plans, Policies and Programmes and Baseline Information

#### Review of Plans, Policies and Programmes

- 3.1 Annex 1(a) of the SEA Directive requires “an outline of the...relationship with other relevant plans or programmes”. The FRMS is not prepared in isolation, and is influenced by other plans, policies and programmes and by broader sustainability objectives.
- 3.2 As part of the scoping stage of the SEA in September 2012, a review was undertaken of other relevant plans, policies and programmes in relation to their objectives, targets, and indicators and their implications for the FRMS and the SEA.
- 3.3 In light of consultation comments received in relation to the Scoping Report, the review has now been amended, with a small number of additional plans, policies and programmes having been added. The full updated review is presented in **Appendix 2**. The international, national, regional and local policies, plans and programmes considered in the review are listed in **Table 3.1** below.

**Table 3.1 Plans, Policies and Programmes of Relevance to the SEA of Camden’s FRMS**

Plan, Policy or Programme
<b>International</b>
The Floods Directive (2007) <i>Directive 2007/60/EC</i>
Water Framework Directive (2000) <i>Directive 2000/60/EC</i>
Groundwater Directive (2006) <i>Directive 2006/118/EC</i>
<b>National</b>
National Planning Policy Framework (2012)
Technical Guidance to the National Planning Policy Framework (2012)
Flood and Water Management Act (2010)
The Flood Risk Regulations (2009)
National Strategy for Flood and Coastal Erosion Risk Management (2011) <i>Defra and the Environment Agency</i>
Future Water, The Government’s Water Strategy for England (2008) <i>Defra</i>
The Water Act (2003)
Guidance for risk management authorities on sustainable development in relation to their flood and coastal erosion risk management functions (2011) <i>Defra</i>
Water for People and the Environment; Water Resources Strategy for England and Wales (2009) <i>Environment Agency</i>



Plan, Policy or Programme
Directing the Flow: Priorities for Future Water Policy (2002) <i>Defra</i>
Sustainable Drainage Systems (SUDS) (2002) <i>Environment Agency</i>
Underground, Under Threat: The state of groundwater in England and Wales (2010) <i>Environment Agency</i>
Working with the Grain of Nature: A Biodiversity Strategy for England (2011) <i>Defra</i>
Environment Act (1995)
Conservation of Habitats and Species Regulations (2010)
Safeguarding our Soils, A Strategy for England (2009) <i>Defra</i>
Contaminated Land (England) Regulations (2006)
Adapting to Climate Change in England. A Framework for Action (2008) <i>Defra</i>
Climate Change UK Programme: Tomorrow's Climate Today's Challenge (2006) <i>Defra</i>
Securing the Future: Delivering the Sustainable Development Strategy (2005) <i>Defra</i>
Natural Environment White Paper - The Natural Choice: Securing the Value of Nature (2012) <i>Defra</i>
The Historic Environment: A Force for Our Future (2001) <i>Department for Culture, Media and Sport</i>
Water for Life (2011) <i>Defra</i>
National Policy Statement for Waste Water (2012) <i>Defra</i>
The Setting of Heritage Assets (Revised 2012) <i>English Heritage</i>
Understanding Place (suite of documents (Revised 2012) <i>English Heritage</i>
Flooding and Historic Buildings (2010) <i>English Heritage</i>
Biodiversity 2020: A strategy for England's wildlife and ecosystem services (2012) <i>Defra</i>
<b>Sub-National</b>
London Climate Change Adaptation Strategy (2010) <i>Mayor of London</i>
London Water Strategy (2011) <i>Mayor of London</i>
Thames River Basin Management Plan (2009) <i>Environment Agency</i>
North London Strategic Flood Risk Assessment (2008) <i>Mouchel on behalf of the North London Boroughs of Barnet, Camden, Enfield, Hackney, Haringey, Islington and Waltham Forest</i>
North London Joint Waste Strategy (North London Waste Authority, 2009)
Thames Catchment Flood Management Plan Summary Report (2009) <i>Environment Agency</i>

Plan, Policy or Programme
Mayor's Regional Flood Risk Appraisal (2009) <i>Mayor of London</i>
The London Plan (2011) <i>Greater London Authority</i>
State of the Environment for London (2011) <i>Environment Agency</i>
Streets for All: A guide to the management of London's streets (2000) <i>English Heritage</i>
<b>Local</b>
London Borough of Camden Preliminary Flood Risk Assessment (2011) <i>Halcrow on behalf of Camden</i>
Groundwater Quality Review: London Basin (2006) <i>Environment Agency</i>
Camden Local Development Framework: Core Strategy (2010) <i>London Borough of Camden</i>
Green Action for Change: Camden's environmental sustainability plan (2011-2020) <i>London Borough of Camden</i>
The Camden Plan (2012-17) <i>London Borough of Camden</i>
Camden Community Strategy – (2007-2012) <i>London Borough of Camden</i>
Camden Biodiversity Action Plan (2011)
Public Health Observatory – Camden Health Profile (2011) <i>Department of Health</i>
Draft Surface Water Management Plan (2012) <i>London Borough of Camden</i>

## Summary of Review of Plans, Policies and Programmes

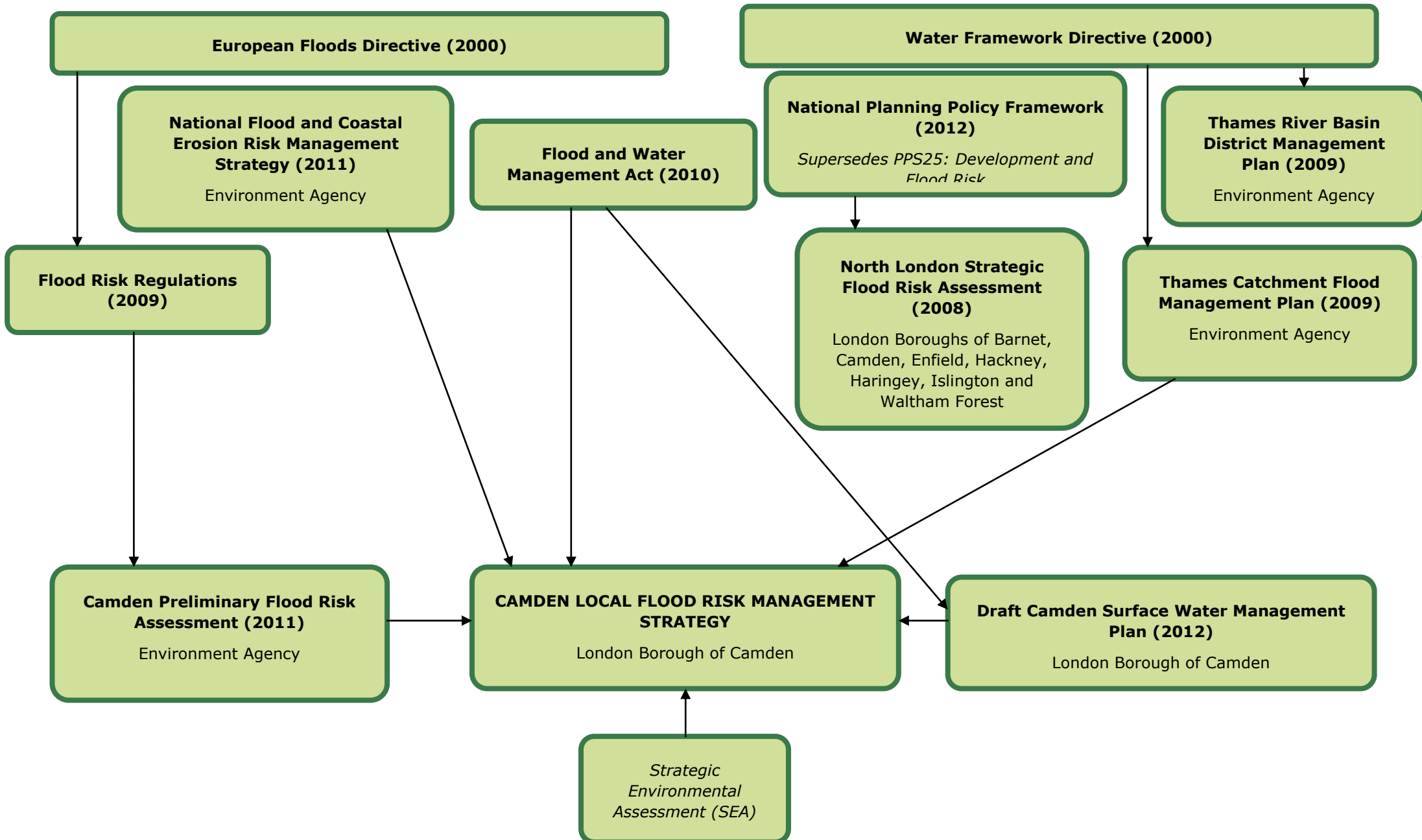
- 3.4 Many of the policies, programmes, plans, strategies and initiatives that have been reviewed are indirectly relevant to the FRMS, for example those that relate to the protection of natural assets including biodiversity and soils. Those that are most directly relevant are summarised below (the full updated review can be found in **Appendix 2**):
- **The EU Floods Directive 2007/60/EC** (2007) requires Member States to assess if all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and co-ordinated measures to reduce this flood risk.
  - **The Water Framework Directive 2000/60/EC** (2000) provides a framework committing EU member states to the protection of inland surface waters, transitional waters, coastal waters and groundwater. There is a requirement to co-ordinate the delivery of the WFD and the Floods Directive (see above), and the Environment Agency is responsible for this in England and Wales.
  - **Flood and Water Management Act** (2010) – This Act sets out the statutory requirement for Lead Local Flood Authorities (LLFAs) such as the London Borough of Camden to produce a strategy for managing local flood risk. It is therefore the legal basis for the production of Camden's LFRMS.
  - **National Flood and Coastal Erosion Risk Management Strategy** (2011) – The Flood and Water Management Act requires all LFRMSs to be in conformity with this Strategy, which encourages more effective risk management by enabling people, communities, business,

infrastructure operators and the public sector to work together to achieve better understanding of the risks of flooding both, nationally and locally, so that investment in risk management can be prioritised more effectively. As such, Camden's FRMS must have regard to the contents of the Strategy.

- **National Planning Policy Framework (2012)** – The NPPF has replaced the suite of planning policy statements and planning policy guidance, including Planning Policy Statement 25 which previously presented national policy in relation to Development and Flood Risk. The NPPF sets out the considerations that local planning authorities need to take account of in order to avoid new development increasing flood risk. The measures included in the emerging FRMS will need to have regard to this national level policy. The information provided in the NPPF is supplemented by the Technical Guidance to the National Planning Policy Framework (2012) which provides additional guidance to local planning authorities to ensure the effective implementation of the planning policy set out in the NPPF on development in areas at risk of flooding. The technical guidance retains key elements of PPS25.
- **The London Plan (2011)** is the overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20–25 years. Reducing flood risk through the FRMS will help to achieve the London Plan's objectives, especially those that relate to improving the environment and creating a safe place for everyone.
- **North London Strategic Flood Risk Assessment (2008)** – This document establishes the extent of flood risk in North London (including Camden) from rivers, groundwater and surface water and defines the geographical extent of the various flood risk zones. It is therefore an important part of the evidence base for the production of the FRMS and the SEA.
- **Draft Camden Surface Water Management Plan (2012)** – This document provides important evidence relating to flood risk from surface water in Camden, identifying the areas at highest risk. Along with the FRMS, it will comprise a key tool for the management of flood risk in the Borough. The Surface Water Management Plan is currently at draft stage, with the final version likely to be published at the same time as the strategy.
- **Camden Core Strategy 2010-2025 (2010)** – The Core Strategy provides the overarching approach to future development within the Borough, and any proposals within the FRMS must have regard to the policies within it. Of particular relevance, Policy CS13: Tackling Climate Change through Promoting Higher Environmental Standards aims to reduce flood risk by requiring development to avoid harm to the water environment, water quality or drainage systems and to prevent or mitigate local surface water and downstream flooding, especially in areas up-hill from, and in, areas known to be at risk from surface water flooding such as South and West Hampstead, Gospel Oak and King's Cross. It also requires new development to incorporate efficient water infrastructure.

3.5 **Figure 3.1** overleaf illustrates how Camden's FRMS fits in with other plans and policies relating to flood and water management.

**Figure 3.1: Relationships between the FRMS and selected other Plans, Policies and Programmes**



## Baseline Information

- 3.6 Baseline information provides the context for assessing the potential environmental effects and sustainability of measures in the emerging FRMS and it provides the basis for identifying trends, predicting the likely effects of the FRMS and monitoring its outcomes.
- 3.7 Annex 1(f) of the SEA Directive requires data to be gathered on biodiversity, population, human health, flora, fauna, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the inter-relationship between the above factors. However, the SEA only needs to report on those topics where significant effects are likely to arise. If there is little or no relationship between the plan and the topic, then the need for assessment can be 'scoped out' for that topic.
- 3.8 The baseline information collated in relation to Camden was originally presented in the SEA Scoping Report (September 2012). In light of consultation comments received in relation to the Scoping Report, the baseline information has been amended and added to in places, and the updated version is presented in **Appendix 3**.

## Key Environmental and Sustainability Issues

- 3.9 Reviewing the relevant plans, policies and programmes and considering the baseline character of Camden highlights a number of environmental and sustainability issues facing the Borough, as set out in **Table 3.2** below. These are relevant to the production of the FRMS and have been considered throughout the SEA process, in particular having helped to inform the SEA objectives that were developed at the Scoping stage (see **Chapter 4**).
- 3.10 Annex 1 of the SEA Directive requires that information is provided on:  
*"the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan."*
- 3.11 In order to meet this requirement, **Table 3.2** also describes how the key issues are likely to develop over time in the absence of the FRMS.

**Table 3.2 Key Environmental and Sustainability Issues and Likely Evolution without the FRMS**

Key Environmental and Sustainability Issues	Likely Evolution without the FRMS
Ongoing population growth and the resulting pressure for new housing and associated development.	This issue is likely to continue as at present, as the FRMS does not intend to address population growth and demand for development. Rather the FRMS should help to ensure that the borough is well-equipped to accommodate the new development without increasing local flood risk. Therefore without implementation of the FRMS, the implications of development pressure in terms of increased flood risk may be more negative.

Key Environmental and Sustainability Issues	Likely Evolution without the FRMS
<p>High quality of the Borough's built environment, with various heritage assets (and their settings) which should be protected and enhanced where possible.</p>	<p>In the absence of the flood risk management achieved through implementation of the FRMS, other flood management plans and policies such as the Camden Surface Water Management Plan and policy CS13 of Camden's Core Strategy will still apply and should provide some benefit in terms of protecting the built environment and heritage assets from the potential adverse impacts of flooding. However, these are likely to have less direct and significant effects on the protection of the built environment and heritage assets through the management of local flood risk than implementation of the FRMS would.</p>
<p>Likely future increase in flood events as a result of ongoing climate change.</p>	<p>This issue is likely to continue as at present, as the FRMS does not intend to address the causes of climate change. Rather the FRMS should help to ensure that the borough is well-equipped to adapt to the increasing flood risk. Therefore without implementation of the FRMS, the implications of climate change in terms of increased flood risk may be more negative.</p>
<p>The risk of water pollution associated with flooding events to watercourses that are already struggling to meet EU Water Framework Directive standards.</p>	<p>Although the primary purpose of the FRMS is to manage flood risk, it is likely to also address water quality indirectly, as flood events can lead to water pollution. Without implementation of the FRMS, these benefits would not occur. However, the requirements associated with the WFD would apply even without implementation of the FRMS, and should therefore still be met through other plans and strategies.</p>
<p>High risk of sewer and surface water flooding exacerbated by hard-standing and compacted soils associated with open space such as Hampstead Heath.</p>	<p>In the absence of the flood risk management achieved through implementation of the FRMS, other flood management plans and policies such as the Camden Surface Water Management Plan and policy CS13 of Camden's Core Strategy would still apply and should have some benefit in terms of managing flood risk from sewer and surface water flooding. However, these are likely to have less direct and significant effects on managing and reducing sewer and surface water flood risk than the implementation of the FRMS will.</p>
<p>Potential impacts of flooding, and the perceived risk of flooding, on the health and wellbeing of the local population particularly the most vulnerable.</p>	<p>In the absence of the FRMS, other flood management plans and policies such as the Camden Surface Water Management Plan and policy CS13 of Camden's Core Strategy would still apply and should have some benefit in terms of protecting local people's health and wellbeing from the potential adverse impacts of flooding. However, these are likely to have less direct and significant effects on the protection of human health through the management of local flood risk than implementation of the FRMS would.</p>

Key Environmental and Sustainability Issues	Likely Evolution without the FRMS
<p>Protection of quantity and quality of open space within the Borough which should be conserved and enhanced.</p>	<p>In the absence of the flood risk management achieved through implementation of the FRMS, policies within Camden's Core Strategy and other flood management plans and policies such as Catchment Flood Management Plans will still apply and should have some benefit in terms of protecting open space from the potential adverse impacts of flooding. However, these are likely to have less direct and significant effects on the protection of open space through the management of local flood risk than implementation of the FRMS would.</p>
<p>Extensive range and high density of community services and facilities, transport infrastructure and other built development, and the need to protect it from future flooding events.</p>	<p>Without the implementation of the FRMS, policy CS13 of Camden's Core Strategy would still apply, which aims to ensure that new development prevents or mitigates local surface water and downstream flooding. Other flood management plans and policies would also still apply and should have some benefit in terms of reducing the flood risk facing existing community services and facilities, transport infrastructure and other built development whilst planning to protect them when flooding does occur. However, these are likely to have less direct and significant effects on the protection of existing services, facilities and buildings through the management of local flood risk than implementation of the FRMS would.</p>





## 4 SEA Framework

- 4.1 The SEA framework was prepared and consulted upon as part of the Scoping process, drawing on the review of relevant plans and programmes, baseline information and key environmental and sustainability issues described in **Section 3** of this SEA Report.
- 4.2 There are seven SEA objectives in total, as listed in **Table 4.1** below.

**Table 4.1 SEA Framework for Camden's FRMS**

SEA Objectives
1. To minimise the risk of flooding to residential properties and community and economic assets.
2. To maintain and enhance soil and water quality.
3. To protect and enhance human health and wellbeing.
4. To minimise the potential impact of flooding on existing and future critical infrastructure.
5. To protect and enhance biodiversity and open space.
6. To maintain and/or enhance the historic significance of the built environment and cultural heritage assets.
7. To adapt development to the impacts of climate change, ensuring that new development does not contribute to increased risk of flooding for existing property and people elsewhere.

- 4.3 Schedule 2 of the SEA Regulations provides a list of specific environmental topics to be addressed (these are also specified in the SEA Directive). In drawing up the SEA objectives, care was taken to ensure that those environmental topics were covered, as shown in **Table 4.2** below. The table lists the SEA environmental topics and the relevant SEA objectives from Camden's FRMS SEA framework that address them. This helps to demonstrate that each SEA environmental issue has been considered in the assessment of the FRMS. Note that one of the SEA topics, 'air', was scoped out of the assessment due to the fact that the type of measures to be included in the FRMS are not considered likely to have an impact on air quality, as they relate to flood risk management and will not result in emissions to air that could affect air quality.

**Table 4.2 SEA environmental topics and coverage by SEA objective**

SEA environmental topic	Relevant SEA objective(s)
Biodiversity, flora and fauna	5
Population and human health	3
Soil	2
Water	2
Air	<i>Scoped out of the assessment</i>

SEA environmental topic	Relevant SEA objective(s)
Climatic factors	7
Material assets	1, 4 and 6
Cultural heritage (including architectural and archaeological heritage)	6
Landscape	5

## Use of the SEA Framework

- 4.4 Within the assessment of the potential environmental effects of Camden's FRMS, symbols have been used against each SEA objective to show whether an effect is likely to be significant, positive or negative, or uncertain, as follows:

**Table 4.3 Key to SEA scores**

Symbol	Effect
++	Significant positive effect
+	Minor positive effect
0	Negligible effect
-	Minor negative effect
--	Significant negative effect
?	Uncertain effect

- 4.5 The likely effects of the FRMS need to be determined and their significance assessed, and this inevitably requires a series of judgments to be made. This assessment has attempted to differentiate between the most significant effects and other more minor effects through the use of the symbols shown above. The dividing line in making a decision about the significance of an effect is often quite small. Where either ++ or -- has been used to distinguish significant effects from more minor effects (+ or -) this is because the effect of the measure on the SEA objective in question is considered to be of such magnitude that it will have a noticeable and measurable effect taking into account other factors that may influence the achievement of that objective. In the context of the FRMS, where FRMS measures relate directly to the achievement of an SEA objective, the likely effect on that objective is considered to be significant.



## 5 SEA Findings

- 5.1 An SEA matrix has been prepared, showing the likely effects of each of the actions proposed in the Public Consultation Draft FRMS (February 2013) on each of the seven SEA objectives. However, due to the high-level nature of the FRMS, it is not possible to reach detailed conclusions about the likely effects of the FRMS actions on each of the SEA objectives with confidence. In particular, the flood alleviation schemes referred to in the FRMS have not yet been developed in detail and so there is a lack of available information about the nature of those schemes.
- 5.2 Article 5.2 of the SEA Directive states that '*the environmental report...shall include the information that may reasonably be required taking into account current knowledge and methods of assessment, the contents and level of detail in the plan or programme, its stage in the decision-making process and the extent to which certain matters are more appropriately assessed at different levels in that process in order to avoid duplication of the assessment*'.
- 5.3 The SEA of the emerging FRMS has been undertaken with this in mind, and while the assessment has attempted to identify the key potential impacts of the FRMS, inevitably there is considerable uncertainty attached to the findings.
- 5.4 In general, the FRMS has been found to have mostly positive effects, due to it being a proactive strategy aiming to reduce and manage flood risk within Camden. While potentially significant positive effects have been identified in relation to SEA objectives 1 and 4, no likely significant negative effects from the actions in the FRMS have been identified in relation to any of the SEA objectives. Some of the actions in the FRMS are unlikely to have any direct effects on the environment as they relate more to improving knowledge and understanding of flood risk rather than actual works that could have an effect on the ground; however a small number of indirect effects could still result from the general contribution that such actions can make to overall flood risk management in the area (e.g. by informing decisions regarding physical works to manage flood risk).
- 5.5 The SEA Regulations require that consideration should be given to whether the potential effects predicted are likely to be secondary, cumulative, synergistic, short, medium or long-term, permanent or temporary. Where relevant, reference has been made throughout this chapter to effects being either direct or indirect (the latter is taken to cover 'secondary' effects). Synergistic effects relate to the interaction of components that when combined produce a total effect that is greater than the sum of the individual components.
- 5.6 The synergistic and cumulative effects of all the FRMS objectives and measures combined are considered to be overall positive for the environment, due to the likely outcomes of implementing the FRMS being a reduction in flooding and associated risk to the natural and built environment within Camden.
- 5.7 In terms of timescales for when effects are likely to occur, the actions for reducing flood risk that are proposed in the emerging FRMS (those actions relating to the proposed flood alleviation schemes) are due to take place between 2013 and 2015, while the actions for improving flood risk management are generally shorter term, with some being underway already. As such, the majority of the effects of the FRMS would be expected to begin to come about during the next one to three years, and in most cases would be permanent. However, there are some effects that may only be temporary, as they would only occur during the initial works on the flood alleviation scheme.
- 5.8 The likely effects of the FRMS are summarised by SEA objective under Table 5.1. For each SEA objective a brief summary is also provided of the likely effects of the alternative options considered, as described in **Section 2** of this report.

**Table 5.1 SEA Matrix for Camden's FRMS (Consultation Draft)**

FRMS Objectives and Actions	SEA Objectives						
	1: Minimise flood risk	2: Soil and water quality	3: Human health and wellbeing	4: Critical infrastructure	5: Biodiversity and open space	6: Built environment and cultural heritage	7: Adapt to climate change
<b>Objectives</b>							
Objective 1: To understand and explain the level of risk affecting the residents and businesses of Camden	+	0	+	+	0	0	+
Objective 2: To provide an action plan for areas at particular risk from surface water flooding	++	0	+	++	+	+	0
Objective 3: To highlight the actions that all partners, businesses and residents in Camden should be taking to manage flood risk	+	0	0	+	0	0	+
Objective 4: To take a sustainable and holistic approach to flood management, seeking to deliver wider environmental and social benefits	+	+	+	0	+	+	0
<b>Actions for Reducing Flood Risk</b>							
Completion of Gospel Oak Project Appraisal Report	+	0	0	+	0	0	0
Completion of Hampstead and Highgate Project Appraisal Report	+	0	0	+	0	0	0
Investigation of Royal Free Hospital Flood Risk	+	0	+	++	0	0	0
Completion of design work for Hampstead Heath dams	+	0	0	+	0	0	0
Completion of Goldhurst Terrace Project Appraisal Report	+	0	0	+	0	0	0

FRMS Objectives and Actions	SEA Objectives						
	1: Minimise flood risk	2: Soil and water quality	3: Human health and wellbeing	4: Critical infrastructure	5: Biodiversity and open space	6: Built environment and cultural heritage	7: Adapt to climate change
Completion of Cannon Hill Road Project Appraisal Report	+	0	0	+	0	0	0
Completion of Hampstead and Highgate Flood Alleviation Scheme	++	+	+	++	?	?	0
Completion of construction work to improve Hampstead Heath ponds	++	+	+	++	?	?	0
Completion of Gospel Oak Flood Alleviation Scheme	++	+	+	++	?	?	0
Completion of Goldhurst Terrace Flood Alleviation Scheme	++	+	+	++	?	?	0
Completion of Cannon Hill Road Flood Alleviation Scheme	++	+	+	++	?	?	0
Maintenance of Primrose Hill siphon	++	+	+	++	?	?	0
<b>Actions to Improve Flood Risk Management</b>							
Flood Investigations Reports for any major new flood incidents	+	0	0	+	0	0	0
Production of Flood Hazard and Flood Risk Maps	+	0	0	+	0	0	+
Publishing of asset register of most significant flood assets in the borough	+	0	0	+	0	0	+
Designation of significant assets to ensure they are maintained in current form	+	0	0	+	0	+	+
Prepare for introduction of SuDS Approval Bodies	+	0	0	+	0	0	+
Refresh the Strategic Flood Risk Assessment	+	0	0	+	0	0	+

### **SEA Objective 1: To minimise the risk of flooding to residential properties and community and economic assets.**

- 5.9 Unsurprisingly given the purpose of the FRMS, all of the actions set out in the Public Consultation Draft are expected to have either positive or significant positive effects on this objective as all of the actions have been developed with the overarching aim of reducing flood risk in and around Camden (including to residential properties and community and economic assets).
- 5.10 A number of the actions for reducing flood risk (the implementation of flood alleviation schemes at Hampstead and Highgate, Gospel Oak Goldhurst Terrace and Cannon Hill, the construction work to improve Hampstead Heath ponds and the maintenance of the Primrose Hill Siphon) are expected to have significant positive effects because they involve direct physical works on the ground that have the primary purpose of reducing flood risk. For example, the FRMS states that the Gospel Oak scheme will aim to alleviate flooding to residential and commercial properties, in an area where over 100 properties may be within the Very Significant and Significant risk bands defined by the Environment Agency.
- 5.11 Most of the actions will have minor rather than significant positive effects, however, as the majority of the actions in the FRMS do not involve physical works but instead relate to research, evidence gathering and communication. While these actions may not have the same direct and tangible effects on flood risk as the flood alleviation schemes, they make an important contribution to the overall aim of improving flood risk management (e.g. by better equipping decision makers). For example, ensuring that the Strategic Flood Risk Assessment is refreshed at an appropriate time will help to ensure that the necessary evidence base is available for decision making, and the preparation of flood investigation reports for any major new flood incidents will help to ensure that lessons can be learned and applied to reduce future flood risk.
- 5.12 While all of the objectives and actions in the FRMS will have positive effects (either direct or indirect) on this objective, the synergistic effects of the FRMS as a whole will be particularly positive. For example, the completion of project appraisal reports for the flood alleviation schemes proposed should ensure that those schemes are as effective as possible at managing flood risk when they are implemented.

#### *Summary of effects of alternatives*

- 5.13 The alternative action of not implementing any form of flood alleviation schemes within the Borough would have a negative effect on this objective as the high level of flood risk within certain areas of the Borough would remain unaddressed and residential properties and community and economic assets would continue to face the risk of flooding.
- 5.14 The effects of producing flood investigation reports will be most positive when they are produced for the greatest number of flood incidents, and can therefore offer the most comprehensive information regarding lessons to be learned from past flood events. The effects would therefore be most positive under Option C and least positive under Option A; however the difference would be minimal and all three options would be considered to have a minor positive effect for the purposes of this SEA. Similarly, the effects of publishing an asset register would be most positive where the most assets are included, which would be under Option A; however again the difference between the effects of the options are minimal in SEA terms.

### **SEA Objective 2: To maintain and enhance soil and water quality.**

- 5.15 Most of the objectives and actions in the FRMS will not affect soil and water quality as they do not involve physical works; rather they relate to research, evidence gathering and communication. However, a positive effect may result from FRMS objective 4 as it aims to ensure that flood management takes a sustainable approach and delivers wider environmental benefits. This could include benefits for soil and water quality; however this is currently uncertain.
- 5.16 The FRMS actions that could have an effect on this SEA objective are the physical works proposed, namely the flood alleviation schemes for Hampstead and Highgate, Gospel Oak Goldhurst Terrace and Cannon Hill, the construction work to improve Hampstead Heath ponds and the maintenance of Primrose Hill siphon. Particularly in the north of the Borough, heavy rainfall leading to overland flow is the key cause of flooding, meaning that there may be particular risk of soil erosion from flood events affecting soil and water quality. The works to alleviate the risk of

flooding should therefore reduce the likelihood of the associated impacts on soil and water quality. While these actions could therefore have a positive effect, the nature of those schemes is not yet known and so there is considerable uncertainty attached to the potential positive effect.

- 5.17 Flooding can pose a more significant risk to soil and water quality where there are areas of contaminated land. In Camden, the most extensive areas of contaminated land are in the south of the Borough and are therefore some distance from the proposed flood alleviation schemes, all of which are to be located in the northern and central parts of the Borough. As such, the potential positive effects of those schemes in relation to soil and water quality are considered to be minor rather than significant.

#### *Summary of effects of alternatives*

- 5.18 The effects of the alternative action of not implementing any form of flood alleviation schemes within the Borough would have a negative effect on soil and water quality as these assets would continue to be put at risk from flood events, the frequency of which would not be reduced by a flood alleviation scheme.
- 5.19 The effects of all of the options put forward in relation to the publication of flood investigation reports and the compilation of an asset register would be negligible.

#### **SEA Objective 3: To protect and enhance human health and wellbeing.**

- 5.20 Most of the objectives and actions in the FRMS will not directly affect human health and wellbeing, with the exception of the intention to investigate flood risk at the Royal Free Hospital which will have a positive effect by helping to reduce surface water flood risk, and therefore maintaining the condition of that healthcare facility. However, a positive effect may result from FRMS objective 4 as it aims to ensure that flood management takes a sustainable and holistic approach and delivers wider social benefits. This effect is currently uncertain as it is not clear yet what those social benefits may be, and whether they will relate to human health and well-being.
- 5.21 The actions that involve physical works to manage flood risk are all expected to have a minor positive effect on this objective as they should deliver a direct reduction in flood risk which can otherwise have a serious impact on the physical and mental health of local people.

#### *Summary of effects of alternatives*

- 5.22 The effects of the alternative action of not implementing any form of flood alleviation schemes within the Borough would have a negative effect on human health and wellbeing as people would continue to be put at risk from flood events, the frequency of which would not be reduced by a flood alleviation scheme.
- 5.23 The effects of all of the options put forward in relation to the publication of flood investigation reports and the compilation of an asset register would be negligible.

#### **SEA Objective 4: To minimise the potential impact of flooding on existing and future critical infrastructure.**

- 5.24 Similarly to SEA objective 1, almost all of the objectives and actions in the FRMS are expected to have a positive effect on this objective as they all contribute to an overall reduction in flood risk (and therefore the risk posed by flooding to critical infrastructure). Again, the physical works proposed are likely to have a more significant positive effect by directly reducing the likelihood of flood events occurring and therefore affecting critical infrastructure. In particular, the FRMS specifies that the Gospel Oak flood alleviation scheme will aim to alleviate flooding to the main railway line to the north of Gospel Oak. In addition, the investigation of flood risk at the Royal Free Hospital will have a significant positive effect as it specifically aims to address the flood risk facing that important component of community infrastructure.
- 5.25 While the actions to improve flood risk management will have generally indirect and minor effects on this objective, some of the actions such as producing Flood Hazard and Flood Risk Maps will have a direct positive effect by providing valuable evidence regarding the location of flood risk that can enable future critical infrastructure to be planned to avoid areas of highest risk.
- 5.26 FRMS objective 4 is not expected to affect this objective because it relates to the delivery of wider social and environmental benefits at the same time as delivering flood risk management.



### *Summary of effects of alternatives*

- 5.27 The effects of the alternative action of not implementing any form of flood alleviation schemes within the Borough would have a negative effect on protecting critical infrastructure from flooding as these assets would continue to be put at risk from flood events, the frequency of which would not be reduced by a flood alleviation scheme.
- 5.28 The effects of producing flood investigation reports will be most positive when they are produced for the greatest number of flood incidents, and can therefore offer the most comprehensive information regarding lessons to be learned from past flood events. The effects would therefore be most positive under Option C and least positive under Option A; however the difference would be minimal and all three options would be considered to have a minor positive effect for the purposes of this SEA. Similarly, the effects of publishing an asset register would be most positive where the most assets are included, which would be under Option A; however again the difference between the effects of the options are minimal in SEA terms.

### **SEA Objective 5: To protect and enhance biodiversity and open space.**

- 5.29 While most of the objectives and actions in the FRMS will not affect this objective, the physical works proposed could have a direct effect on biodiversity, for example as a result of habitat loss or noise/vibration during construction. Key issues include the proximity of Hampstead Heath Woods SSSI to Hampstead Heath Ponds, and the potential for the work there to have an impact on the site. In addition, Hampstead Heath Ponds also falls within the Hampstead Heath Site of Metropolitan Importance and Primrose Hill (where maintenance work on the siphon will take place) is designated as a Site of Borough Importance.
- 5.30 However, it is not possible to draw any conclusions regarding the nature and significance of any such effects at this stage, without more information about the detail of the proposed schemes. While the potential for disturbance to biodiversity is recognised, it may also be possible to deliver biodiversity benefits through the implementation of the flood alleviation schemes. As such, an overall uncertain effect on the relevant FRMS actions has been highlighted. It will be important for these issues to be considered by the more detailed environmental assessment work that will take place as these schemes are progressed.
- 5.31 As with biodiversity, the effects of the works proposed on open space cannot be accurately assessed at this stage as effects will depend on whether new areas of open space are to be created or whether existing open space may be lost to the schemes.

### *Summary of effects of alternatives*

- 5.32 The effects of the alternative action of not implementing any form of flood alleviation schemes within the Borough on biodiversity are also uncertain and potentially mixed. While the chance of flood alleviation schemes resulting in disturbance and damage to habitats and species (particularly during construction) would not exist, similarly the potential for biodiversity benefits to be achieved through such schemes would also be removed.
- 5.33 The effects of all of the options put forward in relation to the publication of flood investigation reports and the compilation of an asset register would be negligible.

### **SEA Objective 6: To maintain and/or enhance the historic significance of the built environment and cultural heritage assets.**

- 5.34 As with SEA objective 5 above, while most of the objectives and actions in the FRMS will not affect this objective, the physical works proposed could have a direct effect on the built environment and cultural heritage assets and their settings. Key issues include the fact that the Borough's one designated Ancient Monument (Boadicea's Mound) is located on Hampstead Heath, within reasonably close proximity of Hampstead Heath Ponds where a flood alleviation scheme is proposed, and Hampstead Heath is also recognised as an Archaeological Priority Area, meaning that it is known to have potential for archaeological remains.
- 5.35 However, the nature and significance of any such effects cannot be accurately assessed at this stage without more information about the detail of the schemes. As such, an overall uncertain effect on the relevant FRMS actions has been highlighted and it will be important for these issues

to be considered by the more detailed environmental assessment work that will take place as these schemes are progressed.

- 5.36 In addition, the designation of significant flood risk assets to ensure that they are maintained in their current form could have a potential positive effect on the built environment. As well as the indirect positive effect that would be achieved by reducing flood risk and therefore reducing the likelihood of damage to built and heritage assets during flood events, maintaining those assets (which could include walls and paved areas) will help to maintain the quality and appearance of the area.

#### *Summary of effects of alternatives*

- 5.37 The effects of the alternative action of not implementing any form of flood alleviation schemes within the Borough on this objective would be potentially mixed as while the potential for heritage assets and their settings to be negatively affected by flood alleviation schemes would not exist, such assets would remain at greater risk of damage from flooding events.
- 5.38 The effects of all of the options put forward in relation to the publication of flood investigation reports and the compilation of an asset register would be negligible.

#### **SEA Objective 7: To adapt development to the impacts of climate change, ensuring that new development does not contribute to increased risk of flooding for existing property and people elsewhere.**

- 5.39 In contrast to most of the other SEA objectives, the physical works proposed in the FRMS will not affect this objective; rather the non-physical actions such as preparing for the introduction of SuDS Approval Bodies will be more likely to have a positive effect. That action will help to ensure that SuDS are more frequently incorporated into new development, while the production of Flood Hazard and Flood Risk Maps will help to ensure that new development can be appropriately designed and sited so as not to increase the risk of flooding elsewhere. Refreshing the Strategic Flood Risk Assessment will also have a positive effect, ensuring that this important part of the evidence base for flood risk adaptation is as up to date as possible.
- 5.40 Positive effects may also result from FRMS objectives 1 (to understand and explain the level of risk affecting the residents and businesses of Camden) and 3 (to highlight the actions that all partners, businesses and residents in Camden should be taking to manage flood risk). These objectives will lead to people within Camden being better informed regarding flood risk and the appropriate response, so they will be more likely to take any actions possible to adapt their properties to deal with flood risk.

#### *Summary of effects of alternatives*

- 5.41 The effects of the alternative action of not implementing any form of flood alleviation schemes within the Borough on this objective would be negligible as the flood alleviation schemes themselves are not expected to have any direct effect; therefore neither would their absence. The only effects on this objective are associated with other actions in the FRMS for which no reasonable alternative options have been identified.
- 5.42 The effects of all of the options put forward in relation to the publication of flood investigation reports and the compilation of an asset register would be negligible.

### **Recommendations and Mitigation**

- 5.43 The SEA has not identified any negative effects (either minor or significant) for which mitigation measures are needed at this stage. Where uncertain effects and the broad potential for negative effects have been identified, mitigation should be provided by FRMS objective 4, which aims to take a sustainable and holistic approach to flood management, seeking to deliver wider environmental and social benefits.
- 5.44 However, as described above, the effects of the FRMS on many of the SEA objectives will depend largely on the detail of the flood alleviation schemes to be developed at Hampstead and Highgate, Gospel Oak, Goldhurst Terrace and Cannon Hill Road, as well as the exact nature of the physical works at Hampstead Heath Ponds and the Primrose Hill siphon. The flood alleviation schemes

proposed should be subject to more detailed environmental assessment as they are progressed, in order to ensure that the potential adverse effects of the schemes are identified and mitigated, and the potential environmental benefits of the schemes are maximised.

5.45 The key issues that further assessment should take into account are:

- The potential impacts of the flood alleviation schemes on biodiversity and the need to ensure that potential benefits (e.g. habitat creation) are maximised.
- The potential impacts of the flood alleviation schemes on nearby cultural heritage assets, in particularly unrecorded archaeological remains.



## 6 Monitoring

- 6.1 The SEA Directive requires that "*member states shall monitor the significant environmental effects of the implementation of plans or programmes... in order, inter alia, to identify at an early stage, unforeseen adverse effects, and be able to undertake appropriate remedial action*" (Article 10.1) and that the environmental report should provide information on "*a description of the measures envisaged concerning monitoring*" (Annex 1 (i)). Monitoring proposals should be designed to provide information that can be used to highlight specific issues and significant effects, and which could help decision-making.
- 6.2 As discussed in **Chapter 5**, many of the effects of the FRMS are uncertain at this stage and it is not possible to draw detailed conclusions regarding the likely effects of each measure on each SEA objective. Therefore, it is recommended that monitoring of environmental effects due to implementation of the FRMS is undertaken in relation to each of the SEA objectives, in order to ensure that all potential effects are monitored.
- 6.3 To achieve efficiencies and to ensure that the environmental effects of implementing any of the FRMS measures are monitored, SEA monitoring of the FRMS should be conducted as part of the overall approach to monitoring achievement of the FRMS measures. The FRMS explains in Section 4.3 that the Council is required to monitor the FRMS and that it will be reviewed in December 2015 and again in 2021 to coincide with the Greater London Flood Risk Management Plan.
- 6.4 In addition, it is recommended that monitoring of the environmental effects of the FRMS is also tied into the overall approach to monitoring the sustainability effects of other plans and strategies developed by the London Borough of Camden (in particular the Core Strategy), as some of the indicators proposed will be relevant to the FRMS. Annual Monitoring Reports are already produced for the Local Development Framework (including the Core Strategy), and monitoring proposals for the Core Strategy are presented in the adopted version. Therefore, it is recommended that monitoring of the potential environmental effects of the FRMS be combined with the annual monitoring process carried out for the LDF.
- 6.5 **Table 6.1** sets out a number of suggested indicators for monitoring the potential environmental effects of implementing the LFRMS, drawing on indicators that may also be used for the Core Strategy sustainability monitoring where relevant. Note that the indicators proposed are included as suggestions at this stage, as it is recognised that many datasets may not be available for monitoring some of the environmental effects of the FRMS, and that the indicators included may change as monitoring is undertaken for the Core Strategy.
- 6.6 In addition, the data used for monitoring in many cases will be provided by outside bodies. Information collected by other organisations (e.g. the Environment Agency) can also be used as a source of indicators.

**Table 6.1: Proposed indicators for monitoring the potential significant and uncertain environmental effects of Camden's FRMS**

SEA objectives for which potential significant positive or uncertain effects have been identified	Suggested indicators for monitoring effects of FRMS
1. To minimise the risk of flooding to residential properties and community and economic assets.	Number of residential properties affected by flooding in the Borough.  Number of community and economic assets affected by flooding in the Borough.
2. To maintain and enhance soil and water quality.	Number of surface water bodies achieving 'good' ecological status.

SEA objectives for which potential significant positive or uncertain effects have been identified	Suggested indicators for monitoring effects of FRMS
	Number of serious soil erosion incidents caused by flood events.
3. To protect and enhance human health and wellbeing.	<p>Number of deaths/injuries resulting from flooding in Camden.</p> <p>Number of healthcare facilities affected by flood incidents.</p>
4. To minimise the potential impact of flooding on existing and future critical infrastructure.	<p>Number of incidents of road or railway line closures due to flooding.</p> <p>Number of planning permissions for new critical infrastructure assets within significant and very significant flood risk areas (as defined by the Environment Agency).</p>
5. To protect and enhance biodiversity and open space.	<p>Gains and losses of open spaces and nature conservation sites (including in areas of deficiency).</p> <p>Change in areas of biodiversity importance.</p>
6. To maintain and/or enhance the historic significance of the built environment and cultural heritage assets.	Number of heritage assets in Camden included in English Heritage's 'Heritage at Risk Register'.
7. To adapt development to the impacts of climate change, ensuring that new development does not contribute to increased risk of flooding for existing property and people elsewhere.	<p>No of approved developments which incorporate sustainable urban drainage systems (SUDs).</p> <p>Number of planning applications approved subject to sustained Environment Agency objections on flood risk grounds.</p>

## 7 Conclusion and Next Steps

- 7.1 None of the measures in the Public Consultation Draft FRMS are considered likely to have significant negative effects on any of the SEA objectives. This is because of the nature of the FRMS, which has an underlying aim of environmental protection through flood risk management, meaning that the effects of the strategy are largely positive. Where uncertain effects have been identified with some potential for negative effects, mitigation should be provided by FRMS objective 4 which aims to take a sustainable and holistic approach to flood management, seeking to deliver wider environmental and social benefits.
- 7.2 Likely significant positive effects have been identified in relation to the following SEA objectives:
- 1: To minimise the risk of flooding to residential properties and community and economic assets.
  - 4: To minimise the potential impact of flooding on existing and future critical infrastructure.
- 7.3 Almost all of these significant positive effects are associated with the FRMS measures for reducing flood risk, and more specifically the physical works proposed (the flood alleviation schemes at Hampstead and Highgate, Gospel Oak Goldhurst Terrace and Cannon Hill, the construction work to improve Hampstead Heath ponds and the maintenance of the Primrose Hill Siphon). These actions are more likely to have significant positive effects because they involve direct physical actions to manage flood risk.

### Next Steps

- 7.4 The findings of this SEA Report will be taken into account by the London Borough of Camden as it finalises the FRMS, following the public consultation between February and March 2013. The SEA Report will then be updated if required, to reflect any consultation comments received on the SEA and any changes made to the measures in the final FRMS that will formally approved by the Council's cabinet and adopted as a Council strategy.

LUC  
December 2012





## **Appendix 1**

### Consultation Comments Received in Relation to the SEA Scoping Report

**Table 1: Comments from Consultees on the SEA Scoping Report for Camden's Flood Risk Management Strategy**

Note that the baseline information, review of relevant plans, policies and programmes and key sustainability issues (originally presented in the SEA Scoping Report) have been revised and updated in light of the comments received from the statutory consultees, as set out in the table below. The revised versions are presented in Appendices 2 and 3 of this SEA Report.

Consultee	Comment	Response
<b>Natural England</b>	<p>The Borough of Camden includes the following designated nature conservation site:</p> <ul style="list-style-type: none"> <li>• Hampstead Heath Woods Special Site of Scientific Interest.</li> </ul> <p>Further information on the SSSI and its special interest features can be found at <a href="http://www.natureonthemap.naturalengland.org.uk">www.natureonthemap.naturalengland.org.uk</a></p> <p>The SEA should include a full assessment of the direct and indirect effects of the FRMS on the features of special interest within Hampstead Heath Woods SSSI and should identify such mitigation measures as may be required in order to avoid, minimise or reduce any adverse significant effects. Protecting designated sites – any flood risk management options that will affect water levels or flows on designated sites should be assessed in line with the conservation objectives.</p>	<p>Noted. The presence of Hampstead Heath Woods Special Site of Scientific Interest within Camden was recognised in the baseline information in the Scoping Report. The assessment of the measures in the FRMS against SEA objective 5 (to protect and enhance biodiversity and open space) includes consideration of the potential for impacts on the SSSI. However, the Flood Risk Management Strategy is a high level document and it is not possible to conduct a detailed assessment of the likely impacts of the flood alleviation schemes proposed on the SSSI due to a lack of information about those schemes. It is recommended that a more detailed assessment of the effects of the schemes be undertaken as they are progressed, and that will include consideration of potential impacts on the SSSI.</p>
<b>Natural England</b>	<p>The SEA, should demonstrate that designated site impacts have been considered. Sites with hydrological connectivity should be considered – rather than sites within a certain radius of the Borough as this is not sufficient, hydrological links may be further away (e.g. via river, stream or groundwater). The SEA should consider whether there is a potential impact pathway with each SSSI and, if there is, consider the impact on conservation objectives and targets for favourable condition.</p>	<p>Noted. The high level nature of the FRMS means that a detailed assessment of specific measures on designated sites is not possible; however the SEA (under objective 5: to protect and enhance biodiversity and open space) has sought to identify where there are particular issues relating to designated sites that should be taken into account as the FRMS, and the specific flood alleviation schemes proposed within it, are progressed. It is recommended that a more detailed assessment of the effects of the schemes be undertaken as they are progressed.</p>
<b>Natural England</b>	<p>There are no European sites (e.g. designated Special Areas or Conservation, Special Protection Areas and/or Ramsar Sites) fall within the scope of the</p>	<p>Noted – this reflects the information provided in Section 4 of the SEA Scoping Report.</p>

Consultee	Comment	Response
	Conservation of Habitats and Species Regulations 2010.	
<b>Natural England</b>	No protected landscape within the area however local designations and local landscape character should be considered where appropriate.	Noted. Potential impacts on landscape are being considered as far as possible during the assessment of FRMS measures on SEA objective 5 (to protect and enhance biodiversity and open space).
<b>Natural England</b>	<p>Natural England encourages any proposal to incorporate measures to help encourage people to access the nature for quiet enjoyment. Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways are to be encouraged. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of wider green infrastructure. Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate.</p> <p>Flood storage and attenuation of surface water runoff in carefully selected locations will provide multiple benefits – including biodiversity, water quality improvements and green infrastructure. Solutions that incorporate the creation of green infrastructure and its multiple benefits should be considered.</p>	Noted. While this comment mainly relates to the content of the FRMS itself rather than the SEA, the SEA seeks to ensure that the potential impacts (both positive and negative) of the measures included in the FRMS will be fully considered, including in relation to biodiversity, water quality improvements and green infrastructure.
<b>Natural England</b>	The SEA will need to consider any impacts upon local wildlife and geological sites. Local Sites are identified by the Borough Ecologist, Local Record Centre or Wildlife Trust established for the purposes of identifying and selecting local sites; the SEA should therefore include an assessment of the likely impacts on the wildlife interests of the sites identified. The assessment should include proposals for mitigation of any impacts and if appropriate, compensation measures.	Noted. The assessment of all measures in the FRMS against SEA objective 5 (to protect and enhance biodiversity and open space) includes consideration of the potential for impacts on local wildlife and geological sites. As stated above, the high level nature of the FRMS makes a detailed assessment of the impacts of specific measures on particular sites impossible; however the SEA seeks to identify where there are particular issues associated with local wildlife and geological sites that should be considered as the FRMS and the specific flood alleviation schemes are progressed.
<b>Natural England</b>	Opportunities for habitat creation and enhancement should be maximised, particularly in relation to BAP habitat. This might include new/existing wetlands, or river restoration (restoring more natural flows, bankside	Noted. This comment relates mainly to the content of the FRMS itself, rather than to the SEA; therefore no action has been taken in relation to the content of the

Consultee	Comment	Response
	vegetation, and removing structures and impoundments where feasible).	SEA Scoping Report. The SEA seeks to identify where there will be opportunities for the FRMS to maximise benefits in relation to habitat creation and enhancement.
<b>Natural England</b>	Please note that the reference to plans and policies with regard to Biodiversity Strategy for England should now make reference to the Biodiversity 2020: A strategy for England's wildlife and ecosystem services rather than Working with the Grain of Nature: A Biodiversity Strategy for England (2011).	Noted. This amendment has been made and Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services is now included in the review of relevant plans, policies and programmes.
<b>Natural England</b>	The SEA should consider how it might contribute to local environmental initiatives and priorities such as the objectives of Local Nature Partnerships encouraged by the Government through last year's Environment White Paper: The Natural Choice. London has received funding from the Department of Environment, Food and Rural Affairs (Defra) to undertake capacity-building to explore the role and remit of a Local Nature Partnership for London.	Noted. This is considered to be outside the direct scope of the SEA; however the SEA process seeks to ensure that the potential positive effects of the measures in the FRMS are identified.
<b>Natural England</b>	<p>The SEA should include an assessment to identify, describe and evaluate the effects that are likely to result from the LFRMS in combination with other projects and activities that are being, have been or will be carried out. The following types of projects should be included in such an assessment (subject to available information):</p> <ul style="list-style-type: none"> <li>a. Existing completed projects</li> <li>b. Approved but uncompleted projects</li> <li>c. Ongoing activities</li> <li>d. Plans or projects for which an application has been made and which are under consideration by the consenting authorities</li> <li>e. Plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.</li> </ul>	Given the high-level nature of the FRMS it is not possible at this stage to conduct a meaningful assessment of the proposals within it in combination with other plans and projects. This will only be possible during more specific environmental assessment work as the individual schemes are progressed.

Consultee	Comment	Response
<b>Environment Agency</b>	Section 1.10 - I would like to propose including an objective that considers the downstream impacts of any proposals on adjoining boroughs. This might include taking action in Camden that contributes to downstream risk reduction or certainly does not make impacts outside the borough any worse. Having the central London partnership in place provides the mechanism for ensuring this objective is considered.	This comment relates to the objectives of the FRMS itself, rather than the SEA. The Flood Risk Management Strategy is a high level document and it is not possible to conduct a detailed assessment of the likely impacts of the flood alleviation schemes on adjoining boroughs due to a lack of information about those schemes. It is recommended that a more detailed assessment of the effects of the schemes be undertaken as they are progressed, and that will include consideration of potential downstream impacts.
<b>English Heritage</b>	Within the plans and programmes section there are a number of documents published by English Heritage which it may be prudent to include. These include Flooding and Historic Buildings. Also relevant is English Heritage's suite of documents Understanding Place (2010) which provides a methodology for identifying historic significance in an area, and therefore, the basis for judging impacts from flood risk. Similarly, the Guidance on the Setting of Heritage Assets (2011) provides a methodology for identifying the extent of an asset's setting, and the degree to which any flood risk would affect the historic significance of the asset through its setting. In relation to flood-resilient public realm design, our Streets for All guidance (available at <a href="http://www.helm.org.uk">www.helm.org.uk</a> ) provides advice on the use of materials and styles to enhance the settings of heritage assets and local distinctiveness.	Noted. These documents have been added to the updated review of relevant plans, policies and programmes.
<b>English Heritage</b>	We are also pleased to see that the Borough's heritage assets are identified within the baseline section of the report. Along with buildings and monuments, however, this should also include archaeological priority areas. These can be obtained from the Greater London Archaeological Advisory Service, accommodated within English Heritage's London office. It should also be noted that the 2012 Heritage at Risk Register has recently been published, which replaces the 2011 register identified in section 4.46.	Noted – information from the 2011 Heritage at Risk Register has been updated to reflect the latest 2012 register. Reference to the archaeological priority areas within Camden has been added to the updated Baseline Information in Appendix 3 of this report.
<b>English Heritage</b>	In section 4.50, second bullet, it would be more accurate to refer to heritage assets (and their settings) rather than merely listed buildings and conservation areas to cover all asset designations and in conformity with the terminology used in the NPPF.	Noted – this amendment has been made to the key environmental issues, as set out in Chapter 3 of this SEA report.

Consultee	Comment	Response
English Heritage	Regarding the SEA objective 6 we suggest that the term "historic significance" be included, also in reflection of the NPPF: "To maintain and/or enhance the <del>quality and character</del> historic significance of the built environment and cultural heritage assets."	Noted – this amendment has been made to SEA objective 6.
Thames Water	Paragraph 4.17 – We support the reference to the increase impact of paving-over areas of vegetation such as gardens and support the reference to talking this through the Camden LFRMS.	Noted.
Thames Water	Paragraph 4.18 – We support the reference to the risk of flooding from both water and sewer flooding in paragraph 4.18. Pluvial flooding is a concern for Thames Water across our catchment. Any measure which can be put into place to minimise the impact of this through the inclusion of policies in documents such as the Camden LFRMS is welcomed and encouraged.	Noted.
Thames Water	<p>Paragraph 4.20 – Whilst we do not object to the reference to past flooding events in Camden we would suggest the removal of the below text.</p> <p><i>'Camden has been subject to two major flood events in the past, one in 1975 and one more recently in 2002 when areas north of Regent's Canal, including Hampstead, were particularly badly affected. <del>Thames Water confirmed that flooding was caused by its sewer system reaching maximum capacity, resulting from heavy rainfall over a short period which meant that surface water could not be drained fast enough. Water was forced back onto the streets and into properties through manholes, gully gratings and toilets</del></i><sup>19</sup>. The extent of past flooding is illustrated on Figure 4.3.'</p> <p>It is considered that this sentence does not accurately reflect the full circumstances of the flooding event and could be misleading, and therefore should be deleted.</p>	Noted – this amendment has been made to the baseline information.
Thames Water	The document references the sources reviewed in order to inform the Camden LFRMS. We would suggest the inclusion of the National Policy Statement on Wastewater, as a key document.	Noted – this document has been added to the review of relevant plans, policies and programmes.

## **Appendix 2**

### Updated Review of Relevant Plans, Policies and Programmes

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
<b>International</b>		
The Floods Directive (2007) <i>Directive 2007/60/EC</i>	Requires Member States to assess if all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and co-ordinated measures to reduce this flood risk.	Directly relevant to the LFRMS as it provides the European policy framework for dealing with flood risk, which has been transposed into UK law through the Flood Risk Regulations 2009 (see below).
Water Framework Directive (2000) <i>Directive 2000/60/EC</i>	<p>The Water Framework Directive (WFD) provides a framework committing EU member states to the protection of inland surface waters, transitional waters, coastal waters and groundwater.</p> <p>The WFD is built on four main pillars:</p> <ol style="list-style-type: none"> <li>1. Co-ordinated action to achieve 'good status' for all EU waters, including surface and groundwater, by 2015.</li> <li>2. Setting up a water-management system based on natural river basin districts, crossing regional and national boundaries.</li> <li>3. Integrated water management, bringing different water management issues into one framework.</li> <li>4. Active involvement of interested parties and consultation of the public.</li> </ol> <p>It covers groundwater and all surface waters including rivers, lakes, coastal waters and 'transitional waters', such as estuaries that connect fresh and saltwater. It sets a less ambitious objective – 'good potential' – for artificial and 'heavily modified' bodies of water such as canals and reservoirs, or industrial ports.</p> <p>There is a requirement to co-ordinate the delivery of the WFD and the Floods Directive (see above), and the Environment Agency is responsible for this in England and Wales. The WFD and the Floods Directive both use river basin districts as</p>	To meet the requirements of the WFD and improve water quality and quantity within rivers, estuaries, coasts and aquifers, River Basin Management Plans have been prepared for all river basin districts by the Environment Agency, in consultation with relevant organisations and individuals. They present the main issues facing the water environment and the actions required to deal with them. The Thames River Basin Management Plan therefore comprises an important part of the evidence base for the LFRMS and the SEA.



Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
	the unit of management. There are 11 river basin districts that are partly or fully in England and Wales, and Camden lies within the Thames River Basin District.	
Groundwater Directive (2006) <i>Directive 2006/118/EC</i>	The Groundwater Directive establishes a regime which sets underground water quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater. In the UK, the Groundwater Directive is implemented through the Environmental Permitting (England and Wales) (Amendment) Regulations 2012.	Legislation that can affect water quality (including groundwater quality) is of relevance to the LFRMS because of the links that can exist between flood events and water pollution.
<b>National</b>		
National Planning Policy Framework (2012)	<p>The National Planning Policy Framework (NPPF) has replaced the suite of national planning policy statements and planning policy guidance notes, bringing them into one slimmed down document.</p> <p>The NPPF is based around the presumption in favour of sustainable development. Sustainable development, for the planning system, is defined as:</p> <ul style="list-style-type: none"> <li>• Planning for prosperity – using the planning system to build a strong, responsive and competitive economy.</li> <li>• Planning for people – using the planning system to promote strong, vibrant and healthy communities.</li> <li>• Planning for places – using the planning system to protect and enhance the natural, built and historic environment.</li> </ul> <p>The presumption in favour of sustainable development requires a positive planning system to help facilitate economic growth. The NPPF requires that significant weight is placed on securing economic growth.</p> <p>The NPPF contains several key changes from the suite of policy guidance notes and statements that it has replaced:</p>	The NPPF has replaced PPS25: Development and Flood Risk, and now provides the national policy framework in relation to planning in areas of high flood risk. The presumption in favour of sustainable development and the requirement for local planning authorities to plan positively to help facilitate economic growth could potentially lead to increased tension between the demand for land for development and the aim to ensure that inappropriate development does not occur in areas of high flood risk.

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
	<ul style="list-style-type: none"> <li>• The local development framework has been replaced with the local plan, which will contain both policies and site allocations.</li> <li>• The long term protection of employment land or floorspace is discouraged.</li> <li>• The sequential test for offices is removed.</li> <li>• Permission should be granted for housing where a 5 year supply (plus 20% contingency) is not in place – though this would be still subject to other policies and parts of the NPPF.</li> <li>• Local communities will be able to designate local green space.</li> </ul> <p>The NPPF introduces neighbourhood planning, neighbourhood development orders and community right to build schemes.</p>	
Technical Guidance to the National Planning Policy Framework (2012)	This document provides additional guidance on flood risk and minerals policy and expands on what is set out in the NPPF, stating that: <i>'inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.'</i>	This document provides detailed technical guidance in relation to national planning policy on flood risk; therefore is directly relevant to the LFRMS.
Flood and Water Management Act (2010)	<p>Addresses water management, including the management of flood risk. Requires that a lead local flood authority must develop, maintain, apply and monitor a strategy for local flood risk management in its area (the LFRMS).</p> <p>The strategy must specify:</p> <ul style="list-style-type: none"> <li>(a) the risk management authorities in the authority's area,</li> <li>(b) the flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area,</li> </ul>	The Act provides the legislative requirement for the production of LFRMSs by all Lead Local Flood Authorities, including the London Borough of Camden.

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
	<p>(c) the objectives for managing local flood risk (including any objectives included in the authority's flood risk management plan prepared in accordance with the Flood Risk Regulations 2009),</p> <p>(d) the measures proposed to achieve those objectives,</p> <p>(e) how and when the measures are expected to be implemented,</p> <p>(f) the costs and benefits of those measures, and how they are to be paid for,</p> <p>(g) the assessment of local flood risk for the purpose of the strategy,</p> <p>(h) how and when the strategy is to be reviewed, and</p> <p>(i) how the strategy contributes to the achievement of wider environmental objectives.</p>	
The Flood Risk Regulations (2009)	These Regulations implement the EU Floods Directive. They require the Environment Agency to assess, map and manage flood risk from main rivers, the sea and reservoirs and 'Lead Local Flood Authorities' such as the London Borough of Camden, to do the same for all other flood risks.	The Flood Risk regulations are directly relevant to the production of the LFRMS because it places duties on local authorities such as Camden to prepare flood risk assessments, flood risk maps and flood risk management plans that will set the context for and inform the LFRMS.
National Strategy for Flood and Coastal Erosion Risk Management (2011) <i>Defra and the Environment Agency</i>	<p>The strategy builds on existing approaches to flood and coastal risk management and promotes the use of a wide range of measures to manage risk.</p> <p>The strategy encourages more effective risk management by enabling people, communities, business, infrastructure operators and the public sector to work together to:</p> <ul style="list-style-type: none"> <li>• ensure a clear understanding of the risks of flooding and coastal erosion, nationally and locally, so that investment in risk management can be prioritised more effectively;</li> <li>• set out clear and consistent plans for risk management so</li> </ul>	The LFRMS should contribute to achieving the objectives of the National Strategy. The LFRMS will balance local priorities and apply the principles of the strategy to suit Camden.

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
	<p>that communities and businesses can make informed decisions about the management of the remaining risk;</p> <ul style="list-style-type: none"> <li>• manage flood and coastal erosion risks in an appropriate way, taking account of the needs of communities and the environment;</li> <li>• ensure that emergency plans and responses to flood incidents are effective and that communities are able to respond effectively to flood forecasts, warnings and advice;</li> <li>• help communities to recover more quickly and effectively after incidents.</li> </ul>	
<p>Future Water, The Government's Water Strategy for England (2008) <i>Defra</i></p>	<p>Future Water sets out how the Government wants the water sector to look by 2030, and some of the steps that will need to be taken to get there. Themes addressed include water supply, water demand, water quality, surface drainage, flooding and climate change. The vision for 2030 in relation to flooding is:</p> <ul style="list-style-type: none"> <li>• Flood and coastal erosion risk management which contributes to sustainable development, combining the delivery of social and environmental benefits with the protection of economic assets.</li> <li>• An understanding of the future risks of river and coastal flooding fully embedded into the spatial planning system, including planning for new settlements and other new developments.</li> <li>• Consistent and holistic management of urban flood risk, with strategic planning, partnerships of responsible bodies and clear understanding of various flood risk responsibilities.</li> <li>• Public understanding of the risks we face and the actions we can take to help manage flood and coastal erosion risk.</li> <li>• Community resilience to flooding from improved</li> </ul>	<p>Flood risk management is one of the themes addressed by the Strategy, and the LFRMS will contribute to the delivery of the 2030 vision by implementing flood risk management within Camden.</p>

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
	development planning, emergency planning and response, and resilience of homes, buildings, services and utilities.	
The Water Act (2003)	Supersedes the Water Resources Act 1991, which controls the abstraction and impounding of water. The 2003 Act aims to improve protection of the environment through providing a simplified process of licensing for abstraction and impounding of water. All abstractors now have responsibility not to let their abstraction cause damage to others, and any damaging licences can be amended or revoked without compensation after 2012. Unused licences may be revoked without compensation. Water companies and the public sector have a new duty to promote water conservation.	As abstraction and impounding of water has a direct influence on water levels, it is closely linked to the issue of flood risk management.
Guidance for risk management authorities on sustainable development in relation to their flood and coastal erosion risk management functions (2011) <i>Defra</i>	Section 27 of the Flood and Water Management Act 2010 requires lead local flood authorities to aim to make a contribution towards the achievement of sustainable development when exercising their flood and coastal erosion risk management functions. It also requires the Secretary of State to issue guidance on how those authorities are to discharge this duty and explain the meaning of sustainable development in this context – this document does that.	The guidance applies to Lead Local Flood Authorities. It provides background context about the application of sustainable development principles when discharging their duties to manage flood risk (as the London Borough of Camden is doing through the production of the LFRMS).
Water for People and the Environment; Water Resources Strategy for England and Wales (2009) <i>Environment Agency</i>	Sets out the approach to water resources management throughout England and Wales to 2050 and beyond to ensure that there will be enough water for people and the environment.	Flood risk management measures are closely linked to wider water resources management issues.
Directing the Flow: Priorities for Future Water Policy (2002) <i>Defra</i>	Sets out the priorities for government policy on water in England over the longer term. Its scope is primarily our use of freshwater and the inland water environment but it also covers estuaries and many aspects of our coastal water.	Flood risk management measures are closely linked to wider water resources management issues.
Sustainable Drainage Systems (SUDS) (2002) <i>Environment Agency</i>	Describes sustainable drainage techniques for reducing the impact of surface water discharge. Techniques described in the document are:	Sustainable Urban Drainage Systems (SuDS) as identified in the policy can have a positive effect on flooding in urban areas such as Camden. The use of

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
	<p><u>Source control and prevention techniques:</u></p> <ul style="list-style-type: none"> <li>• Green roofs</li> <li>• Permeable Pavements</li> <li>• Rainwater Harvesting</li> <li>• Infiltration Trenches</li> <li>• Infiltration Basins</li> </ul> <p><u>Permeable Conveyance Systems:</u></p> <ul style="list-style-type: none"> <li>• Filter (or French) Drains</li> <li>• Swales</li> </ul> <p><u>Passive Treatment Systems:</u></p> <ul style="list-style-type: none"> <li>• Filter Strips</li> <li>• Detention Basins</li> <li>• Retention Ponds</li> <li>• Wetlands</li> </ul>	<p>SuDS is likely to be addressed through the measures in Camden's LFRMS.</p>
<p>Underground, Under Threat: The state of groundwater in England and Wales (2010) <i>Environment Agency</i></p>	<p>Describes the importance of groundwater quality and the current state of groundwater in England and Wales. Two main threats to groundwater resources are identified: demand (making sure groundwater levels do not fluctuate too much), and pollution (groundwater is vulnerable to contamination and difficult to clean if contamination occurs).</p> <p>An example of the importance of managing demand is given in London, where groundwater levels had fallen to 90 metres below the surface by the 1960s. Since then the rate of abstraction has declined and groundwater levels have recovered, and threatened to flood some parts of the underground infrastructure. Increased abstraction will keep the water table below foundations and tunnels.</p>	<p>Flooding can affect groundwater quality; therefore the management of flood risk can be seen as beneficial in terms of achieving higher groundwater quality.</p>

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
Working with the Grain of Nature: A Biodiversity Strategy for England (2011) <i>Defra</i>	<p>This strategy sets out a series of actions that will be undertaken by the Government and partners to make biodiversity a fundamental consideration in public policy, including:</p> <ul style="list-style-type: none"> <li>• Adopting a whole catchment approach to land use and water management, focusing efforts where environmental risks are greatest and actions are most likely to result in significant benefits.</li> <li>• Recognising that there is a need in urban areas to make biodiversity a part of the development process.</li> <li>• Funding of biodiversity should aim to improve techniques for the valuation of biodiversity in the development process and identify gaps in funding regimes.</li> <li>• Encouraging businesses to be concerned with issues related to biodiversity.</li> </ul>	The potential impacts of the LFRMS and any specific measures included within it on biodiversity will need to be taken into account through the SEA and possibly through a separate HRA, depending on the nature of the measures coming forward in the LFRMS and the proximity of the Borough to European designated sites (Special Areas of Conservation, Special Protection Areas and Ramsar sites).
Environment Act (1995)	Established The Environment Agency as a body to protect and enhance the environment. The Agency exercises a general supervision over all matters relating to flood defence.	The Environment Agency exercises a general supervision over all matters relating to flood defence in England and Wales.
Conservation of Habitats and Species Regulations (2010)	The Conservation of Habitats and Species Regulations 2010 consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law.	The Regulations require HRA to be carried out in relation to certain plans, which may include Camden's LFRMS depending on the measures to be included within it and the presence of European sites in or within close proximity of the Borough.
Safeguarding our Soils, A Strategy for England (2009) <i>Defra</i>	Sets out the Government's strategy for improving soil quality in England and safeguard the ability of soils to provide essential services.	Flooding can have implications for soil quality, for example by causing soil erosion, and soil pollution.
Contaminated Land (England)	Sets out provisions relating to the identification and	Flooding in areas of contaminated land can have a

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
Regulations (2006)	remediation of contaminated land under Part 2A of the Environmental Protection Act 1990.	particular effect on water quality.
Adapting to Climate Change in England. A Framework for Action (2008) <i>Defra</i>	Sets out what the Government has already done and what it will be doing to help the country adapt to anticipated climate changes. The framework encourages action to be taken at the appropriate level, and states that many of the actions that need to be taken early but have a long-term impact are delivered at the local and regional levels.	The LFRMS will contribute to the local level actions intended to help areas such as Camden adapt to climate change by addressing local flood risk management.
Climate Change UK Programme: Tomorrow's Climate Today's Challenge (2006) <i>Defra</i>	<p>The Climate Change Programme sets out the Government's commitments at both the international and national levels to meet the challenge of climate change. It also sets out the approach to strengthening the role that individuals can play.</p> <p>It proposes revised guidance on implementing flood and coastal erosion risk management measures, to ensure that adaptability to climate change becomes an integral part of all flood and coastal erosion management decisions.</p>	Government action to mitigate the causes of climate change will impact on the level of future flood risk that is likely to affect all areas, including Camden, and which the LFRMS is required to address.
Securing the Future: Delivering the Sustainable Development Strategy (2005) <i>Defra</i>	<p>Establishes a broad set of actions and priorities to support the achievement of Sustainable Development</p> <p>Establishes five statements of principle:</p> <ul style="list-style-type: none"> <li>• Developing within environmental limits</li> <li>• Promoting a strong healthy and just society</li> <li>• Achieve sustainable economic growth</li> <li>• Promote good governance</li> <li>• Use sound science responsibly</li> </ul> <p>Identifies four priorities for emerging policy:</p> <ul style="list-style-type: none"> <li>• Sustainable consumption and production</li> <li>• Climate change</li> </ul>	Much of the content is aspirational rather than comprising specific sets of proposals; however the LFRMS will play a role in contributing to sustainable development within Camden so should take account of the broader principles of sustainable development.



Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
	<ul style="list-style-type: none"> <li>• Natural resources and protection</li> <li>• Sustainable communities</li> </ul>	
Natural Environment White Paper - The Natural Choice: Securing the Value of Nature (2012) <i>Defra</i>	This document outlines the Government's vision for the natural environment over the next 50 years, and sets out practical actions to deliver that ambition. It also takes forward recommendations contained in ' <i>Making Space for Nature</i> ', an independent review of England's wildlife sites and ecological network. The White Paper identifies the essential 'regulating' services provided by the natural environment, including flood hazard reduction, and describes how the natural environment can be managed to maximise the delivery of that service.	As biodiversity, flora and fauna are included within the SEA topics, the SEA of the LFRMS will be required to consider the likely effects of measures proposed in the LFRMS on the natural environment. In addition, the White Paper could help to inform the development of appropriate measures to be included in the LFRMS.
The Historic Environment: A Force for Our Future (2001) <i>Department for Culture, Media and Sport</i>	This statement was published to conclude a long running review of policy in the area of England's historic environment. Looks at a range of policy instruments that can be used to achieve wider objectives for conserving and enhancing the historic environment, including funding, legislation, policy guidance, delivery mechanisms, reprioritisation and partnership working.	As cultural heritage is one of the SEA topics, the SEA of the LFRMS will be required to consider the likely effects of measures proposed in the LFRMS on the historic environment.
Water for Life (2011) <i>Defra</i>	<p>This White Paper is the government's response to pressures on water resources. Key commitments within the Paper include:</p> <ul style="list-style-type: none"> <li>• Reform of the abstraction regime.</li> <li>• Improving water quality.</li> <li>• Consideration of national infrastructure projects.</li> <li>• Taking a strategic approach to wastewater and drainage.</li> <li>• Ensuring an affordable water supply.</li> <li>• Using water wisely.</li> <li>• Producing a new strategic policy paper to help deliver the</li> </ul>	The White Paper sets out actions for the water environment that may link with measures included in the LFRMS, such as supporting catchment pilots throughout the country alongside the Environment Agency.

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
	White Paper's priorities.	
National Policy Statement for Waste Water (2012) <i>Defra</i>	<p>This National Policy Statement sets out government policy for the provision of major waste water infrastructure. The Statement sets out:</p> <ul style="list-style-type: none"> <li>• Government policy on need for waste water infrastructure.</li> <li>• Factors for examination and determination of major waste water applications.</li> <li>• Generic impacts of major waste water infrastructure.</li> </ul>	Major waste water infrastructure projects can have a significant effect (positive or negative) on flood risk and the quality of the fluvial environment which may link with measures included in the LFRMS.
The Setting of Heritage Assets (Revised 2012) <i>English Heritage</i>	This guidance provides advice on the setting of heritage assets to people involved with managing strategies and development that may affect the setting of heritage assets.	As cultural heritage is one of the SEA topics, the SEA of the LFRMS will be required to take into account the setting of heritage assets in the baseline environmental study where appropriate.
Understanding Place (suite of documents (Revised 2012) <i>English Heritage</i>	<p>This suite of documents provides a methodology for identifying historic significance in an area.</p> <p>Historic characterisation helps to:</p> <ul style="list-style-type: none"> <li>• <i>'Establish sensitivities of a place and its capacity for development of change.</i></li> <li>• <i>Define opportunities for new development and inform its design.</i></li> <li>• <i>Establish the heritage values and significance of a place for different stakeholders and co-ordinate with community neighbourhood aspirations.</i></li> <li>• <i>Identify areas where greater protection of the historic environment is required.</i></li> <li>• <i>Manage and target resources'.</i></li> </ul>	As cultural heritage is one of the SEA topics, the SEA of the LFRMS will be required to consider the likely effects of measures proposed in the LFRMS on the historic environment.
Flooding and Historic Buildings (2010) <i>English Heritage</i>	<i>'This is an advisory note which provides guidance for home-owners, owners of small businesses and others involved with</i>	This guidance note sets out advice on how people and businesses can minimise the risk of flooding

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
	<p><i>managing historic buildings on ways to establish flood risk and prepare for possible flooding by installing protection measures’.</i></p> <p>This is also includes actions to be taken during and after a flood to assist in minimising damage and risks.</p>	<p>when flooding is imminent. This could have a direct influence on any adaptation measures specified in the LFRMS.</p>
<p>Biodiversity 2020: A strategy for England’s wildlife and ecosystem services (2012) <i>Defra</i></p>	<p>This biodiversity strategy builds on the Natural Environment White Paper and illustrates how England will implement the international and EU commitments the government has made.</p> <p>The mission for the strategy is:</p> <p><i>‘to halt overall biodiversity loss, support healthy and well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people’.</i></p> <p>To achieve this, the government wants to improve four priority areas which included:</p> <ul style="list-style-type: none"> <li>• Providing a more integrated large-scale approach to conservation on land and at sea.</li> <li>• Putting people at the heart of biodiversity.</li> <li>• Reducing environmental pressures.</li> <li>• Improving our knowledge.</li> </ul>	<p>Biodiversity 2020 sets out a strategy for water managements up until 2020 which may link with measures included in the LFRMS, such as promoting innovative practices to reduce the risk of flooding to people and property.</p>
<b>Sub-National</b>		
<p>London Climate Change Adaptation Strategy (2010) <i>Mayor of London</i></p>	<p>This strategy takes a risk-based approach to understanding climate impacts, and how these are expected to change through the century. The strategy provides a framework for identifying and prioritising the key climate risks and then identifying who is best placed to work individually or collaboratively to deliver actions to reduce or manage these risks.</p>	<p>Climate change is of particular significance to the LFRMS as the likely increase in precipitation and more frequent extreme weather events will make flood risk management even more important. The actions set out in this document are likely to link closely with the measures included in the LFRMS.</p>

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
London Water Strategy (2011) <i>Mayor of London</i>	<p>The strategy is intended to complement the plans and strategies of other organisations, including the national water strategy, by presenting a London-specific view of water management.</p> <p>Its goal is improved water management – both in terms of the water people want (such a drinking water) and the water people don't want (such as sewage and floodwater in the wrong place).</p>	This document outlines the wider context for managing flood risk in Camden, while the LFRMS will contribute to the higher level goals.
Thames River Basin Management Plan (2009) <i>Environment Agency</i>	<p>The plan aims to manage the pressures facing the water environment within the Thames river basin district. The key issues addressed in the management plan are:</p> <ul style="list-style-type: none"> <li>• point source pollution from water industry sewage works;</li> <li>• physical modification of water bodies;</li> <li>• diffuse pollution from agricultural activities;</li> <li>• abstraction; and</li> <li>• diffuse pollution from urban sources.</li> </ul> <p>The plan sets out actions for different sectors and organisations, including those for local government and urban and transport.</p> <p>For local government, the plan seeks to produce guidance for local planning authorities, to ensure that spatial planning documents take account of the objectives of the Thames River Basin Management Plan and to reduce the physical impacts of urban development.</p>	The River Basin Management Plan provides important evidence and context for the production of the LFRMS and the associated SEA.
North London Strategic Flood Risk Assessment (2008) <i>Mouchel on behalf of the North London Boroughs of Barnet, Camden, Enfield, Hackney, Haringey,</i>	<p>The Primary aims of the Strategic Flood Risk Assessment (SFRA) are to:</p> <ul style="list-style-type: none"> <li>• Identify the areas within North London that are at risk of flooding for all Flood Zones identified in table D1 in PPS 25, and within Flood Zone 3, the variations in the actual flood</li> </ul>	The SFRA provides important evidence and context for the production of the LFRMS and the associated SEA.

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
<i>Islington and Waltham Forest</i>	<p>risk including the effect of any formal or informal flood defences.</p> <ul style="list-style-type: none"> <li>• Identify the risk of flooding due to surface water either in the form of flash flooding due to surface water run-off, rising groundwater, inadequate drain/sewer capacity or inadequate drain/sewer maintenance.</li> <li>• Identify the likely effects of climate change on flood risk.</li> <li>• Identify catchment areas and the potential for development to affect flood risk in areas beyond the individual Borough boundaries.</li> <li>• Provide the basis for allocating sites in the Local Development Framework (LDF) including, if necessary, applying the sequential test approach to site allocation within the indicative flood plain.</li> <li>• Provide a clear rationale for assessing the merits of potential development allocations based on a sequential flood risk assessment, taking into account the flood risk vulnerability of proposed uses (table D2, PPS25).</li> <li>• Recommend policy options for dealing with the range of flood risks and provide guidance for developers.</li> <li>• Recommend appropriate monitoring and review methods.</li> </ul>	
North London Joint Waste Strategy (North London Waste Authority, 2009)	Provides the framework for progress towards reducing, reusing and recovering a greater proportion of the municipal waste which is generated in the North London Waste Authority area and reducing the amount which is sent for disposal to landfill.	Flooding in areas where there is landfill or waste recovery could affect water quality. The location of waste management facilities in relation to areas of high flood risk, and the incorporation of measures such as SuDS, can affect the extent to which they may contribute to or help mitigate the risk from flooding.
Thames Catchment Flood Management Plan Summary Report	The Catchment Flood Management Plan seeks to understand the scale and extent of flooding and how policies can be set for managing flood risk.	This document outlines the wider context for managing flood risk in the London catchments of the Thames, and sets out possible areas for action that

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
(2009) <i>Environment Agency</i>	<p>In the London catchments, flood risk from rivers is currently managed by conveying water in concrete channels through urban areas. This approach relies on a lot of river structures, culverts and trash screens (which prevent blockages inside culverts). These will become increasingly ineffective against storms which are expected to be more frequent and intense in the future.</p> <p>The plan proposes to manage future flood risk through adaptation of the urban environment. There are some major opportunities to reduce flood risk through the appropriate location, layout and design of redevelopment. This will make properties more resilient or resistant to flood water, therefore reducing the consequences of flooding.</p>	could be used in Camden.
Mayor's Regional Flood Risk Appraisal (2009) <i>Mayor of London</i>	The Regional Flood Risk Appraisal, combined with the policies in the London Plan (see below) and a range of actions being undertaken by various organisations, aims to ensure that overall flood risk (probability x consequences) does not increase and that by addressing existing problems, overall risk is reduced.	The LFRMS and the Regional Flood Risk Appraisal both seek to reduce overall flood risk. Measures included in Camden's LFRMS will need to take account of the wider regional flood risk and the actions proposed to address it.
The London Plan (2011) <i>Greater London Authority</i>	<p>This is the overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20–25 years.</p> <p>The six objectives of the plan are to ensure that London is:</p> <ol style="list-style-type: none"> <li>1. A city that meets the challenges of economic and population growth.</li> <li>2. An internationally competitive and successful city.</li> <li>3. A city of diverse, strong, secure and accessible neighbourhoods.</li> <li>4. A city that delights the senses.</li> </ol>	Reducing flood risk through the LFRMS will help to achieve the London Plan's objectives, especially those that relate to improving the environment and creating a safe place for everyone.

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
	<p>5. A city that becomes a world leader in improving the environment.</p> <p>6. A city where it is easy, safe and convenient for everyone to access jobs, opportunities and facilities.</p>	
State of the Environment for London (2011) <i>Environment Agency</i>	The report looks at how the environment has changed over the last decade. Flood risk is one of eight themes used in the report to illustrate the changing environment, and it is shown that fewer Flood warnings were issued in 2010 than in 2000.	This document provides wider contextual information and evidence for the management of local flood risk in Camden and contributes to the baseline information against which the effects of the LFRMS will be assessed.
Streets for All: A guide to the management of London's streets (2000) <i>English Heritage</i>	<p>This is a guide to assist in the management of London's streets to make the streets of the London more attractive, safe and enjoyable spaces for people.</p> <p>To achieve this, it provides advice on the use of materials and styles to enhance the settings of heritage assets and local distinctiveness.</p>	As cultural heritage is one of the SEA topics, the SEA of the LFRMS will be required to consider the likely effects of measures proposed in the LFRMS on the historic environment.
<b>Camden</b>		
London Borough of Camden Preliminary Flood Risk Assessment (2011) <i>Halcrow on behalf of Camden</i>	The Preliminary Flood Risk Assessment (PFRA) is a high level screening exercise that compiles information on significant local flood risk (any flood risk that does not originate from main rivers, the sea or large reservoirs) from past and future floods, based on readily available and derivable information. The PFRA also includes the identification of flood risk areas for use in Flood Risk Maps and Flood Risk Management Plans, which are requirements of the 2009 Flood Risk Regulations alongside the PFRA.	The PFRA is a key document of relevance to the LFRMS, setting out important evidence relating to current levels of flood risk in Camden and the how it can be managed.
Groundwater Quality Review: London Basin (2006) <i>Environment Agency</i>	<p>The report has been produced to provide an overview of groundwater quality in the confined Chalk of the London Basin.</p> <p>The key objectives for groundwater quality monitoring are compliance with UK and European legislation, provision of</p>	Flooding can have an impact on groundwater quality; therefore the management of flood risk can be seen as beneficial in terms of achieving higher groundwater quality.

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
	data to characterise existing quality and trends, and identification of links between groundwater, surface water and ecosystems.	
Camden Local Development Framework: Core Strategy (2010) <i>London Borough of Camden</i>	<p>The Core Strategy sets out the key elements of the vision for the Borough and is a central part of the LDF. Policy CS13: Tackling Climate Change through Promoting Higher Environmental Standards aims to make Camden a water efficient borough and minimise the potential for surface water flooding by:</p> <ul style="list-style-type: none"> <li>• Protecting existing drinking water and foul water infrastructure, including Barrow Hill Reservoir, Hampstead Heath Reservoir, Highgate Reservoir and Kidderpore Reservoir.</li> <li>• Making sure development incorporates efficient water and foul water infrastructure.</li> <li>• Requiring development to avoid harm to the water environment, water quality or drainage systems and prevents or mitigates local surface water and downstream flooding, especially in areas up-hill from, and in, areas known to be at risk from surface water flooding such as South and West Hampstead, Gospel Oak and King's Cross.</li> </ul>	The LDF Core Strategy is an important part of the local planning policy framework within which the LFRMS will be implemented.
Green Action for Change: Camden's environmental sustainability plan (2011-2020) <i>London Borough of Camden</i>	<p>Focuses on:</p> <ul style="list-style-type: none"> <li>• Reducing Camden's carbon emissions.</li> <li>• Adapting to a changing climate.</li> <li>• Reducing, reusing and recycling waste.</li> <li>• Enhancing biodiversity, improving green spaces and involvement in gardening and food growing.</li> </ul> <p>What the plan is trying to achieve in relation to flooding:</p> <ul style="list-style-type: none"> <li>• Less risk of flooding.</li> </ul>	The LFRMS will help to achieve the objectives set out in this plan in relation to flood risk and climate change adaptation in Camden.



Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
	<ul style="list-style-type: none"> <li>• More buildings designed and retrofitted to cope with the changing climate.</li> <li>• Fewer water shortages.</li> <li>• Better 'cool zones' such as parks, green spaces and the public realm.</li> <li>• More residents, organisations and communities informed of the role they can play in helping us adapt to a changing climate.</li> </ul>	
The Camden Plan (2012-17) <i>London Borough of Camden</i>	<p>The plan sets out clear ambitions and outcomes to be achieved by 2017, with some proposed immediate next steps and longer-term plans on how the ambitions of the plan will be delivered. The five objectives of the plan are:</p> <ul style="list-style-type: none"> <li>• Providing democratic and strategic leadership fit for changing times.</li> <li>• Developing new solutions with partners to reduce inequality.</li> <li>• Creating conditions for and harnessing the benefits of economic growth.</li> <li>• Investing in our communities to ensure sustainable neighbourhoods.</li> <li>• Delivering value for money services by getting it 'right first time'.</li> </ul>	The LFRMS will contribute to achieving the objectives of the plan, with reducing flood risk being especially important for achieving sustainable neighbourhoods.
Camden Community Strategy – (2007-2012) <i>London Borough of Camden</i>	<p>The community strategy sets out 96 clear targets intended to help Camden achieve their overall sustainable vision for the Borough.</p> <p>None of the objectives relate specifically to flood risk, although the overall focus of the strategy is on achieving sustainable development in general.</p>	The LFRMS will contribute to delivering sustainable development in Camden by reducing local flood risk.
Camden Biodiversity Action Plan	Identifies priority habitats and species for local action. The	Measures to be included in the LFRMS could

Plan, project or programme	Brief overview and key objectives	Implications for the Camden LFRMS and the SEA (including any potential conflicts)
(2011)	<p>habitats and species are grouped (e.g. Waterways and Wetlands).</p> <p>The Action Plan sets out a vision for Waterways and Wetlands, which is to:</p> <ul style="list-style-type: none"> <li>• To ensure protection, enhancement and optimal management of waterways and wetlands for the benefit of biodiversity and contribute to Camden's sustainability and quality of life.</li> <li>• To create new waterways and wetland habitat in the Borough.</li> <li>• To increase and promote our knowledge and understanding of the ecological value of waterways and wetland habitats and encourage their sustainable use.</li> </ul> <p>The Camden Biodiversity Partnership is currently developing its second action plan.</p>	<p>potentially affect biodiversity, either positively or negatively, for example by altering water levels and therefore affecting habitats.</p>
Public Health Observatory – Camden Health Profile (2011) <i>Department of Health</i>	<p>The profile gives a picture of health in Camden. It is designed to help local government and health services understand their community's needs, so that they can work to improve people's health and reduce health inequalities.</p>	<p>Flood events have the potential to adversely affect health in the Borough. The Camden Health Profile provides useful baseline information relating to current health characteristics of the Borough and so will help inform the assessment of likely impacts of flood risk reduction measures on health.</p>
Draft Surface Water Management Plan (2012) <i>London Borough of Camden</i>	<p>The Surface Water Management Plan (SWMP) outlines the preferred surface water management strategy for Camden, addressing flooding from sewers, drains, and groundwater, and runoff that occurs as a result of heavy rainfall.</p> <p>The SWMP assesses the risk of flooding from surface and ground water and then considers options for alleviating flood risk. Options include SuDS, improved infrastructure, and improved emergency planning and weather warnings.</p>	<p>The SWMP will provide important evidence to support the LFRMS.</p>

## **Appendix 3**

### Updated Baseline Information for Camden

## Baseline Information

The SEA Directive requires the consideration of likely significant effects on the environment, including on biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between these factors. This list of issues is often referred to as the 'SEA topics'.

The sections below set out the baseline information and any local trends that can be identified from a range of data sources in relation to each of the above topics. At the end of each section, the ways in which Camden's LFRMS could potentially affect each topic are summarised. Note that some topics (such as population and human health and flora and fauna) have been grouped together as there is a significant amount of crossover between these topics in terms of the relevant data and the key environmental issues. In addition, one of the SEA topics, 'air', has been scoped out as it is not considered to be relevant to the SEA of the LFRMS - measures of the type that will be included in the LFRMS in order to manage local flood risk are not expected to have any effect on local air quality.

### Population and Human Health

#### Population

The resident population of Camden in the 2011 Census was 220,300, of which 51% was female and 49% male. The population of Camden therefore represents 2.7% of the residential population of Greater London (8,173,900), of whom 50.7% are female and 49.3 are male<sup>6</sup>. Between 2011 and 2026 it is predicted that Camden's population will increase by 14,800 (7%), mostly due to natural increase (more births than deaths)<sup>7</sup>. This increase in population will lead to increased demand for housing and services within the Borough.

The proportion of Camden's population that is of working age (15-64) is 73.9%, which is higher than Greater London (70.2%) and significantly higher than England & Wales (65.9%). Camden's relatively young population is further illustrated by the fact that the 20-39 age group accounts for 41.1% of the Borough's population, in comparison to 35.8% in Greater London and 26.9% across England & Wales. In 2011, 10.8% of the population in Camden was of retirement age (65+) compared with 11.1% of Greater London and 16.4% of the UK as a whole.

Camden has a population density of 101 persons per hectare, which is the eighth highest of the 33 Greater London Boroughs<sup>8</sup>.

#### Health

Health data from the 2001 Census for Camden is broadly in line with the regional and national averages. The percentage of people describing their health as 'good' was 71.3% compared to 70.8% in Greater London and 68.6% across England and Wales<sup>9</sup>.

There is a larger proportion of working age people (16-59/64) with limiting long-term illnesses in Camden in comparison to Greater London and the country as a whole. A total of 11,150 working-age people in Camden receive incapacity/Employment and Support Allowance (ESA) and 12,215 receive disabled benefits<sup>10</sup>.

Camden's growing population and high population density are indicative of the pressure for development that exists within the Borough, in particular for housing. The relatively young population means that demand for affordable housing in particular is high. As well as demand for development, which can affect flood risk as a result of changes to surface permeability, population increases could place increasing strain on the sewage system which could exacerbate the risk of surface water flooding in the future. The LFRMS will affect the health and wellbeing of the local population by influencing the extent that people in Camden perceive themselves to be at risk of flooding, which can have a detrimental effect on mental health and wellbeing, particularly those who may find it difficult to react quickly to flood risk events, such as the elderly, the infirm and the less mobile. In addition, the LFRMS and the measures included within it

<sup>6</sup> 2011 Census, ONS 2011

<sup>7</sup> GLA 2010 Round 'Camden Development, mid-2010.

<sup>8</sup> 2011 Census, ONS 2011

<sup>9</sup> 2001 Census, ONS 2001

<sup>10</sup> DWP, May 2011

will affect the extent to which health-related services and facilities (such as health centres and open space used for recreation) are at risk from flooding.

### **Biodiversity (including flora and fauna)**

#### *Environment, Biodiversity and Natural Resource*

As of 2011, a total of 428.8ha of land in Camden was classed as having biodiversity importance. This includes a total of 37 sites comprising the Hampstead Heath Woods Site of Special Scientific Interest (SSSI) (16.2ha), five sites of Metropolitan Importance (322.8ha), seven sites of Borough Importance Grade 1 (39.6ha), nine sites of Borough Importance Grade 2 (31.8ha) and 15 sites of Local Importance (18.4)<sup>11</sup>.

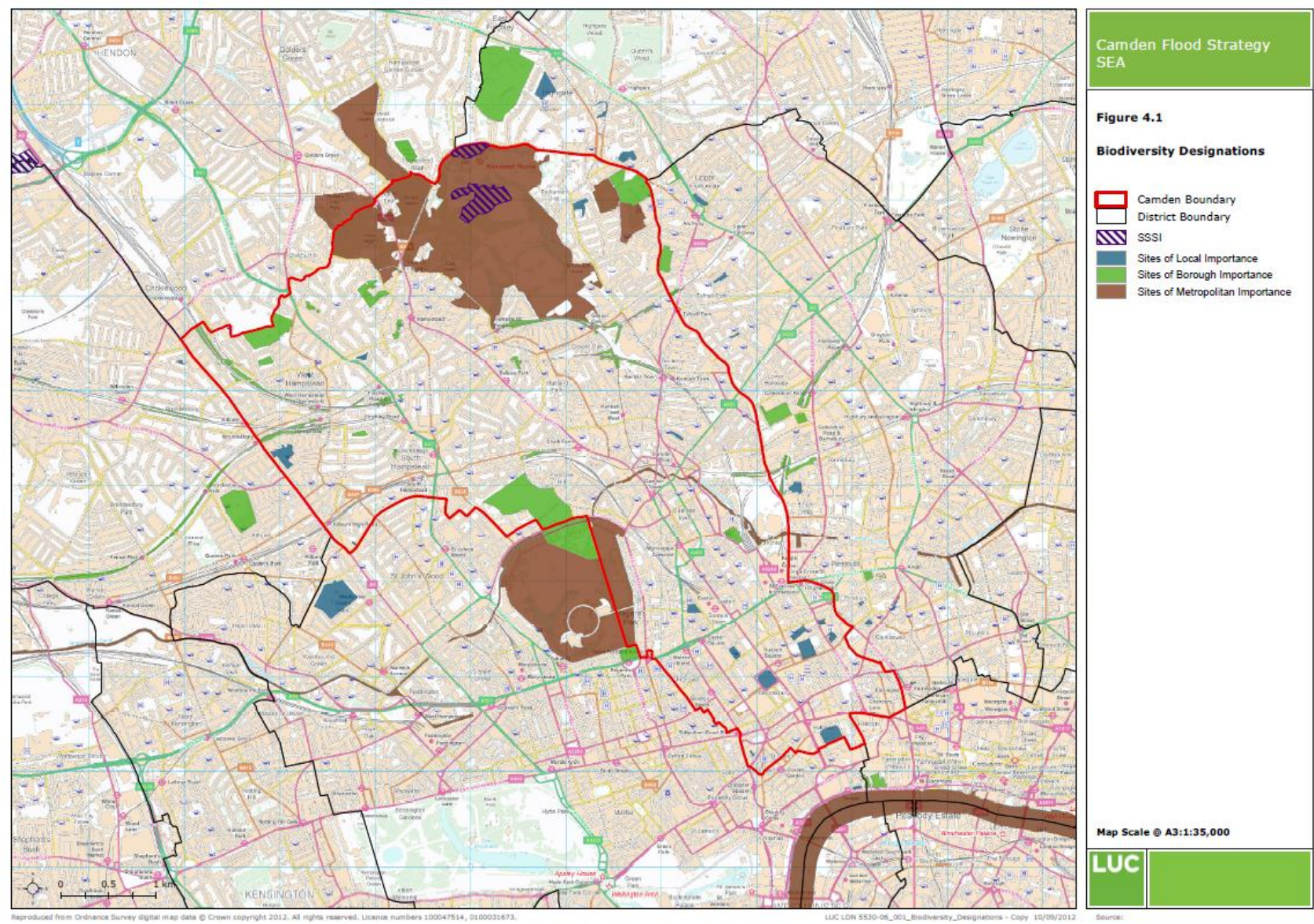
**Figure 1** overleaf illustrates the geographical spread of these biodiversity designations within the Borough.

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<sup>11</sup> Annual Monitoring Report 2010/11, London Borough of Camden, 2012



Figure 1 Biodiversity Designations within Camden



There are no European designated sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Ramsar sites) within Camden or within close proximity of the Borough - the nearest such sites are Lee Valley SPA approximately 5.7km to the north east, Epping Forest SAC approximately 9.7km to the north east and Richmond Park SAC approximately 9.9km to the south west.

Camden's Biodiversity Action Plan has identified the following habitats and species for local action: grassland and heath, parks, gardens and open spaces, the built environment, waterways and wetlands, woodland, hedgerows and trees and all species of bats<sup>12</sup>. As of 2010, 153.24ha (7%) of land in Camden fell within a Biodiversity Action Plan habitat. The largest category was lowland mixed deciduous woodland which comprised 73.14ha<sup>13</sup>.

Depending on the measures to be included in the LFRMS, biodiversity could be affected as a result of construction activities potentially causing disturbance to habitats and species, or through changing land uses, changing water levels or habitat creation and enhancement. Due to the distance between Camden Borough and the nearest European sites and the lack of pathways by which effects could be transmitted, it is not considered necessary to carry out a separate Habitats Regulations Assessment (HRA) to consider the potential effects of the measures in the LFRMS on European designated sites.

## Soil

Soil types are a major component of the Agricultural Land Classification (ALC) system which defines the agricultural potential of land and is used in land use planning. The ALC system classifies land into seven categories, five of which relate to agricultural land and two which relate to non-agricultural land. All of the land within Camden is non-agricultural, with the majority classified as 'land predominantly in urban use', while a small amount is classed as 'other land in non-agricultural use'<sup>14</sup>. However, as described under 'community facilities', there are significant areas of open space within Camden which are not built on.

The geology of Camden below the topsoil is as follows, listed with the shallowest layers first:

- Made ground, worked ground.
- Langlet Silt Deposits in some areas (commonly known as brickearth).
- River Terrace Deposits and Alluvium (in the south of the Borough only).
- Bagshot Formation (in the north of the Borough only).
- London Clay including the Claygate Member.
- Lambeth Group.
- Thanet Formation.
- Chalk Group.

Generally the near-surface layer in the north-east, west and central area is London Clay. However around Hampstead Heath, the near-surface layer is the Bagshot Formation underlain by the Claygate Member and south of Euston Road has a near-surface layer of River Terrace Deposits underlain by London Clay<sup>15</sup>.

In terms of contaminated land, the majority of the Borough has elevated levels of lead – a historical legacy due to industrial, commercial and domestic land uses. The extent of this issue across London has been mapped by the British Geological Survey, and shows that lead levels are particularly high in the central and southern parts of the Borough<sup>16</sup>.

There is no comprehensive data available with regards to the extent of contaminants other than lead; however any re-developed or new build sites which are suspected as potentially contaminated land have been dealt with via implementation of planning conditions and site investigations are carried out by the developers and land remediated as required.

<sup>12</sup> Camden Biodiversity Action Plan webpage, London Borough of Camden 2012

<sup>13</sup> Annual Monitoring Report 2009/10, London Borough of Camden 2011

<sup>14</sup> Natural England Technical Information Note TIN049 Agricultural Land Classification: protecting the best and most versatile agricultural land: First edition 13 January 2009 [www.naturalengland.org.uk](http://www.naturalengland.org.uk)

<sup>15</sup> Camden geological, hydrogeological and hydrological study, November 2010, ARUP

<sup>16</sup> British Geological Survey (2011) Lead (pb) in Topsoils.

In October 2011, several properties in Kentish Town were determined as contaminated land under part IIA of the Environmental Protection Act 1990. Those properties were remediated between February and May 2012; however it can be assumed that other sites in this area may also be contaminated although no further intrusive investigations have been carried out in the area since.

Flooding can cause soil erosion and soil pollution, which can affect soil quality and structure. Soils can act as a 'sponge' absorbing flood waters and in so doing preventing flooding elsewhere. Flooding in areas of contaminated land could affect water quality. Increased hard-standing, including the paving over of gardens to enable off-road car parking, could increase rates of run-off and localised flood risk. Similarly, open space that is intensively used for recreation, such as Hampstead Heath, can experience compacted soils leading a reduced 'sponge' effect and increased run-off. Camden's LFRMS could include measures to address these issues.

## Water

### *Flood Risk*

The risk of flooding within the Borough has been determined through the production of a Strategic Flood Risk Assessment (SFRA) which identifies areas of potential flood risk in North London, including the Borough of Camden. The SFRA identifies Camden as being at a low risk from fluvial flooding due to the lack of watercourses through the Borough, but shows that there is a high risk of flooding from sewer and surface water flooding<sup>17</sup>. Approximately 38,800 properties within Camden are at risk of surface water flooding to depths greater than 0.1m, while 12,700 properties are at risk of surface water flooding greater than a depth of 0.3m<sup>18</sup>.

**Figure 2** overleaf illustrates the extent of flood zones 2 and 3 around Camden and show that none of the land within the Borough is classed as being in either zone.

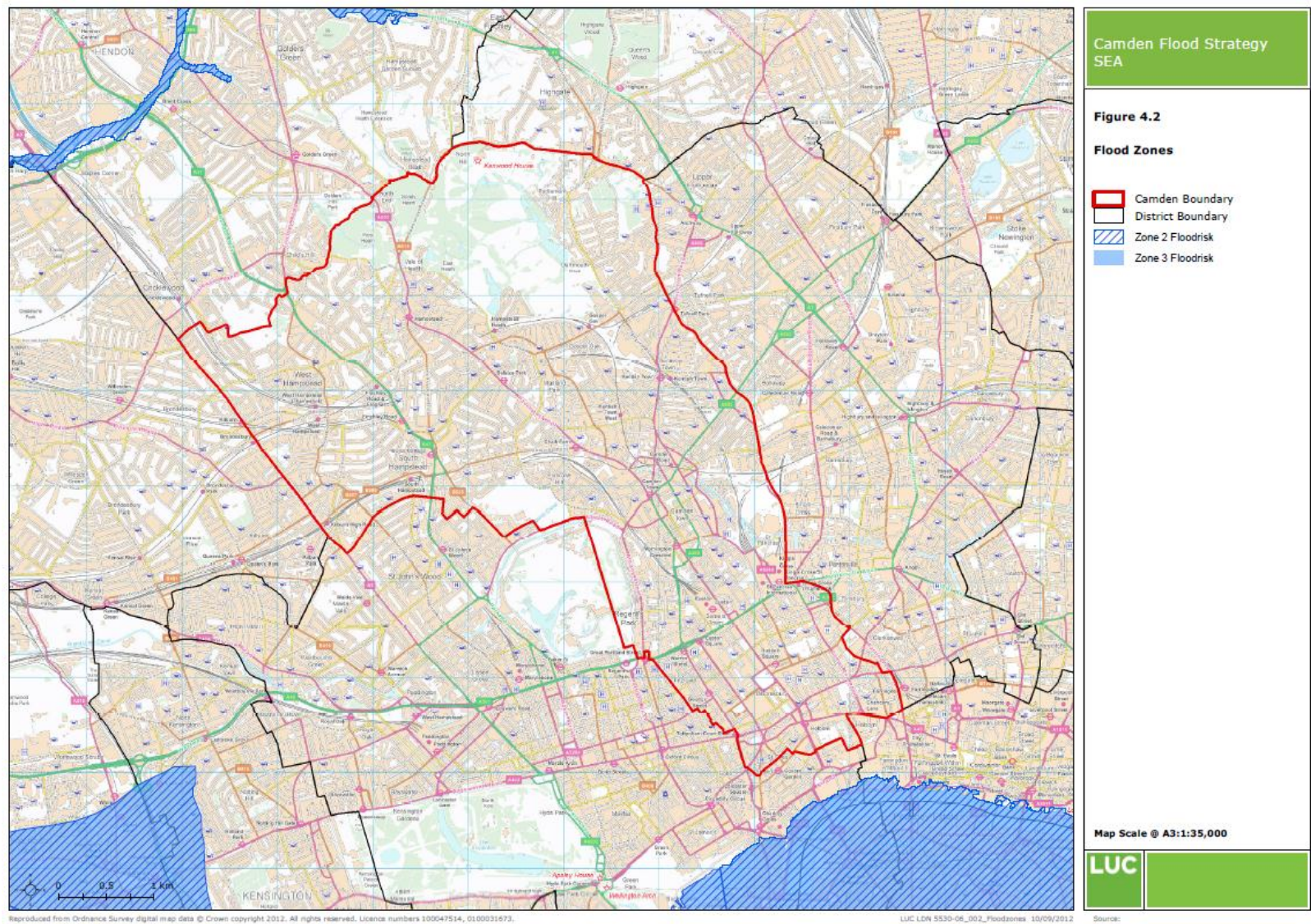
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<sup>17</sup> North London SFRA 2008, Mouchel

<sup>18</sup> Camden, London Borough Environmental Fact Sheet, November 2011, Environment Agency



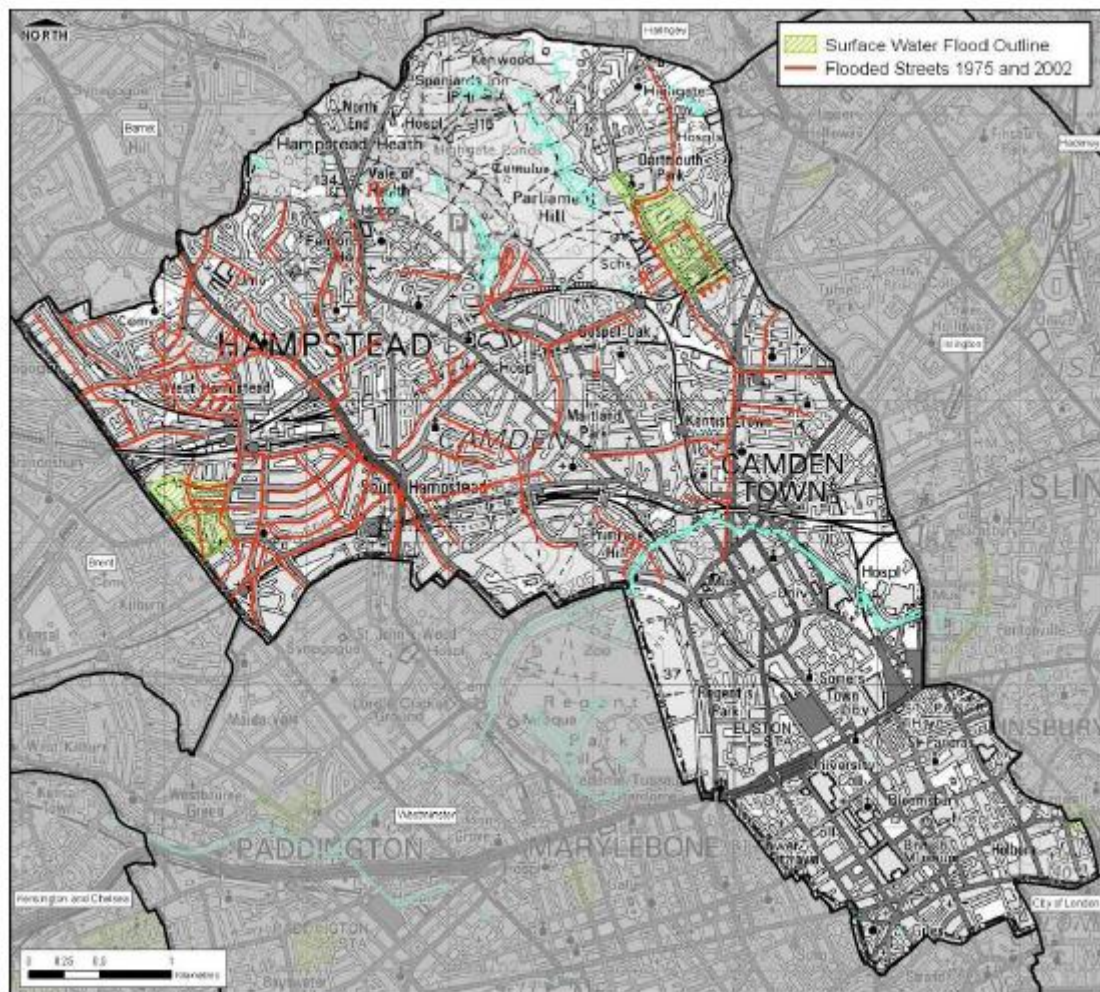
Figure.2 Location of Flood Zones 2 and 3 around Camden





Camden has been subject to two major flood events in the past, one in 1975 and one more recently in 2002 when areas north of Regent's Canal, including Hampstead, were particularly badly affected. The extent of past flooding is illustrated on **Figure 3**.

**Figure.3 Locations of Past Flood Events in Camden**



Source: Draft Camden Surface Water Management Plan (2012)

### Water Quality

The objectives of the Water Framework Directive (WFD) are to prevent the deterioration of water bodies and to improve them such that they meet the required status for that given water body (rivers, lakes, estuaries, coastal and groundwaters). Camden has two designated water bodies (Grand Union Canal and Regent's Canal) and three water body catchments (Brent, Lee and Dollis Brook) flowing through its boundaries. As of 2009, the ecological status of the Grand Union Canal was classed as good, while Regent's Canal, Lee and Dollis Brook were classed as moderate and the Brent was classed as poor. Only the Grand Union Canal was meeting WFD standards<sup>19</sup>.

Measures included in Camden's LFRMS will be designed for the primary purpose of managing local flood risk in the Borough. Water quality can be affected by flooding incidents; therefore the management of flood risk can influence water quality. The promotion of sustainable drainage systems (SuDS) through the LFRMS will help to improve the quality of surface water discharging from development sites.

### Climatic Factors

The London Borough of Camden recognises that climate change will impact upon local citizens and businesses and is implementing various measures to address this. Government targets place

<sup>19</sup> Camden, London Borough Environmental Fact Sheet, November 2011, Environment Agency

requirements on the Borough to act to reduce greenhouse gas emissions. For example the Energy White Paper requires a 60% reduction in emissions by 2050. Camden has produced a document<sup>20</sup> outlining how the Borough will aim to reduce local carbon emission by 40% by 2020 from a 2005 baseline.

The majority of the carbon emissions within the Borough are from commercial and industrial (C&I) activities (65.82%), followed by the domestic sector (24.07%), then the transport sector (10.11%). The high emission for the C&I sector reflect the size of the economy within Camden. The DECC figures for emissions in Camden are set out in **Table 1** below:

**Table 1 Carbon Dioxide Emission for Camden**

Year	Industrial and commercial	Domestic	Road Transport	LULUCF	Total	Per Capita Emissions (t)
2005	1072	431	178	1	1682	7.7
2006	1193	429	177	1	1800	8.1
2007	1154	421	176	1	1752	7.8
2008	1124	424	170	1	1719	7.6
2009	996	388	168	1	1552	6.7

Source: DECC, Local and Regional CO2 Emission Estimates for 2005-2009 ([www.decc.gov.uk](http://www.decc.gov.uk))

In 2010, the Council published a document on how to deliver a low carbon Camden, the Carbon Management Plan. For its estate and operations, it wishes to reduce its 2005 carbon emission level by 21% by March 2014 and by 40% by March 2020. The Council is a participant of the government's Carbon Reduction Commitment Energy Efficiency Scheme (CRC) and as part of the scheme the Council is required to report its carbon emissions and purchase carbon allowances to cover its emissions. Public and private sector organisations are encouraged to produce similar reports and to use the Camden Climate Change Alliance for support.

To help achieve reduced emissions in Camden, the Borough already has plans to install 8.7MWe of Combined Heat and Power (CHP) on buildings by 2014. This is set to increase to 120MWe of CHP by 2020. Reinforcing behavioural change to influence a modal shift in transport will also help while loft and cavity wall insulation will reduce domestic carbon emissions<sup>21</sup>.

It is likely that the risk of flooding will increase as a result of future climate change. The output from the UK Climate Change Projections programme<sup>22</sup> identifies the main implications as being:

- More frequent and intense rainfall events causing flash flooding in low-lying areas.
- More and faster surface water runoff and overland flows, causing sewers, drains and rivers to over flow.
- Rising groundwater levels, causing increased spring source activity and higher spring flows.

Localised flooding could affect renewable energy schemes. In addition, climate change is likely to have a direct effect on local flood risk as a result of increased precipitation and more frequent extreme weather events. The LFRMS, along with other plans and strategies, such as the North London Strategic Flood Risk Assessment, will help the London Borough of Camden to adapt to and mitigate these impacts by developing a strategy for dealing with the increasing flood risk.

<sup>20</sup> Meeting 40% of Carbon Emissions Reductions by 2020, July 2010, Carbon Descent

<sup>21</sup> London Borough of Camden: Meeting 40% of Carbon Emission Reductions by 2020

<sup>22</sup> <http://ukclimateprojections.defra.gov.uk/>

## Material Assets

There is no definition within the SEA Directive with regards to what is covered by 'material assets'. In the context of this SEA of the LFRMS this topic has been taken to include tangible assets which may be affected by flooding including residential properties, employment sites, community facilities (including education facilities), waste management facilities and transport infrastructure.

### *Housing<sup>23</sup>*

Within Policy CS6: Providing Quality Homes in Camden's Core Strategy (adopted 2010), a target of delivering 8,925 homes between 2010 and 2025 is set, including 6,550 additional self-contained homes<sup>24</sup>, equating to 1,032 dwellings per annum. Within Camden there is a particular need for affordable housing. The mean income of the Borough is approximately £40,024, while the average house price is approximately 14 times that amount. The most recent housing needs survey in 2008 suggests that an additional 4,787 affordable homes year over a five year period are required to meet existing and projected demand. The housing delivery numbers for the most recent two years for which data is available have been 420 (2009/10) and 539 (2010/11).

The condition of existing housing is also a concern in Camden, with 37.6% of homes failing to meet the Decent Homes Standard. One of the most common factors making households unsuitable is overcrowding, which affects 5.7% of all housing and 46.5% of unsuitable accommodation.

None of the sites contained within Camden's Site Allocations Development Plan Document<sup>25</sup> are located within a high flood risk zone. Site 31 (187-199 West End Lane), which is proposed for a mixed use development of residential properties with retail, employment and community uses, has been subject to street flooding in the past; however infrastructure works have now taken place to address this. Site 42 (115-117 Wellesley Road (including 2-16 Vicars Road) and Lismore Circus Health Centre and Nursery) of the Site Allocation DPD which is proposed for a mixed use development of community facilities, housing and employment has been subject to historical street flooding in the past, whilst Site 43 (19-37 Highgate Road, former Lensham House (A&A Storage) and 25-37 Greenwood Place), which is proposed for community facilities, employment and housing, is within close proximity to sites that have been subject to street flooding<sup>26</sup>.

### *Employment and Economic Activity*

The employment rate in Camden (the number of residents in work as a percentage of the population aged 16-64) is currently 60% - only the London Borough of Newham has a lower employment rate. Furthermore, the rate is below the Greater London and UK averages (68% and 70% respectively). Unemployment amongst those aged 16+ within Camden is 8.7%, which is lower than Greater London (9.3%) but higher than the UK (8.1%). Furthermore, Camden has a higher economic inactivity rate (34.4%) than both Greater London and the UK as a whole (24.9% and 23.6% respectively). As of July 2012, 5,224 residents in Camden were claiming Job Seekers Allowance<sup>27</sup>, which equates to 5.8% of the local population. This is 0.6% higher than the claimant count recorded in December 2010 (5,170, or 5.2%) and 2% higher than the claimant count at the start of the recession<sup>28</sup>.

In November 2011, people from ethnic minorities made up 43% of the Job Seekers Allowance claimants in Camden. This has increased by 12% since November 2010, compared with 6% for all claimants<sup>29</sup>.

No economic sites included in the Site Allocations DPD are located within a high flood risk zone or have been subject to historical flooding. As stated above, Site 31 has been subject to historical street flooding in the past; however, infrastructure works have now taken place which should alleviate this. Site 42 has also been subject to historical street flooding and Site 43 is adjacent to sites that have street flooded in the past<sup>30,31</sup>.

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<sup>23</sup> Camden's housing strategy for 2011-2016; Camden AMR 2010/11, London Borough of Camden

<sup>24</sup> This covers flats and houses (in Use Class C3) that have been newly built, converted from another use, or formed from a net increase in homes in an existing building.

<sup>25</sup> London Borough of Camden (March 2012) Camden Site Allocations Local Development Framework Proposed Submission Document.

<sup>26</sup> Camden Site Allocation, Sustainability Appraisal of the Proposed Submission Document, March 2012, London Borough of Camden

<sup>27</sup> ONS Annual Population Survey, 2011

<sup>28</sup> Camden Profile 2012, London Borough of Camden

<sup>29</sup> ONS JSA claimant count by ethnic group, November 2011

<sup>30</sup> Camden Site Allocation Proposed Submission Document, March 2012, London Borough of Camden

<sup>31</sup> Camden Site Allocation, Sustainability Appraisal of the Proposed Submission Document, March 2012, London Borough of Camden

### *Community Facilities*

As of 2009, Camden housed 41 primary schools (20 community schools, 13 Anglican and eight Roman Catholic schools), nine secondary schools (four mixed, four girl's and one boy's school), one further education college, three specialist adult colleges and 10 universities.

There are 15 hospitals within the Borough, including Great Ormond Street Hospital which is located within the southern part of the Borough, and the Royal Free Hospital which is located on Pond Street to the south of Hampstead Heath in the northern part of the Borough.

No community facility sites included within the Site Allocations DPD are located within a high flood risk zone. However, as stated above, Site 31 (which is proposed for a mixed use development of residential properties with retail, employment and community uses) has been subject to historical street flooding in the past, although infrastructure works have now taken place which should alleviate this. Site 42 (which is proposed for a mixed use development of community facilities, housing and employment) has also been subject to historical street flooding and Site 43 (which is proposed for community facilities, employment and housing) is adjacent to sites that have street flooded in the past<sup>32,33</sup>.

Camden currently has 11 allotments, community gardens and city farms which equate to 3.8ha of provision. Outdoor sport provision includes 21 full sized football pitches, six full sized cricket pitches, two full sized rugby pitches, one hockey pitch and 10 junior football pitches. However, it should be noted that most of Regents Park which houses all of the above pitches (except 11 full sized football pitches and the hockey pitch) is within the City of Westminster so not all of the pitches mentioned above are entirely within Camden<sup>34</sup>.

The Borough is home to 22 small synthetic pitches (which can be used for 5-a-side football, hockey and basketball) within public open spaces in Camden and 22 public tennis courts. Camden is also home to a number of indoor facilities which includes 15 swimming pools and 14 sports halls<sup>35</sup>.

### *Waste Management Facilities<sup>36</sup>*

During the period 2010/11, Camden produced a total of 121,322 tonnes of municipal waste, with 24,652 tonnes being recycled. The amount of waste produced has been decreasing since 2006/7 when it peaked at 135,697 (tonnes), while recycling rates have increased over the same period (from 21,248 tonnes). Camden provides door-to-door recycling collection which includes rubbish collection, glass, plastic, paper, card, compostable garden waste, food and household hazardous collection. The waste and materials for recycling are taken to various facilities including Taplow in Maidenhead (paper and card), Bromley by Bow in East London (glass, cans and plastics) and an industrial composting facility in North London which takes food and green garden waste.

The Borough of Camden includes one waste management facility, on Regis Road. It is a civic amenity site and accepts both household waste and recyclable materials. Although Regis Road is not in an area of high flood risk, parts of the road are at risk of flood depths of >0.1m and >0.3m from a 1 in 30 year rainfall. Furthermore, the surrounding area is at risk of a 1 in 200 year rainfall scenario<sup>37</sup>.

### *Transport Infrastructure*

Camden has very good public transport links, containing a number of London underground lines, the London overground network, three large national railway stations (King's Cross, Euston and St. Pancras), which have links across the UK, and St. Pancras International station which is host to the Eurostar Terminal that links the UK with mainland Europe.

Bus service provision is also very good within the Borough, with 89 bus routes connecting Camden and 20+ night bus services. The arterial routes through Camden (Euston Road, Tottenham Court Road, Kilburn High Road and Finchley Road) are served by a large number of these bus services.

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<sup>32</sup> Camden Site Allocation Proposed Submission Document, March 2012, London Borough of Camden

<sup>33</sup> Camden Site Allocation, Sustainability Appraisal of the Proposed Submission Document, March 2012, London Borough of Camden

<sup>34</sup> London Borough of Camden Open Space, Sport and Recreation Study Update, Atkins August 2008

<sup>35</sup> London Borough of Camden Open Space, Sport and Recreation Study Update, Atkins August 2008

<sup>36</sup> Camden Annual Monitoring Report 2010/11; [www.camden.gov.uk](http://www.camden.gov.uk), London Borough of Camden.

<sup>37</sup> Figures D2a and D2b of Draft Surface Water Management Plan, London Borough of Camden. 2011, (Final version expected Spring 2013).



Due to Camden's central location there is a heavy demand for use of the highway network by cars, motorcycles, taxis, buses/coaches, heavy goods vehicles, cyclists and pedestrians. Camden Council is responsible for 89% (286km) of the road network within the Borough, while Transport for London manages the remaining 11%<sup>38</sup>. Census data from 2001 showed that 55.6% of households in Camden did not have access to car which is higher than the figures for Greater London and the UK which are 37.5% and 26.8% respectively. The 2001 Census also found that people who travel to work predominantly use the underground/metro/light rail/tram (32.3%) followed by walking (16%), use of a car or van (14.9%) and finally by bus/mini bus/coach (12.5)<sup>39</sup>.

Since 1997, there has been a 24% reduction in vehicle traffic, a 36% reduction in car use and a 61% increase in cycling<sup>40</sup>.

The LFRMS aims to reduce local flood risk in Camden, and thereby the risk facing material assets such as residential properties, employment sites, community facilities, waste management facilities and transport infrastructure that can be damaged or made inoperable by flooding. Measures included in the LFRMS may also have implications for the location and design of forthcoming developments.

### Cultural Heritage (including architectural and archaeological heritage)

Camden has over 5,600 listed buildings in a variety of architectural styles and ages. In addition, there are 39 conservation areas covering 28 square kilometres (50%) of the Borough and one designate ancient monument - Boadicea's mound on Hampstead Heath. 53 of the Borough's squares are protected by the London Squares Preservation Act 1931<sup>41</sup>.

The 2012 Heritage at Risk Register<sup>42</sup> includes 43 buildings in Camden that are considered to be at risk, as well as one registered park and garden (Highgate Cemetery).

There are a number of archaeological priority areas within Camden - Bagnigge Wells, Battle Bridge, Belsize, Hampstead, Hampstead Heath, Highgate, Kentish Town, Kilburn, London Suburbs, South End, St. Pancras, West End and any canalside industry. These areas are known to have potential for archaeological remains and are specified by the London Borough of Camden to help protect any such archaeological remains that might be affected by development.

Cultural heritage assets such as listed buildings can be damaged through flooding; therefore the LFRMS will provide protection through the measures designed to reduce flood risk. Any measures in the LFRMS that involve construction could potentially affect the setting of such assets.

### Landscape

As one of London's inner Boroughs, Camden is urban in nature. However, the Borough has approximately 280 separate open spaces, totalling 526.6 hectares (ha), which represent 25% of the Borough's land area. Of these, 39% (110) are open to the public<sup>43</sup>. These public spaces include local parks and gardens, amenity green space, green corridors, provision for children and young people, civic market squares and other paved open space, natural and semi-natural green space, allotments and community gardens, housing estates areas, outdoor sports and cemeteries and churchyards<sup>44</sup>. The largest open space within the Borough is Hampstead Heath; however the heath itself is managed by the City of London<sup>45</sup>.

Most residents in Camden have access to a metropolitan or district park. However, access to district parks, local parks and gardens and amenity spaces, natural and semi-natural green spaces and green corridors is not universal<sup>46</sup>. Due to Camden's relatively high population density, there is a significant

<sup>38</sup> Camden's Transport Strategy, Camden's Local Implementation Plan, August 2011, London Borough of Camden

<sup>39</sup> Census 2001, ONS

<sup>40</sup> London Borough of Camden, London Councils [www.londoncouncils.gov.uk](http://www.londoncouncils.gov.uk)

<sup>41</sup> SEA Camden Transport Strategy Draft, November 2010

<sup>42</sup> English Heritage (2012) Heritage at Risk Register 2012 London. Available online at: <http://www.english-heritage.org.uk/publications/har-2012-registers/lo-HAR-register-2012.pdf>

<sup>43</sup> Camden Annual Monitoring Report 2010/11, London Borough of Camden

<sup>44</sup> Camden Annual Monitoring Report 2010/11, London Borough of Camden

<sup>45</sup> SEA Camden Transport Strategy Draft, November 2010.

<sup>46</sup> SEA Camden Transport Strategy Draft, November 2010.

challenge providing enough open space relative to the population<sup>47</sup>, an issue which is likely to be compounded by future population growth.

The streetscape of Camden is very diverse, ranging from colourful houses on Hartland road and eclectic shops down Camden High Street to beautiful townhouses on Doughty Street. The historical buildings and structures make a significant contribution to the character of Camden, as illustrated under 'cultural heritage' above. In addition to buildings, street furniture such as cattle and horse troughs, bollards, street lighting and K2 (red) telephone boxes are listed. Many of the original old street nameplates are retained for their historic interest, while the importance of maintaining historic paving such as York stone slabs and granite kerbs has been recognised<sup>48</sup>.

Measures proposed in the Camden LFRMS could affect the local landscape/townscape character if they involve construction, changes in land use or changing water levels.

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<sup>47</sup> Camden's Play Strategy 2007-2012 Draft

<sup>48</sup> Streetscape Design Manual, (undated), London Borough of Camden.