Local Flood Risk Management Strategy for Hertfordshire

Strategic Environmental Assessment Environmental Report Non Technical Summary

Prepared June 2012



Place Services
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CONTENTS

1	Introduction and Methodolgy	1
1.1 1.2 1.3 1.4 1.5	Background Local Flood Risk Management Strategies	1 2 2
2	Environmental Context, Baseline and Objectives	6
2.1 2.2 2.3 2.4 2.5 2.6	Introduction Plans and Programmes Baseline Information Strategic Environmental Assessment Objectives Data Limitations Strategic Environmental Assessment Framework	6 10 11
3	Approach for Assessing the LFRMS	17
4	Assessment of the Vision	18
4.1 4.2	Introduction	
5	Assessment of Objectives and Approaches	20
5.1 5.2 5.3	Introduction	20
6	Assessment of Policies and Procedures	25
6.1 6.2	Introduction	
7	Assessment of the Strategy's Implementation	31
7.1 7.2	Introduction	
8	Conclusions and Recommendations	36
8.1 8.2	ConclusionsRecommendations	
9	Monitoring and Next Steps	41
9.1 9.2	Monitoring Next Steps	

List of Tables and Figures

Table 1: Stages in the SEA Process	3
Table 2: Key Documents	6
Table 3: Defining the Strategic Environmental Assessment Objectives	
Table 4: Example of Assessment	. 17

Annexes of the Environmental Report

Annex A: Plans and Programmes

Annex B: Baseline Information

Annex C: SEA Framework

Annex D: Consultation Responses

Annex E: Working Note of Issues and Options

Annex F: Procedural Checklist

Glossary of Acronyms

AADT Annual Average Daily Flow
AMR Annual Monitoring Report

ANGSt Accessible Natural Green Space Standard

AONB Area of Outstanding Natural Beauty

AQMA Air Quality Management Area

CAMS Catchment Area Management Strategy

CET Central England Temperature

CFMP Catchment Flood Management Plans

CHP Combined Heat and Power

CLG Communities and Local Government

CRF Congestion Reference Flow

Defra Department for Environment, Food and Rural Affairs

DPD Development Plan Document

EC European Commission

EEDA East of England Development Agency
EERA East of England Regional Assembly

EU European Union

HBAP

FWMA Flood and Water Management Act
GCR Geological Conservation Review
HRA Habitats Regulations Assessment

HHER Hertfordshire Historical Environment Record

Hertfordshire Biodiversity Action Plan

HRA Habitats Regulations Assessment

IMD Index of Multiple DeprivationLDF Local Development Framework

LLFA Lead Local Flood Authority

LFRM Local Flood Risk Management Strategy

LNR Local Nature Reserve

LoWS Local Wildlife Site

NNR National Nature Reserve

ODPM Office of the Deputy Prime Minister

ONS Office for National Statistics
PPG Planning Policy Guidance
PPS Planning Policy Statement

PSA Pubic Service Agreement

RBD River Basin District

RBMP River Basin Management Plan

RSS Regional Spatial Strategy

Special Area for Conservation SAC

SEA Strategic Environmental Assessment

SM Scheduled Monument SPA **Special Protection Area**

SPD Supplementary Planning Document

SPZ Special Protection Zone

SSSI Site of Special Scientific Interest

1 INTRODUCTION AND METHODOLGY

1.1 Background

In July 2011 Hertfordshire County Council commissioned Essex County Council's Strategic Environmental Assessment Team, now part of Place Services, to undertake a Strategic Environmental Assessment (SEA) on the proposed Local Flood Risk Management Strategy for Hertfordshire. Place Services continues to act as consultants for this work; therefore the content of the Strategic Environmental Assessment should not be interpreted or otherwise represented as the formal view of Essex County Council.

This document is the Non Technical Summary of the Environmental Report which sets out the assessment of the consultation version of the Draft Local Flood Risk Management Strategy for Hertfordshire (hereafter referred to as the LFRMS).

1.2 Local Flood Risk Management Strategies

Lead Local Flood Authorities (LLFAs) are required by the Flood and Water Management Act (FWMA) 2010 to produce a Local Flood Risk Management Strategy (LFRMS) which must be maintained, applied and monitored. Local flood risk is defined by the FWMA 2010 as meaning flood risk derived from surface runoff, groundwater and ordinary watercourses. Ordinary watercourses are defined as those which do not form part of a main river, with main rivers themselves being defined by the Water Resources Act 1991 as being a watercourse shown as such on a main river map and this includes any structure or appliance for controlling or regulating the flow of water into, in or out of the channel. Flood risk from the sea, main rivers and reservoirs are not defined as local flood risk and are the concern of the Environment Agency. Such sources of flood risk do however need to be considered insofar as their potential interaction with those flood risks defined as local to ensure that all joint risks of flooding are assessed at the local scale.

LFRMSs 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 drainage 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 to be 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.

The draft Local Flood Risk Management Strategy for Hertfordshire has been divided into four parts. Part one is the Strategy which includes the vision for flood risk management within the county, the objectives, and information on partnership working, funding prioritisation, communication and reporting and reviewing of the LFRMS. Part two sets out the policies and procedures that will seek to deliver the Strategy. Part three establishes the work programme/ implementation of the Strategy through a series of actions while part four details the related documents and references.

Assessments have been carried out on those parts of the LFRMS where there is the potential for an environmental impact.

1.3 Strategic Environmental Assessment

The European Directive 2001/42/EC¹ (the 'SEA Directive') was adopted in June 2001 with a view to increase the level of protection for the environment, integrate environmental considerations into the preparation and adoption of plans and programmes and to promote sustainable development. It requires SEA to be carried out for all plans and programmes "which are subject to preparation and/or adoption by an authority at national, regional or local level...". The Local Flood Risk Management Strategy for Hertfordshire is one such document.

The aim of the SEA is to identify potentially significant environmental effects created as a result of the implementation of the plan or programme on issues such as "biodiversity, population, human health, fauna, flora, soil, water, air, climatic, material assets including architectural and archaeological heritage, landscape and the interrelationship between the above factors" (Annex 1(f)). The Directive was transposed into English legislation by the Environmental Assessment of Plans and Programmes Regulations 2004² (the 'SEA Regulation').

1.4 Strategic Environmental Assessment Screening

Prior to starting the SEA process a plan or programme would normally undergo 'screening'. This process determines whether the plan is subject to the SEA Directive and therefore requires an SEA. In the case of Local Flood Risk Management Strategies, this guestion is answered in Article 3 of the 'SEA Directive' which clearly states that SEA is required for plans and programmes which are likely to have significant environmental effects and which are prepared for water management.

1.5 Strategic Environmental Assessment Guidance

The methodology adopted for the SEA of the LFRMS incorporates the requirements of SEA Directive and has been developed in accordance with the following guidance:

¹ European Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment, Article 1

² The Environmental Assessment of Plans and Programmes Regulations, 2004, SI No. 1633, Parts 3 and 4

- A Practical Guide to the Strategic Environmental Assessment Directive (OPDM, August 2006)
- The Plan Making Manual (online guidance PAS);
- A Practical Guide to Sustainability Appraisal (Prepared for Hertfordshire County Council by Land Use Consultants May 2011);
- Towards a more efficient and effective use of Strategic Environmental Assessment and Sustainability Appraisal in spatial planning (DCLG, 2010); and
- A Practical Guide to the Strategic Environmental Assessment Directive (ODPM, 2005).

1.6 Stages in the Strategic Environmental Assessment Process

The assessment of the LFRMS is an integral part of the plan preparation and has five sequential stages. These main stages and the tasks for each stage are listed in Table 1.

TABLE 1: STAGES IN THE SEA PROCESS

SEA Stages	SEA Tasks	
Stage A: Setting	A1: Identifying other relevant policies, plans and programmes, and environmental protection objectives	
the context and objectives,	A2: Collecting baseline information	
establishing the baseline and	A3: Identifying environmental issues and problems	
deciding on the scope	A4: Developing the SEA objectives and framework	
	A5: Consulting on the scope of the SEA	
	B1: Testing the plan objectives against the SEA objectives.	
	B2: Developing strategic alternatives.	
Stage B: Developing and	B3: Predicting the effects of the plan, including alternatives.	
refining options and assessing	B4: Evaluating the effects of the plan, including alternatives.	
effects	B5: Mitigating adverse effects.	
	B6: Proposing measures to monitor the environmental effects of implementing the plan.	
Stage C: Preparing the Environmental Report	C1: Preparing the Environmental Report.	
Stage D: Consulting on the draft	D1: Consulting on the draft LFRMS and Environmental Report with the public and Consultation Bodies.	
LFRMS and the	D2: Assessing significant changes.	

SEA Stages	SEA Tasks
SEA Report	D3: Making decisions and providing information.
Stage E: Monitoring the significant effects of implementing the LFRMS	E1: Developing aims and methods for monitoring.
	E2: Responding to adverse effects.

1.6.1 Scoping Stage

A draft copy of the Scoping Report which shows the outcomes of Tasks A1 to A4 was published for consultation (Task A5), in accordance with the SEA Directive for 5 weeks from Monday 17th October to Thursday 21st November 2011. The consultation sought the views of the three statutory consultation bodies (the Environment Agency, Natural England and English Heritage) on the scope and level of detail. Furthermore, to ensure public participation the draft Scoping Report and accompanying annexes were also published on the Hertfordshire County Council website for wider consultation. Representations were received from the three statutory consultees only. They were reviewed and compiled into a schedule of changes which are detailed in full within the final Scoping Report (December 2011) and Annex D of the Environmental Report.

1.6.2 Issues and Options

The assessment of the LFRMS for Hertfordshire Issues and Options Consultation Document was undertaken in the form of a working note which was published on the Hertfordshire County Council website during public consultation on the Issues and Options at the end of 2011. Responses relating to the working note have been included within Annex D: Consultation Responses of this Environmental Report.

The working note assessed the alternatives that were being considered for each of the eight issues relating to flood risk management within the county. The conclusions and recommendations provided within the report then fed into the development of the preferred approach. Option 1 which was 'do nothing' was the least compatible with the SEA objectives for all the issues while options 2 and 3 varied in support. For each of the issues discussed there was one option that had stronger benefits to the SEA objectives than the others suggested and these were subsequently recommended as preferred approaches in the interest of sustainability. In this instance the options recommended through the SEA process were all selected by Hertfordshire County Council in their preferred approach.

This iterative process can be viewed in the 'Issues and Options Consultation - Report on Preferred Options to be developed in the Draft Strategy for Public Consultation' which is available on the Hertfordshire County Council website.

1.6.3 Draft LFRMS

The Environmental Report and this Non Technical Summary documents the assessment of the Draft LFRMS for Hertfordshire which sets out the preferred approach to flood risk management in the county and is subject to a 12 week public

consultation beginning in June 2012. The production of these reports fulfils Stages B, C and Task E1 while their consultation alongside the LFRMS fulfils Task D1.

2 ENVIRONMENTAL CONTEXT, BASELINE AND **OBJECTIVES**

2.1 Introduction

The following section outlines the key findings of the scoping stage and published Scoping Report which includes an outline of the plans and programmes, the baseline information profile for the strategy area, together with the SEA Objectives.

2.2 Plans and Programmes

The SEA Directive requires "an outline of the plan or programme's relationship with other relevant plans and programmes"; Annex 1(a) and

"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." Annex 1(e)

The LFRMS must comply with existing policies, plans and programmes at national and regional levels and strengthen and support local plans and strategies. It is therefore important to identify and review those policies, plans and programmes and environmental protection objectives which are relevant to both the LFRMS and the SEA at an early stage. This allows any inconsistencies or constraints within the LFRMS to be addressed and also to help develop the SEA framework.

It is recognised that no list of plans or programmes can be definitive and as a result this report describes only the key documents which influence the LFRMS and SEA process. The following table outlines the key documents, whilst a comprehensive description of these documents together with their relevance is provided within the accompanying Annex A.

TABLE 2: KEY DOCUMENTS

International
The Floods Directive, 2007
Water Framework Directive, 2000
Drinking Water Directive, 1998
Landfill Directive, 1991
Groundwater Directive, 1980
Urban Wastewater Directive, 1991
Habitats Directive, 1992
Mining Waste Directive, 2006

National

National Planning Policy Framework, March 2012

Flood and Water Management Act, 2010

The Flood Risk Regulations, 2009

Future Water, The Government's water strategy for England, 2008

The Water Supply (Water Quality) Regulations Act, 2000

Water Act, 2003

Water Resources Act, 1991

Water Industry Act, 1999

Environmental Permitting Regulations (EPR) 2010

The Water Environment Regulations, 2003

Guidance for risk management authorities on sustainable development in relation to their flood and coastal erosion risk management functions, 2011

Protection of Water Against Agricultural Nitrate Pollution (England and Wales) Regulations, 1996

Water for People and the Environment; Water Resources Strategy for England and Wales,

Directing the Flow: Priorities for Future Water Policy, 2002

The Impact of Flooding on Urban and Rural Communities, 2005

Land Drainage Act, 1991, (as Amended 2004)

The Environmental Impact Assessment (Land Drainage Improvement Works) Regulations, 1999

Environment Agency Policy: Sustainable Drainage Systems, 2002

Biodiversity 2020: A Strategy for England's Wildlife and Ecosystems, 2011

Waste Strategy 2007 - England

Underground, Under Threat; The state of groundwater in England and Wales, 2006

Wildlife & Countryside Act, 1981 (as Amended); Countryside and Rights of Way Act, 2000

Environment Act, 1995

The Natural Environment and Rural Communities (NERC) Act, 2006

Conservation of Habitats and Species Regulations, 2010

UK Biodiversity Action Plan, 2007

Safeguarding our Soils, A Strategy for England, 2009

Contaminated Land (England) Regulations, 2006

Adapting to Climate Change – UK Climate Change Projections, 2009

Climate Change – National Adaptation Programme

Mainstreaming Sustainable Development, 2011

Securing the Future: Delivering the Sustainable Development Strategy, 2005

Strong and Prosperous communities – The Local Government White Paper, 2006

Fair Society, Healthy Lives: The Marmot Review, 2010

Low Carbon Transport: A Greener Future, 2009

Environmental Permitting Regulations, 2010

Groundwater Protection Policy (GP3)

A Practical Guide to the Strategic Environmental Assessment Directive, 2006

Sub-National

Anglian River Basin Management Plan, 2009

Thames River Basin Management Plan, 2009

Rye Meads Water Cycle Strategy, 2009

Dacorum Borough Council, St Albans City and District Council, Three Rivers District Council, Watford Borough Council Welwyn Hatfield Borough Council Water Cycle Study, 2010

Level 1 Strategic Flood Risk Assessment prepared for Dacorum Borough Council, St. Albans City & District Council, Three Rivers District Council and Watford Borough Council, 2007

Thames Catchment Flood Management Plan, 2009

Great Ouse Catchment Flood Management Plan, 2011

Lower Lee Flood Risk Management Strategy, Consultation Update, 2008

Upper Lee Flood Risk Management Strategy, 2007

Upper Colne Flood Risk Management Strategy Position Statement, 2007

River Ash Flood Risk Management Strategy Summary and Conclusions Report, 2006

County

Hertfordshire County Council Strategic Flood Risk Assessment, 2010

Hertfordshire County Council Preliminary Flood Risk Assessment, 2011

Groundwater Quality Review: Mid-Chiltern and Colne

Groundwater Quality Review: Upper River Lee

Hertfordshire UKCP09 headlines report, 2010

Hertfordshire Local Transport Plan, 2011 - 2031 (LTP3)

Hertfordshire Economic Development Strategy, 2009 - 2021

Hertfordshire Minerals Local Plan Review 2002-2016 (adopted 2007)

Hertfordshire Joint Municipal Waste Management Strategy, 2007

A 50 year vision for the wildlife and natural habitats of Hertfordshire – A Local Biodiversity Action Plan, 1998, (Reviewed 2006)

A Better Quality of Life – The Hertfordshire Environmental Strategy, 2001

The Environment in Hertfordshire, 2010

Hertfordshire Landscape Character Assessments, 2000 - 2005

Public Health Observatory – Hertfordshire Health Profile, 2011

Hertfordshire Red Data Book

Hertfordshire Sustainability Forum Quality of Life Reports (annual)

District

Level 1 Strategic Flood Risk Assessment prepared for Broxbourne Borough Council, 2007

Level 1 Strategic Flood Risk Assessment prepared by East Hertfordshire Council, 2008

Level 1 Strategic Flood Risk Assessment prepared for Hertsmere Borough Council, 2008

Level 1 Strategic Flood Risk Assessment prepared for North Hertfordshire District Council, 2008

Level 1 Strategic Flood Risk Assessment prepared for Stevenage Borough Council, 2009

Level 1 Strategic Flood Risk Assessment prepared for Welwyn Hatfield Borough Council, 2009

Saved Policies within Broxbourne Borough Local Plan 2001 – 2011 and Broxbourne Borough Council Core Strategy Submission Draft December 2010

Dacorum Borough Council Local Plan 1991 – 2011 and Core Strategy – Pre-submission Omissions Document February 2012

East Hertfordshire Local Plan 2007 and Core Strategy Issues and Options 2010

Hertsmere Local Plan, 2003 and Revised Core Strategy Consultation Draft, 2010

North Hertfordshire District Local Plan (No.2) with Alterations (originally adopted 1996) and Core Strategy Preferred Options, 2007

St Albans City & District Local Plan Saved Policies, 2007 and Core Strategy Consultation on the Strategy for Locating Future Development in the District, 2010

Stevenage Borough Council Local Plan Saved Policies, 2007 and Submission Draft Core Strategy, 2010

Three Rivers District Council Core Strategy, 2011

Watford Borough Council Local Plan, 2000 and Core Strategy Publication - Significant Changes Consultation, 2011

Welwyn Hatfield Borough Council Local Plan Saved Policies, 2007, Core Strategy Issues and Options, 2009 and Core Strategy Consultation - How Many New Homes?, 2011

Dacorum Landscape Character Assessment, 2004

East Hertfordshire District Landscape Character Assessment, 2007

North Hertfordshire and Stevenage Landscape Character Assessment, 2004

Landscape Regions (Part of Hertfordshire Landscape Regions), Three Rivers District Council, 2003

2.3 Baseline Information

SEA Directive requires: 'The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.' Annex I(b);

'The environmental characteristics of areas likely to be significantly affected' Annex I(c);

'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 and the Habitats Directive.' Annex I(d)

The baseline information identifies current environmental issues and problems in the area which should be addressed in the LFRMS and provides a basis for predicting and monitoring the effects of implementing the LFRMS. The baseline may need to be updated during the SEA process as new information emerges and/or as additional issues come to light.

To ensure the data collected was relevant and captured the full range of environmental issues it was categorised under 12 thematic topics which cover all the topics referred to in Annex 1(f) of the SEA Directive. The detailed baseline information can be found in Annex B of the Environmental Report. The next section describes the key issues that were identified during the scoping phase.

2.4 Strategic Environmental Assessment Objectives

The SEA Objectives are based on policy advice and guidance and related to the key environmental issues within Hertfordshire. They are used to evaluate, in a clear and consistent manner, the nature and degree of impact and whether significant effects are likely to emerge from the LFRMS's objectives and actions. Table 3 lists the SEA Objectives and signposts the key environmental issues and the key plans and programmes from which they were derived. The policy documents highlight the policy directions which Hertfordshire intend to take whilst the included baseline information provides a basis from which to measure future success.

TABLE 3: DEFINING THE STRATEGIC ENVIRONMENTAL ASSESSMENT OBJECTIVES

Plans and Programmes	Baseline Information / Environmental Issues	SEA Objective
Hertfordshire County Council Preliminary Flood Risk Assessment, 2011 Strategic Flood Risk Assessments for Hertfordshire County Council and Local Districts, 2007 - 2010	Pluvial flooding and ground water flooding are main sources of flooding within county. Also flood risk from fluvial flooding. FRMSs have been devised for the Lower Lee, Upper Lee, Upper Colne, River Ash and River Rib catchment areas and the town of Hertford. Significant levels of flood risk identified in south and south east of county. Last widespread floods in Hertfordshire occurred in October 2001. Intermittent occurrences of flooding across the county over the last few years 53,400 properties (as of 2008) are predicted to be at risk of deep flooding (up to 0.3 metres) in a high risk (1 in 200 chance in any year) event. A 10 year period up to 2007 shows that there were 291 records of sewer flooding of which 77 could be attributed to surface water and 25 to combined sewers.	1) To minimise the risk of flooding on existing development and amenity.
Water Framework Directive (England and Wales) Regulations 2000/60/EC. The Environment in Hertfordshire, 2010.	Main rivers are the River Lee in the north, Rivers Ash and Rib in the north east, the River Stort in the East and River Colne in the south. Largest concentration of groundwater sources are in the River Colne valley and on the Chalk escarpment. Yields and concentrations of sources are lower to the north and east whilst groundwater flow is roughly downdip into the Colne and Lee catchments. Main pressure on water resources is population growth. Growth will need to be sustainable, with impacts on wastewater, water quality and infrastructure quality and capacity all carefully managed. Wastewater	2) To maintain and enhance water resources and quality.

Plans and Programmes	Baseline Information / Environmental Issues	SEA Objective
	infrastructure should be in place before new residential development is occupied.	
	Fractures within chalk, where the aquifers from which the majority of water is drawn from lie, may allow contaminants from pollution events to move rapidly and extensively. A need to ensure levels of protection and control accidental releases.	
	Rainfall between November 2009 and February 2010 reached 70 per cent more than the long term average. This resulted in a rapid recharge of groundwater meaning that levels were above average in 2010	
	Veolia Water's domestic, non-metered customers increased their water usage last year to an average consumption of 179 litres per person per day in 2009-10. Metered customers used less, at 147 litres per person per day. This compares to a UK non-metered average of 150 litres per person per day. Increased water efficiency will contribute towards less water needing to be abstracted and/or treated at Sewage Treatment Works before being discharged back into our rivers and streams.	
The Environment in Hertfordshire, 2010. A Better Quality of Life – The Hertfordshire Environmental	Hertfordshire had an estimated population of 1,107,600 people as of 2010, an increase of 72,000 people from 2001. At 6.5 per cent this rate of increase is slightly below the equivalent regional figure but above that seen at the national level.	3) To protect and enhance human health and wellbeing.
Strategy, 2001	Overall Hertfordshire is projected to increase its population by 20.56 per cent between 2008 and 2033. This percentage change is greater than the national level but below that of the region. It is important to ensure that housing requirements can be provided for in areas which won't have a detrimental effect on flood risk.	
	Stevenage, Watford and Broxbourne are considered to be the most deprived districts in Hertfordshire when measured by average score on the Indices of Multiple Deprivation. When measured against the rest of the country, the least well performing borough, Watford, is still in the top 50% of districts nationally.	
	Life expectancy for both men and women is higher than the England average.	
	Participation in sport within Hertfordshire was	

Plans and Programmes	Baseline Information / Environmental Issues	SEA Objective
	higher than the regional and national average between October 2007 and October 2010. However, six local authorities in Hertfordshire experienced a decrease in sport and active recreation participation between October 2007-08 and October 2009-10. In Hertfordshire there is 8,264ha of accessible	
	natural greenspace, representing 9 per cent of the county's total area. The districts of Dacorum and Broxbourne had the highest proportions of households meeting all ANGSt criteria at 39.8 per cent and 19.1 per cent respectively. 5 districts reported 0 per cent of households fulfilling all criteria.	
Hertfordshire Local Transport Plan, 2011 – 2031 (LTP3)	Major infrastructure routes have a north to south focus and serve London, the Midlands and the North including the A1 (M) and M1 motorways and the East Coast, Midland and West Coast mainline railways. With the exception of the heavily congested M25 and A414 in the south of the country, east – west routes are limited.	4) To ensure the potential impact of flooding on existing and future infrastructure is minimised.
	Baseline information suggests that Hertfordshire residents are driving progressively further to their places of work, meaning the potential economic implications of flooded transport infrastructure are increasing.	
	Congestion has significant costs attached as it delays people's journeys and therefore impacts on economic competitiveness. The Transport Economic Evidence Study put Hertfordshire's expected economic losses as £0.44bn in 2021.	
Hertfordshire County Council Preliminary Flood Risk Assessment, 2011 Strategic Flood Risk Assessments for Hertfordshire County Council and Local Districts, 2007 - 2010	Location maps showing spatial extent of Floodzone 2 and Floodzone 3. In Hertfordshire between 2010 and 2011 there were thirteen planning applications that were approved contrary to objections by the Environment Agency on the grounds of flood risk.	5) To ensure that new development is directed to reasonably available sites at the lowest probability of flooding.
A 50 year vision for the wildlife and natural habitats of Hertfordshire – A Local Biodiversity	The Hertfordshire Biodiversity Action Plan (HBAP) contains action plans for 17 species and 7 habitats throughout Hertfordshire. In addition, 250 habitats have been listed in the Hertfordshire Red Book.	6) To protect and enhance biodiversity and geodiversity throughout

Plans and Programmes	Baseline Information / Environmental Issues	SEA Objective
Action Plan, 1998 (revised 2006)	In Hertfordshire there is a single Ramsar, the Lee Valley National Park which covers approximately 447.87ha and is also an SPA.	Hertfordshire.
	There are two SACs in the county: Chilterns Beechwoods and Wormley-Hoddesdonpark Woods and together they comprise approximately 1612.01ha and are primarily broad leaved deciduous woodland.	
	There are 43 SSSIs recorded in Hertfordshire, and these cover a total of approximately 25.14ha of the county. Twenty-eight of these have been designated for their biological interest, six for their geological interest, and nine for both biological and geological interest. Within Hertfordshire, 96.87% of the total SSSI area is in a favourable or 'unfavourable recovering 'condition.	
	There is a single NNR located in Hertfordshire. This is Broxbourne Woods, a site which comprises approximately 237.48ha. The reserve comprises four woods: Bencroft, Broxbourne, Hoddesdon Park and Wormley.	
	There are currently 41 LNRs in Hertfordshire.	
	In Hertfordshire there are nearly 1,994 LOWs which total over 16,000ha. These wildlife sites are the most important places for wildlife outside legally protected areas such as Nature Reserves and Sites of Special Scientific Interest.	
	Ancient woodland sites total approximately 5834.14ha.	
National Planning Policy Framework,	Total number of listed buildings or groups of buildings in Hertfordshire is 8068.	7) To maintain and/or enhance the
2012	30 Listed Buildings and Scheduled Monuments at risk	character of townscapes and historic landscapes,
	There are 207 Scheduled Monuments in Hertfordshire, ranging from ancient mounds and ditches to World War II defensive structures.	cultural heritage and designated and undesignated heritage assets
	There is one registered battle site which lies partly in Hertfordshire.	within Hertfordshire.
	There are 43 historic parks and gardens in Hertfordshire.	
	Hertfordshire has 196 designated Conservation Areas. 2 of these are considered to be at risk.	
Safeguarding our	Different types of soil have different	8) To protect best

Plans and Programmes	Baseline Information / Environmental Issues	SEA Objective
Soils, A Strategy for England, 2009 Hertfordshire Landscape Character	implications for water movement. Compaction of soil reduces agricultural productivity and water infiltration, and increases flood risk through higher levels of run off.	quality soil and enhance the quality and character of the Hertfordshire landscape.
Assessments, 2000 - 2005	Hertfordshire County is primarily Grade 3 agricultural land although the northern parts of North Hertfordshire and East Hertfordshire are almost solely covered by Grade 2 agricultural land.	
	A central strip down the county is primarily classified as urban land or otherwise non-agricultural whilst the southern most tip is almost entirely urban or non-agricultural.	
	The Hertfordshire Landscape Strategy identifies six landscape character regions for the County.	
	In Hertfordshire there is one AONB, the Chiltern Hills, within North Hertfordshire and Dacorum.	
A Better Quality of Life – The Hertfordshire Environmental Strategy, 2001	By the 2050s it is expected that there is a 50 per cent probability of precipitation in Hertfordshire reducing in the summer by approximately 10 per cent under a low emissions scenario rising to approximately 20 per cent under the medium and high emission scenarios. By the 2080s, there is predicted to be a 50 per cent chance of summer average precipitation dropping by approximately 20 per cent under a low emission scenario and approximately 30 per cent under a high emissions scenario.	9) To adapt development to the impacts of climate change.
	It is known through modelling carried out by the UKCP09 project that summers will get drier and winters will get wetter. It can also be stated that precipitation in Hertfordshire is lower than the national average. Hertfordshire is located in the East of England, the driest region in the UK, and it is possible that additional growth and the effects of climate change could increase water stresses in the region in the summer, whilst wetter winters could exacerbate existing flood issues.	
	Within the Thames and Anglian River Basin District, flooding impacts will depend on local conditions and vulnerability although it can be stated that wetter winters, and an increase in precipitation falling during wet spells, may increase river flooding in both rural and heavily urbanised catchments. Rainfalls of higher	

Plans and Programmes	Baseline Information / Environmental Issues	SEA Objective
	intensity will create an increase in surface runoff, increasing localised flooding and erosion. In turn, this may increase pressures on drains, sewers and water quality. Within the Thames River Basin District there is the additional risk of flooding from groundwater-bearing chalk and limestone aquifers.	
	There was a -7.08 per cent per capita reduction in Hertfordshire CO ₂ emissions per capita between 2005 and 2008, a per capita reduction below that of the East of England at 7.89 per cent. All of the 10 local authorities in Hertfordshire experienced a reduction in CO ₂ emissions per capita between 2005 and 2008.	
	In Hertfordshire the largest proportion of energy consumption in 2008 was within the transport sector, accounting for 35.08 per cent of the total energy consumed, followed by the domestic sector which consumed 33.27 per cent.	

2.5 Data Limitations

Not all the relevant information was available at county level and as a result national and regional data was used to identify trends. It is still believed that the available information provides a comprehensive view on sustainability issues within the county of Hertfordshire.

2.6 Strategic Environmental Assessment Framework

The SEA Framework is an important tool in the SEA process which is developed during the scoping phase in line with the Planning Advisory Service's best practice guidance. It provides the context against which the emerging LFRMS can be assessed and will be used to look at any secondary, cumulative, synergistic, short, medium and long-term permanent and temporary effects of different elements within the LFRMS in accordance with Annex 1 of the SEA Directive.

Annex C which accompanies this Environmental Report shows the full SEA Framework. It consists of the SEA Objectives; the key questions that should be asked under each of the SEA Objectives to assess the environmental effects of the LFRMS; and indicators which can monitor the impacts following implementation.

Recognising which indicators can be used is important when assessing the impact of the strategy appraised and points towards the specific monitoring which need to be carried out. Collection of this information over a period of time will result in data trends being established, which will show if the strategy has had a positive or negative impact on the environmental, social or economic factors they influence.

3 APPROACH FOR ASSESSING THE LFRMS

The SEA of the LFRMS will appraise the vision, objectives, individual policies and actions against the SEA objectives and each assessment will be presented in a layout similar to that shown in Table 4.

TABLE 4: EXAMPLE OF ASSESSMENT

		SEA Objective									
	1	1 2 3 4 5 6 7 8 9									
Short Term	++										
Medium Term	+										
Long Term	-										

In accordance with the time scale of the LFRMS, the SEA recognises that the impacts of the objectives, individual policies and actions may vary over time. Three time periods will be used to reflect this in the assessments. These three time periods are shown in the temporal matrix as S, M and L which represent:

- Short term present to 2014
- Medium term 2014 to 2020
- Long term 2020 and beyond

The impacts are indicated through colour coding within a 6-fold categorisation as outlined below.

++	Major Positive	/	Uncertain
+	Positive	-	Negative
0	No Impact		Major Negative
n/a	Not Applicable		

4 ASSESSMENT OF THE VISION

4.1 Introduction

The consultation version of the LFRMS contains a vision for flood risk management which provides the strategic direction for Hertfordshire. This is in line with the national strategy and its six guiding principles for flood risk management in England.

4.2 Assessment of the Vision

The vision which underpins the LRFMS comprises of six key principles. These are:

- There will be a strategic understanding of flood risk from all sources.
- 2. Communities understand the information available on flood risk and are supported towards self-sufficiency for flood preparedness and resilience and as beneficiaries of flood alleviation schemes.
- Local flood risk is managed to ensure there is no new flood risk created and 3. where possible opportunities to reduce local flood risk are taken.
- 4. Hertfordshire has a partnership approach to flood risk management, and cooperates with other partnerships on working across catchments.
- 5. Information on local flood risk will be made available to assist in preparing for flood events, roles and responsibilities in a flood event will be clear and wellrehearsed and the cause of flood events will be effectively investigated.
- Flood risk management funding is directed to areas most at need or where solutions will be most effective, and flood risk management will guide other funding decisions and be appropriately prioritised alongside other needs.

Impact on SEA objectives

	Sustair	nability C	Objective	S					
	1	2	3	4	5	6	7	8	9
Short Term	+	+	+	++	+	+	/	+	++
Medium Term	+	+	+	++	+	+	/	+	++
Long Term	+	+	+	++	+	+	/	+	++

Significant Effects

One of the key principles of the Vision specifically seeks to ensure that all risk management authorities (RMAs) manage the effects of climate change which would have a strong positive impact on SEA objective 9 (climate change). A strong impact will also be realised for SEA objective 4 (infrastructure) where the same key principle seeks to ensure that new development and infrastructure does not increase flood risk and that efforts should be made to reduce flood risk. This also supports SEA objective 5 (new development). A strong positive was not given for this objective as it is not explicitly implied that new development will be located in areas of lowest risk.

However it is acknowledged that this is sufficiently dealt with through the LDF process.

In promoting schemes which increase community understanding and support communities and individuals in managing local flood risk, the second key principle of Vision is likely to have a positive impact on SEA objective 1 (existing development). It seeks a predominantly local approach through community cooperation in both reducing flood risk in developed areas and assisting schemes financially; however there will be some degree of uncertainty as to whether communities will become actively involved.

There will also be positive impacts on SEA objectives 2 (water), 3 (health and wellbeing), 6 (biodiversity) and 8 (soil and landscape) through the adoption of measures which aim to provide multiple benefits. These positive impacts could be strengthened if the Vision provided greater detail on what the proposed benefits to the environment and society are, it referred to the use and specific benefits of SuDS, it stated that all the impacts of flooding should be considered and noted that measures should work with natural processes. This would be closer in line with the national guiding principles.

The Vision has an uncertain impact on SEA objective 7 (heritage) at present because it is unclear whether the environmental benefits in key principle 3 refer to the historic environment in addition to the natural environment. It is unlikely to have a negative impact if it didn't because of the high level nature of the strategy; however the impacts on this SEA objective could become positive if the key principle referred to the benefits in greater detail. This would be closer in line with the national guiding principles which stated that all the impacts of flooding should be considered including those on cultural heritage.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

There are no secondary, cumulative or synergistic effects identified at this stage.

Mitigation/Recommendations

It is recommended that the Vision provides greater detail on the types of multiple benefits that the measures should aim to achieve and include preferred measures and their specific benefits (i.e. SuDS which reduces pollution and can offer amenity and recreational value).

5 ASSESSMENT OF OBJECTIVES AND APPROACHES

5.1 Introduction

The objectives for managing local flood risk, a required element of the LFRMS, are discussed in Part 1 – Strategy. The Strategy does not clearly list these but the various sections provide coverage of a range of approaches that support the Vision. Detail on how flood risk will be managed, assessed, funded, and communicated in Hertfordshire are set out within sections 7 to 11 of the Strategy.

5.2 Assessment of the High Level Objectives

Although not set out in the main Strategy, the Executive Summary of the LFRMS does list the following four high level objectives which have been subject to SEA.

- To reduce the potential impact and costs of flooding in the county.
- To better understand local flood risk and make best use of available information.
- To develop greater personal involvement in flood risk management amongst residents of Hertfordshire.
- To secure improvements to the water environment of Hertfordshire through the undertaking of actions associated with flood risk management.

Impact on SEA objectives

	SEA O	A Objectives								
	1	2	3	4	5	6	7	8	9	
Short Term	+	++	+	+	+	+	+	+	+	
Medium Term	+	++	+	+	+	+	+	+	+	
Long Term	+	++	+	+	+	+	+	+	+	

Significant Effects

There will be a strong positive impact on SEA objective 2 (water) as one of the high level objectives directly seeks to enhance the quality of the water. There will be positive impacts on SEA objectives 1 (existing development) and 3 (health and wellbeing) through increased understanding and awareness by the community on local flood risk issues. This will empower them to manage the risk and minimise the impacts that would personally affect them. If significant community involvement is achieved over time stronger positive impacts may be apparent in the long term.

The high level non-spatial nature of the objectives prevents a detailed assessment; however by seeking to reduce the impacts of flooding, the objectives are likely to positively support all of the SEA objectives. Potential impacts should include environmental and social matters however further clarity on this would strengthen these positive impacts.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

Ensuring that there is a database of information to improve understanding on local flood risk should result in an indirect positive impact on the SEA objectives. It should lead to more informed decision making on managing and reducing flood risk.

Mitigation/Recommendations

Further explanation on what impacts they seek to reduce would strengthen the outcome of these high level objectives. This could involve the inclusion of list of topics that flooding can impact on.

5.3 Assessment of the Approaches

There are five additional sections within the Strategy which document the approach being taken by Hertfordshire in managing flood risk. The final point refers to the reporting and reviewing of the LFRMS, for which an assessment is not deemed necessary. The other four sections have been assessed for their environmental impact and the findings are below.

5.3.1 Appraisal of the section 'A Collaborative Approach to Flood Risk Management – Proposals for Partnership Development and Operation'

Impact on SEA objectives

	SEA O	bjectives	3						
	1	2	3	4	5	6	7	8	9
Short Term	0	0	0	0	0	0	0	0	0
Medium Term	0	0	0	0	0	0	0	0	0
Long Term	0	0	0	0	0	0	0	0	0

Significant Effects

There are no significant or direct effects identified at this stage

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

In principle, partnership working should have positive impacts across the SEA objectives as it allows for the pooling of knowledge between disparate stakeholders as well as efficient co-ordination of time and resources to effectively manage flood risk. These positive impacts would be secondary to the main aim of this approach which is to set out the working arrangements for the LFRMS.

The proposed strategy group should strive to include all Risk Management Authorities as they have various strategic responsibilities which will impact on and influence the preparation and delivery of the LFRMS and consequently its impact on the environment. It is noted that the current list of bodies does not include the Bedford and Ivel Internal Drainage Boards.

A local partnership structure that deals with local issues and delivery of locally based schemes would also, in principle, positively support the SEA objectives as it should nurture discussions on a broad range of issues across the whole of the county. It will be particularly important for this group to ensure that the LFRMS's environmental objectives are addressed.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

5.3.2 Appraisal of the section 'Prioritising Local Flood Risk in Hertfordshire'

Impact on SEA objectives

	SEA O	EA Objectives										
	1	2	3	4	5	6	7	8	9			
Short Term	+	+	+	+	n/a	0	0	0	+			
Medium Term	+	+	+	+	n/a	0	0	0	+			
Long Term	+	+	+	+	n/a	0	0	0	+			

Significant Effects

This approach sets out a logical framework for managing flood risk in Hertfordshire by prioritising the assessment of areas by the number of properties at risk of surface water flooding. Areas in greatest need, which reflects the social and economic impacts of flooding, are prioritised first. Although a priority is established between districts, the risk of surface water flooding will be assessed in all districts within Hertfordshire over time ensuring a complete and comprehensive assessment of surface water flooding in the medium term. This will positively support the SEA objectives which refer to the impacts on development, infrastructure and people.

The approach states that Surface Water Management Plans will be produced for each area which will aid understanding of the causes and effects of surface water flooding as well as set out the most cost effective ways of managing surface water flood risk for the long term. This would support SEA objective 9 (climate change).

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

Although this approach directly reflects the social and economic costs of local flooding in Hertfordshire it is likely that there will be indirect positive impacts on the environment from the solutions for managing surface water flood risk in the SWMPs.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

5.3.3 Appraisal of the section 'Understanding and Prioritising Funding for Projects'

Impact on SEA objectives

	SEA O	EA Objectives									
	1	2	3	4	5	6	7	8	9		
Short Term	+	+	+	+	n/a	+	+	+	+		
Medium Term	+	+	+	+	n/a	+	+	+	+		
Long Term	+	+	+	+	n/a	+	+	+	+		

Significant Effects

This approach is informative and raises awareness of funding for projects/ schemes that will manage and potentially reduce flood risk at the local level. The purpose of this section is to identify funding streams and clarify the methodology for determining which local projects receive funding. It is high level and non spatial therefore detailed appraisal cannot be undertaken; however it is likely that this will have positive impacts across the SEA framework.

In determining which projects receive funding Hertfordshire has taken into account the formula for national funding which assesses each project on its outcomes in terms of its benefits to the environment, businesses, agricultural productivity and households. This supports the majority of the SEA objectives through striving to ensure the delivery of projects which improve the environment, human well-being and the protection of development from flooding. Positive impacts are also reflected in the specific criteria being proposed for prioritisation of scheme development within Hertfordshire which includes infrastructure vulnerability (linked to SEA objective 4), number of existing buildings at risk (linked to SEA objective 1), environmental enhancement (linked to SEA objectives 2, 6, 7 and 8) and future resilience (linked to SEA objective 9).

The approach is not applicable to SEA objective 5 as it does not deal with proposed development; only the funding of projects to manage flood risk to existing development.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

There are no secondary, cumulative or synergistic effects identified at this stage.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

5.3.4 Appraisal of the section 'Communicating Understanding of Flood Risk'

Impact on SEA objectives

	SEA O	EA Objectives										
	1	2	3	4	5	6	7	8	9			
Short Term	++	0	+	0	n/a	0	0	0	++			
Medium Term	++	0	+	0	n/a	0	0	0	++			
Long Term	++	0	+	0	n/a	0	0	0	++			

Significant Effects

Public engagement is key to reducing the effects of flooding on a localised level as there are steps that can be taken by any individual to aid the safeguarding of their property from the effects of flooding. This positively promotes well-being (SEA objective 3) as it empowers the local community.

There will also be significant positive impacts on SEA objective 1 (existing development) where the approach directly seeks to enable communities to increase local resilience, and on SEA objective 9 (climate change) where it recognises the need to adapt to climate change when managing future flood risks.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

There may be small secondary positive impacts on the environment as a consequence of community actions in managing the risk of localised surface water flooding where they improve the local surroundings.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

6 ASSESSMENT OF POLICIES AND PROCEDURES

6.1 Introduction

Part 2 of the LFRMS sets out the policies and procedures for the Strategy and for Hertfordshire County Council as the Lead Local Flood Authority (LLFA). As explained within the LFRMS the policies cover the broad principles of how the LLFA role in general, and the specific requirements of legislation, will be carried out. They will span the life of the Strategy while the procedures, which are more detailed guidelines of how the services will be delivered, will be reviewed and updated as the Strategy progresses.

6.2 Assessment of the policies and procedures

There are six policies and five procedures. The first policy stands alone as it details the role of the LLFA while the other policies are each accompanied by a procedure which sets out how the policy will be met.

6.2.1 Policy 1: Role of Lead Local Flood Authority

Impact on SEA objectives

	SEA O	SEA Objectives									
	1	2	3	4	5	6	7	8	9		
Short Term	+	+	+	+	+	+	+	+	+		
Medium Term	+	+	+	+	+	+	+	+	+		
Long Term	+	+	+	+	+	+	+	+	+		

Significant Effects

In referring to the sustainable management of local flood risk this policy will have positive impacts across the SEA objectives. It seeks to ensure that the management of flood risk pursues a balanced approach which is not to the detriment of any of the three pillars of sustainability – the environment, the economy and society. An inclusive and collaborative approach should also result in a range of interests being represented.

The policy touches on the opportunity for additional benefits; however it does not refer to any that are specific to a locality or provide examples of the type of benefits that could be achieved. It does include the words sustainability and environment but they are fairly ambiguous. This prevents significant positive impacts being given to any of the SEA objectives.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

There are no secondary, cumulative or synergistic effects identified at this stage.

Mitigation/Recommendations

Further explanation on what 'opportunities for additional benefits' could be in order to contribute to significant positive impacts on the relevant SEA objectives.

6.2.2 Policy 2: Investigation and Reporting of Flood Events & Procedure 1: **Reporting and Investigation of Flooding Events**

Impact on SEA objectives

	SEA O	EA Objectives									
	1	2	3	4	5	6	7	8	9		
Short Term	++	0	+	++	0	0	0	0	0		
Medium Term	++	0	+	++	0	0	0	0	0		
Long Term	++	0	+	++	0	0	0	0	0		

Significant Effects

The primary purpose of this policy and supporting procedure is to clarify the responsibility for reporting flood events and the circumstances when investigation should be carried out. Procedure 1 is likely to have a significant positive impact on SEA objective 1 (existing development) where it requires detailed investigation on both residential and business properties that have experienced flooding based on prescribed criteria in order to identify how this can be reduced. With regards to individual property flooding this procedure refers to the possibility of providing 'assistance with the provision of flood resistance measures' which would fully support this SEA objective.

There will also be a significant positive impact on SEA objective 4 (infrastructure) where the procedure requires immediate investigation to minimise the risk of flooding of critical infrastructure where flooding has occurred. Responding to the flooding of transport links was also specifically referred to in the procedure.

A positive impact has been given to SEA objective 3 (health and well-being) where the procedure requires investigation where there has been a risk to life.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

The recording of flood events as required through Policy 2 is likely to have an indirect positive impact on many of the SEA objectives where it increase knowledge and understanding of local flood events. This will enable effective mitigation measures to be implemented to minimise the impact, and potentially the occurrence, of local flooding which accords with ideals of the SEA framework.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

6.2.3 Policy 3: Register of Structures and Features & Procedure 2: Significance of Structures and Features

Impact on SEA objectives

	SEA Objectives									
	1	2	3	4	5	6	7	8	9	
Short Term	+	+	+	+	0	+	/	+	0	
Medium Term	+	+	+	+	0	+	/	+	0	
Long Term	+	+	+	+	0	+	/	+	0	

Significant Effects

The use of specific assessment criteria to rate surface water structures and features positively impacts a number of the SEA objectives. It ensures that those structures and features which are registered as being significant will be managed to minimise their impact on the issues/ criteria to which they were originally assessed. The criteria includes assessments on 'threat to life' which links to SEA objective 3 (health and well-being), 'threat to property' which links to SEA objective 1 (existing development), 'threat to infrastructure' which links to SEA objective 4 (infrastructure), 'environmental damage' which links to SEA objectives 6 (biodiversity) and 8 (soil and landscape), and 'groundwater implications' which links to SEA objective 2 (water).

There will be an uncertain impact on SEA objectives 7 (heritage) at present because it is unclear whether 'environmental damage' refers to the historic environment in addition to the natural environment.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

There may be indirect positive impacts on the other SEA objectives as a consequence of the register as it will result in significant structures being maintained in the long term which will aid protection of local areas from surface water flooding. This is compatible with the aims of the SEA framework.

Mitigation/Recommendations

There is some ambiguity as to what the phrase 'environmental' is interpreted as including, for example, whether it refers to the natural environment only or townscapes and historical features as well. A general definition within the LFRMS would resolve this and improve certainty as to this policy and procedure's impact on the various SEA objectives in addition to clarifying other areas of the LFRMS.

6.2.4 Policy 4: Consenting and Enforcement Activities Relating to Ordinary Watercourses & Procedure 3: Regulation of Ordinary Watercourses

Impact on SEA objectives

	SEA Objectives									
	1	2	3	4	5	6	7	8	9	
Short Term	+	++	+	++	n/a	++	++	++	+	
Medium Term	+	++	+	++	n/a	++	++	++	+	
Long Term	+	++	+	++	n/a	++	++	++	+	

Significant Effects

The Advice Note by the Environment Agency on Ordinary Watercourse Regulation (Feb 2012) states that the purpose of ordinary watercourse regulation is to control certain activities that might have an adverse flooding impact. Therefore this policy should have a positive impact on the majority of the SEA objectives because it is compatible with the aims of the SEA framework. The risk based approach being proposed within the policy follows the approach taken by the Environment Agency and the guidance produced by the Environment Agency supports this.

There will be significant positive impacts on SEA objective 2 (water) by this policy where it states that the county council will undertake their role as regulator of ordinary watercourses in coordination with the Environment Agency. This will ensure that activities aren't to the detriment of water resources.

There will be significant positive impacts on SEA objectives 6 (biodiversity) and 8 (soil and landscape) where the policy states that the county council will liaise with Natural England as they are responsible for species habitats and protected sites.

This policy will also have significant positive impacts on SEA objectives 4 (infrastructure) and 7 (heritage) where it stipulates that the county council will liaise with other relevant bodies on the regulation of ordinary watercourses such as those for highways and the historic environment.

The policy is not applicable to SEA objective 5 as it does not deal with locating proposed development.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

There are no secondary, cumulative or synergistic effects identified at this stage.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

6.2.5 Policy 5: Sustainable Drainage (SuDS) Approval Body & Procedure 4: **SuDS Approval Body**

Impact on SEA objectives

	SEA O	SEA Objectives														
	1	2	3	4	5	6	7	8 9								
Short Term	+	+	+	+	+	+	/	+	+							
Medium Term	+	+	+	+	+	+	/	+	+							
Long Term	+	+	+	+	+	+	/	+	+							

Significant Effects

Procedure 4 is not currently fully developed as the transfer of powers over SuDS arrangements is awaiting the commencement of legislation. However the policy details the role of the county council as the SuDS approval body which will positively impact on a number of SEA objectives.

Ensuring that SuDS meet national standards means that SuDS will be designed and constructed in an appropriate way so that they function to manage the flow rate and volume of surface runoff to reduce the risk of flooding and water pollution. This will have positive impacts on minimising the risk of surface water flooding to development and infrastructure (SEA objective 1, 4 and 5), adapting development to climate change (SEA objective 9) and enhancing water quality (SEA objective 2).

The policy also encourages SuDS to improve local amenity and contribute to enhancing the environment which positively supports health and well-being (SEA objective 3) and the environment (SEA objectives 6 and 8).

There will be an uncertain impact on SEA objectives 7 (heritage) at present because it is unclear whether 'the environment' refers to the historic environment in addition to the natural environment.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

There are no secondary, cumulative or synergistic effects identified at this stage.

Mitigation/Recommendations

There is some ambiguity as to what 'the environment' is interpreted as including, for example, whether it refers to the natural environment only or townscapes and historical features as well. A general definition within the LFRMS would resolve this and improve certainty as to this policy's impact on the various SEA objectives in addition to clarifying other areas of the LFRMS.

6.2.6 Policy 6: Designation of Structures and Features & Procedure 5: **Designation of Structures and Features**

Impact on SEA objectives

	SEA O	SEA Objectives										
	1 2 3 4 5 6 7 8											
Short Term	0	0 0 0 0 0 0										
Medium Term	0	0	0	0	0	0	0	0	0			
Long Term	0	0	0	0	0	0	0	0	0			

Significant Effects

There are no significant effects identified at this stage.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

At this stage it is unknown how this policy and procedure will impact on the SEA objectives because the criteria and protocol for designating third party structures and features has yet to be established and guidance for LLFA is still being prepared. However, it is envisaged that there should be indirect positive impacts on the SEA objectives as a consequence of registering third party structures and features as it should result in those that are significant being maintained. This would aid protection of local areas from surface water flooding which is compatible with the aims of the SEA framework.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

7 ASSESSMENT OF THE STRATEGY'S IMPLEMENTATION

7.1 Introduction

Part three of the LRFMS sets out the work programme up to 2017. This includes a series of actions, grouped under various themes, which must be completed to achieve the main objectives.

7.2 Assessment of the Actions

The actions have been assessed collectively under the various grouped themes.

7.2.1 Register of Structures and Features

The two actions categorised under this group are:

- Establish online register of Structure and Features which have a significant effect on local flood risk
- Maintain online register of Structure and Features which have a significant effect on local flood risk

Impact on SEA objectives

	SEA O	SEA Objectives										
	1 2 3 4 5 6 7 8											
Short Term	0	0	0	0								
Medium Term	0	0	0	0	0	0	0	0	0			
Long Term	0	0	0	0	0	0	0	0	0			

Significant Effects

There are no significant effects identified at this stage.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

The presence of an online register of structures and features which have a significant effect on local flood risk does not have a direct impact on the SEA objectives. However there may be indirect positive impacts from the work undertaken in response to the register. Once structures and features are placed on the register they should be maintained and where necessary improved to protect local areas from surface water flooding which is compatible with the aims of the SEA framework.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

7.2.2 Development of Information on Flood Risk and Flood Risk Management in Hertfordshire

The three actions categorised under this group are:

- Develop data sharing protocol for all flood risk information relating to Hertfordshire
- Develop web portal for partners and the public to access the local flood risk
- Review SFRAs to assess how the improving evidence base for flooding from all sources can be used in spatial planning/ development control

Impact on SEA objectives

	SEA O	SEA Objectives											
	1	2	3	4	5	6 7 8 9							
Short Term	+	+	+	+	+	+	+	+	+				
Medium Term	+	+	+	+	+	+	+	+	+				
Long Term	+	+	+	+	+	+	+	+	+				

Significant Effects

This action is high level and non spatial for a detailed assessment however through developing a mechanism for recording flood events and sharing the information with the public and partners it is likely to have a positive impact on all the SEA objectives. It will lead to increased understanding of local flood events thereby providing the local community, service providers and other relevant bodies with the knowledge of flood risk areas and how to minimise the impact of localised flooding to the benefit of the environment, society and resources. Improving the evidence base for spatial planning and development control will enable more informed decisions on the location of new development with regards to flood risk areas.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

There are no secondary, cumulative or synergistic effects identified at this stage.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

7.2.3 Consenting and Enforcement Activities on Ordinary Watercourses

The two actions categorised under this group are:

 Develop risk based categorisation of ordinary water courses to inform inspection and enforcement

Inspection, consenting and enforcement activity on ordinary watercourses

Impact on SEA objectives

	SEA O	SEA Objectives														
	1	2	3	4	5	6	7	7 8 9								
Short Term	+	+ + + n/a + +														
Medium Term	+	+	+	+	+											
Long Term	+	+	+	+	n/a	+	+	+	+							

Significant Effects

The Advice Note by the Environment Agency on Ordinary Watercourse Regulation (Feb 2012) states that the purpose of ordinary watercourse regulation is to control certain activities that might have an adverse flooding impact. Therefore, by setting out actions to inform and then carry out inspections, consenting and enforcement of activities there will be positive impacts on the majority of SEA objectives because they are compatible with the aims of the SEA framework.

The actions are not applicable to SEA objective 5 as they do not deal with locating proposed development.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

There are no secondary, cumulative or synergistic effects identified at this stage.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

7.2.4 Surface Water Management Plans

The action categorised under this group is:

Develop Surface Water Management Plans based on the boundaries of the 10 district authorities

Impact on SEA objectives

	SEA O	SEA Objectives											
	1	2	3 4 5 6 7 8										
Short Term	+	+	+	+	n/a	+	+	+	+				
Medium Term	+	+	+	+	n/a	+	+	+	+				
Long Term	+	+	+	+	n/a	+	+	+	+				

Significant Effects

Surface Water Management Plans aid understanding of the causes and effects of surface water flooding in a specific area as well as set out the most cost effective ways of managing surface water flood risk for the long term. This action is high level and non-spatial to allow for a detailed assessment; however the production of SWMPs across the whole of the county should have positive impacts on the majority of the SEA objectives. They will provide a comprehensive overview of surface water movement and set out the solutions for mitigating and minimising the impacts and instances of local flooding in each of the districts which is compatible with the aims of the SEA framework.

The action is not applicable to SEA objective 5 as it does not deal with locating proposed development.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

There are no secondary, cumulative or synergistic effects identified at this stage.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

7.2.5 Flood Risk Management Partnerships

The two actions categorised under this group are:

- Where necessary establish appropriate Partnership arrangements for flood risk management
- Maintain appropriate Partnership arrangements

Impact on SEA objectives

	SEA O	SEA Objectives										
	1	1 2 3 4 5 6 7 8										
Short Term	0	0 0 0 0 0 0										
Medium Term	0	0	0	0	0	0	0	0	0			
Long Term	0	0	0	0	0	0	0	0	0			

Significant Effects

There are no significant effects identified at this stage.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

In principle, partnership working should have positive impacts across the SEA objectives as it allows for the pooling of knowledge between disparate stakeholders as well as efficient co-ordination of time and resources to effectively manage flood risk. These positive impacts would be secondary to the main aim of these actions which is to set out and maintain partnership arrangements for the LFRMS.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

7.2.6 SuDS

The action categorised under this group is:

• Establish SuDS Approval Body (SAB) to operate in Hertfordshire

Impact on SEA objectives

	SEA O	SEA Objectives										
	1 2 3 4 5 6 7 8											
Short Term	0	0	0	0	0	0	0	0	0			
Medium Term	0	0	0	0	0	0	0	0	0			
Long Term	0	0	0	0	0	0	0	0	0			

Significant Effects

There are no significant effects identified at this stage.

Temporal Effects

There are no temporal effects identified at this stage.

Secondary, Cumulative and Synergistic Effects

The SuDS Approval Body's role will be to approve and adopt SuDS that meet national standards as well as secure their long term management. This will contribute to minimising the risk of surface water flooding to development and infrastructure (SEA objective 1, 4 and 5), adapting development to climate change (SEA objective 9) and enhancing water quality (SEA objective 2). However, these positive impacts would be secondary to the main aim of this action which is to establish SuDS Approval Body.

Mitigation/Recommendations

There are no mitigation measures or recommendations identified at this stage.

8 CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

The six key principles which form the Vision of the Strategy capture and support the majority of the themes within the SEA objectives. There will be significant positive impacts on SEA objective 4 where the Vision seeks to minimise the potential impacts and reduce the likelihood of flooding on infrastructure. The Vision also specifically seeks to ensure that all RMAs manage the effects of climate change which has a significant positive impact on SEA objective 9. A positive impact is associated with SEA objective 1 through the Vision's promotion of schemes that increase community understanding of local flood risk and help support communities and individuals in managing the risk and the impacts. The Vision also strives to consider the needs of the environment and society by seeking to pursue multiple benefits from flood risk management solutions which supports SEA objectives 2 (water), 3 (health and wellbeing), 6 (biodiversity) and 8 (soil and landscape). However, there is some ambiguity as to what aspects of the environment this refers to leading to the Vision recording an uncertain impact on SEA objective 7 (heritage). If it was made clear that the environmental benefits referred to the historic and built environment in addition to the natural environment the uncertain impact associated with SEA objectives 7 would become positive.

The high level objectives and identified approaches within the Strategy assist in meeting the Vision. The high level objectives directly seek to reduce the impact of flooding which supports all of the SEA objectives; however these outcomes could be strengthened if the objectives elaborated on what impacts they seek to reduce. The majority of SEA objectives are also impacted on in a positive manner through at least one of the approaches, as shown in the matrix in Table 5. The only SEA objective where this is not the case is objective 5 as many of the approaches are not relevant to locating new development in areas with the lowest probability of flooding. However it is recognised that such an issue would be sufficiently dealt with through the LDF process.

Significant positive impacts are associated with SEA objective 2 (water) where one of the high level objectives aims to enhance the water environment whilst addressing flood risk management issues. The other significant impacts identified, and shown in the matrix below, relate to the Strategy's approach to communicating understanding of flood risk.

There are also a number of secondary impacts associated with the implementation of these approaches, particularly for the approach which only sets out proposals for partnership development and operation and therefore has no direct impact on the SEA objectives. Indirect positive impacts will arise once the partnership has formed as it allows for the pooling of knowledge between disparate stakeholders as well as efficient co-ordination of time and resources to effectively manage flood risk. The other approaches promote indirect positive impacts on the environment and surroundings from local community actions to manage local flood risks or from solutions set out in the SWMPs.

Cumulative positive impacts on the SEA objectives are also likely where there is increased public engagement on local flood risk issues and by clarifying the approach to fund projects/schemes. It is anticipated that many local schemes will require local contributions to make them viable therefore, by increasing awareness of local flood risks and allowing communities to participate in strengthening local resilience schemes are more likely to go ahead.

TABLE 5: MATRIX SHOWING THE IMPACTS OF THE OBJECTIVES AND APPROACHES

Objectives and Approaches	SEA	A Obj	ective	es					
Objectives and Approaches	1	2	3	4	5	6	7	8	9
High Level Objectives		+	+	+	+	+	+	+	+
A Collaborative Approach to Flood Risk Management – Proposals for Partnership Development and Operation	0	0	0	0	0	0	0	0	0
Prioritising Local Flood Risk in Hertfordshire	+	+	+	+	n/a	0	0	0	+
Understanding and Prioritising Funding for Projects	+	+	+	+	n/a	+	+	+	+
Communicating Understanding of Flood Risk		0	+	0	n/a	0	0	0	++

The policies and procedures capture and support all the themes within the SEA framework and promote a number of significant positive impacts. Policy 4 and Procedure 3 will have the greatest significance to the SEA objectives as they seek to minimise the impacts from regulated activities on the natural environment (SEA objectives 2, 6 and 8), historic environment (SEA objective 7) and infrastructure (SEA objective 4) through a collaborative approach with the relevant body. Policy 2 and Procedure 1 will also have significant positive impacts on infrastructure (SEA objective 4) because the procedure requires immediate investigation of critical infrastructure where flooding has occurred in order to minimise the risk of future flooding. The procedure adopts a similar approach to residential and business properties that have experienced flooding which fully supports SEA objective 1 (existing development). Significant positive impacts could not be realised for Policy 1 owing to the need for further explanation of the type of 'additional benefits' that could be achieved. However, it did promote positive outcomes for all of the SEA objectives by adopting an inclusive and collaborative approach and ensuring that the management of flood risk is sustainable, thereby considering the effects on the environment, the economy and society.

Secondary positive impacts were identified where there were no direct impacts on the SEA objectives from the implementation of some of the policies. This is particularly true for Policies 3 and 6 where the consequence of registering third party structures and features should result in those that are significant being maintained thereby aiding the protection of local areas from surface water flooding. This is compatible with the aims of the SEA framework. Policy 2 is likely to have indirect positive impacts on many of the SEA objectives where the recording of flood events increases knowledge and understanding of local flood issues enabling effective mitigation measures to be implemented.

There was uncertainty with regards to the impacts from two of the other policies on SEA objective 7 (heritage) where in it unclear if the environment refers to townscapes and the historical environment in addition to the natural environment.

The policies and procedures will cumulatively have a strong contribution to minimising the risk and impacts of local flooding on existing development. Improving resilience at an individual and community level, together with the implementation of sustainable drainage schemes and greater ownership of maintaining assets raises the profile of local flood prevention and ensures that measures are adopted to minimise its impact.

TABLE 6: MATRIX SHOWING THE IMPACTS OF THE POLICIES AND PROCEDURES

Policies and Procedures	SEA	A Obj	ective	es					
Policies and Procedures	1	2	3	4	5	6	7	8	9
Policy 1: Role of Lead Local Flood Authority	+	+	+	+	+	+	+	+	+
Policy 2: Investigation and Reporting of Flood Events & Procedure 1: Reporting and Investigation of Flooding Events	+	0	+	+	0	0	0	0	0
Policy 3: Register of Structures and Features & Procedure 2: Significance of Structures and Features	+	+	+	+	0	+	/	+	0
Policy 4: Consenting and Enforcement Activities Relating to Ordinary Watercourses & Procedure 3: Regulation of Ordinary Watercourses	+	++	+	++	n/a	++	++	++	+
Policy 5: Sustainable Drainage (SuDS) Approval Body & Procedure 4: SuDS Approval Body	+	+	+	+	+	+	/	+	+
Policy 6: Designation of Structures and Features & Procedure 5: Designation of Structures and Features	0	0	0	0	0	0	0	0	0

Collaboratively, the actions set out within Part 3 of the LFRMS fully support the SEA Objectives as shown in Table 7. They are high level and non-spatial to allow for a detailed assessment; however the implementation of three of the grouped actions - Development of Information on Flood Risk and Flood Risk Management in Hertfordshire, Consenting and Enforcement Activities on Ordinary Watercourses, and Surface Water Management Plans will result in direct positive impacts on all the SEA objectives to which they are relevant. The former develops a mechanism for recording flood events and sharing information with the public and partners which will increase understanding of local flood events thereby providing the local community, service providers and other relevant bodies with the knowledge of flood risk areas and how to minimise the impact of localised flooding to the benefit of the environment, society and resources. It also seeks to improve the evidence base for

spatial planning and development control, which will enable more informed decisions on the location of new development with regards to flood risk areas, therefore positively impacting on SEA objective 5. The latter two groups of actions support the majority of the SEA objectives through the production of SWMPs which provide a comprehensive overview of surface water movement and set out the solutions for mitigating and minimising the impacts and instances of local flooding, and through ordinary watercourse regulation which controls certain activities that might have an adverse flooding impact. They are not applicable to SEA objective 5 as they are not relevant to the locating of proposed development.

The other three sets of actions - Register of Structures and Features, Flood Risk Management Partnerships and SuDS, all promote secondary impacts. The main aims are to establish a register, partnership working and a SuDS approval body which do not directly impact on the SEA objectives. However, work undertaken following the creation of these should have a positive impact of the SEA objectives. Once structures and features are placed on the register they will be maintained and where necessary improved to protect local areas from surface water flooding which is compatible with the aims of the SEA framework. The partnership working should lead to the pooling of knowledge between disparate stakeholders as well as efficient coordination of time and resources to effectively manage flood risk and the SuDS Approval Body will approve and adopt SuDS that meet national standards as well as secure their long term management, thereby contributing to the management of surface water in the county.

TABLE 7: MATRIX SHOWING THE IMPACTS OF THE ACTIONS

Actions		A Obj	ective	es					
Actions	1	2	3	4	5	6	7	8	9
Register of Structures and Features	0	0	0	0	0	0	0	0	0
Development of Information on Flood Risk and Flood Risk Management in Hertfordshire	+	+	+	+	+	+	+	+	+
Consenting and Enforcement Activities on Ordinary Watercourses	+	+	+	+	n/a	+	+	+	+
Surface Water Management Plans	+	+	+	+	n/a	+	+	+	+
Flood Risk Management Partnerships	0	0	0	0	0	0	0	0	0
SuDS	0	0	0	0	0	0	0	0	0

The intention of the Strategy is to set out the roles and responsibilities and to improve local flood risk management so as to minimise the impact of flooding on infrastructure, businesses and properties. Together, the actions, approaches and procedures provide a clear direction as to the delivery of the Strategy's Vision and

objectives, and do not appear to have any significant negative impacts on the environment.

8.2 Recommendations

The assessment of the vision, objectives, approaches, policies and procedures, and actions has identified a number of areas where the LFRMS could be strengthened to promote a more sustainable approach. The recommendations will help inform further stages in preparation of the LFRMS. They are detailed below:

- Within the Vision provide greater detail on the types of multiple benefits that the measures should aim to achieve and include preferred measures and their specific benefits (i.e. SuDS which reduces pollution and can offer amenity and recreational value).
- Reinforce the positive outcomes associated with the high level objectives by elaborating on what impacts they seek to reduce. This could involve the inclusion of list of topics that flooding can impact on.
- Provide greater clarity on what the 'opportunities for additional benefits' could be in Policy 1 in order to strengthen the positive impacts on the SEA objectives.
- Provide a general definition within the LFRMS of what the Strategy's interpretation of the 'environment' is. This would resolve ambiguity as to whether it refers to the natural environment only or townscapes and the historical environment. If it is clarified that the term refers to all environments the LFRMS would have a greater positive effect on SEA objective 7 (heritage) in a number of areas.
- The LFRMS should reinforce the positive impacts reported for the SEA objectives by including a list of clearly stated wider environmental objectives within the Strategy.

9 MONITORING AND NEXT STEPS

9.1 Monitoring

The significant environmental effects of implementing this Strategy must be monitored in order to identify unforeseen adverse effects and to be able to undertake appropriate remedial action. Annex C of this Environmental Report contains suggested indicators in order to monitor each of the SEA Objectives, however these may not all be collected due to limited resources and difficulty in data availability or collection. Annex 4 of the Strategy also lists the national flood risk indicators which will be collected by Hertfordshire on a regular basis.

Monitoring of the Strategy's implementation will occur on an annual basis so that it can effectively inform the review and update of the annual work programme. Reporting of indicators will also be required for the early review of the Strategy which is expected after three years and any subsequent reviews to ensure the Strategy continues to have no significant impacts. Further details will be provided within the Adoption Statement.

9.2 Next Steps

This Environmental Report will be subject to public consultation alongside the Hertfordshire Local Flood Risk Management Strategy.

All comments on the content of the Environmental Report, this Non-Technical Summary and the accompanying annexes should be sent to:

floodandwatermanagement@hertscc.gov.uk

Flood and Water Management c/o Hertfordshire County Council **CHN215** County Hall Hertford SG13 8DN

Please clearly identify any comments which relate to the SEA and the Environmental Report, and respond within the consultation deadline.

All responses received will be reviewed and taken into consideration for the next stage of appraisal process.