



The Local Flood Risk Management Strategy for Brighton and Hove

Strategic Environmental Assessment - Scoping Report



On behalf of **Brighton and Hove City Council**

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Non-Technical Summary

This is the Scoping Report for the Strategic Environmental Assessment (SEA) in relation to the Draft Local Flood Risk Management Strategy (LFRMS) for Brighton & Hove City.

The purpose of the Scoping Report is to inform the statutory consultees of our intended approach to assessing the potential environmental effects of the Local Flood Risk Management Strategy. The Strategy for Brighton and Hove will set out how flood risk will be assessed and what measures will be put in place in order to manage flood risk.

The Strategy will consider the impact and consequences of local flooding together with the relationship between surface water and other local sources of flooding.

This report proposes how we will identify, describe and evaluate the likely significant effects on the environment of implementing the Strategy.

It is proposed that our assessment will be undertaken by considering the potential effects of the Strategy on the following different aspects of the environment;

- Biodiversity
- Population
- Human health
- Soil and ground conditions
- Water resources
- Material assets
- Cultural heritage
- Climatic factors

This Scoping Report sets out an evaluation of the existing environmental conditions and also identifies a series of SEA objectives; it is proposed that these objectives will then be used as the basis of the assessment.

Consultees to the report are asked to confirm that the evaluation of existing conditions is appropriate and that the propose SEA objectives are acceptable.



Abbreviations

BHCC	Brighton & Hove City Council
CAMS	Catchment Areas Management Strategy
EA	Environment Agency
EC	European Commission
EU	European Union
FRA	Flood Risk Assessment
HRA	Habitat Regulations Assessment
LFRMS	Local Flood Risk Management Strategy
NNR	National Nature Reserve
PBA	Peter Brett Associates
SEA	Strategic Environmental Assessment
SINCs	Sites of Importance for Nature Conservation
SLINCs	Sites of Local Importance for Nature Conservation
SSSIs	Sites of Special Scientific Interest
SuDS	Sustainable Drainage Systems
UKCP	United Kingdom Climate Projections



1 Introduction

1.1 Background

- 1.1.1 Brighton and Hove City Council is required under the Flood and Water Management Act 2010 to develop, maintain, apply and monitor a strategy for local flood risk management in its area.
- 1.1.2 The Local Flood Risk Management Strategy (LFRMS) to be referred to as “the Strategy” from here on will set out the objectives for managing local flood risk and the measures proposed to achieve those objectives. The main partners in delivering a local strategy include the Environment Agency and Southern Water together with other flood risk management authorities.
- 1.1.3 Peter Brett Associates LLP (PBA) is undertaking the Strategic Environmental Assessment (SEA) of the Strategy on behalf of Brighton & Hove City Council.

1.2 Purpose of this report

- 1.2.1 The purpose of the Scoping Report is to inform the statutory consultees of our intended approach to assessing the potential environmental effects of the Local Flood Risk Management Strategy.
- 1.2.2 This Scoping Report sets out an evaluation of the existing environmental conditions and also identifies a series of SEA objectives; it is proposed that these objectives will then be used as the basis of the assessment.

1.3 The Local Flood Risk Management Strategy for Brighton and Hove

- 1.3.1 The Strategy will consider the impact and consequences of local flooding together with the relationship between surface water and other local sources of flooding. There are no rivers within Brighton and Hove, therefore fluvial flooding will not have been considered as part of the Strategy.

1.4 The Strategic Environmental Assessment (SEA)

- 1.4.1 The Strategic Environmental Assessment (SEA) is concerned with assessing the potential environmental effects that may arise from the implementation of the Strategy.
- 1.4.2 The Environmental Assessment of Plans and Programmes Regulations 2004 (the Regulations), implement the requirements of the European Union (EU) Directive 2001/42/EC (known as the SEA Directive), in England.
- 1.4.3 The Regulations state;

The Environmental Report must identify, describe and evaluate the likely significant effects on the environment of implementing the plan (or in this case Strategy).

- 1.4.4 The Strategy for Brighton & Hove has been identified as a plan which could give rise to significant environmental effects. The principle steps in the process are provided below;

Step 1: - Establish the current environmental conditions (i.e. the baseline) within the geographical extent of the Strategy.



Step 2: - Predict any changes/trends to the environmental conditions that are likely to occur within the temporal scope of the Strategy

Step 3: - Identify and agree the SEA objectives. These SEA objectives should take into account the following issues;

- Biodiversity
- Population
- Human health
- Soil and ground conditions
- Water resources
- Air quality
- Material assets
- Cultural heritage
- Landscape
- Climatic factors

- **Step 4:** - Consult on the scope of the SEA (i.e. steps 1-3 above) with statutory consultees.
- **Step 5:** - Assess the Strategy, against the SEA objectives in the context of the existing and future environmental conditions and determine any significant environmental effects.
- **Step 6:** Identify mitigation strategies for any likely significant effects. It is not anticipated that there will be many (if any) significant *adverse* environment effects as a result of the Strategy. If any are identified, mitigation measures to avoid reduce or compensate the effect will be recommended.
- **Step 7:** - Recommend a monitoring regime for the implementation of the Strategy.

1.4.5 The requirements of what should be included in an Environmental Report from Schedule 2 of the Environmental Assessment of Plans and Programmes Regulation 2004 are reproduced at Appendix A.

1.4.6 This Scoping Report covers Steps 1-4 above.

1.5 Structure of this Report

1.5.1 The following sections of this report are;

- Section 2: A review of Policies, Plans and Programmes;
- Section 3: A description of the current baseline environmental conditions
- Section 4: Identification of key issues relevant to the Strategy and environment



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- Section 5: Proposed SEA Objectives and Assessment Framework
 - Section 6: The Proposed Structure of the Environmental Report
 - Section 7: Next Steps and Consultation



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2 Review of Policies Plans and Programmes

2.1 Introduction

- 2.1.1 The relationship between various policies, plans, programmes and environmental protection objectives may influence the Strategy. The relationships are analysed to help:
- 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 Strategy; and
 - determine whether the policies in other plans and programmes might lead to cumulative or synergistic effects when combined with policies in the Strategy.
- 2.1.2 This process enables the Strategy to take advantage of any potential synergies and to respond to any inconsistencies and constraints. The plans and programmes to be considered include those at the international, national, regional and local scale.
- 2.1.3 The review aims to identify the relationships between the Strategy and these other documents i.e. how the Strategy could be affected by the other plans and programmes' aims, objectives and/or targets, or how it could contribute to the achievement of any environmental and sustainability objectives.
- 2.1.4 An understanding of the plans and programmes alongside which the Strategy sits is important in developing a baseline approach to the assessment. It is also a valuable source of information to support the completion of the social, economic and environmental baseline and aid the determination of the key issues. The completed review of plans and programmes will also be used to provide the policy context for the subsequent assessment process and help to inform the development of objectives that comprise the SEA framework.
- 2.1.5 A local policy review has been undertaken in relation to the SEA topics as is provided at Appendix B.

2.2 International, National Policies and Legislation

- 2.2.1 The principal documents which form the legislative context for the Strategy are as follows:
- 2.2.2 At the European level, the **Water Framework Directive (WFD)** is the most substantial piece of EC water legislation to date and replaces a number of existing Directives including the Surface Water Abstraction Directive. It establishes a framework for the protection of inland surface waters, transitional waters, coastal water and groundwater and is designed to improve and integrate the way water bodies are managed, including encouraging the sustainable use of water resources. The key objectives at European level are general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water. In accordance with Article 4(1), the Directive objectives for surface water, groundwater, transitional and coastal water bodies are to: prevent deterioration; reduce pollution; protect, enhance and restore condition; achieve good status" by 2015 or an alternative objective where allowed; and comply with requirements for protected areas. The WFD adopts the "polluter pays principle" in seeking to ensure that the costs and benefits of discharging pollutants to the water environment are appropriately valued, and that implementation of the Directive is achieved in a fair and proportionate way across all sectors.



2.2.3 **The Flood Directive 2007/60/EC** aims to provide a consistent approach to managing flood risk across Europe. The approach is based on a six year cycle of planning which includes the publication of Preliminary Flood Risk Assessments, hazard and risk maps and flood risk management plans. The Directive is transposed into English law by the **Flood Risk Regulations 2009**.

2.2.4 In England, the implementation work related to the Water Framework Directive is undertaken by the Environment Agency. The Environment Agency was required to develop a national strategy for England. This describes what needs to be done by all risk management authorities involved in flood and coastal erosion risk management to reduce the risk of flooding and coastal erosion, and to manage its consequences. Every other agency with a flood risk management function across England and Wales must take account of this strategy. There are 11 River Basin Districts in England and Wales which each require (under the Water Framework Directive) a River Basin Management Plan (RBMP) including objectives for surface water, groundwater, transitional and coastal water bodies.

2.2.5 **The Flood and Water Management Act 2010** sets out which bodies are responsible for managing flood risks. The Environment Agency (EA) has been given a strategic overview role while local authorities have a new leadership role in local flood risk management. Local Authorities are defined as Lead Local Flood Authorities (LLFAs) under the Act. Local authorities across England and Wales are required to develop, maintain, apply and monitor a strategy for local flood risk management in their areas. These local strategies must include the risk of flooding from surface water, watercourse and groundwater flooding.

- Lead local authorities must establish and maintain a register of structures which have an effect on flood risk management in their areas.
- The Act introduces a requirement to improve the flood resistance of existing buildings by amending the Building Act 1984.
- The Act introduces the provision for residential landlords to be charged the cost of their tenant's unpaid water bills should the landlord fail to pass on the tenants details to the respective water company for the local area.
- The Act introduces the requirements for developers of property to construct Sustainable Drainage Systems (SuDS).
- Local authorities may have a responsibility to adopt sustainable drainage systems in accordance with the requirement of Schedule 3 of the Flood and Water Management Act.

2.2.6 Section 9 of the Flood and Water Management Act 2010 details the statutory requirements for Local Flood Risk Management Strategies. It states that an LLFA must develop, maintain, apply and monitor a strategy for local flood risk management in its area for the following forms of flood risk: surface run-off; groundwater; and ordinary watercourses. The Strategy must set out:

- the risk management authorities in the authority's area;
- the flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area;
- the objectives for managing local flood risk (including any objectives included in the authority's flood risk management plan prepared in accordance with the Flood Risk Regulations 2009);



- the measures proposed to achieve those objectives;
- how and when the measures are expected to be implemented;
- the costs and benefits of those measures, and how they are to be paid for;
- the assessment of local flood risk for the purpose of the strategy;
- how and when the strategy is to be reviewed; and
- how the strategy contributes to the achievement of wider environmental objectives.

2.2.7 **The National Planning Policy Framework (NPPF) (2012)** expects the planning system to contribute to conserving and enhancing the natural environment and reducing pollution, and take full account of flood risk. In particular, the planning system is expected to prevent new development from contributing to unacceptable levels of water pollution. Local planning authorities are expected to set out the strategic priorities for their area in the Local Plan including strategic policies to deliver the provision of infrastructure for water supply, wastewater, flood risk and coastal change management. In preparing the evidence base for their Local Plans, they are expected to work with other authorities and providers to assess the quality and capacity of the existing infrastructure and its ability to meet forecast demands. Public bodies have a duty to co-operate on planning issues that cross administrative boundaries particularly those which relate to strategic priorities.

2.2.8 The NPPF expects inappropriate development in areas of flood risk to be avoided and sets out how this should be achieved through the preparation of Local Plans and in determining planning applications. Supporting technical guidance has been provided to ensure the effective implementation of the policy. The Technical Guidance to the NPPF (2012) provides additional guidance to local planning authorities to ensure the effective implementation of the planning policy set out in the NPPF on development in areas at risk of flooding and in relation to mineral extraction.

2.3 Strategies and Plans

2.3.1 The following strategies and plans coincide with the Strategy.

2.3.2 **The South East River Basin Flood Risk Management Plan¹** highlight the hazards and risks from rivers, the sea, surface water, groundwater and reservoirs and set out how Risk Management Authorities (RMAs) will work together with communities to manage flood risk. Flood risk management plans set out where and how to manage flood risk to provide most benefit to communities and the environment. It is integral to the way Risk Management Authorities work and European legislation has formalised this.

This is the first cycle of implementing the Flood Risk Regulations 2009. As a result of this legislation, Lead Local Flood Authorities (LLFAs) must prepare FRMPs in Flood Risk Areas, where the risk of flooding from local flood risks is significant (for instance from surface water, groundwater and ordinary watercourses). Brighton and Hove City Council is designated a Flood Risk Area and is working in partnership with the Environment Agency to develop the FRMP.

2.3.3 **Brighton Marina to River Adur Flood and Coastal Erosion Risk Management Strategy**
The aim of the Brighton Marina to River Adur Flood and Coastal Erosion Risk Management

¹ [Environment Agency \(2013\) South East River Basin Flood Risk Management Plan](#)



Strategy is to establish a Strategy Plan that sets out the strategic planning of flood and coastal erosion risk management assets between Brighton Marina and the River Adur for the next 100 years. With climate changing, sea levels rising and increased frequency and intensity of storms, our existing coastal defences are under increasing threat from the elements. The Brighton Marina to River Adur Flood and Coastal Erosion Risk Management Strategy will consider the risks and impacts of coastal erosion and flooding to communities and the environment, both now and in the future.

Brighton Marina to Saltdean Strategy

- 2.3.4 The strategy recommends maintaining the current defences between Ovingdean Gap and Saltdean and reconstruction of the defences between Ovingdean Gap and the Marina. As a result there is ongoing maintenance of the Undercliff Walk throughout its length following the reconstruction of the defences between the Marina and Ovingdean Gap which was completed in 2005.

Work on a revised and updated strategy for the coast from the Marina to Newhaven has begun led by Lewes District Council.



3 Draft Local Flood Risk Management Strategy

3.1 Introduction

- 3.1.1 The Strategy for Brighton and Hove is currently being developed. A draft of the Strategy will be issued for public consultation later this year.
- 3.1.2 The current objectives of the Strategy are provided below with suggested actions which could be monitored to show achievement. These objectives were developed in a workshop held in June 2014 with representatives from Brighton and Hove City Council.

3.2 Compatibility between the SEA Objectives and the LFRMS Objectives

- 3.2.1 Testing the compatibility between SEA Objectives and Strategy Objectives is a formal requirement of the SEA process. However, it is helpful to identify at an early stage where there could be conflict between the two sets of objectives of the SEA and those devised for the Strategy.
- 3.2.2 An initial compatibility appraisal is provided at Appendix C and concludes that there is some potential for incompatibilities between SEA Objectives and Strategy Objectives but that all of these incompatibilities can be overcome by careful and considered measures to address them. The Environmental Report will revisit this compatibility appraisal and will provide more detail.

3.3 Strategic Local Flood Risk Management objectives

Objective 1

‘Work with Partners, Stakeholders and Local Community Groups to understand and manage flood risk’.

Actions:

- Develop data and information sharing protocols.
- As LLFA hold quarterly partnership meetings with the EA and Southern Water.
- B&HCC to attend the regional South East 7 flood group.

Objective 2

‘Continue to improve B&HCC’s knowledge and evidence base of local flood risk’.

Actions:

- Define B&HCC description of flooding and the associated sources.
- Investigate and record all instances of internal property flooding under Section 19 Duties of the FWMA.
- Undertake a study into groundwater flooding in Brighton and improve monitoring levels throughout the city.
- Investigate and define local SW flood risk areas with drainage infrastructure constraints.



Objective 3

'Raise public awareness and resilience to flooding'.

Actions:

- Provide guidance on interpreting flood risk data.
- Provide self-help advice on flood resilience.
- Provide advice and support establishment of local community groups.

Objective 4

'Manage development impact on flood risk through land allocation and development control policy'.

Actions:

- Establish development control policies for 'city plan' – part 2.
- Establish protocol for consulting the LLFA on planning applications using flood risk evidence base (GIS database) as mandatory development control check / consultation.
- Implement the SuDS Approving Body in accordance with Defra national standards and guidance.

Objective 5

'Work with Partners and Funders to implement sustainable measures to reduce flood risk'.

Actions:

- Identify priority flood risk areas for investigation.
- Continue to implement and improve the beach replenishment programme.
- Implement the Action Plan from the B&HCC SWMP.
- Assess the potential for short term flooding of open space areas as mitigation.

Objective 6

'Undertake annual inspection, maintenance and improvement, where necessary, of flood defence assets'.

Actions:

- Define What constitutes a Flood Defence asset
- Provide a consolidated flood defence asset register.
- Prioritise maintenance budgets and prepare an inspection schedule.
- Undertake ecological surveys of assets prior to any maintenance or improvement works.

Objective 7

'Work with Partners and Funders to implement sustainable public health protection measures'.

Actions:



- Assess the public health implications from flooding.
- Identify and implement measures to protect public health during flood events.

Objective 8

'Ensure that likely environmental effects of implementing the Strategy are considered and understood and any potentially adverse effects are avoided, reduced or minimised.'

Actions:

- Undertake a SEA of the draft Strategy.
- Prepare an SEA Report to accompany the adopted Strategy.
- Implement monitoring according to the SEA Report.



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4 Baseline Conditions

4.1 Introduction

- 4.1.1 This section will establish the current environmental conditions (i.e. the baseline) within the geographical extent of the Strategy.
- 4.1.2 This step is undertaken in order to evaluate the sensitivity, vulnerability, value and importance of the existing environment. This is done by identifying the environmental designations and conditions through a review of available data and existing plans and policies. This assessment is done at a level appropriate to the strategic nature of the Strategy and is presented in a mixture of text, tables and existing graphics. No new data has been collected.
- 4.1.3 Having reviewed the objectives of the Strategy it is concluded that significant impacts on either air quality or landscape as a result of the Strategy being implemented are unlikely and are therefore scoped out of any further assessment.

4.2 Biodiversity and Geodiversity

International Nature Conservation Designations

Brighton and Lewes Downs UNESCO Biosphere Reserve

- 4.2.1 Brighton and Lewes Downs was approved as a UNESCO status biosphere reserve in 2014², as an area of terrestrial and coastal ecosystem promoting solutions to reconcile the conservation of biodiversity with its sustainable use.
- 4.2.2 The Brighton & Lewes Downs Biosphere covers almost 400 square kilometres of land and sea between the River Adur and the River Ouse, bringing together the three environments of countryside, coast, and city & towns under one united approach.

Castle Hill

- 4.2.3 Castle Hill is designated a SSSI³, a Biogenetic Reserve by the Council of Europe and is a Special Area of Conservation (SAC) under the European Habitats Directive. In addition, this site is in 'A Nature Conservation Review' (NCR) and lies within the South Downs Area of Outstanding Natural Beauty (AONB).
- 4.2.4 This is one of the best examples in East Sussex of the nationally uncommon chalk grassland habitat. The variation of plant and animal communities with aspect and slope is of special ecological interest. Two nationally rare species occur at Castle Hill.
- 4.2.5 The chalk grassland is rich in flowering plants and is of the sheep's fescue *Festuca ovina*–upright brome *Bromus erectus* type. Areas of tall grassland are dominated by tor grass *Brachypodium pinnatum* and are valuable for orthoptera (grasshoppers and crickets), an invertebrate group for which the site is possibly of national importance.

² Brighton & Lewes Downs Biosphere Project: <http://biospherehere.org.uk/what-on-earth/>

³ Castle Hill SSSI, Natural England: http://www.sssi.naturalengland.org.uk/citation/citation_photo/1003033.pdf
<http://www.naturalengland.org.uk/ourwork/conservation/designations/nnr/1006030.aspx>



- 4.2.6 Herbs which occur commonly in the grassland include horseshoe vetch *Hippocrepis comosa*, kidney vetch *Anthyllis vulneraria*, yellow rattle *Rhinanthus minor*, milkwort *Polygala calcarea*, scabious *Scabiosa columbaria*, fragrant orchid *Gymnadenia conopsea*, meadow oat grass *Avenula pratensis* and crested hair grass *Koeleria macrantha*. Warm, south facing slopes foster an unusual assemblage of plants with a continental distribution; these include Nottingham catchfly *Silene nutans*, burnt orchid *Orchis ustulata*, round headed rampion *Phyteuma tenerum*, field fleawort *Senecio integrifolius*, bastard toadflax *Thesium humifusum*, longstalked cranesbill *Geranium columbinum* and the nationally rare early spider orchid *Ophrys sphegodes*.
- 4.2.7 Belts of scrub are present and are locally valuable for breeding birds such as yellowhammer, corn bunting, linnets and whitethroat.
- 4.2.8 As a National Nature Reserve, Castle Hill has important education and research functions.

National Nature Conservation Designations

- 4.2.9 Over 40% of Brighton & Hove is within the South Downs national park⁴. The South Downs National Park became fully operational in April 2011 and as a National Park, the SDNPA has statutory purposes and socio-economic responsibilities as specified in the Environment Act of 1995:
- To conserve and enhance the natural beauty, wildlife and cultural heritage of the area.
 - To promote opportunities for the understanding and enjoyment of the special qualities of the Park by the public.
 - Working in partnership with other Local Authorities and other organisations, it is also the duty of the Authority to seek to foster the economic and social well-being of the local communities within the National Park.
- 4.2.10 From 1 April 2011 the South Downs National Park Authority is responsible for Local Access Forum, open access land, and planning. In the national park Brighton and Hove City Council continues to be responsible for managing land, rights of way, and roads.

Brighton to Newhaven Cliffs SSSI

- 4.2.11 This is a national SSSI notified under Section 28 of the Wildlife and Countryside Act 1981. This site includes the two sites formerly known as Black Rock and Peacehaven Cliffs to Castle Hill.
- 4.2.12 The main interest of the site is geological but, in addition, some rare and uncommon plants grow both on the cliff face and in the narrow strip of cliff-top chalk grassland. The cliffs support a locally important colony of breeding seabirds and a diverse community of beetles.
- 4.2.13 This coastal site comprises the length of chalk cliff stretching from Black Rock, Brighton in the west to Castle Hill, Newhaven in the east and includes the wave cut platform at the cliff base.
- 4.2.14 The protected cliffs from Brighton Marina to Newhaven include substantial linear areas of chalk grassland on their tops with rare coastal species such as Hoary Stock *Matthiola incana*, Sea-heath *Frankenia laevis*, Rock Sea lavender *Limonium binervosum* and Strawberry Clover *Trifolium fragiferum*.. The cliffs provide nesting niches for birds, including fulmars *Fulmarus*

⁴ <http://www.brighton-hove.gov.uk/content/leisure-and-libraries/parks-and-green-spaces/south-downs-national-park>



glacialis and a remnant colony of kittiwakes *Rissa tridactyla*. To the west, patches of the internationally rare habitat of vegetated shingle occur, with plants such as the rare sea knotgrass *Polygonum maritimum* and attractive yellow-horned poppy *Glaucium flavum*, although most of the coastline here is developed and intensively regulated and managed.

4.2.15 Geologically, Brighton to Newhaven Cliffs SSSI has the best and most extensive exposure of the *Offaster pilula* zone in England, and is a nationally important reference section for the upper Cretaceous period. There is an ancient “raised beach” and cliffs that comprise one of the most extensive sections of ice age geology visible in Northern Europe;

4.2.16 Overall, it is evaluated that Brighton to Newhaven Cliffs SSSI is all “favourable” conservation status.

Regional and Local Nature Conservation Designations

Local Nature Reserves

4.2.17 Brighton & Hove has several Local Nature Reserves (LNRs) in and around the city⁵. LNRs provide wild spaces where plants and animals can thrive as they offer a natural environment, in contrast with formal open green spaces such as parks and gardens. As they are still readily accessible to people, LNRs can be near city centres, on the coast or in the countryside.

4.2.18 Local Nature Reserves:

- Ladies Mile Open Space LNR
- Stammer Park/Coldean LNR
- Wild Park LNR
- Whitehawk/Race Hill LNR
- Bevendean Down LNR
- Beacon Hill LNR
- Withdean and Westdene LNR
- Benfield Hill LNR

LBAP Species and Habitats of Importance

4.2.19 The Local Biodiversity Action Plan⁶ (LBAP) addresses the species and the habitats of particular importance in Brighton and Hove. These have been defined as the nationally important species and habitats which occur in the city, with refinements and additional recommendations provided by expert naturalists. This list comprises the biodiversity which the City has a particular responsibility to conserve.

4.2.20 Each action plan comprises:

⁵ <http://www.brighton-hove.gov.uk/content/leisure-and-libraries/parks-and-green-spaces/nature-reserves>

⁶ The Brighton & Hove Local Biodiversity Action Plan (2013), Brighton & Hove City Council



- A description of the ecology of the habitat or species, its conservation status nationally and in Brighton and Hove.
- An assessment of the threats and opportunities for that habitat or species.
- A list of 'SMART' conservation objectives, (Specific, Measurable, Achievable, Relevant and Time-limited). Any relevant national, regional and Sussex BAP targets are also described.
- An action table, describing the actions which need to be taken, by when and by whom, to deliver the conservation objectives.

4.2.21 There are 14 UK BAP priority habitats which have significant representation in the city, plus 'Parks and Gardens', which is not represented on the UK Priority list but which has a substantial proportion of the biodiversity experienced by people in Brighton and Hove on a day-to-day basis. The Brighton and Hove habitats of particular importance are:

Table 4.1: UK BAP priority habitats

Area	Habitat Classification
The Coast and Sea Coastal	Vegetated Shingle
	Fragile Sponge and Anthozoan Communities on Subtidal Rocky Habitats
	Intertidal Underboulder Communities
	Intertidal chalk
	Maritime cliff and slopes
	Sheltered Muddy Gravels – subtidal sediments
	Subtidal chalk
	Subtidal sands and gravels
The Urban Area	Parks and Gardens
	Urban Commons (incorporating Open Mosaic Habitats on Previously
	Developed Land national HAP)
Downland	Farmlands [incorporating Arable Field Margins national HAP]
	Hedgerows
	Lowland calcareous grassland (including chalk scrub and waxcap colonies)
	Lowland Mixed Deciduous Woodland
	Ponds

Future Trends

4.2.22 The proportion of Brighton and Hove designated as a terrestrial protected site will have increased from 15.9% (2012) to at least 17% by 2020⁷ (see Table 1, below). At least 10% of coastal and marine areas will be similarly protected (there is no figure available for marine areas in Brighton and Hove in 2012).

Table 4.2: Area of Protected Land in Brighton and Hove

Designation	Terrestrial		Coastal	
	Area (ha)	Area as % of B&H total area	Area (ha)	Area as a % of B&H total area
SSSI/SAC	71.2	0.8	67.6	0.8
LNR & pLNR	690	8.2	0	0
SNCI	578.2	6.9	34.1	0.4
Total	1339.4	15.9	101.7	1.2

4.2.23 There will be an increase in the overall extent of LBAP habitats by at least 60 ha. This figure corresponds with the amount of additional semi-natural green space needed by 2030 to ensure everyone continues to have good access to natural green space under local planning policy. Most of habitat creation will occur within or adjacent to the NIA.

4.3 Climatic Factors

4.3.1 Climate change will become an increasingly important influence on the objectives of the LBAP because it has the potential to result in significant changes to habitat dynamics and species interactions. The effects of climate change will be kept under active review throughout the LBAP implementation period.

4.3.2 UK Climate Projections (Defra) with a medium emissions scenario for the south east region, for the 2020's, are:

- The central estimate of increase in winter mean temperature is 1.3°C
- The central estimate of increase in summer mean temperature is 1.6°C
- The central estimate of change in winter mean precipitation is 6%
- The central estimate of change in summer mean precipitation is –8%
- For London, sea levels are predicted to rise by 9.7cm by 2020

⁷ The Brighton & Hove Local Biodiversity Action Plan (2013), Brighton & Hove City Council



Future Trends

- 4.3.3 Climate projections summarise that we will have hotter drier summers, warmer wetter winters, disruption in usual weather patterns and more frequent or intense weather events (e.g. heat waves, droughts, and flooding) and continued rising sea level. This is likely to have an adverse impact on people, agriculture, water quality and availability, biodiversity, human health, buildings and infrastructure, public spaces, soils and the economy⁸.
- 4.3.4 Climate change predictions will therefore be considered in the assessment of the flood risk management options.
- 4.3.5 Flood risk is projected to increase across the UK. Expected annual damages increase from a current baseline of £1 billion to between £1.8 and £5.6 billion by the 2080s for England (not including the effects of projected population growth).
- 4.3.6 Sensitive ecosystems that have already been degraded by human activity may be placed under increasing pressure due to climate change. The main direct impacts relate to changes in the timing of life-cycle events, shifts in species distributions and ranges, and potential changes in hydrological conditions. While some species would benefit from these changes, many more would suffer.

4.4 Flooding

- 4.4.1 There are no designated main rivers, or ordinary watercourses, within Brighton and Hove, although the City area shares approximately 14km of its boundary with the sea. The topography of the administrative area varies due to its proximity to the Downs in the north and the coast in the south. Situated on the south of the South Chalk Downs, the geology of the area is dominated by the South Downs Chalk, with isolated pockets of clay, silt and sand lying in the south west of this area. The chalk layers of the South Downs are covered by generally shallow and well-drained topsoils, which allow rainfall to quickly seep into the chalk aquifers below.
- 4.4.2 There has been a wide range of flooding events within Brighton and Hove over the last 15 years with surface and groundwater flooding being the most notable sources of flooding. The autumn and winter event of 2000/2001 is the largest recorded event when extreme weather conditions caused flooding across the City. This section considers historical flood events and future risks of surface water, groundwater, tidal and sewer flooding. This information has been taken from the Brighton Strategic Flood Risk Assessment⁹, which takes into account all sources of flooding and climate change.
- 4.4.3 The most recent significant flooding event occurred on 28th July 2014, where over 100 properties, predominantly basements, were affected by surface water flooding following heavy rainfall in a short period.

Surface Water Flood Risk

- 4.4.4 This is a particular concern in urbanised areas, where floods occur quickly in response to heavy rainfall events. In general, surface water flooding is the most frequent cause of flooding, although floodwaters are typically shallower and persist for shorter durations than other types of flooding.

⁸ B&HCC OSC report "Monitoring Outcomes of the Scrutiny Review of Climate Change Adaptation" 19/7/11

⁹ http://wastelocalplanescc.brighton-hove.gov.uk/downloads/bhcc/ldf/Strategic_Flood_Risk_Assessment_Jan_2012.pdf



- 4.4.5 The SFRA (2008) reported the historical surface water flooding events recorded back to the 1960s, which were sometimes referred to as ‘muddy floods’. An indication of those areas which have suffered from this type of flooding was also plotted. It was thought that the increase in muddy floods in this area may be as a result of changes in the farming methods used.
- 4.4.6 An assessment for the potential for surface water flooding in Brighton and Hove has been carried out using EA surface water datasets including Areas Susceptible to Surface Water Flooding (AStSWF), Flood Map for Surface Water (FMfSW) and updated Flood Map for Surface Water (uFMfSW).
- 1 in 30 year flood map
 - 1 in 100 year flood map
 - 1 in 200 year flood map
 - 1 in 1000 year flood map
 - Areas susceptible to surface water flooding
- 4.4.7 There are eight well defined flow routes within Brighton and Hove according to the uFMfSW. The largest affected areas are along the A23 and A270 which form a 'y' shaped flow route in the centre of the city. There are significant areas in Hove, which are more susceptible to surface water flooding. The largest area of surface water ponding in Hove lies between the A270 to Kingsway.
- 4.4.8 The PFRA (2011) carried out by the City Council has summarised the properties at risk of surface water flooding in Brighton and Hove in a 1 in 200 year event from the FMfSW, this has been reproduced in Table 1, below.

Table 4.3: Properties at Risk of Surface Water Flooding Risk in Brighton

FMfSW Depth	Total number of properties at risk of surface water flooding	Number of residential properties at risk of surface water flooding	Number of non-residential properties at risk of surface water flooding	Number of people at risk of surface water flooding. (Human Health Consequence)
‘Surface Water Flooding’ >0.1m	35,600	31,300	4,300	73,242
‘Deeper Surface Water Flooding’ >0.3m	17,400	15,200	2,200	35,568

- 4.4.9 Properties at risk of surface water flooding in a 1 in 200 year event- these numbers have been derived using broadscale modelling, and have been reproduced from the PRFA (2011)- Source Table 5.1 Brighton and Hove PFRA, 2011)



4.4.10 The Surface Water Management Plan identifies seven 'hotspot' sites as remaining at highest risk of future flooding. This then identifies measures that could be taken at each site, leading to an agreed preferred option. The hotspot sites are:

- Mile Oak
- Bevendean
- Patcham
- Carden Avenue/Warmdene Road
- Moulescombe Primary School/Lewes Road
- Ovingdean – Ketts Ridge
- Blatchingham Mill School

Groundwater Flood Risk

4.4.11 Brighton and Hove lies on the south of the Chalk South Downs and has suffered flooding from groundwater in the past. The most notable and largest events in recent years occurred in 2000/01. This resulted in extensive flooding of the A23, which was closed for several days. An assessment of groundwater flood risk in Brighton and Hove has been undertaken using the Environment Agency's 'Areas Susceptible to Groundwater Flooding' data.

4.4.12 The geology within the administrative area of Brighton and Hove is very much dominated by chalk, with isolated pockets of clay, silt and sand lying in the south west of this area (Map 2). An assessment of groundwater flood risk in Brighton and Hove has been undertaken using the Environment Agency's 'Areas Susceptible to Groundwater Flooding' data. Map 10 shows how the risk varies across Brighton and Hove. Only the east of the A23 within Brighton is shown to be less susceptible to groundwater flooding; however the majority of the area is at low risk of flooding.

4.4.13 In February 2014, Brighton & Hove experienced high groundwater levels, which affected a number of properties, infrastructure and the Brighton to London rail line.

Sewer Flood Risk

4.4.14 Sewer flooding can occur where sewage is unable to drain away in sewerage pipes, and emerges at the surface usually due to the system being overloaded with floodwater. In Brighton and Hove, storm water is generally drained by the sewer infrastructure; the system is at risk of becoming overloaded in storm conditions. The infrastructure is also at risk of becoming inundated with groundwater when groundwater levels rise.

4.4.15 There have been recorded incidences of sewer flooding in Brighton and Hove. Records of incidents since 1995 were obtained from Southern Water as part of the SFRA (2008), and were summarised in the 2008 SFRA report, Appendix C. These records, which are combined by postcode, have been plotted on Map 3.

Coastal Flood Risk

4.4.16 Brighton and Hove's coastline extends from Shoreham Port in the west to Saltdean in the east. Much of the area at risk from tidal flooding is protected by flood defences. Tidal flooding then is flooding caused by extreme tide levels exceeding ground levels.

4.4.17 In general, there are only two main areas of tidal flood risk throughout Brighton and Hove: Portslade-by-Sea - including the eastern arm of Shoreham Harbour and Brighton Marina. However, the Brighton Marina company monitors and maintains its own defences, which are funded by the residents and businesses within the site. As such the minimum standards of protection will continue to be maintained.



4.4.18 Tidal flooding along much of the south coast is characterised by the presence of risk associated with wave overtopping, which is when there is a transfer of water from the sea onto the coastal floodplain. In exposed locations along the coast, landward flooding is more likely to occur as a consequence of wave overtopping than inundation. Wave overtopping is of material concern to the coastal frontage of Brighton and Hove; therefore any future development proposal should be accompanied by a flood risk assessment, which appropriately considers the effects of wave overtopping.

Effects of climate change on tidal flood risk

4.4.19 For Brighton and Hove study area the climate change outlines from the SFRA (2008) were used. The SFRA (2008) climate change outlines were created by mapping the predicted extreme still water sea-level for 2115 (the 200 year extreme sea level rise was calculated to rise by 1165 mm for 2115 to 5.465mAOD) using LIDAR data supplied by the Environment Agency.

4.4.20 There are three areas along the Brighton and Hove coastline which suffer notable increases in flood extent as a consequence of climate change: Portslade-by-Sea/Shoreham Harbour, Brighton Beach at Palace Pier and Brighton Marina.

4.4.21 The effect of climate change on wave overtopping has not been looked at as part of the existing studies, given that the region is highly susceptible to wave overtopping, it should be noted that the true risk of future climate change is only partially presented.

4.5 Population and Human Health

Demographics

4.5.1 Brighton & Hove is the largest unitary authority in the South East, with a population 273,369 people. This is an increase of 25,552 (10.3%) when compared to the 2001 Census¹⁰.

4.5.2 The City has proportionally fewer children aged under 14 and fewer adults aged 50 to 84, proportionally more adults aged 20 to 39, particularly adults aged 20 to 24. Compared to the 2001 Census the number of residents aged under 65 has increased by nearly 15% while the number of residents aged over 64 has decreased by nearly 12%. Compared to the 2001 Census the age groups that have seen the largest increase in population are 15 to 24 year olds (11,798 people, 34.3%) and 40 to 49 year olds (11,172 people, 35.8%). The age group 70 to 79 has seen the largest decrease (3,243 people, 18.2%).

4.5.3 The central issue with the trend in population change is that in Brighton & Hove there has been a greater increase in the working age population than in the non-working age population.

4.5.4 This has potentially beneficial effects in that the proportion of potentially economically active residents is higher and the demand for some health and care services lower than if the trend was in reverse. However, a larger working age population means that there needs for sufficient suitable employment, learning and training opportunities to ensure that worklessness remains low.

4.5.5 This means there are more people of a working age who require jobs. This relieves some pressure on health and social care and there is a lower % overall of residents particularly vulnerable to the impacts of flooding.

¹⁰ <http://www.bhconnected.org.uk/sites/bhconnected/files/2011%20Census%20Briefing%20-%20City%20Profile.pdf>



Human Health

- 4.5.6 Life expectancy in Brighton and Hove is 77.7 years for males and 83.2 for females. Whilst females in the City can expect to live on average six months longer than nationally, life expectancy for males is almost a year lower than in England (78.6 years for males and 82.6 years for females).
- 4.5.7 For just over one in six residents (44,569 people, 16.3%,) their day to day activities are limited because of a long term health problem or disability. Nearly one in twelve residents (20,455 people, 7.5%) have a long term health problem that limits their day to day activity a lot. A further 24,124 people (8.8%) have a limiting long term problem or disability that limits their activity a little. Both figures are similar to those found in the South East and in England.
- 4.5.8 Flooding events may result in significant injury and/or death and will also cause health effects (both physical and well-being), including stress and trauma sometimes months or years after the flood event, or whenever flooding appears likely to occur (Tapsell et al, 2002).

Economy

- 4.5.9 Brighton's economy is relatively diverse and predominantly a small-micro SME economy¹¹. It has a very high business start-up rate, but unfortunately the rate of business failures is also high.
- 4.5.10 The sectors that most stakeholders considered to be most important to the City's economy in the Brighton and Hove Economic Strategy are culture, leisure and tourism and creative, digital and IT. The culture, leisure and tourism industry is important not just as a generator of jobs but also to the influx of leisure and business tourist income.
- 4.5.11 The City's economy is also well positioned to take advantage of the growth in the environmental industries sector, by virtue of existing clusters of companies, world class expertise at the two universities and an environmentally aware resident and business population.
- 4.5.12 The 2011 Census¹² Briefing for economy and employment outlines employment trends for the area:
- **Employment by industry:** Wholesale and retail trade (13.7%), human health and social work (13.4%) and education (12.4%) are the industries employing the greatest number of city residents
 - **Employment by occupation:** Nearly two out of five residents (39.4%) work in professional, associate professional or technical occupations. This is significantly high than found in the South East (32.5%) and in England (30.3%) and is an increase of 46% (17,462 people) since the 2001 census. with two out of five (39.5%) of all workers employed in one of these three sectors.
 - **Households with no adult in employment:** Despite the number of households in the City increasing by over 7,000 since the 2001 census the number of households with no adult in employment has fallen by 5,233 or 12.5%. Brighton & Hove (30.3%) has

¹¹ Brighton and Hove Economic Strategy 2013-2018

¹² <http://www.bhconnected.org.uk/sites/bhconnected/files/2011%20Census%20Briefing%20-%20Economy%20and%20Employment.pdf>



proportionally a similar number of households with no adult in employment as the South East (30.9%) but fewer than found in England (33.3%).

Coast to Capital LEP

- 4.5.13 Brighton & Hove is part of the Coast to Capital Local Economic Partnership (LEP). This is one of 39 partnerships established across the UK by Government to determine regional economic priorities, while making investments and delivering activities to drive growth and job creation. Coast to Capital is not a delivery organisation and the Council do not take on the direct delivery of business support services. However, in order to create favourable conditions for growth, priorities and strategies will be identified for improving local transport, housing and skills development.
- 4.5.14 Coast to Capital LEP works closely with the Brighton and Hove Economic Partnership¹³. A key part of the Economic Partnership's work is the development of a summary of major sites for jobs and homes in and around Brighton city. The major housing and employment sites identified are outlined in the figure below:

Tourism

- 4.5.15 Tourism plays an important role in the economy of the Plan study area. Brighton & Hove has 11 kilometres of seafront entertainment, recreation and leisure activities. Substantial public and private investment has transformed the seafront between the piers. It is evident that ongoing investment and support of the coastal areas particularly will be necessary. The City is also a major European conference centre and tourist destination. It now attracts over 8 million visitors a year, bringing £392 million into the local economy annually and supporting around 13,000 jobs¹⁴. These figures are expected to grow over the next 20 years.

Heritage and Culture

- 4.5.16 Brighton and Hove is a major centre for heritage and culture. The historic build environment has been a catalyst for the city's cultural heritage. There are 33 areas of Brighton & Hove that have been designated as Conservation Areas and some 18% of the city's build area lies within a conservation area. 14% of the City's listed buildings are Grade 1 or Grade II, and this is more than double the national average. There are also 5 historic Parks and Gardens including the Royal Pavilion Estate.
- 4.5.17 The cultural focus has been given added impetus in recent years with the extensive restoration and modernisation of the Dome venue and Brighton Museum and the opening of the central Jubilee Library in a new urban quarter due to its topography and history. Brighton holds the largest international arts festival in England every May, with over 700 events in three weeks.

Future Trends

- 4.5.18 The working age population of the City is expected to grow by a further 12,000 by 2017 meaning that 8,000 additional jobs will need to be found to maintain the current employment rate of 75.6%. (source: Brighton & Hove City Employment & Skills Plan 2007-2011)¹⁵. In addition, under subnational annual demographic projections for 2011- 2031, population is

¹³ http://www.brightonbusiness.co.uk/documents/summary_sites.pdf

¹⁴ <http://www.visitbrighton.com/xsdbimngs/Tourism%20Statistics.pdf>

¹⁵ http://www.brightonbusiness.co.uk/brochures/b&h_socio-economic_overview.pdf



predicted to increase by 0.6% annually, with 873 additional houses needed annually and 773 new jobs¹⁶. Tourism figures are also expected to rise over the next 20 years.

- 4.5.19 The Brighton and Hove Economic Strategy for 2013-2018¹⁷ outlines a vision for Brighton to establish a strong and influential Greater Brighton City Region
- 4.5.20 The action plan which accompanies the Strategy contains a suite of projects which will enable the Strategy's objectives to be reached, with the course of success measured by a performance monitoring framework.

4.6 Material Assets

Housing

- 4.6.1 At the time of the 2011 census there were 126,827 household spaces in Brighton & Hove, an increase of 6.6% since the 2001 census. Of these, 121,540 are usually occupied (95.8%) and 5,287 are not (4.2%). Brighton has comparatively low proportions of detached (10.2%) and semi-detached (19.1%) properties and a high proportion of flats, apartments and converted houses (50.2%).¹⁸
- 4.6.2 There has been a significant increase in the number of purpose built flats with 5,656 more recorded in 2011 than in 2001. 8,168 or 6.7% of Brighton & Hove's households are considered to be overcrowded using the 2011 census measure of having one less bedroom than needed. There were 5,406 households (4.4%) without central heating in 2011. This is less than half the number of households recorded as having no central heating in the 2001 census.
- 4.6.3 The draft "Brighton and Hove City Council's Local Development Framework" outlines the planned housing delivery for the City over the plan period. The plan sets a minimum housing target of 11,300 new homes to be achieved by 2030 and this reflects the capacity and availability of land/sites in the city; the need to provide for a mix of homes to support the growth and maintenance of sustainable communities; the need to provide land for other essential uses (such as employment, retail, health and education facilities and other community and leisure facilities) and the need to respect the historic, built and natural environment of the city.
- 4.6.4 The Local Development Framework outlines that the majority of new housing will be directed to eight specific development areas:

Table 4.4: Areas allocated for new homes

Development Area	New Homes
DA1 - Brighton Centre and Churchill Square Area	20
DA2 - Brighton Marina, Gas Works and Black Rock Area	1940
DA3 - Lewes Road Area	810

¹⁶ http://www.lewes.gov.uk/files/plan_demographic_projections.pdf

¹⁷ [http://present.brighton-hove.gov.uk/Published/C00000689/M00004685/AI00034870/\\$Enc.%201%20for%20Economic%20Strategy%20a nd%20Action%20Plan_v2.pdfA.ps.pdf](http://present.brighton-hove.gov.uk/Published/C00000689/M00004685/AI00034870/$Enc.%201%20for%20Economic%20Strategy%20a nd%20Action%20Plan_v2.pdfA.ps.pdf)

¹⁸ <http://www.bhconnected.org.uk/sites/bhconnected/files/2011%20Census%20Briefing%20-%20Housing.pdf>



DA4 - New England Quarter and London Road Area	1185
DA5 - Eastern Road and Edward Street Area	470
DA6 - Hove Station Area	630
DA7 – Toad’s Hole Valley	700
DA8 - Shoreham Harbour	400
Rest of the City	1250
Small site development	3945
Total	11,350

Minerals, Waste and Water

- 4.6.5 In February 2013 East Sussex County Council, the South Downs National Park Authority, and Brighton & Hove City Council adopted a new Waste and Minerals Plan. This Plan shows there is a need for an additional recycling and recovery capacity between 2013 and 2027.
- 4.6.6 One of the objectives of the Waste Plan is to identify Sustainable Locations for Waste Development (Policy WMP7) which offer the best opportunities for locating future waste recycling and recovery facilities.
- 4.6.7 A draft Waste and Minerals Sites Plan has been prepared and this highlights four prospective sites¹⁹:
- WMSP-A/A Beach Road (Land west of), Beach Rd/ Railway Rd, Newhaven
 - WMSP-A/B Coal Yard adjacent to Sackville Trading Estate, Hove
 - WMSP- A/C Former Gasworks, Roedean Road, Brighton
 - WMSP- A/E Hollingdean Industrial Estate, Brighton

4.7 Transport Infrastructure

Highway Network

- 4.7.1 The city’s highway network is formed by hierarchy of strategic routes, local distributor routes and local access roads. The City benefits from the east-west A27 Trunk Road bypass around the northern edge of the built-up area. This also connects with five main routes into the City – the A23, A259 (east and west) and A270 (east and west).
- 4.7.2 The network experiences congestion during peak traffic hours and at weekends both on key routes, such as the A23 and A27 Trunk Roads, and on the major distributor roads within the City centre such A259 King’s Road/Kingsway, A259 Marine Parade and A23 Old Steine. The City experiences additional demand on the transport network from tourist/leisure traffic, especially during peak seasons and weekends, sometimes adding to congestion outside the peak hours.

¹⁹ <http://consult.eastsussex.gov.uk/portal/wmsp/2014/wmsp2014?pointId=2616734>



Rail

- 4.7.3 Brighton & Hove benefits from excellent rail connections to many destinations via the three rail lines which terminate at Brighton Station. These are the London-Brighton Main Line, East Coastway, and West Coastway. Rail services to and from the City are currently operated by Southern, Gatwick Express, Thameslink, and First Great Western.
- 4.7.4 There are eight rail stations in the city. Brighton, Hove, Aldrington, Portslade, Preston Park, London Road, Moulsecoomb and Falmer. Most, particularly Brighton Station, act as passenger interchanges for all forms of transport with facilities for taxis, buses, cycling and walking. The stations act as ‘gateways’ to the City and need to be of a good standard, connecting with the City centre, the seafront, other landmarks and transport routes. Brighton is the busiest station on the south coast between Kent and Hampshire.

Walking and Cycling

- 4.7.5 Walking is a popular choice for shorter trips. Continuing to promote, support and provide facilities for pedestrian movement is therefore a high priority in the city. The numbers have increased in recent years to the extent that the proportion of residents walking to work is well above both regional and national averages of 10%.
- 4.7.6 Walking in the City is further encouraged through continued maintenance and improvement of the extensive network of public footpaths, rural, public Rights of Way, bridleways and byways.
- 4.7.7 Brighton and Hove was designated in 2005 as a Cycling Town and has since received additional funding and support to invest in delivering new infrastructure. The cycle network, although incomplete, includes over 20 km of designated routes. National Cycle Routes 2 and 20, and Regional Cycle Routes 82 and 90 have all been improved.
- 4.7.8 The Brighton & Hove City Council Local Transport Plan 3 (2011) outlines the Transport Vision to:

“To deliver an integrated, accessible and balanced transport system that supports economic growth and enables people to travel around and access services as safely and freely as possible, while minimising damage to the environment and contributing to a safer, cleaner, quieter and healthier city.”

- 4.7.9 This will be delivered through a number of measures which will seek to:
- Reduce transport congestion and journey delay
 - Improve the city’s public transport network to cope with increasing demands
 - Provide cycling and walking routes which connect communities, natural environments and key local services and activities
 - Create attractive and safe routes and places
 - Reduce the number of killed or seriously injured on our network
 - Control and mitigate carbon emissions, air quality and noise effects of our transport systems in our city



5 Key Issues

5.1 Climatic factors

- 5.1.1 Climate changes can affect local flood risk in several ways. The severity of impacts will depend on local conditions and vulnerability.
- 5.1.2 Wetter winters and more of this rain falling in wet spells may increase river flooding, especially in the rapidly responding catchments draining the South Downs and Weald. More intense rainfall causes more surface runoff, increasing localised flooding and erosion. In turn, this may increase pressure on drains, sewers and water quality. Storm intensity in summer could increase even in drier summers.
- 5.1.3 Rising sea or river levels may increase local flood risk inland or away from major rivers because of interactions with drains, sewers and smaller watercourses.
- 5.1.4 There is a risk of flooding from groundwater in the Brighton & Hove city. Recharge may increase in wetter winters, or decrease in drier summers.
- 5.1.5 The Local Flood Risk Management Strategy as a whole is a response to this key issue.
- 5.1.6 In addition the SEA addressed this issue with the inclusion of the following objective;
 - i. To promote the mitigation of, and adaptation to, climate change and its effects across Brighton and Hove.

5.2 Flooding

Surface Water Flooding

- 5.2.1 Surface water flooding is typically caused by heavy rainfall that can overwhelm drainage systems creating overland flows and ponding. Surface water flooding occurs in both urban and rural locations with the latter being as a result of saturated grounds and/ or intense storms. Rural surface water flooding has historically occurred in Brighton and Hove in the downland areas which prompted a number of city flood defences to be constructed.
- 5.2.2 There is a risk of surface water flooding in Brighton, and this is concentrated in 8 identified hotspots: Mile Oak, Bevendean, Patcham, Carden Avenue/Warmdene Road, Moulescombe Primary School/Lewes Road, Ovingdean – Ketts Ridge, and Blatchingham Mill School

Groundwater Flooding

- 5.2.3 Groundwater flooding is the emergence of groundwater above the surface. Groundwater flooding occurs when the groundwater rises from the normal water table level and is typically associated with permeable aquifers (such as chalk or sandstone). This typically occurs after a prolonged period of rainfall and has historically occurred in Brighton and Hove on a number of occasions.
- 5.2.4 The A23 in particular is susceptible to groundwater flooding.



Sewer Flooding

- 5.2.5 Sewer flooding occurs when the sewer network becomes overwhelmed and cannot manage the volume of water entering the system. This occurs during heavy rainfall or if the sewer is under capacity. Water then emerges from the sewer causing flooding.
- 5.2.6 Sewer flooding can be aggravated by groundwater flooding which gets into the systems as either surface water entering through gullies or through infiltration through damaged pipes. This has occurred in Brighton on numerous occasions in the Patcham area where sewers have been overwhelmed by overland flows caused by groundwater flooding.
- 5.2.7 The majority of the sewers in Brighton and Hove are combined sewers, which have foul and surface water discharged into it. Therefore when the sewer floods the water is foul effluent.
- 5.2.8 Incidences of sewerage flooding across the Brighton area have been recorded between 1995-2008. In Brighton and Hove, storm water is generally drained by the sewer infrastructure and the system is at risk of becoming overloaded in storm conditions

Coastal Flooding

- 5.2.9 Coastal flooding is where land is flooded by the sea. This may be due to breaching or overtopping of a barrier/ flood defence allowing sea water to spread onto the land behind.
- 5.2.10 Brighton and Hove's coastline extends from Portslade-by-Sea to Saltdean.
- 5.2.11 In general, there are only two main areas of tidal flood risk throughout Brighton and Hove: Portslade-by-Sea - including the eastern arm of Shoreham Harbour and Brighton Marina. However, the Brighton Marina company monitors and maintains its own defences, which are funded by the residents and businesses within the site. As such the minimum standards of protection will continue to be maintained.
- 5.2.12 All of the key flooding issues are addressed within the Local Flood Risk Management Strategy.

5.3 Biodiversity and Geodiversity

- 5.3.1 The main geological interest on Brighton & Hove's coastline is the chalk cliff line to the east of Black Rock. SSSI
- 5.3.2 The Strategy area falls within the Brighton and Lewes Downs UNESCO Biosphere Reserve as a "centre of excellence, where conserving biodiversity is prioritised, alongside economic and social development."
- 5.3.3 Maintaining and improving the integrity and conservation value of internationally and nationally designated nature conservation sites including the Brighton to Newhaven Cliffs and Castle Hill (both SSSI/SAC).
- 5.3.4 These key issues are addressed in the SEA with the inclusion of the following objectives;
 - ii. To conserve and enhance biodiversity across Brighton and Hove.
 - iii. To protect and conserve soils and reduce their ability to act as pollution sources and pathways.



5.4 Population and Human Health

- 5.4.1 With an increase of 15% in the number of residents aged under 65 there is a reduced % of the overall population whose health would be sensitive to the effects of flooding, however there is still a significant sector who are vulnerable
- 5.4.2 Approximately 32% of the population have a long term health problem or disability which affects their day to day activity.
- 5.4.3 The sectors that most stakeholders considered to be most important to the City's economy are culture, leisure and tourism and creative, digital and IT.
- 5.4.4 The SEA addresses these issues through the inclusion of the following objectives;
- i. To protect and improve the quality and condition of water resources in Brighton and Hove.
 - ii. To protect and conserve soils and reduce their ability to act as pollution sources and pathways.
 - iii. To safeguard existing and future material assets and critical infrastructure in Brighton and Hove.
 - iv. To protect the health and wellbeing of local people and communities in Brighton and Hove.
 - v. To safeguard and enhance sites, features and settings of cultural heritage, archaeological, historical value across Brighton and Hove.



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6 Proposed SEA Objectives and Assessment Framework

6.1 Introduction

6.1.1 In response to the current baseline conditions found in Brighton & Hove (section 4), the key issues identified in Section 5 and the objectives proposed for the Strategy (outlined in Section 3) a series of SEA objectives has been developed.

6.2 Proposed SEA Objectives

6.2.1 The following objectives have been devised and are proposed to be the basis of the subsequent environmental assessment of the Strategy;

- vi. To protect and improve the quality and condition of water resources in Brighton and Hove.
- vii. To conserve and enhance biodiversity across Brighton and Hove.
- viii. To protect and conserve soils and reduce their ability to act as pollution sources and pathways.
- ix. To promote the mitigation of, and adaptation to, climate change and its effects across Brighton and Hove.
- x. To safeguard existing and future material assets and critical infrastructure in Brighton and Hove.
- xi. To protect the health and wellbeing of local people and communities in Brighton and Hove.
- xii. To safeguard and enhance sites, features and settings of cultural heritage, archaeological, historical value across Brighton and Hove.

6.3 Proposed Assessment Framework

Geographic Scope

6.3.1 The SEA will consider potential effects across the Brighton & Hove City Council area.

Short, Medium and Long-Term Timescales

6.3.2 When considering the timing of potential effects of the draft Strategy, the effects will be classified as “short”, “medium” or “long term”. For the purposes of this assessment durations are defined as in Table 6.1.

Table 6.1: Duration of Short, Medium and Long Term

Length (years)	Length (years)
Short	0-10 years



Length (years)	Length (years)
Medium	10-25 years
Long	25 + years

Assessment process

- 6.3.3 In line with the ODPM (now CLG) Practical Guide to the SEA Directive the assessment process will seek to predict the significant environmental effects of the draft Strategy. This is done by identifying the likely changes to the baseline conditions as a result of implementing the proposed plan (or reasonable alternative). These changes will be described (where possible) in terms of their geographic scale, the timescale over which they could occur, whether the effects would be temporary or permanent, positive or negative, likely or unlikely, frequent or rare.
- 6.3.4 Where numerical information is not available, the assessment will be based on professional judgement and with reference to relevant legislation, regulations and policy. More specifically, in undertaking the assessment, consideration will be given to:
- baseline information including existing environmental problems and their evolution;
 - the likely activities and potential effects arising from the interventions outlined in the Strategy;
 - the regulatory framework; and
 - the SEA objectives and guide questions.
- 6.3.5 Each proposal that comes forward from the Strategy will be considered against each of the SEA objectives. This will be informed by the baseline data and evidence gathered as part of the Scoping Report. It will also be informed by expert judgement from various technical specialists including key stakeholders and consultees. The assessment will be reported in a series of tables, an example of which is provided below;



Table 6.2: Example Assessment Table

SEA Objectives	Guide Questions		Timescale			Commentary/Explanation	
			Short term	Medium term	Long term		
To protect and improve the quality and condition of water resources in Brighton and Hove	Will the Strategy impact on water resources across Brighton and Hove and beyond? Will the Strategy protect and improve surface and groundwater water quality? Will the Strategy contribute towards achievement of Good Ecological Potential/Status? Will the Strategy mobilise known areas of contamination?	+ Minor Positive	+ Minor Positive	+ Minor Positive	Assessment of effects: Mitigation: None Assumptions: Uncertainties:		
Key	++ Significant Positive Effect	+ Minor positive effects	0 No overall effect	- Minor negative effect	-- Significant negative effect	? Score Uncertain	
NB: where more than one symbol is presented in a box it indicates that the SEA has found more than one score for the category. Where a box contains a ?, this indicates uncertainty over whether the effect could be a minor or significant effect. A conclusion of uncertainty arises where there is insufficient							



SEA Objectives	Guide Questions	Timescale			Commentary/Explanation
		Short term	Medium term	Long term	
evidence for expert judgement to conclude an effect.					



Appendix A The SEA Regulations

The Environmental Assessment of Plans and Programmes Regulations 2004, SCHEDULE 2

INFORMATION FOR ENVIRONMENTAL REPORTS

1. An outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes.
2. The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.
3. The environmental characteristics of areas likely to be significantly affected.
4. 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 Council Directive 79/409/EEC on the conservation of wild birds(a) and the Habitats Directive.
5. 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.
6. The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues such as—(a) biodiversity;
(b) population;
(c) human health;
(d) fauna;
(e) flora;
(f) soil;
(g) water;
(h) air;
(i) climatic factors;
(j) material assets;
(k) cultural heritage, including architectural and archaeological heritage;
(l) landscape; and
(m) the inter-relationship between the issues referred to in sub-paragraphs (a) to (l).



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- 7.** 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.
 - 8.** 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.
 - 9.** A description of the measures envisaged concerning monitoring in accordance with Regulation 17.
 - 10.** A non-technical summary of the information provided under paragraphs 1 to 9.



Appendix B Policy Review



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Appendix C Compatibility Appraisal



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SEA Objectives	Draft LFRMS Objectives						
	Work with Partners, Stakeholders and Local Community Groups to understand and manage flood risk	Continue to improve B&HCC's knowledge and evidence base of local flood risk	Raise public awareness and resilience to flooding	Manage development impact on flood risk through land allocation and development control policy	Work with Partners and Funders to implement sustainable measures to reduce flood risk	Undertake annual inspection, maintenance and improvement, where necessary, of flood defence assets	Work with Partners and Funders to implement sustainable public health protection measures
To safeguard existing and future material assets and critical infrastructure in Brighton and Hove	+ Potentially compatible	+ Potentially compatible	+ Potentially compatible	+ Potentially compatible	+ Potentially compatible	+ Potentially compatible	+ Potentially compatible
To protect the health and wellbeing of local people and communities in Brighton and Hove	0 unrelated	0 Unrelated	0 unrelated	+ Potentially compatible	+ Potentially compatible	+ Potentially compatible	+ Potentially compatible
To safeguard and enhance sites, features and settings of cultural heritage, archaeological, historical value across Brighton and Hove.	0 unrelated	0 Unrelated	0 unrelated	+ Potentially compatible	+ Potentially compatible	- Potentially incompatible	- Potentially incompatible

Please Note; LFRMS Objective 8: *Ensure that likely environmental effects of implementing the Strategy are considered and understood and any potentially adverse effects are avoided, reduced or minimised.* is not included in the table above as it is considered to be entirely compatible with the SEA.