

Wokingham Local Flood Risk Management Strategy: Strategic Environmental Assessment -Draft Environmental Report Wokingham Borough Council September 2014

Quality Management

Issue/revision	Issue 1	Revision 1	Revision 2	Revision 3
Remarks	Draft for consultation			
Date	September 2014			
Prepared by	Russell Buckley			
Signature				
Checked by	Nic MacMillan			
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Authorised by	Nic MacMillan			
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Project number	62003342			
Report number	1			
File reference	London			

Wokingham Local Flood Risk Management Strategy: Strategic Environmental Assessment -Draft Environmental Report

Wokingham Borough Council

September 2014

Client

Wokingham Borough Council

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1. Introduction

1.1. Purpose of this Report

- 1.1.1. Wokingham Borough Council (WBC) is in the process of developing its Local Flood Risk Management Strategy (LFRMS). As part of the work, a Strategic Environmental Assessment (SEA) is required. WSP UK Ltd has been appointed by WBC to carry out the SEA and prepare this report.
- 1.1.2. The purpose of the SEA is: "To provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development" (SEA Directive Article 1).
- 1.1.3. This Draft Environmental Report is a consultation document for the statutory consultation bodies with environmental responsibilities in England (the Environment Agency, Natural England and English Heritage) and the public. This report sets out the results of an assessment of the Draft LFRMS.
- 1.1.4. A separate Scoping Report was produced and consulted on in August September 2013. The Environment Agency, Natural England and English Heritage were consulted at that stage. The Scoping Report sets out the results of Stage A of the SEA Process and provides details on the proposed approach to later stages of the work.

1.2. Background to the SEA

- 1.2.1. SEA became a requirement when the European Directive 2001/42/EC 'on the assessment of the effects of certain plans and programmes on the environment' (known as the 'SEA Directive') was implemented in Member States in July 2004. The Directive was transposed in England through the Environmental Assessment of Plans and Programmes Regulations, 2004.
- 1.2.2. Under the Flood and Water Management Act (2010) ('the Act'), local authorities were given a new role to manage local flood risk in their area. The Act requires Lead Local Flood Authorities (LLFAs), which include WBC, to produce a LFRMS. These strategies must be consistent with the National Flood and Coastal Erosion Risk Management Strategy. They will set out a vision for the management of flood risk and, although the Act specifies some of the key elements that must be included in the LFRMS, it is intended that they will be locally specific, reflecting key local issues and enabling communities to be more involved in decision-making regarding flood risk management.
- 1.2.3. The Act defines local flood risk as flood risk from:
 - Surface runoff;
 - Groundwater; and
 - Ordinary watercourse (those that do not form part of a 'main river').

Guidance on the production of LFRMSs¹ refers to the need for them to be subject to SEA, stating that "the local FRM Strategy is likely to require statutory SEA, but this requirement is something the LLFA must consider".

1.2.4. Given the uncertainty around the need for SEA and the likely delays and costs associated with screening, WBC has decided to take a pragmatic approach and subject the LFRMS to SEA. It is also noted that the guidance recognises that: "*LLFAs should take a proportionate approach to applying SEA to local strategies particularly when environmental effects are not evident in the early stages of plan development. As the detail of plans develops, SEA should be reviewed*".

¹ Framework to assist the development of the Local Strategy for Flood Risk Management 'A Living Document' 2nd Edition, November 2011

1.3. Key elements of the LFRMS Document

- 1.3.1. Under the Act, WBC now has a key role in the management of flood risk and this includes a duty to develop and maintain a local strategy for flood risk management.
- 1.3.2. The purpose of this strategy is to explain how WBC will manage flood risk from surface water, groundwater and ordinary watercourses, now and in the future. It will provide details of other organisations that are responsible for managing flood risk and what those responsibilities are.
- 1.3.3. The Strategy provides a set of 6 local flood risk management objectives and 28 associated management measures that will ensure that the objectives are achieved within Wokingham. It will also help individuals, communities and businesses understand flood risk and what action they can take to reduce the impacts of flooding.

The Act requires LFRMSs to specify:

- The risk management authorities within the authority's area. In Wokingham, these are:
 - WBC as Lead Local Flood Authority
 - The Environment Agency;
 - Thames Water;
- In addition, the following stakeholders also have a key role:
 - WBC as Highway Authority and Planning Authority;
 - Town and Parish Council's;
 - The Highways Agency;
 - The Thames Regional Flood and Coastal Committee;
 - Thames Valley Local Resilience Forum;
 - Residents Associations and Flood Groups;
 - Developers; and
 - Other Groups and Stakeholders.
- The flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area;
- The assessment of local flood risk for the purpose of the strategy;
- The objectives for managing the local flood risk (including any objectives included in the authority's flood risk management plan prepared in accordance with the Flood Risk Regulations 2009);
- The measures proposed to achieve those objectives;
- How and when the measures are expected to be implemented;
- The costs and benefits of those measures, and how they are to be paid for;
- How and when the strategy is to be reviewed; and
- How the strategy contributes to the achievement of wider environmental objectives.
- 1.3.4. Lead Local Flood Authorities (LLFA's) must consult risk management authorities that may be affected by the strategy as well as the general public about its LFRMS.

1.4. Scope of the SEA

1.4.1. The SEA Directive identifies a range of factors that need to be considered. The Directive makes it clear that this list is not exhaustive. The factors identified are as follows:

- Biodiversity; Fauna & Flora
- Population;
- Human Health;
- Soil;

- Water;
- Climatic Factors;
- Material Assets;
- Cultural Heritage;
- Landscape.
- 1.4.2. The SEA Directive and associated guidance do not define the range of issues that need to be considered under each topic but it is significant that the Directive includes reference to 'population', 'human health' and 'material assets'. These topics suggest that the Directive takes a wide definition of the term 'environment' to include impacts on people and the built environment, as well as the natural environment.
- 1.4.3. This approach is consistent with the concept of sustainable development. The most widely used and recognised definition of Sustainable Development is taken from the report 'Our Common Future' produced by the World Commission on Environment and Development in 1987 (Brundtland Report).

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

1.5. Sustainable Development

- 1.5.1. The government outlined the United Kingdom's approach to sustainable development in the 'UK Government Sustainable Development Strategy' (March 2005). Within this document the government identifies five guiding principles with which the United Kingdom's sustainable development strategy would be developed:
 - Living within Environmental Limits;
 - Ensuring a Strong Healthy and Just Society;
 - Achieving a Sustainable Economy;
 - Promoting Good Governance; and
 - Using Sound Science Responsibly.



1.5.2. The guiding principles are further explained in the diagram below which is taken from the government's strategy.



1.5.3. The previous Government also produced a definition of sustainable communities:

"Places where people want to live and work, now and in the future. They meet the diverse needs of existing and future residents, are sensitive to their environment, and contribute to a high quality of life. They are safe and inclusive, well planned, built and run, and offer equality of opportunity and good services for all"

- 1.5.4. Sustainable communities embody the principles of sustainable development, they:
 - Balance and integrate the social, economic and environmental components of their community;
 - Meet the needs of existing and future generations; and
 - Respect the needs of other communities in the wider region or internationally also to make their communities sustainable.

1.6. Overview of the SEA Process

- 1.6.1. The SEA process consists of the following stages:
 - Stage A: Setting the context and objectives, especially the baseline and deciding the scope;
 - Stage B: Developing and refining options;
 - Stage C: Appraising the effects of the LFRMS;

- Stage D: Consulting on the Strategy and the SEA Report; and
- Stage E: Monitoring Implementation of the Strategy.
- 1.6.2. The tasks associated with these stages are shown in Figure 1.1 at the end of this section.
- 1.6.3. This Draft Environmental Report covers Stages B and C (in addition to summarising the results of Stage A).

1.7. Habitat Regulations Assessment (HRA)

- 1.7.1. In addition to SEA, as part of the work for the LFRMS consideration must be given to the potential for significant effects on sites of European importance for nature conservation. WSP UK Ltd have been appointed by the Council to consider the need for HRA and prepare a separate report.
- 1.7.2. The purpose of the HRA report is to:
 - Confirm the study area and the European sites that need to be considered;
 - Consider the policy context within which the work will be undertaken;
 - Confirm the overall methodology;
 - Identify the issues to be considered; and
 - Contribute to an audit trail for HRA related work.

1.8. Structure of this Report

1.8.1. The tasks undertaken in this report and their location are given in Table 1.1.

Table 1.1 – Report Structure

Structure of the Environmental Report	Information to include	
Chapter 2 – Appraisal Methodology	Purpose of the SEA and the Environmental Report The LFRMS objectives Reasonable alternatives Appraisal of the LFRMS Difficulties in undertaking the SEA When the SEA was carried out Who carried out the SEA Who was consulted, when and how	
Chapter 3 – Environmental Objectives, Baseline and Context	Overview of the area Review of relevant policies, plans and programmes Review of the baseline Review of key issues	
Chapter 4 – The SEA Framework	The SEA Framework Relationship between the SEA Directive topics and the objectives	
Chapter 5 – Results from the Assessment	Assessing the LFRMS Assessing the LFRMS against Defra's high level themes Outcomes of the SEA of the LFRMS Secondary, cumulative and synergistic effects Conclusions and recommendations	



Structure of the Environmental Report	Information to include
Chapter 6 – Next Steps	Monitoring Post-consultation issues

1.8.2. Throughout this report a series of grey boxes are used to demonstrate which element of the SEA Directive the report is complying with.

1.9. How to Comment on this Report

1.9.1. Please send comments to:

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Figure 1.1 – The SA process





2. Appraisal Methodology

2.1. Introduction

2.1.1. This Chapter sets out the approach that has been taken to assessing the LRFMS, including consultation undertaken and difficulties encountered.

2.2. Purpose of the SEA and the Environmental Report

2.2.1. As noted in the introduction to this report a LFRMS must be screened for SEA. Given the uncertainty around the need for SEA and the likely delays and costs associated with screening, WBC has decided to take a pragmatic approach and subject its emerging LFRMS to SEA. This Draft Environmental Report sets out the method used to undertake the work, summarises the baseline information and presents the findings of the assessment.

Methods used to evaluate the effects are described, including how significance of effects has been approached.	Practical Guide to the SEA Directive Appendix 9.
The Environmental Report should consider "reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme" and give "an outline of the reasons for selecting the alternatives dealt with"	Article 5.1 and Annex I (h) of the SEA Directive
Alternatives include 'do minimum' and/or 'business as usual' scenarios wherever relevant.	Practical Guide to the SEA Directive Appendix 9.
The environmental effects (both adverse and	Act Regulation 12(2)(b)
beneficial) of each alternative are identified.	Act Schedule 2(8)
Inconsistencies between the alternatives and other	Act Regulation 12(2)(b)
and explained.	Act Schedule 2(8)
Realistic alternatives are considered and the	Act Regulation 12(2)(b)
reasons for choosing them are documented.	Act Schedule 2(8)

2.3. The LFRMS objectives

- 2.3.1. The objectives of the LFRMS are an integral part of flood risk management for Wokingham. They have been produced to be consistent with the 6 objectives of the National Flood and Coastal Erosion Risk Management Strategy for England (2011):
 - Community focus and partnership working;
 - A catchment 'cell' approach;
 - Sustainability;
 - Proportionate, risk-based approach;
 - Multiple benefits; and
 - Beneficiaries should be allowed and encouraged to invest in local risk management.

2.3.2. The objectives of the LFRMS are considered to be robust and effectively deliver the requirements of the National Flood and Coastal Erosion Management Strategy for Wokingham. They will be subject to public consultation and potentially amended in light of the outcomes of the consultation exercise.

2.4. Reasonable alternatives

The Do Nothing Scenario

- 2.4.1. The do nothing scenario would see none of the benefits of the proposed LFRMS as set out in Section 5 of this report realised. Given that flood risk in Wokingham presents a real risk to people and property, proactive steps need to be taken to address flood risk in the borough. As such, the do nothing scenario is considered significantly less desirable in principal. In addition, the LFRMS is required to be prepared under the Flood and Water Management Act 2010 and to not prepare the LFRMS would be in breach of this legislation.
- 2.4.2. The consideration of alternatives in SEA typically considers the hierarchy of alternatives:



approach is most suited to plans that either have policies that will lead to specific o

- 2.4.3. This approach is most suited to plans that either have policies that will lead to specific development project, or allocate land for development. The LFRMS is a legislative requirement that acts borough-wide and doesn't address the detailed implementation of measures 'on the ground'. Rather it addresses strategic priorities. As such, the particular mode or process, or the 'how it should be done?' is where there are potential options.
- 2.4.4. Table 2.1 identifies the additional alternatives identified that were not included in the draft LFRMS, along with a commentary on their likely environmental effects and the reason that they weren't included. Full assessment matrices have not been prepared for the assessment of alternatives as it would not be a like for like comparison with the assessment of the draft LFRMS, which assessed the combined measures under each objective.

Table 2.1 – Assessmen	t of re	easonable	alternatives
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Measure / Action	Likely environmental effects	Reason it wasn't included
Establish a formal group with these organisations in relation to flood risk management	This would have contributed to SEA objectives 4 and 5 of the SEA Framework (see Table 3.3), relating to flood risk and water quality respectively. Improved cross coordination between groups would be expected to lead to mutual learning and improved flood risk management practices.	It was considered that the organisations involved, including WBC, would have had insufficient resources available to undertake this.
Promote schemes that pro- vide the best long-term bene- fits to residents	This would have contributed to a significant benefit against SEA Objective 2, improving health and wellbeing, due to its focus on	Not within the agency of the LFRMS.



Measure / Action	Likely environmental effects	Reason it wasn't included
	improving the lives of residents.	
Promote value for money schemes (capital costs, maintenance)	This would not have led to any significant environmental effects as it is a purely fiscal matter.	This was taken as a given in day-to-day business that need not be reiterated.
Provide education and train- ing for Flood Wardens	This would have contributed to a significant benefit again SEA Objective 2, improving health and wellbeing, as trained flood wardens would be expected to ensure residents safety during a flood event.	The resources required to undertake this were considered better directed towards developing Emergency Plans.
Actively encourage Flood Risk Management activities for residents, landowners and businesses, especially ripari- an owners. Action should be concentrated in the highest priority areas/wards initially	This would have contributed to a significant benefit again SEA Objective 2, improving health and wellbeing, as residents would be better prepared for flood events.	This was refined down to producing advice specifically for riparian land owners.
Ensure communities under- stand and are able to receive and respond to flood warn- ings	This would have contributed to a significant benefit again SEA Objective 2, improving health and wellbeing, as residents would be better able to act appropriately during a flooding event.	This measure was not specific enough and has since been revised to 'Publicise the Floodline Warnings Direct service and encourage residents in areas at risk from flooding to sign up to the service. Identify areas where local telemetry systems could be installed.

2.4.5. So as can be seen, the reasonable alternative identified would have been expected to lead to environmental benefits, however they were not taken forward for other reasons, such as their being further refined, their being outside the scope of the LFRMS or their being insufficient resources available to take the alternative forward.

2.5. Appraisal of the draft LFRMS

- 2.5.1. The LFRMS is structured as follows:
 - Section A: Introduction;
 - Section B: Legislative and Policy Context;
 - Section C: Roles and Responsibilities;
 - Section D: Understanding Flood Risk in Wokingham;
 - Section E: Managing the Likelihood and Impact of Flooding in Wokingham Borough;
 - Section F: Funding and Delivery;
 - Section G: Action Plan;
 - Section H: Review and Development of the Strategy;

2.5.2. Those sections of the LFRMS that provide background and contextual information do not need to be assessed. The assessment has focussed on the objectives of the draft LFRMS and the associated measures, both of which are set out in Section G.

2.6. Difficulties in undertaking the SEA

Difficulties such as deficiencies in information or methods are explained.	Practical Guide to the SEA Directive Appendix 9.
Technical, procedural and other difficulties encountered are discussed; assumptions and uncertainties are made explicit.	Article 5 and Annex I(h)

- 2.6.1. This Report is required to identify any limitations and assumptions. Assumptions with regards to assumed or 'built-in' mitigation are identified in Section 3 of this Report. No limitations beyond those associated with the strategic nature of an SEA have been identified in undertaking the work.
- 2.6.2. The difficulties encountered related to the strategic nature of the LFRMS and preliminary nature of many of the actions it contains, which made it difficult to identify the potential environmental effects. This simply reflects the strategic nature of the document.

2.7. When the SEA was carried out

2.7.1. A Draft Scoping Report was prepared for consultation. The draft SEA Scoping Report was made available from 7 August 2013 – 11 September 2013 for a five week period of consultation. The appraisal of the LFRMS was undertaken between May 2014 and September 2014.

2.8. Who carried out the SEA

2.8.1. This Environmental Report has been prepared by WSP UK Ltd.

2.9. Who was consulted, when and how

Consultation Authorities are consulted in appropriate ways and at appropriate times on the content and scope of the Environmental Report. There is evidence that scoping responses have been reflected in the ER.	Article 5.4
Explains who was consulted, at which stage in the assessment process, and what methods of consultation were used.	Practical Guide to the SEA Directive Appendix 9.

2.9.1. The three English statutory consultees were consulted on the Draft Scoping Report. The comments received have been taken into account in undertaking this Draft Environmental Report and are summarised in Appendix D.



3. Environmental Objectives, Baseline and Context

3.1. Introduction

3.1.1. This section of the report and associated appendices present the results of Task A1 (Identifying other relevant plans, programmes and sustainability objectives), Task A2 (Collecting baseline information) and Task A3 (Identifying sustainability issues and problems).

3.2. Overview of the Area

- 3.2.1. Wokingham Borough covers an area of 178.9 square kilometres that is generally rural in character, with farmlands to the north, east and south-west of the Borough. To the north the area is part of the Metropolitan Green Belt. The Borough is made up of 17 parishes and towns. Wokingham, the administrative centre, is an old market town that retains its character but only houses one fifth of the Borough's population. Two fifths of the Borough's population live in the towns of Woodley and Earley, which adjoin the Borough of Reading.
- 3.2.2. The Borough is situated 30 miles to the west of London and borders Reading, South Oxfordshire, Wycombe, Windsor and Maidenhead, Bracknell Forest, Hart, Basingstoke and Dean and West Berkshire. The historic market town of Wokingham, the villages of Sonning and Wargrave and the rural communities of Finchampstead and Remenham contrast with the more modem developments of Lower Earley and Woodley.
- 3.2.3. The Borough has a strong regional economy dominated by the IT, communications and pharmaceutical sectors. Major international companies such as Oracle, Microsoft and BG Group, Johnson and Johnson, Jacobs, ING Direct, Foster Wheeler. The University of Reading is also located within the Borough.
- 3.2.4. In 2011 the Census showed that Wokingham Borough had a population of 154,380, in comparison to 150,229 in 2001. The population of the Borough has grown by 2.8% in ten years; this growth however is not universal across all age groups.
- 3.2.5. The Borough is a vital part of the economically buoyant South East area. As part of this, the Borough is regarded as a prosperous area with a thriving local economy and low unemployment record. The Borough's position in south east England and its good links to the transport network have been key factors in its development. The Borough benefits from six rail stations and is in close proximity to Heathrow Airport. The River Thames is one of the Borough's most significant landscape features. The River Thames forms a natural boundary to the north of the Borough between Remenham and Henley.
- 3.2.6. A number of rivers run through Wokingham Borough including the River Thames and its tributary the Foudry Brook, and the River Loddon and its tributaries the Twyford Brook, Emm Brook, Barkham Brook and the River Blackwater, which are the responsibility of the Environment Agency(EA). Associated with these main rivers are a number of smaller watercourses, which are known as ordinary watercourses and are under the jurisdiction of Wokingham Borough Council.
- 3.2.7. The north of the Borough is underlain by chalk bedrock, classified as a principal aquifer indicating very permeable rock with high water-bearing potential. Adjacent to the chalk is Lambeth Group geology (clay, silt and sand), and in the south east of the Borough there are bands of Bagshot, Windlesham and Camberley (sand based rocks) and Claygate (sand, silt and clay). Whilst not as permeable as the chalk, these rocks do influence fluvial flood risk as they have reasonable water bearing potential and are classed as secondary aquifers. Areas overlying either principal or secondary aquifers are at risk of groundwater flooding if the water table reaches the ground surface.

3.3. Review of Relevant Policies, Plans and Programmes (Task A1)

3.3.1. The SEA Directive requires consideration of the following:

The "relationship [of the plan or programme] with other relevant plans and programmes" (Annex I(a))

"The environmental protection objectives, established at international, [European] Community or[national] level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation" (Annex I (e))

- 3.3.2. The review of policies, plans and programmes (PPPs) for the purpose of the SEA identifies relevant objectives that relate to the plan being assessed. This is an important step in identifying potential policy conflicts early in the strategy making process so that it can be adapted to reduce or eliminate the conflict. It also provides the opportunity to identify the synergistic benefits that the strategy might have.
- 3.3.3. It is relevant to note here that the LFRMS must itself demonstrate how it contributes to the achievement of wider environmental objectives. Section 9 of the Flood and Water Management Act details the statutory requirements for Local Flood Risk Management Strategies and include this as a requirement. The SEA team and authors of the LFRMS have worked together to ensure that relevant objectives are reflected in both the Strategy and the SEA.
- 3.3.4. The review of plans and programmes in the context of the SEA seeks to be selective and adopts the principle that local documents are identified first, then documents at the regional level, then documents at the national level (if they have not been enacted through a policy document at the local or regional level) and then documents at the European level (if they have not been enacted at the national level). This approach helps reduce the number of documents that need to be reported on and to focus the assessment.
- 3.3.5. Appendix A sets out the review of relevant policies, plans and programmes, including key objectives. These have been used to inform the SEA assessment process. It has been reviewed and updated following comments on the SEA Scoping Report from the Statutory Consultees. The key documents that have been identified are:
 - The Natural Environment and Rural Communities Act (2006) This places a duty on flood authorities to have regard, so far as is consistent with the proper exercise of their functions, to conserve biodiversity, including restoring or enhancing species populations or habitats;
 - The Natural Environment White Paper (The Natural Choice: Securing the Value of Nature), 2011 - The first Government White Paper dealing with the natural environment in over 20 years, marking the most significant shift in environmental policy for a generation "by 2060, our essential natural assets will be contributing fully to robust and resilient ecosystems, providing a wide range of goods and services so that increasing numbers of people enjoy benefits from a healthier natural environment.";
 - The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 enabled the EU Water Framework Directive (2000) – The Directive came into UK law in 2003 and aims to protect and enhance water quality. It requires River Basin Management Plans to be drawn up in order to improve the water environment. The Regulations establish River Basin Management Districts in England;
 - Flood and Water Management Act (2010) This Act sets out the statutory requirement for Lead Local Flood Authorities (LLFAs) to produce a strategy for managing local flood risk. It therefore provides the legal basis for the production of the WBC LFRMS;
 - National Flood and Coastal Erosion Risk Management Strategy (2011) The Flood and Water Management Act requires all LFRMSs to be in conformity with this Strategy, which encourages more effective risk management by enabling people, communities, business, infrastructure operators and the public sector to work together to achieve better understanding of the risks of flooding both, nationally and locally, so that investment in risk management can be



prioritised more effectively. As such, the WBC LFRMS must have regard to the contents of the Strategy;

- Guidance for Risk Management Authorities on Sustainable Development in Relation to their Flood and Coastal Erosion Management Functions (2011) Section 27 of the Flood and Water Management Act 2010 requires certain flood and coastal erosion risk management authorities (including district councils) to aim to make a contribution towards the achievement of sustainable development when exercising their flood and coastal erosion risk management functions. It also requires the Secretary of State to issue guidance on how those authorities are to discharge this duty and explain the meaning of sustainable development in this context: this document does that and includes ten themes of sustainable development that apply to flood and coastal erosion risk management (FCERM). The ten themes in the guidance are considered to be relevant to the scope of this SEA, essentially the SEA provides an opportunity to ensure that the LFRMS will contribute to achievement of these objectives;
- The National Planning Policy Framework (2012) The NPPF has replaced the suite of planning policy statements and planning policy guidance which previously presented national policy in relation to Development and Flood Risk. The NPPF sets out the considerations that local planning authorities need to take account of in order to avoid new development increasing flood risk;
- River Basin Management Plan Thames River Basin District (2009) This plan is about the pressures facing the water environment in this river basin district and the actions that will address them. It has been prepared under the Water Framework Directive, and is the first of a series of six-year planning cycles;
- Thames Catchment Flood Management Plan (2009) The CFMP identifies flood risk management policies to assist all key decision makers in the catchment. It was produced through a wide consultation and appraisal process; however it is only the first step towards an integrated approach to Flood Risk Management.
- Strategic Flood Risk Assessment Strategy, Berkshire 5 Flood Risk Management Partnership, July 2012 - This report has set the legislative context and requirements for the local authorities in relation to their new responsibilities and duties under the Floods and Water Management Act. It sets out an overarching strategy for the authorities to aid in their collaborative working and helps them have a consistent approach in relation to managing flood risk. The strategy highlights priority areas based on existing modelling data and historic flood records for both urban and rural areas and guides the local authority on possible flood risk mitigation measures that can be incorporated to reduce this risk subject to their detailed local strategy concluding them necessary. The Strategy also provides possible funding roots that the local authorities could potentially use to alleviate the flood risk in highlighted areas;
- Wokingham Borough Strategic Flood Risk Assessment (SFRA) (2012) The SFRA provides an overview of all sources of flood risk throughout the Borough. This includes rivers, surface water, groundwater, large reservoirs/lakes and sewers. The SFRA builds upon existing Council knowledge of flood risk within the Borough and that sourced through consultation with the Environment Agency, Thames Water and local Town and Parish Councils. The SFRA informs the preparation of the Local Development Framework and gives essential information for the allocation of land for development. The SFRA also helps to inform future planning decisions, including those made on planning applications.
- Wokingham Core Strategy (2010). The Council has produced the Core Strategy to set out where development will occur within the borough to 2026, taking account of the health, wellbeing and quality of life of our residents. The Core Strategy includes policies about everything from homes, shops, offices and factories to libraries, schools and health & leisure facilities. The Council also needs to consider the avoidance of areas at risk of flooding, especially after the floods in 1999/2000 and July 2007, which caused disruption around the borough. This included the problems of accessing the facilities and services in Reading after the River Loddon burst its banks preventing access along most of the key highway routes. Arising from subsequent investigations, a number of flood mitigation schemes may be implemented.

Wokingham Borough Adopted Managing Development Delivery Local Plan (February 2014). A primary role of the Managing Development Delivery Local plan is to protect the historic and underlying character of the Borough by maintaining/improving the built/natural environment while mitigating the effect of new development on the environment. The Local Plan sets the policies and context for the delivery of built development in the borough. As such, it is a key document in ensuring that new development takes flood risk into account.

3.4. Review of the Baseline

- 3.4.1. The collection of baseline data serves three primary roles. Firstly, it is used to identify key environmental issues for the area affected by the strategy, which in turn informs the development of objectives. This is so that any environmental issues identified can be taken into account. Secondly, the baseline data is used to help assess potential effects on the environment. Thirdly, once the baseline has been established it is possible to extrapolate the future environmental baseline and how it might evolve without the plan.
- 3.4.2. The SEA Directive requires that the Environmental Report provides information on:

"relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme" and "the environmental characteristics of areas likely to be significantly affected" (Annex I (b), (c))

3.4.3. Appendix B sets out the review of the baseline data against the topic areas in Annex 1 (f) of the SEA Directive. The review also sets out the known gaps in the data and the difficulties encountered in its collection. The collection of baseline data was a desk-based exercise and was drawn from a variety of sources. The baseline data has been updated to incorporate comments received from the statutory consultees following consultation on the SEA Scoping Report.

3.5. Review of Key Issues

3.5.1. Key issues have been identified from the review of the relevant PPPs, other SEAs undertaken in the area and the baseline data. Table 3.1 below sets out the key issues against each topic area and considers the role of the LFRMS in helping to address these. In identifying key issues we have taken into account the 'zone of influence' of the LFRMS. This means answering the question 'given the purpose and scope of the LFRMS how might it impact on a particular topic, both directly and indirectly?'



Table 3.1 Key Issues by SEA Topic			
Topic (s)	Key Issues	Role of the LFRMS in addressing the issue	
Biodiversity / Flora and Fauna	 The Borough has a number of designated sites of international, national, regional and local conservation importance. Special Protection Areas (SPA): There are no SPA's in the Borough. Although 30% of the Borough lies within the 5km protection area for the Thames Basin Heath SPA Sites of Special Scientific Interest (SSSI): The Borough currently has 4 SSSIs, namely; Longmoor Bog; Heath Lake; Lodge Wood and Sandford Mill; and Standford End Mill & River Lodden. Country Parks: There are three within the Borough covering 233ha. Local Nature Reserves: There are 10 local nature reserves. 	Any policies in relation to maintenance should have regard to potential impacts on biodiversity flora and fauna, the LFRMS could have a role in putting such measures in place, particularly in instances where measures do not require planning permission. The LFRMS has a role in ensuring that future responses contribute to protecting and enhancing biodiversity, flora and fauna. Creation of new floodplain grasslands and/or wet woodlands that are designed to flood. Need to understand how flood risk areas correlate with designated areas.	
Population	18,245ha of property are within the local flood zone. Additionally more properties are potentially at risk of localised flooding from surface water, ground water and/or sewer overload.	The LFRMS should help to ensure that the Borough is able to accommodate planned new development without increasing local flood risk. The issues associated with an ageing population will need to be considered through Emergency Planning and fall outside the remit of the LFRMS.	
Human Health	Flooding can have a great impact on people's psychosocial needs and mental health. ²	The LFRMS will have a role in reducing flood risk. Following up on people's mental health needs following flood risk events falls outside the remit of the LFRMS.	

² The Effects of Flooding on Mental Health, Health Protection Agency, 2011

Table 3.1 Key Issues by SEA Topic			
Topic (s)	Key Issues	Role of the LFRMS in addressing the issue	
Soil	Flooding can lead to soil erosion. In relevant locations soil erosion can contribute to higher phosphate levels in water bodies.	The LFRMS will have a role in helping to avoid damage to soils, for example as a result of rapid surface run-off causing soil erosion.	
Water including Flood Risk	WFD target of 'good surface water status' requires both the ecological status and the chemical status of a surface water body need to be at least 'good'.	The LFRMS could have a role in achieving Water Framework Directive targets and reflect the catchment approach to planning.	
	Wokingham has experienced a number of flooding events in recent years that have affected people and businesses. Flood risk can occur from a range of sources including:	The central purpose of the LFRMS is to address flood risk in Wokingham.	
	 Surface water flooding; 		
	Groundwater flooding;		
	 Ordinary watercourse flooding; 		
	Sewer flooding;		
	 Highway flooding; 		
	 River flooding; and 		
	Reservoir flooding.		
Climatic factors	More intense weather conditions have implications for the location of development, design of buildings and the control of flood risk.	The LFRMS will need to take account of projected long – term changes in weather patterns and the potential for more frequent and severe flooding.	
Material assets	Although Material Assets are listed as a topic to be addressed in SEA, there is no definition as to what they might encompass. A common interpretation of Material Assets includes housing and infrastructure relating to areas such as energy, water and transport networks, it also includes social infrastructure such as schools, hospitals and other public buildings.	The LFRMS will have a role in ensuring that existing and planned material assets are resilient to future flood events do not contribute to increased flood risk in the future and, if possible, provide benefits in terms of reducing future flood risk in the wider area.	



Table 3.1 Key Is:	sues by SEA Topic	
Topic (s)	Key Issues	Role of the LFRMS in addressing the issue
	 Relevant assets include³: Housing infrastructure Health infrastructure; Social Infrastructure; Previously Developed Land; Minerals and Aggregates; Transport and Transport Infrastructure; Water Infrastructure; Energy Infrastructure; Environmental Infrastructure; Tourism and Recreation Infrastructure; Flood defence infrastructure and Waste and Waste Infrastructure. 	
Cultural heritage	 Wokingham Borough has 640 listed buildings including: Grade I: 9 Grade II*: 40 Grade II: 591 There are also 18 Scheduled Monuments, 16 Conservation Areas and 5 Registered Historic Parks and Gardens. The Berkshire Historic Environment Record currently notes over 1,000 archaeological sites within Wokingham. 	Any policies in relation to maintenance should have regard to potential impacts on cultural heritage, the LFRMS could have a role in putting such measures in place, particularly in instances where measures do not require planning permission. Need to understand how areas at flood risk correlate with designated features and the Historic Environment Character Zones.
Landscape	The Borough stretches across the Thames Valley floodplain and comprises diverse urban and rural landscapes. These characteristics heavily constrain opportunities for the location of development.	Need to understand how flood risk correlates with Areas of Outstanding Natural Beauty (AONB) and landscape character areas.

³ Adapted from *Strategic Environmental Assessment Guidance for Practitioners SEA Topic: Material Assets,* Countryside Council for Wales, 2007.

Table 3.1 Key Issues by SEA Topic						
Topic (s)	Key Issues	Role of the LFRMS in addressing the issue				
	The River Thames is one of the Borough's most significant landscape features and has an important role in providing leisure and tourist attractions.					



4. The SEA Framework

4.1. Introduction

4.1.1. The SEA Framework sets out the objectives, criteria, assumed mitigation and proposed 'scoring' system used for assessing the measures proposed by the LFRMS. The SEA scoring system ranges from 'significant negative' to 'significant positive'. The assessment process takes into account a variety of factors including baseline data and the plan policy context, but ultimately any score awarded is a matter of professional judgement. Table 3.3 presents the SEA framework.

4.2. The SEA Framework

- 4.2.1. The framework draws on the objectives used for the Borough's development plan and Local Transport Plan but also reflects WSP UK's experience of developing frameworks for other plans and programmes. For example landscape and built heritage have been given their own objectives rather than a combined objective.
- 4.2.2. It should be noted that when compiling the framework consideration was given to the 'zone of influence' of the LFRMS'. For example, the LFRMS has a specific zone of influence in relation to health associated with flood risk but cannot influence other public health issues such as obesity and heart disease.
- 4.2.3. The SEA Framework defines what are considered to be significant positives through to significant negatives for each objective, with the aims of achieving transparency in the assessment process and consistency across the assessment of different elements of the LFRMS. In setting out the definitions, due regard has been made to the assumed mitigation. The purpose of the assumed mitigation is to highlight policies and regulations external to the LFRMS that any development would need to comply with. As such, issues addressed by the assumed mitigation have been taken as a given when undertaking the assessment.
- 4.2.4. The criteria that support the objectives are intended as a reference to the sort of effects that a given objective may have. They are not intended to be used as a checklist against which all measures will be judged. Whilst all of the criteria will have been considered when assessing potential effects, not all of the criteria are referred to in the supporting commentary. This is because in the interests of brevity, the commentary seeks to discuss the most relevant issues for each objective. To comment on every issue for every objective (whether relevant or not) would be impractical, unreadable and due to the sheer volume of comments produced would not effectively inform the decision-making process. Ultimately the aim of the SEA is to help identify potential significant effects (both positive and negative) and suggest mitigation and enhancement.
- 4.2.5. In developing the framework the Department for the Environment, Food and Rural Affair's (Defra) guidance on what sustainable development means in the context of flood risk has been taken into account. Key points from the guidance are:
 - 1. **Risk Management.** Manage flood and coastal erosion risks to people and property, the economy and the environment;
 - 2. Adaptation. Take account of climate change and other long-term uncertainties in decision making;
 - 3. **Resilience.** Develop infrastructure and buildings which perform satisfactorily under a wide range of lifetime flood and coastal erosion loadings, without suffering permanent loss of functionality during extreme events;
 - 4. Integration. Develop solutions that integrate flood and coastal erosion risk management as part of integrated catchment management and coastal zone management;

- Engagement. Work with all those affected by flooding and coastal erosion, empowering 5. those affected to take appropriate actions to reduce risks;
- 6. Appraisal. Adopt appraisal methods that are rigorous, coherent and open and consider long term social, environmental and economic costs and benefits;
- 7. Environment. Protect natural and heritage assets and enhance the environment where it is most degraded;
- Consumption & Production. Promote sustainable consumption and production in all flood 8. and coastal erosion risk management activities;
- 9. Knowledge. Develop the knowledge, skills and awareness to improve our understanding of risk and to promote sustainable solutions; and
- 10. Well-being and social justice. Ensure that FCERM activities continue to contribute to community well-being and address issues of social justice.

4.3. Relationship between the SEA Directive topics and the Objectives

4.3.1. Table 3.2 below shows the relationship between the topics in the SEA Directive and the Objectives in the SEA Framework. It was proposed to scope out 'Air quality' on the grounds that the LFRMS is unlikely to significantly affect this topic. We understand that this approach is consistent with the Strategic Environmental Assessment undertaken for another recent SEA of a Local Flood Risk Management Strategy⁴.

Table 3.2: SEA Topics & Objectives					
Торіс	Objective(s)				
Biodiversity, Flora and Fauna	Objective 1				
Population	Objective 2 and Objective 5				
Human Health	Objective 2				
Soil	Objective 3				
Water	Objective 4				
Climatic factors	Objectives 5 and 6				
Material assets	Objective 7				
Cultural heritage	Objective 8				
Landscape	Objective 9				

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⁴ Kirklees Local Flood Risk Management Strategy Strategic Environmental Assessment Report, LUC, June 2012

Table 3.3: SEA Framework							
Proposed SEA Headline objectives	Sub-Objectives/Criteria	Assumed mitigation	Approach to scoring for LFRMS				
1. To conserve and enhance the Borough's biodiversity, including wildlife, river corridors and networks and to maximise opportunities for building-in beneficial features for biodiversity.	Will LFRMS help avoid a net loss, damage to, or fragmentation of designated wildlife sites and the populations of qualifying habitats and species? Will LFRMS help promote opportunities for people to come into contact with flourishing wildlife places whilst encouraging respect for and raising awareness of the sensitivity of these sites? Will the LFRMS impact on wildlife corridors? Will the LFRMS help ensure that new infrastructure incorporates ecological enhancements?	The Conservation of Habitats and Species Regulations 2010 protect listed species. It is assumed that there will be on- going monitoring of the condition of statutory designated sites by Natural England.	 ++ Measures that promote landscape scale biodiversity enhancements Measures ensure that new infrastructure incorporates ecological enhancements. Measures help promote opportunities for people to come into contact with flourishing wildlife places. + Measures avoid net loss, damage to, or fragmentation of designated wildlife sites and the populations of qualifying habitats and species. - Measures potentially harm locally designated habitats - Potential harm to nationally designated habitats. AND / OR Lead to fragmentation of existing corridors/ spaces 				
2. To improve the health and well-being of the population.	Will the LFRMS contribute to community well-being? Will the LFRMS contribute to social justice?	Emergency Plans will be prepared for major events, including severe weather events.	 ++ LFRMS demonstrably reduces health risk associated with flooding events + LFRMS will indirectly reduce health risk associated with flooding events - LFRMS will indirectly increase health risk associated with flooding event. - LFRMS demonstrably increases health risk associated with flooding events 				
3. To maintain and where appropriate improve soil quality, and to ensure land affected by contamination is	 Does the LFRMS reduce soil erosion? Does the LFRMS support the Berkshire Local 	A Good practice guide for handling soils was published by the Ministry of Agriculture, Fisheries and Food (MAFF) in April 2000 and provides advice in relation to soil stripping,	 ++ Measures directly support the Local Geodiversity Action Plan and/or protect soils + Measures indirectly support the Local Geodiversity Action Plan and/or protect soils 				

Table 3.3: SEA Frame	Table 3.3: SEA Framework						
Proposed SEA Headline objectives	Sub-Objectives/Criteria	Assumed mitigation	Approach to scoring for LFRMS				
remediated to a condition suitable for use	Geodiversity Action Plan? Does the LFRMS encourage the recycling and recovery of soils in construction?	replacement and decompaction Construction projects over £300,000 will require a Site Waste Management Plan in line with the Site Waste Management Plan regulations.	 Measures would indirectly work against the Local Geodiversity Action Plan and/or fail to protect soils - Measures would directly work against the Local Geodiversity Action Plan and/or fail to protect soils 				
4. To maintain, and, where appropriate improve water quality (including groundwater) and to achieve sustainable water resource management	Will the LFRMS help to protect foul drainage, sewage treatment facilities and surface water drainage? Will the LFRMS help improve the ecological status of groundwater and surface water?	 River Basin Management Plan provides the context for working towards targets in the Water Framework Directive. Environmental Permitting (England and Wales) Regulations 2010 provide protection against pollution of rivers and groundwaters. It is assumed that Environment Agency Pollution Prevention Guidelines for construction works will be adhered to, including: PPG 1: General Guide to the Pre- vention of Pollution of Water Re- sources; PPG 5: Works in, Near, or Liable to Affect Water Courses; PPG 6: Working at Construction and Demolition Sites; and PPG 8: Safe Storage and Dis- posal of Oils. 	++ Measures will directly help to improve water quality - Measures indirectly improve water quality - Measures directly impact on water quality				



Table 3.3: SEA Frame	Table 3.3: SEA Framework						
Proposed SEA Headline objectives	Sub-Objectives/Criteria	Assumed mitigation	Approach to scoring for LFRMS				
5. To reduce the risk of flooding and the resulting	Will the LFRMS contribute to a catchment based approach to managing flood risk?	The National Planning Policy Framework and Core Strategy provide the policy context for development and flood risk.	++ Policies avoid areas at risk of flooding and mitigate against any increase in flood risk associated with new development				
well-being, the economy and the environment by	Will the LFRMS help reduce flood risk?		+ Policies adopt sequential approach to flood risk and mitigate against any increase in flood risk associated with new development				
ensuring no inappropriate development in areas at risk of	Will the LFRMS encourage infrastructure and new building to adopt sustainable drainage and other relevant mitigation measures?		- Potential for development within area of high flood risk and failure to mitigate against any increase in flood risk				
flooding.			Potential for development within area of very high flood risk and failure to mitigate against any increase in flood risk.				
6. To increase energy efficiency and the proportion of energy	Will LFRMS encourage developments / infrastructure that is energy efficient in design and construction?	National Planning Policy Framework and Core Strategy provide policy context in relation to climate change adaptation and mitigation.	 ++ Measures directly encourage sustainable design and construction. ++Measures directly promote climate change adaptation for infrastructure and new development, 				
generated from renewable sources in the Borough	Will the LFRMS ensure new infrastructure is adapted to the unavoidable effects of climate change?		++ Measures enable adaptation in existing developed areas				
			+ Measures encourage sustainable design and construction.				
			+Measures encourage climate change adaptation for infrastructure and new development,				
			+ Measures encourage adaptation in existing developed areas.				
			- LFRMS somehow indirectly works against climate change adaptation or mitigation.				
			LFRMS cirectly works against climate change adaptation or mitigation.				
7. To protect material	Does the LFRMS protect	The National Planning Policy Framework and Core Strategy	++ Measures directly protect infrastructure				

Table 3.3: SEA Framework						
Proposed SEA Headline objectives	Sub-Objectives/Criteria	Assumed mitigation	Approach to scoring for LFRMS			
assets	vulnerable infrastructure?	provide the policy context for development and flood risk.	+ Measures indirectly protect infrastructure.			
			Measures would indirectly increase infrastructure's vulnerability to flood risk Measures would directly increase infrastructure's vulnerability to flood risk			
8. To protect and enhance the Borough's	Does the LFRMS protect such assets and/or their setting?	Any measures promoted through the LFRMS that constitute development would require Planning permission in	++ Measures would directly protect an asset and/or its setting and/or significance			
countryside and historic environment	Does the LFRMS effect the significance of a historic asset?	addition to listed building, conservation area or scheduled monument consent	+ Measures would indirectly protect an asset and/ or its setting and/or significance			
			- Measures would indirectly impact on an asset and/ or its setting and/or significance			
			Measures would directly impact an asset and/ or its setting and/or significance			
9. Appropriate new development makes a positive contribution	Does the LFRMS conserve and enhance the landscape?	None identified	++ Measures protect/enhance landscape assets			
or makes no material harm to the character, environment,			+Measures protect other elements of the landscape.			
landscape and heritage within the Borough			- Potential negative impact on other elements of the landscape.			
			Measures which would be detrimental to elements of the landscape.			



5. Results from the Assessment

5.1. Introduction

5.1.1. This section sets out the results of the assessment. It sets out the proposed mitigation and enhancement measures and identifies the conclusions⁵.

5.2. Assessing the LFRMS

- 5.2.1. The LFRMS has 6 objectives, each with associated measures/actions. The measures/actions have been designed to act as a cohesive set of measures that function together to deliver the objective. For this reason, the SEA assesses the LFRMS Objectives including the associated management measures against the SEA objectives as this most closely reflects how the LFRMS is intended to function in practice and allows for a better understanding of the interactions between the management measures.
- 5.2.2. The objectives of the LFRMS, and the associated a management measures, are as follows:
 - LFRMS Objective 1): Continue to improve knowledge and understanding of current and future local sources of flood risk within Wokingham borough:
 - M/A 1: Develop the investigations policy and implement this policy when investigating flood events;
 - M/A 2: Develop and maintain a live database of flood incidents in the borough;
 - M/A 3: Work to transfer the key information from the flood incident database to GIS. This GIS map can then be made accessible to all risk management authorities within Wokingham Borough;
 - **M/A 4:** Undertake a SWMP for the borough; and
 - M/A 5: Work to transfer the key information from the flood incident database to GIS. This GIS map can then be made accessible to all risk management authorities within Wokingham Borough.
 - LFRMS Objective 2): Work collaboratively and develop effective partnerships with other Flood Risk Management Authorities and local communities to deliver a sustainable, cost effective approach to flood risk management that reduces flood risk and provides wider environmental and social economic benefits where possible.
 - **M/A 6**: Continue to work with local communities to develop Flood Forums/ Partnerships in at risk areas in the Borough;
 - M/A 7: The findings and actions emerging from the SWMP will be promoted to local communities to involve them in the process of identifying solutions and implementing the actions;
 - **M/A 8:** The findings from the SWMP will be discussed with maintenance teams and the required actions identified in partnership;
 - **M/A 9:** Work with partners to identify flood alleviation schemes, and assess these schemes against the prioritisation tool;

⁵ Defra Guidance for risk management authorities on sustainable development in relation to their flood and coastal erosion risk management functions, October 2011

- M/A 10: Investigate the further use of social media techniques such as Datasquirt and WBC Facebook page to disseminate information and raise awareness within local communities; and
- **M/A 11:** Develop a prioritisation tool against which flood alleviation schemes can be assessed.
- **LFRMS Objective 3)**: Ensure that planning and decisions take full account of flood risk, avoiding development in inappropriate locations, minimising and preventing an increase in flood risk wherever possible:
 - **M/A 12**: Develop an internal procedure in order to efficiently and effectively undertake new duties as the SAB;
 - M/A 13: Undertake a skills assessment of all officers who are to be involved in the SAB. Any skills gaps will be met with staff training;
 - **M/A 14**: Develop a guidance document for SuDS, setting out the local standards that will be required for SuDS in Wokingham Borough in addition to the National Standards;
 - M/A 15: Identify the relevant stakeholders responsible for reviewing planning and drainage applications in Wokingham Borough, such as the sewage undertaker, the EA and WBC as the Highways Authority;
 - M/A 16: Review local flood policy and guidance to check that it is current, clear (independent review), and can easily be taken into account during the planning process; and
 - **M/A 17**: Prepare a briefing note on Flood Re and what affect it has on new developments.
- LFRMS Objective 4): Maintain and, where necessary, improve local flood risk management infrastructure and privately owned flood defence assets and Ordinary watercourses, to reduce risk:
 - **M/A 18:** Produce a guidance/advice note for riparian owners to ensure they are aware of their responsibilities to maintain their watercourses and associated assets;
 - **M/A 19:** Identify all the ordinary watercourses in Wokingham Borough and designate those they feel are 'high-risk'; and
 - **M/A 20:** Develop a prioritised list of structure categories (e.g. bridges, culverts, etc.) which potentially may have a significant effect on a flood risk in the Borough. The individual features within these categories will then be reviewed in order of priority and the significant features added to the Asset Register.
- LFRMS Objective 5): Ensure that emergency plans and responses to flood incidents are effective and that communities are prepared and resilient to local flood risk:
 - M/A 21: Encourage communities to produce Emergency Plans that consider flooding emergencies. These plans will help support the community and allow them to understand what actions they need to take during an emergency. WBC will encourage communities to log completed plans with the Wokingham Borough Community Resilience Team;
 - **M/A 22**: Continue to review all existing Emergency Plans to ensure they reflect existing/future flood risk;
 - M/A 23: Publicise the Floodline Warnings Direct service and encourage residents in areas at risk from flooding to sign up to the service. Identify areas where local telemetry systems could be installed; and
 - **M/A 24:** Work with local communities at risk from flooding to develop Flood Forums and work with these Forums to develop Flood Plans and encourage Flood Wardens.
- **LFRMS Objective 6)**: Identify national, regional and local funding mechanisms to deliver flood risk management solutions and schemes:



- **M/A 25:** Develop a timeline for funding opportunities and publicise this timeline to at risk communities/communities where potential schemes would be of benefit, to ensure sufficient time is provided to raise funds via partnership funding;
- **M/A 26:** Develop a programme of bids for funding;
- **M/A 27:** The prioritisation tool will produce a list of flood alleviation schemes in order of priority. The potential funding mechanisms which can be used to deliver each scheme will be identified, as well as the need and potential for partnership funding; and
- **M/A 28:** WBC will work with local communities to raise awareness of planned flood alleviation works, the prioritisation system and the need for and benefits of partnership funding.
- 5.2.3. Table 4.1 sets out a summary of the findings of the SEA. The full matrices can be found in Appendix C.

SEA Headline objectives		LFRMS Objectives							
		2	3	4	5	6			
1. To ensure biodiversity is conserved and enhanced	0	0	+	+	0	0			
2. To improve health and well- being and reduce inequalities	+	+	0	++	++	0			
3. To protect soils and Geodiversity	0	0	+	+	0	0			
4. To maintain and improve the water quality of the district's rivers and ground waters.	++	++	+	++	0	+			
5. To ensure that flood risk is not increased and where possible minimised	++	++	++	++	++	+			
6. To Reduce emissions contributing to climate change and ensure adaptive measures are in place to respond to climate change	0	+	+	0	0	0			
7. To protect material assets	++	++	+	++	0	0			
8. To protect and enhance the built, cultural and historic environment	++	+	0	+	0	0			
9. To conserve and enhance the character of the landscape	0	+	0	0	0	0			

Table 4.1: Assessment Summary

Key

Potential major positive effect	++
Potential minor positive effect	+
Uncertain	?
No or negligible effect	0
Potential minor negative effect	-
Potential major negative effect	

5.3. Assessing the LFRMS against Defra's high level themes

- 5.3.1. Early on in the assessment process the LFRMS was considered against the ten high level themes for sustainable development that apply to flood risk management identified by Defra. In undertaking this analysis account was taken of the extent to which other policy documents already contribute to these objectives.
- 5.3.2. The key observations were (with recommendations shown in bold):
 - Theme 2: Adaptation Although climate change is recognised in the Strategy as an issue, Climate change adaptation is not addressed in the Strategy. Given the vulnerability of the area to flood risk it would make sense for future development to demonstrate how it has been adapted in response to flood risk. There could be an action around ensuring that the local authority develops promotes climate change adaptation measures in future developments;
 - **Theme 3: Resilience** This theme is fully addressed within the LFRMS;
 - Theme 4: Appraisal The Strategy is not clear on the appraisal methods that will be used in future decision making. There could be an action in relation to developing appraisal methods;
 - Theme 7: Environment This theme is fully addressed within the LFRMS;
 - Theme 8: Consumption and production The Strategy does promote sustainable design and construction in relation to sustainable drainage systems but could go further by requiring all hard measures to promote sustainable consumption and production;
 - Theme 9: Knowledge The understanding of risk is promoted by measures in the strategy but measures to promote sustainable solutions are not fully developed. The Strategy could encourage a catchment based approach – looking to identify opportunities up-stream for reducing run-off and increasing storage capacity; and
 - **Theme 10 well being and social justice -** This theme is fully addressed within the LFRMS.
- 5.3.3. The outcomes of this assessment process were fed into the LFRMS development process to provide a steer as to the key sustainability issues. In light of this early assessment, Section 7 of the LFRMS reviews the wider environmental objectives set out in the SEA, HRA and WFDa, specifically relating to sustainable development through objective 5 (SuDS).

5.4. Outcomes of the SEA of the LFRMS

5.4.1. Set out here are the key findings from the assessment of each LFRMS objective and associated management measure. The full assessment matrices can be found in Appendix C.

Objective 1): Continue to improve knowledge and understanding of current and future local sources of flood risk within Wokingham borough

- 5.4.2. The measures and actions associated with this objective seek to improve the awareness and understanding of flood risk in Wokingham.
- 5.4.3. A key action for this objective is to prepare a Surface Water Management Plan (SWMP) for the borough. This would be expected to not only benefit flood risk management in the borough but would also be expected to improve water quality through the control of pollution. The assessment identified positive benefits for human heath by utilising social media to improve residents' knowledge and understanding of flood risk in the borough. By improving the knowledge and understanding of assets at risk of flooding, this objective would also benefit material assets including cultural heritage assets by minimising the risk of damage from flooding

Objective 2): Work collaboratively and develop effective partnerships with other Flood Risk Management Authorities and local communities to deliver a sustainable, cost effective approach to flood risk management authorities and local communities to deliver a sustainable, cost effective approach to flood risk and provides wider environmental and social benefits where possible



5.4.4. The management measures that support this objective relate to working in partnership to deliver flood risk management solutions. M/A 7 and 8 seek to act on the outcomes of the SWMP and as such would be expected to minimise flood risk. The same measures would also be expected to minimise the flood risk to material assets. Through using social media to spread information and raise awareness in local communities of flood risk in the Borough, M/A10 would be expected to reduce the adverse health effects of flooding.

Objective 3): Ensure that planning and decisions take full account of flood risk, avoiding development in inappropriate locations minimising and preventing an increase in flood risk wherever possible

5.4.5. The measures associated with this objective seek to ensure that planning decisions consider flood risk. Measures to ensure that local standards for SuDS and ensuring that officers are trained to deal with these issues is expected to minimise flood risk and improve flood risk protection for current and future material assets.

Objective 4): Maintain and, where necessary, improve local flood risk management infrastructure and privately owned flood defence assets and Ordinary watercourses to reduce risk

5.4.6. This objective focuses on reducing flood risk with an emphasis on identifying structures and features that may require maintenance. The management measures are expected to have a number of benefits but in particular are expected to reduce the risk of pollution and therefore have a beneficial effect on water quality and the protection of Wokingham's existing flood risk assets. There will also be a significant benefit in ensuring that flood risk isn't increased, as that is the primary purpose of the objective.

Objective 5): Ensure that emergency plans and responses to flood incidents are effective and that communities are prepared and resilient to local flood risk

5.4.7. This objective focuses on emergency planning and ensuring that everyone is aware of their roles and responsibilities. As such, the primary benefit is for the health and wellbeing of local residents as it would be expected that flood will present a lower risk to life. There would also be benefits for material and historic assets, as protecting these assets is expected to feature in the emergency plans. These measures would also be expected to minimise flood risk by ensuring a prompt and coordinated response by all involved when flooding occurs.

Objective 6): Identify national, regional and local funding mechanisms to deliver flood risk management solutions and schemes

This objective focuses on securing funding mechanisms for local flood risk management. Whilst this is an essential part of flood risk management, it's direct and indirect effects on the environment are both limited and difficult to identify as it depends on exactly how the funding is utilised. Nonetheless assuming that the funding would be utilised to deliver initiatives identified elsewhere in the LFRMS, benefits in terms of reducing flood risk and the risk of pollution were identified.

5.5. Secondary, cumulative and synergistic effects

- 5.5.1. Many sustainability problems result from the accumulation of multiple small and often indirect effects, rather than a few large and obvious ones.
- 5.5.2. Appendix 8 of the Practical Guide to the SEA Directive provides guidance on the assessment of such effects and regard has been had to this in undertaking the work. The work is reported separately for transparency but consideration has been given to the potential for such effects throughout the assessment, all of the effects associated with the Action Plan are considered to be indirect (or secondary) because of the nature of the actions.
- 5.5.3. The Practical Guide to the SEA Directive defines the three terms as follows:

Secondary effects or indirect effects are effects that are not a direct result of the plan, but occur away from the original effect or as a result of a complex pathway. Examples of secondary effects are

a development that changes a water table and thus affects the ecology of a nearby wetland; and construction of one project that facilitates or attracts other developments.

Cumulative effects arise, for instance, where several developments each have insignificant effects but together have a significant effect; or where several individual effects of the plan (e.g. noise, dust and visual) have a combined effect.

Synergistic effects interact to produce a total effect greater than the sum of the individual effects. Synergistic effects often happen as habitats, resources or human communities get close to capacity. For instance a wildlife habitat can become progressively fragmented with limited effects on a particular species until the last fragmentation makes the areas too small to support the species at all.

5.5.4. The potential for cumulative and synergistic effects is considered in Table 4.2 below:

Table 4.2 Consideration	of	cumulative	and	S	ynerg	gistic	effects
-------------------------	----	------------	-----	---	-------	--------	---------

SEA Headline objectives	Potential for cumulative and synergistic effects
1. To ensure biodiversity is conserved and enhanced	It is expected that the management measures would have a cumulative positive effect on biodiversity through the creation and enhancement of habitats associated with schemes to manage flood risk, taking into account the safeguards present at the project stage.
2. To improve health and well- being and reduce inequalities	Reducing flood risk and improving the ability of communities to respond to future events could have cumulative positive effects in relation to this objective.
3. To protect soils and geodiversity	No additional effects identified.
4. To maintain and improve the water quality of the district's rivers and ground waters.	There is the potential for cumulative benefits if a number of measures combine to reduce or prevent, for example, pollution to a watercourse.
5. To ensure that flood risk is not increased and where possible minimised	The measures and actions are designed to act synergistically to achieve this objective.
6. To Reduce emissions contributing to climate change and ensure adaptive measures are in place to respond to climate change	Primarily through improving Wokingham's ability to deal with increased rainfall and in turn flooding events predicted to occur as a result of climate change, the management measures are expected to act cumulatively to achieve this objective.
7. To protect material assets	A number of positive effects have been identified for this objective and there is the potential for these to act cumulatively.
8. To protect and enhance the built, cultural and historic environment	A number of positive effects have been identified for this objective and there is the potential for these to act cumulatively taking into account the safeguards that exist at the project stage.
9. To conserve and enhance the character of the landscape	Measures could have a cumulative positive effect on the landscape and urban areas, for example through the creation of ponds.



5.6. Conclusions and Recommendations

- 5.6.1. The assessment of the LFRMS has not identified any instances where potential significant negative effects are anticipated. The main positive effects identified were associated with flood risk, water quality and the protection of material assets. These effects are anticipated to be indirect, long-term and reversible.
- 5.6.2. The LFRMS operates at a strategic level, with the potential for different outcomes depending on how the measures and actions are implemented on the ground. Where measures and actions would be expected to lead to development, the development itself would be subject to technical assessments that will require planning permission, and if necessary Environmental Impact Assessment (EIA) and screening for Appropriate Assessment.
- 5.6.3. Due to the early assessment work undertaken on the LFRMS comparing it to Defra's high level themes, the LFRMS team were able to take on board and action the key sustainability messages early on in the development of the LFRMS. As such there are not many outstanding recommendations from the SEA. The key recommendations from the assessment are:
 - The role of climate change adaptation could be given greater emphasis in the LFRMS;
 - The LFRMS could emphasise the need to consider environmental enhancements as a part of the management of flood risk infrastructure; and
 - Need to highlight that other organisations should also consider the potential to contribute to wider sustainability objectives in fulfilling their responsibilities.
6. Next Steps

6.1. Introduction

6.1.1. This section discusses monitoring and next steps.

6.2. Monitoring

Measures proposed for monitoring are clear, practicable and linked to the indicators and objectives used in the SEA.	Act Regulation 17 Act Schedule 2(9)
Monitoring is used, where appropriate, during implementation of the plan to make good deficiencies in baseline information in the SEA and to ensure effectiveness of mitigation.	Act Regulation 17 Act Schedule 3(9)
Monitoring enables unforeseen adverse effects to be identified at an early stage. (These effects may include predictions which prove to be incorrect.)	Act Regulation 17 Act Schedule 3(9)
Procedures are stated for the identification of actions required in response to significant adverse effects identified through monitoring.	Practical Guide to the SEA Directive Appendix 9.

6.2.1. The SEA Directive requires monitoring to identify unforeseen adverse effects and to enable appropriate remedial action to be taken (Article 10.1 refers). The factors to be monitored include:

Biodiversity;	Population;
Human health;	Fauna;
Flora;	Soil;
Water;	Climatic factors;
Material assets;	Cultural heritage;

Landscape.

6.2.2. The LFRMS is closely related to the Local Plan and there may be potential to co-ordinate monitoring requirements between these documents. It is proposed that a comprehensive review should be undertaken of the LFRMS in 2017. This will follow the review of the National Strategy in 2016, coinciding with the review of the Wokingham Preliminary Flood Risk Assessment required under the Flood Risk Regulations and follow a review of the Thames River Basin Management Plan which will commence in approximately 2016. This review will provide the opportunity to monitor the outcomes of the SEA.

6.1 Post-consultation issues

The Environmental Report identifies how the information within it has been used to inform the preparation of the plan or programme.	Act Regulation 16(4)(a)
The Environmental Report demonstrates how every consultation response has been taken into account in preparation of the plan or	Act Regulation 16(4)(C and D)



programme.

- 6.2.3. These matters will be discussed in the Post-Adoption Statement that is produced at the end of the SEA process.
- 6.2.4. This Draft Environmental Report will be consulted on and a final version of the report produced in light of comments on the draft and any further changes to the LFRMS that have a bearing on the findings of the SEA.

Appendix A: Review of Plans and Programmes

Document Name:	The Natural Environment and Rural Communities Act
Date of Publication:	2006
Level:	National
Status:	Statutory

An Act to make provision about bodies concerned with the natural environment and rural communities; to make provision in connection with wildlife, sites of special scientific interest, National Parks and the Broads; to amend the law relating to rights of way; to make provision as to the Inland Waterways Amenity Advisory Council; to provide for flexible administrative arrangements in connection with functions relating to the environment and rural affairs and certain other functions; and for connected purposes.

Fifty-six habitats of principal importance are included on the S41 list. These are all the habitats in England that were identified as requiring action in the UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework. They include terrestrial habitats such as upland hay meadows to lowland mixed deciduous woodland, and freshwater and marine habitats such as ponds and sub tidal sands and gravels.

There are 943 species of principal importance included on the S41 list. These are the species found in England which were identified as requiring action under the UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. In addition, the Hen Harrier has also been included on the list because without continued conservation action it is unlikely that the Hen Harrier population will increase from its current very low levels in England.

In accordance with Section 41(4) the Secretary of State will, in consultation with Natural England, keep this list under review and will publish a revised list if necessary.

Relevance to / Implications for LFRMS:

Places a duty on flood authorities to have regard, so far as is consistent with the proper exercise of their functions, to conserve biodiversity, including restoring or enhancing species populations or habitats.

Specific Targets / Requirements / Indicators:

N/A

Environmental Protection Objectives:

The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Conflicts between objectives / requirements:

Potential conflict if the Borough fails in its duty to have, so far as is consistent with the proper exercise of their functions, to conserve biodiversity, including restoring or enhancing species populations or habitats.

Document Name:	The Natural Environment White Paper (The Natural Choice: Securing the Value of Nature)
Date of Publication:	2011
Level:	National
Status:	Statutory

The first Government White Paper dealing with the natural environment in over 20 years, marking the most significant shift in environmental policy for a generation "by 2060, our essential natural assets will be contributing fully to robust and resilient ecosystems, providing a wide range of goods and services so that increasing numbers of people enjoy benefits from a healthier natural environment."

The Natural Environment White Paper sets out how together we can start to tackle the challenges ahead, for example, by:

- Giving local people more involvement in the natural environment and helping them to realise the benefits;
- Helping to develop a thriving green economy, developing payments for ecosystem services and addressing barriers to using green infrastructure to promote sustainable growth;
- Helping to deliver the Government's ambitions for resilient ecological networks, biodiversity recovery, sustainable agriculture, healthy woods and forests, an improved water environment and a better protected marine environment;
- Taking action to address the risks and consequences of climate change and other pressures;
- Delivering conservation at the landscape scale, including through Nature Improvement Areas; and
- Further improving how we monitor progress and provide access to environmental information.

Relevance to / Implications for LFRMS:

The LFRMS should take into account the elements of this framework and be used to manage any increased risk of flooding.

Specific Targets / Requirements / Indicators:

N/A

Environmental Protection Objectives:

- New Nature Improvement Areas (NIAs), transforming rural and urban areas and providing bigger, connected sites for wildlife to live in and adapt to climate change;
- Biodiversity offsetting new way for developers to ensure we don't lose wildlife sites and make them better by making and improving other sites;
- New Local Nature Partnerships to strengthen joined-up action across local agencies and organisations;
- Phasing out peat working with the horticulture industry to phase out peat use, which will help to protect and restore our peat lands, which are valuable carbon sinks, habitats and part of our ecological network;
- Green Areas Designation allowing local communities to give protection to areas that are important to them for recreation, the view or their importance for wildlife;
- Better urban green spaces for the benefit of cities and towns. Support for parks, gardens, and tree planting which benefit people and nature alike;
- More children experiencing nature by learning outdoors, through practical support to schools and reducing red-tape for outdoor learning;
- Strengthening local public health activities which connect people with nature for better health;
- A new environmental volunteering initiative ("Muck in 4 Life") to improve places in towns and

countryside for people and nature to enjoy;

- Natural Capital Committee an independent body to report to the Government's economic affairs committee to put the value of nature at the heart of the Government's economic thinking, and advise Government about the best way of securing our natural assets for the future;
- An annual statement of green accounts for UK Plc to help measure green growth alongside GDP; and
- A business-led Task Force to expand the UK business opportunities from new products and services which are good for the economy and nature alike.

Conflicts between objectives / requirements:

Potential for conflicts if the LFRMS impacts on green space provision and/or biodiversity.

Document Name:	The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003
Date of Publication:	2003
Level:	National
Status:	Statutory

The Water Framework Directive (WFD) is designed to improve and integrate the way water bodies are managed throughout Europe. In the UK, much of the implementation work will be undertaken by competent authorities. It came into force on the 22nd December 2000, and was put into UK law (transposed) in 2003. Member States must aim to reach good chemical and ecological status in inland and coastal waters by 2015 subject to certain limited exceptions. It is designed to:

- Enhance the status and prevent further deterioration of aquatic ecosystems and associated wetlands which depend on the aquatic ecosystems;
- Promote the sustainable use of water;
- Reduce pollution of water, especially by 'priority' and 'priority hazardous' substances;
- Ensure progressive reduction of groundwater pollution; and
- The WFD establishes a strategic framework for managing the water environment. It requires a management plan for each river basin to be developed every 6 years. The plans are based on a detailed analysis of the impacts of human activity on the water environment and incorporate a programme of measures to improve water bodies where required. In December 2009 the Environment Agency (the "competent authority" responsible for implementation of the WFD) published the first set of River Basin Management Plans for England and Wales.

Relevance to / Implications for LFRMS:

The WFD uses the same unit of management (river basin districts) as the Floods Directive (see below) and is based on the same 6 year cycle of planning. There is a requirement to coordinate delivery of the two directives, and the Environment Agency is responsible for this in England and Wales. There are 11 river basin districts that are partly or fully in England and Wales (WBC lies within the Thames River Basin District).

To meet the requirements of the WFD and improve water quality and quantity within rivers, estuaries, coasts and aquifers, River Basin Management Plans have been prepared for all river basin districts by the Environment Agency, in consultation with organisations and individuals. They contain the main issues for the water environment and the actions we needed to deal with them.

Water quality and quantity is linked to the LFRMS as flooding events can lead to water pollution and changes in water levels.

Specific Targets / Requirements / Indicators:

In order to achieve 'good surface water status' both the ecological status and the chemical status of a surface water body need to be at least 'good'.

Environmental Protection Objectives:

The specific objective contained in the WFD is to achieve good qualitative and quantitative status of all water bodies (including marine waters up to one nautical mile from shore) by 2015.

The objectives for water quality cover general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water. All these objectives must be integrated for each river basin. The last three - special habitats, drinking water areas and bathing water - apply only to specific bodies of water (those supporting special wetlands; those identified for drinking water abstraction; those generally used as bathing areas). In contrast, ecological protection should apply to all waters.

Conflicts between objectives / requirements: N/A

Document Name:	Flooding – Minimising the Risk
Date of Publication:	2012
Level:	National
Status:	Non-Statutory

In England, the Environment Agency has the strategic overview for flood risk management from all causes of flooding, including rivers, the sea, groundwater, reservoirs and surface water. The Environment Agency works with Council's to make people aware of flood risk.

The Environment Agency have calculated that in England:

- One in six homes is at risk of flooding;
- Over 2.4 million properties are at risk of flooding from rivers or the sea, of which nearly half a million are at significant risk;
- One million of these are also vulnerable to surface water flooding with a further 2.8 million properties susceptible to surface water flooding alone;
- 55% living in flood risk areas knew they were at risk and for these three out of five of them had taken some action to prepare for flooding;
- 430,000 people have signed up for the Environment Agency Floodline Warnings Direct service;
- A sizeable part of the nation's important infrastructure and public services are in flood risk areas. For example, over 55% of water and sewage pumping stations/treatment works are in flood risk areas, with 34% at significant risk.

This guidance document is produced by the Environment Agency and is for anyone involved in supporting communities or groups to improve their ability to plan for a flood. This guidance outlines things to consider and steps that can be taken to inspire and involve residents, local communities and groups to work together to improve how they prepare for the risk of flooding.

Relevance to / Implications for LFRMS:

At the scoping stage no direct implications for the LFRMS have been identified, however the plan has been noted here as its implications for the LFRMS may be identified during a later stage of the assessment process.

Specific Targets / Requirements / Indicators:

N/A

Environmental Protection Objectives:

N/A

Conflicts between objectives / requirements:

Document Name:	Flood and Water Management Act
Date of Publication:	2010
Level:	National
Status:	Statutory

In April 2010, the Flood & Water Management Act became law. The Act, which applies to England & Wales, aims to create a simpler and more effective means of managing the risk of flood and coastal erosion. The Act also aims to help improve the sustainability of our water resources and protect against potential droughts. The Flood & Water Management Act aims to provide better, more sustainable management of flood risk for people, homes and businesses, help safeguard community groups from unaffordable rises in surface water drainage charges and protect water supplies to the consumer.

Under this strategic role, the duties and powers of the Environment Agency, the lead Competent Authority under the EU Floods Directive, includes:

- Setting out of a national strategy for flood and coastal erosion risk management;
- Developing the methods, framework and tools to understand and manage flooding from all sources;
- Supporting the roles of local authorities and others in flood and coastal erosion risk management (FCERM), by providing them with information and guidance;
- Assessing flood and coastal erosion risk on a national basis and determine spending priorities to manage those risks as well as allocating relevant funding in accordance with the priorities;
- Consenting and enforcement powers in relation to any works or activities by any person which
 may directly impact on flooding from main rivers and the sea; and
- Responsibility for flood warning for all forms of flood risk.

Relevance to / Implications for LFRMS:

The Act sets out the legislative requirement for the production of LFRMSs.

Specific Targets / Requirements / Indicators:

Requires Lead Local Flood Authorities to produce a LFRMS.

Environmental Protection Objectives:

N/A

Conflicts between objectives / requirements:

Document Name:	Flooding and Historic Buildings
Date of Publication:	2010
Level:	National
Status:	Non-Statutory

This advisory note provides guidance for home-owners, owners of small businesses and others involved with managing historic buildings on ways to establish flood risk and prepare for possible flooding by installing protection measures. It also recommends actions to be taken during and after a flood so as to minimise damage and risks.

Although most historic structures are inherently durable and are relatively resistant to flooding compared with much modern construction, they are still vulnerable. Many of these buildings are not only at risk from flood damage but also damage from inappropriate remedial works carried out by contractors who have little understanding of historic fabric. This can result in unnecessary removal and disposal of significant finishes and fittings as well as the use of unsuitable materials for the repairs. Too often like-for-like replacement is not carried out when repair works are put in hand.

This document advises on preparing for and dealing with a flood, and the correct procedures for minimising damage after a flood.

Relevance to / Implications for LFRMS:

At the scoping stage no direct implications for the LFRMS have been identified, however the plan has been noted here as its implications for the LFRMS may be identified during a later stage of the assessment process.

Specific Targets / Requirements / Indicators:

N/A

Environmental Protection Objectives:

N/A

Conflicts between objectives / requirements:

Document Name:	National Flood and Coastal Erosion Risk Management Strategy
Date of Publication:	2011
Level:	National
Status:	Non-Statutory

The risk of flooding and coastal erosion in England is predicted to increase due to climate change and development in areas at risk. It is not possible to prevent all flooding or coastal erosion, but there are actions that can be taken to manage these risks and reduce the impacts on communities. This flood and coastal erosion risk management (FCERM) strategy for England builds on existing approaches to managing risk. It aims to encourage the use of all of the available measures in a co-ordinated way that balances the needs of communities, the economy and the environment.

This strategy sets out a national framework for managing the risk of flooding and coastal erosion. It will help risk management authorities and communities understand their different roles and responsibilities and will be particularly relevant to Lead Local Flood Authorities (LLFAs) which have new responsibilities under the Flood and Water Management Act (2010). It addresses all forms of flooding and coastal erosion consistent with the definitions in the Act.

To do this it considers:

- How the current risk of flooding and coastal erosion may change;
- The measures that can be used to manage these risks;
- The functions of those involved in flood and coastal erosion risk management and how these
 organisations can work together better;
- How work will be paid for and the costs and benefits of the measures used;
- The guidance and advice available to help manage flood risk and coastal erosion.

This strategy aims to make sure that Defra, the Environment Agency, local authorities, water companies, internal drainage boards and other FCERM partners work together to:

- Maintain and over time improve standards of protection against flood and coastal erosion risks where it is affordable to do so;
- Increase the overall level of investment in flood and coastal erosion risk management to supplement central government expenditure;
- Help householders, businesses and communities better understand and manage any flood and coastal erosion risks that they face;
- Ensure fast and effective responses to and recovery from flood events when they do occur;
- Give priority to investment in actions that benefit those communities which face greatest risk and are least able to afford to help themselves;
- Encourage and support local innovation and decision making within the framework of river catchments and coastal cells;
- Achieve environmental gains alongside economic and social gains, consistent with the principles of sustainable development.

The strategy also aims to clarify the responsibilities and roles of all the organisations involved in flood and coastal erosion risk management.

Relevance to / Implications for LFRMS:

The LFRMS is required to be in conformity with this Strategy.

Specific Targets / Requirements / Indicators:

N/A

Environmental Protection Objectives:

The strategy encourages more effective risk management by enabling people, communities,

business, infrastructure operators and the public sector to work together to:

- Ensure a clear understanding of the risks of flooding and coastal erosion, nationally and locally, so that investment in risk management can be prioritised more effectively;
- Set out clear and consistent plans for risk management so that communities and businesses can make informed decisions about the management of the remaining risk;
- Manage flood and coastal erosion risks in an appropriate way, taking account of the needs of communities and the environment;
- Ensure that emergency plans and responses to flood incidents are effective and that communities are able to respond effectively to flood forecasts, warnings and advice;
- Help communities to recover more quickly and effectively after incidents.

Conflicts between objectives / requirements:

Document Name:	Guidance for Risk Management Authorities on Sustainable Development in Relation to their Flood and Coastal Erosion Management Functions
Date of Publication:	2011
Level:	National
Status:	Non-Statutory

Section 27 of the Flood and Water Management Act 2010 requires certain flood and coastal erosion risk management authorities to aim to make a contribution towards the achievement of sustainable development when exercising their flood and coastal erosion risk management functions. It also requires the Secretary of State to issue guidance on how those authorities are to discharge this duty and explain the meaning of sustainable development in this context – this document does that.

Relevance to / Implications for LFRMS:

The guidance applies to Lead Local Flood Authorities. It provides background context about the application of sustainable development principles when discharging their duties to manage flood risk.

Specific Targets / Requirements / Indicators:

N/A

Environmental Protection Objectives:

N/A

Conflicts between objectives / requirements:

Document Name:	National Planning Policy Framework and associated Technical guide
Date of Publication:	2012
Level:	National
Status:	Non-Statutory

The National Planning Policy Framework (NPPF) has replaced the set of national planning policy statements and national planning policy guidance notes, bringing them into one document.

The NPPF is based around the presumption in favour of sustainable development. Sustainable development, for the planning system, is defined as:

- Planning for prosperity using the planning system to build a strong, responsive and competitive economy
- Planning for people using the planning system to promote strong, vibrant and healthy communities
- Planning for places using the planning system to protect and enhance the natural, built and historic environment.

The presumption in favour of sustainable development requires a positive planning system to help facilitate economic growth. The NPPF requires that significant weight is placed on securing economic growth.

The NPPF contains several changes from the suite of policy guidance notes and statements that it is replacing:

- Replacing the local development framework with the local plan, that contain both policies and site allocations
- Discouraging the long term protection of employment land or floor space
- Removing the sequential test for offices
- Permission should be granted for housing where a 5 year supply (plus 20% contingency) is not in place though this would be still subject to other policies and parts of the NPPF
- Local communities will be able to designate local green space

The NPPF introduces neighbourhood planning, neighbourhood development orders and community right to build schemes.

The Technical Guide to the NPPF carries over part of the guidance from the withdrawn PPS 25, including the Flood Zone system and the need for Strategic Flood Risk Assessments.

Relevance to / Implications for LFRMS:

The NPPF has replaced PPS25 along with the other PPSs and PPGs and so comprises the national policy framework in relation to integrating flood risk into planning policy.

Specific Targets / Requirements / Indicators:

Several requirements for local planning authorities that are continued from existing national policy.

Environmental Protection Objectives:

N/A

Conflicts between objectives / requirements:

Document Name:	Loddon Catchment Abstraction Licensing Strategy
Date of Publication:	2012
Level:	Regional
Status:	Non-Statutory

The Loddon catchment covers an area of 680 km² and falls within the counties of Surrey, Hampshire and Berkshire. A licensing strategy for the sustainable management of water resources at a local level. This will make more information on water resources and licensing practice publicly available and allow the balance between the needs of abstractors, other water users and the aquatic environment to be considered in consultation with the local community and interested parties.

Relevance to / Implications for LFRMS:

The storage and abstraction of water in the Catchment, including groundwater could help alleviate flood risk.

Specific Targets / Requirements / Indicators:

N/A

Environmental Protection Objectives:

The main objectives of the Water Framework Directive (WFD) are to protect and enhance the water environment and ensure the sustainable use of water resources for economic and social development. Catchment Abstraction Management Strategies (CAMS) set out how we will manage the water resources of a catchment and contribute to implementing the WFD.

The Loddon strategy will;

- Providing a water resource assessment of rivers, lakes, reservoirs, estuaries and groundwater referred to as waterbodies under the WFD;
- Identifying water bodies that fail flow conditions expected to support good ecological status;
- Preventing deterioration of water body status due to new abstractions;
- Providing results which inform River Basin Management Plans (RBMPs).

Conflicts between objectives / requirements:

Document Name:	River Basin Management Plan Thames River Basin District
Date of Publication:	2009
Level:	Regional
Status:	Non-Statutory

This plan focuses on the protection, improvement and sustainable use of the water environment. Many organisations and individuals help to protect and improve the water environment for the benefit of people and wildlife. River basin management is the approach the Environment Agency is using to ensure our combined efforts achieve the improvement needed in the Thames River Basin District.

River basin management is a continuous process of planning and delivery. The Water Framework Directive introduces a formal series of six year cycles. The first cycle will end in 2015 when, following further planning and consultation, this plan will be updated and reissued.

The Thames River Basin District Liaison Panel has been central to managing this process. The panel includes representatives of businesses and industry, planning authorities, environmental organisations, water consumers, navigation, fishing and recreation bodies and central, regional and local government, all with key roles to play in implementing this plan.

The Environment Agency has also worked extensively with local stakeholders to identify the actions needed to address the main pressures on the water environment. This plan has been prepared under the Water Framework Directive, which requires all countries throughout the European Union to manage the water environment to consistent standards.

The plan describes the river basin district, and the pressures that the water environment faces. It shows what this means for the current state of the water environment, and what actions will be taken to address the pressures. It sets out what improvements are possible by 2015 and how the actions will make a difference to the local environment – the catchments, the estuaries and coasts, and the groundwater.

Looking towards implementation, the plan highlights the programme of investigations to be undertaken. This will identify more actions, particularly those associated with diffuse pollution, for delivery during the first cycle. New national measures, made available by government, will also lead to additional improvements. At local level, the Environment Agency will be working closely with a wide variety of organisations and individuals, not only to deliver the commitments contained in the plan, but wherever possible to expand upon them for the benefit of the water environment.

Relevance to / Implications for LFRMS:

The River Basin Management Plan provides important context for the LFRMS. A small number of candidate Water Protection Zone (WPZs) will be promoted nationally early in the first plan cycle to help achieve the required environmental objectives. A number of organisations will be working with the Environment Agency will implement key actions to improve the water environment by 2015.

In developing this RBMP around 8,500 investigations have been identified, which will focus on issues and the best method to tackle the problem, in order for further reductions in pollution and improvements in the environment. The Environment Agency will adopt a catchment-based approach to implementation that is efficient and cost-effective. This will support the liaison panels, complement existing networks and relationships, and enable better dialogue and more joined up approaches to action.

Specific Targets / Requirements / Indicators:

- By 2015, 22% of surface waters (rivers, lakes estuaries and coastal waters) are going to improve for at least one biological, chemical or physical element, measured as part of an assessment of good status according to the Water Framework Directive.
- 25% of surface waters will be at good or better ecological status and 17% of groundwater bodies will be at good overall status by 2015.
- At least 30% of assessed surface waters will be at good or better biological quality by 2015.

Environmental Protection Objectives:

The RBMP seeks to achieve the objectives identified in the Water Framework Directive.

The SEA for the RBMP identified generic mitigation measures that will be relevant to the LFRMS.

Conflicts between objectives / requirements:

Document Name:	Berkshire Local Geodiversity Action Plan
Date of Publication:	2012
Level:	Sub – regional
Status:	Non-Statutory

The aims of the Berkshire Local Geodiversity Action Plan (LGAP) are to:

- Protect and enhance the geodiversity resource by appropriate designation of geological sites and features
- Promote a wider awareness and understanding of geodiversity
- Provide geological support to local education groups
- Ensure the LGAP is relevant today and remains so in the long term through regular consultation and review.

Part of Berkshire is in the North Wessex Downs Area of Outstanding Natural Beauty. The special chalk landscape of the area includes the highest chalk hill in England at Coombe Gibbet/Walbury Camp

Relevance to / Implications for LFRMS:

Protects areas of 16 geodiversity importance against floodrisk

Specific Targets / Requirements / Indicators: N/A

Environmental Protection Objectives:

Objective 1 To create a catalogue of all known sites of geological exposures, geomorphological features and geological resources (e.g. museums, libraries etc.)

Target 1 Create a searchable database of all known sites and resources by September 2012

Objective 2 Continue to survey the area for new or undiscovered exposures or features.

Target 2 Use existing system to document new sites

Objective 3 To increase understanding of the geology and geomorphology of Berkshire.

Target 3 Produce and publish new research on geodiversity in Berkshire.

Objective 4 To conserve existing geodiversity sites

Target 4 To create management plans for all sites

Objective 5 To designate new sites of geodiversity importance.

Target 5 To ensure that all new sites that are suitable are designated as they are found.

Objective 6 To review and implement management actions already highlighted in existing plans. **Target 6** To follow suggested timetables for implementation.

Objective 7 Popularise and promote the use of sites for education where safety and access are suitable

Target 7 To provide resources for key local sites to help visitors understand their geodiversity.

Objective 8 To raise geodiversity awareness in Berkshire

Target 8 To raise the profile of geodiversity and the work of BGG through activities, leaflets and press releases.

Objective 9 Production of information dissemination tools

Target 9 To produce new and inventive ways for information dissemination and maintain and distribute existing ones.

Conflicts between objectives / requirements:

Potential conflict if flood prevention measures damage Local geological sites

Document Name:	Wokingham Borough Council Strategic Flood Risk Assessment (SFRA)
Date of Publication:	2012
Level:	Local
Status:	Statutory

The SFRA provides an overview of all sources of flood risk throughout the Borough. This includes rivers, surface water, groundwater, large reservoirs/lakes and sewers. The SFRA builds upon existing Council knowledge of flood risk within the Borough and that sourced through consultation with the Environment Agency, Thames Water and local Town and Parish Councils. The SFRA informs the preparation of the Local Development Framework and gives essential information for the allocation of land for development. The SFRA also helps to inform future planning decisions, including those made on planning applications.

A number of rivers run through Wokingham Borough including the River Thames and its tributary the Foudry Brook, and the River Loddon and its tributaries the Twyford Brook, Emm Brook, Barkham Brook and the River Blackwater. Flooding represents a risk to both property and life. It is essential therefore that planning decisions are informed, and take due consideration of the risk posed to, and by, future development by flooding.

The Borough between 1971 and 2001 saw a 50% increase in population from 99,664 to 150,229, associated with an 85% increase in households from 30,855 to 57,252. Between July 1976 and March 2001, around 22,200 dwellings were completed in the Borough, representing about 38% of the Borough's housing stock in 2001. This demonstrates that the Borough has seen significant growth in population and has a relatively modern housing stock.

Planning Policy Statement (PPS) 25: Development and Flood Risk required that local planning authorities prepare a Strategic Flood Risk Assessment (SFRA) in consultation with the Environment Agency. The requirement for SFRA has been carried forward into the NPPF. The primary purpose of the SFRA is to determine the variation in flood risk across the Borough. Robust information on flood risk is essential to inform and support the Council's revised flooding policies in its emerging Local Development Framework (LDF).

Relevance to / Implications for LFRMS:

The SFRA contributes to the evidence base for the LFRMS.

Specific Targets / Requirements / Indicators:

One of the recent main events was in July 2007, when flooding was experienced across most of the country. A key aspect of this event was that much of the flooding was due to surface runoff and this has served to highlight the importance of considering other sources of flooding (compared to the traditional focus on fluvial). Urban areas are particularly susceptible to this type of flooding due to the large areas of impermeable surfaces which prevent rainfall from infiltrating into the ground and the concentration of vulnerable receptors (people, buildings and other infrastructure).

Environmental Protection Objectives:

N/A

Conflicts between objectives / requirements:

Document Name:	Berkshire Biodiversity Action Plan
Date of Publication:	2011
Level:	Regional
Status:	Statutory

The Berkshire BAP is the strategy to conserve and enhance those UK BAP priority habitats and species that occur in Berkshire. There are currently targets to maintain, restore and create the following BAP Priority Habitats:

- Calcareous Grassland
- Lowland Meadow
- Dry Acid Grassland
- Purple Moor Grass and Rush Pasture
- Lowland Heathland
- Ponds
- Eutrophic Standing Water
- Mesotrophic Lakes
- Fen
- Reedbed
- Rivers
- Lowland Mixed Deciduous Woodland
- Lowland Beech and Yew Woodland
- Wet Woodland
- Lowland Wood Pasture and Parkland
- Hedgerows
- Traditional Orchards

Relevance to / Implications for LFRMS:

The LFRMS could have a role in helping achieve the BAP targets.

Specific Targets / Requirements / Indicators:

N/A

Environmental Protection Objectives:

N/A

Conflicts between objectives / requirements:

Potential for conflict if flood prevention measures damage biodiversity

Document Name:	Wokingham District Local Plan
Date of Publication:	2004
Level:	Local
Status:	Non-Statutory

The Local Plan provides, within one document, detailed strategic planning guidance for the whole area. A large area of Wokingham lies within the many flood plains in the Borough. Sustainable approaches have highlighted in relation to residential development in the Borough, including assessments of flood risk and areas that are liable to flooding.

Relevance to / Implications for LFRMS:

Unless carefully sited and designed, new development can increase run-off by the addition of impermeable surfaces such as roofs and paved areas. This can result in increased risk of flooding downstream and to surrounding areas, as well as damage to the water environment. The Council will encourage permeable surfaces, in parking areas for example. Accordingly development will be restricted in areas liable to flood and in locations that would result in an increased flood risk in surrounding areas and downstream.

Specific Targets / Requirements / Indicators:

It is essential to demonstrate that an assessment of the risk of groundwater flooding or local flooding due to run-off exceeding the capacity of drainage systems has been taken into account when formulating development proposals. The Council will require evidence of the use of sustainable drainage systems in the design of any planning proposal

Environmental Protection Objectives:

N/A

Conflicts between objectives / requirements:

Document Name:	Wokingham Borough Local Development Framework Sustainable Design and Construction SPD
Date of Publication:	2010
Level:	Local
Status:	Non-Statutory

The purpose of the SPD is to help improve the sustainability performance of buildings and spaces through their construction and subsequent use. The SPD expands upon or provides further guidance on national, regional and local requirements. It thereby sets out measures that would deem to satisfy the council's requirements.

New development should be designed to be resilient to flooding as appropriate and should also consider the possible change in flood risk over the lifetime of the development because of climate change. All sources of flood risk should be considered.

Relevance to / Implications for LFRMS:

Wokingham Borough is subdivided into three flood zones:

- Flood Zone 1 (Low Probability): Land assessed as having a less than 1 in 1000 annual probability of flooding in any year;
- Flood Zone 2 (Medium Probability): Land assessed as having between a 1 in 100 and 1 in 1000 annual probability of flooding in any year);
- Flood Zone 3 (High Probability/ Functional Floodplain): Land assessed as having a 1 in 100 or greater annual probability of flooding in any year.

According to the Borough's most recent flood data, 3.3% of dwellings in the Borough fell within Flood Zone 2 and 1.54% was in Flood zone 3.

Specific Targets / Requirements / Indicators:

- Developments are expected to comply with the Environment Agency's flood risk standing advice.
- Where a Flood Risk Assessment is required developments should demonstrate through this how

the design has addressed flood risk to, and arising from, the site.

Environmental Protection Objectives:

In achieving the performance of buildings, the SPD has the following objectives:

- To promote the sustainable use and disposal of resources.
- To raise awareness of sustainable design.
- To raise awareness of renewable energy technologies.
- To mitigate against the causes and adapt to the consequences of climate change.
- To promote the consideration of sustainability early within the design process.
- To make the Borough a more attractive, well designed and sustainable place.
- To promote clear understanding, transparency, inclusiveness and consistency for all parties throughout the decision making process.

Conflicts between objectives / requirements:

Document Name:	Thames Basin Heaths SPD
Date of Publication:	2010
Level:	Regional
Status:	Non-Statutory

The Thames Basin Heaths Special Protection Area is an international designation covering parts of Berkshire, Hampshire and Surrey. This SPD provides guidance on how the impact of new residential developments on the Thames Basin Heaths Special Protection Area may be mitigated against.

Relevance to / Implications for LFRMS:

Natural England considers that any new residential development resulting in a net increase in the number of dwellings within 5km of the Thames Basin Heaths SPA could have a significant impact upon it, either alone or in combination with other plans or projects. This in particular is due to the potential for increased recreational use of the SPA resulting in disturbance to the protected ground and near ground nesting birds.

Specific Targets / Requirements / Indicators:

- 400m zone: This is measured as a linear distance from the edge of the SPA to the nearest part of the curtilage of the dwelling. Within this zone it is not considered possible for mitigation measures to protect the integrity of the SPA from the impacts resulting from a net increase in the number of dwellings. This is due to both additional recreational pressures on the SPA as well as the impact of cat predation on the protected bird species. It is not considered that the one for one replacement of existing habitable dwellings is likely to have an impact on the SPA.
- 400m to 5km zone: This is measured as a linear distance from the edge of the SPA to the primary access point to the curtilage of the dwelling. Within this zone of influence it is likely that additional residential dwellings (either alone or in combination with other new dwellings) are likely to have a significant effect on the SPA unless mitigation measures are put in place.
- 5km to 7km: Within this zone applications for large scale residential development (50 units or more) will need to be assessed on an individual basis to ascertain whether the proposal would have a significant adverse impact on the SPA. This assessment would involve a screening of the likely significant effects of the development and where required undertake an Appropriate Assessment under the Habitat Regulations.

Environmental Protection Objectives:

The purpose has been to discuss and develop a strategic approach to the SPA issue and this has resulted in the development of agreed measures to both avoid and mitigate the impact of an increased population around the Thames Basin Heaths SPA. The strategy developed has been published as "The Thames Basin Heaths Special Protection Area Delivery Framework" (February 2009).

Conflicts between objectives / requirements:

Document Name:	Wokingham Borough Council Major Incident Plan	
Date of Publication:	2012	
Level:	Regional	
Status:	Non-Statutory	
Brief Overview:		
The Council aims to ensure that it carries out proactive, continual development of an integrated, flexible emergency management capability enabling the local authority to deal effectively with a major or minor emergency, such as flooding, whether foreseen or unforeseen.		
Relevance to / Implications for LFRMS:		
Flooding has been highlighted as a situation that Neighbourhood Services can respond too.		
Specific Targets / Requirements / Indicators:		
N/A		
Environmental Protection Objectives:		
The objectives of this emergency management plan is to:		
 Assist in saving life by supporting the emergency services Prevent escalation of an emergency; Relieve suffering; Safeguard the environment; Protect property; Continue to maintain services at an appropriate level; Inform the public; Promote self-help and recovery; Restore normality as soon as possible; and Evaluate the response and identify lessons to be learned. 		

Berkshire Biodiversity Habitat Action Plans (Heathland, Lowland unimproved grasslands, Rivers and associated floodplains, and Standing open waters and associated habitats)
Varying
Regional
Non-Statutory

The Berkshire BAP is the strategy to conserve and enhance those UK BAP priority habitats and species that occur in Berkshire. Our actions directly contribute to the national targets.

Relevance to / Implications for LFRMS:

N/A

Specific Targets / Requirements / Indicators:

The main aims of the Berkshire BAP Heathland Action Plan are:

- To maintain and enhance current heathland throughout the county, ensuring no net loss
- To restore damaged or degraded areas of heath through enhanced management, creating a diversity in age and structure to support a range of niches for wildlife
- Where appropriate, to re-create lowland heathland to buffer and reverse the fragmentation of the existing resource.

Lowland unimproved grasslands;

This plan is intended to cover the priority habitat type neutral grassland or lowland meadow through identifying sites, particularly designated areas, of priority grassland, methods to improve existing sites and create or restore other sites to increase this resource

The main objectives for the wetland action plans are:

- To establish the extent and value of the current priority BAP wetland habitats in Berkshire.
- To safeguard and tailor the management of sites of conservation value.
- To create and restore areas of new wetland habitat sites where appropriate, e.g. through mineral extraction or planning gain.
- To minimise damage and disturbance to habitats and species on sites with mixed uses such as fishing, recreation and wildlife.
- A longer term objective is to monitor and manage sites for specific BAP species.

Environmental Protection Objectives:

N/A

Conflicts between objectives / requirements:

Document Name:	Wokingham Borough Landscape Character Assessment
Date of Publication:	2010
Level:	Regional
Status:	Non-Statutory

The landscape of Wokingham is a product of the multitude of physical and human influences that have, over vastly different timescales, acted upon it.

The current river systems were, as described above, established during glacial episodes some 300,000 years ago. The main drainage pattern is from south to north, connecting with the main river valley – the Thames Valley – draining from west to east.

The River Thames is the largest river of Wokingham Borough with a wide flat floodplain, defined to the north by the steep slopes of The Chilterns and to the South by the chalk slopes around Remenham and Sonning respectively creating a distinctive valley landscape defining the northern boundary of the district.

The Thames is joined by a number of tributaries including the River Loddon, which is a significant river its own right and has its own tributary river - the Blackwater River/Broadwater - that defines the southern district boundary. The watershed of the Loddon includes a network of numerous small tributary streams set within very shallow 'valleys'. These include (from north to south of the district) Twyford Brook; Billingbear Brook; Emm Brook, with its tributaries Ashridge Brook, Waterloo Road Stream and Queens Brook; and Barkham Brook.

Relevance to / Implications for LFRMS:

The Landscape Character Assessment allows for a comprehensive assessment of the landscape to provide a framework for, among other purposes, development management decision making. By giving a clear understanding of what contributes to the character of the landscape it will help ensure that the

landscape is fully considered in preparing the LFRMS.

Specific Targets / Requirements / Indicators:

N/A

Environmental Protection Objectives:

The principal objectives of the study are;

- To identify and describe the landscape character types and landscape character areas within the Borough, thus describing local distinctiveness;
- To summarise the key characteristics associated with each landscape type to provide the principles to guide future landscape change;
- To identify how the landscape within the Borough is currently changing, what the causes of these changes are, and the pressures for change in the future;
- To make qualitative judgments on the strength of character and condition of the key characteristics within the landscape;
- To identify the requirements, and mechanisms, for the conservation, restoration, enhancement or creation of the key characteristics within the landscape types;
- To consider the justification and function of the Area of Special Landscape Importance,
- To consider the justification and function of any new local designations;
- To provide a rigorous landscape character assessment for adoption as Supplementary Planning Guidance; and
- To promote public awareness of landscape character within the Borough and, through consultation, obtain broad consensual support for the assessment work.

Conflicts between objectives / requirements:

Document Name:	Wokingham Borough Adopted Managing Development Delivery Local Plan (February 2014)
Date of Publication:	2014
Level:	Borough
Status:	Statutory

The MDD needs to achieve the following objectives, which build on the approach and objectives set out in the Core Strategy. These establish its key policy direction and provide a framework for the development of appropriate indicators and targets for monitoring purposes. The objectives of the MDD are to:

- Protect the historic and underlying character of the Borough by maintaining/improving the built/natural environment while mitigating the effect of new development on the environment
- Ensure good design which is in keeping with the area.
- Maintain the distinct and separate identity of the Borough's settlements through confirming development limits
- Protect the most important areas of biodiversity, landscape and heritage from development
- Limit development in those areas at most risk of flooding and pollution
- Deliver affordable housing that meets identified local needs
- Deliver sustainable development by providing an acceptable balance of housing (in locations outside the SDLs) and employment
- Promote sustainable use and disposal of resources while mitigating and adapting to climate change
- Promote a transport system that enables access to services by a variety of modes and increasing the use of non-car based transport where appropriate
- Support the renaissance of all centres
- Amplify the high level policies of the Core Strategy into appropriate detailed development management policies
- Replace saved policies in the WDLP.

Relevance to / Implications for LFRMS:

The Local Plan sets the policies and context for the delivery of built development in the borough. As such, it is a key document in ensuring that new development takes flood risk into account.

Specific Targets / Requirements / Indicators:

Policy CC09:

All sources of flood risk, including historic flooding, must be taken into account at all stages and to the appropriate degree at all levels in the planning application process to avoid inappropriate development in areas at risk of flooding. Proposals must be consistent with the guidance in paragraphs 99-104 of the National Planning Policy Framework (NPPF); the Technical Guidance to the NPPF and demonstrate how they have used the Strategic Flood Risk Assessment (SFRA) to determine the suitability of the proposal. Development proposals in Flood Zones 2 or 3 must take into account the vulnerability of proposed development. Development must be guided to areas of lowest flood risk by applying the sequential approach taking into account flooding from all sources and shall ensure flood risk is not worsened for the application site and elsewhere, and ideally that betterment of existing conditions is achieved. Where required, suitable and appropriately detailed flood risk information will need to accompany a planning application

Policy CC10:

All development proposals must ensure surface water arising from the proposed development including taking into account climate change is managed in a sustainable manner. All development proposals must

- a) Reproduce greenfield runoff characteristics and return run-off rates and volumes back to the original greenfield levels, for greenfield sites and for brownfield sites both run-off rates and volumes be reduced to as near greenfield as practicably possible.
- b) Incorporate Sustainable Drainage Systems (SuDS), where practicable, which must be of an appropriate design to meet the long term needs of the development and which achieve

wider social and environmental benefits

- c) Provide clear details of proposed SuDS including the adoption arrangements and how they will be maintained to the satisfaction of the Council [as the Lead Local Flood Authority (LLFA)]
- d) Not cause adverse impacts to the public sewerage network serving the development where discharging surface water to a public sewer.

Environmental Protection Objectives:

- The Borough's ecology, landscape, heritage and environment will be protected, and where possible, enhanced. Policies ensure developments will take into account the impacts of flooding and enforce measures to ensure that new development does not increase the likelihood of flooding.
- Opportunities for improvements to green infrastructure to help minimise flood risk
- Development proposals will need to demonstrate that the scale, location and technology type is appropriate and that there is no adverse impact, including cumulative impact on the surrounding area. This will include evidence of the availability of the resource that will be harnessed or the fuel to be used. Impacts to be addressed will include those on surrounding land uses; noise, air and odour pollution; local and visual amenity; character; landscape; wildlife; heritage assets; transport network and highway safety; flood risk; shadow flicker, and telecommunications interference.

Conflicts between objectives / requirements:

Conflict could occer when attempting to meet the delivery of housing and limiting development in those areas at most risk of flooding and pollution.

Document Name:	Wokingham Borough Council Preliminary Flood Risk Assessment
Date of Publication:	2011
Level:	Borough
Status:	Statutory

The PFRA is a high level screening exercise based on readily available data. It provides an assessment of past flood risk based on historical data sourced from Wokingham Borough Council, the Environment Agency, Thames Water, and local Parish Councils, Town Councils and Residents Associations. Four historical events were identified within Wokingham for inclusion in the PFRA spreadsheet. These occurred in 1993, 2000, 2003 and 2007.

Relevance to / Implications for LFRMS:

It is possible that long term developments might affect the occurrence and significance of flooding. Current planning policy aims to prevent new development from increasing flood risk. Planning Policy Statement 25 (PPS25) on development and flood risk aims to "ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall." Any exceptions (e.g. where the benefits of the development outweigh the risks from flooding) would not be expected to increase risk to levels which are "significant" (in terms of the Government's criteria).

Specific Targets / Requirements / Indicators:

- Identify relevant partner organisations involved in future assessment of flood risk; and summarise means of future and ongoing stakeholder engagement;
- Describe arrangements for ongoing collection, assessment and storage of flood risk data and information;
- Summarise the methodology adopted for the PFRA with respect to data sources, availability and review procedures;
- Assess historic flood events within the study area from local sources of flooding, and the consequences and impacts of these events;
- Assess the potential harmful consequences of future flood events within the study area;
- Review the provisional national assessment of indicative Flood Risk Areas provided by the Environment Agency and provide an explanation and justification for any amendments required to the Flood Risk Areas;
- Provide a summary of the systems used for data sharing and storing, and provision for quality assurance, security and data licensing arrangements;
- Provide advice on the next steps required to ensure that Wokingham Borough Council complies with its role as the LLFA.

Environmental Protection Objectives:

As above

Conflicts between objectives / requirements:

Document Name:	National Heritage Protection Plan Framework		
Date of Publication:	2012		
Level:	National		
Status:	Statutory		

The Plan seeks to ensure that England's historic environment:

- Is not needlessly at risk of damage, erosion or loss;
- Is experienced, understood and enjoyed by local communities;
- contributes to sustainable and distinctive places to live and work;
- helps deliver positive and sustainable economic growth.

Relevance to / Implications for LFRMS:

While uncertainty remains over trends, currently it is recognised flooding events and erosion as threats whose severity may be increasing in certain areas as a result of climatic changes. Apparent reduction in precipitation may increase fire risks in moorland or woodland areas. Related directly to such threats, national and international directives and legally binding measures (for example for water management and water quality) may have a significant impact on heritage assets. Action will focus on partnership working to establish risk mapping and strategies for prioritising tactical responses.

New EU Directives, domestic legislation and policy (e.g. Water Framework Directive, Flood & Water Act 2010 and Waste Water NPS) as well as demand to develop micro-renewable energy sites will place increasing pressure on a range of historic water management assets (mills, pumping stations, dams, weirs, flood meadows etc.). Action should focus on completion of coverage for those categories most at risk of major change and on ensuring minimal loss of significance.

Specific Targets / Requirements / Indicators:

N/A

Environmental Protection Objectives:

The Plan's definition of protection is broad and includes developing a sound evidence base; advice to owners; investment in the repair and maintenance of assets or their adaptive re-use; grant-aid and other forms of financial help; protection through the planning system or by designation; and sometimes recording ahead of unavoidable destruction.

Conflicts between objectives / requirements:

Heritage assets may need to be lost in order to provide suitable flood protection for the future if effective flood control measures cannot be installed or natural resources strengthed. Conflicts can arise when flood control measures are installed in cultural landscapes.

Appendix B: Environmental Baseline

Biodiversity/Flora and Fauna

The Borough of Wokingham has a number of designated sites of international, national and local conservation importance. As reported in the 2012/2013 Annual Monitoring Report¹, the Borough supports both a rich and diverse range of biodiversity and geodiversity which make a positive contribution to the overall quality of life and sense of place for residents and visitors in both urban and rural areas. The most important sites for biodiversity and geodiversity receive statutory protection under international and national legislation. Table 1 highlights the areas designated for their intrinsic environmental value. Although there are no Special Protection Areas (SPA's) in the Borough, 30% of the Borough lies within the 5km protection area for the Thames Basin Heath SPA. Additionally there are three country parks (233ha), 11 Nature Reserves (110ha), and one Suitable Alternative Natural Greenspace (18.5ha).

Table 1: Areas designated for their intrinsic environmental value in the Boroug				
Site	Number of Sites			

Sites of Special Scientific Interest	4
Local Wildlife Sites	117
Regional Important Geological Sites	3

The Thames Basin Heaths SPA is an internationally recognised site for its heathland bird populations of Woodlark, Nightjar and Dartford Warbler. Heathlake Site of Special Scientific Interest (SSSI) is an area of woodland and heathland with a shallow 7 acre lake; it is the only acid lake in Berkshire. This means it has a naturally high pH which supports several rare plants, including the water-millfoil and the 6 stemmed water crowfoot². Warren Wood Country Park is an 8 hectare area of secondary birch oak, pine woodland and a large meadow. The site also contains a scheduled ancient monument a round burial mound, which is the largest example of a 'bell barrow' in Berkshire and dates back to between 2000 and 1300 BC³. A significant impact is likely to occur from the net increase in residential development, and consequent increased population, in an area where residents are likely to visit the local sites for recreation. See Figure 1.

Future trends: Thames Valley Environmental Records Centre (TVERC) have stated that without adequate protection, conservation and enhancement, the biodiversity and ecology of existing areas will continue to be threatened by development pressure.

¹ Wokingham Borough Council (2013) Local Planning Authority's Monitoring Report

² Wokingham Borough Council (2014) Heathlake Site of Special Scientific Interest

³ Wokingham Borough Council (2014) Warren Wood



Population

The Borough is made up of 17 parishes and towns. Current projections indicate that the population of the Borough continues to increase; by 2014 the Borough can expect a population of around 159,000 which may increase further to some 167,400 by 2029. The latest Census data for shows that the Borough had a population of 156,663 in 2012. The population of Borough has grown by 2.8% in ten years; this growth however is not universal across all age groups. The Borough's population growth is around 5% lower than that for the South East more generally, and nationally, see **Table 2**. This compares with an 8% increase across Berkshire as a whole. However, this countywide figure is skewed slightly by the increase in population in Slough (18%). If Slough was removed from the Berkshire total, then the rate of increase would fall to 6%.

Region	2011 population	Change in population	
		Number	Percentage
Bracknell Forest	113,200	+3,583	+3.3%
Reading	155,700	+12,604	+8.8%
Royal Borough of Windsor and Maidenhead	144,600	+10,974	+8.2%
Slough	140,200	+21,133	+17.7%
West Berkshire	153,800	+9,317	+6.4%
Wokingham	154,380	+4,171	+2.8%
Berkshire	861,900	+61,782	+7.7%
South East	8,634,800	+634,250	+7.9%
England and Wales	56,075,900	+4,033,984	+7.8%

Table 2: Population change 2001 – 2011

Table 3 breaks the previous analysis for Wokingham down more comprehensively by quinary age groups, and compares with the regional and English average. Looking at the older age groups, the table shows a greater than average increase in numbers of older people above 65 years of age.

Age Group	2011 Wokingham	Change in population since 2001			
		Wokingham numbers	Wokingham Percentage	South East Percentage	England Percentage
0 to 4	10031	+901	+9.8%	+13.0%	+13.4%
5 to 7	5758	-154	-2.6%	+0.2%	-0.6%
8 to 9	3793	-322	-7.8%	-8.9%	-10.8%
10 to 14	9740	-628	-6.0%	-0.7%	-4.5%
15	2048	+49	+2.4%	+7.6%	+4.3%
16 to 17	4090	+319	+8.4%	+10.0%	+6.7%

 Table 3: Population change for 2011 in quinary age groups⁴

⁴ Office for National Statistics (2011) Age Structure 2011. Accessed from

http://neighbourhood.statistics.gov.uk/dissemination/LeadPage.do?pageId=1032&tc=1374069159109&a=7&b=6275319&c=Wokingham&d=13&e=15&f=270&g=6398943&i=1001x1003x1032x1004x1005&l=276&o=1&m=0&p=1&r=1&s=1374069159109&enc=1

18 to 19	3349	-446	-11.7%	+16.1%	+16.7%
20 to 24	7428	-1049	-12.3%	+15.6%	+21.7%
25 to 29	8071	-1665	-17.1%	+5.5%	+11.6%
30 to 44	33741	-3109	-8.4%	-2.5%	-1.6%
45 to 59	33116	+1922	+6.1%	+10.2%	+10.7%
60 to 64	9426	+2461	+35.3%	+38.7%	+32.6%
65 to 74	13052	+2750	+26.6%	+14.2%	+10.9%
75 to 84	7791	+2238	+40.3%	+7.9%	+6.4%
85 to 89	1896	+550	+40.8%	+20.7%	+21.7%
90 and Over	1050	+334	+46.6%	+28.9%	+27.6%

As shown in **Figure 1**, the change in population mirrors that of the South East and England to a moderate extent. Overall the age structure of the Borough's population is similar to the national average, apart from having relatively fewer young people aged 15 to 44 years. This is partly due to a lack of universities within the immediate vicinity, which means that many students live away from home, but also high house prices represent a barrier to young people setting up home in the Borough. The proportion of the Borough's population aged 65 years or over is above the national average age structure, which can have implications on health care and the provision of amenities.

Figure 1: 2001 – 2011 population change for varying age groups for Wokingham, the South East and England


Table 4 sets out the ethnic group residents of Wokingham defined themselves as during the 2011 census⁵. The largest ethnic group was 'White; English/Welsh/Scottish/Northern Irish/British', reflecting the trend within the South East and England as a whole, followed by 'White; Other White'. The third largest group was 'Asian/Asian British; Indian', again reflecting the pattern in the Southeast and England.

Ethnicity	Wokingham	South East	England
White; English/Welsh/Scottish/Northern Irish/British	129,119	7,358,998	42,279,236
White; Irish	1,367	73,571	517,001
White; Gypsy or Irish Traveller	291	14,542	54,895
White; Other White	5,748	380,709	2,430,010
Mixed/Multiple Ethnic Groups; White and Black Caribbean	890	45,980	415,616
Mixed/Multiple Ethnic Groups; White and Black African	337	22,825	161,550
Mixed/Multiple Ethnic Groups; White and Asian	1,273	58,764	332,708
Mixed/Multiple Ethnic Groups; Other Mixed	682	40,195	283,005
Asian/Asian British; Indian	5,331	152,132	1,395,702
Asian/Asian British; Pakistani	2,865	99,246	1,112,282
Asian/Asian British; Bangladeshi	222	27,951	436,514
Asian/Asian British; Chinese	1,203	53,061	379,503
Asian/Asian British; Other Asian	1,817	119,652	819,402
Black/African/Caribbean/Black British; African	1,203	87,345	977,741
Black/African/Caribbean/Black British; Caribbean	712	34,225	591,016
Black/African/Caribbean/Black British; Other Black	178	14,443	277,857
Other Ethnic Group; Arab	500	19,363	220,985
Other Ethnic Group; Any Other Ethnic Group	642	31,748	327,433

 Table 4: Ethnic Group for 2011

Table 5 shows that the employment status of residents is generally healthy. In the ten year period from 2001 to 2011 there was an increase in economically active residents in employment and those unemployed, in line with the rest of $England^{6}$.

Table 5: Employment status of Wokingham residents and England for 2001 - 2011

⁵ Office for National Statistics (2011) Ethnic Group 2011. Accessed from:

 $[\]frac{\text{http://neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=3\&b=6275319\&c=Wokingham\&d=13\&e=61\&g=6398\\943\&i=1001x1003x1032x1004\&m=0\&p=1\&r=1\&s=1368097908960\&enc=1\&dsFamilyId=2575\\$

⁶ Office for National Statistics (2011) Economic Activity, 2011. Accessed from:

	Wokingham 2001	Wokingham 2011	Change	England 2001	England 2011	Change
Economically active: Employee: Part-time	13,275	15,282	+2,007	4,196,041	5,333,268	+1,137,227
Economically active: Employee: Full-time	54,636	51,260	+3,376	14,499,241	15,016,564	+517,323
Economically active: Unemployed	1,721	2,958	+1,237	1,188,855	1,702,847	+513,992
Economically active: Full-time Students	3,393	3,331	-62	917,582	1,336,823	+419,241
Economically inactive: Retired	12,517	14,976	+2,459	4,811,595	5,320,691	+509,096
Economically inactive: Student	4,607	4,441	-166	1,660,564	2,255,831	+595,267
Economically inactive: Looking after home / family	6,711	4,799	-1,912	2,316,229	1,695,134	-621,095

Future trends: In the future, there is likely to be a large increase in the proportion of older people as a result of improved lifestyles, diets, and medical advancements. In 2008 the population had over 21,000 (14%) people above retirement age⁷. This number is expected to increase in line with the current population projections for the Borough, resulting in the need for specialised housing and care facilities.

Human Health

Overall people in Wokingham consider themselves relatively healthy. According to the 2011 census, 87.9% of residents in Wokingham considered their health to be good or better compared with 81.4% of people in England, and 83.6% of residents in the South East⁸ (**see Table 6**). The health of people in the Borough is generally better than the English average, with life expectancy and levels of obesity better than the national and regional averages.

	Wokingham	South East	England
Very Good Health	54.3%	49%	47.2%
Good Health	33.6%	34.6%	34.2%
Fair Health	9.4%	12%	13.1%
Bad Health	2.1%	3.4%	4.2%
Very Bad Health	0.6%	1%	1.2%

 Table 6: Health of Wokingham according to the 2011 census

⁷ Wokingham Borough Council (2008) An Update of the Strategy for Older People in Wokingham

⁸ Office for National Statistics (2011) Heath and Provision of Unpaid Care. Accessed from: <u>http://neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=3&b=6275319&c=Wokingham&d=13&e=62&g=6398</u> <u>943&i=1001x1003x1032x1004&o=362&m=0&p=1&r=1&s=1368106230283&enc=1&dsFamilyId=2480</u>

The 2011 census also provides information about the level of unpaid care people provide to family, friends or neighbours with long term physical or mental health problems, see **Table 7**. 9% of people in Wokingham provide unpaid care, compared with 10.2% of people in England⁹.

able 7.1 rovision of unpaid bare in England and Workingham in 2011				
	Wokingham 2011	England 2011		
Provides No Unpaid Care	91%	89.8%		
Provides 1 to 19 Hours Unpaid Care a Week	6.6%	6.5%		
Provides 20 to 49 Hours Unpaid Care a Week	0.9%	1.4%		
Provides 50 or More Hours Unpaid Care a Week	1.5%	2.4%		

Table 7: Provision of unpaid care in England and Wokingham in 2011

Future trends: Nationally, we are living longer and have greater long-term care needs. It is acknowledged that people want quality services that meet the full range of individual needs, more local care, and the ability to take greater control over their health whilst being supported to remain as independent as possible. Changes in population and communities mean that we are less likely to be part of a close knit family providing support. For isolated rural communities this may mean additional transport links to services and the increased availability and use of broadband and other ICT technologies to provide local access to information about health, social care, housing and other Council services. Increased need for home adaptations or more specialised accommodation geared to allow as much independence as possible while supporting changing abilities is also likely.

Soil and Geology

Berkshire can be divided into three principal geological phases with their associated formations (see **Figure 2**).

The rolling, broad expanses of the Berkshire Downs, formed from the Upper Cretaceous Chalk, mark the northern edge of the basin. As the outcrop of the chalk slopes gently away to the south it is succeeded by sands and clays of Tertiary age which form the central part of the London Basin. These sediments were deposited in shallow marine, coastal and terrestrial environments and reflect changing sea-levels and periods of land uplift over the 20 million year period that they were laid down. The generally free-draining sands give rise to acidic soils which typically support heathland vegetation, although much of the original heathland in the Bracknell-Wokingham area is now fragmented and extensive conifer plantations have been planted.

Over the last two million years the area was not directly impacted by the repeated advances and retreats of the great ice sheets of the Ice Age. However, the arctic conditions that prevailed during glacial periods led to the formation of the characteristic dry valleys of the chalk downs. Throughout this period, the River Thames and its various tributaries transported vast amounts of sediment through the area. This was deposited as terraces of sand and gravel along the sides of the Thames valley. Today the gravels form an important economic resource and have been extensively quarried

⁹ Office for National Statistics (2011) Health and Provision of Unpaid Care. Accessed from:

http://neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=3&b=6275319&c=Wokingham&d=13&e=62&g=6398 943&i=1001x1003x1032x1004&m=0&p=1&r=1&s=1368108096658&enc=1&dsFamilyId=2480

for the production of aggregate. The large lakes left following extraction now provide important areas of open water for recreation and habitat for wildlife¹⁰.





DEFRA's agricultural census for June 2010 shows that there are 8,825ha of agriculturally managed land in Reading and Wokingham managed by 125 agricultural holdings. This is a 2% increase in total farmed area since 2007. There are 988 people employed directly in the agricultural sector in Reading and Wokingham, a 1% increase since 2007. In 2010, 1,756ha of land was used for growing cereals, 1,072ha for arable crops, 292ha for fruit and vegetables, and 4,910ha for grassland. The land also supported livestock numbering (including poultry) 68,415¹².

Future trends: There is evidence that soil degradation is continuing in the UK and around the world despite greater awareness of the importance of soils. Defra updated 'Safeguarding our Soils; a strategy for England' in 2011. The intention is to increase the sustainable use of soils in England and ensure that the protection of soil health is a consideration in decisions made relating to land use planning¹³. There is increasingly a better understanding of the importance of soils to sustainable agriculture and food production. Sustainable agricultural techniques and organic food production methods have increased in recent years and are predicted to continue to gain importance in the future. The European Commission adopted the Thematic Strategy for Soil Protection and are working towards a 'Soil Framework Directive'. In 2012, an update was published on the implementation of the

http://www.naturalengland.org.uk/ourwork/conservation/geodiversity/englands/counties/area_ID2.aspx

¹² Defra (2013) Land use and Livestock. Detailed results and datasets. Accessed from: <u>https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/183111/defra-stats-foodfarm-landuselivestock-june-results-localauthority2010-120608.xls</u>

¹³ Defra (2011) Safeguarding our Soils. A strategy for England. Accessed from:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69261/pb13297-soil-strategy-090910.pdf

¹⁰ Natural England (2014) West Berkshire (including Reading, Wokingham, Bracknell Forest, Windsor and Maidenhead, and Slough). Accessed from:

¹¹ Berkshire Geoconservation (2003) *Geology of Berkshire*. Accessed from: <u>http://www.berksgeoconservation.org.uk/geology.php</u>

strategy and further proposals for the Soil Framework Directive. The update highlights common principles for protecting soil and the most sustainable method for each territory¹⁴.

Water

High levels of nitrates are found in areas of poor water quality. There are no Nitrate Sensitive Areas in Wokingham, but there are large areas covered by Nitrate Vulnerable Zones (NVZs). NVZs apply to areas where surface and/or groundwater contains nitrate concentrations in excess of 50mg/l. 78% of land in the Thames River Basin District is covered by NVZ's¹⁵. The widespread classification of NVZs in Wokingham is reflective of the land use within the area and the intensive agricultural practices which are employed. As a consequence farmers within NVZs are required to comply with a mandatory Action Programme measures designed to protect both ground and surface waters against pollution caused by nitrates from agriculture. The European Commission (EC) nitrates directive requires areas of land that drain into waters polluted by nitrates to be designated as Nitrate Vulnerable Zones (NVZs). NVZ's cover 62% of England; the most prominent in Wokingham is Surface Water NVZ (see **Figure 3**).



Figure 3: Wokingham NVZ map

Water resources within Wokingham are managed by water and wastewater services companies South East Water and Thames Water. The Borough falls largely within the Loddon catchment, however the geography of the most northern section of the Borough means that a small section drains to the River Thames and therefore falls within the Thame catchment. The main drainage pattern is

¹⁴ European Commission (2012) Soil Thematic Strategy. Accessed from: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012DC0046:EN:NOT

¹⁵ Defra (2009) Water for Life and Livelihoods.

from south to north, connecting with the main river valley – the Thames Valley – draining from west to east.

The Loddon Catchment is predominantly rural, with some urban areas including Wokingham. The main River Loddon is fed by a number of tributaries including the Rivers Whitewater, Hart and Blackwater as well as the Emm Brook. This catchment also includes Fleet Pond, Heath Lake and Mytchett Lake Sites of Special Scientific Interest (SSSI). Phosphate levels are high in a number of rivers within the Catchment area, for example the River Blackwater. High levels of nutrients in rivers can lead to excessive plant growth and in turn affect the river's wildlife. Sources of nutrients in this catchment include effluent from sewage treatment works and agricultural pollution.

The Thame catchment is predominately rural in character and is the predominant land use is agricultural. This catchment area also includes part of the Chilterns which includes extensive beech woodland. The River Thame and the River Wye are the principal rivers. The Grand Union Canal and its Wendover and Aylesbury Arms provide amenity benefit. There are several water-dependent sites of nature conservation importance, with Tring reservoirs Site of Special Scientific Interest (SSSI) being the largest. The River Wye is designated a salmonid fishery and is a partly urbanised chalk stream. The major urban areas of Aylesbury, Thame and High Wycombe are experiencing significant growth and development, increasing the demand for water resources across the catchment¹⁶.

The Thames is joined by a number of tributaries including the River Loddon, which is a significant river its own right and has its own tributary river - the Blackwater River. The watershed of the Loddon includes a network of numerous small tributary streams set within very shallow 'valleys'. These include (from north to south of the district) Twyford Brook; Billingbear Brook; Emm Brook, with its tributaries Ashridge Brook, Waterloo Road Stream and Queens Brook and Barkham Brook.

The Foudry Brook in the west of the district drains into the Kennet Valley - the former headwater of the Thames, which today is a tributary of the Thames. The Kennet does not fall within Wokingham District. Where the River Loddon joins the River Thames, the floodplain widens exhibiting an expansive character accommodating the branching of the River Thames forming St Patrick's Stream, west of Wargrave.

Future trends: Climate change is anticipated to have an impact on water supply due to more extreme climatic variability. Hotter summers are expected to result in increased water usage and reduce the period when groundwater sources can refill; in addition, soil moisture is expected to be reduced in summer, resulting in increased use of irrigation for crops. Overall, increased population and the effects of climate change are going to place greater pressures on a finite resource. The Environment Agency suggests that within less than thirty years there will be a major water shortage in the South East unless there is a reduction in the amount of water used or new resources are found.

A considerable amount of research is being carried out worldwide in an endeavour to quantify the impacts that climate change is likely to have on flooding in future years. Climate change is perceived

¹⁶ DEFRA (2009) River Basin Management Plan: Thames River Basin District. Accessed from:

http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/geth0910bswa-e-e.pdf

to represent an increasing risk to low lying areas of England, and it is anticipated that the frequency and severity of flooding will change measurably within our lifetime.

Climatic Factors

Changing weather patterns may be seen as direct indicators of climate change (see **Figures 4 and 5**). The Met Office's average figures for the South East of England (South East and Central South) for 1981-2010 indicate that minimum daily temperatures ranged from 1.4°C in February to a minimum of 12.2°C in July, while maximum temperatures ranged from 7.5°C in January to 22.0°C in July. Average monthly rainfall in the South East varies from 51.2mm in June, to 92.8mm in October, with an average annual total of 787.6mm¹⁷.

- Warming of the global climate system is unequivocal, with global average temperatures having risen by nearly 0.8 °C since the late 19th century, and rising at about 0.2 °C a decade over the past 25 years;
- It is very likely that man-made greenhouse gas emissions caused most of the observed temperature rise since the middle 20th century;
- Global sea-level rise has accelerated between mid-19th century and mid-20th century, and is now about 3mm per year. It is likely that human activities have contributed between a quarter and a half of the rise in the last half of the 20th century;
- Central England Temperature has risen by about a degree Celsius since the 1970's, with 2006 being the warmest on record. It is likely that there has been a significant influence from human activity on the recent warming;
- Temperatures in Scotland and Northern Ireland have risen by about 0.8°C since about 1980, but this rise has not been attributed to specific causes;
- Annual mean precipitation over England and Wales has not changed significantly since records began in 1766. Seasonal rainfall is highly variable, but appears to have decreased in summer and increased in winter, although with little change in the latter over the last 50 years;
- All regions of the UK have experienced an increase over the past 45 years in the contribution to winter rainfall from heavy precipitation events; in summer all regions except NE England and N Scotland show decreases;
- There has been considerable variability in the North Atlantic Oscillation, but with no significant trend over the past few decades;
- Severe windstorms around the UK have become more frequent in the past few decades, though not above that seen in the 1920's;
- Sea-surface temperatures around the UK coast have risen over the past three decades by about 0.7 °C; and
- Sea level around the UK rose by about 1mm a year in the 20th century, corrected for land movement. The rate for the 1990's and 2000's has been higher than this.

¹⁷ Met Office (2014) Average Tables. Accessed from:

http://www.metoffice.gov.uk/public/weather/climate/?tab=climateTables

Figure 4: Average annual rainfall (mm) 1981 – 2010





Future trends: Understanding and adapting to the realities of climate change will be one of the challenges the District will be faced with. Climate change scenarios for the UK (UKCIP02) provide the best information on which to form an understanding of climate change, it shows that it is expected to be more pronounced in the South East than in any other UK region. Nationally it is estimated that there will be an annual warming by the 2080's of between 1°C and 5°C, with greater summer warming in the south-east than the north-west, and with greater warming in summer and autumn than in winter and spring. Over the same period, although annual rainfall totals are not expected to show much change, winters are expected to be up to 30% wetter than at present, and summers up to 50% drier. A changing climate will bring about more storms, heavier rain, stronger winds and more summer heat-waves. It will have an impact on the landscape and our lifestyles; rare wildlife habitats and species may be threatened by the changing climate; farming could suffer from more pests, worse soil erosion and a decrease in agricultural land; more intense rain, rising sea levels and wetter soils will increase flood risk; and water supplies will be affected along with our demands made on them.

Material Assets

Previously Developed Land

The percentage of housing completions on previously developed land in the Borough has been consistently above the previous Government's target of 60%¹⁸, despite a change in the definition of previously developed land (which now excludes gardens).

The Adopted Core Strategy seeks to accommodate 13,232 dwellings between 2006 and 2026. It concentrates development in four key sites (SDL) within the Borough. These are at Arborfield Garrison, south of the M4, north Wokingham and south Wokingham.

Whilst the four SDL will take the majority of development, in order to support existing facilities and services in settlements across the Borough, sites for at least 1,000 additional dwellings will be identified in the Managing Development Delivery DPD. Sites for these dwellings will be identified having regard to the vision for the Borough and the relative sustainability of the location. The Strategic Housing Land Availability Assessment (SHLAA) indicates that there is sufficient land within the Borough to accommodate the sites for at least 1,000 dwellings without resorting to areas with a high probability of flood, containing Sites of Special Scientific Interest (SSSI), within 400m of the TBH SPA or the green belt.

Future trends: In line with the Adopted Core Strategy, it can be assumed that WBC seeks to optimise the use of previously developed land and buildings to accommodate new housing development without resorting to the use of areas with a high probability of flooding.

The Adopted Core Strategy includes a target to ensure that at least 80% of employment development by 2026 is on previously developed land within development limits.

Minerals and Aggregates

Berkshire is underlain by three main types of minerals: sand and gravel; chalk; and clay. Of these only sand and gravel is extracted at any significant scale. Current planning policy on the supply of aggregate minerals state that Berkshire should make provision in its minerals plan for a contribution to this supply at the rate of 1.57 million tonnes of sand and gravel per year. Major challenges accompany sand and gravel extraction in Berkshire. The concentration of development in Berkshire where sand and gravel naturally occur and the extent of planning designations aimed at preserving the special character of the countryside all result in pressure on reconciling the supply of aggregates with protecting the environment and the amenity of local communities¹⁹.

Future trends: The Replacement Minerals Local Plan for Berkshire (2001) sets out the vision and spatial development strategy for minerals in the Borough. It also provides the framework for development control decisions on minerals applications. There is a continued move towards recycling of aggregates to keep demand for primary aggregates down. The replacement plan is due for adoption in 2015.

Transport and Transport Infrastructure

¹⁸ Wokingham Borough Council (2005 - 2013) Annual Monitoring Report. Accessed from <u>http://www.wokingham.gov.uk/planningcontrol/planning/planningpolicies/ldf/amr/</u>

¹⁹ Joint Berkshire Council's (2010) Joint Minerals and Waste Monitoring Report 2010

The district's position in central southern England and its good links to the transport network have been key factors in Wokingham's development. Wokingham's public transport network comprises of six rail stations and 30 registered bus routes. Of the 30 registered bus routes almost half receive subsidies from the Council or neighbouring local authorities. 7.5 million journeys are made by public transport to, form and within the Borough each year. Heathrow Airport is readily accessible from the Borough.

Local Transport Plan (Strategy 2011 - 2026)²⁰

- To have a resilient, safe highway network that balances capacity for all users, enhances the economic prospects of the Borough, and promotes sustainable travel
- To work with partners to promote walking and cycling as a health-enhancing physical activity for all of our residents
- To promote an integrated and inclusive public transport network that provides a convenient, acceptable, reliable and affordable alternative to car travel
- To enable people who live, visit and work in the Borough to make informed, safe and sustainable travel decisions from a range of transport options
- To manage the demand for travel in order to ensure that people have a high level of access to different destinations, with sufficient choice, whilst minimising the adverse effects of congestion

Future trends: People in the South East travel further than those in any other region – 8,000 miles per year against an England average of 6,800 miles per year. In addition to this, vehicle trips in the South East grew by 17.5% between 2001 to 2011. Between 2001 and 2010 there was a 34% increase in rail passenger demand. The Local Transport Plan aims to implement a number of policies relating to road, rail and public transport, in particular, increased usage of public transport and a reduction in the use of the car. There are also objectives in relation to encouraging walking and cycling. Wokingham's Transport Vision is:

'to provide a cost-effective, inclusive transport network that enhances the economic, social and environmental prospects of the Borough whilst promoting the safety, health and wellbeing of those that use it²¹.

Energy Infrastructure

The following target shave been set by in the Sustainable Environment Strategy 2010 - 2020²² by the Borough relating to energy use and infrastructure;

- Lead the way in carbon reduction, including the Carbon Trust Local Authority Carbon Management Programme and Carbon Reduction Commitment.
- Encourage residents to improve the energy efficiency of their homes through advice and support

²⁰ Wokingham Borough Council (2011) Local Transport Plan 2011 - 2026

²¹ Wokingham Borough Council (2011) Local Transport Plan 2011 - 2026

²² Wokingham Borough Council (2010) Sustainable Environment Strategy 2010 - 2020

 Motivate and support local businesses to reduce their carbon footprint through initiatives, such as, the LoCUS partnership and Sustainable Routes project.

The Borough will have succeeded in their targets if by 2020;

- Domestic housing and transport carbon emissions have reduced by 20%
- Carbon emissions on our estate have fallen by 40% reducing energy costs and avoiding financial penalties thus easing the burden on the tax payer
- No household on benefits live in homes with a Standard Assessment Procedure (SAP) rating less than 35 helping to reduce fuel poverty
- At least 600 local businesses have accessed advice on energy management and sustainable transport
- Car travel per head has reduced
- All new homes are being built to the zero carbon standard and produce 10% renewable energy
- There are no areas within the Borough where nitrogen dioxide concentrations in the air exceed national air quality objectives.
- At least 50% of household waste is recycled or composted
- The Borough generates at least 10% of its energy from renewable sources
- Reduced water use to 135 litres per person per day

As highlighted in the strategy, Wokingham Borough is the home of the Green Park wind turbine, which has become a landmark of renewable energy in the Borough and surrounding areas. The Government has a target to produce 10% of electricity from renewable sources by 2010. The Borough is exceeding this Government target for wind but it is falling short in terms of other renewable energy technologies, such as, biomass, hydro and solar power generation.

The Core Strategy²³ ensures that new developments are sustainable from the outset with higher levels of energy efficiency, good transport links and ample green space. This document will be an important mechanism through which emissions reduction will be implemented. The type, location and density of homes, businesses and community uses have a major role to play in determining the energy demand of their development and uses. The use of sustainable technologies, such as, solar panels, photovoltaic, combined heat and power and biomass, should be considered and incorporated into developments at the design stage to contribute to renewable energy.

Future trends: The Thames Valley and Surrey sub-region currently had a total of 71.44 MWe installed capacity in 2007 while the 2010 target was 140 MWe.

Tourism and Recreation Infrastructure

The Borough lies in a naturally central location, within an hour's reach of London, Bristol, Oxford and the south coast. Unlike its neighbouring Boroughs, tourism does not make such a large contribution to the economy in Wokingham. However, many of the large tourist attractions of the neighbouring Boroughs are easily accessible from Wokingham, such as Windsor Castle and Legoland. Of the

²³ Wokingham Borough Council (2010) Wokingham Borough Core Strategy

66,400 employee jobs in Wokingham Borough, 71.5% are full time and 28.5% are part time. In Wokingham there are considerably more jobs in the service industry compared to manufacturing, construction and tourism.

Future trends: One of the priorities is to ensure the continued success of the Tourism industry in Wokingham, especially post 2012 Olympics and Paralympics.

Waste and Waste Infrastructure

According to the Berkshire Unitary Authorities Joint Minerals and Waste Annual Monitoring Report 2010²⁴ there has been a reduction year on year (between 2007 and 2010), in municipal solid waste. The report also highlights international and national legislation driving changes in waste management towards a more sustainable approach²⁵.

Key points are:

- Over 40% of household waste was recycled in England in 2010/11, compared to 11% in 2000/01;
- The average residual waste per person in England has reduced by 88kg since 2006/07 to 263kg/person/year in 2010/11;
- 52% of commercial and industrial waste was recycled or reused in England in 2009, compared to 42% in 2002/3;
- 50% of local authority collected waste generated in the UK was sent to landfill in 2010/11, compared to an EU average of 40%;
- According to RecycleNow, UK recycling saves more than 18 million tonnes of carbon dioxide a year – equivalent to taking 5 million cars off the road;
- The UK produced in 2009 approximately 8.3 million tonnes of food and drink waste per year, 7.0 million tonnes of which was food;
- In England this could generate at least 3-5 TWh electricity per year by 2020 (a heat equivalent of 6-10TWh);
- The UK water industry treats 66% of sewage sludge by AD, generating in the region of 1 TWh per year of electricity in 2010;
- The diversion of biodegradable wastes to AD can reduce greenhouse gas emissions from landfill. For example, capturing the biogas from one tonne of food waste will save between 0.5 and 1 tonne of CO₂ equivalent; and
- Direct emissions from the waste management greenhouse gas inventory sector in the UK accounted for 3.2% of the UK's total estimated emissions of greenhouse gases in 2009, or 17.9 Mt CO₂ compared to 59 Mt CO₂ in 1990. Of the 2008 total, 89% arises from landfill, 10% from waste-water handling and 2% from waste incineration (these figures are rounded)²⁶.

²⁴ Wokingham Borough Council (2010) Berkshire Unitary Authorities Joint Minerals and Waste Annual Monitoring Report

²⁵ Wokingham Borough Council (2010) Economic Development Strategy

²⁶ Defra (2014) Waste and Recycling: <u>http://www.defra.gov.uk/environment/waste/</u>

The Core Strategy²⁷ highlights the councils longer term vision to improve rates of recycling. To meet these future targets the Council has entered into a 25 year waste PFI contract with re3 partners (Bracknell Forest and Reading Borough Council). This contract will upgrade the existing waste facilities, provide a materials recycling facility and divert municipal waste to an "Energy from Waste" plant. Challenges for the future are to increase recycling by developing facilities and additional collections and to process kitchen waste, which is currently landfilled, if and when appropriate infrastructure becomes available in the region. The Council will seek appropriate contributions from developers to support innovation and new initiatives in this area.

The report also states that planning permission will be granted for developments that meet a number of criteria including those that incorporate facilities for recycling of water and waste to help reduce per capita water consumption.

Most of the Borough's waste is currently sent for disposal in landfill sites. By far the greatest generator of waste is the construction industry (63.8% of waste generated in Berkshire) followed by Households (18.5%). However, landfill void space continues to be used up at a faster rate than it is being created. In addition, current practices are wasteful of resources and fail to deal with waste arising in the most environmentally sound manner. A radical change in waste practice is developing through the Minerals Local Plan for Berkshire which in turn is implementing the Government's 'Waste Hierarchy' advocated in the White Paper 'Making Waste Work' (December 1995). This places emphasis on minimisation and the efficient use of re-usable resources.

Future trends: The Government has set challenging targets to increase the recycling of household waste and reduce dependence on landfill. The England Waste Strategy 2007 sets out targets for recycling and composting. For recycling and composting of household waste the target is 50% by 2020; and in the recovery of municipal waste is 67% by 2015 and 75% by 2020.

Cultural Heritage

The Borough has a rich natural heritage. There are 277 Wildlife Heritage Sites²⁸ in the Borough, which protect locally important habitats and ensure the sites are taken into account during planning applications. In addition to the physical characteristics of Wokingham, the area is also strongly influence by human activities since the last ice age. Changes in land management and the expansion of development in recent times have had, in particular, fundamental effects on the character of the landscape. These occupations and settlements have changed and altered the landscape dramatically.

There are a number of monuments in Wokingham on the Heritage at Risk Register (see **Table 9**)²⁹. See Figures 2 - 5.

Site Name	Designation	Condition	Description
Fawley Court	Registered Park	Generally	Early C18 garden and pleasure grounds

 Table 9: Wokingham Heritage at Risk Register

²⁷ Wokingham Borough Council (2010) Wokingham Borough Core Strategy

²⁸ NBN Gateway (2014)2003-2004 Wokingham WHS Surveys. Accessed from: https://data.nbn.org.uk/Datasets/GA001113

²⁹ English Heritage (2013) Heritage at Risk Register: South East

and Temple Island	and Garden Grade II	unsatisfactory with major localised problems	surrounding a 1680s house set within a park landscaped by Lancelot Brown. Most of the estate and park are in separate ownership. Discussions with the new owner of the house and pleasure grounds are underway. English Heritage agreed to works to improve the vegetation structure within the gardens but requested a landscape Conservation Management Plan that engages with the other key owners, before agreeing to any further major works. A joined up approach to management is essential.
Site of St Bartholomews Church	Grade II listed building / Scheduled Monument	Very bad	Old parish church, now a roofless ruin. Originally C13 in flint and stone, with substantial probable C18 brick rebuilding. One wall partially standing, with fragments of later brick segments. Very overgrown. Risk of further collapse.
Bearwood College	Registered Park and Garden Grade II	Generally unsatisfactory with major localised problems	This C19 landscape park and woodland surrounds a Victorian country house standing on formal terraces, with gardens by William Sawrey Gilpin and Pulham. The school which now occupies the house helped secure its future after WWI. The landscape park is now subdivided into two golf courses. Subsequent and current development and management of the gardens and woodland, plus a lack of specialist guidance and resources, challenge the integrity and survival of the historic landscape.
Cropmark complex south west of St Patrick's Avenue	Scheduled Monument	Extensive significant problems	-
Ring ditch cropmark east of St Patrick's Avenue	Scheduled Monument	Extensive significant problems	-
Cropmark enclosure and pits north east of St Patrick's Avenue	Scheduled Monument	Extensive significant problems	-
Infirmary Stables	Scheduled Monument	Very bad	A specialised 'horse hospital' built 1911-12. The building is redundant by virtue of changes in army practices (reduced cavalry activity).
Cropmark Site east of Broadmoor Lane	Scheduled Monument	Generally satisfactory but with significant localised problems	-

Future trends: The conservation of historic buildings and areas has helped to sustain the distinctive communities in the District. The National Heritage Protection Plan identifies that:

"While uncertainty remains over trends, currently we recognise flooding events and erosion as threats whose severity may be increasing in certain areas as a result of climatic changes. Apparent reduction in precipitation may increase fire risks in moorland or woodland areas. Related directly to such threats, national and international directives and legally binding measures (for example for water management and water quality) may have a significant impact on heritage assets³⁰."

³⁰ English Heritage (2013) *National Heritage Protection Plan*. Available online at: <u>http://www.english-heritage.org.uk/content/imported-docs/k-o/nhpp-action-plan.pdf</u>



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Landscape

As highlighted in the Landscape Character Assessment³¹ the landscape is a result of various human and physical influences, having permanent and fundamental impacts on its appearance. The qualities of the geological substrate affect the nature and consequences of weathering, erosion and deposition, in turn influencing the landform, hydrological patterns and the range of soil conditions created. These patterns provide the template for human activities, for example determining the most appropriate locations for agriculture, settlement or mineral extraction.

The Wokingham Landscape Character Assessment identifies the following Landscape Areas within the Borough:

The River Landscapes

- A1: Thames River Valley;
- A2: Loddon River Valley;
- A3: Blackwater River Valley;
- B1: Loddon River Valley with Open Water;
- B2: Thames River Valley with Open Water;
- B3: Blackwater River Valley with Open Water;
- C1: Arborfield River Terrace;
- C2: Hurst River Terrace;

The Chalk Landscapes

- D1: Remenham Wooded Chalk Slopes;
- D2: Sonning Wooded Chalk Slopes;
- E1: Remenham Arable Chalk Plateau;
- F1: Bowsey Hill Wooded Chalk Knolls;
- G1: Hare Hatch Farmed Chalk Slopes;
- H1: Wargrave-Twyford Arable Chalk Lowlands;

The Clay Landscapes

- I1: Ashridge Farmed Clay Lowland East of Wokingham;
- I2: Riseley Farmed Clay Lowland;
- I3: Grazeley Farmed Clay Lowland;
- I4: Hurst Farmed Clay Lowland;
- J1: Wokingham-Winnersh Settled and Farmed Clay;
- J2: Arborfield Cross and Barkham Settled and Farmed Clay;
- J3: Spencers Wood Settled and Farmed Clay;
- J4: Woodley-Earley Settled and Farmed Clay;
- K1: Stanlake Farmed Sand and Clay Lowland Twyford and Ruscombe;

The Sand Landscapes

- L1: Bearwood Wooded Sand and Gravel Hills;
- L2: Farley Hill Wooded Sand and Gravel Hills;

³¹ Wokingham Borough Council (2014) Wokingham District Landscape Character Assessment

- L3: Stanford End Wooded Sand and Gravel Hills;
- M1: Finchampstead Forested and Settled Sands;
- M2: Finchampstead Ridges Forested and Settled Sands; and
- N1: Holme Green Pastoral Sandy Lowland.

Further details on the nature of each of these landscapes are provided by the Wokingham Landscape Character Assessment.

The soil type and conditions strongly relate to the nature of the underlying geology and drift deposits and the influences of hydrology, such as the susceptibility to seasonal waterlogging in river valleys. This in turn affects the land use potential and intensity and type of land use and its subsequent ability to support different assemblages of natural vegetation.

Assessment of local and national Biodiversity Action Plans (BAPs) and statutory and non-statutory wildlife site data for Wokingham indicate that a wide range of habitats occur within the county. Wokingham's most valuable habitats are summarised below as:

- Woodland;
- Grassland;
- Rivers and wetlands; and
- Heathland.

Future trends: The Berkshire Landscape Character Assessment states that the current driving forces relating to landscape change are agriculture/forestry, recreation and development. Agriculture is currently in recession and inevitable restructuring of the agricultural economy is resulting in increased farm units and expansion, or conversely land coming out of production resulting in lifestyle and hobby farms. In addition, a loss of markets in forestry has resulted in a decline in woodland management especially those of ancient origin managed under traditional regime. Development is also a powerful force for change. The increasing pressure from expanding business economies and the need to accommodate housing is threatening landscape character. Other potential changes to landscape character relate to energy crops, mineral extraction (although sympathetic restoration has resulted in the creation of important new wetland landscape and habitats) and telecommunications. Tourism and recreation can also threaten landscape character.

Appendix C: SEA Matrices

Key to Matrices

Potential major positive effect	++
Potential minor positive effect	+
Uncertain	?
No or negligible effect	0
Potential minor negative effect	-
Potential major negative effect	

Objective 1: Continue to improve knowledge and understanding of current and future local sources of flood risk within Wokingham borough.

Management Measures:	M/A1	– M/A5
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SEA Headline objectives	Score	Commentary
1. To ensure biodiversity is conserved and enhanced	0	Measures set out in the LFRMS around improving knowledge and understanding of local sources of flood risk are unlikely to have an effect on biodiversity.
2. To improve health and wellbeing and reduce inequalities	+	Through using social media to improve knowledge in the general public of flood risk in the Borough, M/A 5 would be expected to reduce the adverse health effects of flooding.
3. To protect soils and geodiversity	0	Measures set out in the LFRMS around improving knowledge and understanding of local sources of flood risk are unlikely to have an effect on soils and geodiversity
4. To maintain and improve the water quality of the district's rivers and ground waters.	++	Developing a SWMP is likely to have a long term significant positive effect on surface water drainage.
5. To ensure that flood risk is not increased and where possible minimised	++	Developing a SWMP (M/A 4) and promoting understanding the future local sources of flooding in the local area will not increase flood risk and is likely to help minimise future flood risk.
6. To Reduce emissions contributing to climate change and ensure adaptive measures are in place to respond to climate change	0	Measures set out in the LFRMS around improving knowledge and understanding of local sources of flood risk are unlikely to have an effect on climate change.
7. To protect material assets	++	Improving flood risk knowledge, understanding future sources of flood risk and developing a SWMP will help protect material assets from the damaging effects of flooding.
8. To protect and enhance the built, cultural and historic environment	++	Improving flood risk knowledge, understanding future sources of flood risk and developing a SWMP measure M/A4 will help protect districts historic environment from the damaging effects of flooding.
9. To conserve and enhance the character of the landscape	0	Measures set out in the LFRMS around improving knowledge and understanding are unlikely to have an effect on the character of the landscape

Objective 2: Work collaboratively and develop effective partnerships with other Flood Risk Management Authorities and local communities to deliver a sustainable, cost effective approach to flood risk management authorities and local communities to deliver a sustainable, cost effective approach to flood risk and provides wider environmental and social benefits where possible.

SEA Headline objectives	Score	Commentary
1. To ensure biodiversity is conserved and enhanced	0	Measures set out in the LFRMS work collaboratively and develop and deliver a sustainable cost effect approach to flood risk are unlikely to have an effect on biodiversity
2. To improve health and well- being and reduce inequalities	+	Through using social media to spread information and raise awareness in local communities of flood risk in the Borough, M/A10 would be expected to reduce the adverse health effects of flooding.
3. To protect soils and geodiversity	0	Measures set out in the LFRMS to work collaboratively and develop effective partnerships with other Flood Risk Management Authorities are unlikely to have an effect on soils and geodiversity
4. To maintain and improve the water quality of the district's rivers and ground waters.	++	Measures set out in the LFRMS to deliver a sustainable and cost effective approach to flood risk management that reduces flood risk, and to promote actions emerging from the SWMP ($M/A7 - 8$) are likely to have a significant positive effect on the Borough's water quality.
5. To ensure that flood risk is not increased and where possible minimised	++	Promoting actions emerging from the SWMP and working with partners to identify flood alleviation schemes (M/A 9) would minimise the risk of flooding.
6. To Reduce emissions contributing to climate change and ensure adaptive measures are in place to respond to climate change	+	Measures set out in the LFRMS to work collaboratively and develop and deliver a sustainable cost effect approach to flood risk are likely to lead to better flood risk management, a key aspect of adapting to climate change.
7. To protect material assets	++	Measures set out in the LFRMS to deliver a sustainable cost effective approach to flood risk management that reduces flood risk are likely to directly protect material assets.
8. To protect and enhance the built, cultural and historic environment	+	Measures set out in the LFRMS to deliver sustainable cost effective approach to flood risk management that reduces flood risk may help to protect the historic environment in the Borough from the damaging effects of flooding.
9. To conserve and enhance the character of the landscape	0	Measures set out in the LFRMS to work collaboratively and develop and deliver a sustainable cost effect approach to flood risk are unlikely to have an effect on the character of the landscape

Management Measures: M/A6 - M/A11

Objective 3: Ensure that planning and decisions take full account of flood risk, avoiding development in inappropriate locations minimising and preventing an increase in flood risk wherever possible.

Management Measures: M/A12 – M/A17

SEA Headline objectives	Score	Commentary
1. To ensure biodiversity is conserved and enhanced	+	Measures set out in the LFRMS ensuring that development is in appropriate locations to minimise and prevent an increase in flood risk has the potential to benefit biodiversity through the appropriate design of flood risk management measures and avoiding sensitive habitats.
2. To improve health and well- being and reduce inequalities	0	Measures set out in the LFRMS ensuring that planning decisions take full account of flood risk and avoid development in inappropriate locations are unlikely to have an effect on health.
3. To protect soils and geodiversity	+	Measures set out in the LFRMS ensuring that planning decisions take full account of flood risk and avoid development in inappropriate locations would be expected to take into account consideration of the potential effect on soils and geodiversity.
4. To maintain and improve the water quality of the district's rivers and ground waters.	+	Identifying the relevant stakeholders for reviewing planning and drainage applications (M/A 15) is likely to improve water quality.
5. To ensure that flood risk is not increased and where possible minimised	++	Measures set out in the LFRMS around planning decisions and development to minimise flood risk is likely to ensure that flood risk is not increased and is minimised.
6. To Reduce emissions contributing to climate change and ensure adaptive measures are in place to respond to climate change	+	Measures set out in the LFRMS to take account of flood risk in planning and to avoid development in inappropriate locations are key to considering the need to adapt to climate change
7. To protect material assets	+	Measures set out in the LFRMS to ensure planning decisions take flood risk into account are likely to have a positive effect on protecting housing and through M/A 17, promoting the Governments Flood Re scheme which provides reinsurance for housing.
8. To protect and enhance the built, cultural and historic environment	0	Measures set out in the LFRMS to take account of flood risk in planning and to avoid development in inappropriate locations in regards to flood risk are unlikely to have any effect on the historical environment of the Borough.
9. To conserve and enhance the character of the landscape	0	Measures set out in the LFRMS to take account of flood risk in planning and to avoid development in inappropriate locations in regards to flood risk are unlikely to have any effect on the character of the landscape.

Objective 4: Maintain and, where necessary, improve local flood risk management infrastructure and privately owned flood defence assets and Ordinary watercourses to reduce risk.

Management Measures:	M/A18 –	M/A20
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SEA Headline objectives	Score	Commentary
1. To ensure biodiversity is conserved and enhanced	0	Measures set out in the LFRMS to maintain and improve local flood risk management infrastructure is has the potential to benefit biodiversity through the appropriate design of flood risk management measures.
2. To improve health and well- being and reduce inequalities	++	Management measures improving local flood risk management infrastructure further reduce flood risk and in turn the risk to human health.
3. To protect soils and geodiversity	+	Measures set out in the LFRMS to maintain and improve local flood risk management infrastructure would be expected to take into account consideration of the potential effect on soils and geodiversity
4. To maintain and improve the water quality of the district's rivers and ground waters.	++	M/A 18 and 20 will significantly reduce the flood risk through improving flood infrastructure, reducing the risk of pollution.
5. To ensure that flood risk is not increased and where possible minimised	++	Ensuring that flood risk is not increased is the central aspect of objective 4 and all measures will contribute to it.
6. To Reduce emissions contributing to climate change and ensure adaptive measures are in place to respond to climate change	0	The measures to improve local flood risk management infrastructure are unlikely to have any effect on climate change.
7. To protect material assets	++	Objective 4 seeks to maintain and improve flood management infrastructure and privately owned flood defence assets to reduce the risk of flooding which will protect material assets from the damaging effects of flooding.
8. To protect and enhance the built, cultural and historic environment	+	The improvement of local flood risk management infrastructure will help to protect the Borough's historical environment from the damaging effect of flooding.
9. To conserve and enhance the character of the landscape	0	The measures to improve local flood risk management infrastructure are unlikely to have an effect on the character of the landscape.

Objective 5: Ensure that emergency plans and responses to flood incidents are effective and that communities are prepared and resilient to local flood risk.

SEA Headline objectives	Score	Commentary
1. To ensure biodiversity is conserved and enhanced	0	Measures set out in the LFRMS to ensure that emergency planning for flooding is effective are unlikely to have an effect on biodiversity
2. To improve health and well- being and reduce inequalities	++	M/A 21-24 all seek improve the quality of emergency planning in the borough, which in the event of an emergency will be essential in minimising the risk to life that floods can pose.
3. To protect soils and Geodiversity	0	Measures set out in the LFRMS to ensure that emergency planning for flooding is effective within are unlikely to have an effect on soils and geodiversity
4. To maintain and improve the water quality of the district's rivers and ground waters.	0	Measures set out in the LFRMS to ensure that emergency planning for flooding is effective within are unlikely to have an effect on water quality
5. To ensure that flood risk is not increased and where possible minimised	++	Management measures M/A21 - 24 have an important role to play in minimising the risk from flooding when it occurs, putting emergency measures in place that will mean communities are resilient to local flood risk.
6. To Reduce emissions contributing to climate change and ensure adaptive measures are in place to respond to climate change	0	Ensuring emergency plans and responses to flood events are effective is unlikely to have any effect on climate change.
7. To protect material assets	+	Ensuring emergency plans and responses to flood events are effective would be expected to protect material assets as they are expected to feature in the emergency plans
8. To protect and enhance the built, cultural and historic environment	+	Ensuring emergency plans and responses to flood events are effective would be expected to protect historic assets as they are expected to feature in the emergency plans
9. To conserve and enhance the character of the landscape	0	Ensuring emergency plans and responses to flood events are effective is unlikely to have any effect on the character of the landscape.

Management Measures: M/A21 - M/A24

Objective 6: Identify national, regional and local funding mechanisms to deliver flood risk management solutions and schemes.

Management Measures: M25 – M28

SEA Headline objectives	Score	Commentary	
1. To ensure biodiversity is conserved and enhanced	0	The LFRMS measures to identify funding mechanisms are unlikely to have an impact on biodiversity.	
2. To improve health and well- being and reduce inequalities	0	The LFRMS measures to identify funding mechanisms are unlikely to have an impact on health and well-being.	
3. To protect soils and Geodiversity	0	The LFRMS measures to identify funding mechanisms are unlikely to have an impact on soils and geodiversity.	
4. To maintain and improve the water quality of the district's rivers and ground waters.	+	The prioritisation of flood alleviation schemes is likely to have a beneficial effect on water quality through reducing the risk of pollution.	
5. To ensure that flood risk is not increased and where possible minimised	+	Management measures to ensure the funding for flood risk management solutions will help to minimise flood risk.	
6. To Reduce emissions contributing to climate change and ensure adaptive measures are in place to respond to climate change	0	Management measures to ensure funding for flood risk management solutions is unlikely to have an effect on climate change.	
7. To protect material assets	0	Management measures to ensure funding for flood risk management solutions is unlikely to have an effect on protecting material assets.	
8. To protect and enhance the built, cultural and historic environment	0	M Management measures to ensure funding for flood risk management solutions is unlikely to have an effect on the historic environment.	
9. To conserve and enhance the character of the landscape	0	Management measures to ensure funding for flood risk management solutions is unlikely to have an effect on the character of the landscape.	

Appendix D Consultee Comments

Set out here are the comments received from the Environment Agency, Natural England and English Heritage on the SEA Scoping Report and WSP's responses to them.

Consultee	Comments	Response
Environment Agency Partnership and Strategic Overview Team	We are pleased to see that section 2.3 details an overview flood risk however we request that all sources of flood risk to include flooding from ordinary watercourses and possibly from sewers is included. We advise that Wokingham Borough Council's Strategic Flood Risk Assessment (SFRA) and Preliminary Flood Risk Assessment (PFRA) should be referred to and referenced within this section of the documents where appropriate.	Reference added to all types of flood risk in Table 3.1. The SFRA was already referenced twice in the Scoping Report. Reference to the Preliminary flood risk assessment has been added.
	We would also request that Flood Risk be included as a topic under the Key Issues under section 2.6 of the strategy if appropriate. We also recommend that incorporating SuDS (sustainable drainage systems) features within the design of new developments can help to improve the amenity value of an area to improve community well-being (please refer to objective 2 for further information).	Flood risk has been added to the key issues. The incorporation of SuDS into the design of new developments is a matter for the LFRMS itself rather than the SEA
Natural England	We welcome the reference to the Thames Basin Heaths (TBH) Supplementary Planning Document (SPD), along with the Berkshire Local Geodiversity Action Plan and Biodiversity Action Plan (BAP). We note however that none of these Documents are listed in Section 2.4.5, and we would advise that these documents are also included in the list. We note and welcome the inclusion of the Landscape Character Assessment document and the Natural Environment White Paper. We note that the Natural Environmental and Rural Communities Act (2006) has been referenced, and therefore the Conservation of Habitats and Species Regulations 2010 (as amended) and the Wildlife and Countryside Act 1981 (as amended) could also be referenced.	Noted. Whilst these are important plans, section 2.4.5 is for those of the most direct relevance.
	We would advise that the data in Appendix B is appropriate, but that in the final SEA Report with regard to the SSSIs and SPA it would be useful to include a spatial map (as has been done for the soils section) of where these designated sites are to help visualisation. It would also be useful to show what condition these sites are in, e.g. "Favourable", "Unfavourable", etc. This information can be found on our website here: http://www.sssi.naturalengland.org.uk/Special/sssi/index.cfm	A spatial map has been prepared and added to the baseline data section.

 In addition, the Natura 2000 network site conservation objectives are available on our internet site here: http://www.naturalengland.org.uk/ourwork/conservation/designations/sac/conservationobjectives.as px You may also wish to include BAP species in the final Report (i.e. along with BAP habitats which have already been included), and it could also be useful here to include a spatial map of the BAP habitats and BAP species. 3) Is there any other relevant baseline data that should be included? Rights of Way, Access land, Coastal access and National Trails - The Document could consider potential impacts on access land, public open land, rights of way and coastal access routes in the vicinity of the development. Air Quality - The Document could also consider air quality, which although has improved overall over recent decades, still remains a significant issue. Green infrastructure (GI) - Please note that this area is one that has been highlighted by Natural England as having GI potential, i.e. is in an area which we consider could benefit from GI provision. Multi-functional green infrastructure can perform a range of functions including improved flood risk management, provision of accessible green space, climate change adaptation and biodiversity enhancement. Cumulative and in-combination effects - The Document should include an impact assessment to identify, describe and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. Other useful organisations for consulting about baseline data – a comprehensive list of local groups can be found at Wildlife and Countryside link: http://www.wcl.org.uk/our-members.asp. 	The LFRMS functions at a strategic tier. As such, the additional details here would not help to inform the assessment. Cumulative and in- combination effects have been considered in Section 5.5 of the Draft Environmental Report.
Natural England are satisfied with the accuracy of the key environmental issues considered in this scoping report.	Noted
In addition, we would advise that it would be useful to list the four SSSIs by name within the Table, as has been done with the SPA. "SSSI"s" does not need an apostrophe. We would also suggest moving the SSSI text to below the SPA text in order to follow a more intuitive reading order which would relate to level / hierarchy of designation. We note that Local Wildlife Sites (LWS) seem to be absent from the Table. We would advise that these are added in. Ancient Woodland Sites (AWS) could also be added into the Table, along with other BAP habitats.	Amendments made in Table 3.1 of the Draft Environmental Report. Add adding all LWS, AWS and BAP habititas would make the table excessively long and not help to inform the reader as to the most important designated habitats.

	 Natural England is supportive of the LFRMS process and we believe the strategy should not only protect people and property, but should lead to the best outcome for wildlife and habitats, and for ecosystem services. We would therefore welcome any scheme options emerging from the LFRMS which would deliver both flood defence and biodiversity benefits (e.g. SUDS schemes, re-naturalising of canalised watercourses, flood storage lagoons, etc). We recommend that in the preparation of the LFRMS that the LPA look for the following, but not exclusive, outcomes: Any flood risk management options that will affect water levels or flows on designated sites should be assessed in line with the conservation objectives of these sites; Flood storage and attenuation of surface water runoff in carefully selected locations will provide multiple benefits – including biodiversity, water quality improvements and green infrastructure; and Opportunities for habitat creation and enhancement should be maximised. This might include be new/existing wetlands, or river restoration (restoring more natural flows, bankside vegetation, and remenvious endition of surface water water for the set of the set	Noted
	Habitats Regulations Assessment We are pleased to see that section 1.7 acknowledges that in addition to the SEA process a Habitat Regulations Assessment (HRA) will need to be carried out as part of the work for the LFRMS. Consideration must be given to the potential for significant effects on Natura 2000 sites, and even if the potential for impacts can be screened out at an early stage, the process will still need to be followed as part of the audit process.	Please refer to the HRA Screening submitted alongside this Draft Environmental Report.
English Heritage	It is a pity that there does not appear to be a Wokingham or Berkshire Heritage Strategy/Action Plan such as there is for biodiversity and geodiversity. Reference could be made to the National Heritage Protection Plan, published by English Heritage which identifies a number of generic threats to the historic environment, including natural and environmental threats and physical infrastructure threats. Conservation Area Character Appraisals may also be relevant.	Reference to the National Heritage Protection Plan has been added.
	What little baseline data is presented for cultural heritage is appropriate as regards the historic environment but it is woefully inadequate (see our response to the next question). "Wildlife Heritage Sites" should be identified under "Biodiversity/Flora and Fauna rather than "Cultural Heritage".	Amended
	There should be a full breakdown of designated heritage assets within the Borough under "Cultural Heritage": 640 listed buildings (Grade I: 9, Grade II*: 40, Grade II: 591), 18 Scheduled Monuments, 16 Conservation Areas and 5 Registered Historic Parks and Gardens. In addition, reference should be made to the Berkshire Historic Environment Record (HER), which currently notes over 1000 archaeological sites existing within the Borough, and that there are many more as yet unidentified. This section should also include a brief assessment of the significance of the beritage assets.	The breakdown of heritage assets has been added. With regards to providing "a brief
	those of the highest significance.	assessment of the

The paragraph on "Future trends" is too simplistic. The National Heritage Protection Plan (see our response to Question 1 above) identifies a number of potential trends which may be applicable to the Borough, or there may be others. Overall, it is very disappointing to find "cultural heritage" not given the prominence it deserves within the Scoping Report.	significance of the heritage assets, particularly those of the highest significance", this is not a reasonable requirement. It would mean providing an assessment of heritage assets that might be unaffected by the LFRMS. This was discussed with English heritage on receipt of their comments, and it was confirmed the approach taken is satisfactory. Text on future trends has been amended.
Not as regards the limited historic environment information within the baseline data.	Noted
In Table 2.1, we are pleased to see cultural heritage as a topic. However, "Key Issues" present an incomplete picture of the heritage assets in the Borough – there should be a full breakdown of heritage assets within the Borough (see our response to Question 3 above). "Wildlife Heritage Sites" should be identified under "Biodiversity/Flora and Fauna rather than "Cultural Heritage". We agree that the LFRMS can indeed have a role in putting maintenance measures in place and that any policies in relation to maintenance should have regard to potential impacts on cultural heritage. However, the same principle applies to physical works, e.g. the construction of flood defences, which can be permanently harmful to the significance of heritage assets, or any property-specific flood prevention measures which may also detract from the significance of the asset. Of course, it is important to protect designated heritage assets, e.g. listed buildings, from flood risk, which needs to be weighed against any potential harm.	Amended
enhance" as terminology more consistent with the National Planning Policy Framework. The sub-	Amenaea

objective/criteria should be "Does the proposed measure conserve or enhance the significance of heritage assets and their setting?" Measures should be scored for their conservation/enhancement of or impact on the significance of an asset.	
The need for planning permission, listed building consent or scheduled monument consent is a safeguard rather than a mitigation measure, although conditions attached to the permission or consent could be mitigation measures. Where specific measures are proposed that would cause unavoidable harm to the significance of a heritage asset, specific mitigation measures should be identified and proposed.	For the purposes of the LFRMS, which is a strategic document, planning permission has been included under mitigation for ease of reference.
Q8 Do you consider that the structure of the report is appropriate?	Noted
Yes.	

WSP

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