



Local Flood Risk Management Strategy

April 2015

An important new tool to help authorities, individuals, communities and businesses within the Borough understand and manage local flood risk

WOKINGHAM BOROUGH COUNCIL LOCAL FLOOD RISK MANAGEMENT STRATEGY

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FOREWORD

As I write, the winter of 2013/14 is still fresh in many minds and there will be few people in the borough who were not affected in some way by the extreme weather that we experienced. Flooding has a detrimental effect on businesses and our lives. Though relatively few homes were flooded in our borough, there were significant effects due to roads flooding and causing issues for getting about, especially across the River Loddon. On a positive note, some of the actions taken since the 2007 event stood the test of the recent one, encouraging us now to work even harder to reduce the risk of flooding.

As a Lead Local Flood Authority, the council is responsible for identifying all local flood sources including surface water runoff, flooding from ditches and watercourses and groundwater. This strategy explains the roles and responsibilities of the organisations involved in flood management and how we plan to work together to ensure our businesses, schools and residents receive the best support possible.

This document sets out the council's objectives and the measures we propose to undertake over the coming years. There are inevitably some technical aspects to this strategy and to ensure it is understood we have included a glossary as Appendix I of the main report, and we have also produced a separate summary report.

We will continue to evolve this strategy engaging with partners including all resident flood groups across the Borough. We must work hard with our partners to improve the resilience to flooding across the Borough in whatever form that flooding takes and to ensure future developments do not have a detrimental flooding impact.

I welcome Wokingham Borough's strategy and will support its implementation.

Cllr Angus Ross

Executive Member for Environment, Wokingham Borough Council

March 2015

A Introduction

A.1 Purpose of the Strategy

- A.1.1 Wokingham Borough has experienced a number of flooding events in recent years, which have directly affected the lives of individuals living and working in the Borough. The probability of flood events occurring in the future cannot be discounted, however steps can be taken to understand, mitigate and manage the consequences of flooding.
- A.1.2 Wokingham Borough is situated within the Thames river basin and a number of rivers run through the 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. There are also seven major reservoirs located in Wokingham Borough. For more information on the characteristics of the Borough refer to the Wokingham Borough Council Core Strategy 2010.
- A.1.3 Under the Flood and Water Management Act (2010) Wokingham Borough Council became a Lead Local Flood Authority, responsible for managing local flood risk from surface water, groundwater and Ordinary watercourses in Wokingham. These flood risk sources are described further in Table 1 overleaf, and in the Glossary provided in Appendix I.
- A.1.4 One of the new duties placed on Lead Local Flood Authorities (LLFAs) to assist with the management of local flood risk is to 'develop, maintain, apply and monitor' a Local Flood Risk Management Strategy.
- A.1.5 The Strategy must focus on local flood risk sources and explain the ways in which Wokingham Borough Council will ensure flood risk is managed in an integrated and effective way. The Strategy provides a single consistent reference point for flood risk management in the Borough.
- A.1.6 Our approach must be consistent with the National Flood and Coastal Erosion Risk Management Strategy (produced by the Environment Agency in September 2011) and meet the requirements of the Floods and Water Management Act (The Act). The legislative context of the strategy is described in more detail in Section B.
- A.1.7 The Act requires that a Local Flood Risk Management strategy must specify:
- The risk management authorities in the Borough;
 - The flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area;
 - The objectives for managing local flood risk;
 - The measures proposed to achieve those objectives;
 - How and when the measures are expected to be implemented;
 - The costs and benefits of those measures, and how they are to be paid for;
 - The assessment of local flood risk for the purpose of the strategy;
 - How and when the strategy is to be reviewed; and
 - How the strategy contributes to the achievement of wider environmental objectives.
- A.1.8 It is intended that these requirements be locally specific, reflecting key local issues and enabling communities to be more involved in decision-making regarding flood risk management.

A.2 Who the Strategy is relevant to?

- A.2.1 The Strategy is written for anyone who lives in, works in, or visits the Borough, to help them understand and manage flood risk. The Environment Agency, Wokingham Borough Council as the Highways Authority and Thames Water must all act in accordance with the Strategy.

A.3 The period covered by the Strategy

- A.3.1 In order to ensure this Strategy remains fit for purpose it will be reviewed and updated regularly. The initial review of the document will be undertaken in 2017, following the review of the National Strategy in 2016, and to coincide with the review of the Wokingham Preliminary Flood Risk Assessment. Section H provides further detail on additional points at which the Strategy may be reviewed.

A.4 What is flooding?

- A.4.1 Flooding is often defined by where the flood water comes from. Wokingham Borough is affected by flooding from a number of different sources. This Strategy is focused on local flooding defined as flooding from surface water, groundwater and ordinary watercourses. The most severe flooding is often caused when different sources combine. The different sources of flooding that may affect the Borough are set out below. Further information and definitions of the various terms associated with flooding used throughout this Strategy are provided in Appendix I.

TABLE 1 Types of Flooding

Type of Flooding	Description
Surface Water flooding	High intensity rainfalls cause runoff which flows over the surface of the ground and accumulates in low lying areas.
Groundwater flooding	Water levels in the ground rise above the ground surface due to prolonged or heavy rainfall.
Ordinary watercourse flooding	When a watercourse (not designated as Main River) cannot accommodate the volume of water flowing in it or the channel becomes blocked, causing water to come out of bank.
Sewer flooding	The sewer network cannot cope with the volume of water entering it or a problem occurs in the system, such as a blockage or collapse.
Highway flooding	Heavy rainfall or overflow from blocked drains and gullies causes water to pond on the carriageway.
River flooding	When the capacity of a river (designated as Main River) is exceeded or the channel becomes blocked, causing water to spill onto the floodplain.
Reservoir flooding	When a reservoir overtops or the embankment is breached.

A.5 What is flood risk?

- A.5.1 Flood risk is the likelihood of flooding combined with the possible damage a flood could do. There are a number of terms used to describe flooding and flood risk.
- A.5.2 The **likelihood of flooding** is the chance that a location will flood in any one year. This is most commonly written as either a percentage of the flood occurring in any one year, such as 0.5%, or as a probability, such as 1 in 200.
- A.5.3 The chance of a location flooding is not a guarantee that it will flood. If a location with a 1 in 200 chance of flooding in any given year has not flooded for the last 199 years, it will not necessarily flood in year 200.
- A.5.4 The fact that a flood has happened does not change the chance of it happening again. If a location with a 1 in 200 chance of flooding in any given year floods, it does not mean it will not flood again for the next 199 years.
- A.5.5 The Environment Agency has mapped the likelihood of various types of flooding occurring in England and Wales. The Environment Agency Flood Maps show the likelihood of flooding from rivers and the sea for England and Wales using three zones; 1, 2 and 3.
- A.5.6 **Flood Zone 3** shows the areas that could be affected by flooding from either the sea or rivers, if there were no flood defences, in the following scenarios:
- a flood from the sea that has a 0.5% (1 in 200) or greater chance of happening each year; or
 - a flood from a river that has a 1% (1 in 100) or greater chance of happening each year.
- A.5.7 **Flood Zone 2** shows the areas that could be affected by flooding from either the sea or rivers, if there were no flood defences, in the following scenarios:
- a flood from the sea that has between a 0.5% (1 in 200) and 0.1% (1 in 1000) chance of happening each year; or
 - a flood from a river that has between a 1% (1 in 100) and 0.1% (1 in 1000) chance of happening each year.
- A.5.8 **Flood Zone 1** shows the areas which have a less than 0.1% (1 in 1000) chance of flooding from the sea and rivers in any given year. The majority of the Borough falls within Flood Zone 1.
- A.5.9 The **updated Flood Map for Surface Water** shows areas where surface water would be expected to flow or pond, as a result of three different chances of rainfall events; the 1 in 30 year (3.3%), the 1 in 100 year (1%) and the 1 in 1,000 year (0.1%). The depth and velocity of the flood risk is also provided as part of these maps. Information on the specific flood risk from each source in Wokingham Borough is provided in Section D.

A.6 What are the impacts of flooding

- A.6.1 Flooding can have a significant impact on people, property and the environment, with the damage often reaching into the tens of thousands of pounds. Residential, commercial and community buildings can all be affected. In addition to internal flooding of commercial buildings, business can also be impacted by external flooding, for example flooding leading to the loss of farm land or crops.
- A.6.2 The impacts of flooding are not always financial; flooding has a social and environmental impact, as well as an economic effect. This means the full impacts of flooding are not always simple to assess. Flooding of people's homes and businesses leading to damage, loss of personal possessions, displacement during remedial works and environmental impacts from pollution have an impact that can't be fully measured financially. Flooding and its consequences can also lead to physical and mental health issues and increased strain on people's lives.
- A.6.3 Damage sustained to the natural environment as a result of flooding is also often difficult to adequately quantify in purely financial terms. Similarly, damage to the historic environment often has costs which cannot be attributed with a financial value.

A.7 The Objectives of the Strategy

- A.7.1 The Wokingham Local Flood Risk Management Strategy aims to set out how flood risk will be reduced and managed in the Borough. In order to achieve this aim six objectives have been developed, these are outlined in Table 2 below.

TABLE 2 Wokingham Borough Strategy Objectives

Ref	Objective
O1	Continue to improve knowledge and understanding of current and future local sources of flood risk within Wokingham.
O2	Continue to 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.
O3	Ensure that land use planning and application decisions take full account of flood risk, avoiding development in inappropriate locations, preventing an increase in flood risk and minimising existing flood risk wherever possible.
O4	Maintain and, where necessary, improve local flood risk management infrastructure and work with riparian landowners to ensure privately owned flood defence assets, features and Ordinary watercourses, are well maintained to reduce risk.
O5	Ensure that emergency plans and responses to flood incidents are effective and that communities are prepared and resilient to local flood risk.
O6	Identify national, regional and local funding mechanisms to deliver flood risk management solutions and schemes.

A.8 Action to Reduce and Manage Flood Risk

- A.8.1 Wokingham Borough Council will apply this strategy through the implementation of the Strategic Action Plan presented in Section G.
- A.8.2 All actions are intended to be sustainable and centre on a risk-based proportionate approach that reflects the size and complexity of the flood risk and WBC's financial ability to manage these risks.

A.9 Scrutiny

- A.9.1 Scrutiny in local government was formally created by the Local Government Act 2000. It is a process of examining and monitoring the activity of councils with the aim of improving the quality of local services. Wokingham Borough Council scrutiny is led by the Overview and Scrutiny Management Committee, which comprises a number of elected Members that reflect the political make-up of the Council.
- A.9.2 The Flood and Water Management Act has made an amendment to the Local Government Act, under Section 21F, introducing powers for Overview and Scrutiny Committees to review and scrutinise the activities of the flood risk management authorities. In addition, under the Flood Risk Management Overview and Scrutiny (England) Regulations 2011, the Lead Local Flood Authority's Overview and Scrutiny Committee is empowered to request reports and attendance at meetings by any flood risk management authority, to enable the scrutiny of the delivery of their flood risk management functions.
- A.9.3 The role of the Overview and Scrutiny Committee will be:
- Policy development - the Committee may review current and draft policies and plans on flooding, risk and contingencies.
 - Reactive reviews – the Committee may review the flood risk management authorities' responses to flooding after it has occurred to find out what happened and where lessons could be learnt.

- A.9.4 The combination of these two activities will enable the Council to use a more proactive approach to managing future flood risk by applying the lessons learned to the development of this strategy and other related policies.
- A.9.5 The Overview and Scrutiny Committee will receive an annual report on performance and progress over the financial year and plans for the forthcoming financial year. The report will be submitted to the Committee in April every year.
- A.9.6 The Local Flood Risk Management Strategy will also be scrutinised by Wokingham Borough Council.

B Legislative and Policy Context

B.1 The Pitt Review

- B.1.1 Sir Michael Pitt carried out an independent review of national flood risk management practices after the widespread floods during the summer of 2007, in which over 50,000 households were affected and damages exceeded £4 billion.
- B.1.2 The Pitt Review was published in June 2008 and called for urgent and fundamental changes to the way flood risk was being managed.
- B.1.3 The report contained 92 recommendations for Government, Local Authorities, Local Resilience Forums and other stakeholders which were based around the concept of local authorities playing a major role in the management of local flood risk, through coordination with all relevant authorities.

B.2 The Flood and Water Management Act (FWMA) 2010

- B.2.1 Many of the recommendations contained within the Pitt Review were implemented within the Flood and Water Management Act (the Act), which came into force in April 2010. The Act reinforces the need to manage flood risk and flooding holistically and in a sustainable manner. As the Lead Local Flood Authority, Wokingham Borough Council is responsible for managing the risk of flooding from local sources. The new roles and responsibilities placed on Wokingham Borough Council are discussed in more detail in Section C.
- B.2.2 The Act identifies the authorities with a role to play in managing flood risk and defines them as ‘risk management authorities’:
- A Lead Local Flood Authority (the Unitary Authority or County Council for the area);
 - The Environment Agency;
 - A district council for an area for which there is no unitary authority;
 - An internal drainage board;
 - A water company; and
 - A highway authority.
- B.2.3 The Act stresses the need for these authorities to cooperate to manage flood risk. Cross border and cross catchment collaboration is imperative in managing flood risk as flood water does not respect administrative boundaries.

B.3 The National Flood and Coastal Erosion Risk Management Strategy (NFCERMS) 2011

- B.3.1 The Flood and Water Management Act 2010 requires the Environment Agency to ‘develop, maintain, apply and monitor a strategy for flood and coastal erosion risk management in England’. The strategy was published in September 2011 and can be viewed via the Environment Agency’s website or by clicking [here](#).
- B.3.2 The overall aim of the National Strategy is to ensure the risk of flooding is properly managed by using the full range of options in a co-ordinated way. The government will work with individuals, communities and organisations to reduce the threat of flooding by:
- Understanding the risks of flooding, working together to put in place long-term plans to manage these risks and making sure that other plans take account of them;
 - Avoiding inappropriate development in areas of flood risk and being careful to manage land elsewhere to avoid increasing risks;
 - Building, maintaining and improving flood management infrastructure and systems to reduce the likelihood of harm to people and damage to the economy, environment and society;

- Increasing public awareness of the risk that remains and engaging with people at risk to make their property more resilient; and
- Improving the detection, forecasting and issuing of flood warnings, planning for and co-ordinating a rapid response to flood emergencies, and promoting faster recovery from flooding.

B.3.3 The Flood and Water Management Act 2010 requires the Lead Local Flood Authority to produce a Local Flood Risk Management Strategy (LFRMS) which is consistent with the National Strategy. The Strategy must therefore act in accordance with the following six guiding principles:

- 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.

B.3.4 Further information on legislative and policy documents relevant to the strategy is provided in Appendix II.

C Roles and Responsibilities

C.1 Purpose of defining roles and responsibilities in Wokingham

C.1.1 As the Lead Local Flood Authority for Wokingham, the Borough Council is responsible for managing flood risk from local sources of flooding. For the purpose of this Strategy, local sources of flooding are surface water, groundwater and ordinary watercourses.

C.1.2 In order for Wokingham Borough Council to be able to effectively achieve this, the role and the responsibilities of the various key parties involved in managing flood risk in Wokingham must be set out.

C.2 Key agencies involved in the management of Flood Risk in Wokingham

C.2.1 The Flood and Water Management Act 2010 defines risk management as anything done for the purposes of:

- 1) analysing a risk;
- 2) assessing a risk;
- 3) reducing a risk;
- 4) reducing a component in the assessment of a risk;
- 5) altering the balance of factors combined in assessing a risk; or
- 6) otherwise taking action in respect of a risk or a factor relevant to the assessment of a risk (including action for the purpose of flood defence).

C.2.2 Risk Management Authorities (RMAs) are those bodies with a duty to undertake any number of the above. The following bodies are defined as RMAs in Wokingham Borough:

- Wokingham Borough Council as LLFA and Highway Authority
- Environment Agency
- Thames Water

C.2.3 Under the provisions of the FWMA, the following duties are common to all RMAs:

- a duty to cooperate with other risk management authorities;
- a duty to act consistently in accordance to the national and local strategies;
- powers to take on flood risk functions from another risk management authority; and
- a duty to contribute towards the achievement of sustainable development.

C.2.4 The following sections provide more detailed information on the specific roles and responsibilities of each RMA as well as other groups and stakeholders with a role in flood risk management in Wokingham.

C.3 Risk Management Authorities in Wokingham

Wokingham Borough Council as Lead Local Flood Authority (LLFA)

- C.3.1 The Flood and Water Management Act (2010) identifies Wokingham Borough Council as the Lead Local Flood Authority (LLFA), responsible for managing the flood risk from surface water, groundwater and ordinary watercourses within the Borough. In conjunction with leading and co-ordinating flood risk management activities, the FWMA also places a number of key duties on the LLFA. These duties are identified and detailed within Table 3 below.

TABLE 3 Wokingham Borough Council's responsibilities as Lead Local Flood Authority

Responsibility	Details
Local Flood Risk Management Strategy	To develop, maintain, apply and monitor a Local Flood Risk Management Strategy in line with the National Flood and Coastal Erosion Risk Management Strategy.
Duty to Investigate Flood Incidents	<p>On becoming aware of a flood in the Borough, the LLFA must, to the extent that it considers it necessary or appropriate, investigate which Risk Management Authorities (RMAs) have relevant flood risk management functions and whether those authorities have or are proposing to exercise those functions.</p> <p>Once the investigation is complete, the LLFA must publish the results and notify any relevant RMAs of their conclusions. Wokingham Borough Council's Investigations Policy is provided in Appendix III.</p> <p>These reports will provide an understanding of the situation, outlining possible causes of flooding and recommending potential flood risk management actions. WBC's duty to investigate does not guarantee that problems will be resolved and the LLFA cannot force other authorities into action.</p>
Preparation of an Asset Register	<p>As the LLFA WBC has a duty to establish and maintain a register of structures or features which it considers are likely to have a significant effect on flood risk in the Borough. The LLFA must also establish and maintain a record of information about each of those structures or features, including information about ownership and condition as a minimum.</p> <p>The LLFA must ensure that the register is available for inspection by risk management authorities and the public at all reasonable times.</p>
Designation of Features	<p>Wokingham Borough Council and the Environment Agency are 'Designating Authorities', which means they may 'designate' features or structures where the following conditions are satisfied:</p> <ul style="list-style-type: none"> the designating authority has established that the existence or location of the structure or feature effects flood or coastal erosion risk; the designating authority has flood or coastal erosion risk management functions in respect of the risk which is affected; the structure or feature is not designated by another 'designating authority'; and the owner of the structure or feature is not a 'designating authority'. <p>If an asset becomes 'designated' its owner cannot alter, remove or replace it without first consulting the designating authority. The purpose of designating structures or features is to safeguard them against unchecked works which could increase flood risk in the area. Designation of features or structures will be done only when they are located on a Critical Watercourse or there are concerns about the asset.</p>
Consenting works to Ordinary watercourses	The LLFA is responsible for consenting works by third parties on ordinary watercourses within the Borough. The LLFA also has power of enforcement where works have been completed without a necessary consent and power of enforcement to maintain a proper flow on ordinary watercourses.

Responsibility	Details
Statutory Surface Water Drainage Consultee	In December 2014 it was proposed that to support local planning authorities (LPAs) in assessing the provision of SuDS in new development, LLFAs would be made statutory consultees on all major planning applications with surface water drainage implications to provide technical advice. Under this proposal Wokingham Borough Council will become responsible for reviewing the surface water drainage strategy and information submitted with major planning applications in the Borough.

Wokingham Borough Council as Highway Authority

C.3.2 Wokingham Borough Council is also the Highway Authority and has the following responsibilities under other legislation:

- To maintain highways, including ensuring that highway drainage systems are clear and that blockages on the highway are cleared. This is a duty under the Highways Act.
- To deliver works necessary to protect the highway from flooding. These works can either be on the highway itself or on land which has been acquired by the Highway Authority in the exercise of highway acquisition powers.
- The Highway Authority may divert parts of watercourses or carry out any other works on any form of watercourse if it is necessary for the construction, improvement or alteration of the highway or provides a new means of access to any premises from the highway.

Wokingham Borough Council as Planning Authority

C.3.3 Wokingham Borough Council is also the Planning Authority and is responsible for preparing local planning policy in accordance with national planning policy and for determining individual planning applications. The Council has overall responsibility for determining where new development will be located. It has a responsibility to ensure that flood risk is taken into account within the planning process by providing clear guidance and policies in relation to flooding.

C.3.4 The Planning Authority is informed by appropriate flood risk assessments produced by developers in support of applications.

Environment Agency

C.3.5 The Environment Agency has both a national strategic role and local operational role in relation to Flood Risk Management. National Strategic Role

C.3.6 The Flood and Water Management Act requires the Environment Agency to publish the National Strategy. The National Strategy identifies the following strategic actions for the Environment Agency:

- Use Strategic Plans such as Catchment Flood Management Plans (CFMP) and Shoreline Management Plans (SMP) to set the direction of Flood Risk Management;
- Support the creation of Flood Risk Regulation by collating and reviewing the assessments, plans and maps that Lead Local Flood Authorities produce;
- Provide data, information and tools to inform government policy and aid risk management authorities in delivering their responsibilities;
- Support collaboration, knowledge-building and sharing of good practice including provision of capacity-building schemes;
- Manage the Regional Flood and Coastal Committees (RFCCs) and support their decisions in allocating funding for flood defence and flood resilience;
- Report on and monitor flood and coastal erosion risk management; and
- Provide grants to risk management authorities to support the implementation of their incidental flooding or environmental powers.

Local Operational Role

- C.3.7 The Environment Agency's Local Operational Role includes emergency planning, advising on Planning Applications in relation to flood risk and managing flood risk from Main Rivers and reservoirs. In order to manage flood risk from Main Rivers the Environment Agency is also responsible for consenting works on or adjacent to Main Rivers.

Emergency Planning

- C.3.8 The Environment Agency contributes to the development of multi-agency flood plans. These flood plans are developed by local resilience forums to help the relevant organisations work efficiently when responding to a flood.
- C.3.9 To help provide better warning to organisations, the media and the public, the Environment Agency also works jointly with the Met Office in the Flood Forecasting Centre.

Planning Process

- C.3.10 In 2006 the Environment Agency was made statutory consultee for all planning applications in areas where there is a risk of flooding and for any site larger than 1 hectare. The Environment Agency provides advice on flood risk and helps the local planning authority to technically interpret developer's Flood Risk Assessments.

Main Rivers

- C.3.11 Main Rivers are watercourses shown on the Statutory Main River Map held by the Environment Agency and Defra. The Environment Agency has permissive powers to carry out maintenance and improvement works on Main Rivers. This can include any structure or appliance for controlling or regulating flow of water into or out of the channel. The overall responsibility for maintenance of Main Rivers lies with the riparian owner.
- C.3.12 The Environment Agency brings flood defence schemes forward through the Regional Flood and Coastal Committees, and it will work with LLFAs and local communities to shape schemes which respond to local priorities.
- C.3.13 The Environment Agency is also the regulating authority with regards to consenting works carried out by others in, under, over or within eight metres of a Main River. Figure 1 identifies the Main Rivers in the Borough.

Reservoirs

- C.3.14 The Environment Agency enforces the Reservoirs Act 1975 (amended within the Flood and Water Management Act) which is the safety legislation for reservoirs in the United Kingdom. The Environment Agency is responsible, as the Enforcement Authority in England and Wales, for ensuring that flood plans are produced for specified reservoirs. The responsibility for carrying out work to manage reservoir safety lies with the reservoir owner/operator who is required to produce the flood plans.

Thames Water

C.3.15 Sewerage companies have a general duty (under Section 94 of the Water Industry Act 1991) to provide, extend and improve the public sewer system to ensure that their areas are, and continue to be, effectually drained.

C.3.16 The Water Industry Act 1991 Part IV states:

94 *General duty to provide sewerage system.*
(1) *It shall be the duty of every sewerage undertaker—*
 (a) *to provide, improve and extend such a system of public sewers (whether inside its area or elsewhere) and so to cleanse and maintain those sewers [and any lateral drains which belong to or vest in the undertaker] as to ensure that that area is and continues to be effectually drained; and*
 (b) *to make provision for the emptying of those sewers and such further provision (whether inside its area or elsewhere) as is necessary from time to time for effectually dealing, by means of sewage disposal works or otherwise, with the contents of those sewers.*

C.3.17 Thames Water has the following responsibilities around flood risk management:

- respond to flooding incidents involving their assets;
- maintain of a register of properties at risk of flooding due to hydraulic overload in the sewerage network (DG5 register; refer below);
- provide, maintain and operate systems of public sewers and works for the purpose of draining an area;
- co-operate with other relevant authorities in the exercise of their flood risk management functions;
- have a regard to National and Local Flood Risk Management Strategies; and
- statutory consultee to the SAB when new drainage systems are proposed to connect to existing public sewer.

DG5 Register

C.3.18 Water and sewerage companies report to Water Services Regulation Authority, commonly known as Ofwat, on sewer flooding incidents under two casual categories:

- properties flooding because of overloaded sewers; and
- properties flooding from other causes, typically blockages, including equipment failures (e.g. pumping stations) and collapsed sewers.

C.3.19 All water and sewerage companies maintain a register of properties at risk of internal flooding due to hydraulic overload in the sewerage network; this is known as the DG5 register and part of the set of Ofwat DG (Director General) Indicators.

C.3.20 The DG5 Register is a register of properties and areas that have suffered or are likely to suffer flooding from public foul, combined or surface water sewers, due to the system being overloaded. For a sewer to be classified as overloaded the flow of a storm is unable to pass through it due to a permanent problem not due to problems such as blockage, siltation or collapse. When a solution is in place to rectify the overloading a property or area is removed from the register.

Tackling sewer flooding

- C.3.21 As part of the obligation to Ofwat, sewerage companies are required to undertake capacity improvements to alleviate sewer flooding problems on the DG5 register during the current Asset Management Period (2010 – 2015) with priority being given to more frequent internal flooding problems.

Other Groups and Stakeholders**Wokingham Borough Council as Planning Authority**

- C.3.22 Wokingham Borough Council is also the Planning Authority and is responsible for preparing local planning policy in accordance with national planning policy and for determining individual planning applications. The Council has overall responsibility for determining where new development will be located. It has a responsibility to ensure that flood risk is taken into account within the planning process by providing clear guidance and policies in relation to flooding.
- C.3.23 The Planning Authority is informed by appropriate flood risk assessments produced by developers in support of applications. In September 2014 it was proposed to make better use of the planning system to secure SuDS in new development. As a result, Wokingham Borough Council as the Local Planning Authority will be required to review the surface water drainage systems for proposed developments to ensure they meet the requirements set out in the National Standards and appropriate local guidance.

Riparian Owners

- C.3.24 Landowners and householders whose properties are adjacent to or border a river, stream or ditch are likely to be riparian owners. Riparian owners have a number of responsibilities with regards to the watercourse(s).
- C.3.25 Riparian owners have a right to protect their property from flooding but in most cases will need to discuss the methods of doing this with the Environment Agency or Wokingham Borough Council as LLFA. They also have the responsibility for maintaining the bed and banks of the watercourse and ensuring there is no obstruction, diversion or pollution to the flow of the watercourse. Any works to the watercourse will need consent from either the Environment Agency (if Main River) or Wokingham Borough Council as the LLFA (if Ordinary Watercourse). Under the Flood and Water Management Act the Borough Council can issue Enforcement notices to ensure ditches are regularly maintained by the relevant landowner.
- C.3.26 Further information on the rights and responsibilities of riparian owners is provided in the Environment Agency's guide '[Living on the Edge](#)', which can be accessed via the [Environment Agency's website](#).

Residents and Businesses

- C.3.27 Responsibility for protecting property from flooding lies in the first instance with the property owner. While in some circumstances other organisations or property owners may be liable due to neglect of their own responsibilities, there will be many occasions when flooding occurs despite all parties meeting their responsibilities.
- C.3.28 It is important that householders whose homes are at risk of flooding take the following steps to ensure the impact to their home is reduced:
- check whether their household is at risk from flooding from all sources;
 - ensure that preparations have been made in the event of a flood;
 - take measures to ensure that the impact of flooding to their household is reduced, either through permanent measures or temporary measures; and
 - where possible take out flood insurance.
- C.3.29 Information on areas at risk from flooding is provided on the [Environment Agency's website](#). All households in Flood Zones 2 and 3 will receive flood warnings from the Environment Agency when the risk of Main River flooding is high. Flood warning information can also be found on the [Environment Agency's website](#) and via the Flood Alerts page on [Facebook](#).

C.3.30 Information about surface water flood risk is also available on the [Environment Agency's website](#). The risk of flooding from surface water is much harder to map and predict. Therefore the Environment Agency does not issue warnings for surface water flooding.

C.3.31 The Environment Agency provides information on what to do to prepare a household for emergencies. This includes how to make a flood plan which will help residents to decide what practical actions to take before and after a flood. For more information visit the [Environment Agency's website](#). Another useful document for householders to refer to is the [National Flood Forum's Blue Pages Directory](#) which provides information and advice on what products are available to help protect homes or businesses against flooding.

Town and Parish Councils

C.3.32 Town and parish councils have no formal duties in the management of flood risk, however they have an important role to play in establishing local groups, developing community flood plans and raising awareness of flooding and flood response with their communities. Some Town and Parish Councils recruit Community Flood Wardens or people with similar interests, who help to support and prepare the community for flood events. They can also assist in identifying and reporting flood risk issues and vulnerable residents.

Highways Agency

C.3.33 The Highways Agency is responsible for operating, maintaining and improving the strategic road network in England.

C.3.34 The Highways Agency has the same obligations to co-operate on flood risk issues as the Highway Authority. It also has the following responsibilities under other legislation:

- Responsibility to maintain highways, including ensuring that highway drainage systems are clear and that blockages on the highway are cleared, this is a duty under the Highways Act and therefore strategic highways are inspected and maintained regularly.
- Powers to deliver works that they consider necessary to protect the highway from flooding. These works can either be on the highway itself or on land which has been acquired by the Highway Agency in the exercise of highway acquisition powers.
- The Highway Agency may divert parts of watercourses or carry out any other works on any form of watercourse if it is necessary for the construction, improvement or alteration of the highway or provides a new means of access to any premises from the highway.

C.3.35 The Highways Agency is responsible for the M4 where it passes through Wokingham Borough.

The Thames Regional Flood and Coastal Committee (RFCC)

C.3.36 Wokingham Borough is covered by the Thames RFCC, which is primarily responsible for ensuring there are coherent plans to identify, communicate and manage the risk from all sources of flooding and coastal erosion risk within the Thames region. RFCCs are established by the Environment Agency under the Flood and Water Management Act 2010, and comprise both independent members and those appointed by the LLFAs. They also act as a link between the Environment Agency, LLFA and other risk management authorities and are responsible for promoting efficient and risk based investment in flood risk management and coastal erosion.

Thames Valley Local Resilience Forum

C.3.37 The Thames Valley Local Resilience Forum is the mechanism by which the emergency responding agencies in the Borough routinely cooperate with each other as a partnership to discharge their duties under the Civil Contingencies Act 2004.

C.3.38 The Resilience Forum is not a statutory body nor does it have powers to direct its members; however, it is the agreed forum that co-ordinates multi-agency emergency preparedness, including risk assessment, contingency planning, training and exercises to enhance the Borough's preparedness for emergencies.

Residents Associations and Flood Groups

- C.3.39 Wokingham Borough has a number of Residents Associations. These Associations comprise members of the community in a geographical location who work to address issues within their community. Flood Partnerships have been set up between some Resident Associations, Wokingham Borough Council, the Environment Agency and Thames Water to address specific geographical flood issues.
- C.3.40 The National Flood Forum is active in Wokingham Borough and is currently supporting a number of Residents Associations with regards to flood risk management and resilience.

Developers

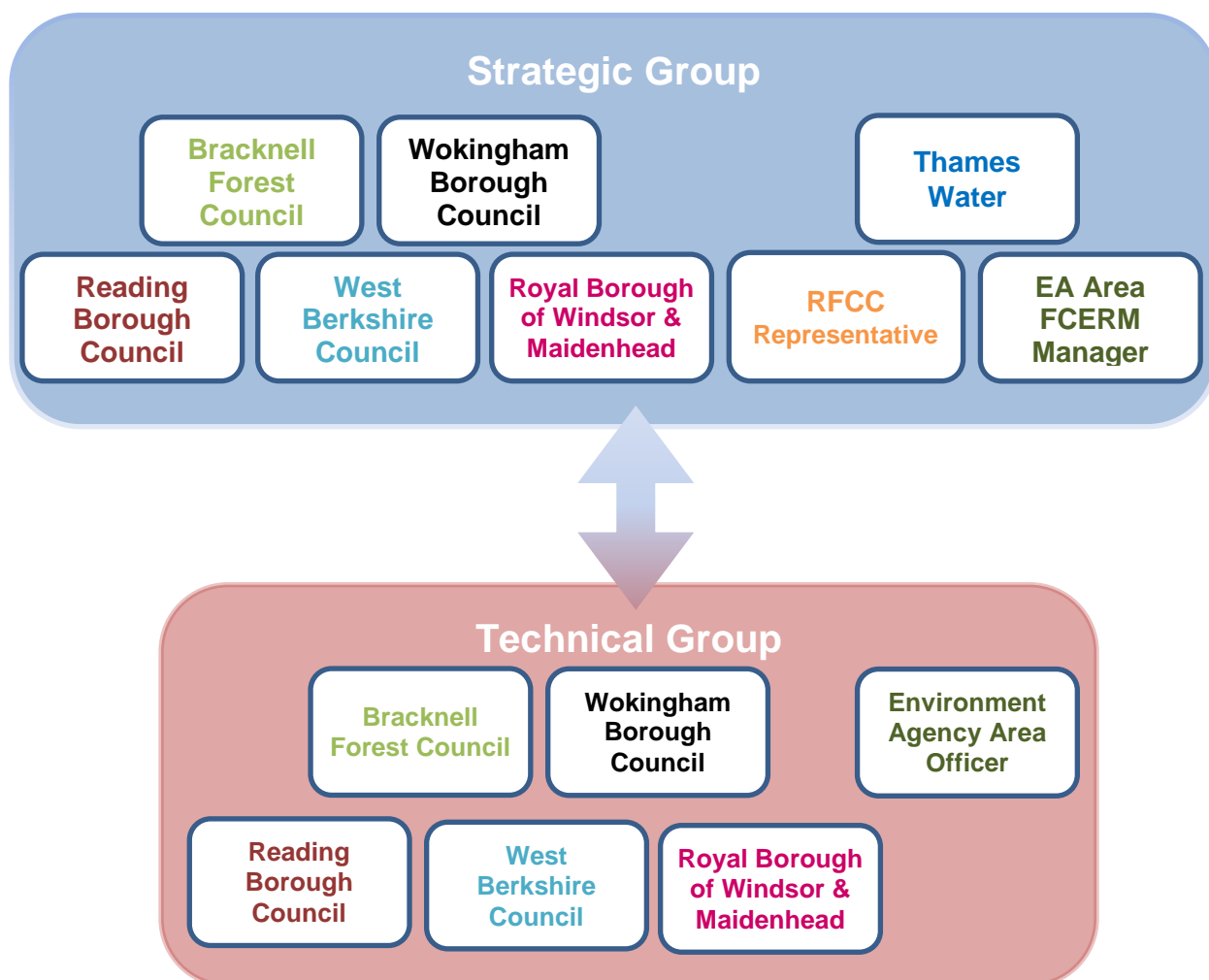
- C.3.41 Developers are responsible for properly considering flood risk to ensure occupants of new developments are not put at risk and to ensure the risk of flooding is not increased elsewhere. Developers must undertake a robust assessment of the flood risk using the best available data in order to accurately characterise the risk and mitigate this risk where necessary. As the Local Planning Authority and LLFA, Wokingham Borough Council will work to address flood risk and development.

C.4 Risk Management Authority Cooperation

Berkshire Five Strategic and Technical Group

- C.4.1 The Berkshire Group was set up to facilitate discussions on the implementation of the FWMA and to share best practice. The Berkshire Five Group consists of five of the Berkshire Unitary Authorities, namely:
- Bracknell Forest Council (BFC);
 - Reading Borough Council (RBC);
 - Royal Borough of Windsor and Maidenhead Council (RBWM);
 - West Berkshire Council (WestBC); and
 - Wokingham Borough Council (WBC).
- C.4.2 It should be noted that Slough Borough Council is aligned with South Buckinghamshire Council due to the local drainage catchments.
- C.4.3 The Berkshire Group is made up of two separate groups; the Strategic Group and the Technical Group, as illustrated in Figure 2. The Strategic Group comprises heads of department within the Lead Local Flood Authorities (LLFAs), the Environment Agency, Thames Water and the Chair of the Thames Regional Flood and Coastal Committee. The Strategic Group set the direction and guide the work of the Technical Group.
- C.4.4 The Technical Group is made up of officers within the LLFAs and the Environment Agency who have a working knowledge of the various technical aspects of how the Flood and Water Management Act (FWMA) will be and is being implemented. The Technical Group provides information and suggests approaches to the implementation of the FWMA for decisions at the Strategic Group.

FIGURE 2 Berkshire Five Strategic and Technical Group Structure



D Understanding the Flood Risk in Wokingham

- D.1.1 There are a number of different types of flooding that affect Wokingham. An overview of how each of these affects the Borough is provided in this section. Although this Strategy is focused on local flooding from surface water, groundwater and ordinary watercourses, it is important to emphasise that the cause of flooding is not always certain and cannot always be attributed to just one source of flooding. In addition it is recognised that the most severe flooding is often caused when different sources combine.

D.2 Overview of flood risk in Wokingham

Rivers and waterbodies

- D.2.1 The River Thames runs along the north-west and north boundary of the Borough and, along with its tributary the River Loddon, is one of the area's most significant landscape features. Associated with the River Loddon, which flows south to north through the centre of the Borough are its tributaries; namely the Twyford Brook, Emm Brook, Barkham Brook and the River Blackwater. Numerous ordinary watercourses are also associated with these main rivers. A number of towns within the Borough are situated along the length of these rivers, and not surprisingly a considerable proportion of the Borough is affected by flooding.

Geology

- D.2.2 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. Figure 3 illustrates the geology of the Borough.

Environmentally sensitive sites

- D.2.3 The Borough of Wokingham has a number of designated sites of international, national and local conservation importance. Wokingham Borough is home to 4 Sites of Special Scientific Importance (SSSI) namely; Stanford End Mill and River Loddon SSSI, Longmoor Bog SSSI, Heath Lake SSSI and Lodge Wood & Sandford Mill SSSI. 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 a number of Suitable Alternative Natural Greenspaces (SANG) (18.5ha). Figure 4 shows the environmentally sensitive sites in the Borough.

FIGURE 3 **Geology of Wokingham Borough**

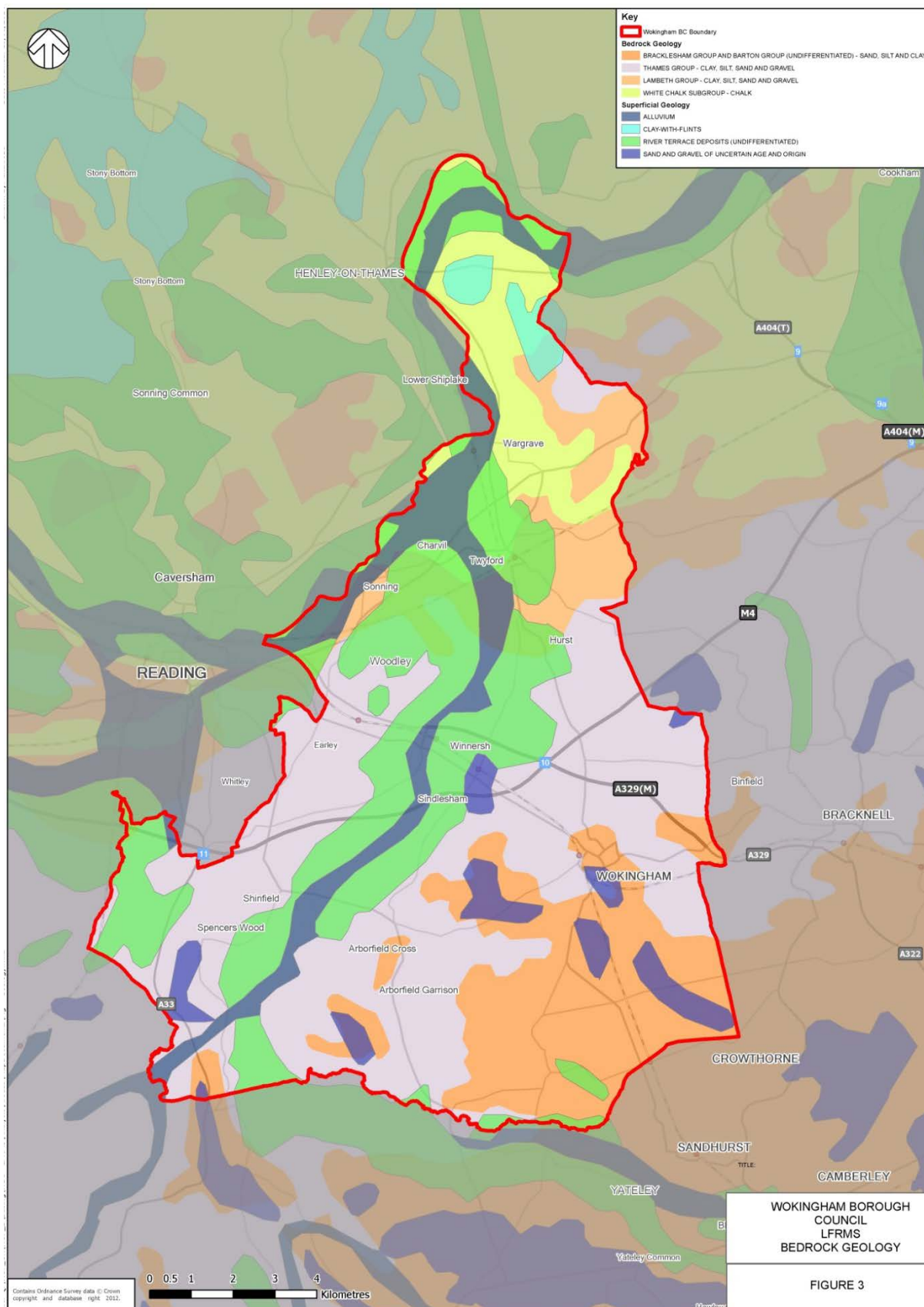
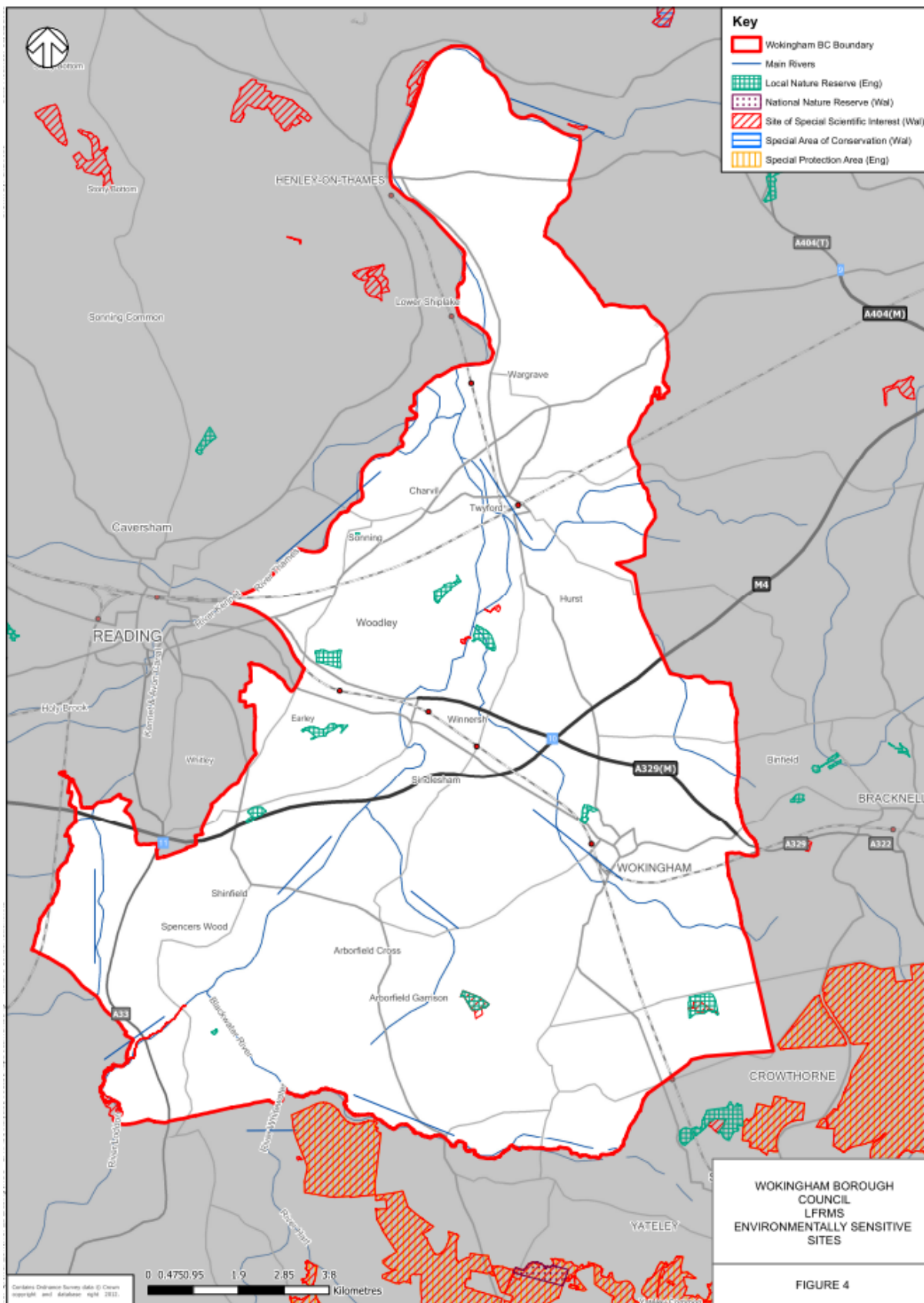


FIGURE 4 Environmentally Sensitive Sites in Wokingham Borough



D.3 Historic flooding

- D.3.1 Information on historic flood risk has previously been captured by a number of documents, including the Preliminary Flood Risk Assessment (PFRA) and the Strategic Flood Risk Assessment (SFRA).
- D.3.2 Records of flooding have also been provided by local Parish and Town Councils, the Environment Agency, Thames Water and the Loddon Valley Residents Association. The Borough has experienced five significant events in recent years; 1993, 2000, 2003, 2007 and most recently December 2013 through to February 2014.
- D.3.3 Last winter and the 2000 and 2007 events were part of flooding which occurred across much of the country. The 1993 event was of a similar scale to the other two events within Wokingham Borough. Whilst little direct evidence is available for the 2003 event, it is reported as having affected many of the same locations as the 2000 and 2007 events.
- D.3.4 Although a large amount of data on historic flooding has been obtained as part of the [PFRA](#) and [SFRA](#) processes, it is difficult to draw definitive conclusions on the impacts and consequences of historic flood events on people, the economy, cultural heritage and the environment, as detailed information is not available for all of the historic flooding incidents recorded.
- D.3.5 The most recent flooding during Winter 2013/14 had a significant impact on key infrastructure routes across the Borough. Many of the main routes between Reading and Wokingham were simultaneously closed, and some roads were closed for long periods of time. The high groundwater table had an impact on the operation of pumping stations causing problems with the foul drainage in some areas.

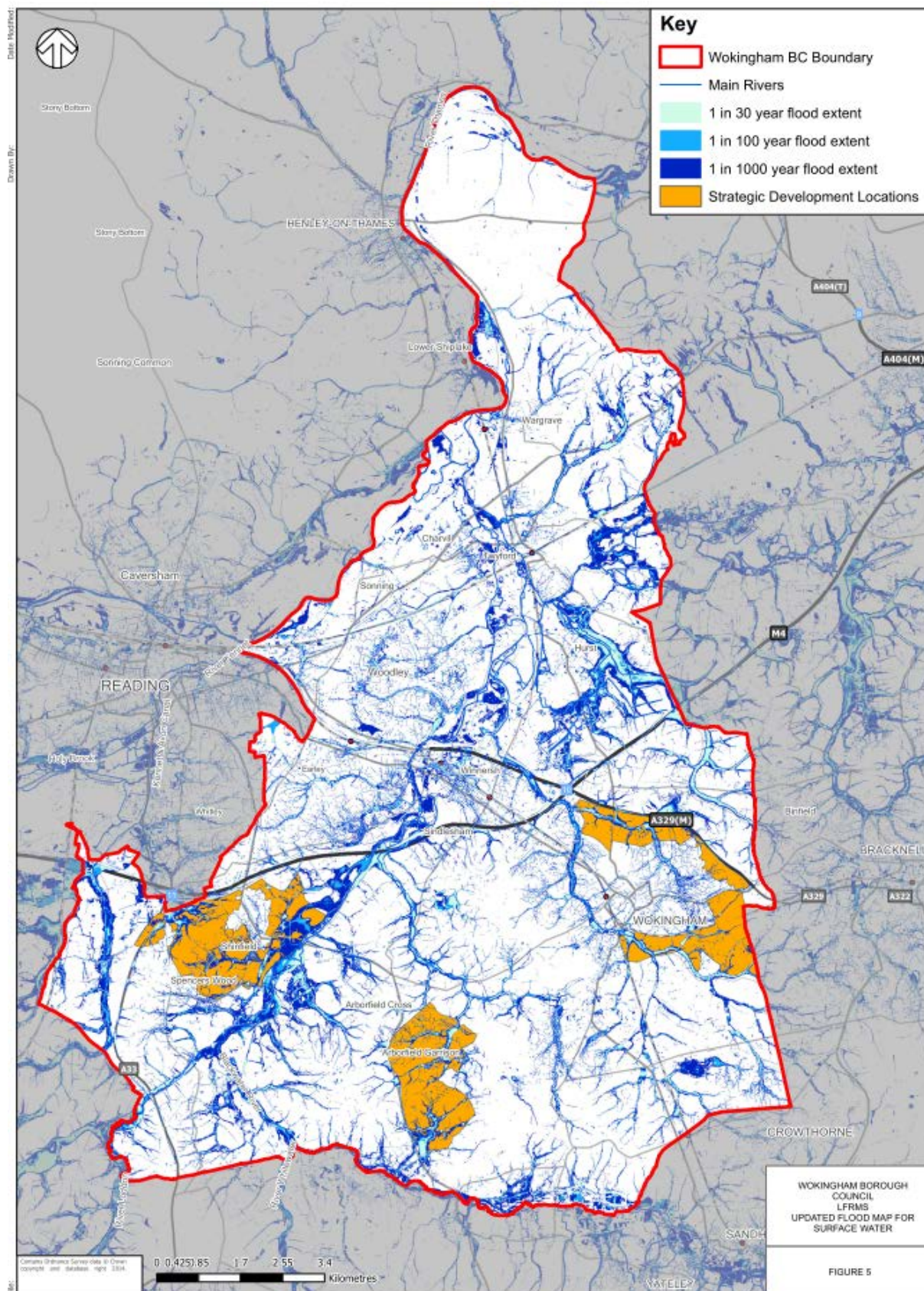
Surface Water Flooding

- D.3.6 The majority of historical flood information for Wokingham Borough relates to surface water flooding. The two most significant events, in terms of the numbers of property flooding, occurred in 1993 and 2007.
- D.3.7 The 1993 event comprised foul, highway and surface water drainage. The surface water flooding experienced in Wokingham in 2007 affected approximately 300 properties within the Borough, with around 140 of these being flooded internally (of which 115 were outside the Environment Agency flood zones). It is thought that ordinary watercourse flooding contributed to this event in some locations.
- D.3.8 Surface water flood risk primarily affects the areas of Riseley, Swallowfield and Shinfield. Surface water flood risk is mainly concentrated in rural areas of Wokingham Borough however there are a number of historical flood incidents within Earley and Woodley.

Flood Map for Surface Water

- D.3.9 The Environment Agency has published mapping of Surface Water flooding based on computational hydraulic modelling; referred to as Flood Maps for Surface Water. In 2013 these maps were updated and now provide flooding extents from surface water for three storm events; the 1 in 30 year return period, the 1 in 100 year return period and the 1 in 1,000 year return period. The depth and velocity of these flood waters has also been estimated. The maps can be viewed in detail on the [Environment Agency's website](#). The updated Flood Map for Surface Water for the Borough is replicated in Figure 5.

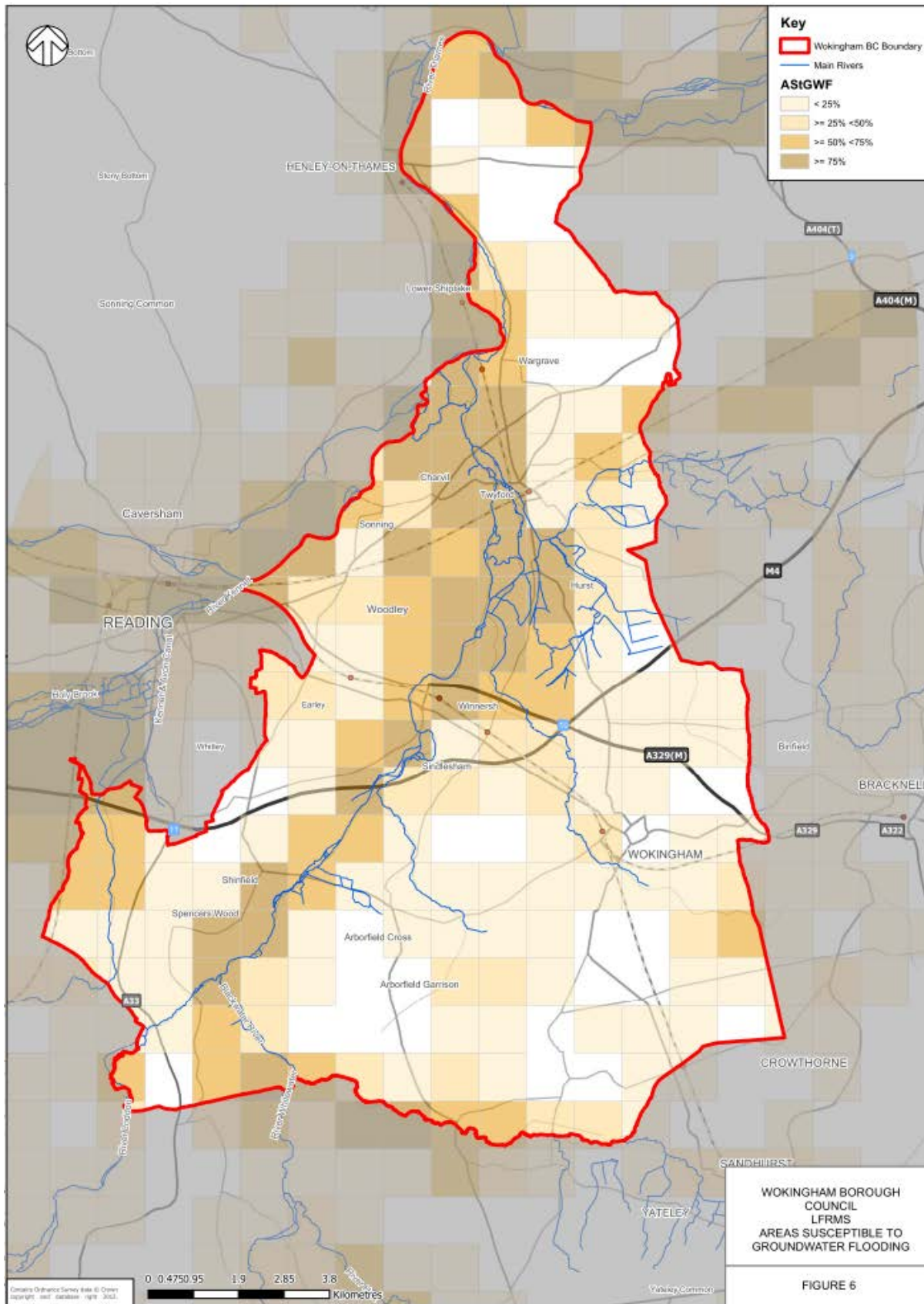
FIGURE 5 Updated Flood Map for Surface Water for Wokingham Borough



Groundwater Flooding

- D.3.10 There are isolated historical flood incidents attributed to groundwater across the areas of Sonning, Woodley, Earley and Winnersh. However, direct information on groundwater flooding is sparse. It is thought that the flood event of Autumn 2000 may have had a groundwater component since it followed persistent rainfall during October and November. Other areas of the country, including Hampshire, experienced considerable groundwater flooding at this time. There is insufficient information available to conclude whether any, some or most of the flooding incidents in Wokingham resulted from groundwater.
- D.3.11 There is a known risk of groundwater flooding within the River Thames floodplain due to the presence of 'Thames Gravels'. This is a term commonly used to describe the highly permeable soils beneath the historical floodplain of the River Thames. During periods of high water levels in the river, the local water table within this gravel layer rises, often resulting in localised groundwater flooding to properties situated away from the direct influence of the river.
- D.3.12 Equally, where flood defences have been constructed to mitigate the risk of fluvial flooding, a residual risk of groundwater flooding may remain. Groundwater could move through the Thames Gravels, driven by high water levels in the river, flooding land behind the river defences. Fluvial defences could also impede the natural flow of groundwater into the river, thus resulting in a backing up of groundwater behind the defences, potentially exacerbating the risk of groundwater flooding.
- D.3.13 The risk of groundwater flooding is highly variable and heavily dependent upon local conditions at any particular time. The Environment Agency has produced strategic scale maps known as Areas Susceptible to Groundwater Flooding (ASStGWF) which were used within the LLFAs Preliminary Flood Risk Assessment. The map for Wokingham Borough is replicated in Figure 6.
- D.3.14 The maps are based on a grid format and show the proportion of each 1km grid square where geological and hydrogeological conditions indicate that groundwater might emerge. They do not show the likelihood of groundwater flooding occurring. In common with the majority of datasets showing areas which may experience groundwater emergence, this dataset covers a large area of land, and only isolated locations within the overall susceptible area are actually likely to suffer the consequences of groundwater flooding. The data should not be interpreted as identifying areas where groundwater is actually likely to flow or pond, thus causing flooding, but may be of use to LLFAs in identifying where, for example, further studies may be useful.

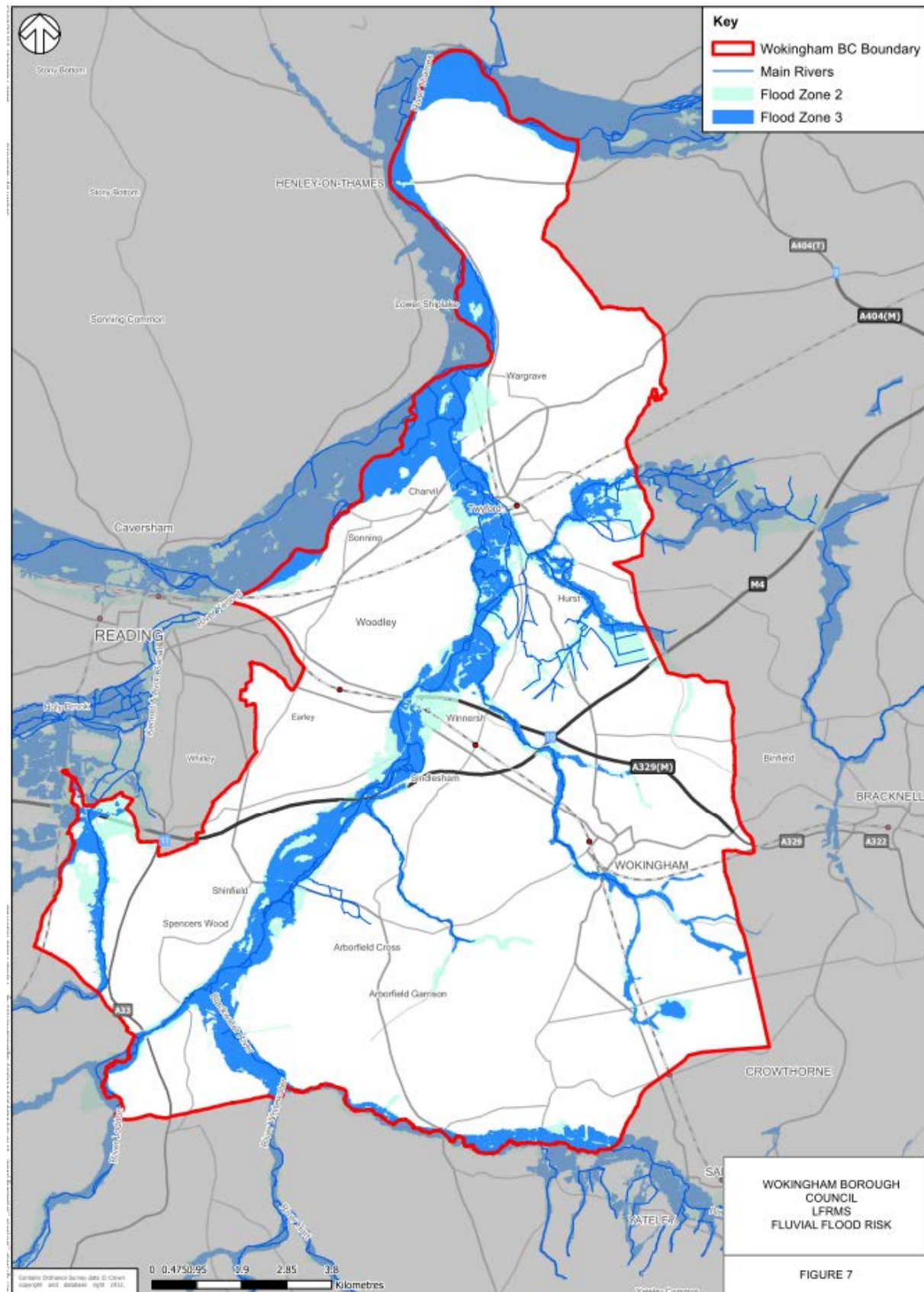
FIGURE 6 Areas Susceptible to Groundwater Flooding in Wokingham Borough



Main River and Ordinary Watercourse Flooding

- D.3.15 Flood risk from main rivers and ordinary watercourses within the Borough is largely governed by the River Loddon which runs south-north through the west of the Borough. Parts of Winnersh, Woodley, Earley, Charvil, Twyford and Swallowfield are within Flood Zones 2 and 3. Figure 7 illustrates the areas of Wokingham Borough covered by Flood Zone 2 and 3.
- D.3.16 There are a number of historic fluvial flood incidents around Winnersh and also Hurst. The Emm Brook is a tributary to the River Loddon and flows through Wokingham and Winnersh contributing to flood risk in these areas.
- D.3.17 The flooding event in 2000 resulted from a prolonged period of rainfall between October and November. Just under half of all of the flooding that occurred during this event was associated with main rivers, including the Loddon, the River Thames, the Emm Brook and the Twyford Brook. Flooding typically occurred as a result of watercourses either overtopping their banks or the failure of flood defences.
- D.3.18 In 2007, the unprecedented rainfall which fell in the latter half of July resulted in the River Loddon bursting its banks. This caused problems in accessing the facilities and services in Reading, preventing access along most of the key highway routes.
- D.3.19 During the flooding of winter 2013-14 a number of key routes across the Borough were closed, at one point simultaneously, making travel towards Reading and to the north of the Borough very difficult for a number of weeks.
- D.3.20 Flooding has been reported as a recurrent problem (evidenced by floods in October 2000, January 2003, July 2007 and Winter 2013-14) at the following locations:
- The River Loddon of residential property, and of the Loddon Bridge roundabout, Showcase Cinema complex and Winnersh Triangle Trading Estate, which has led to disruption to transport and industry in the area; and
 - The Emm Brook at Sylvester Close, Emm Brook School, some properties within the residential area downstream of Barkham Road and on Finchampstead Road, adjacent to the Tesco site.
 - Sonning Bridge was closed for an extended period which caused significant travel problems and impacted on businesses and many residents.
 - A number of major and minor roads were closed, including the A321 and the A327.

FIGURE 7 Flood Map for Wokingham Borough



Sewer Flooding

- D.3.21 Thames Water is responsible for sewer flooding. As part of this responsibility, Thames Water collects and records incidents of sewer flooding on their DG5 'At Risk Register'. The information provided to Wokingham was at too large a scale to be used in the current SFRA, but Wokingham Borough will look to work closely with Thames Water to obtain more detailed updates to inform future updates.
- D.3.22 Given the urbanised character of key town centres within the Borough, it is inevitable that localised flooding problems arising from under capacity surface and foul water sewer systems will occur, particularly given the mounting pressure placed upon ageing systems as a result of climate change. Furthermore, modern sewer systems are generally designed to cater for the 1 in 30 year (3.33%) storm, and highway soakaways are generally designed for only 1 in 10 year (10%) storm events. Storm events over and above these design events will exceed the drainage system, resulting in overland flow, often in an uncontrolled manner.
- D.3.23 Sewer flooding can also occur via the ingress of groundwater into the sewer network, which results in overloading of the sewer network, increasing the risk of flooding.

Highway Flooding

- D.3.24 Within Wokingham Borough there are a number of towns including Wokingham, Earley and Woodley. This urbanisation gives rise to localised flooding issues from surface water drainage and/or sewer systems Highway drainage systems are only designed for a 1 in 10 year storm in accordance with Government guidance. Future storms over and above these design events are likely to exceed the capacity of the drainage system, resulting in overland flows and localised flooding.
- D.3.25 Just less than half of reported incidents during the 2000 flood event resulted from problems with highway drainage. Both the A329 and A327 were affected, along with many other minor roads in a number of parishes, including Swallowfield, Hurst and Arborfield, which had to be closed to traffic.

Reservoir Flooding

- D.3.26 Reservoir flood maps have been produced by the Environment Agency for large reservoirs over 25,000 cubic meters of water (available at www.environment-agency.gov.uk). Flood maps are not displayed for smaller reservoirs and details of flood depth and flow are not provided. There are seven major reservoirs in Wokingham, which each hold over 25,000m³ of water:
- Bearwood Lake
 - Black Swan Lake at Dinton Pastures
 - Longmoor Lake
 - Maiden Erlegh Lake
 - Queensmere
 - Southlake
 - Whiteknights Lake
- D.3.27 The Environment Agency's map also indicate that the maximum flood extent of a number of reservoirs located in Hampshire (Wellington Country Park Lake; Bramshill House Pond; Tundry Pond; Dogmersfield Park Lake), Reading (Whiteknights Lake) and Oxfordshire (Caversham Rowing Lake) would cover parts of Wokingham Borough.
- D.3.28 These reservoirs are situated above ground, and a sudden failure of the embankments retaining the stored water could have a catastrophic effect on properties situated in the path of the resulting flood wave. The possible failure of the underground system is also a risk. However, it is notoriously difficult to measure in real terms the potential risk of a structural failure of this nature occurring.

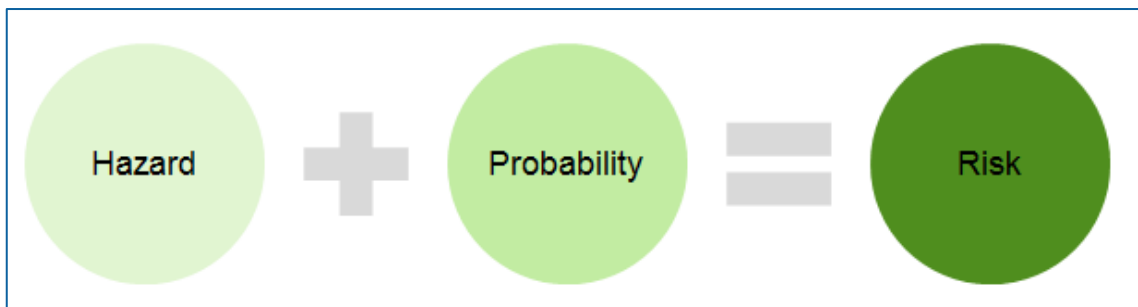
Combined flooding

- D.3.29 The types of flooding detailed above rarely happen in isolation. Incidences of historic flooding in Wokingham have often involved at least two types of flooding. Understanding how the different types of flooding interact is key to managing and working to reduce flood risk within the Borough.

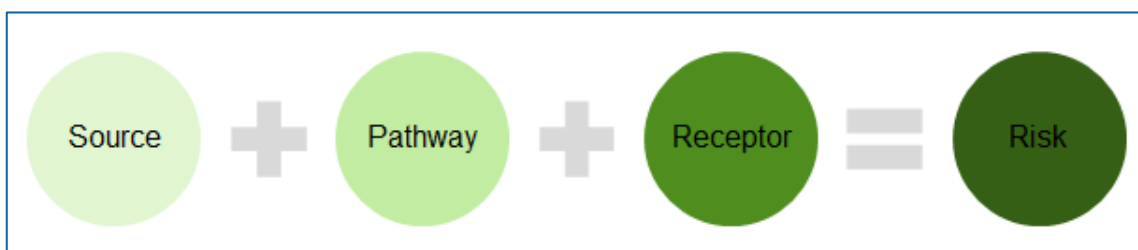
D.4 Changes to current and future Flood Risk

Assessment of Flood Risk

- D.4.1 Flood risk arises when the probability of a flood results in a consequence for a sensitive receptor. This is often expressed by the following model:



- D.4.2 When assessing the risk and determining risk management approaches, flooding is commonly considered in the context of a Source Pathway Receptor model.
- D.4.3 This model uses an understanding of all the sources of hazard, all the exposed receptors and the pathways that link them. The model specifies that in order for there to be a 'Risk' there must be a link ('pathway') between a 'source' (type of flooding) and a 'receptor' (people, homes businesses).
- D.4.4 All three elements of the model are required for a risk to manifest. Risk mitigation can therefore be provided by removing any single component.



- D.4.5 These models can be demonstrated by the example of groundwater flooding in Wokingham.
- D.4.6 The northern area of the Borough is underlain by a major aquifer in the Chalk which presents a flood source. The probability of flooding occurring from the Chalk is associated with the occurrence of periods of heavy, sustained rainfall giving rise to groundwater levels in the Chalk rising.
- D.4.7 The pathway for groundwater flooding is the emergence of groundwater at the ground surface, affecting receptors, which in this case are the homes and residents of Wokingham.
- D.4.8 As can be seen from the information presented in this LFRMS, the risk to residents of Wokingham from groundwater flooding is not the same. In some areas of Wokingham there is no Chalk aquifer (i.e. no **source**), in other areas the Chalk is present but does not appear at the ground surface (i.e. no **pathway**) and finally across some areas of Wokingham there is no development and no residents (i.e. no **receptor**).
- D.4.9 Therefore for a risk from groundwater to be realised there must be a **receptor** (home and/or resident) located in an area of Wokingham which is underlain by the Chalk (**source**), which is present at the ground surface and has been subject to prolonged and sustained heavy rainfall leading to rising groundwater levels (**pathway**).

Factors Influencing Flood Risk

D.4.10 There are a number of causes which may potentially increase flood risk including climate change, urban creep and poor land use management and management of the environment. Table 4 summarises the various factors which have the potential to contribute to the current and future flood risk in Wokingham.

TABLE 4 Flood Risk Factors

Meteorological Factors	Hydrological Factors	Human Factors
<ul style="list-style-type: none"> • Rainfall • Cyclonic storms • Small-scale storms • Temperature • Snowfall and snowmelt • Cyclones 	<ul style="list-style-type: none"> • Soil moisture level • Groundwater level prior to storm • Surface infiltration rate affected by vegetation, soil texture, density, structure and soil moisture • Presence of impervious cover such as snow and ice • Channel cross-sectional shape and roughness • Presence or absence of over bank flow, channel network • Synchronization of run-offs from various parts of watershed 	<ul style="list-style-type: none"> • Land-use activities such as urbanization increase run-off volume and rate • Occupation of the floodplain obstructing flows • Structural flood control measures such as embankments • Greenhouse gas emissions which may affect climate change and frequency and magnitude of precipitation events • Decrease in conveyance of the river channels owing to build up of river debris, restriction of waterways, dumping of mineral, wastes and rubbish • Mining and other industries alter water regimes, pollute water channels and affect ecosystems; can also alter water courses • Poor or inadequate maintenance of drainage systems and networks

Climate Change

D.4.11 Over the past century around the UK sea levels have risen, more winter rain has fallen in intense wet spells and seasonal rainfall is highly variable. Some of the changes might reflect natural variation; however the broad trends are in line with projections from climate models. The effects of flooding in the future may be made more severe due to the impact of climate change, especially if nothing is done in relation to the risks.

D.4.12 The latest UK climate projections (UKCP09) indicate that the greenhouse gas levels in the atmosphere are likely to cause higher winter rainfall in the future, with predictions of potentially three times as many days in winter with heavy rainfall (more than 25mm in a day) by the 2080s. The amount of rain in extreme storms (with a 1 in 5 annual chance or rarer) could also increase by 40%.

D.4.13 If emissions follow a medium future scenario, UKCP09 projected changes by the 2050s relative to the recent past for the Thames River Basin District are:

- Winter precipitation increases of around 15% (very likely to be between 2 and 32%)
- Precipitation on the wettest day in winter to increase by around 15% (very unlikely to be more than 31%)
- Peak river flows in a typical catchment likely to increase between 8 and 18%

D.4.14 The consequences of these changes in climate in local flood risk will vary, with the outcome dependant on local conditions and vulnerability. Greater levels of precipitation during the winter months, and more of this rain falling in wet spells may increase river flooding both in urbanised and rural catchments. An increase in the intensity of rainfall will result in greater surface runoff, increasing localised flooding and erosion. This may in turn increase the pressure on sewers, drains and water quality. Rising sea levels may affect inland areas, as well as the coast, due to interactions with rivers, smaller watercourses, sewers and drains. Groundwater bearing aquifers across the Borough pose an increased risk in the future, as wetter winters may result in increased recharge.

Urban Development

- D.4.15 Further development and urbanisation has the potential to increase the hard surfaces and reduce the opportunities for water to filter into the soil and aquifers. This increases the volume and speed of runoff, potentially increasing flooding, particularly surface water flooding. Not all development and urbanisation is subject to planning procedures or part of the development control process and thus their impact on flooding is less likely to be controlled. Development defined as urban creep is one such example, consisting of activities such as paving gardens and building extensions.
- D.4.16 New developments typically increase the area covered by hard surfaces and could therefore increase the risk of surface water flooding. The National Planning Policy Framework (NPPF) and the upcoming National Standards for SuDS will help ensure that new developments do not result in an increase in local flood risk.

Development Planning

- D.4.17 There are a number of significant housing development proposals, called Strategic Development Locations, planned for the Borough in the coming years. These locations are identified in the Borough's Core Strategy, which sets out the broad vision for how the Borough will develop up to 2026 and how Wokingham Borough Council aims to protect and enhance the Borough's quality of life.
- D.4.18 The four Strategic Development Locations in Wokingham are Arborfield Garrison, South of the M4, North Wokingham and South Wokingham. As part of developing each SDL an overarching Infrastructure Delivery Supplementary Planning Document (SPD) has been produced, along with four separate master plan SPDs for each of the sites. These documents can be downloaded from [Wokingham Borough Council's website](#).
- D.4.19 In order to ensure these developments do not result in an increase in flood risk the evidence base used to make planning decisions and formulate planning policy must take into account and address the local flood risk in the Borough. The Borough Council is keen to ensure that the key principles and messages from this Strategy are applied to the planning process when allocating land for development, making decisions about planning applications and considering the provision of infrastructure on specific sites.

D.5 Existing Flood Risk Management Schemes

- D.5.1 Flood Risk Management Schemes encompass a variety of approaches for mitigating flood risk to a settlement, or part of a settlement. Schemes can range from works such as flood walls and embankments, channel diversions and enlargements, addition or removal of structures such as culverts or weirs, flood storage areas, pumping stations, channel maintenance such as dredging or vegetation clearance, environmental improvements such as wetland restoration, and changes in land management practices to reduce storm runoff.
- D.5.2 The type of scheme that could be used to alleviate the risk of flooding in a certain area is dependent on the type of flooding and surrounding environmental characteristics. Different schemes and works have different costs associated with their construction, which can also influence the type of flood risk management undertaken in an area. Further information on funding for flood risk management schemes and works is provided in Section E.

Land use management

- D.5.3 Consideration of flood risk is paramount when selecting and assessing sites for development. The risk and impact of flooding must be assessed not only with respect to the particular development proposal, but also the surrounding and downstream areas where the flood risk may be increased by the development. The Borough will ensure flood risk for future developments is assessed, the risks are managed and new properties are insurable over their lifetime.
- D.5.4 The advice set out in this Strategy, which constitutes a material planning consideration, will be used when determining planning applications. The measures identified in the Action Plan (Section G) should be considered when preparing infrastructure assessments and Community Infrastructure Charging (CIL) Documents.

E Managing the Likelihood and Impact of Flooding in Wokingham Borough

- E.1.1 The following section identifies the objectives and proposed measures to manage flood risk within Wokingham Borough. How and when these measures are expected to be implemented is specified in the Action Plan (Section G). When considering Flood Risk Management there are many different options that can be utilised to reduce the risk of flooding. However, the options cannot remove the risk completely as there can always be an extreme event that may exceed the design standard of the measure put in place.

E.2 Objective 1:

Continue to improve knowledge and understanding of current and future local sources of flood risk within Wokingham

- E.2.1 Wokingham Borough Council has already collected and captured data and information on flooding within the Borough. It is only through continuing to capture this information from flood events and using this to obtain a better understanding of where the greatest local risks occur, the causes and who should be involved, that possible measures to reduce flooding can be identified.
- E.2.2 Data and information is held and updated by a number of different organisations. The [WBC Preliminary Flood Risk Assessment](#) provides a table summarising types of data available and the limitations of this data when considering flood risks.

Measure: Develop the investigation policy and implement this policy when investigating flood events.

Measure: Develop and maintain a live database of flood incidents in the Borough

Measure: 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.

Measure: Undertake a Surface Water Management Plan for the Borough.

Measure: Utilise social media to enable the general public to report flood issues to improve knowledge of flood risk in the Borough.

E.3 Objective 2:

Continue to 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 socio-economic benefits where possible

- E.3.1 A key objective of local flood risk management is to communicate flood risk and raise awareness within local communities. This will make residents and local businesses more aware of the flood risk in Wokingham Borough. Whilst all the authorities involved in flood risk have a role to play there is also an important role for individual households to protect and prepare themselves in the event of a flood. Wokingham Borough Council have a co-ordinating role to play in the communication of flood risk, however local knowledge and information are important and therefore town and parish councils have a key role to play in providing focussed communication on a local level.

- Measure: Continue to work with local communities to develop Flood Forums/ Partnerships in at risk areas in the Borough.
- Measure: 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.
- Measure: The findings from the SWMP will be discussed with maintenance teams and the required actions identified in partnership.
- Measure: Work with partners to identify flood alleviation schemes, and assess these schemes against the prioritisation tool.
- Measure: Investigate the further use of social media techniques such as Datasquirt and WBC Facebook page to disseminate information and raise awareness within local communities.
- Measure: Develop a prioritisation tool against which flood alleviation schemes can be assessed.

E.4 Objective 3:

Ensure that land use planning and application decisions take full account of flood risk, avoiding development in inappropriate locations, minimising and preventing an increase in flood risk wherever possible

- E.4.1 The planning process has a significant role to play in reducing flood risk from new developments as well as ensuring that new developments are not impacted by existing flood risk.
- E.4.2 The National Planning Policy Framework (NPPF) is the key piece of National Planning Policy in relation to managing flood risk from new developments.
- E.4.3 The strategic planning process should be informed by the Strategic Flood Risk Assessment (SFRA) which aims to:
- Provide evidence on flood risk to inform the planning process
 - Aid the application of the sequential test
 - Inform planning policy on flood risk
- E.4.4 The flood risk for individual developments should be informed by a detailed Flood Risk Assessment. A Flood Risk Assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its uses / users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. Whilst the SFRA provides the evidence base it has also been used to inform the production of local planning policies within the Borough's Local Plan. As part of its local planning strategy, WBC has produced a Sustainable Design and Construction Supplementary Planning Document (SPD), which details flood risk management requirements, including the use of SuDS. This SPD was adopted by WBC in May 2010. To supplement the Core Strategy, WBC has prepared the Managing Development Delivery (MDD) Local Plan, which sets out the long term vision for Wokingham Borough for the next 15 years. At the planning stages of any new development or redevelopment consideration should be given to the reduction of flood risk not only to the development but to the wider community. Existing flood risk information and proposals for flood risk management contained within this strategy should be considered when looking at developments and the overall flood risk benefits that can be achieved.
- E.4.5 At the planning stages of any new development or redevelopment consideration should be given to the reduction of flood risk not only to the development but to the wider community. Existing flood risk information and proposals for flood risk management contained within this strategy should be considered when looking at developments and the overall flood risk benefits that can be achieved.

- E.4.6 Neighbouring Local Planning Authorities have a statutory requirement to consult Wokingham Borough Council when determining planning applications that have the potential to impact on Wokingham Borough. Through this statutory consultation, Wokingham Borough Council will ensure any proposed developments for which they are not the planning authority do not increase flood risk within the Borough.
- E.4.7 As part of the Flood and Water Management Act 2010, Schedule 3 sets out a range of significant new responsibilities for local authorities around Sustainable Drainage Systems (SuDS). Government consulted on the implementation of Schedule 3 between December 2012 and March 2013, however a number of issues were identified with the proposals. As a result of the concerns an alternative approach was presented in September 2014 for making better use of the planning system to secure SuDS in new development. It was confirmed in December 2014 that this approach would be taken forward and implemented as of 6th April 2015.
- E.4.8 As of April 2015, Wokingham Borough Council as the Local Planning Authority is required to review the surface water drainage systems for proposed developments to ensure they meet the requirements set out in National Standards and appropriate local guidance.
- E.4.9 To deliver this enhanced planning system it is intended that planning policy will be strengthened to give increased weight to the provision and maintenance of SuDS in the determination of planning decisions. To support this there will be changes to planning guidance that will be based on the draft National Standards and Specified Criteria that set out the requirements for the design, construction, operation and maintenance of SuDS in England and Wales. These changes will only apply to major development as set out in Article 2(1) of the Town and County Planning (Development Management Procedure) (England) Order 2010.
- E.4.10 Wokingham Borough Council has produced the 'Wokingham Sustainable Drainage Technical Guidance' which sets out the local requirements for SuDS in the Borough. This guide provides Wokingham Borough specific information on the planning, design and delivery of SuDS that are designed to reduce the risk of flooding and maximise environmental gain, including water quality, water resources, biodiversity, landscape and amenity. The guide also aims to ensure that all new developments and redevelopments in the Borough are designed to mitigate and adapt to the effects of climate change. This guidance fits with the draft National Standards and Specified Criteria.
- Measure: Develop a guidance document for SuDS, setting out the local standards that will be required for SuDS in Wokingham in addition to the National Standards.
- Measure: Review local flood policy and guidance to check that it is current, clear, and can easily be taken into account during the planning process.
- Measure: Prepare a briefing note on Flood Re and what affect it has on new developments.

E.5 Objective 4:

Maintain and, where necessary, improve local flood risk management infrastructure and privately owned flood defence assets, features and Ordinary watercourses, to reduce risk

- E.5.1 Local Flood Risk Management assets and privately owned flood defence assets need to be maintained in order to continually perform their original flood risk management function. The impact on flood risk will vary depending on the type of asset and what is protected by the asset. Routine inspection and maintenance needs to be undertaken to mitigate against flood risk and extend the lifetime of assets.
- E.5.2 With regards to privately owned flood defence assets the public need to be aware of the role these features play and their responsibilities for maintaining them. However, public knowledge regarding maintenance responsibilities is typically poor, especially with regards to Ordinary watercourses. Individuals who own land through which an Ordinary watercourse flows are referred to as riparian owners under Common Law, and must ensure that water is able to flow freely through the section of the watercourse on their land.
- Measure: Produce a guidance/advice note for riparian owners to ensure they are aware of their responsibilities to maintain their watercourses and associated assets.

Measure: Identify all the ordinary watercourses in Wokingham and designate those they feel are 'high-risk'.

Measure: 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.

E.6 Objective 5:

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

E.6.1 The Thames Valley Local Resilience Forum (LRF) was established by the Civil Contingencies Act 2004, which placed a duty on public sector organisations to warn, inform and advise the public in the event of an emergency. The borders of the LRF match those of Thames Valley Police and cover an area of 2,200 square miles within Berkshire, Buckinghamshire, Oxfordshire and Milton Keynes

E.6.2 Wokingham Borough Council has a duty under the Civil Contingencies Act 2004 to have plans in place to deal with risks in the communities. The Council complies with this by having in place an overarching plan, the Wokingham Borough Council Major Incident Plan (MIP) 2012 that outlines the Council's generic response to and preparations for an emergency.

E.6.3 The Council has a duty to warn and inform the local community. For flood risk this is achieved by communicating with flood wardens (where they exist), town and parish councils and ward members.

E.6.4 The Council promotes community resilience to support local communities to produce plans for their areas. Town and parish councils have a key role to play in increasing the coverage of these plans.

Measure: 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.

Measure: Continue to review all existing Emergency Plans to ensure they reflect existing/future flood risk.

Measure: Publicise the Environment Agency Flood Line 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.

Measure: 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.

E.7 Objective 6:

Identify national, regional and local funding mechanisms to deliver flood risk management solutions and schemes

E.7.1 Flood and water management work can be funded from a number of sources, set out in Section F. In order to undertake the actions identified in this Strategy to manage flood risk, there is a need to secure funding from various sources. This Strategy includes measures to bid for funding and inform communities and potential beneficiaries of potential schemes as and when they are developed.

- E.7.2 Partnership funding is an important source of funding, as it opens up other funding sources, such as Flood and Coastal Erosion Risk Management Grant in Aid (FCRM GiA), which would be unavailable otherwise. Consultation with key partners must be undertaken at the initial stages for any scheme to enable the discussion and agreement of funding options.
- E.7.3 The way in which projects are funded may alter in the future as a result of a number of triggers. These could include: funding availability; alterations in funding regimes; changes in political priorities; community pressure; new development; regeneration; a major flooding incident; revised assessments of flood risk; and changes in assessment methodology.
- Measure: 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.
- Measure: Develop a programme of bids for funding.
- Measure: 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.
- Measure: 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.

F Funding and Delivery

- F.1.1 It is important that the Local Flood Risk Management Strategy sets out how the proposed measures will be funded and resourced. This section sets out the standard funding options that are available to individual LLFAs. Additional sources of funding may be available for individual projects at a more local scale. As these funding sources are available on a case-by-case basis, details are not provided in this strategic document.

F.2 Local funding

- F.2.1 In addition to the national funding sources available for Flood Risk Management, there are a number of local funding mechanisms which can be utilised by Wokingham Borough Council to help manage flood risk in the Borough.

F.3 Highway budget

- F.3.1 As the Highways Authority, Wokingham Borough Council receives an annual capital budget for work on the highways drainage network. Work is prioritised according to safety, internal property flooding, social impact and the duration of flood incidents. For more information visit [Wokingham Borough Council's website](#).

Community Infrastructure Levy (CIL)

- F.3.2 The Community Infrastructure Levy (CIL) came into force in April 2010 and provides local authorities with an alternative source of potential funding for flood defence and alleviation schemes. CIL allows local authorities to raise funds from new development in their area in order to pay for the impact that the development has on local infrastructure.

- F.3.3 For more information visit [GOV.UK](#).

Section 106 Funding – Developers Contributions

- F.3.4 Section 106 of the Town and Country Planning Act 1990 allows a local planning authority to enter into an agreement with a landowner or developer in association with granting of planning permission. A section 106 (s106) agreement is used to address issues that are necessary to make a development acceptable, such as supporting provision of services and infrastructure.

- F.3.5 It is recommended that local planning authorities should make more use of Section 106 agreements to ensure that there is a strong planning policy to manage flood risk. This means that any flood risk which is caused by, or increased by, new development should be resolved and funded by the developer.

- F.3.6 For more information visit the [Planning Advisory Service website](#).

National funding

- F.3.7 Under the FWMA funding for co-ordination, local management and investigation of flood risk issues has been allocated to LLFAs to enable authorities to adapt to their new responsibilities. It is indicated that this funding will continue for Flood Risk Management, although the funding will not be ring-fenced. In addition to this funding there are a number of other national sources which may be utilised by Wokingham Borough Council.

Flood and Coastal Erosion Risk Management Grant in Aid (FCRM GiA)

- F.3.8 Partnership funding is a way of allocating capital funding to flood and coastal erosion risk management projects. Instead of meeting the full costs of a limited number of schemes, the partnership funding approach means that government money can help meet the costs of any worthwhile scheme. The amount of money that government will allocate to a scheme is based on:

- the numbers of households protected
- the damages being prevented
- other benefits a project would deliver

F.3.9 Partnership funding allows local communities to have a bigger say in what is done to protect them. The weighting within the system puts added emphasis on government helping those most at risk and living in the most deprived parts of the country.

F.3.10 The approach encourages cost savings and the use of other sources of funding to supplement money from government. As a result, more schemes are likely to go ahead than under the previous 'all or nothing' funding system. So far this new approach has brought forward £148 million nationally in external co-funding for the 2011/12 to 2014/15 period.

F.3.11 For more information visit [GOV.UK](http://gov.uk).

The Local Levy

F.3.12 Local levies are paid by upper tier authorities, such as Wokingham Borough Council, to the Environment Agency for additional flood risk management schemes that would not otherwise proceed. The Thames Regional Flood and Coastal Committee (RFCC) sets a local levy and votes on where to invest it. The Levy Funding for the Thames Region for the period 2012/13 totalled £10 million from the various authorities.

Bellwin Scheme

F.3.13 The Secretary of State announced on 13 February 2014 further changes to the Bellwin scheme which provides emergency financial assistance to local authorities in England. The scheme has been strengthened in response to the exceptional circumstances caused by the 2013 to 2014 winter's flooding.

F.3.14 The Bellwin Scheme is a discretionary scheme which provides special financial assistance to local authorities following large-scale emergencies, such as widespread flood events. The scheme is set up when these authorities would otherwise be faced with an undue financial burden as a result of providing relief and carrying out work as a result of the emergency.

F.3.15 For more information visit [GOV.UK](http://gov.uk).

Other sources of funding

F.3.16 There are also other sources of funding currently available and there may be other funds in the future that can be used for flood risk management. A list of the current funds is provided below:

European Regional Development Fund (ERDF)

F.3.17 South East England Operational Programme (SEEO) sets out how ERDF resources are to be used in the South East Region. The Programme is based upon an analysis of the needs and opportunities facing South East England, particularly the recognised importance of decoupling further economic growth from resource consumption, pollution generation and a loss of biodiversity if the region is to achieve its vision of achieving sustainable prosperity by 2016. For more information visit [GOV.UK](http://gov.uk).

Business Improvement District (BID) scheme

F.3.18 This is a business-led initiative supported by government legislation which gives local businesses the power to 'raise funds locally to be spent locally' on improving their trading environment. For more information see the [House of Commons](#) note.

Growing Places Fund

F.3.19 This fund aims to help address infrastructure constraints by enabling targeted investment in pieces of infrastructure which unlock development. This will allow places to realise development values which can be recycled to provide a longer term solution to infrastructure provision.

F.3.20 For more information visit [GOV.UK](http://gov.uk).

Water Framework Directive

F.3.21 Funding is available through the Environment Agency for projects on river and floodplains which improve, enhance and develop habitats. The WFD cannot be used solely or directly for flood management projects, however, if habitat enhancement is part of the project, funding can help deliver those aspects of the project.

For more information visit [Water Framework Directive Guidance Documents](#).

G Action Plan

G.1.1 Wokingham Borough Council have reviewed the available data and resources required to implement the Action Plan measures. This review has enabled each of the measures to be categorised into short term, medium term or long term, as detailed in Table 5 below. Wokingham Borough Council will aim to implement short term measures within 3 years, medium term measures within 6 years and long term measures within 10 years.

TABLE 5 Wokingham Local Flood Risk Management Action Plan

Objective		Measure/Action	Description and benefits of undertaking the measure/action	Financial implication	Timescale
O1	Continue to improve knowledge and understanding of current and future local sources of flood risk within Wokingham.	Develop the investigations policy and implement this policy when investigating flood events	Building knowledge of flooding sources in the Borough to ensure schemes and funding are targeted appropriately	In house resource	Short term
		Develop and maintain a live database of flood incidents in the Borough.	Improve knowledge available to other departments. Ready access to data to support funding applications for schemes	In house resources	Short term
		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.	Ensuring maintenance and responsibilities can be correctly identified. Improved understanding of the area and risks	Some training for GIS needed in house (£)	Short term
		Undertake a SWMP for the Borough.	Will allow WBC to investigate the accuracy of the recently released surface water flood maps and provide affected residents with information and support. Allow maintenance programmes to be developed and identify critical assets	Additional support required (££)	Medium term
		Utilise social media to enable the general public to report flood issues to improve knowledge of flood risk in the Borough.	Improved understanding of flooding in the Borough. Engages with younger communities providing new data	Uses already active systems and in house resources	Short term
O2	Work collaboratively and	Continue to work with local communities to develop	Help to reduce risk to communities and ensure	In house resources	Short term

Objective		Measure/Action	Description and benefits of undertaking the measure/action	Financial implication	Timescale
	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.	Flood Forums/ Partnerships in at risk areas in the Borough.	responsibilities are correctly identify		
		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	Improves understanding and steps that can be taken by the community to reduce risk	In house resources	Long term
		The findings from the SWMP will be discussed with maintenance teams and the required actions identified in partnership.	Reduces risk and ensures critical assets are identified	Increase in programmed maintenance (£££)	Long term
		Work with partners to identify flood alleviation schemes, and assess these schemes against the prioritisation tool.	Ensure responsibilities are defined and funding appropriately spent	In house resources	Medium term
		Investigate the further use of social media techniques such as Datasquirt and WBC Facebook page to disseminate information and raise awareness within local communities.	Reduces risk and potential disruption and damages	Uses already active systems and in house resources	Short term
		Develop a prioritisation tool against which flood alleviation schemes can be assessed.	Robust approach to ensure potentially limited funds are spent in the areas where it will be most effective	Additional Support required (££)	Short term
		Update the Strategic Flood Risk Assessment for the Borough to ensure the evidence base on historic flood incidences is up-to-date. This document will become a 'live' document and will be updated with new information on flood events	Ensure a comprehensive, up-to-date evidence base on historic flood incidences is maintained for the Borough.	Consultant fees required <10k	Short term

Objective		Measure/Action	Description and benefits of undertaking the measure/action	Financial implication	Timescale
03	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.	Develop an internal procedure in order to efficiently and effectively undertake new duties reviewing surface water drainage plans for major developments	Required under the FWMA	Additional resources required (££)	Short term
		Undertake a skills assessment of all officers who are to be involved reviewing surface water drainage plans. Any skills gaps will be met with staff training.	Required to ensure SUDS schemes are appropriately designed.	External training required (££)	Short term
		Develop a guidance document for SuDS, setting out the local standards that will be required for SuDS in Wokingham in addition to the National Standards	Provides sound and robust advice to developers and improves the quality and accuracy of the SAB Applications	Additional support required (££)	Short term
		Identify the relevant stakeholders responsible for reviewing planning and drainage applications in Wokingham, such as the sewage undertaker, the EA and WBC as the Highways Authority.	Input in development planning required from all Risk Management Authorities under the Act	Additional Resources required	Short term
		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	Ensures that the new Strategic Development Sites consider flood risk on and off site and provide betterment wherever possible	In house resources	Short term
		Prepare a briefing note on Flood Re and what affect it has on new developments.	Ensures that the siting of commercial and domestic properties in terms of flood risk is appropriate.	In house resource	Short term

Objective	Measure/Action	Description and benefits of undertaking the measure/action	Financial implication	Timescale
O4	Maintain and, where necessary, improve local flood risk management infrastructure and privately owned flood defence assets and Ordinary watercourses, to reduce risk.	Produce a guidance/advice note for riparian owners to ensure they are aware of their responsibilities to maintain their watercourses and associated assets.	In house resources	Short term
		Identify all the ordinary watercourses in Wokingham and designate those they feel are 'high-risk'.	In house resources	Medium term
		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.	In house resources	Short term
O5	Ensure that emergency plans and responses to flood incidents are effective and that communities are prepared and resilient to local flood risk.	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.	In house resources	Short term
		Continue to review all existing Emergency Plans to ensure they reflect existing/future flood risk.	In house resources	Short term
		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	Local Telemetry installations (£)	Short/medium term
		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.	In house resources	Medium term

Objective		Measure/Action	Description and benefits of undertaking the measure/action	Financial implication	Timescale
O6	Identify national, regional and local funding mechanisms to deliver flood risk management solutions and schemes.	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.	Maximises chances of successful funding applications	In house resources	Medium term
		Develop a programme of bids for funding.	Maximises chances of successful funding applications	In house resources	Long term
		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.	Robust approach to ensure targeted spending of funds	Additional support required (£)	Medium term
		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.	Maximises chances of successful funding applications	In house resources	Long term

H Review and Development of the Strategy

H.1 Review

- H.1.1 Local flood risk management must be responsive to change. This strategy will therefore be continually monitored, reviewed and developed to ensure the information contained within it is the best available and most up to date and the document continues to be effective in allowing risk management authorities within Wokingham Borough to manage flood risk. Regular review of the strategy will also provide a mechanism for demonstrating successes in delivering reduced flood risk within Wokingham Borough.
- H.1.2 It is proposed that a comprehensive review should be undertaken in 2017 following the review of the National Strategy in 2016, and to coincide with the review of the Wokingham Preliminary Flood Risk Assessment required under the Flood Risk Regulations. The review will:
- Assess our progress towards achieving the objectives of this strategy.
 - Consider the successes and shortcomings of the risk management authorities and the successes and failures of our flood risk management measures.
 - Identify new objectives and measures to address flood risk issues present at the time and those anticipated over the life of the LFRMS and beyond.
 - Collate any new data on flood risk within Wokingham.
 - The Strategy may need to be updated before 2017 if:
 - a significant flood event(s) occurs that challenges the conclusion of the risk assessment;
 - any significant changes occur to any of the datasets that underpin the risk assessment;
 - any significant policy changes occur that amend the roles and responsibilities of the Flood Risk Management Agencies;
 - the annual monitoring identifies that the Strategy is not achieving its objectives; and
 - there is a change in funding availability which has a significant effect on the actions proposed in this Strategy.
- H.1.3 In addition to the above reasons for updating the Strategy, there are going to be some significant changes in relation to flood risk management in the next few years with changes to the planning system, sustainable drainage requirements and the funding of flood defence scheme and improvements in our knowledge and understanding of flood risk in Wokingham Borough. Some strategy supplements may therefore need to be produced before the next review to recognise these changes. For this reason the Local Strategy and associated Strategic Action Plan should be viewed as a 'living' document.

Appendices

Appendix I – Glossary

Term	Description
Climate Change	A long-term change in the statistical distribution of weather patterns over periods of time that range from decades to millions of years. Climate change may be limited to a specific region, or may occur across the whole planet.
Flood Warden	The flood wardens' role is to raise awareness within the local community about the prevention of flooding and to be a focal point for flood issues. The Environment Agency, Wokingham Borough Council and the emergency services can communicate directly with them if necessary.
Flood Zones	These are a national dataset held by the Environment Agency and show the predicted probability of flooding for any given area. The zones were created following Defra's Making Space for Water pilot study. This was a Government programme that sought to take forward the developing strategy for flood and coastal erosion risk management in England.
Flood Zone 1	Low probability of flooding – Land considered as having less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).
Flood Zone 2	Medium probability of flooding – Land considered as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% to 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding in any year (0.5% to 0.1%).
Flood Zone 3a	High probability of flooding – Land considered as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea in any year (>0.5%).
Flood Zone 3b	The Functional Floodplain – This zone comprises land where water has to flow or be stored in times of flood. Land within this zone is considered to flood with an annual probability of 1 in 20 (5%) or greater in any year, or has been designed to flood in an extreme (0.1%) flood.
GIS	Geographic Information System. GIS is any system which stores geographical data, such as elevations, locations of buildings and extents of flood outlines.
Groundwater flooding	Groundwater flooding occurs when water levels in the ground rise above the ground surface, due to the occurrence of prolonged or heavy rainfall. Groundwater levels tend to respond to rainfall more slowly than water levels in rivers or on the surface. This slower response means groundwater flooding does not necessarily occur immediately after the occurrence of prolonged or heavy rainfall. This also means that when groundwater flooding does occur it can last for days, weeks and occasionally months. The areas most at risk are typically those which are low-lying, where the water table is more likely to be at a shallow depth and flooding can be experienced through water rising up from the underlying aquifer or from water flowing from springs.
Highway Flooding	Highway flooding is caused by heavy rainfall or overflow from blocked drains and gullies causing water to pond within the highway network.
Main Rivers	Main Rivers are usually larger streams and rivers, but also include smaller watercourses of strategic drainage importance. A main river is defined as a watercourse shown as such on a main river map, and can include any structure or appliance for controlling or regulating flow or water in, into or out of a main river. The Environment Agency's powers to carry out flood defence works apply to main rivers only. Main rivers are designated by Defra.

Term	Description
Ordinary watercourse	An ordinary watercourse is any other river, stream, ditch, cut, sluice, dyke or non-public sewer which is not a Main River.
Ordinary watercourse flooding	Ordinary watercourse flooding concerns flooding from any watercourse which is not designated by the Environment Agency as a Main River. Ordinary watercourses include rivers, streams, ditches, culverts, drains, cuts, dikes, sluices and passages, through which water flows. Flooding of an Ordinary watercourse (fluvial flooding) occurs when a watercourse cannot accommodate the volume of water that is flowing in it or when there is significant impedance to the passage of flow within the channel, causing flow to come out of bank.
Reservoir Flooding	Reservoir flooding occurs when the reservoir overtops or the embankment is breached. It could have exactly the same effect as other types of flooding, and cause a slow increase in the level of water. However, if a reservoir dam were to suddenly fail, a large volume of water may discharge at once.
Riparian Owner	A riparian owner is someone who owns land or property adjacent to a watercourse. A riparian owner has a duty to maintain the watercourse and allow flow to pass through freely.
River Flooding	River flooding is also known as fluvial flooding. It occurs when the capacity of the river is exceeded and water spills onto the floodplain. In the context of this Strategy, we refer to river flooding as being from Main Rivers. Main Rivers are larger streams and rivers, or smaller watercourses with strategic drainage importance. The Environment Agency is responsible for managing flooding from Main Rivers. All watercourses which are not designated as Main River are called Ordinary watercourses. Wokingham Borough Council is responsible for managing flooding from Ordinary watercourses.
Sewer Flooding	Sewer flooding occurs when the sewer network cannot cope with the volume of water that is entering it. It is often experienced during times of heavy rainfall when large amounts of surface water overwhelm the sewer network. Sewer flooding can also occur when an outfall surcharges or when temporary problems such as blockage, siltation, collapses and equipment or operational failure occur.
Surface Water flooding	Surface water flooding is also known as pluvial flooding or flash flooding. This type of flooding occurs when high intensity rainfalls generate runoff which flows over the surface of the ground and accumulates in low lying areas. It is usually associated with high intensity rainfall events and can be exacerbated when the ground is saturated or when the drainage network has insufficient capacity to cope with the rate at which water is trying to enter it.
Surface Water Management Plan (SWMP)	A framework through which key local partners with a responsibility for surface water and drainage in the Borough will work together to understand the causes of surface water flooding and agree to most cost effective way of managing that risk. The purpose is to make sustainable surface water management decisions that are evidence based, risk based, future proofed and inclusive of stakeholder views. A SWMP should establish a long-term action plan to manage surface water in an area and should influence future capital investment, drainage maintenance, public engagement and understanding, land-use planning, emergency planning and future developments.
Sustainable Drainage Systems (SuDS)	A sequence of management practices and control measures designed to mimic natural drainage processes by allowing rainfall to infiltrate and by attenuating and conveying surface water runoff slowly compared to conventional drainage. SuDS can operate at different levels; ideally in a hierarchy of source control, site control and regional control.

Appendix II – Legislation and Policy

Legislation

EU Floods Directive & Flood Risk Regulations 2009

The European Floods Directive came into force on 26 November 2007 and requires Member States to assess if all watercourses and coastlines are at risk from flooding, to map the flood extent, assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk.

To transpose the EU Floods Directive into law for England and Wales, The Flood Risk Regulations came into force in December 2009. The Flood Risk Regulations require LLFAs to prepare three main pieces of work:

- Preliminary Flood Risk Assessment (PFRA) – this involves collecting information on past and future floods from surface water, groundwater and ordinary watercourses, and identifying where significant numbers of people are at risk. PFRA's were produced and published by 22 December 2011.
- Flood Hazard and Flood Risk Maps – Where areas have been identified within the PFRA as being at significant risk then the Environment Agency and the Lead Local Flood Authorities are required to produce hazard and risk maps for indicative Flood Risk Areas by 22 December 2013.
- Flood Risk Management Plans – The final stage is for the production of a Flood Risk Management Plan for the indicative Flood Risk Areas by 22 December 2015.
- Wokingham Borough does not have areas defined as having 'significant' risk as defined by the Flood Risk Regulations therefore the Council is only required to produce the Preliminary Assessment Report under the first bullet point above.

The Localism Act 2011

The Localism Act introduces a number of proposals to provide new freedoms and flexibilities for local government. With regards to flood risk management the Localism Act requires Lead Local Flood Authorities (LLFAs) to establish processes to enable overview and scrutiny committees to review and scrutinise risk management authorities in their area. Risk management authorities have a duty to comply with a request made by an overview and scrutiny committee for information or a response to a report in relation to its flood or coastal erosion risk management functions.

The Localism Act introduces the 'duty to cooperate', which requires all risk management authorities to work together. It is important these organisations work together across administrative boundaries when working in relation to flood and coastal erosion risk management.

Water Resources Act 1991

The aim of the Water Resources Act is to prevent and minimise the pollution of water. Under the Act it is an offence to cause or knowingly permit any poisonous, noxious or polluting material, or any solid waste to enter any controlled water. The Environment Agency is responsible for policing this Act.

The definition of polluting material includes silt and soil from eroded areas. If silt or soil from eroded areas is found to be polluting a water body or watercourse, the Environment Agency has the power to prevent or clear up the pollution and recover the damages from the landowner or responsible person.

Highways Act 1980

The Highways Act provides powers to Wokingham Borough Council as the Highway Authority for the creation, improvement and maintenance of roads and for acquisition of land. Under the Act Wokingham Borough Council, as the Highway Authority, are able to enter into Section 38 and Section 278 agreements with developers, allowing the adoption of new roads (Section 38) and the provision of off-site highway works in conjunction with a development (Section 278). The Act also provides legislation on navigable rivers and watercourses, with regards to construction bridges over and tunnels under waterbodies and diverting watercourses.

Making Space for Water 2004

The Making Space for Water strategy covers the period until 2024 and sets out how the Government will adopt a more holistic approach to managing flood and coastal erosion risk in England during this period. All sources of flooding will be accounted for, with flood and coastal erosion risk becoming embedded in a range of Government policies. The strategy aims to manage risks by implementing integrated national and local approaches, with the purpose of reducing flood risk and providing environmental, social and economic benefit, consistent with the Government's sustainable development principles.

Civil Contingencies Act 2004

The Civil Contingencies Act details the framework for civil protection in the UK and sets out the actions required in a flood event. In order to provide protection in the event of a flood the Civil Contingencies Act is arranged in two sections: Part 1: local arrangements for civil protection; and Part 2: emergency powers.

Wokingham Borough Council has a number of responsibilities under Part 1:

- Undertaking risk assessments;
- Developing Emergency Plans;
- Developing Business Community Plans;
- Arranging to make information available to the public about civil protection matters and maintain arrangements to warn, inform and advise the public in the event of an emergency;
- Share information with other local responders to enable greater co-ordination;
- Co-operate with other local responders to enhance greater co-ordination and efficiency; and
- Provide advice and assistance to businesses and voluntary organisations about business continuity management.

Local Authorities do not have any direct responsibilities under Part 2 of the Civil Contingencies Act.

Reservoirs Act 1975

The Reservoirs Act is applicable to all reservoirs classified as 'large raised reservoirs', meaning all those which hold a volume of water greater than 25,000 cubic meters above the natural level of any part of the surrounding ground level, and regulates the responsibility for their management and supervision.

The Reservoirs Act is to be amended by the Flood and Water Management Act, with the introduction of new arrangements for reservoir safety and the redefining of 'large raised reservoir' to include any reservoir with a volume of more than 10,000 cubic meters above the natural level of any part of the surrounding ground level. Under the changes provided by the Flood and Water Management Act all large raised reservoirs that are assessed as 'high risk' will be subject to full regulation and any large raised reservoirs not at 'high risk' will need to be registered. In addition, all incidents at reservoirs will need to be reported.

The Flood and Water Management Act defines a 'high risk' reservoir as any reservoir for which the Environment Agency considers that "in the event of an uncontrolled release of water from the reservoir, human life could be endangered, and the reservoir does not satisfy the conditions (if any) specified in regulations made by the Minister". These conditions may include conditions as to:

- The purpose for which the reservoir is used;
- The materials used to construct the reservoir;
- The way in which the reservoir is constructed; and
- The maintenance of the reservoir.

If a reservoir is subject to 'full regulation' a qualified (panel) civil engineer must be appointed to supervise the design and construction, the reservoir must be continually supervised once constructed, an inspection must be undertaken every ten years, and any measures recommended in the interests of safety must be supervised.

Habitats Directive (The Conservation of Habitats and Species Regulations) 2010

These regulations transpose the European Habitat Directive into English and Welsh law. The regulations focus on the importance of conserving natural habitats in order to help maintain and enhance biodiversity. The primary tool within the regulations for achieving this is the establishment of a network of protected areas and strict protection measures for particularly rare and threatened species.

Water Framework Directive 2000

Introduced in December 2000 and transposed into UK law in 2003, this piece of EC water legislation is designed to improve and integrate the way water bodies are managed throughout Europe. European Member States must aim for inland and coastal waters to be at 'good' chemical and ecological status by 2015.

The Environment Agency is the coordinating authority for the Water Framework Directive in England. In order to address the requirements of the Directive, the Environment Agency has produced river basin management plans, which develop new ways of protecting and improving the water environment.

River Basin Management Plans (RBMP)

These plans have been prepared under the Water Framework Directive, which requires all countries throughout the European Union to manage the water environment to consistent standards. River Basin Management Plans assess the pressures facing the basin and set out potential actions to address them. The Plans are produced in a continuous process of planning and delivery. The Water Framework Directive introduces a formal series of six year cycles for River Basin Management Plans. The first cycle will end in 2015.

The Wokingham Borough Council administrative area is covered by the Thames River Basin Management Plan. The main issues to address in the Thames River Basin include:

- point source pollution from water industry sewage works;
- physical modification of water bodies;
- diffuse pollution from agricultural activities;
- abstraction; and
- diffuse pollution from urban sources

In 2009 these issues meant that only 23 per cent of surface waters were classified as good or better ecological status and 35 per cent of groundwater bodies were at good quantitative status. 28 per cent of assessed surface water bodies were at good biological status. By 2015 it is anticipated that 22 per cent of surface waters will improve for at least one biological, chemical or physical element. In addition, 17 per cent of groundwater bodies will be at good overall status by 2015 and at least 30 per cent of assessed surface waters will be at good or better biological quality.

The Thames RBMP lists a number of actions to help address the above issues and achieve these improvements. The Strategic Environmental Assessment (SEA) produced for this Strategy addresses the implications of the Thames RBMP of this Strategy.

The Land Drainage Act 1991

The Land Drainage Act details the duties and powers to manage land drainage for a number of bodies and groups, including local authorities, the Environment Agency, Internal Drainage Boards and riparian owners. The Flood and Water Management Act updates a number of elements of this legislation.

The key powers and duties provided to Wokingham Borough Council by the Land Drainage Act are:

- A general duty to the environment when exercising powers;
- Powers to maintain, improve and build new drainage related works;
- Consenting and enforcement powers for ordinary watercourses;
- Powers to create byelaws; and
- General powers of entry onto land for water level management so that statutory authorities can exercise flood risk management for the common good.

Policy

Thames Catchment Flood Management Plan (CFMP) 2009

CFMPs provide an overview of flood risk across a river catchment; they consider all types of flooding and consider the impacts of climate change. Key policies and actions at the catchment scale are provided in order to assist in the management of flood risk. CFMPs have been produced by the Environment Agency and are to be used as a tool that informs the management of flood risk on a river catchment basis.

A CFMP has been developed for the River Thames catchment. Wokingham Borough extends over three sub areas of the CFMP, namely the Loddon; the Upper and Middle Blackwater; and the Addlestone Bourne, Emm Brook, The Cut. These sub areas fall under two main policy units within the Thames CFMP:

■ The Upper and Middle Blackwater

Areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change

This policy will tend to be applied where the risks are currently deemed to be appropriately-managed, but where the risk of flooding is expected to significantly rise in the future. In this case we would need to do more in the future to contain what would otherwise be increasing risk. Taking further action to reduce risk will require further appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options.

■ The Loddon and the Addlestone Bourne, Emm Brook, The Cut

Areas of moderate to high flood risk where we can generally take further action to reduce flood risk

This policy will tend to be applied to those areas where the case for further action to reduce flood risk is most compelling, for example where there are many people at high risk, or where changes in the environment have already increased risk. Taking further action to reduce risk will require additional appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options.

Planning Policy

There are a number of plans and strategies that relate to planning and development which have a bearing on the Local Flood Risk Management Strategy. Details of each of these documents and how they relate to the Strategy are provided in Table 6 overleaf.

TABLE 6 Relevant Planning Policy

Document	Description	How has the document informed the production of this Local Strategy?
National Planning Policy Framework (NPPF) 2012	<p>The NPPF sets out the National Planning Policy in relation to the requirements for development and flood risk in paragraphs 99-104.</p> <p>The Framework provides clear guidance on how flood risk should be considered within the planning process.</p>	The general principles of the NPPF have informed the Strategy.
NPPF Technical Note 2012	This note provides the technical guidance for implementing the NPPF. Paragraphs 2-19 specifically mention flooding.	The technical guidance has enabled the preparation of potential options for managing flood risk presented in the Strategy.
Wokingham Borough Council Core Strategy 2010 and Managing Development Delivery Development Plan Document 2013	<p>Wokingham Borough Council's Core Strategy provides the overall vision and objectives that will guide the future pattern and form of development in the Borough.</p> <p>The Borough Council's Managing Development Delivery (MDD) Development Plan comprises the Local Plan, the Core Strategy, the Minerals and Waste Plan and the Gypsy and Traveller Local Plan (when adopted). The MDD was prepared in accordance with the National Planning Policy Framework. The Plan sets out the overarching spatial development strategy for the Borough, including site allocations and detailed development management and delivery policies.</p>	The policies and information on regeneration and development proposals have been reviewed as part of the preparation of this Strategy to ensure that there are no conflicts between the LFRMS and the Core Strategy and the Local Plan.
Wokingham Borough Strategic Flood Risk Assessment (SFRA) 2012	The SFRA is an evidence base used to inform the Spatial Planning process through assessing flood risk.	The information collected as part of this process has been used to provide baseline information in the Strategy.
Wokingham Borough Preliminary Flood Risk Assessment (PFRA) 2011	This is a high level document required under the EU Floods Directive which assesses the risk from local sources of flooding (surface water, groundwater and ordinary watercourses) within the Borough.	The information collected as part of this process has been used to provide baseline information in the Strategy.

Appendix III

Wokingham Flood Investigation Policy

Flood and Water Management Act 2010

Section 19 “Duty to Investigate” Flooding Incidents Policy

Background

The Flood and Water Management Act 2010 places a duty on the Council, as the Lead Local Flood Authority for its area, to investigate flooding incidents that it becomes aware of, to the extent that it considers necessary or appropriate.

Section 19 of the Act 2010 states 19 Local authorities: investigations

(1) On becoming aware of a flood in its area, a lead local flood authority must,

to the extent that it considers it necessary or appropriate, investigate

(a) which risk management authorities have relevant flood risk

management functions, and

(b) whether each of those risk management authorities has exercised, or

is proposing to exercise, those functions in response to the flood.

(2) Where an authority carries out an investigation under subsection (1) it must

(a) publish the results of its investigation, and

(b) notify any relevant risk management authorities.”

As a result, Lead Local Flood Authorities have scope to define a threshold or criteria that will determine whether or not a formal investigation of a flood is required.

As such, Wokingham Borough Council should establish a policy framework within which officers can implement this duty to best serve local residents within the resources available.

Threshold for Investigation

The Council will investigate all flooding incidents reported by residents, or that otherwise come to its attention, that involve

☐ Internal flooding of habitable property (excluding garages and out-buildings)

☐ Flooding of any road that requires formal closure of that road and diversion of traffic

☐ Flooding of critical infrastructure (such as electricity sub-stations, sewage pumping stations or schools) that results in loss of service to customers or potential loss of service.

Whilst accepting that a flood event must be seen as ‘significant’ both by the Authority and the community affected, to set the threshold too high would simply be seen as a method of avoiding the responsibility of carrying out investigations. Setting the threshold too low could well lead to a burden that the Authority and other Risk Management Authorities could not meet. The Council may also investigate smaller ‘near miss’ flooding incidents. The Council, as Highway Authority, will also continue to investigate smaller scale flooding and ‘ponding’ on the highway

Purpose and Scale of Investigations

Any investigations undertaken will seek to establish the likely causes of the flooding incident, the relevant risk management authorities and any actions undertaken or proposed by the relevant risk management authorities.

Investigations will be undertaken during, or as soon as possible after, the flooding incident and will be appropriate to the scale and nature of the flooding incident.

Small scale flooding incidents and incidents where the relevant risk management authorities are immediately apparent or are undertaking actions to alleviate the cause of the flooding incident, are likely to require limited investigations.

Large scale flooding incidents, incidents where the relevant flood risk management authorities are unclear, and incidents where a number of risk management authorities are involved, are likely to require more detailed investigations. In such circumstances the Council will work closely with the risk management authorities involved and may, where appropriate, prepare a detailed report.

Publication of Findings of Investigations

The findings of all investigations undertaken by the Council, as Lead Local Flood Authority, will be recorded and published on the Council's website.

Risk management authorities

The principal risk management authorities are:

The Environment Agency

The Environment Agency has a strategic overview for all forms of flooding at national level and is responsible for managing the risk of flooding from main rivers and regulating reservoirs. The Agency has a duty to contribute to sustainable development when delivering its statutory functions.

Thames Water/South East Water

Water and Sewerage Companies manage the supply and quality of drinking water, as well as the disposal and treatment of sewage and, in urban areas, the disposal of surface water runoff from properties.

The Council (as Lead Local Flood Authority) is responsible for local sources of flood risk, in particular surface runoff, groundwater and ordinary watercourses.

The Council (as Highway Authority)

Wokingham Borough Council as Highway Authority is responsible for drainage on adopted roads.

