



# Reigate & Banstead

# Strategic Flood Risk Assessment

**Final Report May 2012**



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## Executive Summary

This Strategic Flood Risk Assessment (SFRA) seeks to meet the requirements of the National Planning Policy Framework (NPPF) in providing an up to date assessment of flood risk in the borough, in order to inform the production of the Local Development Framework and decision making on planning applications. This document updates the original SFRA carried out on behalf of the Council in 2007. Since that time there have been significant changes to legislation and policy guidance that affect the management of flood risk, most notably the introduction of the Flood Risk Regulations 2009, the Flood and Water Management Act 2010, the publication of the revised Planning Policy Statement 25 (PPS25) in 2010 and the publication of the NPPF in March 2012.

The 2012 update of the SFRA constitutes a Level 1 SFRA. The SFRA contains a full assessment of flood risk from all sources of flooding, taking into account the effects of climate change. The SFRA makes reference to the Environment Agency's most recent fluvial Flood Maps and Flood Maps for Surface Water and links to these maps are provided alongside the document. The SFRA sets out a detailed account of the flood risk in different parts of the borough which will form the basis for carrying out the Sequential Test in relation to site allocations and planning applications.

The SFRA explains how flood risk will be managed through the planning process when allocating sites in the Local Development Framework and in the assessment of planning applications. The SFRA builds upon the analysis of flood risk in different parts of the borough to provide recommendations to be taken into account in drafting planning policies and in site allocations. It sets out recommendations for development in each Flood Zone to assist in the assessment of development proposals. The SFRA also provides advice for developers and sets out where to find further information.

The main findings of the SFRA in relation to flood risk in the borough are summarised below:

- The risk of flooding within the north of the borough is relatively limited. There is no risk of flooding from rivers; however surface water flooding and flooding from other sources, such as blocked drainage systems can be a problem in this area.
- Redhill Town Centre is an area at particular risk. Redhill Brook is culverted beneath the town. This culvert system is limited in its capacity, and is susceptible to blockage. During particularly wet weather, the culvert is surcharged, resulting in overland flooding and consequently ponding within the natural 'low spots' within the town centre.
- River flooding is a recognised risk to property in the Horley area. Horley is situated at the confluence of the River Mole and Gatwick Stream, and a short distance downstream is the confluence of the River Mole and Burstow Stream. All three rivers flow through the town in open channel, and all pose a risk of flooding to homes and businesses in events of varying magnitude and return period.

- There is also a risk of river flooding in parts of Earlswood and Merstham.
- The River Mole and its tributaries are key characteristics of the Green Belt areas of the borough. These areas retain their rural character, and development has not been permitted to encroach upon the natural floodplain of the river corridors. The future protection of these areas is imperative to retain essential flood storage away from the built up areas of the borough.
- There is a risk of flooding along all river valleys throughout the borough, and it should be noted that some rivers and water courses are culverted and therefore their route is not always immediately apparent. There is also a risk of overland flow down any valley in the borough.
- Localised flooding, arising from sewer flooding, the blockage or limited capacity of culverts, or rapid runoff during intense rainfall, often referred to as 'flash flooding', has been reported in many parts of the borough.

This SFRA has taken into account the flood risk in the borough and recommends measures to ensure that future development does not exacerbate flooding either in this borough or other areas downstream.

The 2012 update of the SFRA shows that there has been little significant change in the overall risk of flooding in the borough since the original SFRA was published in 2007. Whilst there has been some modification of the Flood Zone outlines, the same general areas remain at risk as at the time of the original study. However, the largest areas of change have been in the Horley area.

More accurate surface water mapping is now available than at the time of the original SFRA and greater emphasis has been placed upon surface water management through the Flood and Water Management Act and the Flood Risk Regulations. The original SFRA recommended the widespread use of SuDs in new developments and this remains a recommendation of the revised SFRA. In 2012 the approval and adoption of SuDs in developments of two or more residential properties is likely to become a legal requirement.

Growing pressures for development and the impact of climate change will mean that the sustainable management of flood risk will be increasingly important in future, and the risk management approach enshrined in PPS25 will remain an important planning consideration. This revised SFRA seeks to ensure that the relevant information is available to inform flood risk management as part of the planning process.

# 1. Introduction

- 1.1. Paragraph 100 of the NPPF requires local planning authorities to carry out a Strategic Flood Risk Assessment in order to inform the preparation of Local Development Documents and to provide the necessary information to apply the Sequential Test and Exception Test in making site allocations and determining planning applications. The SFRA should also inform the Sustainability Appraisal (incorporating the SEA Directive) of Local Development Documents.
- 1.2. Flood risk is an issue of significant importance in the borough owing to the presence of the River Mole and its tributaries, which include Redhill Brook, the Burstow Stream and the Gatwick Stream. As in many places, the historical development of settlements in the borough has focussed around water courses and this has resulted in flooding to properties on a number of occasions over the years. Redhill Town Centre and areas in and around Horley are particularly liable to flooding, as are parts of Earlswood and Merstham. Localised flooding incidents associated with surface water and sewer flooding are also common in some parts of the borough. Pressure for development in the borough will make it even more critical to take account of flood risk in the planning process and measures will need to be put in place to prevent the exacerbation of flood risk to existing properties and to reduce the risk to and from future developments.
- 1.3. An initial SFRA was produced for Reigate and Banstead Borough Council in 2007. However, this document needs to be updated in the light of changes to national policy and legislation and the availability of new mapping and further information on flood risk in the borough.
- 1.4. This revised version of the SFRA aims to provide as complete a picture as possible of flood risk in the borough taking into account flooding from all known sources, together with the impact of climate change. It is based on the most up to date sources of information, including Environment Agency maps and the Council's own data on local flooding incidents. Further details on the sources of data used to inform the SFRA are provided at Appendix 1: Data Sources. The SFRA sets out the factors that contribute to flood risk and provides a detailed assessment of the particular risks facing different parts of the borough. It then sets out how these risks will be managed through the planning process. A further section Guidance for Developers sets out the main considerations to be taken into account when submitting planning applications. Appendix 4: Further Information provides an extensive list of relevant and helpful documents and websites.

## Notes on the 2012 Update

- 1.5. The original 2007 SFRA was carried out by Jacobs on behalf of Reigate and Banstead Borough Council and was part of a joint project with the adjoining boroughs

of Crawley and Horsham. The 2012 update has been carried out by Reigate and Banstead Borough Council, in consultation with the Environment Agency, the adjoining boroughs and the Lead Local Flood Authority (Surrey County Council).

- 1.6. The 2012 version of the SFRA provides an update on changes to policy and legislation since 2007, the most notable being the publication of the revised PPS25 in 2010, the introduction of the Flood and Water Management Act 2010 and the Flood Risk Regulations 2009 and the publication of the NPPF in 2012. An update on the Council's Local Development Framework is also included.
- 1.7. The 2012 update makes reference to current Environment Agency fluvial Flood Mapping and Flood Maps for Surface Water. Electronic links to these maps are provided to enable developers to check the very latest information at the time of planning their development. The information on local flooding incidents has also been updated and incidents have been plotted on a map, which is again available in electronic form.
- 1.8. This updated version of the SFRA also includes maps showing the locations of reservoirs in the borough and the areas at risk of reservoir flooding.
- 1.9. Finally, the document has been substantially restructured, for ease of use and to provide clearer recommendations and guidance for planning officers and developers.

#### Future Updates

- 1.10. The SFRA is a living document that will need to be updated regularly in response to changing circumstances. As noted above the use of electronic maps will ensure that the document does not become outdated each time new maps are published. Developers should use the links provided in this document to ensure they are using the very latest information. It is proposed to carry out a review of the document every year.



## **2. Policy Framework**

- 2.1 This section provides a brief overview of planning policy relevant to flood risk in Reigate & Banstead.

### **National Policy**

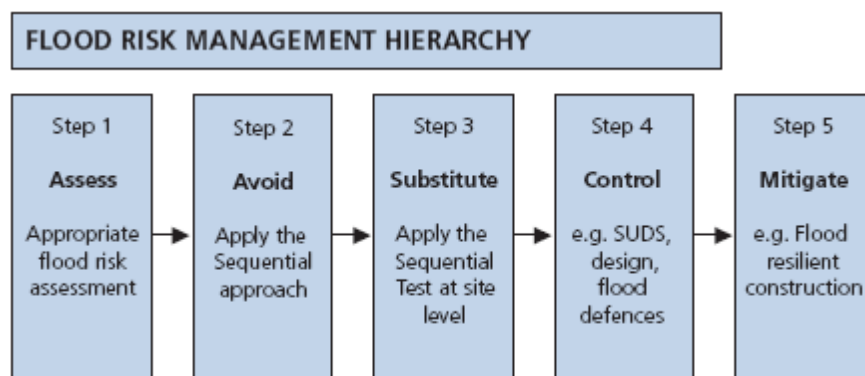
#### National Planning Policy Framework

- 2.2 The NPPF, together with its accompanying Technical Guidance, now replaces PPS25. However, the NPPF retains many of the key principles embodied in PPS25. Paragraph 100 of the NPPF states that “inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.”
- 2.3 The guidance retains the requirements in relation to Strategic Flood Risk Assessments to support Local Plans, the sequential, risk based approach to the location of development and consideration of the impacts of climate change.
- 2.4 The principles of the Sequential Test remain the same as in PPS25, namely to steer new development to areas with the lowest probability of flooding. There have however been some modifications to the Exception Test, most significantly the removal of the requirement for development to be on “developable previously developed land”.
- 2.5 The NPPF also contains guidance on the determination of planning applications which seeks to ensure that flood risk is not increased elsewhere. Specific guidance is provided for sites in areas of flood risk (where the Sequential and if, necessary the Exception test have been passed) to ensure that development is directed to the parts of the site at lowest flood risk, that development is appropriately flood resilient and resistant, that any residual risk can be safely managed and that priority is given to the use of sustainable drainage systems.
- 2.6 The NPPF is accompanied by Technical Guidance which includes definitions of flood zones and flood vulnerability classifications, advice on Strategic Flood Risk Assessments and site specific flood risk assessment, taking into account the impacts of climate change and managing residual flood risk.

#### Planning Policy Statement 25: Development and Flood Risk (Cancelled)

- 2.7 Until the publication of the NPPF in March 2012 PPS25 provided most up to date and comprehensive guidance in relation to flood risk and this has informed much of the work on this revised SFRA.

- 2.8 The main principle of PPS25 was that flood risk should be considered at all levels of the planning process in order to avoid inappropriate development in flood risk areas and help deliver sustainable development into the future. It advised that development should be directed away from areas at highest risk. Where new development was, exceptionally, necessary in such areas, the guidance sought to make it safe without increasing flood risk elsewhere and where possible, reduce flood risk overall.
- 2.9 PPS25 set out the role of planners, developers, and others, in managing flood risk (see Figure 1 below) and how the planning system can reduce flood risk to existing communities and developments through better management of surface water and provision for the conveyance and storage of flood water.



**Figure 1: Flood Risk Hierarchy, source PPS25 Practice Guide**

- 2.10 The key objectives for planning were appraising, managing and reducing flood risk. To *appraise* the risk flood risk areas need to be defined, and that the level of risk needs to be identified. To facilitate this, PPS25 advocated the preparation of Regional Flood Risk Appraisals and Strategic Flood Risk Assessments.
- 2.11 To *manage* the risk, PPS25 stated that Local Planning Authorities need to develop policies which “avoid flood risk to people and property where possible, and manage any residual risk, taking account of the impacts of climate change”. Local Planning Authorities were required to apply the Sequential Test to focus development in areas of low flood risk and only allow development in flood risk areas if there were no feasible alternatives located in areas of lower flood risk.
- 2.12 To *reduce* the risk, PPS25 advised that land needed for current or future flood management should be safeguarded; new development should have an appropriate location, layout and design and incorporate sustainable drainage systems (SuDS); and new development should be seen as an opportunity to reduce the causes and impacts of flooding by measures such as provision of flood storage, use of SuDS, and re-creating the functional flood plain.

- 2.13 A partnership approach was stressed in PPS25 to ensure that Local Planning Authorities worked with other organisations involved in flood risk management, such as the Environment Agency.
- 2.14 PPS25 was supported by the PPS25 Practice Guide which was updated in December 2009. This Practice Guide was not included in the list of guidance cancelled by the NPPF and it will remain in place until such a time as it is formally replaced or cancelled.

## **Regional Planning Policy**

### The South East Plan

- 2.15 The government's decision to revoke the Regional Strategies (in this area the South East Plan) was the subject of a High Court challenge which ruled that the revocation was unlawful. For the time being, this means that the policies of the South East Plan remain in place. However, the government has made clear its intention to promote legislation that will remove regional policies.
- 2.16 The South East Plan contains policies which provides direction on the management of flood risk. Policy NRM4: Sustainable Flood Risk Management states that Local Authorities should undertake a Strategic Flood Risk Assessment to provide a comprehensive understanding of the flood risk and put in place framework for applying the sequential approach set out in PPS25. The policy also sets out requirements, in relation to flood risk management, for Local Planning Authorities in preparing Local Development Documents and considering planning applications.

## **Local Planning Policy**

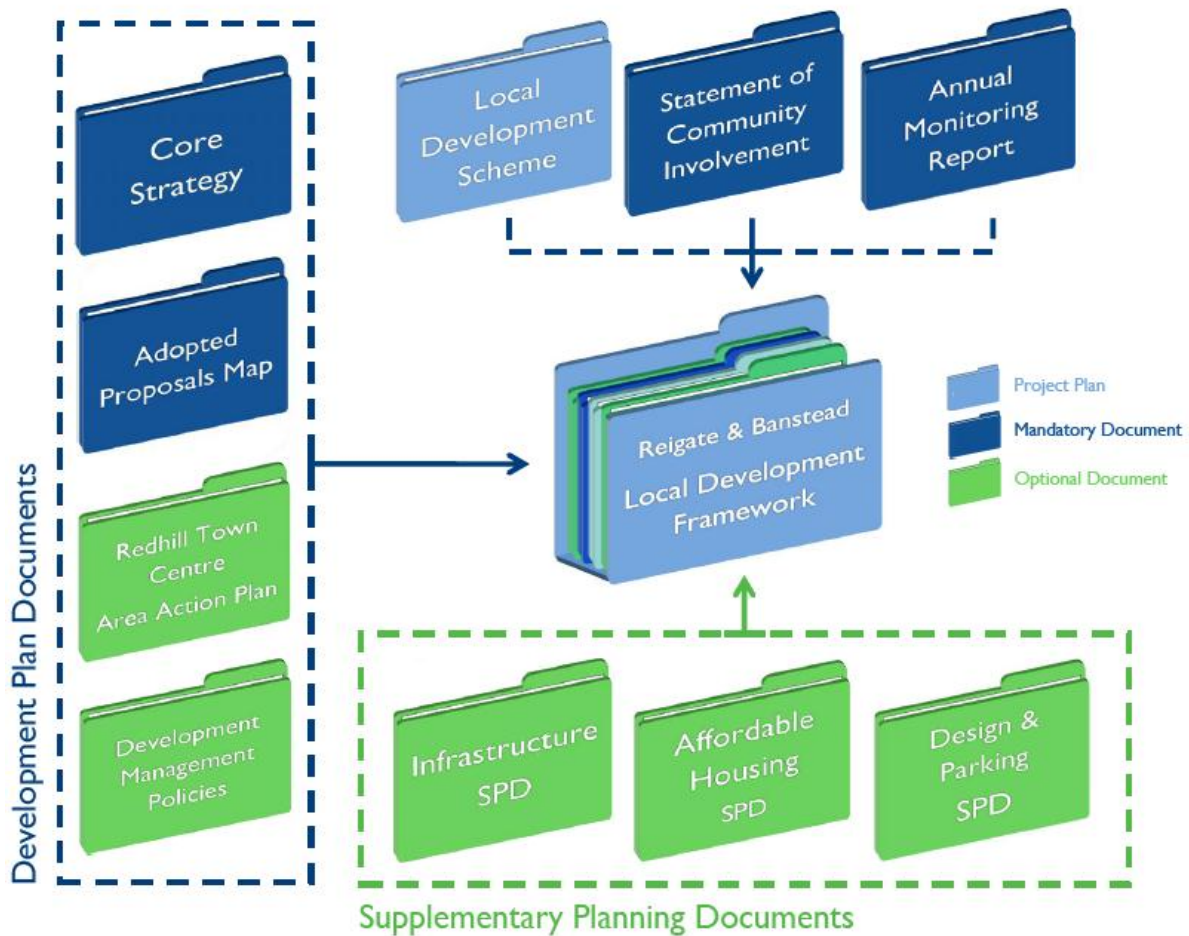
### Reigate & Banstead Borough Local Plan 2005

- 2.17 The Borough Local Plan 2005 sets out policies and site allocations for the borough which are used in determining planning applications. The Council is in the process of developing a Local Development Framework which will eventually replace the Borough Local Plan. However, most of the policies in the Borough Local Plan have been saved and these remain in force until such time as they are replaced by policies of the Local Development Framework.
- 2.18 Policy Ut4 of the Borough Local Plan states that new development and land raising will not normally be permitted in areas at risk from flooding and that appropriate flood protection and mitigation measures will generally be required as part of development in areas at risk from flooding. In addition where drainage problems have been identified, and if adequate flood risk information is unavailable, developers will be required to implement all necessary measures approved by the Borough Council.

- 2.19 Policy Ut3 sets out requirements for development in areas defined by the Council as having a problem in terms of flooding or potential flooding of foul sewage, or lack of capacity at a sewage treatment works.
- 2.20 The Horley Master Plan, which forms part of the Borough Local Plan 2005, plans for the provision of 2,600 new dwellings in the Horley area. The development of these new neighbourhoods is currently in the process of being implemented. The Horley Master Plan was informed by the Horley Flood Study 2004 which was prepared by the Environment Agency and verified by independent consultants. This provided an indicative 1 in 100 year flood event as a wide area model.
- 2.21 When submitting proposals for developments within the new neighbourhoods developers are required by Policy Hr2A of the Borough Local Plan 2005 to provide detailed models to support their applications. The models are required to include a detailed assessment of flooding from main rivers, ordinary watercourses, sewers and surface water run off, together with an assessment of existing sewerage systems and an action plan to ensure continued satisfactory performance of existing sewer networks that might be affected by development. Developers are required to demonstrate that their new developments would not increase the risk of flooding at the site or elsewhere. In addition to this the Horley Design Guide Supplementary Planning Document (adopted January 2006) includes an appendix, The Horley Flood Risk Development Brief which sets out detailed requirements for the content of Flood Risk Assessments for developments in Horley.
- 2.22 As the Borough Local Plan was adopted prior to the publication of PPS25 it will be necessary to treat the NPPF (which replaces this PPS) as a material consideration in addition to Local Plan policies in the determination of planning applications. Site allocations in the Reigate and Banstead the Borough Local Plan allocations were not informed by sequential testing and therefore the Sequential Test needs to be applied to all applications for development in areas at risk of flooding, including allocated sites.

#### Reigate & Banstead Local Development Framework

- 2.23 The Council is in the process of producing a Local Development Framework to set out new planning policies for the borough. This will comprise a suite of Development Plan Documents and Supplementary Planning Documents. These will include the Core Strategy, which will set the strategic policy for the whole borough and the Redhill Town Centre Area Action Plan which will include detailed policies and proposals for this area. The Council also needs to develop policies to manage new development and to allocate sites for specific types of development and this will be done through the Development Management Policies document. Figure 2 below shows the components of the LDF.



**Figure 2: Components of the Local Development Framework**

- 2.24 The Council’s Core Strategy was submitted in March 2009 and an Examination in Public was held in January 2010. The Council withdrew the Core Strategy in March 2010 after it became clear that the Inspector had concerns on a number of issues and was likely to find the document unsound. The Inspector’s draft report, although never formally issued, became available as the result of a third party Freedom of Information Request and the Council is working to address the areas of concern.
- 2.25 The emerging Core Strategy seeks to achieve a sustainable approach to growth which preserves and encourages prosperity, protects valued and vulnerable parts of the environment alongside ensuring that adequate services and infrastructure are provided to support the community. The strategy will focus on areas within the borough that are well served by shopping, leisure and community facilities and are highly accessible. The strategy will direct development to the most sustainable locations first and only as a last resort or, in very special circumstances, direct development to locations that are less well serviced or less sustainable.
- 2.26 The spatial strategy also recognises the role of regeneration areas in the borough. The following locations have therefore been identified as Regeneration Areas:

- Redhill Town Centre
- Horley Town Centre
- Preston Regeneration Area
- Merstham Regeneration Area
- Other regeneration areas as identified by the Council and its partners

2.27 Once adopted, the Development Management Policies will form the basis for decisions on planning applications and, in combination with the Core Strategy, will replace the saved policies of the Borough Local Plan 2005. In addition to setting out development management policies, this document will also allocate sites for different land uses and developments. Alongside the policy document will be a Proposals Map, showing site allocations such as housing and employment sites and protective designations such as the Green Belt and conservation areas.

2.28 The Redhill Town Centre Area Action Plan will provide detailed policies and site allocations specific to the Action Plan Area which will direct the development required to regenerate Redhill Town Centre.

### **3. Roles and Responsibilities in the Management of Flood Risk**

#### **Introduction**

- 3.1 This section will examine the roles and responsibilities of the various authorities and agencies involved in the management of flood risk, relevant to Reigate and Banstead. It will also consider local community actions to reduce flood risk. This summary takes into account the changes to legislation that have come into effect since the publication of the original SFRA, including the Flood Risk Regulations 2009 and the Flood and Water Management Act 2010, which introduced new flood risk management responsibilities.

#### **The Environment Agency**

- 3.2 The Environment Agency has statutory responsibility for flood management and flood defence. The recent Flood and Water Management Act 2010 introduced a requirement for the Environment Agency to develop a national strategy for the management of coastal erosion and all sources of flood risk for England. One of the main functions of the Environment Agency is the provision of advice on flooding issues to support the planning system, acting as a statutory consultation body on the preparation of Preliminary Flood Risk Assessments and Strategic Flood Risk Assessments and as a statutory consultee on all planning applications for development in flood risk areas. It also provides advice to developers on flooding matters. In addition to its advisory function, the Environment Agency is responsible for flood forecasting and the operation of flood warning systems.
- 3.3 The Environment Agency is responsible for the assessment and management of flood risk at the local level on a catchment basis. This enables the Environment Agency to review the impact that proposed defence works at a particular location may have upon flooding at other locations throughout the catchment. Catchment Flood Management Plans (CFMPs) are a planning tool through which the Environment Agency aims to work in partnership with other key decision-makers within a river catchment to explore and define long term sustainable policies for flood risk management. CFMPs support an integrated approach to land use planning and management in conjunction with River Basin Management Plans under the Water Framework Directive.” The Thames Catchment Flood Management Plan was published in December 2009. The Plan sets out the Environment Agency’s broad policies and approach for the management of flood risk within the catchment and more detailed policies for catchment sub-areas. Within the catchment sub-areas which includes the Upper Mole, the Hogsmill River and the River Wandle, the recommended policy approach focuses on the storage and management of run off in locations that provide overall flood risk reduction or environmental benefits.

- 3.4 In addition the Environment Agency is involved in the implementation of flood risk management initiatives such as the Upper Mole Flood Alleviation Investigation Scheme. This particular scheme seeks to implement five projects aimed at providing improved flood protection for Horley, Crawley and Gatwick Airport.

### **Surrey County Council**

- 3.5 Under the Flood Risk Regulations 2009 and the Flood & Water Management Act 2010 Surrey County Council has been given a new role as Lead Local Flood Authority (LLFA) in the management of flood risk. The Act requires the LLFA to produce a Preliminary Flood Risk Assessment highlighting areas of potential significant flood risk. The Preliminary Flood Risk Assessment for Surrey was published in June 2011. The LLFA must also develop, maintain, apply and monitor a strategy for local flood risk management in its area and co-operate with other authorities in the discharge of these functions.
- 3.6 The LLFA must investigate flooding incidents in its area and publish the investigation results. It must also maintain a register of structures or features considered to have a significant effect on flood risk in the area. The Act confers powers to LLFAs, together with district councils, internal drainage boards and the Environment Agency to designate structures and features that affect flooding or coastal erosion. Once a feature is designated, the owner must seek consent from the authority to alter, remove or replace it.
- 3.7 The Act also introduces a requirement for a SuDS Approving Body (SAB) at county or unitary local authority level. This is expected to be implemented in April 2012. The SAB will have responsibility for the approval of proposed drainage systems in new developments and redevelopments, subject to certain exemptions and thresholds. Approval must be given before the developer can commence construction. The SAB would also be responsible for adopting and maintaining SuDS which serve more than one property.
- 3.8 In addition to the above new responsibilities the County Council also retains its existing responsibilities in relation to highways drainage in its capacity as Highways Authority.

### **Reigate & Banstead Borough Council**

#### Spatial Planning

- 3.9 In accordance with the guidance set out in the NPPF the Council is required to formulate policies for the allocation of sites and management of development which seek to avoid flood risk to people and property, and where possible, the management of flood risk elsewhere. This Strategic Flood Risk Assessment will be used to inform



the sustainability appraisals of future Development Plan Documents to ensure that flood risk is adequately addressed in future policies and site allocations.

- 3.10 The Council will need to apply a sequential approach to the allocation of land for development in the borough to ensure areas that are at low risk of flooding are given priority for development and areas subject to flooding are only considered once all sites at low risk have been exhausted. Detailed analysis of the implications of flooding on the allocation of development sites in the borough is given in Section 6: Management of Flood Risk Through the Planning Process.

#### Development Management

- 3.11 Flood risk is a material consideration in the determination of planning applications. In exercising its duties as Local Planning Authority the Council is required to consult the Environment Agency on planning applications in areas of flood risk. The Council also needs to ensure that the Sequential and Exception Tests set out in the NPPF are applied to all applications for development in areas at risk of flooding. The information contained in this Strategic Flood Risk Assessment will be used as the basis for carrying out the Sequential Test for specific developments. The Council also has a role in promoting the use of SuDS in new developments through the development management process.

#### Emergency Planning

- 3.12 Emergency planning is a critical element of any sustainable flood risk management solution. The Council is designated as a Category 1 Responder under the Civil Contingencies Act 2004. As such, the Council has defined responsibilities to assess risk, and respond appropriately in case of an emergency, including a major flooding event. The Council's primary responsibilities under the Act are:
- from time to time assess the risk of an emergency occurring;
  - from time to time assess the risk of an emergency making it necessary or expedient for the person or body to perform any of his or its functions;
  - maintain plans for the purpose of ensuring, so far as is reasonably practicable, that if an emergency occurs the person or body is able to continue to perform his or its functions;
  - maintain plans for the purpose of ensuring that if an emergency occurs or is likely to occur the person or body is able to perform his or its functions so far as necessary or desirable for the purpose of:

- i. preventing the emergency,
- ii. reducing, controlling or mitigating its effects, or
- iii. taking other action in connection with it

3.13 In accordance with the above responsibilities the Council has developed a Multi-Agency Flood Plan which sets out the actions to be taken by the Council and other organisations as part of a multi-agency response to a significant flood in the borough.

### **Property Owners**

3.14 It is essential to ensure a broad awareness with respect to flood risk, providing members of the community with the knowledge and tools that will enable them to help themselves should a flood event occur. The following measures are cost effective solutions that property owners may introduce to minimise the damage sustained to their own homes in the case of flooding.

#### Environment Agency Flood Warning System

3.15 The Environment Agency offers a service whereby residents can sign up for free flooding alerts by a variety of means e.g. phone, text, e-mail. Residents of areas affected by flooding are advised to make use of this service. Further information about this can be found on the Environment Agency's website [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

#### Community Flood Plans

3.16 Local communities can create their own flood plans to enable them to be better prepared for flooding. The Environment Agency has produced a guidance document which gives practical advice for communities and groups on how to create a flood plan. Details of this can be found at Appendix 4: Further Information.

#### Flood Proofing & Flood Resilience

3.17 There are a variety of flood proofing measures that may be undertaken, both in new properties and existing properties. In new properties the raising of floor levels above the anticipated maximum flood level ensures that the interior of the property is not directly affected by flooding, avoiding damage to furnishings, wiring and interior walls. However, plumbing may still be impacted as a result of mains sewer failure. The raising of electrical wiring and sockets within flood affected buildings reduces the risks to health and safety, and reduces the time required after a flood to rectify the damage. Materials for the construction of the building, the fitments (e.g. kitchen cupboards) and the furniture should be chosen to ensure that are likely to suffer minimal damage should they be submerged in floodwater. Further advice on

reducing flood risk in new developments is given in Section 7: Guidance for Developers and in Appendix 4: Further Information.

- 3.18 In existing properties the placement of a temporary watertight seal across doors, windows and air bricks can prevent flooding of the building interior. This may be suitable for relatively short periods of flooding, however the porosity of brickwork may result in damage being sustained should water levels remain elevated for an extended period of time.

#### Insurance

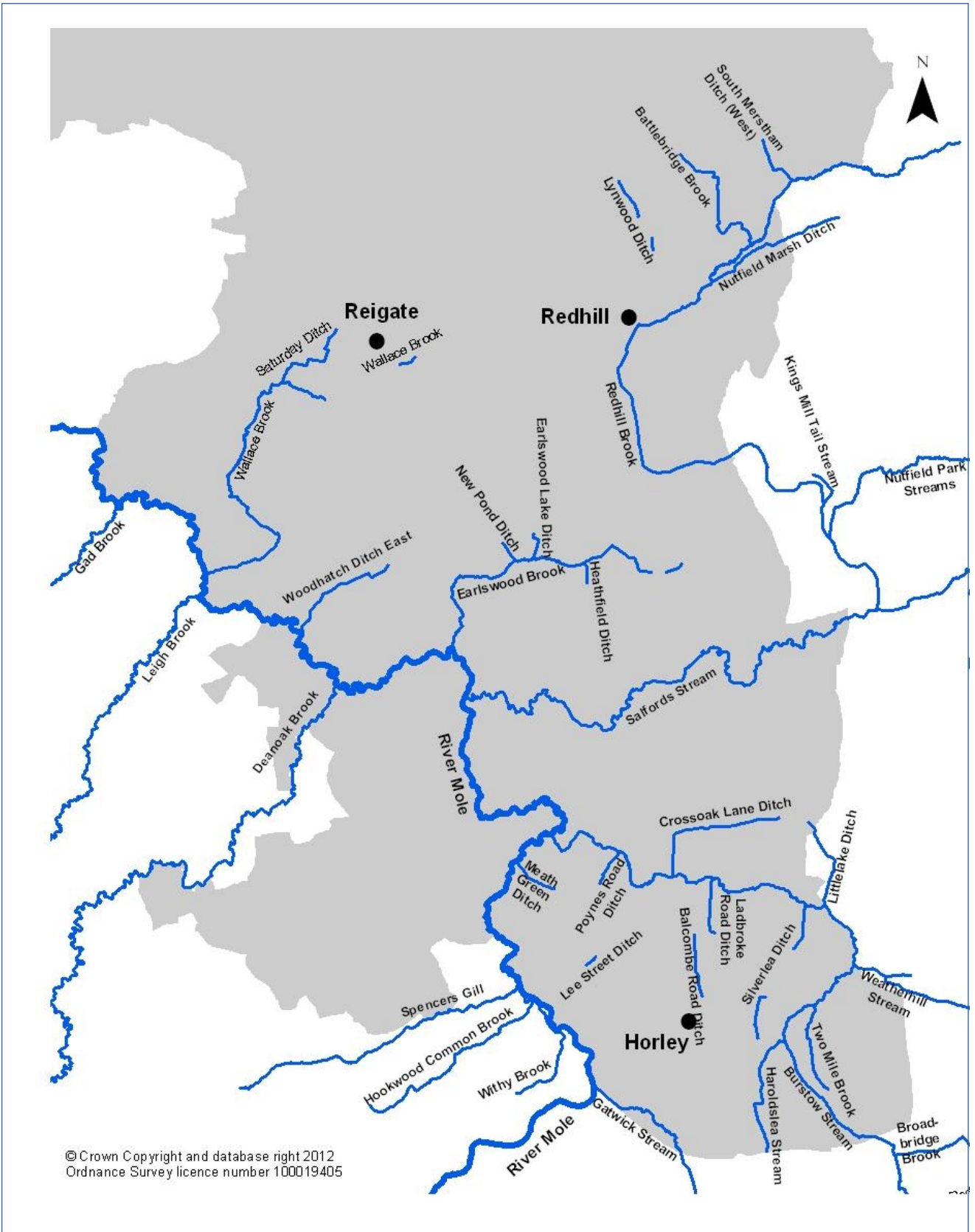
- 3.19 Many residents and business owners perceive insurance to be a final safeguard should damage be sustained as a result of a natural disaster such as flooding. Considerable media interest followed the widespread flooding of 2000 when it became clear that the insurance industry was rigorously reviewing its approach to providing insurance protection to homes and businesses situated within flood affected areas. The widespread flooding of July 2007 further exacerbated the discussion surrounding the future of insurance for householders and business owners situated within flood affected areas.
- 3.20 The Environment Agency, in partnership with the British Association of Insurers, has published an information sheet in relation to Flood Risk and Insurance which sets out the most up to date information on insurance in areas at risk of flooding. This can be found on the Environment Agency's website [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

## **4. Flood Risk in the Borough of Reigate and Banstead**

The following section should be read in conjunction with the Maps of Flood Risk in Reigate and Banstead at Appendix 5 and the list of local flooding incidents at Appendix 6.

### **Factors influencing flooding in the borough**

- 4.1 The borough is characterised by clay geology to the south, and chalk to the north, with a band of various soil strata between the two. This geological 'boundary' follows roughly the alignment of the M25 motorway corridor. The topography of Reigate & Banstead is characterised by the ridge of the top of the North Downs (just north of the route of the M25) that represents the boundary between the River Mole catchment to the south, and the River Wandle and River Hogsmill catchments to the north.
- 4.2 The northernmost part of the borough (Nork, Tadworth and part of Burgh Heath) overlays chalk geology. To the north of the M25, land within the north west of the borough falls within the Hogsmill River catchment and to the north east falls within the River Wandle catchment. Within the borough, there are no overland watercourses within the Hogsmill or Wandle catchments, and therefore there is no risk of flooding to property from either river system. Most drainage within this area of the borough is diverted to soak-aways. In extreme events however, the soak-away infiltration capacity will be exceeded. When this occurs, overland flow-paths will form, following the natural topography. Although it is highly unlikely that development in Reigate and Banstead would have much direct effect on the existing flooding in the lower reaches of either the River Hogsmill or River Wandle systems, it is important that planning decisions do not erect an artificial 'glass wall' at the borough boundary, as all decisions taken may have an implication upon properties downstream.
- 4.3 There is a band across the middle of the borough through Reigate, Redhill & Merstham (near the foot of the North Downs Escarpment) that is on a variety of subsoils, including Upper Greens and, Gault, Folkestone Beds, Sandgate Beds, Hythe Beds & Atherfield Clay. The permeability of these soils varies considerably. Springs occur where the more permeable soils overlay less permeable soils.
- 4.4 The southern two-thirds of the borough is Weald clay and is characterised by the waterway corridors of the River Mole and its tributaries, a large proportion of which retain their natural floodplain throughout the rural areas of the borough. These watercourses are shown on the map at Figure 3. Whilst low lying land within these rural areas may be susceptible to flooding, this is generally accepted by the local community as a natural process and is therefore not brought to the attention of the Council or the Environment Agency.



**Figure 3: Map of Water Courses in the Borough**

- 4.5 Future development within the upper River Mole catchment in the adjacent boroughs of Crawley and Horsham also has the potential to increase the risk of flooding to property within the borough of Reigate & Banstead, specifically Horley.
- 4.6 It is important to highlight however that flooding within the borough is not due simply to river flooding. The flood zones (and consequently the application of the Sequential Test to guide development towards areas of lowest risk) are based solely upon the risk of river flooding. It is essential therefore that other potential sources of flood risk, including culvert blockage, sewer flooding and surface water flooding are taken into account.
- 4.7 These localised sources of flooding can often be more disruptive, occurring on a much more frequent basis. Such flooding is often a result of causes that can be overcome relatively easily however through, for example, the design and maintenance of clear overland flow paths, the upgrade of undersized drainage systems as part of a new development, or through the introduction of a proactive maintenance programme. For this reason, it is unlikely that issues of this nature will prevent future development; however it is imperative that these are addressed as part of the design process. If not, the frequency and severity of flooding is likely to increase.
- 4.8 Gatwick Airport is situated at the boundary between Crawley and Reigate & Banstead, and intensification of the airport precinct may heavily influence the speed and volume of runoff into the River Mole system if not carefully mitigated, once again increasing the risk of flooding downstream. As the airport has extensive permitted development rights works may be carried out development on the site which cannot be managed through planning applications.

### **Historical Flooding**

- 4.9 Records show that the flood in 1968 was the worst in living memory recorded in this area. The Environment Agency has undertaken an extensive review of the 1968 flood event data. This was an extreme event with major flooding in Horley and throughout the Mole catchment. The 1968 event, in the Upper Mole area in some places was significantly greater than the 1% (100 year) flood, ranging from less than a 1% up to 0.25% (400 year) return period.
- 4.10 The most recent widespread flooding event to affect the local region occurred in 2000. The cause of flooding varied considerably from one location to the next, including river flooding (in some cases exacerbated by the blockage of culverts), surface water flooding, and sewer flooding. Within the Reigate & Banstead area, most of the rivers broke their banks. Horley was particularly affected during this event. The 2000 flood event was considered the worst on record since 1968, and has been estimated to be equivalent to roughly a 1 in 30 year event.

- 4.11 Other major floods causing widespread disruption occurred in 1947, 1980, 1990, 1993, 1994, 2002 and 2007.

### Fluvial Flood Risk

- 4.12 In view of the location of the borough's settlements in relation to the rivers that flow through the borough the risk from river flooding is the most serious flood risk facing the borough.
- 4.13 The Technical Guidance to the NPPF recommends that areas be categorised into zones of low, medium and high probability risk of fluvial flooding. Figure 4 below shows the definitions for the flood zones used in this SFRA, which accord with the definitions for fluvial flood risk set out in Table 1 of the Technical Guide to the NPPF.

Flood Zone	Definition
Zone 3b Functional Floodplain	Areas susceptible to flooding in which "water has to flow or be stored in times of flood."
Zone 3a High Probability	Areas assessed as having a 1 in 100 or greater annual probability of flooding in any year (i.e. 1% AEP*).
Zone 2 Medium Probability	Areas assessed as having between a 1 in 100 (i.e. 1% AEP) and 1 in 1000 (i.e. 0.1% AEP) annual probability of river flooding in any year.
Zone 1 Low Probability	Areas assessed as having a less than 1 in 1000 annual probability of river flooding in any year (i.e. 0.1% AEP).

\*AEP: Annual Exceedance Probability

### Figure 4: Flood Zone Definitions

- 4.14 Flood maps for the borough have been produced, based on the Environment Agency's flood mapping, which show the outlines of Zones 1, 2 and 3. These maps are available on the Council's website and will be updated each time new flood maps are issued by the Environment Agency. Please follow the link below to view these

maps. Information on the extent of Flood Zones 3a and 3b may be obtained from the Environment Agency.

### Flood Maps

- 4.15 As can be seen from the flood maps that accompany this SFRA, the areas of highest fluvial flood risk largely coincide with most populated areas of the borough, namely Redhill Town Centre and the areas around Horley. Within the urban centres flooding can cause severe damage and disruption. Whilst only a relatively small proportion of the borough is susceptible to river flooding, the consequence of flooding to homes, business and local infrastructure can be considerable. Plans for future development in these areas will need to be carefully examined to ensure that the risk from flooding is properly managed.

### **Surface Water Flooding**

- 4.16 Surface water flooding refers to the flow of water over land before it enters a watercourse or sewer. This is usually, but not always, the result of heavy rainfall but can occur with lighter rainfall where the ground is saturated or less permeable.
- 4.17 In 2008 the Environment Agency issued Surface Water Flooding Maps showing areas susceptible to flooding from surface water displayed in three bands, ranging from less susceptible to more susceptible to flooding. However, these maps had a number of limitations due to the assumptions used to compile them which relied mainly on national averages rather than local data.
- 4.18 These maps have now been refined to produce Flood Maps for Surface Water which are based on enhanced modelling, to give an improved degree of accuracy. The Flood Map for Surface Water shows areas where surface water would be expected to flow or pond. The areas at risk of flooding are displayed in two bands showing a) surface water flooding and b) areas of deeper surface water flooding. These maps have been used to inform this SFRA and details of the areas susceptible to surface water flooding are shown on the maps at Appendix 5.
- 4.19 The Environment Agency has identified ten Indicative Flood Risk Areas (IFRA) across England. These are areas where there is a significant risk of flooding from local sources, such as surface water, ground water and ordinary watercourses. The London IFRA extends into the northern part of Reigate and Banstead, including parts of Banstead, Chipstead, Hooley and Woodmansterne. The Lead Local Flood Authority is required to produce flood hazard maps and flood risk maps and flood risk management plans for the area covered by the IFRA.
- 4.20 The Preliminary Flood Risk Assessment carried out by Surrey County Council (See Appendix 4: Further Information for details) reviewed the IFRA by reference to locally



agreed surface water information and concluded that a considerable risk exists in the Surrey sections of the London IFRA. The areas surrounding the IFRA were also reviewed, taking into account local wet spot data. As a result of this review the PFRA recommends that the IFRA is extended to the west of Banstead to include Nork and part of Epsom Downs. The identification of the IFRA, and the subsequent review of its boundary, indicates that surface water flooding and other forms of localised flooding are matters for concern in some areas in the north of the borough.

- 4.21 The topography and geology of the borough provides a means of identifying those areas within which surface water runoff is likely to cause the most disruption, and potentially damage to property. Areas in which the soils are highly impermeable (reducing the capacity of infiltration into the ground during periods of wet weather), any sites located in valleys and localised 'sags' in the topography (where ponding is likely to occur) can be considered locations within which the potential risk of localised flooding should be taken into account as part of the design process. In addition, development can fundamentally alter drainage patterns, obstructing overland flow routes, and altering the volume and speed of runoff.

#### **Localised flooding incidents**

- 4.22 At times the Council receives information regarding flooding of buildings, land, and/or roads. This information comes from various sources, including reports from residents, land owners, other 'relevant' authorities, road users, information reported in newspaper articles and occasionally direct observations by Council officers. It is sometimes received as the flood is happening, and sometimes after it has happened. The information received is recorded in a data-base, which dates back to July 2000. The Council has a duty to answer questions regarding its knowledge of historical flooding as accurately as possible. This data-base is used to answer those questions. However, as much of the information is anecdotal any information regarding exact location, extent, depth duration, and cause, must be treated with caution. Many of these are incidents of a 'localised nature', however it is important to recognise that often the *cause* of observed flooding is difficult to ascertain, particularly after the floodwaters have passed. It is important to note that a number have subsequently been addressed, for example, removal of localised blockages, however these will only remain resolved if maintenance continues in the longer term.
- 4.23 Reported localised flooding incidents are shown on the maps at Appendix 5 and the list at Appendix 6. The maps show the general locations of these reported flooding locations and the list identifies the location of the flooding incident by road name only, together with the 'assumed' source of the flooding.
- 4.24 There is no legal requirement for incidents of flooding to be reported to the Council. Other 'relevant' authorities (for example the Sewerage Authority, Lead Local Flood Authority, Highway Authority and Environment Agency may hold information on

incidents/location of historical flooding and land owners or neighbours may also have information.

- 4.25 The information on local flooding incidents collected by the Council only relates to localised problems once they have occurred. The NPPF advocates the prediction of potential flood risk, seeking an avoidance strategy that guides development away from these areas wherever possible. However, it is very difficult to sensibly predict the potential risk of localised flooding, particularly given that many of these incidents will be as a result of, for example, the collection of leaves over a gully during a rainfall event.
- 4.26 Within the urban centres of the borough, even where flooding may not have been observed to date, it is inevitable that localised flooding problems arising from under capacity drainage and/or sewer systems will occur, particularly given the mounting pressure placed upon ageing systems as a result of climate change. Furthermore, sewer systems are generally designed to cater for the 1 in 30 year storm, and highway soakaways are generally designed for only 1 in 10 year storms. Storms over and above these design events will exceed the drainage system, resulting in overland flow, often in an uncontrolled manner resulting in localised flooding.

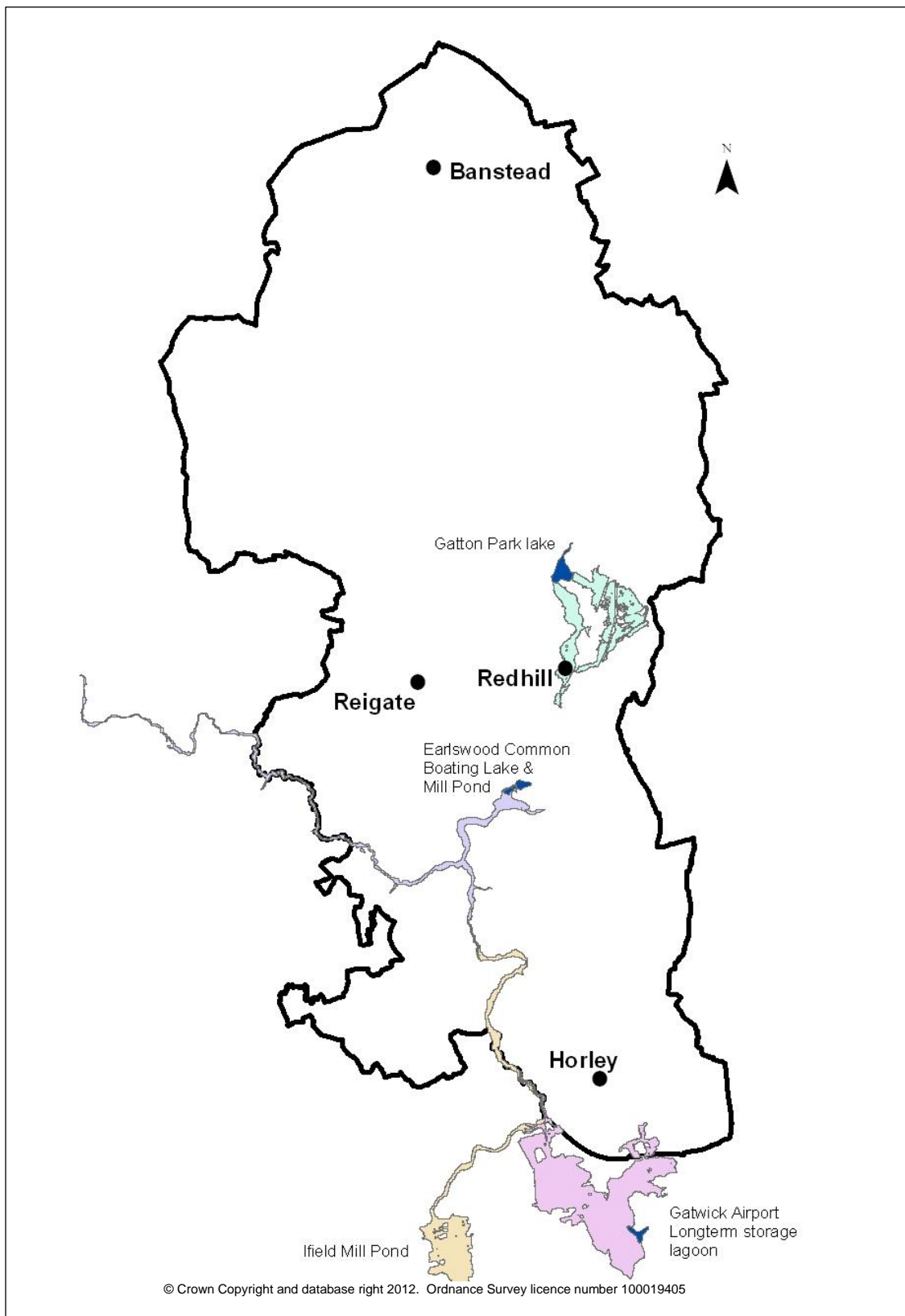
#### **Groundwater Flooding**

- 4.27 The risk of groundwater flooding is typically highly variable and heavily dependent upon local conditions at any particular time, nevertheless the risk of groundwater flooding in this instance is considered negligible. There is no record of groundwater flooding affecting properties within the borough, however a high ground water table, and even springs, are found in some of the soils strata across the middle of the borough.

#### **Flood Hazard Due to Reservoir Failure**

- 4.28 The catastrophic failure of reservoirs may potentially pose a risk to property and life downstream. There are five reservoirs in or near the borough, the failure of which would affect land and/or property in Reigate & Banstead. These are:
1. Gatton Park Lake
  2. Earlswood Common Boating Lake
  3. Earlswood Common Mill Pond
  4. Gatwick Airport Long Term Storage Pond
  5. Ifield Mill Pond
- 4.29 The location of the reservoirs and the areas susceptible to flooding from these reservoirs is shown in Figure 5 below. More detailed locations of the reservoirs are

shown on the Maps of Flood Risk in Reigate and Banstead at Appendix 5. Further details of the areas susceptible to flooding from reservoirs are shown on the Environment Agency Website. See Appendix 4: Further Information for details.



**Figure 5: Location of Reservoirs and Areas Susceptible to Flooding**

- 4.30 Whilst the probability of reservoir failure is low the effects of such failure would be catastrophic. It is therefore essential to take account of this risk when planning developments in the vicinity of reservoirs.

#### **Flood Hazard due to Flood Defence Failure**

- 4.31 A 'formal' flood defence is a structure constructed specifically to redirect the flow of floodwater, and maintained for this purpose. An 'informal' flood defence is a structure that is not specifically built to redirect floodwater and is not maintained for this specific purpose, but may afford some protection against flooding. These can include boundary walls, industrial buildings, railway embankments and road embankments situated immediately adjacent to rivers.
- 4.32 The Environment Agency has identified and mapped all structures it considers to be Flood Defences. These can be viewed on the Environment Agency web-site. See Appendix 4: Further Information for details. They currently show no flood defences in the borough.
- 4.33 Although there are no specifically constructed flood defences in the borough there are a number of embankments that alter the natural progression of floodwater as it flows overland, once breaking out of the river. These embankments are typically raised road or rail structures that clearly have not been constructed to hold water. As water levels rise these embankments will provide a barrier to the flow, altering the flooding regime. Ponding may occur behind the embankments, increasing the depth and width of the floodplain. Conversely, areas on the 'dry side' of the embankments may be offered a degree of protection against flooding that they would not otherwise receive if the floodwaters were permitted to take their natural course.
- 4.34 The structures within the borough that are recognised as 'informal flood defences' have been highlighted in the Flood Maps accompanying this report, and they include the railway embankment adjoining Redhill Brook, and the railway embankment adjoining Salfords Stream.
- 4.35 These structures are generally substantial engineered embankments that are extremely unlikely to suffer catastrophic failure as a result of flooding. For this reason, the risk of catastrophic failure resulting in a direct risk to life at these locations is considered negligible, and therefore the flood hazard associated with these structures has not been considered further in this SFRA.

#### **The Impact of Climate Change on Flood Risk**

- 4.36 A considerable amount of research is being carried out to quantify the impacts that climate change is likely to have on flooding in future years. According to Investing in the Future: Flood and Coastal Risk Management in England a Long Term Strategy

(Environment Agency, 2009) it is predicted that climate change will result in sea level rises, an increase in the frequency and severity of storms and an increase in the risk of coastal flooding and erosion especially for parts of the east and south coasts of England. Table 5 of the Technical Guidance to the NPPF states that a 10% increase in the 1% AEP (100 year) river flow can be expected by 2025, increasing to 20% within the period from 2025 to 2115.

**Table 5: Recommended national precautionary sensitivity ranges for peak rainfall intensities, peak river flows, offshore wind speeds and wave heights**

Parameter	1990 to 2025	2025 to 2055	2055 to 2085	2085 to 2112
Peak rainfall intensity	+5%	+10%	+20%	+30%
Peak river flow	+10%	+20%		
Offshore wind speed	+5%		+10%	
Extreme wave height	+5%		+10%	

**Figure 6: Reproduced from Technical Guidance to the NPPF**

- 4.37 The NPPF requires that the impacts of climate change be taken into account in the preparation of Local Plans. It is therefore necessary to consider the impacts of climate change upon flood risk in the borough as part of this Strategic Flood Risk Assessment.
- 4.38 The Environment Agency has carried out detailed modelling of fluvial flood risk for the Horley area which includes the potential impact of climate within that area. This indicates a relatively large increase in the number of properties at risk of flooding within Horley.
- 4.39 No detailed modelling of the potential impacts of climate change upon fluvial flood risk within the rest of the borough has been carried out. Therefore within these areas, for planning purposes, the Environment Agency's Zone 2 Medium Probability is considered a reasonable approximation of the likely extent of the High Probability flood zone in 100 years as a result of climate change. Although this is considered a conservative estimate, in planning terms it is essential to the potential impact that climate change may have upon the borough. Enhanced modelling of the effects of climate change will be carried out by the Environment Agency once the Upper Mole Flood Alleviation Scheme is complete in around 2014. The SFRA will be updated to take account of the new data.

- 4.40 Adopting the pragmatic comparison between Zone 3 and Zone 2 above, it is clear that climate change will not markedly increase the extent of river flooding within most areas of the borough, with the exception of Horley. Consequently, few areas that are currently situated outside of Zone 3 High Probability will be at substantial risk of flooding in the foreseeable future. This is an important conclusion from a spatial planning perspective.
- 4.41 It is important to remember however that the potential impacts of climate change will affect not only the risk of flooding posed to property as a result of river flooding, but it will also potentially increase the frequency and intensity of localised storms over the borough. This may exacerbate localised drainage problems, and it is essential therefore that detailed FRAs for developments consider the potential impacts of climate change upon localised flood risks, as well as the risks of fluvial flooding. The peak rainfall intensity is relevant to the design of the proposed surface water drainage systems, including SuDS for any development.
- 4.42 It is also important to recognise that those properties and areas that are currently at risk of flooding may be susceptible to more frequent, and more severe flooding in future years. It is essential therefore that the development management process mitigates against the potential impact that climate change may have upon the risk of flooding both to and from properties and that developers consider the possible change in flood risk over the lifetime of the development. In the case of residential development the lifetime of the development should be 100 years unless there is a specific justification for considering a shorter period.

#### **Assessment of Flood Hazard**

- 4.43 The assessment of flood risk above considers the maximum extent to which flooding will occur during a particular flood event and identifies the areas potentially impacted by flooding. Of equal importance however is the speed with which flooding occurs as river levels rise. The inundation of floodwaters into low lying areas can pose a considerable risk to life.
- 4.44 Substantial research has been carried out into the risk posed to pedestrians during flash flooding. This research has concluded that the likelihood of a person being knocked over by floodwaters is related directly to the depth of flow, and the speed with which the water is flowing. This is referred to as 'flood hazard'.
- 4.45 For example, if a flood flow is relatively deep but is slow moving, then an average adult will be able to remain standing. Similarly, if the flow of water is moving rapidly but is very shallow, then once again an average adult should not be put off balance. If however the flow is both relatively deep and fast flowing, then a person will be washed off their feet, placing them at considerable risk. The risk to health and safety

as a result of submerged hazards during flooding conditions, given the often murky nature of floodwaters, is also a consideration.

- 4.46 Flood hazard should be considered in the preparation of site specific Flood Risk Assessments (see paragraph 7.5 and in emergency flood plans (see paragraph 7.13)
- 4.47 Detailed modelling of flood hazard is likely to be carried out by the Environment Agency in future and this SFRA will be updated to take account of this new data when it is available.

### **Residual Risk of Flooding**

- 4.48 It is essential that the risk of flooding is minimised over the lifetime of the development in all instances. It is important to recognise however that flood risk can never be fully mitigated, and there will always be a residual risk of flooding.
- 4.49 This residual risk is associated with a number of potential risk factors including, but not limited to:
- a flood event that exceeds that for which the local drainage system has been designed;
  - the residual danger posed to property and life as a result of flood defence failure;
  - general uncertainties inherent in the prediction of flooding.
- 4.50 The modelling of flood flows and flood levels is not an exact science therefore there are inherent uncertainties in the prediction of flood levels used in the assessment of flood risk. The adopted flood zones underpinning this SFRA are largely based upon the detailed flood mapping within the area. Whilst these provide a robust depiction of flood risk for specific modelled conditions, all detailed modelling requires the making of core assumptions and the use of empirical estimations relating to, for example, rainfall distribution and catchment response. A conservative (worst case scenario) approach should always be taken therefore when considering flood risk.

### **Water Cycle Implications**

- 4.51 The Gatwick Sub-Region Outline Water Cycle Study was published in January 2011 and identifies constraints for both water infrastructure and environmental capacity in relation to development within the region. The study was carried out on behalf of Horsham, Mid Sussex and Crawley Councils and covers the Gatwick Sub-region. This means that for Reigate and Banstead the only part of the borough covered by the study is Horley.
- 4.52 The study analyses environmental constraints to development, such as water quality, water resource availability, flooding, and also infrastructure constraints such as water

treatment flow consent, wastewater treatment quality consent, sewer network, drainage and water supply. The study concludes that current planned growth in the Horley area has no limiting factors in relation to the water cycle.



## 5. Summary of Flood Risk by Area

- 5.1 It is essential to understand the potential risk that flooding may pose to future development within the borough and the potential impacts that future development may have upon the flooding regime. To this end, the following section provides an overview of the potential risks of flooding posed to each area of the borough.
- 5.2 For planning purposes, the borough has been divided into three strategic development areas as set out in the emerging Core Strategy – Area 1: The North Downs, Area 2: The Wealden Greensand Ridge and Area 3: The Low Weald. These areas are shown on the overview map below: These broadly reflect the three main geological areas of the borough and each area exhibits a corresponding hydrological response to rainfall. The discussions provided are structured accordingly, correlating with the major settlements within each area as depicted in the overview map at Figure 7:



**Figure 7: Overview Map of Strategic Development Areas**

- 5.3 The discussions provided below should be read in conjunction with the flood maps, including surface water maps, and details of local flooding incidents accompanying this report at Appendix 5: Maps of Flood Risk in Reigate and Banstead and Appendix 6: List of Local Flooding Incidents. Collectively these will provide an overview of the nature and scale of the potential flood risk posed to the site under consideration. However, topographical surveys will be required to provide a more detailed assessment of flood risk at the site level.

#### **Area 1: The North Downs**

##### **Nork, Banstead, Woodmansterne, Chipstead, Preston and Tadworth, Burgh Heath, Hooley, Walton on the Hill, and Lower Kingswood**

- 5.4 The north of the borough, demarcated roughly by the top of the North Downs escarpment, represents the uppermost reaches of the River Hogsmill and River Wandle catchments. This area drains in a northerly direction and is generally characterised by porous chalk geology. Runoff within this northern area of the borough is drained almost exclusively to soakaways, made evident by the lack of natural overland watercourses. Consequently there is no risk of flooding from rivers to the north of the M25.
- 5.5 There are however areas of “clay cap” overlaying the chalk. These will cause localised overland flooding in heavy rain and will exacerbate flooding from overloaded soakaways. A number of localised flooding issues have been observed and these are shown on the accompanying flood maps. The local geology should be taken into account when designing drainage solutions.
- 5.6 Whilst the borough itself is not at risk of flooding within the Hogsmill River catchment, to the north of the M25, it is important to recognise that areas downstream of the borough are affected by flooding from the Hogsmill River and River Wandle, including Epsom & Ewell and Kingston upon Thames. Major development within the borough to the north of the M25 is unlikely, and therefore it is considered unlikely that development within the borough will exacerbate the risk of flooding downstream. Notwithstanding this however, the presence of problems of a localised nature do emphasise the importance of a sustainable drainage system (SuDS) as an integral element of the site design.

#### **Area 2: The Wealden Greensand Ridge (River Mole Catchment North)**

##### **Redhill, Merstham, Earlswood and South Earlswood**

- 5.7 Redhill Brook flows through the centre of Redhill and Earlswood, largely in culvert. The capacity of the culvert is relatively limited, and the system is prone to blockage.

Consequently, there is a risk of fluvial flooding to properties within Redhill and Earlswood.

- 5.8 Redhill Town Centre has been identified as an area for growth and will be the subject of an Area Action Plan to promote and steer regeneration. This area is also identified as being at risk of flooding – a number of development sites within Redhill Town Centre are within Flood Zones 3b, 3a & 2. A more detailed assessment of flood risk in Redhill Town Centre is provided in the Redhill Town Centre Action Plan Flood Risk Assessment Jacobs September 2011. See Appendix 4: Further Information for details. The Council has also commissioned work to examine possible flood storage options within, and upstream of, the town centre which may help to alleviate flood risk.
- 5.9 There is also a risk of fluvial flooding to some properties from the Gatton Brook in the northern part of Redhill, from the South Merstham Ditch in Merstham and the Earlswood Ditch in South Earlswood. Open space along these river corridors should be protected and any redevelopment should take into account the potential flood risk.
- 5.10 Merstham Regeneration Area largely falls outside Zones 2 and 3 however there are a small number of sites that at risk of fluvial flooding. There are also areas susceptible to surface water flooding. The risk of flooding from these sources needs to be taken into account when considering any regeneration proposals.
- 5.11 A number of localised flooding issues have been identified within Redhill and Earlswood. These areas are situated at the foot of the North Downs, underlain by soils of varying permeability. As highlighted above, it is essential that the proposed drainage system considers the local geology to ensure that the adopted SuDS provide a sustainable solution for the lifetime of the proposed development.
- 5.12 It is important that surface water run off from all developments is restricted to ensure that it does not increase flood risk down stream. This surface water attenuation should generally be achieved by using sustainable drainage methods (SuDS).
- 5.13 The Environment Agency is seeking the ‘naturalisation’, through opening up, of culverted watercourses wherever this is physically possible and this should be considered in this area.

### **Reigate**

- 5.14 There is a risk of fluvial flooding to some properties south of Reigate Town Centre from the Wallace Brook and to the west of the Town Centre from the Saturday Ditch. Any redevelopment of properties in these areas will need to take into account the potential flood risk.

- 5.15 Both the Wallace Brook and the Saturday Ditch run largely through open parkland and fields which form the natural flood plain and these areas should be protected.
- 5.16 Again, the Environment Agency is seeking the naturalisation of culverted watercourses wherever this is physically possible. Longer term proposals could consider the possibility of completing the link between the open waterway corridors upstream and downstream of the town centre.
- 5.17 A number of localised flooding issues have been identified within Reigate. Reigate is situated at the foot of the North Downs and the permeability of soils in this area is highly variable. It is essential that a site based geological investigation is carried out to inform the SuDS design. The suitability of infiltration techniques will be heavily dependant upon the local soil regime.
- 5.18 It is important that surface water run off from all developments is restricted to ensure that it does not increase flood risk down stream. This surface water attenuation should generally be achieved by using sustainable drainage methods (SuDS).

### **Area 3: The Low Weald (River Mole Catchment South)**

#### **Salfords**

- 5.19 Salfords Stream is a tributary of the River Mole, flowing from east to west through Salfords. Throughout its length, Salford Stream is in open channel. The natural floodplain lies predominantly within the Metropolitan Green Belt, with the exception of those parts that lie within the Urban Area of Salfords, where the brook provides the boundary to the settlement. The River Mole corridor is similarly protected, and does not pose a major risk of flooding to property at this location.
- 5.20 Very few properties in Salfords are currently at risk of river flooding, the main exceptions being those located in close proximity to the Salfords Stream and the Cross Oak Lane Ditch. Open space along these river corridors should be protected and any redevelopment should take into account the potential flood risk.
- 5.21 Surface water flooding has been identified as an issue in parts of Salfords. It is important that all future development mitigates the potential impact that it may have upon the localised drainage regime. Sustainable drainage techniques should be incorporated into all developments, taking due consideration of the underlying clay soils.

## **Horley Town Centre Regeneration Area, Horley Urban Area and New Neighbourhoods**

- 5.22 Horley is bounded to the west by the River Mole, and to the north and east by Burstow Stream, a tributary of the River Mole. The area to the north east and north west of Horley is the focus of a planned development to provide 2,600 new homes.
- 5.23 Whilst Horley Town Centre falls within Flood Zone 1, the current Environment Agency flood zone maps indicate that a relatively large number of properties within the wider Horley area are at risk of river flooding.
- 5.24 A number of homes situated in close proximity to the River Mole are clearly at risk of river flooding, on average, once in 100 years and some properties are also at risk of relatively frequent flooding, including the 1 in 20 year event. This latter risk is associated with both Burstow Stream and Weatherhill Stream, a tributary of Burstow Stream flowing from Weatherhill in the adjoining borough. It is worth noting that flooding has been observed in this area in recent years.
- 5.25 Flood Zone 2 Medium Probability affects a considerable number of properties within Horley and this is an important consideration in planning terms. It should be noted that the depth of flooding, even in Zone 2, can be quite considerable in parts of Horley. Examination of anticipated flood levels and actual ground levels therefore needs to be included in the Flood Risk Assessments for proposed development in this area.
- 5.26 The sub-soil under Horley is generally solid Weald Clay. Sustainable drainage solutions that rely upon infiltration, including soak-aways, are unsuitable in this area, and alternative techniques will be required to ensure that the run off from the proposed development does not increase flood risk.

## **6. Flood Risk Management Through the Planning Process**

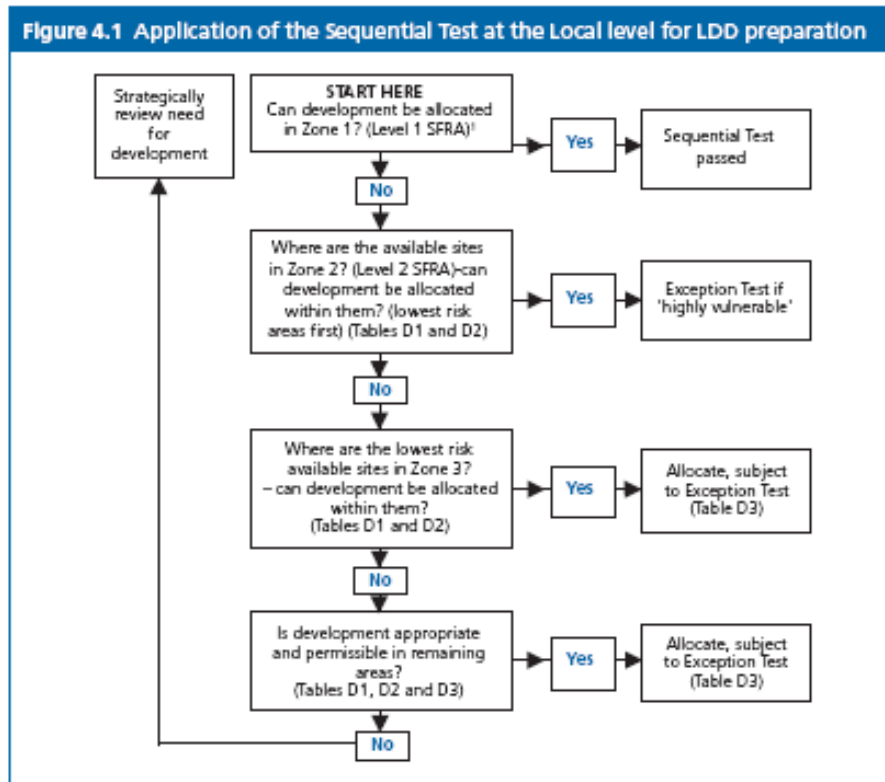
6.1 This section will look at the practices and policy measures needed to manage flood risk in the borough as outlined in the preceding sections. This will include the use of the Sequential Test and Exception Test in the allocation of sites and in the assessment of planning applications, as well as policies to address specific aspects of the identified flood risk.

### **The Sequential Test**

6.2 The Sequential Test is part of the risk based approach to flood management and is required by the NPPF. It seeks to ensure that Local Planning Authorities steer development to areas of lowest flood risk, requiring them to establish that there are no reasonably available development sites within the areas of lowest flood risk before considering development in areas of higher flood risk.

6.3 The Sequential Test is used by Local Planning Authorities at the site allocation stage when preparing development plan documents, however it is also carried out at the application stage in the case of windfall sites or where the allocations in the current development plan have not been subjected to such testing.

6.4 The diagram below shows the application of the Sequential Test in the preparation of a Local Development Document:



**Nota**  
<sup>1</sup> Other sources of flooding need to be considered in Flood Zone 1

**Figure 8: Application of the Sequential Test for DPD Preparation, source PPS25 Practice Guide**

6.5 Table 3 of the Technical Guidance to the NPPF stipulates permissible development types for different Flood Zones. This considers the degree of flood risk posed to the site in terms of the likely vulnerability of the proposed development to damage and the risk to the lives of the site occupants should a flood occur. Wherever possible, development should be restricted to the suitable land uses summarised in Tables 1 and 2 of the Technical Guidance to the NPPF. This may involve seeking opportunities to ‘swap’ more vulnerable allocations at risk of flooding with areas of lesser vulnerability that are situated on higher ground.

**The Exception Test**

6.6 If the Sequential Test concludes that it is not possible for development to be located exclusively within the areas of lowest risk the Exception Test must be applied.

6.7 Paragraph 102 of the NPPF sets out the requirements of the Exception Test:

“For the Exception Test to be passed:

- it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment where one has been prepared; and

- a site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

Both elements of the test will have to be passed for development to be allocated or permitted.”

### **Use of the Sequential and Exception Tests in Site Allocations**

- 6.8 Section 6 of the SFRA sets out an overview of flood risk in the borough by area. Appendix 2: Overview of Flood Risk & Planning Policy Implications provides further analysis of the flood risk for each of the strategic development areas of the borough together with a summary of the implications for spatial planning. This information can be used to inform the Sequential Test for the purposes of site allocations. All sites identified as being suitable for residential development through the SHLAA will need to be tested as will any potential new employment sites or other major land allocations. Allocations in the Borough Local Plan which are to be carried forward into the Local Development Framework will also need to be tested. Should it be necessary to consider sustainable urban extensions in the latter part of the plan period these will also need to be tested. The scale of any proposed urban extensions will depend upon the amount of development yielded by allocations in the Development Management Policies document and Redhill Town Centre Area Action Plan and the level of acceptable development in the urban area. Where any of the potential sites for allocations lie in Zones 2, 3a or 3b consideration will need to be given to the availability of other suitable sites for development in areas of lower flood risk.
- 6.9 It is recognised that, whilst only a relatively small proportion of the borough is situated within flood affected areas, many of those areas affected correspond to the areas under pressure for future growth, for example Redhill Town Centre. Limiting future residential development in these areas may impact upon the economic and social welfare of the existing community, and consequently there may be pressing planning needs that may warrant further consideration of these areas. This being the case, the Council will need to consider site allocations in areas of higher flood risk and apply the Exception Test accordingly.

### **Use of the Sequential and Exception Tests in the assessment of planning applications**

- 6.10 Where sites have been allocated in a Development Plan Document, informed by the application of the Sequential Test it will not be necessary for a Sequential Test to be carried out at the planning application stage. The site allocations made in the Reigate



and Banstead Borough Local Plan 2005 were not informed by sequential testing, however such testing will be used to inform site allocations in the Local Development Framework.

- 6.11 Until such a time as sites have been formally allocated in the Local Development Framework it will be necessary to apply the Sequential Test to all sites outside the Redhill Town Centre Action Plan area and, where necessary the Exception Test. The detailed guidance on the application of the Sequential Test provided in the NPPF and the accompanying Technical Guidance, together with the Environment Agency's Standing Advice for Local Planning Authorities (see Appendix 4: Further Information for details) should be used in assessing all applications for development in areas of flood risk. Section 4: Flood Risk in the Borough of Reigate and Banstead provides detailed information on flood risk in each area of the borough and should be used to inform the Sequential Test.
- 6.12 Sites within the area covered by the Redhill Town Centre Area Action Plan have been subjected to a specific Sequential Test covering the Action Plan Area. This identifies the need to apply the Exception Test to some development sites within this area and makes recommendations for the design and layout of development on these sites. This document also makes it clear that site specific FRAs will be required for all developments within this area of the borough.

#### **Planning policies to manage flood risk**

- 6.13 In addition to making site allocations, the Local Development Framework, through the Core Strategy, Redhill Town Centre Area Action Plan and Development Management Policies, will set out policies to guide development in the borough. These policy documents will include policies to enable the sustainable management of flood risk.
- 6.14 In response to the assessment of flood risk in the borough set out in this SFRA planning policies will need to:
- Ensure that development does not have an adverse effect on flooding, either on the site or elsewhere;
  - Include a requirement that new developments aim to achieve green field run off rates;
  - Require the use of SUDS appropriate to local ground conditions be used in all new developments;
  - Require an appropriate allowance for climate change to be designed into new developments;

- Protect the areas of the functional floodplain that are currently undeveloped for flood storage purposes and restrict future development within these areas to water compatible uses and essential infrastructure as defined by the Technical Guidance to the NPPF;
- Restrict all development, including extensions and outbuildings, in Zone 3b functional flood plain in order to reduce loss of flood storage;
- Secure the management and reduction of flood risk in Redhill Town Centre and enable the implementation of appropriate flood storage measures within the Town Centre;
- Steer development away from areas in the immediate vicinity of the borough's reservoirs in order to reduce the risk to life and damage to property in the event of dam failure.

6.16 In addition Supplementary Planning Documents should be prepared as appropriate to provide detailed advice and design guidance in relation to reducing flood risk and managing the effects of climate change in developments.

6.17 The use of open land for flood storage schemes, for reducing surface water run off and other similar measures, should be implemented through the Council's Green Infrastructure Strategy.

## **7. Guidance for Developers**

### **Getting Started**

- 7.1 Before submitting a planning application it will be necessary to check if the development site is affected by flooding, from rivers, surface water or other sources. The Flood Maps that accompany this SFRA provide a general guide to the known and anticipated areas of flooding within the borough. However, the location, topology and sub-soil specific to the site will need to be taken into account when considering the risk of flooding both to and from the site. The table at Appendix 3: Development Recommendations by Flood Zone provides a general guide to whether a proposal is likely to be acceptable in a particular Flood Zone and the minimum requirements for developments within each Flood Zone. More detailed advice about the risk of flooding in the borough and the specific risks in each area is provided in Section 4: Flood Risk in the Borough of Reigate and Banstead.
- 7.2 If the above sources of information indicate that flooding is likely to be an issue advice should be sought at an early stage from the Council, the Environment Agency, and/or other relevant authority. Details of how to make contact with the Council and other authorities are included in Appendix 4: Further Information.
- 7.3 Development within Flood Zones 2, 3a and 3b will require the application of the Sequential Test, and if necessary, the Exception Test as explained in Section 6: Management of Flood Risk Through the Planning Process. Developers may assist the Council in carrying out the Sequential Test and Exception Test by providing information, where relevant. Further information on the Sequential Test and Exception Test is provided in the NPPF and the Environment Agency's Standing Advice for Agents and Applicants. Links to these documents are provided in Appendix 4: Further Information.
- 7.4 It is also necessary to consider the potential increase in flood risk 'from' the proposed development. Consideration should be given to ensuring that the development does not increase the run-off from the site, either above ground or through the drainage system, especially where there is known existing flooding downstream/down hill. The development must also not divert, onto neighbouring properties, any existing overland flows that would currently flow onto or across the development site,

### **Site Specific Flood Risk Assessment**

- 7.5 A 'relevant' site specific Flood Risk Assessment (FRA) will be required for all development sites affected by flooding or where development may increase flooding. The level of detail to be included in the FRA will depend upon the nature of the site and the scale of the development. A full FRA may not be needed in all cases. The

FRA should consider flooding both to and from the development. Further information on preparing a FRA is provided in the Technical Guide to the NPPF and the Environment Agency's Standing Advice for Agents and Applicants. Please refer to Appendix 4: Further Information.

### **Climate Change**

- 7.6 In designing developments an appropriate allowance should be made for climate change in relation to fluvial and other flooding. This will ensure that flood risk is addressed throughout the lifetime of the development. (Further information climate change in relation to flood risk is provided in Section 4 of this SFRA and in the Technical Guide to the NPPF. With regard to defining the lifetime of a development paragraph 3.102 of the PPS25 Practice Guide advises that “for guidance residential development should be considered for a minimum of 100 years unless there is specific justification for considering a shorter period. An example of this would be if the development was controlled by a time limited planning condition.”

### **Sustainable Drainage Systems (SuDS)**

- 7.7 The management of surface water is essential to reducing the risk of flooding to and from development sites. SuDS are drainage measures which seek to mimic natural drainage and the use of SuDS is one of the most effective ways of managing surface water on development sites.
- 7.8 The terms SuDS refers to a wide range of surface water management techniques such as those listed in CIRIA C697 – The SuDS Manual and CIRIA C687 – SuDS Making it Happen. Please refer to Appendix 4: Further Information.
- 7.9 The suitability of different types of SuDS will depend upon the conditions of the site, in particular soil types and geology. There is a large variation of types of sub-soil within the borough, including chalks, sands, and clays. Developers should note that “infiltration’ methods of SuDS, such as soakaways, are generally only suitable for sites on ‘permeable’ sub-soil. Permeability test results may need to be submitted with the application, if these methods of surface water disposal are proposed. Further information on different types of SuDS and their suitability for different sites is provided by the CIRIA documents referred to in Appendix4: Further Information.
- 7.10 The Council encourages the use of SUDS in all developments. The Flood & Water Management Act 2010 will introduce the requirement that the drainage system for all structures that may affect the ability of land to absorb rainwater (including patios and driveways) will need the approval of the Sustainable Drainage Approving Body (SAB). Surrey County Council will be the SAB throughout Surrey. All Sustainable Drainage Systems serving two or more properties, once approved, will be adopted by Surrey County Council. The automatic right to drain to a Public Sewer will cease to

exist. It is anticipated that these sections of the Flood & Water Management Act will come into force in 2012.

### **Designing for Flood Resilience**

- 7.11 The avoidance of flood risk is always the optimal solution, either by restricting development to sites of lowest flood risk, or when it is not possible, moving a development to a lower flood risk site, by siting buildings in the parts of the site which are least likely to be affected by flooding. However, in some circumstances, for example, re-development or extensions to an existing building within the floodplain, it will be necessary to design developments to be resistant or resilient to flooding. Flood resilience measures include, for example, the use of water resistant materials and fixtures or siting electrical wiring and sockets at a higher level. In order to choose the most effective flood resilience measures it will be necessary to know the potential depth and duration of flooding that is likely to occur. Detailed advice on flood resilient construction is provided in the documents listed at Appendix 4: Further Information.

### **Safe Access and Egress**

- 7.12 Safe access and escape from a development during flood conditions is an important consideration in the design of developments. Provision for safe access and egress, ideally by 'dry access', should be considered at the start of the design process. Where dry access cannot be provided for a proposed development a Flood Warning and Evacuation Plan should be prepared and submitted with the planning application. Detailed advice on this matter is provided by the Environment Agency. See Appendix 4: Further Information for details.

### **Flood Warning & Evacuation Plans**

- 7.13 Where a development is proposed with a 'residual' flood risk, that is part of the building or site is liable to flood, the developer should prepare a Flood Warning & Evacuation Plan to be given to, or made available to, all future owners and users of the building. This plan will warn the owners/users of the flood risk and the 'safe' procedures in the event of a potential flood. A copy of the Flood Warning & Evacuation Plan should be included in the FRA where relevant and approved by the local planning authority. Developers should discuss this with the local planning authority and Environment Agency at the earliest opportunity. Guidance on the content of flood plans is set out in Appendix 7: Reigate and Banstead Borough Council Flood Plan Requirements.

## **Permitted Development Rights for Hardsurfacing**

- 7.14 Since 1 October 2008 it has been necessary for householders to apply for planning permission for the paving of their front gardens, where the surface area exceeds five square metres. Permeable surfaces can be laid without the need for planning permission. Communities and Local Government has produced detailed guidance on the permeable surfacing of front gardens. Details of this publication can be found at Appendix 4: Further Information.

## **8. Conclusions and Recommendations**

- 8.1 This review of the SFRA has shown that, whilst there have been some minor changes to the outlines of the Flood Zones in the borough, there has been little significant change in flood risk since the 2007 SFRA was carried out. In terms of fluvial flood risk, Redhill Town Centre, parts of Earlswood and Merstham and the areas in and around Horley remain the most severely affected parts of the borough. The northern part of borough is unaffected by fluvial flooding but surface water flooding is common in this area and may have implications for flood risk downstream, in adjoining boroughs.
- 8.2 The application of the Sequential Test (and where appropriate, the Exception Test) in order to steer vulnerable development away from areas of flood risk, remains a fundamental part of the planning process in both the allocation of sites and decision making on planning applications. The findings of the updated SFRA will provide the essential information required to undertake this testing.
- 8.3 Recent changes in legislation have reinforced the importance of flood risk management as a planning consideration and will bring further changes to the way in which flood risk is managed in future. In particular the introduction of the SuDS Approval Bodies will place greater emphasis on the need for effective surface water management in new developments.
- 8.4 Pressure for development in the borough, together with the impact of climate change means that flood risk management will remain an important planning consideration in future.
- 8.5 The following specific recommendations should be taken into account at the relevant stages of the planning process:

### **Planning Policy**

- The findings of the updated SFRA should be used to inform site allocations and future planning policies.
- Reference should be made to Appendix 2: Overview of Flood Risk and Implications for Planning Policy Implications and the specific recommendations made in Section 6: Management of Flood Risk Through the Planning Process.

### **Development Management**

- The information contained in this SFRA should be used to inform the Sequential Test in relation to planning applications. Relevant information is provided in Section 4: Flood Risk in the Borough of Reigate and Banstead and Section 6: Management of Flood Risk Through the Planning Process.

- Appendix 3: Development Recommendations by Flood Zone should be used as a starting point for the assessment of applications, in conjunction with Environment Agency advice.

### **Developers**

- Developers are advised to make use of the information contained in this SFRA at the earliest stages of considering their development, and when preparing planning applications. The most relevant sections are Section 4: Flood Risk in the Borough of Reigate and Banstead, Appendix 3: Development Recommendations by Flood Zone as well as the specific advice set out in Section 8: Guidance for Developers.
- Developers should always seek advice from the Council and the Environment Agency prior to submitting a planning application for a development within an area at risk of flooding.

### **Emergency Planning**

- The findings of this updated SFRA should be used to inform any revision to the Council's emergency response plan, and Multi-Agency Flood Plan.



## References

- Gatwick Sub-Region Outline Water Cycle Study, Entec, January 2011
- Horley Design Guide, Reigate and Banstead Borough Council, January 2006.
- Horley Flood Risk Development Brief (part of Horley Design Guide), Reigate and Banstead Borough Council, Environment Agency and Thames Water Utilities 2006.
- Horley Flood Study, Babtie, 2004.
- Investing in the Future: Flood and Coastal Risk Management in England – A Long Term Strategy, Environment Agency 2009.
- National Planning Policy Framework, Communities and Local Government, March 2012
- Planning Policy Statement 25: Development and Flood Risk Practice Guide, Communities & Local Government, December 2009.
- Planning Policy Statement 25: Development and Flood Risk, Communities & Local Government March 2010.
- Redhill Town Centre Area Action Plan Flood Risk Assessment, Jacobs, September 2011.
- Reigate and Banstead Borough Council Multi-Agency Flood Plan, Reigate and Banstead Borough Council, 2010.
- Reigate and Banstead Borough Local Plan, Reigate and Banstead Borough Council, 2005.
- South East Plan: Regional Spatial Strategy for the South East, Government Office for the South East, May 2009.
- Surrey Preliminary Flood Risk Assessment, Surrey County Council, June 2011.
- Thames Catchment Management Plan, Environment Agency, December 2009.

## Appendix 1: Data Sources

### Environment Agency Fluvial Flood Zone Maps

- A1.1 The flood maps for the borough which accompany this SFRA are based on the Environment Agency's Flood Zone maps.
- A1.2 The Environment Agency's knowledge of the floodplain is continuously being improved by a variety of studies, detailed models, data from river flow and level monitoring stations, and actual flooding information. The Environment Agency has an on-going programme of improvement, and updates are generally made on a quarterly basis.
- A1.3 It should be noted that the Flood Zones are plotted using "lidar" (aerial survey) mapping and are therefore only a guide to the limits of flooding. Developers may need to refine the limits for site specific locations by the use of flood levels obtained from the Environment Agency and topographical surveys.

### Geological Information

- A1.4 The geological (sub-soil) information, referred to in this SFRA, has been obtained from the Geological Survey of Great Britain (England and Wales) map produced by British Geological Society. Developers should carry out their own investigation, desk top and/or physical survey as necessary, to determine the sub-soil information in and around their specific site.

### Consultation

- A1.5 Consultation has formed a key part of the data collation phase for this SFRA. The following key stakeholders were consulted to inform the original SFRA prepared in 2007 and the 2012 update:

#### Reigate & Banstead Borough Council

- A1.6 The Planning Policy team identified areas under pressure from development and/or regeneration and the Council's Drainage Engineer was consulted to identify areas potentially at risk from river flooding and/or other sources of flooding.

#### Environment Agency

- A1.7 The Environment Agency has been consulted to source specific flood risk information to inform the development of the SFRA. In addition, the Environment Agency is a statutory consultee and therefore must be satisfied with the findings and

recommendations for sustainable flood risk management into the future. For this reason, the Environment Agency has been consulted during the development of the original 2007 SFRA and as part of the 2012 update to discuss potential flood risk mitigation measures and planning recommendations.

#### Surrey County Council

- A1.8 Surrey County Council was contacted to provide information relating to known incidents of highway flooding within the borough and was consulted on this SFRA in recognition of its role as Lead Local Flood Authority.

#### Thames Water

- A1.9 Thames Water is responsible for the management of Public Sewers within the borough (both foul and surface water) and any associated flood risk. Thames Water was consulted during the preparation of the original SFRA to discuss the risk of localised flooding associated with the existing drainage/sewer system.

## Appendix 2: Overview of Flood Risk and Planning Policy Implications

Strategic Development Area	Overview of Flood Risk	Implications for Spatial Planning
<b>Area 1: The North Downs</b>		
<p><b>Banstead, Nork, Tadworth, Walton-on- the-Hill and other urban areas</b></p> <p>Growth within this area will be focussed on Banstead Town Centre, edge of centre and other sustainable locations within urban areas.</p> <p><b>Preston Regeneration Area</b></p> <p>This area has been identified for regeneration to achieve a number of social, economic and environmental objectives. This will involve new and improved housing, new community and leisure facilities and environmental improvements.</p> <p><b>All areas outside the existing Urban Area</b></p> <p>Green Belt, therefore not designated for large-scale development. Small-scale development may be permitted in accordance with Green Belt policy.</p>	<p>There is no fluvial flood risk to properties situated to the north of the North Downs Escarpment (aligned roughly with the M25). The area falls entirely within Zone 1 Low Probability.</p> <p>There are areas at risk from surface water flooding and other localised flood risk within this area. In addition increases in surface water run off from this area may increase the risk of flooding to areas within adjacent boroughs.</p>	<p>There are no specific restrictions placed upon land use within this area in terms of flood risk.</p> <p>Particular attention should be paid to surface water flood risk management in this area.</p>
<b>Area 2: The Wealden Greensand Ridge (Middle River Mole Catchment)</b>		
<p><b>Redhill, Merstham, Earlswood and South Merstham Urban Areas</b></p> <p>Redhill Town Centre has been identified as a Regeneration Area and regional transport hub. An Area Action Plan is being developed to guide the regeneration process. This will result in substantial new development for retail, leisure, office and residential uses.</p>	<p>There are properties within all Flood Zones 3, 2 &amp; 1 in this area.</p> <p>Localised flooding incidents and surface water flooding are evident throughout the area.</p> <p>There are areas at risk of flooding from reservoir failure.</p>	<p>Please refer to Redhill Town Centre Flood Risk Assessment for detailed advice. See Appendix 4: Further Information for details.</p> <p>Development should be directed away from areas at risk from flooding associated with reservoir failure.</p>

Strategic Development Area	Overview of Flood Risk	Implications for Spatial Planning
<b>Area 2: The Wealden Greensand Ridge (Middle River Mole Catchment) continued</b>		
<p>Part of Merstham has been identified as a Regeneration Area. The regeneration of this area will focus on ensuring that residents benefit from the provision of appropriate services and facilitates and making the estate a cleaner and safer environment. No major growth is planned for this area although there will be some redevelopment to provide improved facilities and housing.</p> <p>Growth in the remained of this area will be focussed on the edge of Redhill Town Centre and other sustainable locations within the urban area.</p>		<p>Residential development should be avoided within Zone 3.</p> <p>Highly vulnerable development should not be permitted in Zone 2.</p> <p>There are no restrictions placed upon land use within the remainder of this area (Zone 1).</p> <p>Protection should be provided to areas of natural floodplain.</p> <p>Surface water attenuation (SuDS) will be required within the drainage system of developments in this area.</p>
<p><b>Reigate Urban Area</b></p> <p>Growth within this area will be focussed on Reigate Town Centre, edge of centre and other sustainable locations in the urban area.</p>	<p>There are properties within Flood Zones 3, 2 &amp; 1 in this area.</p> <p>Localised flooding incidents and surface water flooding are evident throughout the area.</p>	<p>Residential development should be avoided within Zone 3.</p> <p>Highly vulnerable development should not be permitted in Zone 2.</p> <p>There are no restrictions placed upon land use within the remainder of this area (Zone 1).</p> <p>Protection should be provided to areas of natural floodplain.</p> <p>Surface water attenuation (SuDS) will be required within the drainage system of developments in this area.</p>
<p><b>All areas outside the existing Urban Area</b></p> <p>Green Belt, therefore not designated for large-scale development although sustainable urban extensions may be considered in the latter part of the plan period. Small-scale development may be permitted in accordance with Green Belt policy.</p>	<p>There are properties within Flood Zones 3, 2 &amp; 1 in this area.</p> <p>Localised flooding incidents and surface water flooding are evident throughout the area.</p>	<p>Residential development should be avoided within Zone 3.</p> <p>Highly vulnerable development should not be permitted in Zone 2.</p> <p>There are no restrictions placed upon land use within the remainder of this area (Zone 1).</p> <p>Protection should be provided to areas of natural floodplain.</p> <p>Surface water attenuation (SuDS) will be required within the drainage system of developments in this area.</p>

Strategic Development Area	Overview of Flood Risk	Implications for Spatial Planning
<b>Area 3 Low Weald (Southern River Mole Catchment)</b>		
<p><b>Salfords Urban Area</b></p> <p>This has not been identified as a specific location for growth however there is scope for some growth on sustainable sites in this area.</p>	<p>There is a risk of fluvial flooding to properties situated immediately adjacent to Salford Stream and the Cross Oak Lane Ditch within Salfords.</p> <p>The remaining area falls within Zone 2 Medium Probability (river corridor) and Zone 1 Low Probability.</p> <p>Localised flooding incidents and surface water flooding are evident throughout the area.</p>	<p>Residential development should be avoided within Zone 3.</p> <p>Highly vulnerable development should not be permitted in Zone 2.</p> <p>There are no restrictions placed upon land use within the remainder of Salfords (Zone 1).</p> <p>Protection could be provided to areas of natural floodplain.</p> <p>Surface water attenuation (SuDS) will be required within the drainage system of developments in this area.</p>
<p><b>Horley Town Centre Regeneration Area</b></p> <p>The regeneration of Horley Town Centre will focus on providing a social, cultural and commercial centre to cater for the increase in population resulting from the development of the new neighbourhoods. Plans for Horley Town Centre include the provision of new residential units, together with improved shopping facilities and streetscene enhancements.</p>	<p>The Town Centre Regeneration Area falls within Zone 1 Low Probability and therefore there is no fluvial flood to properties situated within this area.</p> <p>Although there are no known local flooding incidents there are areas of surface water flooding evident in the area.</p>	<p>There are no restrictions placed upon land use within the Horley Town Centre Regeneration Area (Zone 1).</p> <p>Surface water attenuation (SuDS) will be required within the drainage system of developments in this area.</p>
<p><b>Horley New Neighbourhoods</b></p> <p>Land was allocated in the Borough Local Plan 2005 for the development of 2600 houses and associated neighbourhood centre and facilities on two greenfield sites adjacent to the north of Horley. Work is currently in progress on development in the North East Sector. A Riverside Green Chain has been designated to manage the interface between the development and the rivers as referred to in the saved policies of the Borough Local Plan 2005.</p>	<p>The Horley New Neighbourhoods are situated close to both the River Mole and Burstow Stream. A variable risk of fluvial flooding is evident at the periphery of the New Neighbourhoods area, with some areas falling within Zone 3 High Probability.</p> <p>A proportion of Horley New Neighbourhoods falls within Zone 2 Medium Probability</p> <p>The remaining area is situated within Zone 1 Low Probability.</p>	<p>Only essential infrastructure and open space will be permitted within Flood Zone 3.</p> <p>Highly vulnerable development should not be permitted in Zone 2.</p> <p>There are no restrictions placed upon land use within the remainder of Horley New Neighbourhoods (Zone 1).</p> <p>Protection should be provided to areas of natural floodplain.</p> <p>Surface water attenuation (SuDS) will be required within the drainage system of developments in this area.</p>

Strategic Development Area	Overview of Flood Risk	Implications for Spatial Planning
<p><b>Horley Urban Area</b></p> <p>Growth within this area will be focussed on the edge of Horley Town Centre and other sustainable sites within the urban area.</p>	<p>Parts of the Urban Area of Horley are situated close to the River Mole or Burstow Stream. A variable risk of fluvial flooding is evident within Horley, with some areas falling within Zone 3 and Zone 2. The remaining area is situated within Zone 1 Low Probability.</p> <p>There are areas at risk of flooding from reservoir failure.</p>	<p>Residential development should be avoided within Zones 3a and 3b.</p> <p>Highly vulnerable development should not be permitted in Zone 2.</p> <p>There are no restrictions placed upon land use within the remainder of Horley (Zone 1).</p> <p>Protection should be provided to areas of natural floodplain.</p> <p>Surface water attenuation (SuDS) will be required within the drainage system of developments in this area.</p> <p>Development should be directed away from areas at risk from flooding associated with reservoir failure.</p>
<p><b>All areas outside the existing Urban Area</b></p> <p>Green Belt, therefore not designated for large-scale development, although sustainable urban extensions may be considered in the latter part of the plan period. Small-scale development may be permitted in accordance with Green Belt policy.</p>	<p>There are parts of the rural area that are within flood Zones 3, 2 and 1.</p> <p>Localised flooding incidents and surface water flooding are evident throughout the area.</p> <p>There are areas at risk of flooding from reservoir failure.</p>	<p>Residential development should be avoided within Zone 3.</p> <p>Highly vulnerable development should not be permitted in Zone 2.</p> <p>There are no restrictions placed upon land use within the remainder of Area 3 (Zone 1).</p> <p>Protection should be provided to areas of natural floodplain and there is the potential to designate the area for functional flood plain to address known or future flood risk to the existing Urban Area.</p> <p>Surface water attenuation (SuDS) will be required within the drainage system of developments in this area.</p> <p>Development should be directed away from areas at risk from flooding associated with reservoir failure.</p>

## Appendix 3: Development Recommendations by Flood Risk Zone

Flood Risk Zone	Minimum Requirements for Developments
<p><b>Zone 3b (Functional Floodplain)</b></p> <p>Undeveloped Areas</p> <p>Generally encompasses those open space areas adjoining the main river corridors within rural areas of the borough. These areas are mostly protected by the Green Belt designation. Around Horley land adjoining the rivers has been designated in the Borough Local Plan to establish a Riverside Green Chain (providing a dedicated linkage of green space areas along the waterway corridor). This is in line with the advice given in the NPPF with regard to safeguarding land for development for purposes of flood management.</p>	<ol style="list-style-type: none"> <li>1. The Sequential Test and, if necessary, the Exception Test must be carried out.</li> <li>2. Future development, with the exception of water compatible uses and essential infrastructure, will not be approved. The frequency and severity of flooding within these areas are such that no engineered mitigation measures could be implemented to safely and effectively minimise the risk to life and property over the lifetime of the development.</li> </ol>
<p><b>Zone 3b (Functional Floodplain)</b></p> <p>Developed Areas</p> <p>It is important to recognise that, within Zone 3b (Functional Floodplain), <i>'previously developed land'</i> relates solely to <u>existing buildings</u> that are impermeable to flood water. The land surrounding these buildings provides important flow paths and/or flood storage areas that must be retained.</p>	<ol style="list-style-type: none"> <li>1. The Sequential Test and, if necessary, the Exception Test must be carried out.</li> <li>2. There is a general presumption against building extensions within Flood Zone 3b</li> <li>3. A positive reduction in the risk of flooding within the borough should be demonstrated as an outcome of the proposed development. This may be achieved through, for example, a reduction in the building footprint area, and/or the realignment of buildings within the site to reduce constrictions to overland flow paths;</li> <li>4. All proposed future development within Zone 3b Functional Floodplain will require a detailed Flood Risk Assessment (FRA), in accordance with the risk-based approach outlined in the NPPF.</li> <li>5. Floodplain Compensation must be provided for all proposed building and ground raising. Compensatory flood storage must be provided on a 'level for level' basis (i.e. the loss of available storage volume at each incremental height above river level must be replaced at an equivalent elevation), and must be hydraulically linked to the floodplain so that floodwaters can recede naturally.</li> <li>6. Floor levels must be situated above the 1% (100 year) predicted maximum flood level plus climate change, incorporating an</li> </ol>



Flood Risk Zone	Minimum Requirements for Developments
	<p>allowance for freeboard. For finished floor levels this is 300mm above the 100 year (1%) + climate change flood water level;</p> <ol style="list-style-type: none"> <li>7. Basements should not be allowed within Zone 3b Functional Floodplain;</li> <li>8. A SuDS system will be required to ensure that runoff from the site following development does not exceed greenfield runoff rates. Any SuDS design must take due account of groundwater and geological conditions. It is important to ensure that all developments are designed to cater for 'exceedance' flows (i.e. flows that exceed the design capacity of the local drainage system), without endangering property either on or off the site;</li> <li>9. To ensure the safety of residents and employees during a flood, access and egress routes must be designed to meet Environment Agency defined criteria. See Appendix 4: Further Information. It is essential to ensure that the nominated evacuation route does not divert evacuees onto a 'dry island' upon which essential supplies and services (for example food, shelter and medical treatment) will not be available for the duration of the flood event;</li> <li>10. It will be necessary to ensure that the proposed development does not result in an increase in maximum flood levels within adjoining properties. This may be achieved by ensuring that the existing building footprint is not increased and/or compensatory flood storage is provided within the site (or upstream);</li> <li>11. A minimum buffer zone must be provided to 'top of bank' within sites immediately adjoining a river corridor. This relates to both open waterways and culverted waterway corridors. The minimum buffer width is 8m. This requirement may be negotiated with the Environment Agency in heavily constrained locations.</li> <li>12. A 'Flood Plan' should be prepared for any development (residential, commercial, or industrial) that may be susceptible to or surrounded by flood water.</li> </ol>
<p><b>Zone 3a High Probability</b></p> <p>The 3a (High Probability) Flood Zone equates approximately to the 1 in 100 year (1%) the rivers.</p> <p>A large proportion of the area within the Borough affected by Flood Zone 3a is within rural, Green Belt or Horley Riverside Green Chain areas. However a number of properties, particularly in Redhill and Horley are within Flood Zone 3a</p>	<ol style="list-style-type: none"> <li>1. The Sequential Test and, if necessary, the Exception Test must be carried out.</li> <li>2. A positive reduction in the risk of flooding within the borough should be demonstrated as an outcome of the proposed development. This may be achieved through, for example, a reduction in the building footprint area, and/or the realignment of buildings within the site to reduce constrictions to overland flow paths;</li> <li>3. All proposed future development within Zone 3a High Probability will require a detailed FRA, in accordance with the risk-based approach outlined in the NPPF.</li> <li>4. Floodplain Compensation must be provided for all proposed building and ground raising. Compensatory flood storage must</li> </ol>

Flood Risk Zone	Minimum Requirements for Developments
<p>N.B. Sites within the (Fluvial) Flood Zone 3a may also be susceptible to 'Other' Forms of Flooding. (See below)</p>	<p>be provided on a 'level for level' basis (i.e. the loss of available storage volume at each incremental height above river level must be replaced at an equivalent elevation), and must be hydraulically linked to the floodplain so that floodwaters can recede naturally.</p> <ol style="list-style-type: none"> <li>5. Floor levels must be situated above the 1% (100 year) predicted maximum flood level plus climate change, incorporating an allowance for freeboard. For finished floor levels this is 300mm above the 100 year (1%) + climate change flood water level;</li> <li>6. Basements are not to be utilised for habitable purposes. All basements must provide a safe evacuation route in time of flood, providing an access point that is situated above the 1% (100 year) peak design flood level;</li> <li>7. A SuDS system will be required to ensure that runoff from the site following development does not exceed greenfield runoff rates. Any SuDS design must take due account of groundwater and geological conditions. It is important to ensure that all developments are designed to cater for 'exceedance' flows (flows that exceed the design capacity of the local drainage system), without endangering property either on or off the site;</li> <li>8. To ensure the safety of residents and employees during a flood, access and egress routes must be designed to meet Environment Agency defined criteria. See Appendix 4: Further Information. It is essential to ensure that the nominated evacuation route does not divert evacuees onto a 'dry island' upon which essential supplies and services (for example food, shelter and medical treatment) will not be available for the duration of the flood event;</li> <li>9. It will be necessary to ensure that the proposed development does not result in an increase in maximum flood levels within adjoining properties. This may be achieved by ensuring that the existing building footprint is not increased and/or compensatory flood storage is provided within the site or upstream;</li> <li>10. A minimum buffer zone must be provided to 'top of bank' within sites immediately adjoining a river corridor. This relates to both open waterways and culverted waterway corridors. The minimum buffer width is 8m. This requirement may be negotiated with the Environment Agency in heavily constrained locations;</li> <li>11. A 'Flood Plan' should be prepared for any development (residential, commercial, or industrial) that may be susceptible to or surrounded by flood water.</li> </ol>

Flood Risk Zone	Minimum Requirements for Developments
<p><b>Zone 2 Medium Probability</b></p> <p>Flood Zone 2 (Medium Probability) equates approximately to the area between the 1 in 100 year (1%) and the 1 in 1000 year (0.1%) extents of flood risk from the rivers.</p> <p>N.B. Sites within the Flood Zone 2 may also be susceptible to other forms of flooding.(See below)</p>	<ol style="list-style-type: none"> <li>1. The Sequential Test, and, if necessary, the Exception Test must be carried out.</li> <li>2. A positive reduction in the risk of flooding within the borough should be demonstrated as an outcome of the proposed development. This may be achieved through, for example, a reduction in the building footprint area, and/or the realignment of buildings within the site to reduce constrictions to overland flow paths;</li> <li>3. All proposed future development within Zone 2 Medium Probability will require a relevant FRA, in accordance with the risk-based approach outlined in the NPPF.</li> <li>4. Floor levels must be situated above the 1% (100 year) predicted maximum flood level plus climate change, incorporating an allowance for freeboard. For finished floor levels this is 300mm above the 100 year (1%) + climate change flood water level;</li> <li>5. A SuDS system will be required to ensure that runoff from the site following development does not exceed greenfield runoff rates. Any SuDS design must take due account of groundwater and geological conditions. It is important to ensure that all developments are designed to cater for 'exceedance' flows (flows that exceed the design capacity of the local drainage system), without endangering property either on or off the site;</li> <li>6. To ensure the safety of residents and employees during a flood, access and egress routes must be designed to meet Environment Agency defined criteria. See Appendix 4: Further Information. It is essential to ensure that the nominated evacuation route does not divert evacuees onto a 'dry island' upon which essential supplies (i.e. food, shelter and medical treatment) will not be available for the duration of the flood event.</li> <li>7. A 'Flood Plan' should be prepared for any development (residential, commercial, or industrial) that may be susceptible to or surrounded by flood water.</li> </ol>
<p><b>Zone 1 Low Probability</b></p> <p>Remainder of the borough NB. Sites within Flood Zone 1 may also be susceptible to other forms of Flooding. (See below)</p>	<ol style="list-style-type: none"> <li>1. Sites greater than 1ha in area will require a simple FRA in compliance with the NPPF and current guidance and policy. This will involve the introduction of SuDS techniques to ensure that runoff from the site following development does not exceed greenfield runoff rates. Any SuDS design must take due account of groundwater and geological conditions. It is important to ensure that all developments are designed to cater for 'exceedance' flows (flows that exceed the design capacity of the local drainage system), without endangering property either on or off the site.</li> </ol>

Flood Risk Zone	Minimum Requirements for Developments
<p><b>Areas Susceptible to 'Other' Forms of Flooding</b></p> <p>All forms of flooding both to and from developments must be considered.</p> <p>These other sources may include:</p> <p>Surface water flooding  Ground water flooding  Exceedance flows  Sewer flooding  Highway related flooding  Flooding from reservoirs, canals and other artificial sources</p>	<ol style="list-style-type: none"> <li>1. Areas 'Susceptible to Surface Water Flooding' and 'Localised Flooding Issues' known to the Council are identified in the maps and Appendices that accompany this SFRA. However, it is the developer's responsibility to carry out their own investigation to assess any possible flood risk, to or from the proposed development.</li> <li>2. A 'relevant' site specific FR A is required for any development in areas susceptible to, or that may cause, flooding from other forms of flooding.</li> </ol>

## Appendix 4: Further Information

The following list provides some sources of information and guidance that may be of use in the consideration of flood risk for development sites. The list is not exclusive. It is the developer's responsibility to consider all sources of flood risk, and all sources of flood risk information.

Information	Source(s)	Notes
Environment Agency's General Advice to Developers	Environment Agency website <a href="http://www.environment-agency.gov.uk/research/planning/93498.aspx">http://www.environment-agency.gov.uk/research/planning/93498.aspx</a>	
Environment Agency Standing Advice to Local Planning Authorities	Environment Agency website <a href="http://www.environment-agency.gov.uk/research/planning/33098.aspx">http://www.environment-agency.gov.uk/research/planning/33098.aspx</a>	
Sequential Test & Exception Test	National Planning Policy Framework <a href="http://www.communities.gov.uk/publications/planningandbuilding/nppf">http://www.communities.gov.uk/publications/planningandbuilding/nppf</a>  Technical Guidance to the National Planning Policy Framework <a href="http://www.communities.gov.uk/publications/planningandbuilding/nppftechnicalguidance">http://www.communities.gov.uk/publications/planningandbuilding/nppftechnicalguidance</a>  Planning Policy Statement 25 Development and Flood Risk Practice Guide. <a href="http://www.communities.gov.uk/publications/planningandbuilding/pps25guideupdate">http://www.communities.gov.uk/publications/planningandbuilding/pps25guideupdate</a>	Sequential Test & Exception Test
Site Specific Flood Risk Assessment	National Planning Policy Framework <a href="http://www.communities.gov.uk/publications/planningandbuilding/nppf">http://www.communities.gov.uk/publications/planningandbuilding/nppf</a>  Technical Guidance to the National Planning Policy Framework <a href="http://www.communities.gov.uk/publications/planningandbuilding/nppftechnicalguidance">http://www.communities.gov.uk/publications/planningandbuilding/nppftechnicalguidance</a>  Planning Policy Statement 25 Development and Flood Risk Practice Guide <a href="http://www.communities.gov.uk/publications/planningandbuilding/pps25guideupdate">http://www.communities.gov.uk/publications/planningandbuilding/pps25guideupdate</a>	The developer may need to employ their own Drainage Consultant  A 'relevant' FRA is required in each case. This will not necessarily be a 'full' FRA in every case.

Information	Source(s)	Notes
Flood Zones	Environment Agency website  <a href="http://www.environment-agency.gov.uk/homeandleisure/37837.aspx">http://www.environment-agency.gov.uk/homeandleisure/37837.aspx</a>	The developer may need to obtain detailed information from the EA regarding anticipated 1 in 100 year (1%), and Climate Change, River Flood Levels. Detailed Topographical Surveys of the site area may also be required, and in some circumstances additional Hydraulic Modelling may be necessary.
Safe Access and Egress	RBBC Flood Plan Requirements - See Appendix 7	
Anticipated River Flood Levels	Environment Agency enquires  Tel: 08708 506506	
Existing Ground Levels	The developer may need to employ their own land surveyor to determine the exact ground levels for the site.	
Sustainable Drainage Systems (SuDS)	CIRIA C687 – Planning for SuDS Making it Happen  <a href="http://www.ciria.org/service/Web_Site/AM/ContentManagerNet/ContentDisplay.aspx?Section=Web_Site&amp;ContentID=18820">http://www.ciria.org/service/Web_Site/AM/ContentManagerNet/ContentDisplay.aspx?Section=Web_Site&amp;ContentID=18820</a>  CIRIA C697 – The SUDS Manual  <a href="http://www.ciria.com/suds/ciria_publications.htm#C697">http://www.ciria.com/suds/ciria_publications.htm#C697</a>	
Flood Resistance & Resilience Measures	ODPM Interim guidance for improving flood resilience of domestic and small business properties 2003  <a href="http://www.planningportal.gov.uk/uploads/odpm/400000009282.pdf">http://www.planningportal.gov.uk/uploads/odpm/400000009282.pdf</a>  Environment Agency Web-site:  <a href="http://www.environment-agency.gov.uk/homeandleisure/floods/31644.aspx">http://www.environment-agency.gov.uk/homeandleisure/floods/31644.aspx</a>  Improving the Flood Performance of New Buildings: Flood Resilient Construction, Communities and Local Government 1 June 2007.	

Information	Source(s)	Notes
	<a href="http://www.communities.gov.uk/publications/planningandbuilding/improvingflood">http://www.communities.gov.uk/publications/planningandbuilding/improvingflood</a>	
Areas Susceptible to Surface Water Flooding	Environment Agency Enquiries <a href="mailto:kslenquiries@environment-agency.gov.uk">kslenquiries@environment-agency.gov.uk</a>	
Other Known Flooding	Reigate and Banstead Council reported incidents of flooding - Appendix 6 of this SFRA  Public Sewer Flooding - Thames Water plc. Tel: 01189 251515  Highway Related Flooding  Motorways & Trunk Roads – Highway Agency Tel: 08459 556575  Other Roads - Surrey County Council Tel: 08456 009009	
Flood Plans	Environment Agency Website  <a href="http://www.environment-agency.gov.uk/homeandleisure/floods/38329.aspx">http://www.environment-agency.gov.uk/homeandleisure/floods/38329.aspx</a>  <a href="http://publications.environment-agency.gov.uk/PDF/GEHO0111BTJK-E-E.pdf">http://publications.environment-agency.gov.uk/PDF/GEHO0111BTJK-E-E.pdf</a>	
Flood Warnings	Environment Agency Floodline Warning Direct  Tel: 0845 988 1188  <a href="http://www.environment-agency.gov.uk/homeandleisure/floods/38289.aspx">http://www.environment-agency.gov.uk/homeandleisure/floods/38289.aspx</a>	
Exceedance Flows	CIRIA C635 – Exceedance in Urban Drainage: Good Practice  <a href="http://www.ciria.org/service/AM/ContentManagerNet/Search/SearchRedirect.aspx?Section=Search1&amp;content=product_excerpts&amp;template=/contentmanagernet/contentdisplay.aspx&amp;contentfileid=1426">http://www.ciria.org/service/AM/ContentManagerNet/Search/SearchRedirect.aspx?Section=Search1&amp;content=product_excerpts&amp;template=/contentmanagernet/contentdisplay.aspx&amp;contentfileid=1426</a>	

Information	Source(s)	Notes
Reservoir Flooding	Environment Agency Website  <a href="http://www.environment-agency.gov.uk/homeandleisure/floods/124783.aspx">http://www.environment-agency.gov.uk/homeandleisure/floods/124783.aspx</a>	
Paved Front Gardens	Planning Portal advice on paving of front gardens  <a href="http://www.planningportal.gov.uk/permission/commo-nprojects/pavingfrontgarden">http://www.planningportal.gov.uk/permission/commo-nprojects/pavingfrontgarden</a>  Department for Communities & Local Government/ Environment Agency - Guidance on the permeable surfacing of front gardens  <a href="http://www.communities.gov.uk/documents/planningandbuilding/pdf/pavingfrontgardens.pdf">http://www.communities.gov.uk/documents/planningandbuilding/pdf/pavingfrontgardens.pdf</a>	Planning Permission may be required for paving of front gardens.
Pre-Planning Discussions/Advise	Reigate & Banstead Borough Council  Duty Planning Officer - Tel: 01737 276000  Reigate and Banstead Borough Council Website – Charging for pre-application advice  <a href="http://www.reigate-banstead.gov.uk/planning/planning_advice_and_guidance/before_you_apply/charging_for_pre_application_planning_advice/index.asp">http://www.reigate-banstead.gov.uk/planning/planning_advice_and_guidance/before_you_apply/charging_for_pre_application_planning_advice/index.asp</a>	Charges apply for pre-application meetings. See website for details.
Surrey County Council Preliminary Flood Risk Assessment	Surrey County Council website  <a href="http://www.surreycc.gov.uk/people-and-community/emergency-planning-and-community-safety/flooding-advice/the-preliminary-flood-risk-assessment">http://www.surreycc.gov.uk/people-and-community/emergency-planning-and-community-safety/flooding-advice/the-preliminary-flood-risk-assessment</a>	
Redhill Town Centre Area Action Plan Flood Risk Assessment	Reigate and Banstead Borough Council  <a href="http://www.reigate-banstead.gov.uk/Images/Redhill%20Town%20FRA%20FINAL_report%20main_tcm9-46413.pdf">http://www.reigate-banstead.gov.uk/Images/Redhill%20Town%20FRA%20FINAL_report%20main_tcm9-46413.pdf</a>	



## **Appendix 5: Maps of Flood Risk in Reigate and Banstead**

The flood maps that accompany this SFRA are available on the Council's website. Please follow the link below:

[Flood Maps](#)

## Appendix 6: List of Local Flooding Incidents

Ref no	Road Name	Area	Perceived source
1	Brighton Road	Burgh Heath	Highway drainage
2	Brighton Road	Kingswood	Highway drainage
3	The Avenue	Tadworth	Highway drainage
4	Horley Road	Earlswood	Highway drainage
5	Woodhatch Road	Woodhatch	Highway drainage
6	Sandcross Road	Woodhatch	Highway drainage
7	Bonsor Drive	Kingswood	Highway drainage
8	Chipstead Lane	Kingswood	Highway drainage
9	Waterhouse Lane	Kingswood	Highway drainage
10	Kings Mill Lane	South Nutfield	Highway drainage
11	Outwood Lane	Chipstead	Highway drainage
12	Chipstead Valley Road	Woodmansterne	Highway drainage
13	Frenches Road	Redhill	Highway drainage
14	Holly Lane/Garrats Lane	Banstead	Highway drainage
15	High Street Banstead	Banstead	Highway drainage
16	Nork Way	Banstead	Highway drainage
17	Chestnut Road j/w Sarel way	Horley	Highway drainage
18	Langshott	Horley	Highway drainage
19	Balcombe Road	Horley	Highway drainage
20	Cross Road	Tadworth	Highway drainage
21	Kingswood Road	Tadworth	Highway drainage
22	Gatton Bottom/Back Lane	Merstham	Highway drainage
23	Downland Way	Tattenhams	Highway drainage
24	Reigate Road	Sidlow	Highway drainage
25	Horley Road	Earlswood	Highway drainage
26	Longbridge Road/Brighton Road	Horley	Highway drainage/main river
27	Horley Road	Earlswood	Highway drainage
28	Broad Walk	Hooley	Highway drainage
29	Brighton Road/The Warren	Kingswood	Highway drainage
30	Waterhouse Lane	Kingswood	Highway drainage
31	High Road	Chipstead	Highway drainage
32	Sutton Road	Banstead	Highway drainage
33	Winkworth Road	Banstead	Highway drainage
34	Woodmansterne Lane	Woodmansterne	Highway drainage
35	Brighton Road	Salfords	Highway drainage/main river
36	Park View Road	Salfords	Highway drainage/main river
37	Picketts Lane j/w Cross Oak Lane	Salfords	Highway drainage
38	Dovers Green Road/ Ironsbottom	Sidlow	Highway drainage/main river
39	Horse Hill	Hookwood	Highway drainage
40	Kinnersley Manor	Sidlow	Highway drainage
41	Great Tattenhams	Tattenham Corner	Highway drainage
42	West Drive	Burgh Heath	Highway drainage

43	Warren Road/Nork Way	Banstead	Highway drainage
44	Fir Tree Road/Warren Road	Banstead	Highway drainage
45	Bonehurst Road	Horley	Highway drainage/main river
46	Bolters Lane	Banstead	Highway drainage
47	Bolters Lane r/a to Garrats Lane	Banstead	Highway drainage
48	High Road	Chipstead	Highway drainage
49	Margery Lane	Lower Kingswood	Highway drainage
50	Raglan Road	Reigate	Highway drainage
51	Alders Road	Reigate	Public Sewer
52	Babylon Lane	Lower Kingswood	Land Drainage
53	Balcombe Road	Horley	Land Drainage
54	Ballards Green	Tadworth	Highway drainage
55	Bancroft Road	Reigate	Public Sewer
56	Bell Street	Reigate	Public Sewer
57	Brambletye Park Road	Redhill	Public Sewer
58	Breeches Lane	Walton on the Hill	Land Drainage
59	Bridge Way	Chipstead	Land Drainage
60	Brighton Road	Redhill	Land Drainage/Highway Drainage
61	Budgen Drive	Redhill	Public Sewer/Land Drainage
62	Carlton Road	Redhill	Public Sewer/Highway Drainage
63	Carshalton Road	Woodmansterne	Highway Drainage
64	Castle Drive	Horley	Land Drainage
65	Charlesfield Road	Horley	Land Drainage
66	Charman Road	Redhill	Public Sewer
67	The Close/Chart Lane	Reigate	Public Sewer
68	Church Street/Croydon Road	Reigate	Public Sewer
69	Clayhall Lane	Reigate	Land Drainage
70	Cormongers Lane	Merstham	Land Drainage
71	Copsleigh Avenue	Salfords	Public Sewer
72	Delabole Road	Merstham	Land Drainage
73	Dennis Close	Redhill	Land Drainage
74	Dorking Road	Walton on the Hill	Land Drainage
75	Downsway	Tadworth	Highway Drainage
76	Dunnymans Road	Banstead	Highway Drainage
77	Elmwood Road	Merstham	Highway Drainage
78	Emlyn Road	Redhill	Public Sewer
79	Epsom Lane North	Tadworth	Highway Drainage
80	Epsom Lane South	Tadworth	Highway Drainage
81	Eversfield Road	Reigate	Highway Drainage
82	Fairhaven Road	Redhill	Land Drainage
83	Fairlawn Grove	Banstead	Highway Drainage
84	Felland Way	Woodhatch	Public Sewer/Land Drainage
85	Flanchford Road	Reigate	Public Sewer
86	Flanchford Road	Reigate	Public Sewer
87	Forest Drive	Kingswood	Highway Drainage
88	Flanchford Road	Reigate	Highway Drainage

89	Fountain Road	Redhill	Public Sewer
90	Frenches Road	Redhill	Land Drainage/ Highway Drainage
91	Garlands Road	Redhill	Public Sewer
92	Gatton Bottom	Merstham	Land Drainage
93	Goodwood Road	Redhill	Public Sewer
94	The Green	Burgh Heath	Land Drainage
95	Haroldslea Drive	Horley	Land Drainage
96	Haroldslea Drive	Horley	Land Drainage
97	Haroldslea Drive	Horley	Land Drainage
98	Haroldslea Drive	Horley	Land Drainage
99	Hartwood Avenue	Horley	Public Sewer
100	Hatchlands Road	Redhill	Public Sewer
101	Heston Road	Earlswood	Public Sewer
102	High Road	Chipstead	Highway Drainage
103	High Street	Reigate	Public Sewer
104	Holmcroft	Walton on the Hill	Highway Drainage
105	Holmesdale Road	Reigate	Highway Drainage
106	Hooley Lane	Redhill	Highway Drainage
107	Horley Road/Earlswood Road	Redhill	Highway Drainage/Land Drainage
108	Earlswood Road/Horley Road	Redhill	Highway Drainage/Land Drainage
109	How Lane	Chipstead	Highway Drainage
110	Ironsbottom	Ironsbottom	Land Drainage
111	Kingfisher Drive	Redhill	Land Drainage/Public Sewer
112	Jason Close	Redhill	Land Drainage
113	Lackford Road	Woodmansterne	Highway Drainage
114	Laglands Close	Reigate	Land Drainage
115	Lake Lane	Horley	Land Drainage
116	Lambert Road	Banstead	Highway Drainage
117	Langshott Lane	Horley	Highway Drainage
118	Langshott	Horley	Land Drainage
119	Lee Street	Horley	Land Drainage
120	Limes Avenue	Horley	Land Drainage
121	Linkfield Gardens	Redhill	Public Sewer
122	Linkfield Street	Redhill	Public Sewer/Highway Drainage
123	Madeira Walk	Reigate	Land Drainage
124	Marketfield Way/Marketfield Road	Redhill	Land Drainage
125	Meadow Walk	Walton on the Hill	Land Drainage
126	Meath Green Lane	Horley	Land Drainage
127	Meath Green Lane	Horley	Land Drainage
128	Merstham Recreation Ground	Merstham	Public Sewer
129	Merland Green	Tadworth	Highway Drainage
130	Monkswell Lane	Lower Kingswood	Land Drainage
131	Monson Road	Redhill	Land Drainage
132	Noke Drive	Redhill	Highway Drainage/Land Drainage
133	Nutfield Road	Redhill	Highway Drainage
134	Oakwood Road/Wray Park Road	Reigate	Highway Drainage

135	Park Lane	Reigate	Public Sewer
136	Park Lane East	Reigate	Highway Drainage
137	Peeks Brook Lane	Horley	Land Drainage
138	Pebble Close	Tadworth	Highway drainage
139	Poynes Road	Horley	Highway Drainage
140	Reigate Road	Hookwood	Land Drainage
141	Ringwood Avenue	Redhill	Land Drainage
142	Roebuck Close	Reigate	Land Drainage
143	Riverside	Horley	Land Drainage
144	Sandhills Road	Reigate	Land Drainage
145	Shawley Way	Tattenhams	Highway Drainage
146	Silverlea Gardens	Horley	Highway Drainage
147	Sliphatch Road	Woodhatch	Land Drainage
148	St Hildas Close	Horley	Land Drainage
149	St Johns Road	Redhill	Public Sewer
150	St Lawences Way	Reigate	Highway Drainage
151	Starrock Lane	Chipstead	Land Drainage
152	Station Parade	Chipstead	Highway Drainage
153	Stocks Close	Horley	Highway Drainage/Land Drainage
154	Stockton Road	Reigate	Highway Drainage/Public Sewer
155	Subrosa Drive	Merstham	Land Drainage
156	The Green	Burgh Heath	Highway Drainage
157	Thornton Close	Horley	Land Drainage
158	Vicarage Lane	Horley	Land Drainage
159	Victoria Road	Redhill	Public Sewer
160	Weldon Way	Merstham	Public Sewer
161	West Avenue	Salfords	Highway Drainage/Land Drainage
162	Whitepost Hill	Redhill	Highway Drainage/Land Drainage
163	Wimborne Avenue	Redhill	Land Drainage
164	White Hill	Chipstead	Land Drainage/Highway Drainage
165	Withybed Corner	Walton on the Hill	Land Drainage
166	Woodroyd Gardens	Horley	Land Drainage
167	Wray Common Road	Reigate	Highway Drainage
168	Wray Park Road	Reigate	Public Sewer
169	Wray Park Road	Reigate	Land Drainage

## **Appendix 7: Reigate and Banstead Borough Council Flood Plan Requirements**

All Flood Plans should include:

1. Identification of extent, depth and velocity, if available, also anticipated/possible duration of flooding in a 1 in 100 year + climate change storm, or other relevant storm
2. Anticipated/possible number, and vulnerability classification of residents/users (e.g. children, disabled, aged, etc.)
3. Plan of dry access routes, if they exist, or safest routes if dry routes don't exist
4. Details of safe havens
5. Details of Environment Agency Flood Warning Area and/or proposed Warning System for residents/users, including likely timing/duration of warning, with special consideration for night-time floods
6. Evacuation Procedure before the flood
7. Safe Haven Procedure for full duration of flood, plus Emergency Evacuation Procedure in case of sudden illness or exceedence flood

**We are happy to provide information in other languages, large print, braille or on audio tape – please contact our Help Line 01737 276000 if you would like this service**

### **Portugese**

Estamos ao dispor para fornecer informações noutras línguas, em formato ampliado, em Braille ou em cassete áudio – se pretender este serviço, deverá contactar a nossa linha de apoio através do número 01737 276000

### **Urdu**

ہم بخوشی دوسری زبانوں، بڑے حروف، بریل یا آڈیو ٹیپ کی شکل میں معلومات فراہم کرتے ہیں۔ اگر آپ کو یہ خدمت درکار ہے تو براہ کرم ہماری ہیلپ لائن 01737 276000 پر رابطہ کریں

### **Punjabi**

ਅਸੀਂ ਖੁਸ਼ੀ ਨਾਲ ਦੂਜੀਆਂ ਭਾਸ਼ਾਵਾਂ, ਵੱਡੇ ਅੱਖਰਾਂ ਦੀ ਛਪਾਈ, ਬ੍ਰੇਲ ਜਾਂ ਆਡੀਓ ਟੇਪ ਤੇ ਜਾਣਕਾਰੀ ਮੁਹੱਈਆ ਕਰਦੇ ਹਾਂ - ਜੇ ਤੁਸੀਂ ਇਹ ਸੇਵਾ ਲੈਣੀ ਚਾਹੋ ਤਾਂ ਕਿਰਪਾ ਕਰਕੇ ਸਾਡੀ ਹੈਲਪਲਾਈਨ 01737 276000 ਤੇ ਸੰਪਰਕ ਕਰੋ

### **Bengali**

আমরা আপনাকে আনন্দের সাথে অন্যান্য ভাষায়, বড় ছাপার হরফে, ব্রেইলে বা অডিও টেপে তথ্য দিতে পারি - আপনি এই পরিষেবা পেতে চাইলে অনুগ্রহ করে আমাদের হেল্প লাইনে 01737 276000 নম্বরে যোগাযোগ করুন

### **Polish**

Chętnie udzielimy Państwu informacji w innej wersji językowej, w wersji dużym drukiem, w alfabecie Braille'a lub na taśmie dźwiękowej – jeśli chcieliby Państwo skorzystać z powyższych usług proszę o skontaktowanie się z naszą infolinią pod numerem 01737 276000

Punjabi	ਪੰਜਾਬੀ
Urdu	اردو
Bengali	বাংলা
Polish	Język polski
Portuguese	Português

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