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**London Borough of  
Lewisham  
Local Flood Risk  
Management Strategy**

**Strategic Environmental  
Assessment  
Scoping Report**

**October 2013**

**London Borough of Lewisham  
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## Contract

This report describes work commissioned by the London Borough of Lewisham. Jessie Kennedy and David Revill of JBA Consulting carried out this work.

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## Purpose

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## Definitions

AOD .....	Air Ordnance Datum
AQMA .....	Air Quality Management Area
AQO .....	Air Quality Objectives
AONB.....	Area of Outstanding Natural Beauty
BAP .....	Biodiversity Action Plan
CAMS.....	Catchment Abstraction Management Strategy
CWS.....	County Wildlife Site
LBAP .....	Local Biodiversity Action Plan
LFRMS.....	Local Flood Risk Management Strategy
LLFA .....	Lead Local Flood Authority
LNR.....	Local Nature Reserve
ODPM .....	Office of the Deputy Prime Minister
NCA .....	National Character Area
NNR .....	National Nature Reserve
SAC.....	Special Area of Conservation
SEA.....	Strategic Environmental Assessment
SPA.....	Special Protection Area
SSSI.....	Site of Special Scientific Interest

# 1 Introduction

The London Borough of Lewisham is currently preparing a Local Flood Risk Management Strategy (LFRMS). As part of this process, the Council is also carrying out a Strategic Environmental Assessment (SEA), which considers the potential environmental impacts of the LFRMS. This Scoping Report sets out the scope of, and assessment framework for undertaking the SEA. It provides a description of the baseline environmental characteristics and key environmental issues present in and around the Borough, and identifies other relevant plans, programmes and policies that may influence the development of the LFRMS. This report also sets out a framework to be used to examine the environmental impacts of implementing the LFRMS and comprises a series of SEA objectives and indicators that have been developed to reflect the key environmental issues of relevance to the Borough.

## 1.1 The Local Flood Risk Management Strategy

The Flood and Water Management Act (FWMA) was passed in April 2010. It aims to improve both flood risk management and the way we manage our water resources. The FWMA creates clearer roles and responsibilities and instils a more risk-based approach to flood risk management. This includes a new lead role for the Council as a Lead Local Flood Authority (LLFA) in managing and leading on local flood risk management from surface water, groundwater and ordinary watercourses.

Under the requirements of the FWMA, the Council must develop, maintain, apply and monitor a LFRMS for local flood risk management in its area. The LFRMS provides a delivery vehicle for improved flood risk management and supports the development of partnership funding and strategic investment programme.

The LFRMS will set out:

- The roles and responsibilities for each risk management authority (RMA) and their flood risk management functions; and
- Opportunities, objectives and measures for flood risk reduction of existing communities, including ways to minimise the risk from future growth.

Development of the LFRMS provides considerable opportunities to improve and integrate land use planning and flood risk management. It is an important tool to protect vulnerable communities and deliver sustainable regeneration and growth.

## 1.2 Strategic Environmental Assessment (SEA)

SEA is a statutory assessment process required under the Environmental Assessment of Plans and Programmes Regulations 2004 (the 'SEA Regulations'). These regulations transpose into United Kingdom (UK) law the requirements of 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 requires formal assessment of plans and programmes which are likely to have significant effects (either positive or negative) on the environment. It applies to all plans and programmes which are 'subject to preparation and/or adoption by an authority at national, regional or local level' or are 'required by legislative, regulatory or administrative provisions'.

Local Government Association (LGA) guidance<sup>1</sup> on the production of the LFRMS identifies the likely requirement for an SEA, stating that 'the Local FRM Strategy is likely to require statutory SEA, but this requirement is something the LLFA must consider'. A SEA screening process was therefore undertaken and the Council has confirmed the requirement for its LFRMS to undergo SEA.

The first output from the SEA process is the production of a Scoping Report, which outlines the scope and methodology of the assessment. A proportionate approach has been adopted towards establishing the scope of the SEA, reflecting the high-level nature of the LFRMS. Consultation with the statutory consultees (English Heritage, Natural England and the

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<sup>1</sup> Local Government Association (2011) Framework to Assist the Development of the Local Strategy for Flood Risk Management.

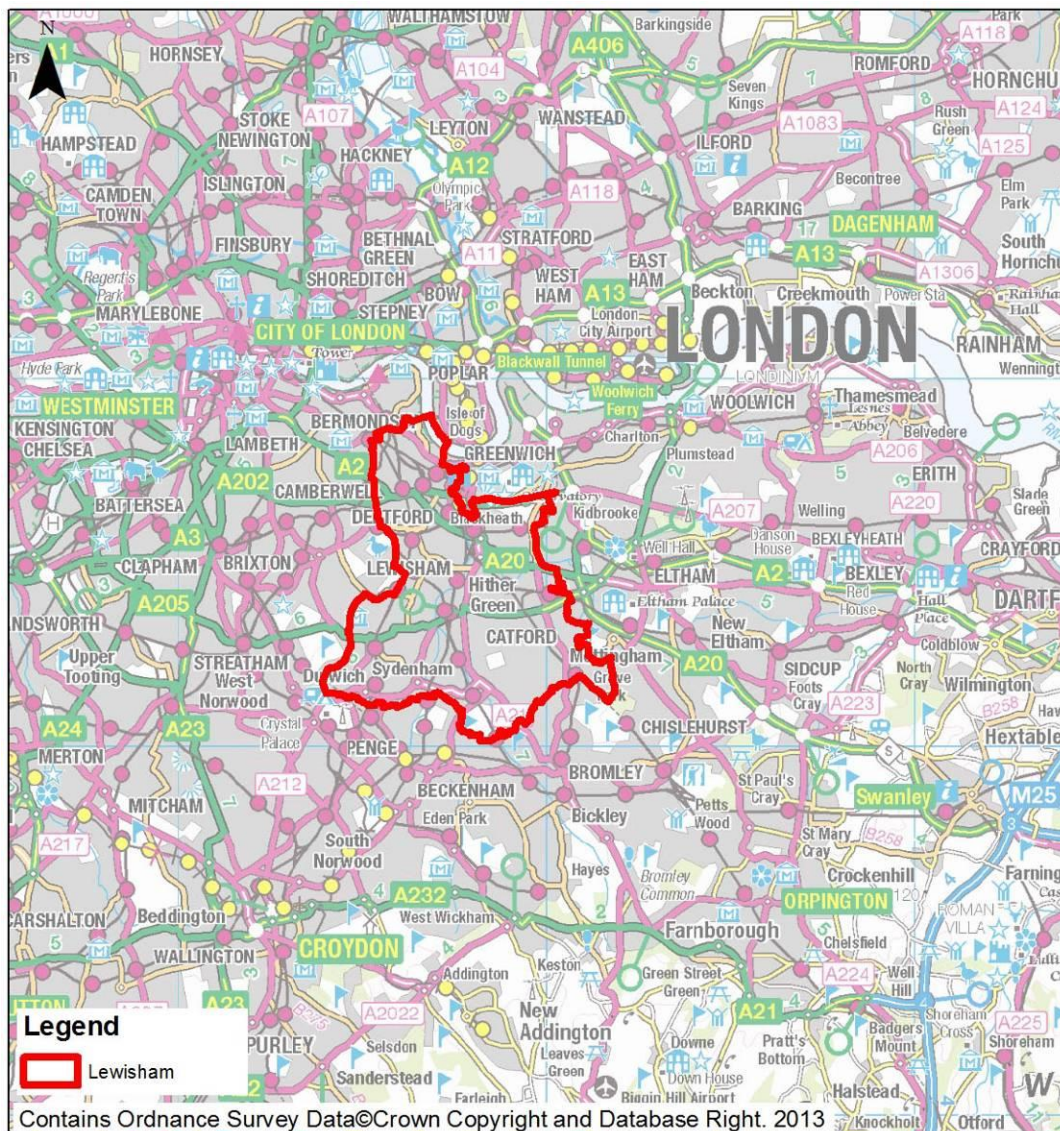
Environment Agency) will be undertaken to refine and confirm the methodology and scope of the assessment. These aspects will be reviewed iteratively as the LFRMS develops so as to ensure the strategy fully considers the environmental impacts of its implementation before it is adopted.

Once consultation on the scope of the SEA has been completed, an Environmental Report will be prepared that describes the likely significant impacts on the environment of implementing the LFRMS.

### 1.3 The study area

The London Borough of Lewisham is located in south-east London and takes its name from its largest settlement, Lewisham. It is bounded to the north by the River Thames, with the Royal Borough of Greenwich to the east, and the boroughs of Southwark and Bromley to the west and south respectively. The Borough is highly urban and includes the areas of Catford, Deptford, Lewisham and Downham. It covers an area of 13.5 sq miles (35km<sup>2</sup>) and has a population of approximately 281,500 people (2012 ONS mid-year estimate)<sup>2</sup>.

Figure 1: Extent of study area



<sup>2</sup> Office of National Statistics (2012), 2012 Mid-year estimate <http://www.ons.gov.uk/ons/publications/index.html>

## 2 SEA process and methodology

### 2.1 Meeting the requirements of the SEA Directive

SEA involves the systematic identification and evaluation of the potential environmental impacts of the LFRMS. This information is then used to aid the selection of a preferred option(s) for the strategy, which are those that best meet its economic, environmental and social objectives, and legal requirements.

The full range of environmental receptors has been considered when developing the scope of the SEA. This meets the requirements of the SEA Directive, which requires that an assessment identifies the potentially significant environmental impacts on *'biodiversity, population, human health, fauna, flora, soil, water, air, climatic, material assets including architectural and archaeological heritage, landscape and the interrelationship between the above factors'*.

Annex I of the SEA Directive sets out the scope of information to be provided by the SEA. This is described in Table 1 below, which also identifies where in the SEA process for the LFRMS that the relevant requirement will be met.

**Table 1: Stages in the SEA process as identified within Annex I of the SEA Directive**

SEA Directive requirements	Where covered in the SEA
(a) an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes;	SEA Scoping Report (Section 3)
(b) the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;	SEA Scoping Report (Section 4)
(c) the environmental characteristics of areas likely to be significantly affected;	SEA Scoping Report (Section 4)
(d) 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;	SEA Scoping Report (Section 4)
(e) the environmental protection objectives, established at international, Community or Member State 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;	SEA Scoping Report (Sections 3 and 4)
(f) 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;	SEA Environmental Report (to be prepared)
(g) 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;	SEA Environmental Report (to be prepared)
(h) 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;	SEA Environmental Report (to be prepared)
(i) a description of the measures envisaged concerning monitoring in accordance with Article 10;	SEA Environmental Report (to be prepared)
(j) a non-technical summary of the information provided under the above headings.	SEA Environmental Report (to be prepared)

### 2.2 Stages in the SEA process

This report has been prepared in accordance with the requirements of the SEA Regulations and follows good practice guidance produced by the Office of the Deputy Prime Minister



(ODPM)<sup>3</sup>. The ODPM guidance sets out a five stage process (A to E) to be followed (see Table 2). This Scoping Report addresses Stage A of the process wherein the context and objectives of the SEA are identified and the scope of the assessment is determined. For the purpose of this assessment, stages A1 to A4 will be completed, whilst stage A5 comprises consultation on this Scoping Report, which will be conducted as outlined in Section 6 of this document.

**Table 2: Stages in the SEA process**

SEA stages and tasks	Purpose	Where covered in the SEA
<b>Stage A</b>	<b>Setting the context and objectives, establishing the baseline and deciding on the scope</b>	SEA Scoping Report
(A1) Identifying other relevant plans, programmes and environmental protection objectives	To establish how the plan or programme is affected by outside factors, to suggest ideas for how any constraints can be addressed and to help to identify SEA objectives.	SEA Scoping Report (Section 3)
(A2) Collecting baseline information	To provide an evidence base for environmental problems, prediction of effects, and monitoring; to help in the development of SEA objectives.	SEA Scoping Report (Section 4)
(A3) Identifying potential environmental problems	To help focus the SEA and streamline the subsequent problems, prediction of effects, and monitoring; to help in the development of SEA objectives.	SEA Scoping Report (Section 4)
(A4) Developing SEA objectives	To provide a means by which the environmental performance of the plan or programme and alternatives can be assessed.	SEA Scoping Report (Section 5)
(A5) Consulting on the scope of SEA	To ensure that the SEA covers the likely significant environmental effects of the plan or programme.	SEA Scoping Report (Section 6)
<b>Stage B</b>	<b>Developing and refining options and assessing effects</b>	SEA Environmental Report (to be prepared)
<b>Stage C</b>	<b>Preparing the Environmental Report</b>	SEA Environmental Report (to be prepared)
<b>Stage D</b>	<b>Consulting on the draft LFRMS and the Environmental Report</b>	SEA Environmental Report (to be prepared)
<b>Stage E</b>	<b>Monitoring the significant effects of implementing the LFRMS</b>	SEA Environmental Report (to be prepared)

## 2.3 Scope of the SEA

### 2.3.1 Task A1: Identifying other relevant policies, plans and programmes, and environmental protection objectives

The relationship between various policies, plans, programmes and environmental protection objectives may influence the LFRMS. The relationships are analysed to:

- Identify any external social, environmental or economic objectives that should be reflected in the SEA process;
- Identify external factors that may have influenced the preparation of the plan; and
- Determine whether the policies in other plans and programmes might lead to cumulative or synergistic effects when combined with policies in the plan.

The plans and programmes that need to be considered include those at the international, national, regional and local scale. These are identified and evaluated in Section 3.

### 2.3.2 Task A2: Collecting baseline information

The SEA Directive identifies a range of environmental topics that must be considered for all environmental assessments. These are shown in Table 3.

<sup>3</sup> Office of the Deputy Prime Minister (ODPM) (2005) A Practical Guide to the Strategic Environmental Assessment Directive.

Baseline information has been collected in relation to each of these topics, many of which are inter-linked. A desk study information search was undertaken to identify baseline environmental information, which was used to determine the key environmental characteristics of the LFRMS area. This information provides the basis for assessing the potential effects of the LFRMS options and will aid development of appropriate mitigation measures, together with future monitoring data. The information search included information from a wide range of sources including the following organisations:

- London Borough of Lewisham
- Greater London Authority
- Natural England
- Environment Agency
- Office for National Statistics
- English Heritage
- Joint Nature Conservation Committee
- Transport for London

Where information is available, key environmental targets and objectives have been identified; established and predicted trends in the status or condition of environmental features have been described; and significant environmental and sustainability issues have been highlighted. Trends evident in the baseline information have been used to predict the future baseline situation, which has assumed a continuation of the existing trends in some cases.

**Table 3: Environmental topics to be covered in the SEA**

SEA Directive requirements	Where covered in the Scoping Report	Definition in relation to this report
Air	Air quality	Air quality patterns.
Biodiversity (including flora and fauna)	Biodiversity, flora and fauna	Rare and notable species and habitats; trends in condition and status.
Climate	Climate	Regional climate patterns; trends in greenhouse gas emissions and the sources of these emissions; mitigation measures and adaptation options to manage climate change.
Cultural heritage	Historic environment	Protected and notable heritage features; human induced physical changes to the environment.
Human health	Population	Trends and patterns in human health; key community facilities and recreation opportunities.
Landscape	Landscape and visual amenity	The local landscape character; protected and notable landscapes; key local landscape features.
Material assets	Material assets	Critical infrastructure.
Population	Population	Where people live and work; population trends and demographics; economic prosperity; relative levels of advantage, disadvantage and inequality; key community facilities; accessibility and recreation opportunities.
Soil	Geology and soils	Variety of rocks, minerals and landforms; the quantity and distribution of high quality soil.
Water	Water environment	Chemical and biological water quality; water resources; waterbody hydromorphology; flood risk.
And the interrelationship between the above factors	Throughout the Scoping Report	The relationship between environmental features and issues.

### 2.3.3 Task A3: Identifying environmental issues and problems

The identification of significant environmental issues is an important step in establishing an appropriate assessment framework. Such issues have been identified directly through the

baseline information search or can be identified by evaluating the relationship between the aims of the LFRMS and the established environmental baseline.

#### **2.3.4 Task A4: Developing the SEA objectives**

SEA objectives are a key tool used to assess the potential positive and negative environmental effects of the LFRMS. Together with associated indicators, they form an assessment framework that provides a means to predict, describe and analyse the environmental effects that are likely to arise from the implementation of the strategy. The strategy objectives are appraised individually against each SEA objective, thereby allowing environmental, economic and social effects, in particular those which are significant, to be identified. The use of comparable alternatives can also be incorporated into the assessment once the assessment framework has been established to aid in the identification of the most appropriate option for each of the strategy objectives.

### **2.4 Habitats Regulations**

The European Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC, 'the Habitats Directive') as implemented through the Conservation of Habitats and Species Regulation 2010 (as amended) ('the Habitats Regulations') requires a competent authority to carry out a Habitats Regulations Assessment (HRA) of a plan or project to establish whether it will have a 'likely significant effect' on sites designated for their nature conservation interest at an international level. (known as European sites, which include SACs, SPAs, and by UK Government policy, Ramsar sites). The LFRMS for the London Borough of Lewisham, as a statutory plan, is subject to the requirements of the Habitats Directive.

Assessing the impacts of a plan under the Habitats Regulations is a separate process to SEA. However, there is overlap between these two types of assessment. A Test of Likely Significant Effect (Screening Assessment) has been undertaken in accordance with the requirements of the Habitats Regulations to determine whether the LFRMS is likely to adversely affect the integrity of a European site (alone or in combination). If a likely significant adverse effect is identified, an Appropriate Assessment must be carried out to assess the potential impacts and determine whether it is possible to demonstrate that there would not be an adverse effect on the integrity of the European site.

The outcomes of this Screening Assessment are documented in Appendix B of this report and a summary of its outcomes is provided in Section 4.12. Consultation with Natural England on the outcomes of this assessment will be undertaken as part of the consultation process outlined in Section 6.

## 3 Other relevant policies, plans and programmes

### 3.1 Introduction

An important aspect of the SEA process is the assessment of other policies, plans and programmes and their environmental protection objectives, to identify how these strategic objectives may influence the development of the LFRMS. Identifying these relationships enables potential synergies to be determined, strengthening the benefits that can be gained from implementation of the LFRMS. This information is also used to inform the development of the environmental baseline and the identification of key issues and problems.

In addition, any inconsistencies or constraints can be identified, which could hinder the achievement of the environmental protection objectives or those of the LFRMS, and therefore providing a broad appraisal of the strategy's compliance with international, national and local considerations.

The ODPM SEA guidance recognises that no list of plans or programmes can be definitive and as a result this report describes only the key documents which may influence the LFRMS. These are shown in Table 4.

**Table 4: Policies, plans and programmes reviewed through this SEA process**

Plan, Policy or Programme
<b>International</b>
EU Sustainable Development Strategy (revised 2006)
European Biodiversity Strategy to 2020
EC Birds Directive – Council Directive 2009/147/EEC on the conservation of wild birds
EU Floods Directive – Directive 2007/60/EC on the assessment and management of flood risks
EU Groundwater Directive – Directive 2006/118/EC on the protection of groundwater against pollution and deterioration
EC Habitats Directive – Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora
Urban Wastewater Treatment Directive – Directive 91/271/EEC concerning urban waste water treatment
EU Water Framework Directive – Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy
<b>National</b>
Securing the Future – the UK Government Sustainable Development Strategy (2005)
Flood and Water Management Act (2010)
Flood Risk Regulations (2009)
Water for People and the Environment, Water Resources Strategy for England and Wales (2009)
Future Water, The Government's water strategy for England (2008)
Making Space for Water – taking forward a new Government strategy for flood and coastal erosion risk management in England (2005)
The National Flood and Coastal Erosion Risk Management Strategy for England (2011)
Water Act (2003)
Water Act (2014)
The National Flood Emergency Framework for England (2011)
The Carbon Plan (2011)
Building a Low Carbon Economy – the UK's Contribution to Tackling Climate Change (2008)
Climate Change Act (2008)
Biodiversity 2020: A Strategy for England's Wildlife and Ecosystems (2011)
England Biodiversity Framework (2008)
UK Biodiversity Action Plan (1994)
National Wetland Vision (2008)
Wildlife and Countryside Act (as amended) (1981)
Natural Environment and Rural Communities (NERC) Act (2006)
Salmon and Freshwater Fisheries Act (1975)
Contaminated Land (England) Regulations (2006)
Heritage Protection for the 21 <sup>st</sup> Century, White Paper (2007)

Plan, Policy or Programme
National Adaptation Programme: Making the Country Resilient to a Change in Climate (2013)
National Planning Policy Framework (2012)
<b>Regional / Local</b>
Regional Flood Risk Appraisal for South East England (2008)
Thames Catchment Flood Management Plan (2009)
London Regional Flood Risk Appraisal – Greater London Authority (2009)
London Plan – Greater London Authority (2011)
Thames Estuary 2100 Strategy (2002)
Managing Water Resources & Flood Risk in the South East (2005)
East London Boroughs Strategic Flood Risk Assessment (2009)
London Rivers Action Plan (2009)
Thames River Basin Management Plan (2009)
London's Great Outdoors: A Manifesto for Public Space (2009)
Cleaning the Air – Mayors Air Quality Strategy (2010)
Climate Change Adaptation strategy for London (2011)
Preliminary Flood Risk Assessment London Borough of Lewisham (2011)
London Borough of Lewisham Strategic Flood Risk Assessment (2008)
Ravensbourne River Corridor Improvement Plan (2010)
London Borough of Lewisham Core Strategy (2011)
Lewisham Unitary Development Plan Saved Policies (2004)
London Borough of Lewisham Infrastructure Delivery Plan (2010)
Lewisham Biodiversity Action Plan (2007)
Lewisham Sustainable Community Strategy 2008-2020 (2008)
Lewisham Local Implementation Plan (Transport) (2010)

### 3.2 Summary of the review

The key themes identified by this review are shown in Table 5. A summary of the policy documents and their relevance to the Lewisham LFRMS is set out in Appendix A.

**Table 5: Policies, plans and programmes reviewed through this SEA process**

SEA topic	Key themes
Landscape and visual amenity	Protecting sensitive landscape assets (including National Parks and AONBs); promoting the conservation and enhancement of natural beauty and amenity of important landscapes, including inland waters; definition and protection of regional and local landscape character; and the provision and enhancement of green infrastructure to benefit people and the environment.
Biodiversity, flora and fauna	Protection of international and national designated sites and their qualifying features; preservation and enhancement of notable habitats and species, particularly those noted for their conservation value or under threat; identification of the responsibilities of organisations including local authorities to protect and enhance biodiversity including the creation of BAP habitats and promotion of BAP species; provision of new/restored habitat to enable adaptation to the impacts of climate change.
Water environment	Promote the sustainable use of water resources to meet future growth in demand and impacts of climate change; better regulation and management of the water environment to benefit water resources and flood risk, and reduce water pollution; and promotion of sustainable drainage systems (SuDS).
Geology and soils	Long term protection, improvement and sustainable management of soil quality and quantity, including the preservation of best and most versatile land; and the management and remediation of contaminated land to reduce the risk to human health and the environment, particularly soils and water quality.
Historic environment	Protection and enhancement of nationally and locally important heritage assets and historic landscapes; better integration of heritage protection within the planning regime; and providing better access to heritage sites including their promotion as an economic asset.
Population	Protect and improve human health, wellbeing and living standards; greater integration of socio-economic and environmental objectives to deliver sustainable

	development; promotion of prosperous, sustainable and coherent communities; provision of better public transport and access; reduction of flood risk; enhancement of recreation and amenity resources to benefit health and wellbeing; and development and provision of measures to enable adaptation to the impacts of climate change.
Material assets	Improvement and better management of material assets including highways and utilities infrastructure; greater provision and enhancement of green infrastructure to deliver benefits to people and the environment; and provision of better public services to deliver socio-economic benefits.
Air quality	Protection of air quality in urban areas through enhanced management of polluting emissions.
Climate	Requirements to reduce future greenhouse gas emissions across all socio-economic sectors to limit the impacts of climate change of people and the environment; and provision of measures to enable future adaptation to the impacts of climate change and increase resilience.

## 4 Environmental characteristics and key issues

### 4.1 Introduction

A search of baseline environmental information has been undertaken to identify the key environmental characteristics of the Borough. This includes details of the environmental status and condition of notable environmental features; current and future predicted trends in the evolution of the environment; and issues and problems currently affecting the environment.

The information obtained through this desk study exercise is set out in the following topic-specific sections, many of which are inter-linked. The information used to characterise the baseline environment is broadly strategic in nature and reflects the high-level objectives of the LFRMS. It has been obtained from a broad range of sources and no new investigations or surveys have been undertaken as part of the scoping process. The baseline may require updating throughout the duration of the SEA process as the LFRMS is developed further and new information becomes available.

### 4.2 Landscape and visual amenity

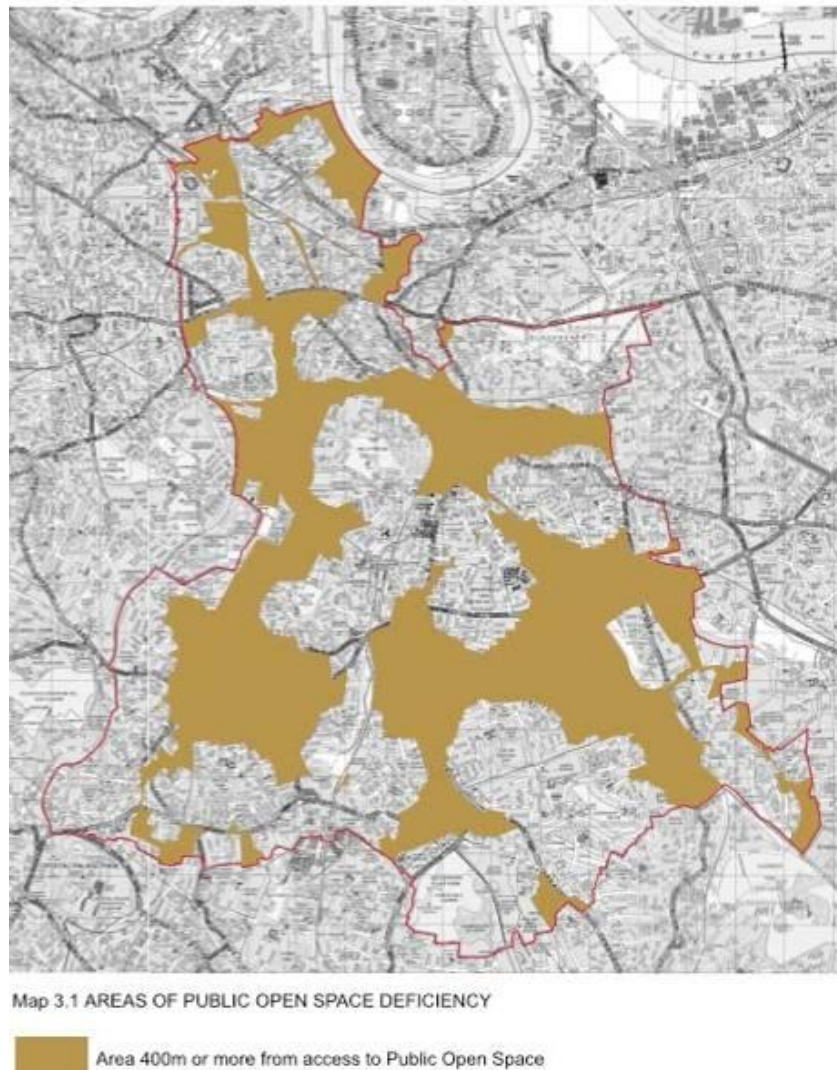
The London Borough of Lewisham is located in the south east of London and covers an area of approximately 35km<sup>2</sup>. Lewisham is a highly developed urban area consisting of mixed residential neighbourhoods and commercial centres. The north of the Borough has three main commercial centres at Deptford, Lewisham and Catford, which are surrounded by a broad hinterland of residential areas. The south of the Borough consists of large suburban inter-war and post-war residential estates.

The topography of Lewisham gently slopes from the east and west of the Borough to the River Ravensbourne, which flows through the centre of the Borough to the River Thames in the north. The highest viewpoints in the Borough are Crystal Palace at 109mAOD and Forest Hill at 105mAOD, both of which are located in the south west of the Borough.

There are a number of large and small open green spaces and parks located along the course of the River Ravensbourne, which form part of its floodplain and provide a green corridor through the Borough. These areas form part of a larger and wider network of parks and green spaces across the Borough, which make up 14% of the Borough's land area<sup>4</sup> and provides a significant positive contribution to the character of their surrounding areas. There are nearly 3km<sup>2</sup> of Metropolitan Open Land, over 3km<sup>2</sup> of Sites of Nature Conservation Importance (SNCI) and three Registered Parks and Gardens of Special Historic Interest in the Borough. However, there tends to be a lack of parks and open green spaces around areas of densely built Victorian and Edwardian terraces around the areas of Catford, Forest Hill, Lewisham and areas around Deptford. However, tree lined streets in these areas provide a small amount of green amenity.

The Council has identified a number of areas with open space deficiency (defined as areas that are more than 0.4km from a park that is 2ha or more in size). These deficient areas occur across a wide proportion of the Borough as dense urban development and pressure on land restricts access to local parks (see Figure 2).

<sup>4</sup> London Borough of Lewisham (2004), Unitary Development Plan, Chapter 3: Open Space  
<http://www2.lewisham.gov.uk/lb/planning/udp/chapter3.html>



**Figure 2: Areas of Public Open Space Deficiency (source: London Borough of Lewisham)**

Green corridors are most notable along the River Ravensbourne and the Borough's railway corridors<sup>5</sup>. There are over 40 public parks, 14 of which have been given a Green Flag Award, which sets the benchmark for a national standard for parks and green spaces in the UK. Lewisham ranks among the top 10 boroughs in London for provision of Green Flag areas<sup>6</sup>.

The Green Chain Walk runs through the west, south and east of the Borough and is part of the South East London Green Chain (SELGC). This is a series of inter-linked open green spaces that connect between the neighbouring boroughs of Bexley, Bromley, Greenwich and Southwark, and provide a valuable recreation amenity, landscape and wildlife resource for the wider south east London area.

There are two Special Character Areas (SCA) within the Borough: Blackheath and Sydenham Ridge. Blackheath was designated as an SCA in order to protect the architectural and historic character of the Victorian village qualities including its skyline and viewpoints. Sydenham Ridge was designated to safeguard its scale and character and to also protect its skyline. These areas provide a valuable contribution to the character of the Borough and wider area and the Council resists development proposals that could adversely affect their character<sup>7</sup>. Important views and landmarks in the Borough have been identified by the Council and

<sup>5</sup> Urban Practitioners (2010), Lewisham Borough Wide Character Study, Final Report, October 2010  
<http://www.lewisham.gov.uk/myserVICES/planning/policy/Documents/LewishamBoroughWideCharacterStudyP1.pdf>

<sup>6</sup> Green Flag Award <http://www.greenflagaward.org/>

<sup>7</sup> London Borough of Lewisham (2004), Unitary Development Plan, Part II, Chapter 2: Urban Design and Conservation  
<http://www2.lewisham.gov.uk/lb/planning/udp/chapter2.html>



designated as Local Views and Local Landmarks<sup>7</sup>. There are 15 throughout the Borough, which include:<sup>8</sup>

- Horniman Museum (front facade), Forest Hill;
- Horniman Gardens, Forest Hill;
- Telegraph Hill;
- Christchurch Forest Hill;
- St. Bartholomew's Westwood Hill;
- Foreshore, Deptford;
- Blythe Hill Fields;
- St Paul's Deptford;
- Hilly Fields;
- St Mary's Ladywell;
- Ladywell Water Tower;
- Lewisham Clocktower;
- Hither Green Hospital Clock and Water Tower;
- Mountsfield Park; and
- All Saints Blackheath.

There are also two strategic views across the northern part of the Borough towards St Pauls Cathedral; these are from Greenwich Park and The Point in Blackheath. These are protected views under The Town and Country Planning General Development Order, which restricts development within the viewing corridor to protect and enhance the foreground, background and wider setting of these strategic views.

Lewisham underwent 46 regeneration projects throughout the Borough between 2007 and 2013, with a 15 projects at proposal stage; the majority of these are focused in the north of the Borough. Regeneration projects include improvements and enhancements to high streets, leisure centres, schools, riverside walks and cycle routes.

The Borough is characterised by two National Landscape Character Areas (LCA): Inner London (112) and Greater Thames Estuary (81). The Inner London LCA covers the majority of the Borough. It has been characterised as predominantly urban, forming both the centre of UK Government and is major international hub for finance, business, tourism, transport and recreation. A key characteristic of the LCA that is predominant in Lewisham is its network of green space and green space deficiency<sup>9</sup>.

The very north of the Borough includes a narrow strip of land following the River Thames, which is characterised by the Greater Thames Estuary. Key characteristics of this LCA include a predominantly remote and tranquil landscape of shallow creeks, drowned estuaries, low lying islands, mudflats and tidal salt marches. However, such characteristics are not present in the Lewisham section of this LCA, which is characterised by dense urban and industrial areas, where population density is high and development pressures are increasing<sup>10</sup>.

#### **Key environmental issues:**

Pressure from new development and associated infrastructure are likely to present significant challenges as the area responds to an increasing population and the demands of economic development and climate change. Urban greening is important in Lewisham as there are dense built up areas that have been identified as having open space deficiency.

<sup>8</sup> London Borough of Lewisham Schedule 1 the Councils Proposals

<http://www2.lewisham.gov.uk/lb/planning/udp/schedule1.html#SCH1A>

<sup>9</sup> Natural England (2013), National Character Area Profile 112 Inner London

<http://publications.naturalengland.org.uk/publication/5360729876070400?category=587130>

<sup>10</sup> Natural England (2013), National Character Area Profile 81 Greater Thames Estuary

<http://publications.naturalengland.org.uk/publication/4531632073605120?category=587130>

Flood risk management measures have the potential to affect the landscape characteristics of the Borough. This includes changes to the river corridors, impacts on existing open spaces, and impacts on the setting of local landmarks and landscape features. Many of these aspects are protected through regional and local policies, and as such could restrict the implementation of LFRMS objectives if they are shown to present a risk to the quality of the landscape.

### 4.3 Biodiversity, flora and fauna

Several rivers flow through the Borough: a short section of the River Thames at its northern boundary, including a section of its tributary, Deptford Creek, and the River Ravensbourne including its tributaries the Pool River, River Quaggy and Spring Brook. These watercourses form wildlife corridors through the Borough. The Waterlink Way further increases the wildlife corridors and connectivity within the Borough by a linked network of open spaces and waterways from Beckenham Place Park to Deptford Creek, following the line of the rivers Ravensbourne, Quaggy and Pool. During the last 10 years the Council and the Environment Agency have undertaken works to re-naturalise the rivers in the Borough. Storage capacity has been incorporated for use in flood events and this has been of benefit to plants, creating more diverse natural environments along the rivers Quaggy and Ravensbourne<sup>11</sup>.

The following priority habitats are listed as part of the Lewisham Local Biodiversity Action Plan (LBAP):

- Parks, open spaces and cemeteries
- Railway linesides
- Rivers
- Standing open water

The following priority species are listed as part of the Lewisham Local Biodiversity Action Plan (LBAP):

- Bats
- Black redstart
- House sparrow
- Songthrush
- Stag beetle

#### 4.3.1 Designated nature conservation sites

Lewisham does not support any internationally or nationally designated sites. However, 10 such sites are located within 30km of the Borough boundary. These are:

- Lee Valley Special Protection Area (SPA)
- Lee Valley Ramsar
- Thames Estuary and Marshes SPA
- Thames Estuary and Marshes Ramsar
- South West London Waterbodies SPA
- South West London Waterbodies Ramsar
- Richmond Park Special Area of Conservation (SAC)
- Wimbledon Common SAC
- Epping Forest SAC
- North Downs Woodlands SAC

The Lee Valley SPA and Ramsar sites are the closest sites to the Borough, located 9km to the north of the Borough boundary, to the north of the City of London and the River Thames. These sites are designated for their wetland habitats and support internationally important

<sup>11</sup> London Borough of Lewisham & Environment Agency (2010), Ravensbourne River Corridor Improvement Plan [http://www.lewisham.gov.uk/myservices/planning/policy/Documents/Ravensbourne\\_River\\_Corridor\\_Improvement\\_Plan\\_%20Newformat\\_Feb%202012.pdf](http://www.lewisham.gov.uk/myservices/planning/policy/Documents/Ravensbourne_River_Corridor_Improvement_Plan_%20Newformat_Feb%202012.pdf)

numbers of wintering wildfowl. The Thames Estuary and Marshes SPA and Ramsar sites are located on the south side of the Thames Estuary, 26km to the east of Lewisham. The sites support internationally important numbers of wintering wildfowl. The South West London Waterbodies SPA and Ramsar sites are located 22km west of Lewisham and comprise a series of embanked water supply reservoirs and former gravel pits that support a range of man-made and semi-natural open water habitats. The reservoirs and gravel pits are important feeding and roosting sites for wintering wildfowl. The three SPAs and Ramsar sites are not directly hydrologically linked to the Borough, although the Thames Marshes SPA and Ramsar sites are indirectly linked via the River Thames. Richmond Park SAC is located 9km to the west of Lewisham, whilst Wimbledon Common SAC is 12km to the west and Epping Forest SAC is located 14km to the north.

There are no Sites of Special Scientific Interest (SSSIs) in the Borough. The nearest SSSI is Oxleas Woodlands SSSI located approximately 3km to the east of the Borough.

Lewisham has four sites of major ecological importance in London: Beckenham Place Park, Blackheath, the Thames/Deptford Creek, and New Cross Gate to Forrest Hill railway cutting. Blackheath and Beckenham Place Park support important areas of acid grassland, which is a rare habitat in Lewisham (and rather uncommon in London as a whole). The ponds at Blackheath constitute a substantial proportion of the Borough's still water habitat and the park is considered an important nature conservation area within the Borough. Deptford Creek supports fresh and saltwater plants and animals.

Brookmill Park Nature Reserve supports areas of marsh, water and grassland, which have the tendency to flood at high tides. A small ornamental lake is present within the park which is located alongside the River Ravensbourne. Sydenham Cottages nature reserve lies adjacent to the River Quaggy and once formed part of an extensive water meadows system before the river was realigned and a concrete channel installed<sup>12</sup>. Dacres Wood nature reserve supports a large population of frogs and population of smooth newts (*Lissotriton vulgaris*). Ladywell Fields recently underwent a major capital programme of landscape and river enhancement works to create wetlands and aid flood alleviation.

There are approximately 25 non-statutory Sites of Local Importance in the Borough, which cover an area of 474 hectares (13% of the Borough) and a further 39 Sites of Borough Importance. In addition, there are six Local Nature Reserves (LNRs) within the Borough. Burnt Ash Pond Nature Reserve is an important amphibian site in the Borough with a large breeding population of common toad (*Bufo bufo*). The pond also supports smaller numbers of common frog (*Rana temporaria*) and smooth newts. The pond was first recorded in 1870, but is vulnerable to drying out during recent dry summers<sup>13</sup>.

Invasive species found within Lewisham include Japanese knotweed, Himalayan balsam and giant hogweed. These have spread prolifically over the past couple of decades effecting the River Ravensbourne, River Quaggy and River Pool. Parrot's feather and floating pennywort occur in a couple of ponds in Lewisham, with Australian swamp stonecrop identified in the part of Greenwich Park that intersects the boundary to Lewisham<sup>14</sup>.

The 'Three Rivers Clean-up' is a catchment (four Borough) and NGO partnership project where volunteers are engaged in the clean-up of the river system and specifically with the removal of Himalayan Balsam and Giant Hogweed. Flooding has the potential to cause the movement of detritus and rubbish downstream but also contributes to the spread of these invasive species through the movement of seeds and plant fragments. Any flood risk management works at these locations could lead to the spread of detritus/rubbish and the movement of these species.

<sup>12</sup> Natural England (2011), London's Natural Signatures: The London Landscape Framework. Chapter 18: The River Ravensbourne [http://www.naturalengland.org.uk/Images/01-execssummary\\_tcm6-14408.pdf](http://www.naturalengland.org.uk/Images/01-execssummary_tcm6-14408.pdf)

<sup>13</sup> London Borough of Lewisham (2013), Burnt Ash Pond webpage <http://www.lewisham.gov.uk/inmyarea/openspaces/nature-reserves/burnt-ash-pond/Pages/default.aspx>

<sup>14</sup> Environment Agency (2013), Lewisham: London Borough Environmental Fact Sheet August 2013 [http://www.environment-agency.gov.uk/static/documents/Research/Lewisham\\_2013.pdf](http://www.environment-agency.gov.uk/static/documents/Research/Lewisham_2013.pdf)

### 4.3.2 Fisheries

The tidal River Thames, which includes the section of the river at the northern edge of the Borough, supports a mixture of freshwater, estuarine and marine fish including species such as bream, dace, eel, sea trout, bass, flounder and smelt. Commercial eel fishing occurs in the tidal Thames throughout Lewisham with eel populations currently considered sustainable.

Inter-tidal habitat is generally limited along the Tidal Thames through London due to the presence of hard defences and urban development. However, new developments and flood defence replacement in Lewisham, such as those along Deptford Creek, have created valuable new foraging habitat for fish. Works by the Environment Agency at Ladywell Fields have included the provision of fish shelters, riffles and weirs to ensure suitable fish habitat is available at low water levels. The most commonly encountered fish at Ladywell Fields are eel and stickleback.

The River Ravensbourne and Pool River support good coarse fish populations in the limited areas of parkland where the river has remained in its natural channel, whilst bullhead, (a Biodiversity Action Plan priority species) has been recorded in the lower reaches of the Ravensbourne during recent fisheries monitoring work. The River Quaggy supports populations of smaller fish species such as stone loach, stickleback and minnow.

#### **Key environmental issues:**

A number of nature designated sites, such as Beckenham Place Park and Blackheath support ponds and wetland habitats. These habitats are largely dependent upon the underlying hydrological conditions and are therefore vulnerable to flooding and changes in underlying soils, hydrology and habitat. The Borough also supports a number of species, particularly amphibians, which are reliant on aquatic and riparian habitats and subsequently are at risk from flooding events, poor water quality and habitat changes. Invasive species, particularly Japanese Knotweed and Himalayan Balsam have spread within the Borough and future flood events are likely to result in the further spread of these species.

Future incidences of flooding could potentially damage and change the nature of habitats and supporting species composition within the designated sites within and outside the Borough. The LFRMS will need to consider whether any flood risk management measures will lead to adverse impacts on the water bodies within the Borough and whether the LFRMS can help contribute to delivering any mitigation measures such as through improvement to fish passage.

## 4.4 Water environment

### 4.4.1 Water resources

Four main rivers flow through the Borough – the River Ravensbourne and its tributaries the River Quaggy, Pool River and Spring Brook – whilst the River Thames forms part of the northern boundary of the Borough. The Ravensbourne rises in the Borough of Bromley and flows northwards towards Lewisham before flowing into the tidal Thames at Deptford, where its tidal reach is known as Deptford Creek. The Ravensbourne is joined by the River Pool near Catford and by the River Quaggy, which rises in Bromley, at Loampit Vale. Numerous other small streams and surface water outfalls join the main river between its source and confluence.

Lewisham lies wholly within the Thames Water region, which supplies around 2,600 million litres of tap water to 9 million customers across London and the Thames Valley. Most of the Borough falls within the 'London Water Resource Zone', which has been designated as an area that is 'seriously water stressed'<sup>15</sup>. The Borough also falls within the London Catchment Abstraction Management Strategy (CAMS) area, which has been assessed as having 'no water available'.

Average water consumption in the borough in 2011/12 was 165 litres per person per day (pp/pd). These figures have remained relatively stable over the past decade and are in line with the London average, but are higher than the UK average of around 145l pp/pd.<sup>11</sup>

<sup>15</sup> Environment Agency (2013), The challenges for water resources in London webpage <http://www.environment-agency.gov.uk/research/library/publications/41045.aspx>.

The River Ravensbourne is the major surface water resource for abstraction in Lewisham and provides water for public water supply and industry. However, the availability of water from this source is restricted. The major chalk aquifer that underlies much of London is the major groundwater resource for abstraction in the region<sup>14</sup>. The chalk aquifer is assessed as over-licenced and is managed to avoid groundwater flooding of London's deep infrastructure. There are seven licensed abstractions from groundwater in the Borough, which are mainly for public water supply, but also for use in the energy sector<sup>14</sup>. A water treatment works (WTW) operated by Thames Water is also located within the Borough.

Pressure on water resources will continue to increase in the future and corresponding annual flows in River Thames by the 2050's could be over 10% lower when compared to today's values<sup>14</sup>. These issues are linked to increasing population growth in the Borough and in Greater London, and the impacts of climate change, which could lead to hotter and drier conditions and more erratic rainfall events.

#### 4.4.2 Water Framework Directive

The Borough of Lewisham is covered by the Thames River Basin Management Plan (RBMP), which identifies the current quality of water bodies in the Borough and sets objectives for making further improvements to their ecological and chemical quality.

Five WFD designated river water bodies are present in the Borough: River Ravensbourne (Keston – Catford and Catford to Deptford sections), River Thames, Quaggy and Pool River. These rivers are classified as Heavily Modified Water Bodies (HMWB) and as priority water bodies for improvement action under the Water Framework Directive (WFD). The heavily modified status of these water bodies means that often structures block fish passage resulting in limitations to fish migration and spawning success.

River water bodies in Lewisham are classified as Moderate or Poor under the WFD and are generally improving across the Borough with the exception of the Ravensbourne (Catford to Deptford section), which declined from Poor to Bad between 2009 and 2012, due to pollution and misconnected drains. The biological status is Poor. In terms of macro-invertebrates, the rivers are classified as Moderate or Poor and are also Poor for fish. Physio-chemical status is described as Good or Moderate, although not all waterbodies have been assessed<sup>16</sup>.

#### 4.4.3 Surface water quality

Water pollution does not tend to be a major issue in Lewisham<sup>14</sup>. There were no major (Category 1) pollution incidents in the Borough between 2005 and 2012, although there were two significant (Category 2) and 53 minor (Category 3) incidents during this period. The most frequent cause was containment failure. There is no Sewage Treatment Works (STW) in Lewisham, which is served by Crossness STW in south-east London.

Pressures on water quality and factors preventing waterbodies reaching Good status generally arise from the urban nature of catchment. A number of pressures and risks have been identified for Lewisham which are contributing to preventing waterbodies reaching Good status and can adversely affect river ecology and water quality, these include:

- Invasive non-native species
- Misconnected domestic drains
- Pollution
- Physical or morphological alterations.

#### 4.4.4 Groundwater quality

Groundwater provides vital resources for public water supply, industry, feeds rivers and support wetlands. Groundwater has been a contributing factor to a number of Lewisham's past flooding.

Impacts on groundwater are broadly related to land use. A number of pressures and risks have been identified for the Borough and include<sup>16</sup>:

<sup>16</sup> Environment Agency (2009) River Basin Management Plan: Thames River Basin District <http://www.environment-agency.gov.uk/research/planning/125035.aspx>

- Abstraction and flow regulation: impact on surface waters, ground water, water balance (ground water) and terrestrial ecosystems
- Misconnected domestic drains
- Diffuse pollution sources: road run-off, pollutants from domestic and agricultural sources
- Inputs of nitrates, pesticides, solvents and hydrocarbons

Land contamination from historical sources poses a particularly high risk to groundwater used for public water supply in the lower Ravensbourne valley between Lewisham and Deptford. Redevelopment of sites such as the former Seager Distillery within the inner Source Protection Zone for Deptford Pumping Station are considered to pose a much higher potential risk than those on the London Clay in Catford or Bell Green<sup>14</sup>.

Lewisham lies within a Groundwater Source Protection Zone (SPZ) in the Total Catchment (Zones 1 and 2). Lewisham also lies within a Groundwater Safeguard Zone, which is protected because of the risk of pesticides and solvents, and within a Groundwater Vulnerability Zone for a minor aquifer (classed as High). The Borough does not contain any Drinking Water Protected Areas and the drinking water status is classed as not at risk.<sup>14</sup>

#### 4.4.5 Flooding

Approximately 22,400 properties are in areas at risk of flooding in Lewisham, accounting for 17% of all properties in the Borough. Around 58% of properties have been identified as at risk from tidal flooding, 40% from fluvial (river) flooding and 2% at risk from both tidal and fluvial flooding<sup>14</sup>. A total of 4,360 properties in the Borough were registered to receive flood warnings in March 2013.

The area of land within flood zones 2 and 3 is predominantly in the north of the Borough, where the risk is from the tidal River Thames. Other areas include the land around the River Ravensbourne and River Pool, extending to the southern part of the Borough, and the River Quaggy, extending towards the east.<sup>17</sup>

Groundwater has been a contributing factor to a number of Lewisham's past flooding events. Flooding events have occurred in a number of places, particularly those subject to a high water table. Groundwater may become elevated by a number of means:

- Above average rainfall for a number of months in Chalk outcrop areas
- Shorter period of above average rainfall in permeable superficial deposits
- Permeable superficial deposits in hydraulic continuity with high water levels in the river
- Interruption of groundwater flow paths
- Cessation of groundwater abstraction causing groundwater rebound.

The main flooding interaction between the separate surface water drainage system and the fluvial network system occurs when water levels in the main river system are high enough to stop surface water discharging into them, causing surface water to back up.

#### **Key environmental issues:**

Lewisham falls within the Thames Water's 'London Water Resource Zone', which is identified as seriously water stressed with water resources under high demand. Pressures include population growth and development, increasing water demand, climate change, leakage rates and meeting ecological requirements under the WFD. Measures to help meet future demands include desalination plants, reusing treated effluent and restrictions on usage.

Rivers currently fail to meet Good Ecological potential under the WFD. The LFRMS will need to consider whether any flood risk management measures will lead to adverse impacts on the water bodies within the Borough and whether the LFRMS can help contribute to achieving WFD objectives and improving water quality in the Borough. Important factors that need to be protected include drinking water quality, groundwater and human health, and there should be no adverse impacts on the hydrological regime of various aquatic habitats.

<sup>17</sup> London Borough of Lewisham (2011), Surface Water Management Plan  
<http://councilmeetings.lewisham.gov.uk/documents/s3731/Appendix%202%20Surface%20Water%20Management%20Plan.pdf>

## 4.5 Soils and geology

The whole of Lewisham is underlain by London Clay, which is capped by younger and more resistant strata of the Claygate Member to form ridges. The oldest rocks are in the Deptford area to the north, where an exposure of the Thanet Sand Formation and small inliers of Lewes Nodular Chalk Formation are surrounded by sands/gravels from the Lambeth Group. The soils also reflect the geology, with poor draining soils over the London Clay and sandier soils over the older rocks of the Lambeth Group, Thanet Sand and Lewes Nodular Chalk Formations which underlie the London Clay<sup>18</sup>.

The complex geology beneath Beckenham Place Park in the south of the Borough is responsible in part for the acid grassland habitats present there which is rare in the Borough and in London. The north-western part of the park and a small area in the south lie on the London Clay. Most of the middle of the Borough is underlain by the pebbly sand and gravel of the Blackheath Beds, with a narrow band of Woolwich and Reading Beds. River Terrace Gravels lie to the east. These three strata give rise to well-drained, acidic soils.

Groundwater has been a contributing factor to a number of Lewisham's past flooding. This has been a result of elevated groundwater from permeable superficial soils in the centre of the Borough, which surround the flood plain of the River Ravensbourne. Elevated groundwater from consolidated aquifers in the north western corner of the Borough around Deptford can also be a contributing factor<sup>17</sup>.

Summerhouse Field lies on alluvium from the River Ravensbourne. The well-drained, acidic soils of the Blackheath Beds support acid grassland, a habitat rare in the Borough and also in London<sup>19</sup>.

### **Key environmental issues:**

Flooding events could alter the extent or duration of flooding and therefore could have implications for soil quality and the underlying geology. However, given the highly urban nature of the Borough, the LFRMS is not likely to impact on soil quality and geology in the Borough, with any impacts, such as through increased flood risk management activity, unlikely to be significant.

## 4.6 Historic environment

Early settlements such as Lewisham and Catford were built along watercourses and adjacent roads in the Borough. Eleven mills were recorded in the Domesday Book of 1086 as being located along the River Ravensbourne. These mills ground steel for weapons and tanned leather, among other industrial uses,<sup>20</sup> which could have led to historic land contamination in the area. The River Thames also played a key role in the development and growth of the Royal Naval Dockyards and shipbuilding along the Deptford waterfront.

The current A21 was historically the route of Watling Street, once an important Roman Road travelling east to west across Britain. The expansion of the railway in 1839 was a key influence on the growth of Forest Hill and Sydenham. It later arrived in Blackheath in 1849, playing a major part in the suburban development of the area<sup>21</sup>.

Historic sites in the Borough include:

- One World Heritage Site: Maritime Greenwich Buffer Zone, which crosses the north east boundary of the Borough. This is a site of cultural and natural heritage considered to be of outstanding international importance.
- One Scheduled Monument: Tudor naval storehouse at Convoys Wharf, which is a historic site of national importance;

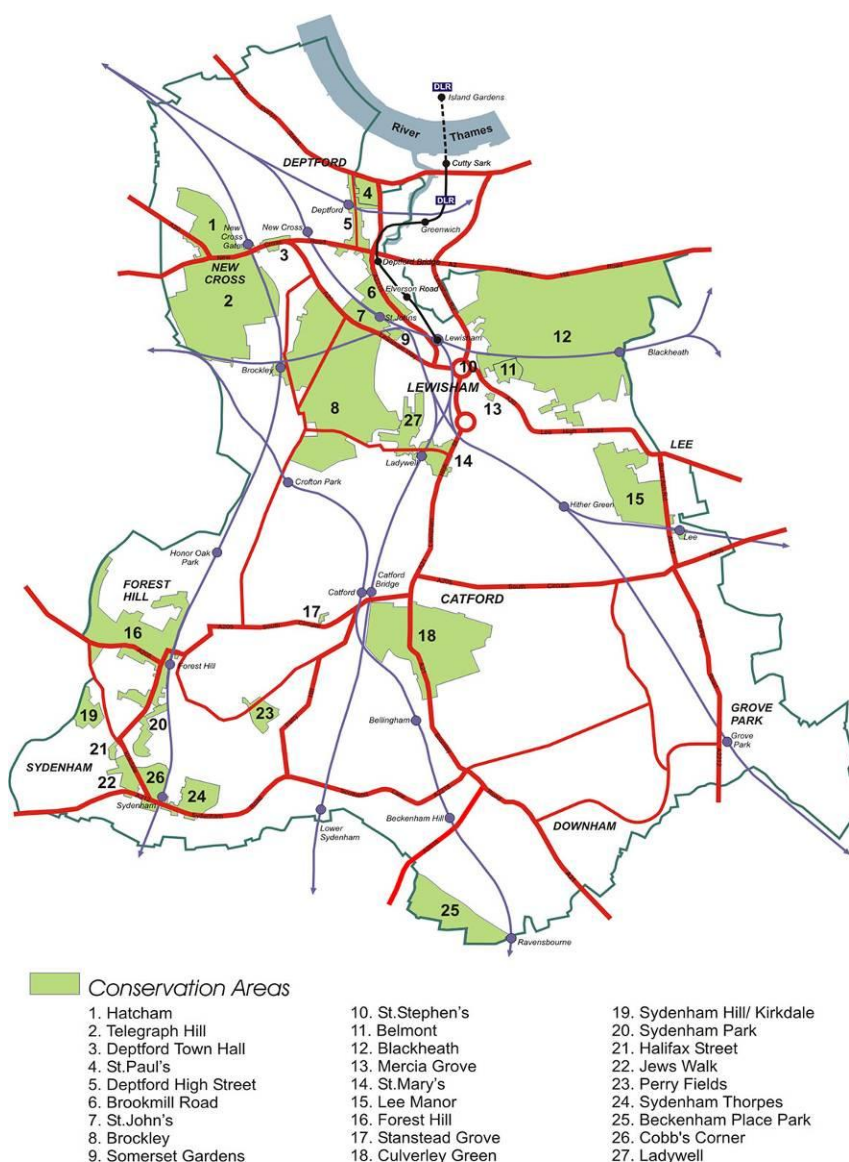
<sup>18</sup> Natural England (2011) London's Natural Signatures: The London Landscape Framework, 17: South London Clays and Gravels [http://www.naturalengland.org.uk/Images/22-south-london\\_tcm6-14429.pdf](http://www.naturalengland.org.uk/Images/22-south-london_tcm6-14429.pdf)

<sup>19</sup> London Borough of Lewisham (2013), Beckenham Place Park webpage [http://www2.lewisham.gov.uk/nature\\_conservation/Beckenham%20place%20extra%20text.htm](http://www2.lewisham.gov.uk/nature_conservation/Beckenham%20place%20extra%20text.htm)

<sup>20</sup> Ideal Homes (2013), A History of South-east London Suburbs webpage <http://www.ideal-homes.org.uk/lewisham/assets/histories/lewisham>

<sup>21</sup> Urban Practitioners (2010), Lewisham Borough Wide Character Study October 2010 <http://www.lewisham.gov.uk/myserVICES/planning/policy/Documents/LewishamBoroughWideCharacterStudyP1.pdf>

- Five hundred and forty listed buildings: these are statutorily designated and include two Grade I listed buildings: Boone's chapel in Lee High Road and St Paul's Church in Deptford;
- Three historic parkland areas: these are sites included on the Register of Parks and Gardens of Special Historic Interest; and
- Twenty eight Conservation Areas: the largest number of conservation areas being in the north with a concentration of small conservation areas in the south west of the Borough.



Geographic Information & Research 2010

**Figure 3: The London Borough of Lewisham Conservation Areas (source: London Borough of Lewisham)**

The Borough's Heritage at Risk Register (2012) identifies one conservation area and 17 listed buildings at risk. The number of structures at risk as a result of neglect, decay or inappropriate development has risen since 2009<sup>22</sup>.

**Key environmental issues:**

Lewisham contains a wealth of historic sites. However, a small number of the most important of these sites are currently assessed as being under threat. Conservation areas face pressure

<sup>22</sup> English Heritage (2012), Heritage at Risk Register 2012 London <http://www.english-heritage.org.uk/publications/har-2012-registers/lo-HAR-register-2012.pdf>



from heavy and increased traffic levels, and economic challenges such as viability of shops and businesses in these areas. There is a risk that adverse impacts upon aspects of Lewisham's cultural heritage could arise from flooding and increased flood risk in the future, whilst the implementation of flood risk management options selected by the LFRMS could also have adverse effects. Potential benefits may also arise from reduced flood risk to assets as a result of implementation of the LFRMS. However, it should be noted that some archaeological assets require waterlogged conditions to preserve them.

## 4.7 Population

The Borough's population is estimated to be approximately 281,500<sup>24</sup>. Between 2001 and 2011, the population grew by 17,000 (approximately 10%). This is greater than the England national average of 6.9% increase over the same period, whilst the population of London increased by 14%<sup>23</sup>. The population of the Borough is estimated to have grown by a further 9,000 in the two years to 2013, and is predicted to continue to rise, with an increase of approximately 5% between 2013 and 2018<sup>24</sup>. There are 78.5 people per hectare, making Lewisham the 13<sup>th</sup> most populated authority in England and Wales (2011 census)<sup>25</sup>. Population density is fairly evenly spread across the Borough, with some denser areas located in the north and west<sup>26</sup>.

Between 2002 and 2011 there has been an increase in persons aged under 65 living in the Borough and a decline in the number of older persons there. The percentage of people in the age groups of 0-15 and 16-64 are above the national and London averages with 20.7% (the national average being 18.9%) and 69.8% (the national average being 64.7%) respectively.

The average household size in Lewisham increased from 2.3 to 2.4 in the 10 year period to 2011, which challenges the broad assumption that household size is generally in decline. The number of households across the Borough increased by 8.1% between 2001 and 2011 to 116,091<sup>27</sup>. Property types vary and include houses, flats and bungalows, with the most common type of accommodation being purpose built flats. Approximately 55% of dwellings are either council or privately rented, with an increase in privately rented properties and a decline in council rented properties in the 10 year period to 2011. There has also been a decline in people owning a property outright, with a mortgage or shared ownership from 50.1% to 43.6% between 2001 and 2011<sup>28</sup>.

### 4.7.1 Health

The Association of Public Health Observatories 2012 health profile report for Lewisham shows that the health of people in Lewisham varies, with higher deprivation, obesity, teenage pregnancy and lower life expectancy rates than the England average. However healthy eating, smoking in pregnancy and alcohol related hospital stays among under 18 year olds are lower than the England average. The key causes of death in Lewisham remain circulatory disease, cancer and respiratory disease, all of which are above the England average. Life expectancy across the Borough, like elsewhere across the country, has increased over the last 20 years. However, it is marginally below the England average for both men and women. Life expectancy for men is 77.6 year old (78.9 England average) and for women is 82.3 years old (82.9 England average)<sup>29</sup>.

Several health related priorities have been identified by the Council. These include tackling lifestyle issues such as diet, weight and physical activity, behaviour change, obesity, alcohol and smoking.

<sup>23</sup> Census Information Scheme (2012), GLA Intelligence 2011 Census first results July 2012

<http://data.london.gov.uk/datastore/files/documents/2011-census-first-results.pdf>

<sup>24</sup> Office of National Statistics (2012), 2012 Mid-year estimate <http://www.ons.gov.uk/ons/publications/index.html>

<sup>25</sup> London European Partnership for Transport (2013), London Borough of Lewisham

<http://www.londoncouncils.gov.uk/services/lept/boroughmap/lewisham/>

<sup>26</sup> Urban Practitioners (2010), Lewisham Borough Wide Character Study Part 1 (Final Report)

<http://www.lewisham.gov.uk/myserVICES/planning/policy/Documents/LewishamBoroughWideCharacterStudyP1.pdf>

<sup>27</sup> London Borough of Lewisham, personal communication 15 November 2013.

<sup>28</sup> London Borough of Lewisham (2012), 2011 Census Second Release December 2012

<http://www.lewisham.gov.uk/inmyarea/Documents/2011CensusSecondReleaseDec2012.pdf>

<sup>29</sup> Public Health England (2013), Lewisham Health Profile

[http://www.apho.org.uk/resource/view.aspx?QN=HP\\_RESULTS&GEOGRAPHY=AZ](http://www.apho.org.uk/resource/view.aspx?QN=HP_RESULTS&GEOGRAPHY=AZ)

#### 4.7.2 Deprivation

Social deprivation is an issue in the Borough, as is the case across London, and Lewisham is the tenth most deprived borough in the city. The Index of Multiple Deprivation provides a measure of relative deprivation across England and was most recently published in 2010. Deprivation is not spread evenly across the country with Lewisham being the 31<sup>st</sup> most deprived borough in England<sup>30</sup>. The highest areas of deprivation are generally found in the northern and southern parts of the Borough. Small areas of the highest deprivation are found in the wards of Bellingham, Downham, Evelyn, Lewisham Central, Rushney Green and Whitefoot.

In 2010, 36.6% of the population in Lewisham was reported to be living in the 20% most deprived areas in England, which is significantly more than the England average of 20.3%. There are areas in the Borough recorded as being among the five per cent most deprived in England. Approximately 17,905 children were reported to be living in poverty (defined as families receiving means-tested benefits and low income) in Lewisham in 2010. Comparison with previous results published in 2004 and 2007 indicates deprivation is inherent in particular areas of the Borough and that the level of deprivation is increasing.

##### **Key environmental issues:**

The population and number of households in the Borough are set to increase in the future, with growth expected to concentrate in the wards of Evelyn, New Cross and Lewisham Central. General health varies across the Borough with some health issues worse than the England average, including life expectancy. Poorer health is linked to areas of higher social deprivation. However, major development and regeneration plans are also proposed in these areas, which will aim to combat issues associated with crime, health, education and business growth<sup>31</sup>.

This growing population will place increased demand on a range of resources and the Borough's water and sewerage infrastructure, which could be exacerbated by the effects of climate change. Linked to this may be increased demands for development and pressure on the existing housing provision, which may result in greater need for development in areas at risk of flooding.

#### 4.8 Material assets

The Borough benefits enormously from a well served transport network. Fast railway links into central London, Canary Wharf, London City Airport, the international terminal at Stratford and the extension of the Docklands Light Railway (DLR) provides access to economic and social opportunities for the Borough. There are 20 main line stations, three DLR stations and 42 bus routes in the Borough.

The Borough has the ninth highest proportion of people travelling to work by public transport both nationally and regionally, and one of the lowest proportions of people travelling to work by car; this provides a strong indication that the public transport network is well used, with the highest percentage of train journeys connected to the most affluent wards in the Borough<sup>32</sup>.

Lewisham forms part of the London Strategic Road Network with the south circular (A205) passing through the borough and linking it to the centre of London. Car ownership is relatively low, with a third of households without access to a car, highlighting greater dependency on public transport.

National Cycle Route 21, the Downs and Weald, runs from Greenwich down through Lewisham following the Waterway link along the River Ravensbourne and on to Heathfield

<sup>30</sup> London Borough of Lewisham (2013), Lewisham's Joint Strategic Needs Assessment, Index of Multiple Deprivation webpage <http://www.lewishamjsna.org.uk/health-inequalities/index-of-multiple-deprivation>

<sup>31</sup> London Borough of Lewisham (2011), Local Development Framework, Core Strategy <http://www.lewisham.gov.uk/myservices/planning/policy/Documents/CoreStrategyAdoptedVersion.pdf>

<sup>32</sup> London Borough of Lewisham (2012), Local Economic Assessment <http://www.lewisham.gov.uk/mayorandcouncil/aboutthecouncil/strategies/Documents/LocalEconomicAssessment2012.pdf>

and Eastbourne. The national route also forms part of the Avenue Verte Greenway linking London and Paris via the Newhaven to Dieppe ferry<sup>33</sup>.

The Thames Gateway is considered to be the largest regeneration project in Europe over the coming 20 years with 120,000 new homes expected to be built and 180,000 new jobs created<sup>11</sup>. As part of the Thames Gateway development, there are plans to build over 18,000 additional new dwellings in the Borough over the next 15 years to meet local housing needs and comply with the London Plan requirements<sup>31</sup>.

Lewisham Gateway is currently the single largest development within Lewisham. The scheme is a collaboration between Lewisham Council, the Greater London Authority, Transport for London and the developer with construction due to be completed in 2015. Lewisham Gateway will include:

- Shops, restaurants, bars and cafes
- Leisure facilities
- Up to 800 new homes
- A park where the Ravensbourne and Quaggy rivers meet

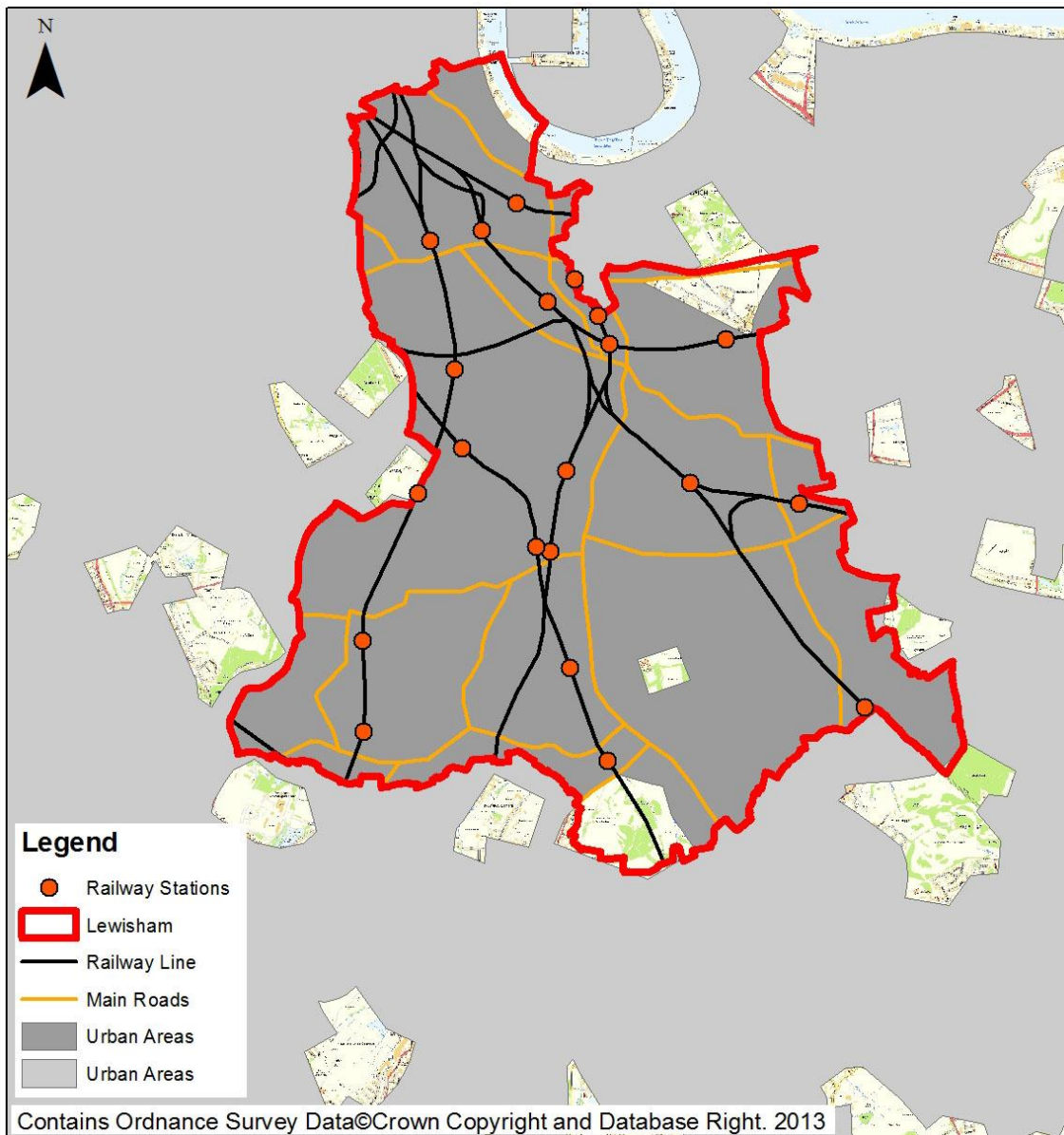


Figure 4: Transport infrastructure in Lewisham

<sup>33</sup> Sustrans (2013), Waterway Link webpage [http://www.sustrans.org.uk/ncn/map/route/waterlink-way#./waterlink-way?&\\_suid=138174062919208849910593526933](http://www.sustrans.org.uk/ncn/map/route/waterlink-way#./waterlink-way?&_suid=138174062919208849910593526933)

#### 4.8.1 Economy

The Borough is the fifth most populated of the inner London boroughs<sup>34</sup>. However, Lewisham's economy is one of the smallest in London. Nearly 70% of the Borough's workforce travel outside the Borough for work<sup>31</sup>. Employment within the Borough is mainly public sector, which includes the Council as the largest employer, followed by Lewisham Hospital, Lewisham College and the Metropolitan Police<sup>35</sup>. Private sector businesses tend to be medium to small scale retail, business services and construction, with a growing creative sector around Goldsmiths University.

The Borough has nine town centres, with significant expansion and regeneration expected in the north of the Borough at Convoys Wharf, Surrey Canal Triangle, Oxestalls Road, Plough Way, Lewisham Gateway, where there are plans for the provision of 9,450 dwellings<sup>36</sup>. Deptford High Street is proposed to become a major visitor and business destination<sup>37</sup>.

#### 4.8.2 Green infrastructure

In addition to the traditional material assets identified above, the Borough contains a range of significant green infrastructure and public green spaces, which positively contribute to public health and wellbeing, as well as the wider environment. There are four Greenway routes through the Borough, which provide walking and cycling routes within the Borough and other London Boroughs. The four routes include:

- Capital Ring: A 126km circular walk around London which runs through the south of the Borough;
- Green Chain Walk: A 80km path through the four south London Boroughs of Lewisham, Bexley, Bromley and Greenwich;
- Thames Path National Trail: A 294km route from the Cotswolds to the Thames Barrier in Greenwich; and
- Jubilee Greenway: A 60km route circular route around London.

The Waterlink Way also provides a significant transport, recreational and biodiversity benefit, linking open spaces and waterways from Beckenham Place Park to Deptford Creek, following the line of the rivers Ravensbourne, Quaggy and Pool.

Together, these areas form part of the All London Green Grid strategic network of green infrastructure, linking parks, waterways and other green spaces across wider London. Delivery of infrastructure improvements is through Area Frameworks, with Lewisham forming part of the South East London Green Chain Plus framework that also comprises the neighbouring boroughs of Bexley, Bromley, Greenwich and Southwark. The framework's key objectives include increasing access to open space, conserving landscape and natural environment features, improving sustainable travel connections and enabling adaptation to the impacts of climate change.

#### **Key environmental issues:**

The Borough experiences excellent internal and external transport links with a large proportion of the population utilising the public transport network. The predicted increase in population will place greater pressure on the transport network, which could be exacerbated by increased future development pressure. In addition, development and commercial pressures are set to place increased demand on land availability, which will in turn affect the existing transport network.

Flooding of transport assets has the potential to cause disruption to movement of residents, commuters and emergency services. This could have short-term impacts on the local and regional economies, and longer-term impacts on transport planning, utilities provision and social mobility.

<sup>34</sup> Office of National Statistics (2012), 2012 Mid-year estimate <http://www.ons.gov.uk/ons/publications/index.html>

<sup>35</sup> Lewisham Strategic Partnership (2013), The Borough webpage <http://www.lewishamstrategicpartnership.org.uk/borough.asp>

<sup>36</sup> London Borough of Lewisham (2011), Lewisham Local Implementation Plan 2011-2031 <http://www.lewisham.gov.uk/mayorandcouncil/aboutthecouncil/strategies/Documents/Local%20Implementation%20Plan%202011-2031.pdf>

<sup>37</sup> London Borough of Lewisham (2012) Local Economic Assessment <http://www.lewisham.gov.uk/mayorandcouncil/aboutthecouncil/strategies/Documents/LocalEconomicAssessment2012.pdf>

Flood risk management measures, such as flood defences, have the potential to impact upon cycle routes and footpaths along river corridors. New development should complement the core strategy for sustainability in Lewisham. New infrastructure should ensure accessibility through walking and cycling is promoted and enhanced as part of the development process.

## 4.9 Air quality

Periodic reviews of air quality in the Borough are undertaken for a range of potentially harmful substances. These are required to meet the targets set by the Government's Air Quality Strategy. National air quality objectives (AQOs) have been designated for the following contaminants: ground level ozone (O<sub>3</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulphur dioxide (SO<sub>2</sub>), particulates, Benzene, 1,3-Butadiene and Lead. If further assessments verify the original finding of excessive contaminant concentrations, the area is designated as an Air Quality Management Area (AQMA) for which objective contaminant levels are set and strategies to achieve them drawn up. An Air Quality Action Plan was produced in 2010 to demonstrate how the Council will improve air quality in the Borough, which complements the Mayor of London Air Quality Strategy – Clearing London's Air<sup>38</sup>.

A review of air quality in Lewisham found targets for nitrogen dioxide (NO<sub>2</sub>) and particles (PM<sub>10</sub>) were likely to be exceeded in the northern part of the Borough and at locations close to the most congested roads. Five AQMAs were consequently declared in Jun 2001<sup>39</sup>. A detailed assessment in 2011 found the annual average nitrogen dioxide (NO<sub>2</sub>) levels were exceeded at roadside sites, with a general improvement in nitrogen dioxide concentrations at roadside monitoring locations across the borough with many background sites showing a slight worsening. Air quality objectives for nitrogen dioxide occurring outside of the existing AQMAs were found to have been exceeded and a new AQMA was required.<sup>40</sup>

### **Key environmental issues:**

Generally, air quality in the Borough meets the targets set by the government in the Air Quality Objective (AQO). However, greater pressures on air quality may occur in the future through increases in the population of the Borough, greater development and increased traffic congestion. This could lead to the designation of additional AQMAs to address local impacts on air quality. The LFRMS is not likely to impact on air quality in the Borough, with any impacts, such as through increased flood risk management activity, unlikely to be significant.

## 4.10 Climate

Lewisham experiences a relatively stable climate with mild variations between average highs and lows. The average annual temperature high is 15.3°C and low temperature is 7.8°C. The area experiences adequate rainfall year round, with over 109.4 precipitation days each year and an average annual rainfall of 557mm<sup>41</sup>, which is almost identical to the UK average of 557.4mm<sup>42</sup>.

Lewisham is the second lowest London borough for per capita CO<sub>2</sub> emissions with 5.0 tonnes per capita compared to the London average of 6.9 tonnes. Lewisham also has one of the lowest rates of local authority collected waste to landfill in London at only 9%. This is due to 74% of the waste being incinerated (the highest amount in London).

The UK Climate Projection (UKCP09) provides probability-based projections of key climate variables, such as temperature and rainfall at a higher geographic resolution than has previously been available. Projections are based on the Intergovernmental Panel on Climate Change's 'business as usual' emissions scenario.

<sup>38</sup> Greater London Authority (2010), Mayor's Air Quality Strategy  
<http://www.london.gov.uk/priorities/environment/publications/mayors-air-quality-strategy>

<sup>39</sup> London Borough of Lewisham (2008), Lewisham Air Quality Action Plan  
<https://www.lewisham.gov.uk/SiteCollectionDocuments/LewishamAirQualityActionPlan.pdf>

<sup>40</sup> London Borough of Lewisham (2011), Air Quality Progress Report for London Borough of Lewisham  
<http://www.lewisham.gov.uk/myservices/environment/air-pollution/Documents/Progress%20Report%202011.pdf>

<sup>41</sup> Weatherbase (2013), [www.weatherbase.com](http://www.weatherbase.com)

<sup>42</sup> Met Office (2013), City of London webpage <http://www.metoffice.gov.uk/public/weather/climate/city-of-london#?tab=climateTables>

Current predictions indicate towards significant and more variable temperature and rainfall predictions in future. Also expected are greater peak temperatures and prolonged hot periods. Summer mean temperatures are predicted to rise, on average, by 4.5°C. Minimum temperature rise is expected to be no less than 2.4°C and maximum rise is not expected to exceed 7.5°C. Winter mean temperature is also expected to increase - however by a lesser amount. The average, predicted rise is 3.7°C, while the minimum increase expected is 2 degrees and the maximum 5.7°C.

Lewisham is considered to have one of the lowest carbon footprints in London with the primary contributor from domestic sources<sup>43</sup>. Lewisham has a distinctively different profile for emissions by sector in comparison to the national and London average. Figures for industry and commercial emissions are lower but domestic and road transport figures are higher. This is due to the prevalence of older, pre-1945 detached and semi-detached housing stock. Almost half of Lewisham's carbon dioxide (CO<sub>2</sub>) emissions are from domestic properties.

**Key environmental issues:**

Lewisham is considered to have one of the lowest carbon footprints in London with the primary contributor from domestic sources. The projected rise in temperatures, sea level and weather extremes through climate change could affect the magnitude and frequency of extreme flows along water courses within the Borough with a resulting impacts on material assets, the population unpredictable loss or gain of certain habitats and species. Inevitable changes to vegetation composition may occur with certain communities becoming vulnerable to extreme hydrological conditions. With rainfall frequency and intensity set to significantly increase in the coming decades, the likelihood of river flooding and overwhelming of drains and sewers will rise due to the increased surface runoff. This in turn will lead to localised flood events and increased erosion. To accommodate the increased likelihood of such events the LFRMS must implement measures aimed at coping with them.

If such climate change projections are realised, the adverse risk and impact toward Lewisham's infrastructure, public health and the natural environment has the potential to be great.

With regard to the natural environment changing climate, mainly that of changing temperatures poses the biggest threat. Species and habitat abundance and richness will become threatened as a result of changing habitats, drier soils and increased competition from invasive species throughout the Borough's watercourses.

The LFRMS options, could potentially, both directly and indirectly, lead to an increase in greenhouse gas emissions as a result of construction and maintenance activities. Emissions could be reduced by selecting, sustainable building practices and materials

## 4.11 Scoping conclusion

Following a review of this environmental baseline data it was possible to scope out air quality as an SEA issue as it is unlikely that there will be a significant environmental impact on air quality in the Borough from implementation of the LFRMS. A summary of the scoping conclusions are given in Table 6.

<sup>43</sup> London Borough of Lewisham (2008), Carbon Reduction and Climate Change Strategy. <http://www.lewisham.gov.uk/SiteCollectionDocuments/ClimateChangeStrategyFINAL.pdf>.

**Table 6: SEA scoping assessment summary**

Receptor	Scoped In	Scoped Out	Conclusion
Landscape and visual amenity	The landscape qualities and integrity of the Borough could be affected by changes to flood risk or land use/management, including new development whilst increased flood risk could impact on locally important urban landscapes and landscape features.		Flood risk management could potentially impact on local landscape features, potentially within areas of open green space and other locally important landscape areas.
Biodiversity, flora and fauna	National and locally important biodiversity sites, features and species, including SNCIs, LNR and BAP habitats and species where these may be affected by the water environment and flooding.	International nature conservation sites (e.g. SAC, SPA, Ramsar site) due to their significant distance from the Borough and because they are not hydrologically linked. Therefore, they are unlikely to be affected by flooding events within Lewisham (see Section 4.12 for further information).	There are a number of SNCIs and LNRs within Lewisham at risk from flooding. Future incidences of flooding could potentially change the underlying nature of habitats and the LFRMS policies may present opportunities for biodiversity gain. LFRMS measures could improve the river channel by removal of blockages, which would be of benefit to fish passage.
Water environment	Flooding has the potential to impact on the level of water availability, the quality of the watercourses within the Borough and the WFD objectives. There is the potential for indirect impacts on water dependent designated sites/species.		Flood risk management measures could potentially affect the water environment both positively and negatively. The LFRMS could give rise to changes in flood risk and water quality, and could affect provision of water resources. The LFRMS needs to be assessed to determine compliance with the objectives of the WFD.
Soils and geology		The LFRMS is not likely to have a significant effect on soils and geology in the Borough due to the localised nature of any potential impacts and the highly urban nature of the area.	
Historic environment	Changes to flood risk could have positive and negative impacts on historic sites including scheduled monuments and listed buildings. This includes damage to the fabric of the structures through waterlogging or drought and impacts on their historic value.		There are a large number of historic sites in the Borough that could be affected by changes to flooding and flood risk management measures. Opportunities may exist to protect important sites or negative impacts could occur due to increased flood risk to vulnerable sites.
Population	Flood risk can influence a range of socio-economic characteristics of the Borough including social deprivation levels, health and wellbeing, access and recreation, and employment opportunities.		The LFRMS has the potential to provide significant positive benefits to the population of the Borough.
Material assets	Critical infrastructure including the transport network, waste sites, utilities services and emergency services, could benefit from reduced flood risk. Conversely, increased flood risk to these sites could cause significant disruption to the Borough, impacting on human and economic activity and the environment.		Material assets could benefit from reduced flood risk, but the Borough could be significantly affected by increased flood risk to these assets.
Air quality		The LFRMS is not likely to have a significant effect on air quality in the Borough due to the localised nature of any potential impacts.	

Climate	Changes in flood risk could affect resilience to the potential impacts of future climate change. This could have knock-on effects on a range of environmental aspects including biodiversity, water resources and the local landscape. Flood risk management measures could also result in increased carbon emissions associated with new development or increased management activities.		The LFRMS may include mitigation, resilience and adaption responses and measures that could contribute to addressing the future impacts of climate change effects. Opportunities to improve climate change adaptation will be considered in the SEA.
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## 4.12 Habitats Regulations Assessment

A Test of Likely Significant Effect (screening assessment) has been undertaken in accordance with the requirements of the Habitats Regulations to determine whether the LFRMS is likely to adversely affect the integrity of a European site (alone or in combination).

Lewisham does not support any European sites (SACs, SPAs and Ramsar sites). There are 10 European sites within approximately 30km of the Borough boundary. These are:

- Lee Valley SPA
- Lee Valley SPA Ramsar
- Thames Estuary and Marshes SPA
- Thames Estuary and Marshes Ramsar
- South West London Waterbodies SPA
- South West London Waterbodies Ramsar
- Richmond Park SAC
- Wimbledon Common SAC
- Epping Forest SAC
- North Downs Woodlands SAC

The Lee Valley SPA and Ramsar sites are the closest sites to the Borough, located 9km to the north of the Borough boundary, to the north of the City of London and the River Thames. None of the European sites is hydrologically linked to Lewisham and the majority are located to the north of the Borough, which is separated from these sites by central London and the River Thames.

The TLSE concluded that it is not likely that any of these designated sites would be adversely impacted by flood risk management activities undertaken in the Borough and as such, no further assessment is required under the Habitats Regulations. Further details of this assessment are provided in the TLSE screening appraisal included in Appendix B of this report.



## 5 SEA framework

### 5.1 Introduction

The SEA framework is used to identify and evaluate the potential environmental issues associated with the implementation of the LFRMS. The framework comprises a set of SEA objectives that have been developed to reflect the key environmental issues identified through the baseline information review. These objectives are supported by a series of indicators, which are used as a means to measure the potential significance of the environmental issues and can also be used to monitor implementation of the LFRMS objectives. These LFRMS objectives are tested against the SEA framework to identify whether each option will support or inhibit achievement of each objective. Table 7 below summarises the purpose and requirements of the SEA objectives, indicators and targets.

**Table 7: Definition of SEA objectives, indicators and targets**

	Purpose
<b>Objective</b>	Provide a benchmark 'intention' against which environmental effects of the plan can be tested. They need to be fit-for-purpose.
<b>Indicator</b>	Provide a means of measuring the progress towards achieving the environmental objectives over time. They need to be measurable and relevant and ideally rely on existing monitoring networks.

### 5.2 SEA objectives and indicators

SEA objectives and indicators have been compiled for each of the environmental receptors (or groups of environmental receptors) scoped into the study during this phase of the project (see Table 6). The draft SEA objectives for the LFRMS are given in Table 8 below. These objectives are currently in draft form and can be refined or revised in response to comments received during the consultation phase on this SEA Scoping Report and in light of any additional information obtained during the life of the project.

**Table 8: SEA objectives and indicators**

Receptor	Objective	Indicator
Landscape	1 Protect the integrity of the Borough's urban and rural landscapes, and do not cause an adverse impact on the Borough's important views and landmarks.	Changes in the condition and extent of existing characteristic elements of the landscape. The condition and quality of new characteristics introduced to the environment.
Biodiversity, flora and fauna	2 Protect and enhance important and notable habitats and species in the Borough.	Area of designated nature conservation sites adversely affected by flooding. Monitoring of reported status of designated nature conservation sites.
	3 Maintain and enhance habitat connectivity and wildlife corridors within the Borough.	No net loss of land designated as nature conservation sites as a result of LFRMS measures.
	4 Maintain existing, and where possible create new, riverine habitat to benefit aquatic species and fisheries, and maintain upstream access.	Area of habitat created as a result of implementation of the LFRMS (e.g. flood storage areas creating wetland habitat). Number of barriers to fish migration removed.
Water environment	5 Improve the quality and quantity of the water in the rivers.	Number of sites with SuDS and green roof schemes installed as part of the LFRMS. Numbers of sites with high pollution potential (e.g. landfill sites, waste water treatment works) at risk from flooding.
	6 Do not inhibit achievement of the WFD objectives and contribute to their achievement where possible.	Assessment of FRM options and their impact (e.g. disconnection/ reconnection with floodplain, in-channel works/dredging, barriers to fish movement, reinstatement/ removal of natural morphology).
Historic environment	7 Preserve and where possible enhance important historic and cultural sites in the Borough.	Number of historic sites at risk from flooding.
Population	8 Minimise the risk of flooding to communities.	Number of residential properties at risk of flooding. Number of key services (e.g. hospitals, health centres, residential/care homes, schools etc) at risk from flooding.

Receptor	Objective	Indicator	
	9	Increase the use of sustainable drainage systems (SuDS), particularly in all new developments.	Number of sites with SuDS and green roof schemes installed as part of the LFRMS.
Material assets	10	Minimise the impacts of flooding to the Borough's transport network.	Length of road and rail infrastructure at risk from flooding. Number of key infrastructure assets at risk from flooding.
Climate	11	Reduce vulnerability to climate change impacts and promote measures to enable adaptation to climate change impacts.	Number of residential properties at risk of flooding. Number of key services at risk from flooding. Number of sites with SuDS and green roof schemes installed as part of the LFRMS. Area of habitat created as a result of implementation of the LFRMS (e.g. flood storage areas creating wetland habitat). Number of barriers to migration removed.

### 5.3 Impact significance

The unmitigated impacts of the LFRMS objectives on achieving the SEA objectives will be identified through the analysis of the baseline environmental conditions and use of professional judgement. The significance of effects will be scored using the five point scale summarised in Table 9. If there is high uncertainty regarding the likelihood and potential significance of an impact (either positive or negative), it will be scored as uncertain.

**Table 9: Impact significance key**

Impact significance	Impact symbol
Significant positive impact	++
Minor positive impact	+
Neutral impact	O
Minor negative impact	-
Significant negative impact	--
Uncertain impact	?

### 5.4 SEA assessment approach

#### 5.4.1 Developing alternatives

The SEA Directive requires an assessment of the plan and its 'reasonable alternatives'. In order to assess reasonable alternatives, different strategy options for delivering the LFRMS will be developed and assessed at a strategic level against the above SEA objectives and environmental baseline as detailed in Section 4. The results of this assessment will be used to inform the decision making process in choosing a preferred way of delivering the LFRMS.

The LFRMS objectives and measures (in SEA terms called 'alternative options') are not yet sufficiently developed to detail in this scoping report. However, they will be assessed at a later stage, with details of each provided in the Environmental Report.

The SEA will also consider a 'do nothing' scenario (i.e., how the situation would develop in relation to each environmental receptor without implementation of the LFRMS).

#### 5.4.2 Assessment approach

The LFRMS measures will be evaluated in light of their potential cumulative, synergistic and indirect environmental effects on the different SEA receptors selected for further assessment (see Table 6). The assessment of these environmental effects will be informed by the baseline data collected at this scoping stage, professional judgement and experience with other flood risk related SEAs, as well as an assessment of national, regional and local trends. In some cases, the assessment will draw upon mapping data and GIS to identify areas of potential pressure, for example due to flood risk or presence of environmental designations.

Throughout the assessment the following will apply:

- Positive, neutral and negative impacts will be assessed, with uncertain impacts highlighted.
- The duration of the impact will be considered over the short, medium and long term.
- The reversibility and permanence of the impact will be assessed (e.g. temporary construction impacts, impacts which can be mitigated against/restored over time or completely irreversible changes to the environment).
- In-combination effects will also be considered.

The significance of effects upon each of the SEA objectives will then be evaluated and used to inform option selection.

## 6 Next steps in the SEA process

### 6.1 Consultation

A key aspect of the SEA process is consultation (See Table 1 stage A5), which is also a requirement under Article 10 (1) and (2) of the Floods Directive. The SEA process provides a mechanism to ensure that stakeholder engagement requirements are achieved by providing interested parties/organisations and the public an opportunity to inform the process and comment on decisions taken. Stakeholder engagement also ensures that environmental and social issues, constraints and opportunities are identified and assessed at an early stage of the project. The Scoping Report will be subject to a five week consultation period, after which the comments received will be taken into account in the Environmental Report. The Environmental Report will be the next output in the SEA process and it will document the assessment of the LFRMS against the SEA objectives.

### 6.2 The Environmental Report

Following the consultation period on the SEA Scoping Report, the LFRMS will be developed, concurrently with the SEA, following the framework outlined above. The results of this will be summarised in an Environmental Report. A proposed structure for the Environmental Report is outlined below.

**Table 10: Proposed Structure of the Environmental Report**

Section	Information to be included
Non-technical summary	<ul style="list-style-type: none"> <li>Non-technical summary of the SEA process</li> </ul>
Methodology	<ul style="list-style-type: none"> <li>Who carried out the SEA, how, who was consulted, and when</li> <li>Difficulties in collecting data or assessment</li> </ul>
Background	<ul style="list-style-type: none"> <li>Purpose of the SEA and integration with LFRMS objectives</li> </ul>
Environmental baseline	<ul style="list-style-type: none"> <li>Baseline environmental data, including the future baseline without the plan. This will be updated from the Scoping Stage with information brought to light during the consultation period.</li> <li>Links to other plans, programmes and relevant environmental protection objectives, and how they have been incorporated</li> <li>Existing and foreseeable future environmental problems</li> <li>Limitations of the data, assumptions etc</li> </ul>
SEA objectives, baseline and context	<ul style="list-style-type: none"> <li>SEA objectives and indicators</li> </ul>
Plan issues and alternatives	<ul style="list-style-type: none"> <li>Description of significant environmental effects of the strategies</li> <li>Assessment matrix for each strategy/alternative</li> <li>How environmental problems were considered in developing the strategies and choosing the preferred alternatives</li> <li>Other alternatives considered, and why these were rejected</li> <li>Proposed mitigation and enhancement measures to deliver objectives</li> </ul>
Implementation	<ul style="list-style-type: none"> <li>Links to project environmental impact assessment, design guidance etc.</li> <li>Proposals for monitoring and reporting</li> </ul>

## **A Appendix A: Review of policies, plans and programmes**

Plan/Policy/Programme	Overview	Relevance to LFRMS	Conflict with LFRMS	Primary SEA topic
<b>International</b>				
EU Sustainable Development Strategy (revised 2006)	Outlines the need for economic growth to support social progress and respect the environment to achieve sustainable development.	The strategy aims to limit climate change and manage natural resources more responsibly, issues which are directly relevant to flood risk. Provides direction for the LFRMS in the managing of natural resources for flood risk	The LFRMS should seek to promote objectives that deliver sustainable flood risk management and sustainable development.	<ul style="list-style-type: none"> <li>• Biodiversity, flora and fauna</li> <li>• Water environment</li> </ul>
European Biodiversity Strategy to 2020	Outlines strategy to halt the loss of biodiversity and ecosystem services in the EU by 2020.	Aims include the provision of better protection for ecosystems and fish stocks, promotion of green infrastructure and tighter controls on invasive alien species.	The LFRMS may contribute to the aims of the strategy through the provision of new green infrastructure to manage flood risk. In contrast, the strategy may limit certain flood risk management objectives if they are shown to be likely to adversely affect biodiversity or ecosystem services.	<ul style="list-style-type: none"> <li>• Biodiversity, flora and fauna</li> </ul>
EC Birds Directive – Council Directive 2009/147/EEC on the conservation of wild birds	Provides for protection of all naturally occurring wild bird species and their habitats, with particular protection of rare species.	Designates Special Protection Areas (SPAs) to protect birds and their habitats. The LFRMS objectives should avoid any significant adverse effect on these sites and supporting features. Requires LFRMS to be assessed for potential impact.	May restrict certain flood risk management objectives if they are shown to be likely to have a significant effect on a SPA.	<ul style="list-style-type: none"> <li>• Biodiversity, flora and fauna</li> </ul>
EU Floods Directive – Directive 2007/60/EC on the assessment and management of flood risks	Aims to reduce and manage the risk of flooding and associated impacts on the environment, human health, heritage and economy. Principle requirement is the preparation of flood risk management plans at River Basin District level, together with preliminary flood risk assessments and hazard/risk maps.	Provides strategic direction to reduce impacts of flooding and promote enhanced flood risk management. The LFRMS will need to demonstrate compliance with the requirements of the Directive.	None likely as the LFRMS will seek to contribute to achieving the Directive.	<ul style="list-style-type: none"> <li>• Water environment</li> <li>• Climate</li> </ul>
EU Groundwater Directive – Directive 2006/118/EC on the protection of groundwater against pollution and deterioration	Establishes a regime that sets underground water quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater. Implemented in the UK through the Environmental Permitting Regulations (2010).	Water quality is relevant to the LFRM as flooding is linked to water pollution and a reduction in surface water and groundwater quality.	Improved flood risk management may benefit groundwater quality by reducing the risk of water pollution during a flood event. LFRMS objectives would need to consider potential impacts on groundwater and may be restricted if they contribute to an adverse impact.	<ul style="list-style-type: none"> <li>• Water environment</li> </ul>
EC Habitats Directive – Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora	Principle aim is to promote the maintenance of biodiversity by requiring Member States to take measures to restore habitats and species to favourable conservation status. Introduces robust protection for habitats and species of European importance. Enables the creation of Special Areas of Conservation (SACs) in order to establish a coherent ecological network of protected sites. Encourages protection and management of flora and fauna and supporting landscapes through planning and development policies.	Designates SACs to protect and promote biodiversity. The LFRMS objectives should avoid any significant adverse effect on these sites and supporting features. Requires LFRMS to be assessed for potential impact.	May restrict certain flood risk management objectives if they are shown to be likely to have a significant effect on a SAC.	<ul style="list-style-type: none"> <li>• Biodiversity, flora and fauna</li> </ul>

Plan/Policy/Programme	Overview	Relevance to LFRMS	Conflict with LFRMS	Primary SEA topic
Urban Wastewater Treatment Directive – Directive 91/271/EEC concerning urban waste water treatment	Aims to protect the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors.	Defines requirements for the collection and treatment of waste water in line with the population equivalent. LFRMS would need to consider potential impact of flood risk management objectives on water treatment sites.	The LFRMS could support the aims of the Directive by reducing the risk of flooding to water treatment sites. However, LFRMS objectives may be restricted if they are shown to be likely to effect on wastewater discharges during flood events.	<ul style="list-style-type: none"> <li>• Water environment</li> </ul>
EU Water Framework Directive – Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy	Establishes framework for protection of inland surface waters, transitional waters, coastal waters and groundwater to prevent pollution, promote sustainable water use, protect the aquatic environment, improve the status of aquatic ecosystems and mitigate the effects of floods and droughts.	Member states must prepare River Basin Management Plans and programme of measures for each River Basin District that sets out a timetable approach to achieving the WFD objectives. Places requirements on all relevant authorities to ensure their actions do not contravene the objectives of the Directive.	May restrict certain flood risk management options if likely to inhibit achievement of WFD objectives and detailed programme of measures. Flood risk management options may be strengthened if they actively contribute to meeting the WFD requirements.	<ul style="list-style-type: none"> <li>• Biodiversity, flora and fauna</li> <li>• Water environment</li> </ul>
<b>National</b>				
Securing the Future – the UK Government Sustainable Development Strategy (2005)	Establishes a broad set of actions and priorities to support the achievement of sustainable development. It includes measures to enable and encourage behaviour change, measures to engage people, and ways in which the Government can promote sustainability.	Includes high level aims to promote sustainable development and sets out how local authorities can contribute to delivering this and the improvement of the local environment.	The LFRMS can contribute to sustainable development through the promotion of better flood risk management to benefit people, the economy and the environment.	<ul style="list-style-type: none"> <li>• Population</li> <li>• Material assets</li> </ul>
Flood and Water Management Act (2010)	Designates Lead Local Flood Authorities (LLFAs) who <i>'must develop, maintain, apply and monitor a strategy for flood risk management in its area'</i> . Applies to ordinary watercourses, surface runoff and groundwater.	Provides key driver for production of LFRMS and sets strategic direction.	None	<ul style="list-style-type: none"> <li>• Water environment</li> <li>• Climate</li> </ul>
Flood Risk Regulations (2009)	Implements the requirements of the EU Floods Directive, which aims to manage the risk of flooding and associated socio-economic and environmental impacts. Requires LLFAs to manage flooding from surface runoff.	Key driver for implementing flood risk management strategies at the local level.	None	<ul style="list-style-type: none"> <li>• Water environment</li> <li>• Climate</li> </ul>
Water for People and the Environment, Water Resources Strategy for England and Wales (2009)	Sets out the approach to sustainable water resources management throughout England and Wales to 2050 and beyond to ensure that there will be sufficient water for people and the environment.	Flood risk management measures are linked to wider water resources management issues and both aspects can actively contribute to achieving corresponding objectives.	None	<ul style="list-style-type: none"> <li>• Water environment</li> <li>• Population</li> <li>• Climate</li> </ul>
Future Water, The Government's water strategy for England (2008)	Future Water defines future objectives for the water sector by 2030 and implementation steps on achieving the objectives. It includes objectives to reduce flood risk from rivers and the coast; improve the sustainable delivery of water supplies; improve the quality of the water environment through greater protection; and more effective management of surface water, which includes the promotion of SuDS, water reuse and above-ground storage;	The strategy includes provisions that seek to better manage surface water drainage and reduce flood risk, and the LFRMS could actively contribute to achieving these objectives.	The strategy promotes greater protection of the water environment, reduced water pollution and enhanced ecological quality of watercourses. The strategy may restrict certain flood risk management options if they are likely to inhibit achievement of these wider environmental objectives.	<ul style="list-style-type: none"> <li>• Water environment</li> </ul>

Plan/Policy/Programme	Overview	Relevance to LFRMS	Conflict with LFRMS	Primary SEA topic
Making Space for Water – taking forward a new Government strategy for flood and coastal erosion risk management in England (2005)	Aims to provide strategic direction to deliver sufficient space for water and enable more effective management of coastal erosion and flooding to benefit both people and the economy. The aim being to address these issues to mitigate their impact and to achieve environmental and social benefits.	National guidance regarding flood risk management is directly relevant to the LFRMS. The LFRMS can contribute to its aims, including promoting greater land management and land use planning, and integrated urban drainage management.	None	<ul style="list-style-type: none"> <li>• Water environment</li> <li>• Population</li> <li>• Climate</li> </ul>
The National Flood and Coastal Erosion Risk Management Strategy for England (2011)	Provides strategic direction to manage and monitor flood and coastal erosion risks in England. It sets out responsibilities of different organisations including local authorities to reduce risks and sets out the requirements for LLFAs to develop LFRMS.	Key driver for implementing flood risk management strategies at the local level.	None	<ul style="list-style-type: none"> <li>• Water environment</li> <li>• Population</li> <li>• Climate</li> </ul>
Water Act (2003)	Sets out the framework for abstraction licensing, impoundments, water quality standards and pollution control measures, and includes measures for drought management and flood defence work in England and Wales.	Flood risk management is one of the themes addressed by the LFRMS.	The strategy promotes greater protection of water resources and may restrict LFRMS objectives if they are likely to adversely affect water quality or sustainable resource management.	<ul style="list-style-type: none"> <li>• Water environment</li> </ul>
Draft Water Bill (2012)	Emerging national strategy aimed at improved regulation of the water industry, whilst increasing its resilience to natural hazards such as drought and floods. It includes provisions to better manage sustainable water abstraction and encourage the use of SuDS.	Aims to promote better management of water resources and reduce the risks of flooding.	The strategy promotes greater protection of water resources and may restrict LFRMS objectives if they are likely to adversely affect water quality or sustainable resource management.	<ul style="list-style-type: none"> <li>• Water environment</li> </ul>
The National Flood Emergency Framework for England (2011)	Sets out a strategic approach to emergency response planning to reduce the impacts of flooding and improve resilience.	The framework sets out organisational responsibilities and promotes a multi-agency approach to managing flooding events.	None	<ul style="list-style-type: none"> <li>• Water environment</li> </ul>
The Carbon Plan (2011)	The carbon plan sets out a vision for Britain powered by cleaner energy used more efficiently, with more secure energy supplies and stable energy prices and benefits from jobs and growth that a low carbon economy will bring. Key areas are electricity generation, eating homes and businesses and travel.	Carbon emissions, and the resulting climate change impacts, are highly relevant to the issue of flood risk management due to the likely increased flood risk resulting from climate change.	None	<ul style="list-style-type: none"> <li>• Climate change</li> </ul>
Building a Low Carbon Economy – the UK's Contribution to Tackling Climate Change (2008)	Puts forward a framework for adapting to climate change and associated threats as well as a case for increased resilience to climate change.	Emphasises the commitment to sustainable development and consideration of the potential impacts of climate change, including increased flooding.	The LFRMS may contribute to the aims of the strategy through the provision of measures to adapt to an increase in flood risk due to future climate change.	<ul style="list-style-type: none"> <li>• Climate change</li> </ul>
Climate Change Act (2008)	Establishes a definite target to reduce UK national carbon emissions by 80% by 2050, relative to a 1990 baseline. Requires the government to publish five yearly carbon budgets starting with the period 2008-2012. Sets targets to reduce greenhouse gases, and puts in place funding and mechanisms to reduce and alter activities which contribute to the emission of these gasses.	Emphasises the commitment to sustainable development.	The LFRMS will need to consider the carbon implications of its objectives and should seek to minimise emissions whilst promoting sustainable flood risk management.	<ul style="list-style-type: none"> <li>• Climate change</li> </ul>



Plan/Policy/Programme	Overview	Relevance to LFRMS	Conflict with LFRMS	Primary SEA topic
Biodiversity 2020: A Strategy for England's Wildlife and Ecosystems (2011)	Sets out the Government's strategy for improving biodiversity in England up to 2020.	Flooding can have adverse impacts on biodiversity. However there may be opportunities for the LFRMS to provide for biodiversity enhancements, as well as reducing risks to habitats and species from flood events.	The strategy could restrict LFRMS objectives if they are shown to have a significant adverse impact on water quality or local biodiversity.	<ul style="list-style-type: none"> <li>Biodiversity, flora and fauna</li> <li>Water environment</li> </ul>
England Biodiversity Framework (2008)	The framework encourages a number of conservation aspects including the adoption of an ecosystem approach and to embed climate change adaptation principles in conservation action.	The LFRMS may include measures that would result in biodiversity enhancements across landscapes and restoring / improving habitats.	The strategy could restrict LFRMS objectives if they are shown to have a significant adverse impact on water quality or local biodiversity.	<ul style="list-style-type: none"> <li>Biodiversity, flora and fauna</li> <li>Water environment</li> </ul>
UK Biodiversity Action Plan (1994)	The UK BAP aims to maintain and enhance biological diversity within the UK and contribute to the conservation and enhancement of global diversity.	The LFRMS will need to consider the potential impacts of measures within it on important species and habitats that are within the District, including the various Sites of Special Scientific Interest.	The strategy could restrict LFRMS objectives if they are shown to have a significant adverse impact on water quality or local biodiversity.	<ul style="list-style-type: none"> <li>Biodiversity, flora and fauna</li> <li>Water environment</li> </ul>
National Wetland Vision (2008)	The Wetland Vision is of a future where wetlands are a significant feature of the landscape in which wildlife can flourish. It will be a future in which wetland heritage is recognised and safeguarded; where everyone can enjoy wetlands for quiet recreation and tranquillity. Vtally, it will be a future where wetlands are valued both for the roles they play in helping us deal with some of the challenges of the 21st century and in improving and sustaining our quality of life.	Preserving and restoring wetlands such as peatlands, rivers and lakes will help regulate surface water run-off, store flood water and recharge groundwaters. These actions that are part of the wetland vision could potentially link with measures within the LFRMS.	May restrict certain flood risk management objectives if they are shown to be likely to have a significant effect on wetland habitats within the Borough.	<ul style="list-style-type: none"> <li>Biodiversity, flora and fauna</li> <li>Water environment</li> </ul>
Wildlife and Countryside Act (as amended) (1981)	The Act is the principle mechanism for legislative protect of wildlife in Great Britain. The Act deals with the protection of birds, other animals and plants.	The Act provides for the notification of Sites of Special Scientific Interest and their protection and management. Any potential impacts of the LFRMS, including on SSSIs, will need to be considered through the SEA.	May restrict certain flood risk management objectives if they are shown to be likely to have a significant effect on a SSSI.	<ul style="list-style-type: none"> <li>Biodiversity, flora and fauna</li> <li>Water environment</li> </ul>
Natural Environment and Rural Communities (NERC) Act (2006)	Provides guidance for the protection and enhancement of important habitat and species.	Requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England.	May restrict certain flood risk management objectives if they are shown to be likely to have a significant effect on priority species or habitats.	<ul style="list-style-type: none"> <li>Biodiversity, flora and fauna</li> <li>Water environment</li> </ul>
Salmon and Freshwater Fisheries Act (1975)	Aims to regulate practice relating to freshwater fisheries and salmon fishing.	The Act's main purpose is to protect fish species. However, it does indirectly affect flood risk. Restricting the obstruction to passage of fish may have implications for flood risk, as this will prohibit the use of fish weirs and mill dams.	May restrict certain flood risk management objectives if they are shown to be likely to have an adverse effect on fish passage or compromise a waterbody from achieving Good status under the WFD.	<ul style="list-style-type: none"> <li>Biodiversity, flora and fauna</li> <li>Water environment</li> </ul>
Contaminated Land (England) Regulations (2006)	Sets out provisions relating to the identification and remediation of contaminated land. The regulations identify contaminated land issues and pathways to pollution of surface, ground, estuarine and coastal water environments.	Although there is no heavy industry in the Borough, other light industries may have contaminated the land.	Flooding of contaminated land can have adverse impacts on factors such as biodiversity, water and soils	<ul style="list-style-type: none"> <li>Water environment</li> <li>Soils</li> </ul>

Plan/Policy/Programme	Overview	Relevance to LFRMS	Conflict with LFRMS	Primary SEA topic
Heritage Protection for the 21 <sup>st</sup> Century, White Paper (2007)	Aims to promote the protection of the historic environment through the planning system.	Flooding events may have an adverse impact on historic features in the Borough and the LFRMS may provide an opportunity to deliver benefits through reduced flood risk.	The strategy could restrict LFRMS objectives if they are shown to have a significant adverse effect on heritage sites in the Borough.	<ul style="list-style-type: none"> <li>Cultural heritage</li> </ul>
National Planning Policy Framework (2012)	The National Planning Policy Framework (NPPF) has replaced the set of national planning policy statements and national planning policy guidance notes, bringing them into one document. It sets high level national economic, environmental and social planning policy and includes a new presumption in favour of sustainable development.	The NPPF has replaced PPS25 along with the other PPSs and PPGs, and so comprises the national policy framework in relation to planning in areas of higher flood risk. The NPPF restricts development that would adversely affect sites European sites, designated sites, including Green Belt, Sites of Special Scientific Interest (SSSIs) and Areas of Outstanding Natural Beauty (AONB), as well as locations at risk of flooding or coastal erosion.	The strategy could restrict LFRMS objectives if they are shown to have a significant adverse effect on sensitive ecological and landscape sites in the Borough.	<ul style="list-style-type: none"> <li>Biodiversity, flora and fauna</li> <li>Water environment</li> <li>Landscape</li> <li>Population</li> <li>Soils</li> </ul>
<b>Regional / Local</b>				
Thames Catchment Flood Management Plan (2009)	These CFMPs provide an overview of the flood risk in these catchments and set out the preferred surface water management strategy for future years. They outline the wider context for managing flood risk in London.	The CFMPs provide important context for the LFRMS and set the strategic direction for managing flood risk from main rivers.	None	<ul style="list-style-type: none"> <li>Water environment</li> </ul>
London Regional Flood Risk Appraisal – Greater London Authority (2009); and City of London Strategic Flood Risk Assessment (2012)	These regional flood risk assessments provide a high level overview of historical and future flood risk from local flood sources in the region.	Takes into consideration significant consequences on human health, economic activity, the environment and cultural heritage.	The LFRMS will need to address these broad topics in a local context.	<ul style="list-style-type: none"> <li>Water environment</li> <li>Population</li> <li>Cultural heritage</li> </ul>
London Plan – Greater London Authority (2011)	The Mayor's London Plan provides an economic, environmental, transport and social framework for development in London.	Forms a basis to local plans within London.	None	<ul style="list-style-type: none"> <li>All</li> </ul>
Thames Estuary 2100 Strategy (2002)	Provides recommendations for flood risk management for London and the Thames estuary.	Provide important context for the LFRMS.	None	<ul style="list-style-type: none"> <li>Water environment</li> </ul>
Managing Water Resources & Flood Risk in the South East (2005); and East London Boroughs Strategic Flood Risk Assessment (2009)	Provides levels of strategic assessment of flood risk across the region.	Provide broad context for the LFRMS.	None	<ul style="list-style-type: none"> <li>Water environment</li> </ul>
London Rivers Action Plan (2009)	A tool to help restore rivers for people and nature. Provides guidance regarding improving the wildlife and amenity value of London rivers. Key aspirations include the improvement of	The watercourses within Lewisham and surface water flooding are a key feature of the LFRMS.	The LFRMS will need to consider these aspirations in a local context and should seek ways	<ul style="list-style-type: none"> <li>Water environment</li> <li>Biodiversity, flora and fauna</li> </ul>

Plan/Policy/Programme	Overview	Relevance to LFRMS	Conflict with LFRMS	Primary SEA topic
	flood management using more natural processes; reducing the likely negative impacts of climate change; reconnecting people to the natural environment through urban regeneration; and enhancing habitats for wildlife.			
Thames River Basin Management Plan (2009)	The Thames River Basin Management Plan (RBMP) has been prepared to meet the requirements of the EU Water Framework Directive. It focuses on actions to address the protection, improvement, sustainable use of water and other pressures facing the water environment in the Thames River Basin.	Water quality and quantity is linked to the LFRMS as flooding events can lead to water pollution and changes in water levels.	May restrict certain flood risk management options if likely to inhibit achievement of WFD objectives and detailed programme of measures. Flood risk management options may be strengthened if they actively contribute to meeting the WFD requirements.	<ul style="list-style-type: none"> <li>• Water environment</li> </ul>
London's Great Outdoors: A Manifesto for Public Space (2009)	Outlines the aim for London boroughs to work with the mayor of London to revitalise public space and improve London's quality of life.	Provides a broad context to aims to increase and enhance open spaces within the Borough. The LFRMS provides an opportunity to contribute to the objectives of the plan.	Protects amenity value of public open spaces.	<ul style="list-style-type: none"> <li>• Human Health</li> <li>• Socio-economic</li> <li>• Biodiversity flora and fauna</li> </ul>
Cleaning the Air – Mayors Air Quality Strategy (2010)	Outlines the direction for air quality policy of the City of London through to 2015. It includes details for air quality management and monitoring the effectiveness of policies and measures that are introduced to reduce pollution.	Provides information on regional policies to improve air quality across London.	None	<ul style="list-style-type: none"> <li>• Air Quality</li> </ul>
Draft Climatic Change Adaptation strategy for London (2010)	The strategy aims to increase resilience to the future effects of climate change, sets targets for reducing carbon dioxide emissions in London, and seeks to deliver energy efficiency measures. It aims to make London a Low Carbon City and to achieve a range of environmental and social benefits.	Flood risk management actions can contribute to the provision of adaptation measures to benefit people and biodiversity. Flood risk management activities will generate carbon emissions.	The LFRMS will need to demonstrate that it can deliver improved flood risk management measures whilst minimising the level of associated carbon dioxide emissions.	<ul style="list-style-type: none"> <li>• Climate</li> </ul>
Preliminary Flood Risk Assessment London Borough of Lewisham (2011)	Provides levels of strategic assessment of flood risk across the Borough.	The flood risk assessment provides an important local context for the LFRMS.	None	<ul style="list-style-type: none"> <li>• Water environment</li> </ul>
London Borough of Lewisham Strategic Flood Risk Assessment (2008)	Set strategic policy for flood risk management in the Borough and guides the development of the LFRMS.	The flood risk assessment provides an important local context for the LFRMS.	None	<ul style="list-style-type: none"> <li>• Water environment</li> </ul>
Ravensbourne River Corridor Improvement Plan (2010)	Provides specific guidance for the Ravensbourne corridor that lies within the boundary of the Thames Gateway with focus on areas of planned growth and investment. It sets a future vision for the catchment, provides a description of the landscape character areas it contains and provides strategic design and management guidance to influence future development.	Provides useful information on local schemes within the borough catchment	The LFRMS will need to consider local schemes within the catchment and has the potential to contribute to biodiversity enhancements through new flood risk management activities.	<ul style="list-style-type: none"> <li>• Water environment</li> <li>• Biodiversity flora and fauna</li> </ul>
London Borough of Lewisham Infrastructure Delivery Plan (2010)	Plan sets out the requirements for infrastructure in the City and the priorities for delivery. Provides guidance to help partnerships deliver this infrastructure in a timely manner to support development.	Objectives in relation to flood risk and the water environment are included within the plan, which is of relevance to the LFRMS.	None	<ul style="list-style-type: none"> <li>• Water environment</li> </ul>

Plan/Policy/Programme	Overview	Relevance to LFRMS	Conflict with LFRMS	Primary SEA topic
London Borough of Lewisham Core Strategy (2011)	The Plan sets out the long term spatial vision for Lewisham to 2026 and includes strategic and more detailed policies used in determining local planning applications.	The Plan sets out the vision and the high level planning policies for the Borough as a whole with the overall aim of promoting and managing sustainable development.	The LFRMS will need to consider policies set out in the Local Plan, particularly if the LFRMS proposes to implement new development, which may be restricted by planning policy.	<ul style="list-style-type: none"> <li>• All</li> </ul>
Lewisham Unitary Development Plan Saved Policies (2004)	The UDP forms part of the development plan for the borough together with the Lewisham Core Strategy and the London Plan.	Provides important context for new developments in the Borough that require planning permission.	The LFRMS will need to consider policies set out in the UDP.	<ul style="list-style-type: none"> <li>• All</li> </ul>
Lewisham Biodiversity Action Plan (2007)	Details the priorities for habitats and species and offers practical measures which can be implemented to achieve the conservation of the areas biodiversity heritage. The content of the plan is informed and guided by national targets so that its implementation is firmly linked to national priorities. An additional Habitat Action Plan for Rivers, Riverine Corridors and Associated Habitats has been produced that sets objectives for these particular habitats.	Objectives include the improvement of water quality, removal of barriers to aquatic species and enhancement of wetland and riverine habitats and connectivity and the issue of invasive species.	Objectives of the Lewisham BAP are linked to those of the WFD to enhance biodiversity and improve water quality status.	<ul style="list-style-type: none"> <li>• Biodiversity flora and fauna</li> </ul>
Lewisham Sustainable Community Strategy 2008-2020 (2008)	Sets out strategic objectives to achieve community benefits in the future, including reducing inequality, promoting sustainable resource use and sustainable development, and improving the local environment.	Provides a broad context to aims to increase and enhance the quality of life within the Borough. The LFRMS provides an opportunity to contribute to the objectives of the plan.	The LFRMS will need to demonstrate that it can deliver improved flood risk management measures whilst contributing to the objectives of the plan.	<ul style="list-style-type: none"> <li>• All</li> </ul>
Lewisham Local Implementation Plan (Transport) (2010)	Provides information on transport patterns in the borough and sets strategic objectives to achieve safer, cleaner and improved transport provision.	Provides important context for the LFRMS and sets the strategic direction for managing and improving transport infrastructure in the Borough. The LFRMS provides an opportunity to contribute to the objectives of the plan.	The LFRMS will need to demonstrate that it can deliver improved flood risk management measures whilst contributing to the objectives of the plan.	<ul style="list-style-type: none"> <li>• Material assets</li> </ul>

## **B Appendix B: Habitats Regulations screening assessment**

# London Borough of Lewisham Local Flood Risk Management Strategy (LFRMS)

## 1 Test of Likely Significance

### 1.1 Record of Assessment of Likely Significant Effect on a European/International Site (SAC/SPA/Ramsar)

#### 1.1.1 Part A: The Proposal

<b>Type or permission/activity</b>	Local Flood Risk Management Strategy (LFRMS)
<b>Project/File Ref. Number</b>	London Borough of Lewisham
<b>National Grid Reference (NGR)</b>	TQ 382752
<b>Brief Description of the project</b>	<p>The LFRMS is a requirement under the Flood and Water Management Act (2010). The Act outlines the responsibility of the lead local flood authority to 'develop, maintain, apply and monitor' a strategy for local flood risk management. It notes that the strategy must identify or outline the following:</p> <ul style="list-style-type: none"> <li>• The risk management authorities in the area;</li> <li>• The flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area;</li> <li>• 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;</li> <li>• The measures proposed to achieve those objectives;</li> <li>• How and when the measures are expected to be implemented;</li> <li>• The costs and benefits of those measures, and how they are to be paid for;</li> <li>• The assessment of local flood risk for the purpose of the strategy;</li> <li>• How and when the strategy is to be reviewed; and</li> <li>• How the strategy contributes to the achievement of wider environmental objectives.</li> </ul>
<b>European Site Name and Status</b>	<b>Richmond Park Special Area of Conservation (SAC)</b>
<b>Distance to European/International Site</b>	13km
<b>Site EU Reference Number</b>	UK0030246
<b>Site Centre NGR</b>	TQ199728
<b>List of Site Interest Features</b>	Designated for Annex II species: stag beetle <i>Lucanus cervus</i> - site of national importance for the conservation of the fauna of invertebrates associated with the decaying timber of ancient trees.
<b>European Site Name and Status</b>	<b>Wimbledon Common Special Area of Conservation (SAC)</b>
<b>Distance to European/International Site</b>	10km
<b>Site EU Reference Number</b>	UK0030301
<b>Site Centre NGR</b>	TQ227719
<b>List of Site Interest Features</b>	Annex I habitats: North Atlantic wet heath with <i>Erica tetralix</i> ; and European dry heaths Annex II species: stag beetle <i>Lucanus cervus</i>
<b>European Site Name and Status</b>	<b>Epping Forest Special Area of Conservation (SAC)</b>
<b>Distance to European/International Site</b>	10km
<b>Site EU Reference Number</b>	UK0012720
<b>Site Centre NGR</b>	TQ399959
<b>List of Site Interest Features</b>	Annex I habitats: Atlantic acidophilous beech forests with Ilex and sometimes also taxus in the shrub layer <i>Quercion robori-petraeae</i> or <i>Illici Fagenion</i> ; North Atlantic wet heath with <i>Erica tetralix</i> ; and European dry heaths. Annex II species: stag beetle <i>Lucanus cervus</i>
<b>European Site Name and Status</b>	<b>Lee Valley Special Protection Area (SPA)</b>

<b>Distance to European/International Site</b>	9km
<b>Site EU Reference Number</b>	UK9012111
<b>Site Centre NGR</b>	51 34 05 N / 00 02 58 W
<b>List of Site Interest Features</b>	Site supports populations of Bittern <i>Botaurus stellaris</i> , (representing at least 6.0% of the wintering population in Great Britain); Gadwall <i>Anas strepera</i> (representing at least 1.7% of the wintering Northwestern Europe population) and Shoveler <i>Anas clypeata</i> (representing at least 1.9% of the wintering Northwestern/Central Europe population).
<b>European Site Name and Status</b>	<b>Lee Valley Ramsar</b>
<b>Distance to European/International Site</b>	9km
<b>Site EU Reference Number</b>	UK11034
<b>Site Centre NGR</b>	51 34 51 N / 00 02 58 W
<b>List of Site Interest Features</b>	Site supports the nationally scarce plant species whorled water-milfoil <i>Myriophyllum verticillatum</i> and the rare or vulnerable invertebrate <i>Micronecta minutissima</i> (a water-boatman). Site supports populations of Northern shoveler <i>Anas clypeata</i> (representing an average of 1.9% of the GB population) and Gadwall <i>Anas strepera</i> (representing an average of 2.6% of the GB population).
<b>European Site Name and Status</b>	<b>Thames Estuary and Marshes Special Protection Area (SPA)</b>
<b>Distance to European/International Site</b>	26km
<b>Site EU Reference Number</b>	UK9012021
<b>Site Centre NGR</b>	51 29 08 N / 00 35 47 E
<b>List of Site Interest Features</b>	Site supports populations of Avocet <i>Recurvirostra avosetta</i> , (representing 21.7% of the wintering population in Great Britain); Hen Harrier <i>Circus cyaneus</i> (representing 0.9% of the wintering Great Britain population). The site also supports wintering and on passage Ringed Plover <i>Charadrius hiaticula</i> .
<b>European Site Name and Status</b>	<b>Thames Estuary and Marshes Ramsar</b>
<b>Distance to European/International Site</b>	26km
<b>Site EU Reference Number</b>	UK11069
<b>Site Centre NGR</b>	51 29 08 N / 00 35 47 E
<b>List of Site Interest Features</b>	Site supports one endangered plant species and at least 14 nationally scarce plants of wetland habitats. The site also supports more than 20 British Red Data Book invertebrates. Assemblages of (waterfowl) of international importance Ringed plover <i>Charadrius hiaticula</i> (representing an average of 1.8% of the GB population), Black-tailed godwit <i>Limosa limosa islandica</i> (representing an average of 4.6% of the population), Grey plover <i>Pluvialis squatarola</i> (representing an average of 3.1% of the GB population), Red knot <i>Calidris canutus islandica</i> (representing an average of 1.6% of the population), Dunlin <i>Calidris alpina alpina</i> (representing an average of 1.1% of the population) and Common redshank <i>Tringa totanus tetanus</i> (representing an average of 1% of the GB population)
<b>European Site Name and Status</b>	<b>South West London Waterbodies Special Protection Area (SPA)</b>
<b>Distance to European/International Site</b>	22km
<b>Site EU Reference Number</b>	UK9012171
<b>Site Centre NGR</b>	51 27 41 N / 00 31 27 W
<b>List of Site Interest Features</b>	Site supports populations of Gadwall <i>Anas strepera</i> (representing at least 2.6% of the wintering Northwestern Europe population) and Shoveler <i>Anas clypeata</i> (representing at least 2.7% of the wintering Northwestern/Central Europe population).
<b>European Site Name and Status</b>	<b>South West London Waterbodies Ramsar</b>
<b>Distance to European/International Site</b>	22km
<b>Site EU Reference Number</b>	UK11065
<b>Site Centre NGR</b>	51 23 59 N / 00 23 26 E
<b>List of Site Interest Features</b>	Site supports populations of Gadwall <i>Anas strepera</i> (representing an average of 2.8% of the GB population) and Northern shoveler <i>Anas clypeata</i> (representing at least 2.6% of the GB population).

<b>European Site Name and Status</b>	<b>North Downs Woodlands Special Area of Conservation (SAC)</b>
<b>Distance to European/International Site</b>	27km
<b>Site EU Reference Number</b>	UK0030225
<b>Site Centre NGR</b>	TQ674629
<b>List of Site Interest Features</b>	Annex I habitats: mature <i>Asperulo-Fagetum</i> beech forests; and yew <i>Taxus baccata</i> woods of the British Isles. Annex II habitats: semi-natural dry grasslands and scrubland facies on calcareous substrates (important orchid sites).
<b>Is this proposal directly connected with or necessary to the management of the site for nature conservation?</b>	No

### 1.1.2 Part B: Activities:

<b>Hazards and Effects in reference to the individual elements and consented activities of the project. Describe any hazards or effects with potential to give rise to impacts on the European Site (either alone or in combination with other plans or projects).</b>		
<b>Sensitive Interest Features</b>	<b>Potential Hazard(s)</b>	<b>Potential Exposure to hazard and mechanism of effect/impact if known</b>
<b>Wetland plant species</b>  Thames Estuary and Marshes Ramsar <ul style="list-style-type: none"> <li>Site supports one endangered plant species and at least 14 nationally scarce plants of wetland habitats.</li> </ul>	None	The sites are located a significant distance from the boundary of the Borough of Lewisham and are not hydrologically linked with the Borough. The LFRMS seeks to implement flood risk management measures in the Borough and does not aim to influence flood risk or flood risk management activities at a wider regional level. Flood risk management activities introduced by the LFRMS will therefore have a local impact and will not extend a significant distance beyond the boundary of the Borough. Therefore, no hazards will arise on the sensitive interest features as a result of implementation of the LFRMS.
<b>Aquatic invertebrate species</b>  Lee Valley Ramsar <ul style="list-style-type: none"> <li>Whorled water-milfoil <i>Myriophyllum verticillatum</i></li> <li><i>Micronecta minutissima</i></li> </ul> Thames Estuary and Marshes Ramsar <ul style="list-style-type: none"> <li>The site supports more than 20 British Red Data Book invertebrates.</li> </ul>	None	The sites are located a significant distance from the boundary of the Borough of Lewisham and are not hydrologically linked with the Borough. The LFRMS seeks to implement flood risk management measures in the Borough and does not aim to influence flood risk or flood risk management activities at a wider regional level. Flood risk management activities introduced by the LFRMS will therefore have a local impact and will not extend a significant distance beyond the boundary of the Borough. Therefore, no hazards will arise on the sensitive interest features as a result of implementation of the LFRMS.
<b>Terrestrial habitats</b>  Wimbledon Common Special Area of Conservation (SAC) <ul style="list-style-type: none"> <li>North Atlantic wet heath with <i>Erica tetralix</i>,</li> <li>European dry heaths</li> </ul> Epping Forest Special Area of Conservation (SAC) <ul style="list-style-type: none"> <li>Atlantic acidophilous beech forests with Ilex and sometimes also taxus in the shrub layer <i>Quercion robri-petraeae</i> or <i>Illici Fagenion</i></li> <li>North Atlantic wet heath with <i>Erica tetralix</i></li> <li>European dry heaths</li> </ul> North Downs Woodlands SAC <ul style="list-style-type: none"> <li>Mature <i>Asperulo-Fagetum</i> beech forests</li> <li>Yew <i>Taxus baccata</i> woods of the British Isles</li> <li>Semi-natural dry grasslands and scrubland facies on calcareous substrates (important orchid sites).</li> </ul>	None	The SAC sites are located a significant distance from the boundary of the Borough of Lewisham; are not hydrologically linked with the Borough; and are not designated for wetland /hydrological interest features. The LFRMS seeks to implement flood risk management measures in the Borough and does not aim to influence flood risk or flood risk management activities at a wider regional level. Flood risk management activities introduced by the LFRMS will therefore have a local impact and will not extend a significant distance beyond the boundary of the Borough. Therefore, no hazards will arise on the sensitive interest features as a result of implementation of the LFRMS.



<p><b>Terrestrial invertebrate species</b></p> <p>Richmond Park Special Area of Conservation (SAC)</p> <ul style="list-style-type: none"> <li>• Stag beetle <i>Lucanus cervus</i>;</li> <li>• Site of national importance for the conservation of the fauna of invertebrates associated with the decaying timber of ancient trees.</li> </ul> <p>Wimbledon Common Special Area of Conservation (SAC)</p> <ul style="list-style-type: none"> <li>• Stag beetle <i>Lucanus cervus</i>.</li> </ul> <p>Epping Forest Special Area of Conservation (SAC)</p> <ul style="list-style-type: none"> <li>• Stag beetle <i>Lucanus cervus</i>.</li> </ul>	None	<p>The SAC sites are located a significant distance from the boundary of the Borough of Lewisham; are not hydrologically linked with the Borough; and are not designated for wetland /hydrological interest features.</p> <p>The LFRMS seeks to implement flood risk management measures in the Borough and does not aim to influence flood risk or flood risk management activities at a wider regional level. Flood risk management activities introduced by the LFRMS will therefore have a local impact and will not extend a significant distance beyond the boundary of the Borough.</p> <p>Therefore, no hazards will arise on the sensitive interest features as a result of implementation of the LFRMS.</p>
<p><b>Wintering and migratory bird species</b></p> <p>Lee Valley Special Area of Protection (SPA)</p> <ul style="list-style-type: none"> <li>• Bittern <i>Botaurus stellaris</i></li> <li>• Gadwall <i>Anas strepera</i></li> <li>• Shoveler <i>Anas clypeata</i></li> </ul> <p>Lee Valley Ramsar</p> <ul style="list-style-type: none"> <li>• Gadwall <i>Anas strepera</i></li> <li>• Shoveler <i>Anas clypeata</i></li> </ul> <p>Thames Estuary and Marshes Special Protection Area (SPA)</p> <ul style="list-style-type: none"> <li>• Avocet <i>Recurvirostra avosetta</i></li> <li>• Hen Harrier <i>Circus cyaneus</i></li> <li>• Ringed Plover <i>Charadrius hiaticula</i></li> </ul> <p>Thames Estuary and Marshes Ramsar</p> <ul style="list-style-type: none"> <li>• Assemblages of (waterfowl) of international importance</li> <li>• Ringed plover <i>Charadrius hiaticula</i></li> <li>• Black-tailed godwit <i>Limosa limosa islandica</i></li> <li>• Grey plover <i>Pluvialis squatarola</i></li> <li>• Red knot <i>Calidris canutus islandica</i></li> <li>• Dunlin <i>Calidris alpina alpina</i></li> <li>• Common redshank <i>Tringa totanus tetanus</i></li> </ul> <p>South West London Waterbodies Special Protection Area (SPA)</p> <ul style="list-style-type: none"> <li>• Gadwall <i>Anas strepera</i></li> <li>• Shoveler <i>Anas clypeata</i></li> </ul> <p>South West London Waterbodies Ramsar</p> <ul style="list-style-type: none"> <li>• Gadwall <i>Anas strepera</i></li> <li>• Shoveler <i>Anas clypeata</i></li> </ul>	None	<p>The sites are located a significant distance from the boundary of the Borough of Lewisham and are not hydrologically linked with the Borough.</p> <p>The LFRMS seeks to implement flood risk management measures in the Borough and does not aim to influence flood risk or flood risk management activities at a wider regional level. Flood risk management activities introduced by the LFRMS will therefore have a local impact and will not extend a significant distance beyond the boundary of the Borough.</p> <p>Therefore, no hazards will arise on the sensitive interest features as a result of implementation of the LFRMS.</p>

### 1.1.3 Part C: Assessment of Significance

<p><b>In reference to the site interest features and their conservation objectives, describe any likely direct, indirect or secondary effects from the uncompleted and/or continuing consented activities of the project (either alone or in combination with other plans or projects) likely to give rise to significant effects on the European/Ramsar Site.</b></p>	None
<p><b>Is the project likely to have a significant effect 'alone'?</b></p>	No
<p><b>If there is no likely significant effect 'alone', are there other projects or plans that in-combination with the project being assessed could affect the site?</b></p>	No





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