

Strategic Environmental Assessment of Southwark Council's Local Flood Risk Management Strategy

SEA Environmental Report

November 2014

Prepared for
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Abbreviations

| | |
|---------|--|
| BAP | Biodiversity Action Plan |
| BREEAM | Building Research Establishment Environmental Assessment Method |
| CDA | Critical Drainage Area |
| CEEQUAL | Civil Engineering Environmental Quality Assessment & Awards Scheme |
| DCLG | Department for Communities and Local Government |
| Defra | Department for Environment and Rural Affairs |
| FDT | Flood and Drainage Team |
| HRA | Habitat Regulations Assessment |
| LFRMS | Local Flood Risk Management Strategy |
| LFRZ | Local Flood Risk Zone |
| LLFA | Lead Local Flood Authority |
| LNR | Local Nature Reserve |
| ODPM | Office of the Deputy Prime Minister |
| PFRA | Preliminary Flood Risk Assessment |
| PPP | Plans, Programmes and Policies |
| RoW | Rights of Way |
| SAC | Special Area of Conservation |
| SEA | Strategic Environmental Assessment |
| SINC | Site of Importance for Nature Conservation |
| SPA | Special Protection Area |
| SSSI | Site of Special Scientific Interest |
| SuDS | Sustainable Urban Drainage Systems |
| SWMP | Surface Water Management Plan |
| TfL | Transport for London |

1 Introduction

1.1 Background

In September 2012, Southwark Council commissioned Mouchel to undertake the Strategic Environmental Assessment (SEA) of their emerging Local Flood Risk Management Strategy (LFRMS). In November 2014, a revised Draft for Consultation LFRMS was issued to Mouchel.

The SEA process is concerned with identifying possible effects that plans, programmes and strategies may have on the existing environment, and therefore increases the consideration of environmental issues in the decision making process.

The present Environmental Report details the SEA of the LFRMS Draft for Consultation (November 2014). It sets out the framework for undertaking the SEA of the Strategy together with the scope of the assessment, evidence base and review of relevant plans, programmes and policies to inform the assessment. It includes a discussion of the likely significant environmental effects of the implementation of the LFRMS. Recommendations are made in relation to ways in which likely adverse effects on the environment can be reduced or beneficial effects can be enhanced. The report includes proposals for relevant environmental indicators to monitor the effects of the implementation of the LFRMS.

The findings of the SEA are being made available to stakeholders, including statutory consultees, local authorities and the public, in order to help all those with an interest in flood risk management within the London Borough of Southwark to understand the effects of the proposed Strategy. This report should be read alongside the LFRMS document.

1.2 Strategic Environmental Assessment

SEA is a statutory assessment process that incorporates environmental considerations into policies, plans and programmes. It ensures that significant environmental effects arising from policies, plans and programmes are identified, assessed, mitigated, communicated to decision-makers, monitored and that opportunities for public involvement are provided.

In the European Union, an SEA is required for all member states on all plans and programmes by European Community Directive (2001/42/EC) 'on the assessment of the effects of certain plans and programmes on the environment', known as the 'SEA Directive'. The Directive is implemented in England through the Environmental Assessment of Plans and Programmes Regulations (Statutory Instrument 1633 2004).

Guidance released to assist the development of Local Flood Management Strategiesⁱ outlines that 'the Local Flood Risk Management Strategy is likely to require statutory SEA, but this requirement is something the Local Lead Flood

ⁱ Local Government Association (2011). Framework to Assist the Development of the Local Strategy for Flood Risk Management.

Authority (LLFA) must consider'. As the LLFA, Southwark Council considers that its emerging LFRMS requires an SEA to be undertaken.

SEA is an iterative process which ensures environmental considerations are integrated into the development of the LFRMS at the earliest opportunity, and that the strategy has, as far as is practicable, met environmental concerns.

1.2.1 Compliance with the SEA Directive

This Environmental Report has been prepared in accordance with the SEA Directive. Table 1.1 shows where the requirements of the Directive have been addressed in this report.

Table 1.1 - SEA requirements and where they have been addressed in this report

| Requirements / Where covered in Guide | (Section / Appendix / End notes) |
|--|------------------------------------|
| Preparation of an environmental report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and geographical scope of the plan or programme, are identified, described and evaluated. The information to be given for this purpose is referred to in Article 5 and Annex I of the SEA Directive. | This is the Environmental Report |
| a) An outline of the contents, main objectives of the plan or programme, and relationship with other relevant plans and programmes. | Sections 2.3, 2.4, 4.2, Appendix 2 |
| b) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme. | Sections 4.3, 4.4, Appendix 2, 3 |
| c) The environmental characteristics of areas likely to be significantly affected. | Sections 4.3, 4.4, Appendix 2, 3 |
| 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. | Sections 4.3, 4.4, Appendix 2 |
| e) The environmental protection objectives, established at international, Community or national level, which are relevant to the plan or programme, and the way those objectives and any environmental considerations have been taken into account during its preparation. | Section 4.2 |
| 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 ⁱⁱ .) | Section 6.2 |

ⁱⁱ These effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects.

| Requirements / Where covered in Guide | (Section / Appendix / End notes) |
|---|--|
| 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. | Section 7 |
| 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. | Section 3.2, 4.6, Appendix 3 |
| i) A description of measures envisaged concerning monitoring in accordance with Article 10. | Section 8 |
| The report shall include the information that may reasonably be required taking into account current knowledge and methods of assessment, the contents and level of detail in the plan or programme, its stage in the decision-making process and the extent to which certain matters are more appropriately assessed at different levels in that process to avoid duplication of the assessment (Article 5.2). | Included in this report |
| <p>Consultation:</p> <p>Authorities with environmental responsibility, when deciding on the scope and level of detail of the information to be included in the environmental report (Article 5.4).</p> | An account on the consultation undertaken in the scoping phase is provided in Appendix 1 |
| Authorities with environmental responsibility and the public shall be given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan, or programme, and the accompanying environmental report before the adoption of the plan or programme (Article 6.1, 6.2). | The schedule for consultation is outlined in Table 3.1 |
| Other EU Member States, where the implementation of the plan or programme is likely to have significant effects on the environment of that country (Article 7). | N/A |
| Taking the environmental report and the results of the consultations into account in decision-making (Article 8). | Pending |
| <p>Provision of information on the decision: When the plan or programme is adopted, the public and any countries consulted shall be informed and the following made available to those so informed:</p> <ul style="list-style-type: none"> • The plan or programme as adopted; • A statement summarising how environmental considerations have been integrated into the plan or programme and how the environmental report pursuant to Article 5, the opinions expressed pursuant to Article 6 and the results of consultations entered into pursuant to Article 7 have been taken into account in accordance with Article 8, and the reasons for choosing the plan or programme as adopted, in the light of the other reasonable alternatives dealt with; and • The measures decided concerning monitoring (Articles 9 and 10). | Pending |

| Requirements / Where covered in Guide | (Section / Appendix / End notes) |
|---|---|
| Monitoring of the significant environmental effects of the plan's or programme's implementation (Article 10). | Proposals for monitoring outlined in Section 8. |
| Quality assurance: environmental reports should be of a sufficient standard to meet the requirements of the SEA Directive (Article 12). | Complete. |

1.3 Habitats Regulations Assessment

A Habitats Regulations Assessment (HRA) is undertaken during the development of a programme or plan that is likely to have an adverse effect on any designated Natura 2000 sites. Natura 2000 sites are designated by the EC Directive on the Conservation of Wild Birds 79/409/EEC 1979 (Special Protection Areas (SPAs) and the EC Directive on the Conservation of Natural Habitats of Wild Fauna and Flora 92/43/EEC 1992 (Special Areas of Conservation (SACs)).

Initial screening identified that the nearest Natura 2000 site is located over 10km from the study area. It is not anticipated that the LFRMS will have any impact on this site. As such, a HRA is deemed unnecessary.

1.4 Structure of this Report

This Environmental Report sets out the findings of the assessment of the effects of implementing the LFRMS. The structure of this report follows guidance set out in, *A Practical Guide to the Strategic Environmental Assessment Directive* (ODPM, 2005), and consists of the following sections:

Chapter 1: This chapter describes the background to emergence of the LFRMS, the legislative requirement to undertake the SEA, and how this report fulfils those requirements.

Chapter 2: Describes the study area, background to the strategy and its aims and objectives.

Chapter 3: Details the approach that has been used for the SEA and the steps taken and tasks involved.

Chapter 4: Develops the strategic environmental framework that is used to evaluate the environmental effects of the LFRMS.

Chapter 5: Assessment of the LFRMS objectives – provides detail on the compatibility of the LFRMS objectives against the SEA objectives, and the internal compatibility of both sets of objectives.

Chapter 6: Appraisal of the LFRMS Action Plan Measures – compares the measures with SEA objectives to identify the potential environmental effects of their implementation.

Chapter 7: Conclusions from the SEA process and recommendations to be incorporated into the LFRMS.

Chapter 8: Provides suggested monitoring to assess the implementation of the plan.

Additional to the main report, there are six appendices which provide supporting information, these are:

Appendix 1: Consultation comments received following the submission of the Scoping Report and how these have been addressed in this report.

Appendix 2: Updated Scoping Report in light of comments received during consultation, including review of the Plans, Programmes and Policies.

Appendix 3: Comparison of potential environmental effects of high level strategy alternatives.

Appendix 4: Internal compatibility of the SEA and LFRMS objectives matrices.

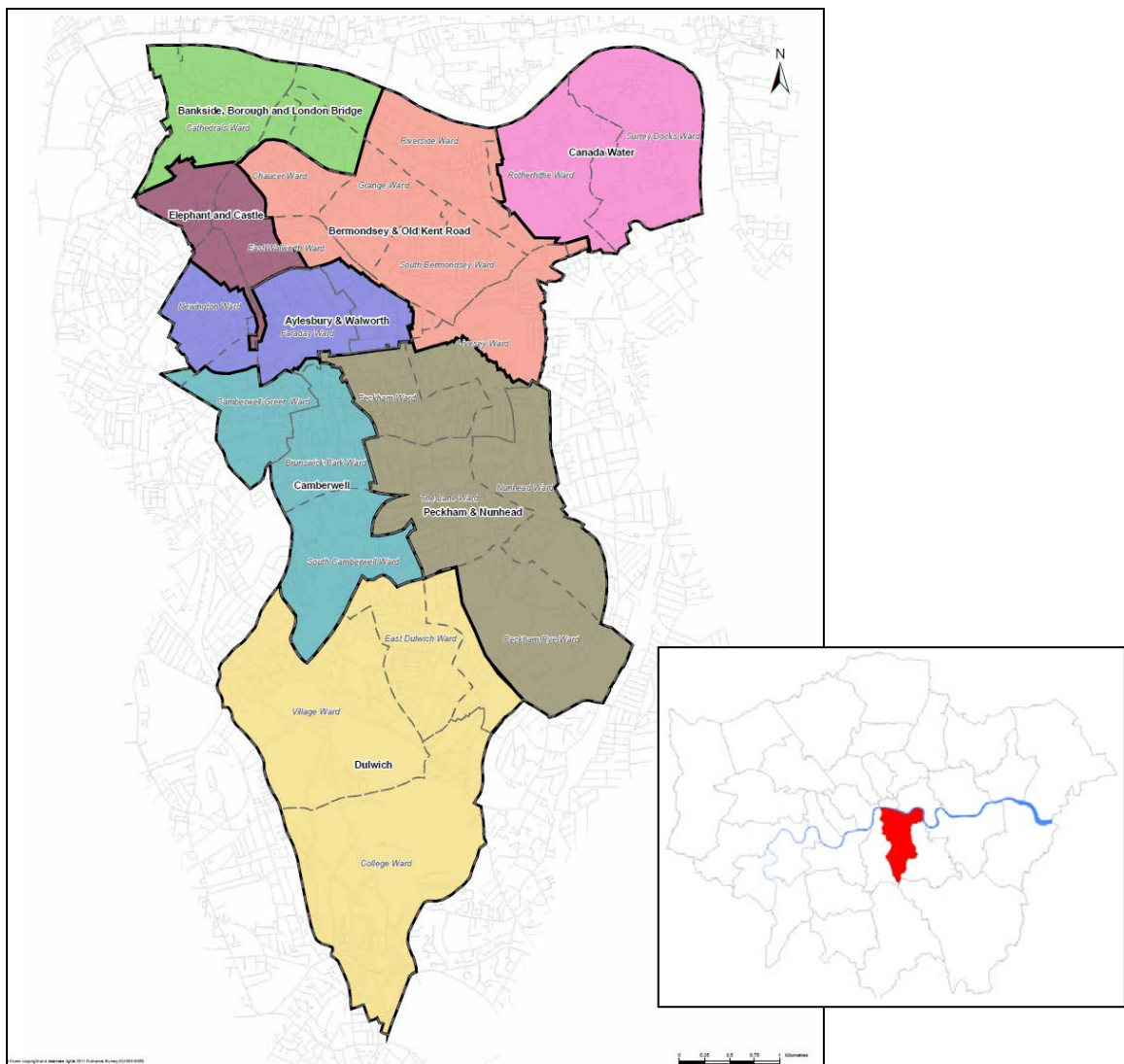
Appendix 5: SEA Matrices.

2 Southwark Council's Local Flood Risk Management Strategy

2.1 The Study Area

The study area is defined by the administrative boundary of the London Borough of Southwark; a large inner city borough in London. It is situated directly south and immediately adjacent to the River Thames which forms its northern boundary. It also borders the London Borough of Lambeth to the west, the London Boroughs of Croydon and Bromley to the south, and the London Borough of Lewisham to the east. It covers an area of approximately 29km² consisting of eight distinct districts; these are Bermondsey, Borough and Bankside, Camberwell, Dulwich, Nunhead and Peckham Rye, Peckham, Rotherhithe and Walworth (see Figure 2.1).

Figure 2.1 - London Borough of Southwark



Source: Southwark Open Space Study, 2012.

The Borough has a long history of occupation having first been settled in the Roman period. Today, it is heavily urbanised and includes major urban centres, residential areas, industry, commerce, and some of London's main transport terminals. Borough landmarks include the Tate Modern (Museum), Shakespeare's Globe Theatre, the Imperial War Museum and the Shard. It is connected to the City of London by Tower Bridge, Blackfriars Bridge, Southwark Bridge and London Bridge.

The population of the borough was 288,300 in provisional results released from the 2011 census, with approximately 117,000 households, of which almost half live in public sector housing.

Strategic road and rail networks, controlled by the Mayor for London via Transport for London (TfL) and rail operators, traverse the borough. These include thirteen 'red routes' classed as major routes through London which are managed by TfL, nine tube stations connecting to the Jubilee, Northern and Bakerloo lines, and London Bridge overland rail station which is the fourth busiest rail terminal in London, serving over 54 million people a year, and a comprehensive bus network.

2.2 Background to the Strategy

In the summer of 2007, severe flooding in England, particularly in Yorkshire, Worcestershire, Gloucestershire and Oxfordshire prompted the Government to commission a review of flood risk management in England and Wales. The report published by Sir Michael Pitt 'Learning Lessons from the 2007 Floods' in June 2008 had its recommendations accepted in full by the Government in 2008, and this led to a new Act of Parliament, the Flood and Water Management Act (2010).

Under the requirements of the Flood and Water Management Act (2010), Southwark Council's position as LLFA means that they must 'develop, maintain, apply and monitor a strategy for local flood risk management in its area'. The council is required by law to develop, maintain, apply and monitor a Local Flood Risk Management Strategy. The strategy should be consistent with the National Strategy but should respond to local needs and circumstances. The Act defines 'local flood risk' as that arising from:

- Surface run off;
- Groundwater; and
- 'Ordinary watercourses' including risks from a lake, pond or other area of water which flows into an ordinary watercourse.

Local Flood Risk Management Strategies are statutorily required to include the following:

- The risk management authorities in the LLFA area and what flood and coastal erosion risk management functions they may exercise in relation to the area. If functions normally carried out by one body will be carried out by another, this also has to be specified.
- The objectives for managing local flood risk. These will be relevant to the local area and reflect the level of local risk.

- The measures proposed to achieve the objectives. This could include a wide range of measures such as sustainable drainage systems, designation of features, improvements to the sewage network and application of the planning system.
- How and when measures are expected to be implemented.
- The costs and benefits of these measures and how they are paid for.
- The assessment of local flood risk for the purpose of the strategy. The strategy may identify gaps in the understanding of local flood risk and specify the actions which could close these gaps.
- How and when the strategy is to be reviewed. The review period is not specified at the national level and it is therefore up to the LLFA to decide what is appropriate.
- How the strategy contributes to the achievement of wider environmental objectives.

In response to its responsibilities under the Act, Southwark Council has set up a Flood and Drainage Team (FDT). The FDT is in the process of producing Southwark's LFRMS to provide strategic direction and proactively manage flood risk in the borough whilst satisfying the requirements of the Act. The Strategy will be reviewed every six years and ties in with periodic reviews of Southwark Council's Preliminary Flood Risk Assessment (PFRA) as required under the regulations.

2.3 Purpose and Objectives of the Strategy

The Strategy outlines the purpose and general approach to managing flood risk across the borough. The primary purpose of the strategy is:

'to ensure that, as far as is reasonably practical, the risk of flooding to human health and life, the environment, economic activity, infrastructure and cultural heritage arising from surface water, ground water and ordinary water courses is minimised.'

As a requirement of the Flood and Coastal Erosion Risk Management appraisal process the LLFA is responsible for outlining a number of specific objectives of the Flood Risk Management Strategy. These objectives are identified in the LFRMS and detail what will be in place when the Strategy's purpose is achieved, these are listed below:

- a) ensure a clear understanding of local flood risks, so that investment in risk management can be prioritised and implemented most effectively;
- b) develop and maintain a community and partnership based engagement in the management of flood risk, encouraging beneficiaries to invest in the management of risk where possible;
- c) set out clear and consistent plans for risk management so that communities and businesses can make informed decisions about managing residual risks;

- d) encourage innovative management of flood risk, taking account of the needs of communities and the environment;
- e) promote sustainable measures to reduce flood risk and provide multiple benefits to local communities;
- f) develop links between the local flood risk management strategy and local spatial planning;
- g) co-operate with neighbouring LLFAs to ensure effective risk management of flooding and compliance with the Water Framework Directive;
- h) increase environmental protection and integrate considerations into the preparation and implementation of policies and programmes that promote sustainable development;
- i) ensure that emergency plans and responses to flood incidents are effective and that communities are able to respond properly to flood warnings; and
- j) help communities to recover more quickly and effectively from flooding incidents.

2.4 Action Plan and Measures

To deliver the objectives and primary purpose of the Strategy outlined above, the LFRMS identifies a number of measures that could be implemented across the borough through an Action Plan. A measure is a strategy or activity to improve flood risk management. These measures fall into seven measures categories, listed below:

- A – Resources, Structure and Capacity to fulfil LLFA requirements under the Flood and Water Management Act 2010 and Flood Risk Regulations 2009.
- B – Communication, Partnerships and Community Engagement.
- C – Emergency Response and Recovery.
- D – Community and Infrastructure Resilience.
- E – Planning and Development Policies.
- F – Flood Alleviation Feasibility, Investigations and Design.
- G – Flood Alleviation Scheme Implementation.
- H – Drainage Asset Operation and Maintenance.

3 SEA Methodology

3.1 Approach to the SEA

The approach to the SEA stages completed to date (A to C) has been to provide an expert judgement based system of prediction and assessment that is transparent and auditable.

Current best practice guidance has been used to inform the process:

- A Practical Guide to the Strategic Environmental Assessment Directive (Department of Communities and Local Government, previously the Office of the Deputy Prime Minister, 2005).

This guidance has been used in conjunction with other best practice guidelines that include:

- Sustainability Appraisal and the Historic Environment (English Heritage).
- Catchment Flood Management Plans and the Historic Environment (Environment Agency 2007).
- Strategic Environmental Assessment and Biodiversity: Guidance for Practitioners (Royal Society for the Protection of Birds 2004).

The SEA process is undertaken in five main stages as outlined in Table 3.1, to date Stages A to C have been completed. The table details the timescales of the work undertaken and future work to be completed.

3.2 Data Limitations

It should be noted there is a large amount of environmental information available; this assessment has selected information on the basis it may be influenced or affected by the LFRMS. Effort has been made to avoid including baseline information or plans and programmes which are of no clear relevance to the LFRMS.

Table 3.1 - SEA Stages and Work Undertaken

| SEA Stages | SEA Tasks | Timescales and Work Undertaken |
|--|---|--|
| Stage A: Setting the context and objectives, establishing the baseline and deciding on the scope. | <ul style="list-style-type: none"> • A1: Identifying other relevant policies, plans and programmes, and SEA objectives. | <p>An SEA Scoping Reportⁱⁱⁱ was prepared and consulted upon for 5 weeks during October and November 2012. The Environment Agency, English Heritage and Natural England are designated as statutory consultation bodies under the SEA Regulations and must be consulted on the scope and level of detail of information to be included in the Environmental Report.</p> <p>An additional LFRMS objective has been identified since the Scoping Report was prepared (objective g in Section 2.3 above), and is considered in this Environmental Report.</p> |
| | <ul style="list-style-type: none"> • A2: Collecting baseline information | |
| | <ul style="list-style-type: none"> • A3: Identifying environmental problems. | |
| | <ul style="list-style-type: none"> • A4: Developing the SEA objectives. | |
| | <ul style="list-style-type: none"> • A5: Consulting on the scope of the SEA. | |
| Stage B: Developing and refining options and assessing effects | <ul style="list-style-type: none"> • B1: Testing the plan or programme objectives against the SEA alternatives. | <p>Documented consultation responses relating to the Scoping Report were reviewed and addressed. A list of comments received from consultees, along with a description of how each one has been addressed, is provided in Appendix 1.</p> <p>A working draft of the LFRMS was issued to Mouchel for review/appraisal in September 2012. This included a full set of key objectives. A revised Draft for</p> |
| | <ul style="list-style-type: none"> • B2: Developing the Strategic options. | |
| | <ul style="list-style-type: none"> • B3: Predicting the effects of the Draft plan or programme including alternatives. | |
| | <ul style="list-style-type: none"> • B4: Evaluating the effects of the Draft plan or programme including alternatives. | |

ⁱⁱⁱ Strategic Environmental Assessment of the Southwark Council Local Flood Risk Management Strategy – Scoping Report (Mouchel, October 2012)

| SEA Stages | SEA Tasks | Timescales and Work Undertaken |
|--|---|---|
| | <ul style="list-style-type: none"> • B5: Considering ways of mitigating adverse effects. | <p>Consultation LFRMS was issued to Mouchel for review in November 2014.</p> |
| | <ul style="list-style-type: none"> • B6: Proposing measures to monitor the environmental effects of implementing the plan or programme. | |
| Stage C: Environmental Report | <ul style="list-style-type: none"> • C1: Preparing the Environmental Report. | This is the Environmental Report |
| Stage D: Consulting | <ul style="list-style-type: none"> • D1: Consulting on the draft plan and the Environmental Report. | <p>The SEA Environmental Report will be consulted on between November 2014 and January 2015 alongside the LFRMS. It will be made available to the above statutory consultees, as well as being made available to other consultees and the wider public.</p> <p>Any responses received on the sustainability effects of the LFRMS and the content of this Environmental Report will be considered in producing the final LFRMS for adoption in 2015.</p> |
| | <ul style="list-style-type: none"> • D2 (i): Assessing significant changes. | |
| | <ul style="list-style-type: none"> • D2 (ii): Appraising significant changes resulting from representations. | |
| | <ul style="list-style-type: none"> • D3: Making decisions and providing information. | |
| Stage E: Monitoring the significant effects of implementing the plan on the environment | <ul style="list-style-type: none"> • E1: Finalising aims and methods for monitoring. | <p>Once the LFRMS has been adopted, it is the role of the SEA to ensure that effects of the LFRMS are monitored. This will allow for any unforeseen significant adverse effects of the Action Plan Measures to be detected.</p> <p>The monitoring methods are outlined in Section 8.</p> |
| | <ul style="list-style-type: none"> • E2: Responding to adverse effects. | |

4 Developing the SEA Framework

4.1 Introduction

The SEA framework provides a structure to describe, analyse and compare environmental effects of the LFRMS. It has been developed drawing on information collated during the review of relevant plans, programmes and policies (PPPs) (section 4.2), review of baseline information (section 4.3) and identification of key environmental issues (section 4.4). The SEA framework was prepared and consulted upon as part of the scoping process.

4.2 Relationship with other Plans, Programmes and Policies

As part of the scoping stage of the SEA a review was undertaken of relevant PPPs in relation to their implications for the LFRMS and this SEA. The Strategy may be influenced in many ways by other plans, and programmes and by external sustainability objectives, such as those laid down in policies and legislation.

The task is a requirement of the SEA Directive Annex 1(a) where it states the Environmental Report should contain 'an outline of the (...) relationship with other relevant plans or programmes'.

A wide range of PPPs have been identified during the scoping stage of the SEA, this has been updated further in light of consultation comments received on the Scoping Report. It is recognised that no list of PPPs can be definitive and as a result this report outlines the key documents that directly influence the LFRMS in Table 4.1.

A full review of international, national, regional and local PPPs is presented in Appendix 2.

Table 4.1 - Key Plans, Programmes and Policies

| |
|---|
| International |
| European Union Water Framework Directive (2000/60/EC) |
| National |
| Flood and Water Management Act (2010) |
| Flood Risk Regulations (2009) |
| The National Flood and Coastal Erosion Strategy (2011) |
| National Planning Policy Framework (2012) |
| Sub-National |
| Securing London's Water Future: the Mayor's Water Strategy (2011) |
| The London Plan. Spatial Development Strategy for Greater London (2013) |
| Thames Estuary 2100. Managing flood risk through London and the Thames estuary (2009) |
| Thames Catchment Flood Management Plan. Managing Flood Risk (2009) |

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|--|
| London Regional Flood Risk Appraisal (2009) |
| Local |
| Southwark Core Strategy (2011) |
| The Southwark Plan (2007) Saved Policies |
| Southwark Preliminary Flood Risk Assessment (2011) |
| Southwark Strategic Flood Risk Assessment (2008) |
| Southwark Surface Water Management Plan (2011) |

4.3 Updated Environmental Baseline

Baseline information was collected during 2012 to establish the current state of the study area, identify trends in economic, environmental and social parameters and to assess current environmental and sustainability issues that are evident in the area.

This is a requirement of the SEA Directive Annex 1(b) (c) which outlines that the Environmental Report should provide information on 'the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme' and 'the environmental characteristics of areas likely to be significantly affected'.

To consider how the developing Strategy may affect the environment, it is essential to understand the current environment characteristics of the area and how the environment is likely to change in the future. The baseline information provides a basis for predicting and monitoring the effects of the implementation of the Strategy. It also helps to identify the environmental and sustainability issues and alternative ways of dealing with them.

Updated baseline information, collated during 2012, is provided in Appendix 2, this incorporates additional information included as a result of consultation comments made on the Scoping Report.

4.4 Identifying Key Environmental Issues

Environmental issues and problems have been identified from the baseline information to define the key social, environmental and economic issues that need to be taken into account when preparing the LFRMS. In some cases these are constraints which must be overcome, or impacts which must be avoided, in other cases these may be opportunities which should be pursued where possible, or supported indirectly by flood management policies in other instances. Table 4.2 summarises the issues identified through the review of the relevant plans, programmes and policies and through considering the baseline data available for Southwark.

Table 4.2 - Key Issues

| Key Environmental Issues | Description |
|---|---|
| Climatic Factors | |
| Climate Change | Climate change is predicted to result in more extreme weather events, increased temperatures and rising sea levels. London's average winter precipitation is projected to increase by 15%. There is likely to be increased risk of tidal, river and surface water flooding. |
| Biodiversity, Flora and Fauna | |
| Threats to Biodiversity | Despite being heavily urbanised Southwark has rich ecological resources that include locally designated sites that host species of national and international importance. Biodiversity in the Borough is under threat from development and increased population. If possible biodiversity should be protected and enhanced. |
| Water | |
| Flooding | There have been a number of recent flood events that have impacted Southwark; these include surface water flooding events in 2004, 2006 and 2007, and a tidal flooding event in 2005. |
| Water Quality | The WFD sets an objective to achieve at least 'good' status in all water bodies by 2015. Currently within the Thames River Basin District, 23% of surface waters are at good or better ecological status/ potential and 28% of assessed surface waters are at good or better biological status. |
| Population and Human Health | |
| Population growth and demands for new development and infrastructure | Early data released from the March 2011 census estimates Southwark's population as 288,300; a 12.3% increase from 2001. This is a higher percentage increase in population than both London and the south east region. Population density is also relatively high with Southwark being the ninth most densely populated local authority in England and Wales. The increasing population adds pressure for new infrastructure and development. A high population density means that flooding events have the potential to impact a large number of people in a relatively small area. |
| Health impacts of flooding | Perceived risk of flooding and its impact on the health of the local population. |
| Accessibility to community and public transport | The coverage and accessibility of community and public transport across the borough varies significantly. Accessibility is central to the safeguarding of sustainable communities, in particular people's ability to reach services by available, affordable and accessible public and community transport. |

| Key Environmental Issues | Description |
|---|---|
| Cultural Heritage | |
| Protection of the Historic Environment | There are a large number of cultural heritage resources within Southwark including seven Scheduled Ancient Monuments, approximately 2,200 listed buildings and 43 conservation areas. There are 30 buildings currently 'at risk' (sites that are most at risk of being lost as a result of neglect, decay or inappropriate development) according to the Buildings at Risk Register. |
| Townscape/ Landscape | |
| Protection of Townscape/ Landscape | The majority of the borough is a developed townscape that forms part of inner London. The Mayor of London has identified a number of public views that are important for all of London. Southwark acts as a statutory consultee for a number of these protected views. These should be conserved and enhanced. |
| Material Assets | |
| Flood Risk to Housing | Southwark covers areas of diverse housing types. To meet growing housing needs the Southwark Core Strategy details the plan for 24,450 homes before 2026. Most of the sites identified for development are located in the northern part of the borough, within the Thames flood plain. |
| Flood Risk to Critical Infrastructure | Southwark is a fast growing tourist destination within London; housing tourist attractions including the Tate Modern and Shakespeare's Globe Theatre. It is an important part of the borough's economy. The north of the borough has seen an increase in the number of hotel rooms due to the proximity to tourist attractions and higher level of public transport accessibility. This part of the borough is within the Thames floodplain. |

4.5 SEA Objectives

The SEA objectives seek to address the key environmental issues and opportunities identified as important in Southwark. Schedule 2 of the SEA Regulations provides a list of specific environmental topics to be addressed in the SEA. In drawing up the objectives it was ensured that all the relevant environmental topics are covered by the objectives. Following consultation a total of 16 SEA objectives were developed, these are listed in Table 4.3.

Table 4.3 - SEA Objectives

| SEA Objectives | SEA Environmental Issue |
|--|-------------------------|
| 1. Adapt to and mitigate the impact of climate change | Climatic Factors |
| 2. To ensure that flood management related activities use natural resources more efficiently and sustainably, in particular land, mineral aggregates, water and fuel | |

| SEA Objectives | SEA Environmental Issue |
|---|--------------------------------------|
| 3. To ensure protection and enhancement of biodiversity at designated sites | Biodiversity, Flora and Fauna |
| 4. To promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations | |
| 5. Promote the conservation and wise use of land, and protect soil quality and quantity | Geology and Soil |
| 6. Prevent pollution to the water environment and protect resources | Water |
| 7. Reduce vulnerability to flooding | |
| 8. To reduce the flood risk to population and properties and to contribute to flood risk management within Southwark | Population and Human Health |
| 9. To safeguard and promote existing public access, navigation and recreational resources and to promote education on the environment | |
| 10. Increase accessibility to open space and green infrastructure | |
| 11. Protect and enhance the historic environment, heritage assets and their setting (including architectural and archaeological heritage) | Cultural Heritage |
| 12. To protect and enhance attractive townscapes/ landscapes in terms of both their visual quality and their character | Townscape/ Landscape |
| 13. Protect and enhance green infrastructure and open space | Material Assets |
| 14. Reduce economic cost of flood damage | |
| 15. Ensure the potential impact of flooding on existing and future housing and critical infrastructure is minimised | |
| 16. Encourage Sustainable Tourism | |

The LFRMS objectives and potential measures were assessed against the SEA objectives to assess their compatibility and predicted environmental effects, as reported in Sections 5 and 6 of this report.

4.6 Consideration of Alternatives

Four alternatives for the management of flood risk within Southwark have been considered. At this stage a high level comparison of the alternatives was undertaken, to identify the potential effects of implementing the alternatives on the identified key issues within Southwark. The alternatives considered are listed below and their potential effects are summarised in Appendix 3.

- **Do Nothing** – where existing flood management assets and flood management activities related to surface water, ground water and ordinary water courses are abandoned.
- **Business as Usual** – maintains the current approach to flood management and is the likely status without strategic action. This represents what would occur if no further plans were put in place beyond existing projects, government policies and

statutory obligations, and is included to assess whether strategic action is required.

- **Maintain Current Flood Risk** – where existing flood management assets and flood management activities related to surface water, ground water and ordinary water courses would be developed in line with climate change projections.
- **Proactive Approach to Flood Risk** – this approach would see the implementation of a Local Flood Risk Management Strategy. It takes a proactive approach to managing flood risk and reducing environmental, social and economic impacts due to flooding.

A high level comparison of the alternatives concludes that the only realistic option, as a high level strategy, is to take a pro-active approach to flood risk through the implementation of a Local Flood Risk Management Strategy. This conclusion has been taken in the context of:

- the statutory duties of the London Borough of Southwark as the LLFA;
- achieving the strategic aims and objectives of the National Strategy for Flood and Coastal Erosion Risk Management.

Should any other alternatives be identified during consultation on the LFRMS, they will be subject to assessment as the Environmental Report is updated to reflect the final version of the LFRMS.

5 Assessment of the Southwark LFRMS Objectives

5.1 Introduction

Stage B1 of the ODPM SEA guidance requires the SEA to test the Strategy objectives against the SEA objectives. This exercise identifies where there are tensions or synergies that exist between the different objectives, and any clear conflicts that should be addressed. It is primarily used to inform development of the LFRMS and secondarily, to refine the LFRMS objectives.

Compatibility testing was also undertaken internally for both sets of objectives. A summary of the results is provided below, with detailed matrices available in Appendix 4.

5.2 Testing the LFRMS Objectives against the SEA Objectives

The LFRMS objectives (section 2.3) have been tested for compatibility against the SEA objectives (Table 4.3); using a standard matrix approach, professional judgement and peer review.

The assessment outcomes were recorded as compatible, incompatible, unrelated or unclear (a relationship between objectives exists, but there is no direct compatible or incompatible relationship). The symbols in Table 5.1 were used in the assessment matrices to indicate the compatibility of the objectives.

The results of the assessment are shown in Table 5.2 below.

Table 5.1 - Compatibility Key

| Key | |
|-----|--------------|
| + | Compatible |
| 0 | Unrelated |
| ? | Unclear |
| - | Incompatible |

Table 5.2 - LFRMS/ SEA Objectives Compatibility Matrix

| | SEA 1 | SEA 2 | SEA 3 | SEA 4 | SEA 5 | SEA 6 | SEA 7 | SEA 8 | SEA 9 | SEA 10 | SEA 11 | SEA 12 | SEA 13 | SEA 14 | SEA 15 | SEA 16 | |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|---|
| LFRMS a | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| LFRMS b | 0 | 0 | 0 | 0 | 0 | 0 | + | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| LFRMS c | 0 | 0 | 0 | 0 | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | + | + | 0 | |
| LFRMS d | 0 | 0 | + | + | + | + | + | + | + | + | + | + | + | 0 | + | + | |
| LFRMS e | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | + | + | + | + | |
| LFRMS f | + | 0 | + | + | + | + | + | + | + | + | + | + | + | + | + | 0 | |
| LFRMS g | 0 | 0 | 0 | 0 | 0 | + | + | + | 0 | 0 | 0 | 0 | 0 | 0 | + | + | 0 |
| LFRMS h | + | + | + | + | + | + | ? | ? | + | 0 | + | + | + | 0 | ? | + | |
| LFRMS i | 0 | 0 | + | + | + | + | + | + | 0 | 0 | + | + | + | + | + | 0 | |
| LFRMS j | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | |

None of the LFRMS objectives are fundamentally incompatible with the SEA objectives. The majority of the LFRMS objectives are either compatible (69/144) or unrelated (67/144) to the SEA objectives. A clear understanding of local flood risks, community engagement, clear plans for management of flood risk and integration with new development closely align with the SEA.

LFRMS objectives d (13) and f (14) have the highest compatibility with the SEA objectives and this reflects their aim to consider communities, future development and environmental considerations into flood risk management, closely aligning with the SEA objectives.

There are uncertainties over LFRMS objective h's compatibility with three SEA objectives (7, 8 and 15). The LFRMS objective seeks to increase 'environmental protection'; however, it is unclear at this stage whether this covers the 'natural' environment (such as biodiversity and open space), the 'human' environment (such as population, properties and infrastructure), or both. If, for example, the objective is concerned with protection of the natural environment there are uncertainties over its compatibility with managing flood risk to the human environment. Increasing protection to the natural environment has the potential to increase flood risk in other locations which may result in adverse impacts on the human environment. It is recommended that 'environmental protection' is defined within the LFRMS objective text.

5.3 Internal Compatibility of LFRMS Objectives

From a total of 42 possible results; 20 scored as compatible and 22 unrelated. All the LFRMS objectives are compatible with at least one other objective and there are no identified conflicts between the objectives. This reflects the similar pro-active approach of LFRMS objectives which have been designed with the aim of reducing overall flood risk.

5.4 Internal Compatibility of the SEA Objectives

From a total of 120 possible results, 44 are compatible, 16 unclear and 60 unrelated. None of the SEA objectives are fundamentally incompatible with each other.

SEA objective 8 (to reduce the flood risk to population and properties and to contribute to flood risk management within Southwark) is considered to have an unclear relationship with six other SEA objectives. This is because the objective has the potential to be incompatible with objectives associated with biodiversity, soils, cultural heritage and open space should there be a requirement to offer compensatory flood storage to reduce the flood risk to population and properties.

6 Appraisal of the Southwark LFRMS Action Plan Measures

6.1 Introduction

As outlined in section 2.4, the Southwark LFRMS sets out a number of measures that form an Action Plan. The measures are divided into two categories:

- Borough-wide action plan – the council recognises that flooding within the borough is not confined to Critical Drainage Areas, and have developed generic measures to be extended throughout the borough.
- Local community action plans – these are specific measures aimed at each community council area.

Each of the borough-wide measures is grouped into measure categories that are used to inform the local community action plans. At this stage the LFRMS is only able to identify potential measures that could be employed in the delivery of LFRMS objectives and primary purpose. The SEA has therefore concentrated on assessing the potential for effects arising from the LFRMS measures considered. The SEA will flag potential environmental issues that will need to be addressed in the subsequent development of the Strategy and implementation of individual measures.

6.2 Testing of the LFRMS Action Plan Measures

Testing of the LFRMS Action Plan measures against the SEA objectives has been undertaken using the method and scoring methodology outlined below in Table 6.1.

Table 6.1 - Measure of Impact of Action Plan Measures on SEA Objectives

| | |
|----|--|
| ++ | Major Positive Impact – when the LFRMS measures are very closely allied in their purpose and intended outcome to the SEA objective and will deliver a clear benefit. |
| + | Minor Positive Impact – when the LFRMS measures are related to the SEA objective and are likely to deliver some benefit as a result of their implementation. |
| – | Minor Negative Impact – when the LFRMS measures will lead to a minor negative effect on the SEA objective as a result of their implementation. |
| -- | Major Negative Impact – where there is a clear and unambiguously negative relationship between the aims of the LFRMS and the SEA objective. |
| 0 | 'Unrelated' – the aim of one of the LFRMS measures does not impact on the aim of the SEA objective. This is neither a positive or negative effect. |
| ? | 'Unclear' – where there is a relationship identified between the LFRMS measure and the SEA objective, but it can't be clarified whether this is positive or negative. |

It is considered that all of the SEA objectives are of equal weight and that no one is more important than another. Therefore they must be achieved together to secure sustainable development.

The SEA regulations also require that consideration should be given to the short, medium and long term effects, permanent and temporary effects, positive and negative effects and secondary, cumulative and synergistic effects.

Therefore in testing the measures due consideration has been given to all these factors, although for the purposes of clarity have only identified when these factors are present and when short, medium and long term effects are absent. Greater detail on the justification for each test is given in Appendix 5.

Table 6.2 - LFRMS Measures/ Actions compared with SEA Objectives

| Measures Category | | SEA Objectives | | | | | | | | | | | | | | | |
|-------------------|---|----------------|---|---|---|---|----|----|----|---|----|----|----|----|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| A | Resources, Structure and Capacity to fulfil LLFA requirements under the Flood and Water Management Act 2010 and the Flood Risk Regulations 2009 | + | 0 | + | + | + | + | + | + | + | 0 | + | 0 | + | + | + | 0 |
| B | Communication, Partnerships and Community Engagement | + | 0 | + | + | + | + | ++ | + | + | 0 | + | 0 | + | + | + | 0 |
| C | Emergency Response and Recovery | 0 | 0 | + | + | + | + | ++ | ++ | + | 0 | + | 0 | + | + | ++ | 0 |
| D | Community and Infrastructure Resilience | + | ? | 0 | 0 | ? | + | + | + | 0 | + | + | 0 | + | + | + | 0 |
| E | Planning and Development Policies | + | 0 | + | + | + | + | + | + | + | + | + | 0 | + | + | ++ | 0 |
| F | Flood Alleviation Feasibility, Investigations and Design | + | 0 | + | + | + | + | ++ | ++ | + | + | + | 0 | + | + | ++ | 0 |
| G | Flood Alleviation Scheme Implementation | ++ | ? | ? | ? | ? | ++ | ++ | ++ | + | + | ++ | ? | ++ | ++ | ++ | 0 |
| H | Drainage Asset Operation and Maintenance | + | 0 | + | + | + | + | + | + | + | 0 | + | 0 | + | + | + | 0 |

6.3 Analysis of Predicted Environmental Effects

Overall, none of the LFRMS measures are deemed to have a negative effect on the SEA objectives, and unsurprisingly for a strategy that aims to reduce overall flood risk the majority of the action plan measures have a positive effect on the SEA objectives (76 minor and 16 major).

6.3.1 *Measure Category A: Resources, Structure and Capacity to fulfil LLFA requirements under the Flood and Water Management Act 2010 and the Flood Risk Regulations 2009*

The individual measures associated with this measure category aim to position the Council to effectively deliver flood risk management; through having the required skills and knowledge base, and taking advantage of collaborative working with internal and external partners.

Although the measures will not directly result in physical works to manage flood risk, it is considered that in combination they will result in a secondary positive effect in reducing overall flood risk in the borough. The LFRMS measures are considered to have a minor positive effect on all the SEA objectives, apart from 2, 10, 12 and 16 which are considered unrelated. This is mainly as a result of the potential for a reduction in adverse effects associated with flood risk.

No negative effects from the LFRMS measures, minor or significant, have been identified in relation to the SEA objectives.

6.3.2 *Measure Category B: Communication, Partnerships and Community Engagement*

The measure seeks to raise community awareness of flood risk and its consequences through partnership and key stakeholder working. Community awareness is essential part of developing local level resilience to flooding. The proactive approach taken in the LFRMS is considered to have a positive effect on the on the majority of the SEA objectives. In particular, it is likely to have a direct major positive effect on reducing vulnerability to flooding as it will allow local communities to be better informed on flood risk. Subsequently they will be better prepared to minimise the impacts (human and economic) and recover from flood events.

While it is important that identified key stakeholders who are most at risk are targeted for community engagement, the Strategy should also seek as much engagement with all members of the population as they may still be at risk of flooding.

6.3.3 *Measure Category C: Emergency Response and Recovery*

The LFRMS identifies emergency response and recovery as crucial to protecting human health, economic loss and the environment. The development of Emergency Response Plan is considered to have a minor secondary positive effect on the majority of SEA objective. By using new information on flood risk, improving weather warning and community flood plans the Council will be able to respond to flood events in a more effective manner than present. This should contribute to reducing the impact that flood events have on a number of receptors including: biodiversity, soils and land, water quality, public access and green infrastructure.

The measures are predicted to have a direct major impact on reducing vulnerability to flooding and the flood risk to population and properties. The implementation of Community Flood Plans will enable the most vulnerable members of communities to be identified and prioritised.

6.3.4 *Measure Category D: Community and Infrastructure Resilience*

The LFRMS measures are predicted to have a minor positive effect on the majority of the SEA objectives. While the measures if implemented will identify opportunities to improve property and critical infrastructure resilience, they will not result in direct physical works to improve resilience. At this stage it is unclear the success of resilience measures, particularly uptake of property level measures by private owners.

The measures are an important part of flood risk management in Southwark. The identification of local scale and source control measures alongside practical information will allow property owners and the Council to make informed decisions on increasing resilience of properties and critical infrastructure.

6.3.5 *Measure Category E: Planning and Development Policies*

The use of a flood risk management framework to inform spatial planning and development control policies is considered an improvement on the current approach, and will reduce the overall flood risk to new developments; potentially allowing outstanding flood issues to be addressed. This is likely to have a secondary minor positive effect on many of the SEA objectives by reducing the negative impacts associated with flood events; for example, high levels of soil erosion from surface water run-off.

The measures are likely to combine to have a direct major impact on ensuring that the impact of flooding on future housing and infrastructure is minimised by ensuring that new development incorporates robust flood risk management measures. Given that the Core Strategy outlines the delivery of 24,450 new homes in the borough by 2026, these measures are likely to be significantly positive.

6.3.6 *Measure Category F: Flood Alleviation, Feasibility, Investigations and Design*

The LFRMS measures will not result in direct physical works to manage flood risk. However, they are expected to have a secondary positive effect on the majority of SEA objectives by combining to reduce overall flood risk. The measures will improve the Council's evidence base on drainage capacity, critical infrastructure, 'urban greening' measures, sustainable urban drainage systems (SuDS) and 'Quick-win' flood mitigation schemes; this should allow the Council to manage flood risk in more appropriate and effective ways.

6.3.7 *Measure Category G: Flood Alleviation Scheme Implementation*

The measures are likely to combine to significantly reduce overall flood risk in Southwark; by reducing water run-off at source, attenuation of run-off volumes and velocities and flood water storage. Implementation of these measures in the identified areas at highest risk of flooding (Critical Drainage Areas and Local Flood Risk Zones) through an informed understanding of their need is considered likely to have a major positive effect on eight of the SEA objectives. The measures are likely

to significantly reduce the flood risk to populations, properties, the historic environment, green infrastructure and open land.

There are uncertain effects on SEA objective 2, as it is unclear how the development of property level and infrastructure measures will use natural resources in the development of physical works. Although many of the measures promote sustainable use of resources (e.g. rainwater harvesting, grey water re-use), there is still the potential for schemes to misuse natural resources as no specific requirements are identified.

There are also uncertainties in regards to the effects on SEA objectives 3, 4 and 5. While the LFRMS measures seek to reduce flood risk there is also the potential that physical works could have adverse impacts on biodiversity habitats, species and soil.

6.3.8 *Measure Category H: Drainage Asset Operation and Maintenance*

The measures are anticipated to contribute to a reduction in overall flood risk through improved maintenance of flood risk assets, maintaining the capacity of drainage networks to ensure that surface water drainage is maximised and using learning outcomes to improve future scheme development. This is expected to have a secondary minor positive effect on the majority of SEA objectives as the adverse impacts of flood events are minimised.

7 Conclusions and Recommendations

The conclusions of the SEA are generally positive, with none of the measures in the LFRMS likely to have negative effects, either minor or significant, on any of the SEA objectives. The principle reason for this is that the overriding purpose of the LFRMS is to minimise the risk of flooding from surface water, ground water and ordinary watercourses to human health and life, the environment, economic activity, infrastructure and cultural heritage. The LFRMS takes a pro-active approach to flood risk management and there is a clear consideration to integrate environmental issues and opportunities into the objectives of the LFRMS.

Many of the proposed measures to deliver the LFRMS have the potential for direct and indirect environmental benefits. A number of major positive effects have been identified for SEA objectives 7 (vulnerability to flooding), 8 (flood risk to population and properties) and 15 (impact of flooding on housing and critical infrastructure), as they are directly effected by reductions in flood risk. The other SEA objectives are considered more likely to benefit from secondary positive effects, as a result of reductions in the adverse impacts associated with flood events.

SEA objectives 2 (use of natural resources in flood risk management) and 12 (protect townscapes/ landscapes) are unrelated to the majority of LFRMS measures as they concern the implementation of physical works in flood risk management. The effect on these measures is unclear in relation to Measures Category G, as specific information on locations and natural resources for development are unclear at this stage.

The uncertainties attached to the potential effects of Measures Category G (Flood Alleviation Scheme Implementation) on SEA objectives 2, 3, 4 and 5 could be removed if there was more specific information on how the potential environmental effects arising from physical works (hard engineering and urban greening) will be mitigated. An example would be to develop an Environmental Management Plan across flood risk management activities with a precondition that it is applied across all physical works schemes, including those that do not qualify for statutory environmental impact assessment.

It is recommended that although it is important to identify and prioritise areas that are at more severe risk of flooding, it is also important to ensure that as far as is feasibly possible all members of the community are made aware of flood risk and measures to reduce its impacts. It is also recommended that 'environmental protection' is defined within the LFRMS objective text.

The findings of this Environmental Report should be taken into account by Southwark Council as it finalises the LFRMS. The final Environmental Report will be published following consultation with statutory consultees, stakeholders and the public and then making any necessary amendments and updates to the documents.

Following adoption of the LFRMS, an SEA Statement is produced which outlines how the SEA process has influenced the development of the Southwark LFRMS, how consultation comments were taken into consideration and how the Strategy will be monitored.

8 Monitoring

The SEA Directive requires that 'Member States shall monitor the significant environmental effects of the implementation of plans and programmes in order, inter alia, to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action' (Article 10.1)

Monitoring allows the actual significant environmental effects of the LFRMS to be tested against those predicted. It allows for any unforeseen adverse effects to be identified and appropriate remedial action to be taken.

Aims and methods for SEA monitoring will be finalised during preparation of the SEA Statement which will accompany the adopted version of the LFRMS and the Environmental Report including changes resulting from consultation. The finalised monitoring arrangements will be designed to provide information that can be used to highlight specific performance issues and significant effects, and lead to more informed decision-making.

In order to monitor the effects of the LFRMS it is necessary to have indicators that can be assessed throughout the duration of the LFRMS. Table 8.1 sets out the suggested indicators at this stage. Indicators will be finalised during consultation and will be detailed in the SEA Statement.

Table 8.1 - SEA Objectives and Potential Indicators

| SEA Objectives | Potential Indicators | Responsible Authority |
|--|---|----------------------------|
| SEA Topic: Climatic Factors | | |
| 1. Adapt to and mitigate the impact of climate change | Length of green infrastructure network | Local Authority |
| | Number of new flood prevention schemes developed | Lead Local Flood Authority |
| | Number of flood incidents recorded | Environment Agency |
| | Proportion of suitable applications granted with sustainable urban drainage system (SUDS) | SUDS Approving Body |
| 2. To ensure that flood management related activities use natural resources more efficiently and sustainably, in particular land, mineral aggregates, water and fuel | Number of flood related developments accredited to CEEQUAL | Planning Authority |
| | Number of planning applications approved that include aspirations for a Very Good or Excellent BREEAM rating in buildings related to flood management | Planning Authority |
| SEA Topic: Biodiversity, Flora and Fauna | | |
| 3. To ensure protection and enhancement of biodiversity at designated sites | Change in areas designated for their intrinsic environmental value, including sites of international, national, regional, sub-regional or local significance: a) Loss b) Addition | Natural England |
| | Area of land designated as a Local Nature Reserve (LNR) | Local Authority |
| | Area of land designated as Site of Importance for Nature Conservation (SINC) | Local Authority |
| 4. To promote the preservation, restoration and re-creation of | % area of land designated as a SINC within the local authority area in 'positive management' | Defra |

| SEA Objectives | Potential Indicators | Responsible Authority |
|--|--|---|
| priority habitats, ecological networks and the protection and recovery of priority species populations | Proportion of biodiversity enhancement schemes implemented due to construction of flood management schemes, for example wild-flower planting on roadside verges and street trees | Lead Local Flood Authority |
| | Number of biodiversity enhancement schemes implemented through flood management related activities to promote priority species/habitats in Biodiversity Action Plans | Lead Local Flood Authority / Southwark Biodiversity Partnership |
| SEA Topic: Geology and Soil | | |
| 5. Promote the conservation and wise use of land, and protect soil quality and quantity | % of Part 2A sites cleared up/ discharged | Planning Authority |
| | Number of new flood prevention schemes developed to protect land at risk from flooding | Lead Local Flood Authority |
| | Area of land provided with protection measures to protect from flooding | Lead Local Flood Authority |
| SEA Topic: Water | | |
| 6. Prevent pollution to the water environment and protect resources | Planning permission granted contrary to Environment Agency advice on Source Protection Zones | Planning Authority |
| | Proportion of suitable applications granted with sustainable urban drainage system (SUDS) | Planning Authority |
| 7. Reduce vulnerability to flooding | Number of planning permissions granted contrary to Environment Agency advice on flooding and water quality grounds | Planning Authority |
| | Area of urban development provided with flood protection measures | Lead Local Flood Authority |
| | Properties at risk from water flooding (from a 1 in 200 year event) | Lead Local Flood Authority |
| SEA Topic: Population & Human Health | | |
| 8. To reduce the flood risk to population and properties and to contribute to flood risk management within Southwark | Number of properties at risk from fluvial and surface water flooding | Environment Agency |
| | Economic cost of flood damage | Defra/ Environment Agency |
| 9. To safeguard and promote | Length of footpaths | Local Authority |

| SEA Objectives | Potential Indicators | Responsible Authority |
|---|---|--|
| existing public access, navigation and recreational resources and to promote education on the environment | New or additional recreational facilities, or increased access to open spaces | Local Authority |
| 10. Increase accessibility to open space and green infrastructure | Major additional open space land provided in association with other development | Local Authority |
| | Area of open space permitted to be converted to other uses specifically flood management related | Local Authority |
| | Area (ha) of Local Nature Reserve per 1,000 population | Local Authority |
| | Total km of new cycle routes during monitoring period | Local Authority |
| | Length of green infrastructure network, including greenways | Local Authority |
| | Total km of public Rights of Way (RoW) network | Local Authority |
| SEA Topic: Cultural Heritage | | |
| 11. Protect and enhance the historic environment, heritage assets and their setting (including architectural and archaeological heritage) | % of designated sites, listed buildings and conservations areas provided with flood protection measures | English Heritage/ Lead Local Flood Authority |
| | The number of flood related schemes that avoid causing harm and contributions are made to the enhancement of heritage assets or their setting | Local Authority |
| SEA Topic: Townscape/ Landscape | | |
| 12. To protect and enhance attractive townscapes/ landscapes in terms of both their visual quality and their character | Number of flood related applications refused because of adverse effects on the designated landscape areas | Natural England |
| | Number of visual impact assessments undertaken as part of any flood related planning applications | Planning Authority |
| SEA Topic: Material Assets | | |
| 13. Protect and enhance green infrastructure and open space | Number of urban parks | Local Authority |
| | Total km of public Rights of Way (RoW) network | Local Authority |

| SEA Objectives | Potential Indicators | Responsible Authority |
|---|---|-----------------------------|
| | Total km of new cycle routes during monitoring period | Local Authority |
| | Major additional open space land provided in association with other development | Planning Authority |
| | Area of open space permitted to be converted to other uses specifically flood management related | Planning Authority |
| | Number of Green Spaces with a Green Flag Award | Green Flag Plus Partnership |
| 14. Reduce economic cost of flood damage | Economic cost of flood damage | Defra/ Environment Agency |
| 15. Ensure the potential impact of flooding on existing and future housing and critical infrastructure is minimised | Economic cost of flood damage | Defra/ Environment Agency |
| | Conflict with existing or proposed key transport routes (recreational and commercial) or infrastructure e.g. closures/ restrictions | Local Authority |
| 16. Encourage sustainable tourism | Visitor spend/ numbers | Local Authority |
| | Positive impact on surrounding land use in terms of the local economy | Local Authority |

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Mouchel (October 2012). Strategic Environmental Assessment of the Southwark Council Local Flood Risk Management Strategy – Scoping Report.

Southwark Council (2014). Draft for Consultation Local Flood Risk Management Strategy.

Appendices

Appendix 1: Comments from the Statutory Consultees on the Southwark LFRMS Scoping Report.

Appendix 2: Updated Scoping Report including review of the relevant Plans, Programmes and Policies.

Appendix 3: Comparison of potential environmental effects of high level strategy alternatives.

Appendix 4: Internal compatibility of the SEA and LFRMS objectives matrices.

Appendix 5: SEA Matrices.