Section 19 Flood Investigation Report: Woking Borough

28 October 2015

SURREY

Section 19 Report

Purpose

This document has been prepared specifically for the purpose of meeting the requirements of Section 19 of the Flood and Water Management Act 2010.

The report investigates which risk management authorities (RMAs) had relevant flood risk management functions during the flooding that took place in the winter of 2013/14. The report also considers whether the relevant RMAs have exercised, or propose to exercise, their flood risk management functions. It does not address wider issues beyond that remit.

The supporting data has been put together based on records of internal property flooding and road closure information from a variety of sources. While every effort has been made to verify the locations of the Section 19s identified, the nature of the data and the methods used to collate this information mean that it does not include every occurrence of flooding. This data only identifies where flooding has been reported and is indicative only.

Location Name	Woking; Blackhorse Road, Byfleet, Byfleet (south) and Wisley, Old Woking and Maybury, Horsell, and Sutton Green and Worplesdon
Date(s) of Incidents	Winter 2013-14
Section 19 Trigger(s)	Internal property flooding at multiple addresses Road closures

Glossary

The table below defines some of the frequently used terminology within the flood risk management industry and this document.

Acronym/Term	Definition
Annual Probability	Throughout this document, flood events are defined according to their likelihood of occurrence. The term 'annual probability of flooding' is used, meaning the chance of a particular flood occurring in any one year. This can be expressed as a percentage. For example, a flood with an annual probability of 1 in 100 can also be referred to as a flood with a 1% annual probability. This means that every year there is a 1% chance that this magnitude flood could occur.
EA	Environment Agency
Flooding Asset Register	The register is a record of all structures or features designated by the EA, the LLFA, the district and borough councils or the IDB which have an effect on flood risk. More information on the Flooding Asset Register can be found on SCC's website and in Schedule 2 of the Flood and Water Management Act (2010).
Flood Risk Management Function	A flood risk management function is a function listed in the Act (or related Acts) which may be exercised by a risk management authority for a purpose connected with flood risk management.
Very Low Flood Risk	Area with a very low probability of flooding from rivers (< 1 in 1,000 annual chance of flooding or <0.1%).
Low Flood Risk	Area with a low probability of flooding from rivers (between a 1 in 1000 and 1 in 100 annual chance of flooding or between 0.1% and 1%)
Medium Flood Risk	Area with a medium probability of flooding from rivers (between a 1 in 100 and 1 in 30 annual chance of flooding or between 1% and 3.33%).
High Flood Risk	Area with a high probability of flooding from rivers (> 1 in 30 annual chance of flooding or greater than 3.3%).
IDB	Internal Drainage Board
Instances of property	This is a count of the reported incidents of internal property flooding that occurred across

flooding	Winter 2013/2014. This means that properties which were flooded twice are accounted for twice. It is therefore not a count of the number of properties.
LLFA	Lead Local Flood Authority
Main River	Main rivers are usually larger streams and rivers, but some of them are smaller watercourses of local significance. Main Rivers indicate those watercourses for which the Environment Agency is the relevant risk management authority.
Ordinary Watercourse	Ordinary Watercourses are displayed in the mapping as the detailed river network. An ordinary watercourse is any watercourse (excluding public sewers) that is not a Main River, and the Lead Local Flood Authority, District/Borough Council or Internal Drainage Board are the relevant risk management authority.
RMA	Risk Management Authority
SCC	Surrey County Council
SCG	Strategic Command Group
TW	Thames Water
WBC	Woking Borough Council
uFMfSW	Updated Flood Maps for Surface Water

Sources of Flooding

The following report considers the flooding which occurred in the winter of 2013-14. The table below describes different sources of flood risk.

Source	Description
Fluvial flooding	Exceeding of the flow capacity of river channels (whether this is a Main River or an Ordinary Watercourse), leading to overtopping of the river banks and inundation of the surrounding land. Climate change is expected to increase the risk of fluvial flooding in the future.
Tidal flooding	Propagation of high tides and storm surges up tidal river channels, leading to overtopping of the river banks and inundation of the surrounding land.
Surface water flooding	Intense rainfall exceeds the available infiltration capacity and/or the drainage capacity leading to overland flows and surface water flooding. Climate change is expected to increase the risk of surface water flooding in the future. This source is also referred to as pluvial flooding.
Groundwater flooding	Emergence of groundwater at the surface (and subsequent overland flows) or into subsurface voids as a result of abnormally high groundwater flows, the introduction of an obstruction to groundwater flow and/or the rebound of previously depressed groundwater levels.
Sewer flooding	Flooding from sewers is caused by the exceeding of sewer capacity and/or a blockage in the sewer network. In areas with a combined sewer network system there is a risk that land and infrastructure could be flooded with contaminated water. In cases where a separate sewer network is in place, sites are not sensitive to flooding from the foul sewer system.
Other sources of flood risk	Flooding from canals, reservoirs (breach or overtopping) and failure of flood defences.

Flood Risk Data Sources

The following sources of data have been used in preparing this report and its associated mapping:

- Fluvial Flood Risk
  - Flood Risk Mapping (Risk of Flooding from Rivers and Sea; EA)
  - Flood Warning and Alert areas (EA)
- Surface Water Flood Risk
  - Updated Flood Maps for Surface Water (uFMfSW; EA)
- Groundwater
  - Susceptibility to Groundwater Flooding (British Geological Survey)
- Historic Flood Evidence
  - Historic Flood Map (EA)
  - Wetspots (SCC)
  - Property Flooding Database (SCC)
  - Historic Flooding Incidents Database (SCC)

If you are aware of any historical flooding in the area which is not highlighted on the mapping please report it, with any evidence you have (for example photos or videos), to flooding.enquiries@surreycc.gov.uk.

Other Data Sources

The following sources of data have been used in preparing this report and its associated mapping:

- Geological information
    - Superficial geology (Geology of Britain Viewer; British Geological Survey)
    - Bedrock geology (Geology of Britain Viewer; British Geological Survey)

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1. Executive Summary

The purpose of this report is to investigate which Risk Management Authorities (RMAs) had relevant flood risk management functions during the flooding that took place within the boundary of Woking Borough Council (WBC) in the winter of 2013/14. The report also considers whether the relevant RMAs have exercised, or propose to exercise, their risk management functions (as per section 19(1) of the Flood and Water Management Act 2010). It does not address wider issues beyond that remit.

The flooding in Woking was predominately due to fluvial and surface water sources. This was caused by unprecedented rainfall during the winter 2013/14 period (275% compared with an average winter) and an excessive amount of rainfall which drainage systems and river channels were not able to cope with. There were approximately 40 incidents of internal property flooding in Woking during winter 2013/14.

The Environment Agency (EA) is the lead RMA for incidents of fluvial flooding from Main Rivers, though Thames Water (TW), Surrey County Council (SCC) and WBC also performed other functions during that event, some of which were under different legislation including the Civil Contingencies Act 2004 and the Water industry Act 1991. The actions of the authorities are summarised below:

1.1. Environment Agency

- Operated Flood Alert and Flood Warning service.
- Sent out flood ambassadors and flood data recorders to the areas affected by flooding.
- Supported resident engagement events.
- Operated flood risk management assets during the flooding.
- Carried out flood risk mitigation works.
- Undertaking initial assessments to determine the feasibility of flood alleviation schemes.
- Adjusted flood warning trigger levels using evidence collected during the flooding, to improve their flood warning service.

1.2. Thames Water

- Main focus during event was on maintaining customer services, on protecting assets vital for the ongoing delivery of service, and on ensuring that where there was service disruption they were able to resume it as soon as possible.
- Working with WBC to investigate options to reduce the risk of flooding from drainage systems in Woking Borough.

1.3. Surrey County Council

- A number of roads were closed for public safety during the flood event.
- Surrey Fire and Rescue Service pumped water away from properties during the flooding to reduce the damage caused.
- Staff assisted residents on the ground, working in partnership with other RMAs to help inform residents, answer their queries (also via the call centre), deploy signs and sandbags to inform the community of risks, such as road closures and reduce flooding to the highway respectively.
- Since the flooding the affected highways and their drainage assets have been inspected and repairs carried out or a programme of works developed to address the damage caused.

- The Local Flood Risk Management Strategy (LFRMS) was published in December 2014.
- Section 19 reports have been produced for the flooding experienced across the county in Winter 2013/14.
- Staff attended resident engagement events after the flooding to hear their concerns.
- Cleared trees and debris from parts of the drainage network and carried out ditching works, alongside other maintenance works with other RMAs to enable drainage systems to function normally.

1.4. Woking Borough Council

- Carried out a programme of ditch clearing and culvert inspections jointly with riparian owners and other RMAs (where necessary).
- Carried out inspections, investigations and flood risk mitigation works.
- Provided residents with sandbags and assisted residents with evacuations.
- The WBC flood plan and Multi Agency Flood Plan have been updated.
- Monitored river levels at key locations.
- Provided council tax rebates to residents and businesses that were affected by flooding.
- Provided rebates to residents for flood repair work through the Repair and Renew Grant.
- Working with residents to prepare flood plans and install property level protection measures.
- Attended resident engagement events.

Throughout the flooding, Strategic Command Groups (SCG's) with representatives from the RMAs were in place to coordinate the emergency response and recovery.

2. Introduction

2.1. Section 19 Investigation Requirement

Under the Flood and Water Management Act 2010 the Lead Local Flood Authority (LLFA) must (to the extent that it considers it necessary or appropriate) undertake an investigation upon becoming aware of a flood incident within its area.

An LLFA is defined under Section 6(7) of Flood and Water Management Act as being the County Council for that area. Section 19(1) requires that the investigation determines the RMAs that have relevant flood risk management functions and whether each of those authorities have exercised or propose to exercise those functions.

Section 19(2) requires that the LLFA publishes the results of its investigation and notify the relevant RMAs accordingly.

This report covers flooding during the winter of 2013/14 only. As flooding was widespread across Surrey, multiple reports have been produced.

2.2. Locations of the investigations

This report addresses sites that flooded within the borough of Woking. There are 25 sites in total, spread across six sub areas. The sub areas are illustrated in Figure 2-1 below. There were approximately 40 incidents of internal property flooding in Woking.

Due to the sensitivities in publishing property flooding information, this report does not contain a comprehensive list of the S19 sites but supporting maps showing the sub areas in more detail are available.

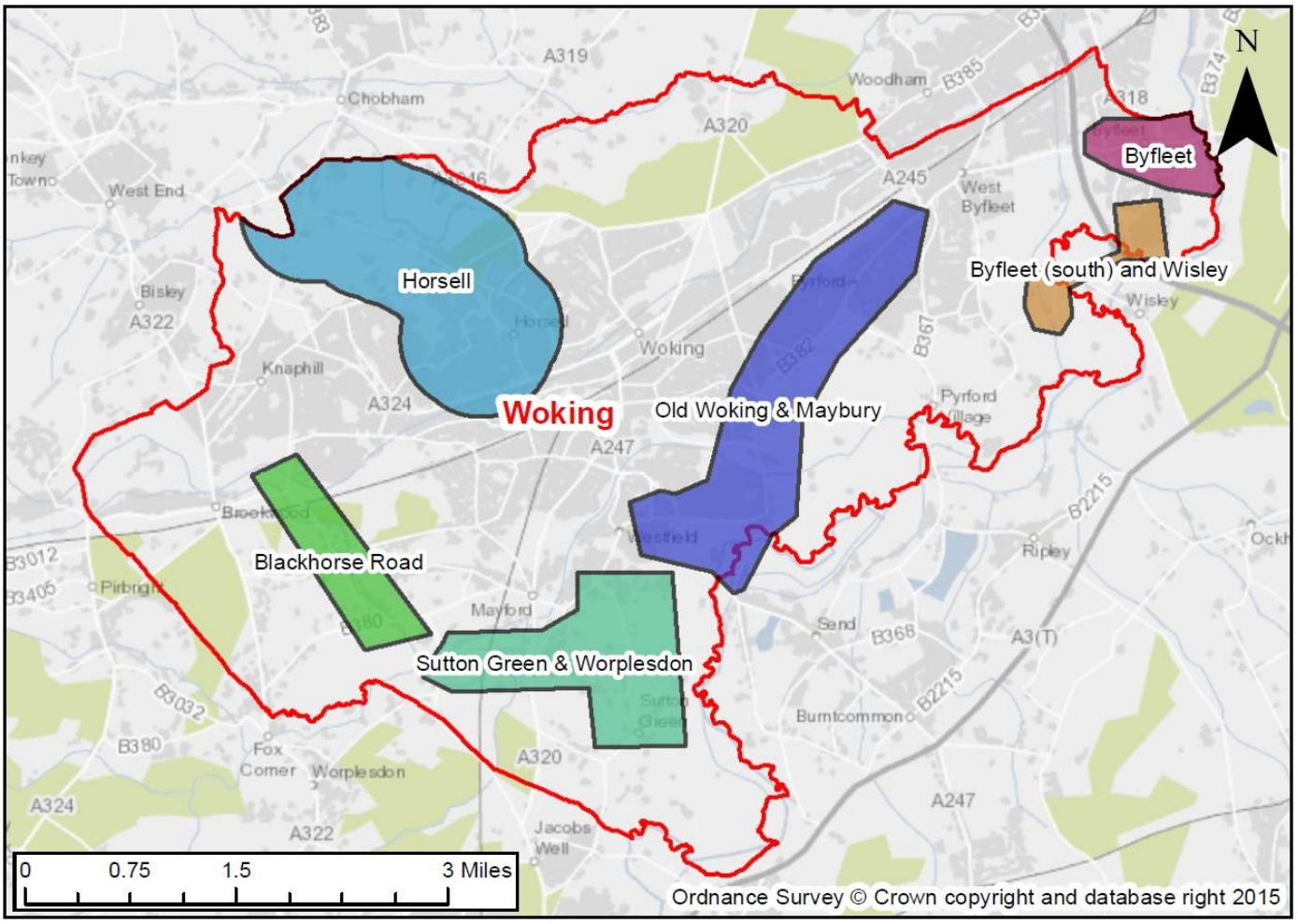

Figure 2-1 Location of Sub Areas within Woking Borough used in this report

3. Background Weather and Catchment Conditions

3.1. Weather Conditions

The overall amount of rainfall recorded during the winter 2013/14 period was exceptional: on average, 446mm across the South East of England. This set new records for each of the individual months and for the season as a whole. The totals represented a significant proportion of the average annual rainfall. Table 3-1 indicates that parts of South East England received around two and a half times the amount of rainfall that they would normally expect at this time of year.

This caused wide-spread flooding across Surrey from a range of sources including groundwater as the levels across the region had risen so high. In some areas of South East England they exceeded records set in 2000/01, the last time significant disruption from groundwater flooding was recorded.

Table 3-1 Winter 2013/14 rainfall, compared with average winter totals (December, January and February)

County	Winter 2013/14 rainfall (mm)	Winter long term average rainfall (mm)	Winter 2013/14 rainfall compared with winter average
Oxfordshire	350	170	205%
Berkshire	415	190	220%
Hampshire	570	225	255%
Surrey	560	205	275%
Buckinghamshire	420	185	230%

Storm events hit the UK on 18 to 19, 23 to 27 and 30 to 31 December 2013, followed by 3 and 5 January 2014. These storms came from the Atlantic and were characterised by unusually large and deep areas of low pressure, which brought heavy rainfall and strong winds. The rainfall on individual days was not so exceptional, however the combined effect of heavy rain falling on saturated ground led to widespread flooding.

3.2. Catchment conditions

There are three main catchments across the Woking Borough area: The River Wey which follows the Borough's southern boundary, the Addlestone Bourne in the north of Woking Borough and the Rive which runs through the city centre of Woking. These three rivers all flow generally in a north easterly direction towards the River Thames. The Hoe Stream is a tributary to the River Wey and flows through the south of Woking.

On the 23 December nearly 60mm of rainfall was recorded in an 18-hour period at the EA gauge at Cranleigh Waters, south of Guildford. It was this storm that was responsible for the flooding on the River Wey. Christmas Eve was mostly dry, but levels rose steadily throughout the day and reached their highest in the early hours of Christmas Day in the Godalming and Guildford area. On the lower reaches of the Wey (Byfleet, Old Woking and Weybridge), the highest levels were not reached until Boxing Day. Levels rose 2.5m above normal winter levels in Guildford, although they did not quite reach the levels of November 2000.

There were several dry days between Christmas and New Year that allowed river levels across the area to subside. However, the period around New Year and the first week of 2014 was again exceptionally wet. Rainfall totals between 30 December and 8 January averaged 90mm.
In some areas there was up to 150mm of rain. The heaviest rainfall recorded across Surrey and North Hampshire was in locations that had already been badly affected over Christmas.

Levels on the River Wey rose again on New Year's Day but they did not exceed those reached over Christmas. Widespread property flooding was not repeated. During this period, the highest rainfall on a single day was 35mm at Bordon on the Upper Wey: this was considerably less than that recorded on 23 December.

Following the prolonged rainfall, groundwater levels across South East England also rose dramatically. In some areas, they exceeded records set in 2000/01, the last time significant disruption from groundwater flooding was recorded.

The EA estimated the return period for the River Wey to have reached a 1 in 20 to 1 in 30 year annual chance event and the Hoe Stream a 1 in 5 to a 1 in 15 year annual chance event.

Table 3-2 Return periods for selected tributaries of the River Thames

Tributary	Location	Winter 2013/14	Associated month
Hoe Stream	Woking (South)	5-15	December
Wey	Weybridge	20-30	December
Wey	Guildford	20-30	December

4. Identification of Relevant Risk Management Authorities

There are a range of RMAs which together cover all sources of flooding.

The EA is responsible for taking a strategic overview of the management of all sources of flooding and coastal erosion in England and Wales. They have prepared strategic plans which set out how to manage risk, provide evidence for example their online flood maps, and provide advice to the Government. They provide support to the other RMAs through the development of risk management skills and provide a framework to support local delivery. The EA also has operational responsibility for managing the risk of flooding from Main Rivers, reservoirs, estuaries and the sea, as well as being a coastal erosion RMA. Main Rivers are defined through an agreed map which is updated annually. These tend to be the larger rivers in the country and the EA have permissive powers to carry out maintenance works on them.

LLFAs are responsible for developing, maintaining and applying a strategy for local flood risk management in their areas. As part of this, the LLFA liaises regularly with the EA as well as the other RMAs to ensure that all sources of flooding in their area are being properly managed. They need to produce reports when there is a reported flood, and they have to keep a register of flood management assets. They also have lead responsibility for managing the risk of flooding from surface water, groundwater and Ordinary Watercourses. Ordinary Watercourses are rivers that are not designated as ‘Main Rivers’.

District and Borough Councils can carry out flood risk management works on minor watercourses, working with the LLFA. Through the planning processes, they control development in their area, ensuring that flood risks are effectively managed. If they cover part of the coast, then District and Unitary councils also act as coastal erosion RMAs.

Internal Drainage Boards (IDB) are responsible for water level management in low lying areas. Not all areas require an IDB, and they currently cover approximately 10% of England. They work in partnership with other authorities and land owners to actively manage and reduce the risk of flooding.

Water and sewerage companies are responsible for managing the risks of flooding from drainage systems, including both their surface water only systems and combined sewer systems.

Highway Authorities are responsible for providing and managing highway drainage and roadside ditches, and must ensure that road projects do not increase flood risk.

Table 4-1 below summarises the RMAs responsible for the sites within this report. The ticks indicate which authorities have responsibility for which function. SCC is the LLFA. TW is the water company that has responsibility for all sources of sewer flooding. There are no IDBs in Woking Borough.

Table 4-1 Risk Management Authorities

Flood Source	Environment Agency	Lead Local Flood Authority	Land Drainage Authority		Water Company	Highway Authority
		Surrey County Council		Borough / District Council	Thames Water	Surrey County Council
Main River	✓					
Surface Water		✓				✓
Surface Water (on or coming off the highway)						✓
Sewer flooding					✓	
Ordinary Watercourse			✓	✓		
Groundwater		✓				
Reservoirs	✓					

5. Strategic Actions and Flood Risk Management Functions

RMAs have defined flood risk management functions under the Flood and Water Management Act (2010). A flood risk management function is a function listed in the Act (or related Acts) which may be exercised by a RMA for a purpose connected with flood risk management. The following section sets out the strategic actions and relevant flood risk management functions that were carried out before, during and after the flooding that occurred across Surrey and particularly in Woking during the Winter of 2013/14.

Environment Agency

The EA have a number of flood risk management functions, which include (but are not limited to); undertaking and maintaining flood mitigation works/defences, strategic responsibility for managing the risk of reservoir flooding, consenting and enforcement, the provision of strategic flood risk management plans, operation of flood alerts, flood warnings and flood risk management assets and designation of structures and features that affect flood risk. The relevant functions undertaken are listed below:

- Operated Flood Alert and Flood Warning service.
- Operated flood risk management assets during the flooding.
- Carried out flood risk mitigation works.

In addition, the EA carried out the following actions across the County:

- Participated in the Strategic and Tactical Command Groups once a major incident had been declared to respond to the flooding across Surrey.
- Cleared 860 blockages and storm damage incidents.
- Reported 1087 pollution incidents.
- 125 Flood Ambassadors visited 95 locations.
- 70 flood data recorders sent to more than 100 locations.
- Supported (and are supporting) community groups to help develop their community flood/emergency plans.
- Sent out newsletters to inform residents of their site investigation works and are finalising plans for a regular community newsletter.
- Met with local people to discuss their ideas and are now studying these proposals in more detail.

Thames Water

TW have flood risk management functions under the Water Resources Act (1991). Relevant actions of water companies include: the inspection, maintenance, repair and any works to their drainage assets which may include watercourses, pipes, ditches or other infrastructure such as pumping stations.

No specific flood risk management functions have been identified as being directly relevant to the 2013/2014 flooding incident in Woking. However, this investigation has identified other relevant actions carried out by TW.

TW put in place winter arrangements for responding to winter weather conditions. This included triggers for the scaling up of resources and management for a range of foreseeable weather conditions. During the event their main focus was on maintaining customer services, on protecting

assets vital for the ongoing delivery of service and on ensuring that where there was service disruption they were able to resume it as soon as possible. To these ends TW carried out the following actions within Surrey:

- Physical protection measures – deployment of flood barriers and sandbags to TW sites (both water and wastewater).
- Regular (often daily) physical checks of unmanned sites to ensure that they were working and in workable condition.
- Optimisation of use of the sewerage network – where possible work such as investigations and sewer cleaning was carried out to ensure that sewers and pumping stations were working to optimum capacity.
- Increased the number of engineers and staff on the ground to investigate flooding reports - Network Engineers visited internally flooded properties where sewer flooding was the primary cause.
- Provided a sewer flooding information leaflet for general distribution to properties affected and attended a number of local flood meetings.
- Provided support to Affinity Water with risk assessments and contingency planning for their sites in Surrey which were at risk of inundation.

Surrey County Council

SCC, as LLFA, has flood risk management functions, which include (but are not limited to): the provision of a local flood risk management strategy (LFRMS), designation and maintenance of a register of structures or features that have a significant effect on flood risk, consenting and enforcement works on Ordinary Watercourses, undertaking works to mitigate surface water and groundwater flooding and undertaking Section 19 investigations. SCC also has responsibilities as a Highways Authority and as an Emergency Responder (under the Land Drainage Act 1991 and the Civil Contingencies Act 2004 respectively) which may relate to flooding. SCC's relevant flood risk management functions undertaken are listed below:

- The LFRMS was published in December 2014.
- A High Capacity Underground pipe that runs through Sheerwater and emerges just east of Sheerwater Bridge has been identified as a key drainage asset in Woking and added to the Flooding asset register.
- Section 19 reports have been produced for the flooding experienced across the county in Winter 2013/14.

In addition SCC carried out the following activities across Surrey;

- Officers inspected flood affected roads, after which defect repairs were undertaken by SCC's Contractors; Kier. Where extensive areas of carriageway were damaged by the flooding, they were assessed for inclusion into the Project 400 programme; a targeted programme to resurface and repair roads which were damaged by the Winter 2013/14 floods.
- All flood affected roads in Surrey were assessed for potential schemes which may be included in the Project 400 programme.
- Cleansed and re-opened roads as quickly as possible after the flooding.
- Surrey Fire & Rescue Service (SFRS) pumped flood waters away to protect residents, property and infrastructure during the flooding.
- During the flooding SCC and TW were in discussions about the opportunity for joint working across the County.

- The Surrey Strategic and Tactical Coordination Groups met for a response meeting in advance of the February 2014 event to set up coordination between authorities.
- Provided sandbags to slow down the ingress of water into properties, and recycled sandbags after the event.
- Staff attended resident engagement events after the flooding to hear their concerns.
- After the storms and flooding, SCC cleared trees, debris and carried out ditching works to enable the drainage systems to function normally again.
- Operated a call centre throughout the flooding which dealt with residents queries and have since hired a Community Resilience Officer to support communities in becoming more resilient to flooding amongst other issues.

Woking Borough Council

Woking as a Borough Council have the following flood risk management functions: to designate structures and features that affect flood risk and they may also undertake works on Ordinary Watercourses to reduce flood risk, however this is a permissive power.

Specifically in the Borough of Woking the actions listed below were carried out:

- Updated the WBC flood plan and Multi Agency flood plan with the relevant information from the event.
- Delivered sandbags to properties affected by flooding as well as helping residents evacuate where necessary.
- Throughout the flooding continued to monitor river levels at key locations.
- Staff attended resident engagement meetings to address residents concerns.
- Co-ordinated the installation of Property Level Protection (PLP) measures to internally flooded properties as part of the Repair and Renewal Grant.
- Cleared debris, fallen trees and carried out ditching and drainage work to enable drainage systems to function adequately.
- Officers have and continue to investigate and record flooding events.

In addition, WBC carried out the following actions across the county;

- Provided a sweeper to assist Runnymede in their clean-up operations.

All RMAs

All RMAs under the Flood and Water Management Act (2010) have a responsibility to cooperate and coordinate with regards to their flood risk management functions, including raising awareness of flood risk and the sharing of information. Landowners also have riparian responsibilities under the Flood and Water Management Act (2010) to maintain and undertake any necessary works on assets on their land (with consent from the relevant RMA) which may have an effect on flood risk including watercourses and drainage assets.

6. Format of Subsequent Sections

The sites in this report have been grouped into sub areas based on location.

There are six sub areas in this report, all within WBC.

Each sub area will be introduced and information relevant to the whole sub area presented. Responsible RMAs will be identified at sub group level, and their response to the flood event summarised.

Individual site information has predominantly come from existing SCC information (collated from a variety of sources) and EA datasets. No site visits were undertaken as there are over 500 sites to report on in Surrey, however borough and district councils were consulted to collect any further information in relation to the flood events at the relevant sites. If further information is required in relation to any of the sites, requests should be submitted to SCC via flooding.enquiries@surreycc.gov.uk.

7. Sub Area: Blackhorse Road

7.1. Sub Area Definition

This sub area is located around Blackhorse Road in Woking.

7.2. Location and Catchment Description

Blackhorse Road is located to the south west of Woking Town Centre. The area is rural in nature and a number of large detached dwellings are located sporadically along the roads. A complex network of drainage ditches and streams are responsible for the drainage of the area as well as the residential developments of Knaphill to the north and Brookwood to the North West.

There are two large golf courses in the area, which both drain to the stream that all drainage ditches in the area discharge to. This stream flows in a south east direction under Blackhorse Road at the railway bridge through a culvert, and continues to flow eastwards towards the Hoe Stream under Saunders Lane and Smarts Heath Road and through a SSSI until it discharges to the Hoe Stream.

According to the EA online fluvial flood risk maps, the northern end of Blackhorse Road is at risk of fluvial flooding with a medium to high chance of flooding (greater than a 1 in 100 annual chance of flooding, with some areas at risk during events with an annual chance of 1 in 30 or greater). The flood risk maps do not take into account climate change and are designed only to give an indication of flood risk to an area of land and are not sufficiently detailed to show whether an individual property is at risk of flooding. In addition to fluvial flood risk the EA online surface water flooding maps show flow routes which cross Blackhorse Road to the north and to the south. These flow routes follow the drainage ditch paths and enter into the stream to the east of the road and present a low to high risk of surface water flooding on the road in locations described above.

Blackhorse Land is predominantly underlain by sand from the Bagshot formation, with a small band of sand, silt and clay from the Windlesham formation to the north. There are no superficial deposits. There is the potential for groundwater flooding to occur at the surface along Blackhorse Road, to the north of Heath House Road.

Highways ditches run along both sides of Blackhorse Road for the length of carriageway covered by this report. The sections below describe the drainage arrangements in more detail.

Blackhorse Road (north)
Blackhorse Road by the railway embankment was closed due to flooding at the beginning of February 2014. The stream flows through a culvert under the road, which causes a constriction and backing up overtops the bridge level at this location. The water flowed down the road under the railway bridge to the stream on the other side, with a depth greater than 300mm. At this location the stream is joined by a local drainage system from a golf course to the west. Due to the condition of the culvert under the road being unknown, the road was closed to traffic for safety reasons.

Blackhorse Road (Central)
Flooding was reported as occurring at Blackhorse Road adjacent to properties during late December 2013 and early January 2014. The initial cause of flooding was due to excessive rainfall and a blocked outfall of the ditch and pipe network. The ditches along the road at this location were full of debris and required maintenance.

A drain (100mm diameter) runs through the grounds of a residential property, taking run-off from the golf course located to the west as well as the grounds of the property. This drain discharges into the

highway drain (150mm diameter) located in the highway verge at the front of the property. The highway drain discharges to a ditch on the adjacent side of the highway. Another ditch is located upstream of the drainage network which drains the highway and adjacent land. The outfall to the drainage network was blocked by debris.

Blackhorse Road (south) and Smarts Heath Road
Blackhorse Road joins Smarts Heath Road to the south. Smarts Heath Road crosses the stream by a double arched bridge, causing a local constriction to flow and allowing the water to back up. This location is where the Hoe Stream to the south can have a significant impact on the flow of the stream as this channel allows floodwater from the Hoe to back up. When the stream and the Hoe Stream are in flood the drainage ditches are unable to discharge. This causes them to back up.

A depth of 250mm of flood water covered Smarts Heath Road near the Saunders Lane drainage ditches (to the east of Blackhorse Road), caused by a combination of the flooding from the Hoe Stream, the flow from the drainage ditches at this location and the blockage of the local drainage.

7.3. Identification of Relevant RMAs

Following a range of consultation events during and since the floods, the relevant RMAs in this sub area have been identified as being Woking WBC and SCC.

7.4. Exercised Flood Risk Management Functions and Other Actions

Woking Borough Council

Actions prior to and during the flood incident

To prevent one property from flooding, a sand bag wall was constructed between the property and the piped ditch, pumping was carried out to discharge the surcharged water to the adjacent ditch.

WBC attended the site on the 24 January and jetted the network down to the outfall. Following jetting, the drainage system was flowing and surface flooding receded as the ditches began to fill.

Actions since the flood incident

- Riparian owners have been identified and some ditches have been cleared and dug out in liaison with riparian owners to allow the conveyance of surface water and long term maintenance. Where riparian owners have not cleared their ditches, WBC and SCC are working jointly to get the ditch work undertaken.
- SCC and WBC have worked and are continuing to work in partnership with private landowners in regards to drainage in Saunders Lane, specifically maintenance of riparian owned ditches.
- Plan to install a trash screen to prevent pipe at the north of Blackhorse Road from being blocked by debris.
- Plan to investigate the culvert under Blackhorse Road to the north to see if capacity can be increased or additional storage areas can be identified, in partnership with SCC.
- Liaised with the Golf Course to ensure that ditch maintenance is undertaken and plan to identify possible areas to restrict flow at times of extreme rainfall.
- Further investigations will be undertaken into the effect of the Hoe Stream at Smarts Heath Road and interaction when the Hoe Stream is out of banks and possible mitigation measures in liaison with land owners.

Section 5 provides details of WBC's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

Surrey County Council

Actions prior to and during the flood incident

There were a number of temporary road closures during the flooding, which included Blackhorse Road.

Actions since the flood incident

Trash screens have been replaced at the junction of Saunders Lane and Heath House Lane. Extensive maintenance work has also been undertaken by SCC at this location.

Section 5 provides details of SCC's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

8. Sub Area: Byfleet

8.1. Sub Area Definition

This sub area covers the area of Byfleet.

8.2. Location and Catchment Description

Weyside Close, Mill Lane, High Road and Bridge Close are located to the east of Byfleet adjacent to the River Wey. The roads are comprised of large detached residential dwellings. The River Wey is located to the east of Weyside close and forms the eastern boundary of the properties within Weyside Close.

On 25 and 26 December, Byfleet experienced its worst flooding since 2000. Properties flooded from the River Wey following heavy rainfall on already saturated ground. Property flooding started at around midday on 25 December and became deeper and more widespread throughout the day. The river reached its highest level on 26 December.

Residents in Bridge Close, High Road and Weyside Close reported flooding from the River Wey. The River Wey overtopped its banks to the south of these properties and to the east. It was reported by residents that the flood water initially came from the back through the gardens in Bridge Close to High Road and then down the road way into Weyside. The River Wey also overtopped its banks adjacent to the properties within Weyside and flooded the properties directly from the rear, at the same time water was also entering the properties from the front.

According to the EA online fluvial flood risk maps, the majority of the sub area is at risk of fluvial flooding with a high to medium chance of flooding (greater than a 1 in 100 annual chance of flooding, with some areas at risk during events with an annual chance of 1 in 30 or greater). The flood risk maps do not take into account climate change and are designed only to give an indication of flood risk to an area of land and are not sufficiently detailed to show whether an individual property is at risk of flooding.

According to the EA online surface water flood risk maps, the roads in this area are at low or very low risk of surface water flooding (less than a 1 in 1000 annual chance event). Fluvial flooding is clearly the greater risk.

The return period of the level of flooding experienced in winter 2013/14 on the River Wey at Guildford (to the South West) and Weybridge (to the North East) is estimated to be 1 in 20 to 30 annual chance event.

Parts of the Byfleet sub area are within a Flood Warning and Flood Alert Area. These are areas for which the EA provides free flood warnings.

The underlying geology is sand from the Bagshot formation, with superficial bands of Alluvium (clay, silt, sand and gravel) around Mill Lane and Kempton Park Gravel Formation (sand and gravel) elsewhere. These superficial deposits are associated with fluvial environments and can convey flood waters. There is a limited potential for groundwater flooding to occur across the sub area.

8.3. Identification of Relevant RMAs

Following a range of consultation events during and since the floods, the relevant RMAs in this sub area have been identified as being the WBC, SCC and the EA.

8.4. Exercised Flood Risk Management Functions and Other Actions

Woking Borough Council

Actions prior to and during the flood incident

Attended the sub area and delivered sandbags to impacted properties as well as helping residents evacuate. Officers continued to monitor river levels at key locations.

Actions since the flood incident

WBC has been liaising closely with affected residents in relation to the installation of property protection measures and the repair and renewal grant. All impacted residents have applied and the property protection measures have been installed at each property.

WBC is working with residents to prepare individual flood plans to help them prepare if a flood event should happen again in the area.

A flood surgery was held on the 23 December 2014, coordinated by the EA and WBC for the Byfleet area for local residents to attend. In addition a Flood Forum has been created by residents which WBC, the EA and SCC attend.

Section 5 provides details of WBC's borough-wide flood risk management functions prior to, during and since the flood incident.

Surrey County Council

No flood risk management functions relevant to SCC have been identified as specific to the flood incident in this sub area.

Section 5 provides details of SCC's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

Environment Agency

Actions prior to and during the flood incident

A flood warning for the River Wey at Byfleet was issued to over 2,000 people on the 25 December at 13:15.

The EA sent ambassadors to Byfleet between Christmas and New Year and again during high flows in January.

Actions since the flood incident

The EA has completed an initial assessment to assess previous studies and the viability of a larger flood defence scheme in the Byfleet and Weybridge area to reduce the risk of flooding to this residential area in the future. The next stage of the project is to complete a business case which is due to be completed within the 2016/17 financial year.

The EA have adjusted the flood warning trigger level at the River Wey at Byfleet following evidence gathered during the flooding.

As stated under the actions for WBC, a flood surgery was coordinated by the EA and WBC for local residents to attend. A Flood Forum has also been setup.

Section 5 provides details of the EA's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

9. Sub Area: Byfleet (south) and Wisley

9.1. Sub Area Definition

This sub area covers the area of Byfleet (south) and Wisley.

9.2. Location and Catchment Description

Sanway Road, Sanway Close and Fullerton Way are located in the south of Byfleet and are made up of a mixture of terrace, semi-detached and detached residential dwellings. Wisley Lane is a separate location, the other side of the M25 and is rural in nature and crosses the River Wey. The Broad Ditch, a bypass channel of the River Wey, is located to the north of Wisley Lane and west of the other locations and is classified as Main River.

Flooding occurred at Sanway Close and Sanway Road on 25 December 2013. The initial cause of flooding was due to the River Wey and the Broad Ditch overtopping their banks.

The flood water flowed through the fields to the west of the residential development towards Sanway Road and Sanway Close. A low point along the bank of the Broad Ditch is present and is the likely location that water was able to enter the adjacent fields.

Following the floods, residents commented that the flood water initially came through the road gullies located within Sanway Close, on the morning of 25 December, followed by the water flowing from Sanway Road. WBC's preliminary investigation suggested that Sanway Close initially flooded from river water from the Wey backing up the highway drains at this location. The secondary cause of flooding at this location is the flood water over topping low spots along the banks of the Broad Ditch.

According to the EA online fluvial flood risk maps, the majority of the area has a medium to high chance of flooding (greater than a 1 in 100 annual chance of flooding, with some areas at risk during events with an annual chance of 1 in 30 or greater). The flood risk extents for the Broad Ditch, the River Wey and the Wey Navigation all merge here. The flood risk maps do not take into account climate change and are designed only to give an indication of flood risk to an area of land and are not sufficiently detailed to show whether an individual property is at risk of flooding. The roads in this area, according to the EA online surface water flood risk maps, are at low to high risk of surface water flooding (greater than a 1 in 1000 annual chance event).

The return period of the level of flooding experienced in winter 2013/14 on the River Wey at Guildford (to the South West) and Weybridge (to the North East) is estimated to be 20-30 years.

Parts of the Byfleet (south) and Wisley sub area are within a Flood Warning and Flood Alert Area. These are areas for which the EA provides free flood warnings.

The underlying geology is sand from the Bagshot formation, with superficial bands of alluvium (clay, silt, sand and gravel) around Mill Lane and Kempton Park Gravel Formation (sand and gravel) elsewhere. These superficial deposits are associated with fluvial environments and can convey flood waters. There is limited potential for groundwater flooding to occur across the sub area, except for the southern half of Wisley Lane where below ground property and infrastructure may be affected.

9.3. Identification of Relevant RMAs

Following a range of consultation events during and since the floods, the relevant RMAs in this sub area have been identified as being WBC, SCC, TW and the EA.

9.4. Exercised Flood Risk Management Functions and Other Actions

Woking Borough Council

Actions prior to and during the flood incident

On 25 December 2013 at 09.30, the EA stated that river levels were stabilising, except for nearer the Thames, and no issues were expected for the Woking area in the Strategic Command Group (SCG). WBC attended a teleconference attended by representatives of all boroughs within Surrey, The Met Office, the EA, SCC and TW.

A flood warning was subsequently issued at 13:15 for the River Wey at Byfleet. Properties flooded almost immediately, following receipt of warning.

Actions since the flood incident

WBC is working closely with TW to install a non return valve in the main surface water sewer network at Sanway Close as an external flap valve has been determined as not suitable.

The Broad Ditch is classified as a 'Main River' and therefore any works in under or within 8m of the Broad Ditch will require Flood Defence Consent from the EA under the Water Resources Act 1991 and the Land Drainage Bylaws 1981. WBC and the EA are investigating possible actions that can be implemented in coordination with all riparian owners along the Broad Ditch, especially in relation to the low spots along the Broad Ditch banks and build up of debris within the channel. The Broad Ditch is on the EA's maintenance plan for this year (2015/16).

WBC are currently undertaking land searches to determine all the riparian owners of the Broad Ditch to establish the best course of action in ensuring the future maintenance of this ditch and repair of its banks. They are also seeking the riparian owners of the Broad Ditch to allow WBC and the EA to work with them to clear the Broad Ditch river channel of the debris and silt that has built up over the years. This work should help improve the existing capacity of the channel and improve its conveyance of the flood flow in the area.

WBC has been liaising closely with affected residents in relation to the installation of property protection measures and the repair and renew grant. All impacted residents have applied and the property protection measures have been installed at each property.

A flood surgery was coordinated by the EA, SCC and WBC for the 23 December 2014 in the Byfleet area for local residents to discuss their concerns with the RMAs.

Section 5 provides details of WBC's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

Surrey County Council

There were temporary road closures within this sub area, including Wisley Lane.

Section 5 provides details of SCC's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

Environment Agency

Actions prior to and during the flood incident

A flood warning for the River Wey at Byfleet was issued to over 2,000 people on 25 December at 13:13.

EA ambassadors went to Byfleet between Christmas and New Year and, again, during high flows in January.

Actions since the flood incident

The Broad Ditch is classified as a 'Main River' and therefore any works in under or within 8m of the Broad Ditch will require Flood Defence Consent from the EA under the Water Resources Act 1991 and the Land Drainage Bylaws 1981. WBC and the EA are investigating possible actions that can be implemented in coordination with all riparian owners along the Broad Ditch, especially in relation to the low spots along the Broad Ditch banks and build-up of debris within the channel.

The EA has completed an initial assessment to assess previous studies and the viability of a larger flood defence scheme in the Byfleet and Weybridge area to reduce the risk of flooding to this the residential area in the future. The next stage of the project is to complete a business case which is due to be completed within the 2016/17 financial year.

The EA attended the flood surgery coordinated by the RMAs on 23 December 2014.

The EA has subsequently adjusted the flood warning trigger level for the River Wey at Byfleet following evidence gathered during the flooding.

Section 5 provides details of EA's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

Thames Water

On 25 December 2013 at 09.30, the EA stated that river levels were stabilising, except for nearer the Thames, and no issues were expected for the Woking area in the Strategic Command Group (SCG). TW attended a teleconference attended by representatives of all boroughs within Surrey, The Met Office, the EA, SCC and WBC.

TW is working closely with WBC to install a non return valve in the main surface water sewer network at Sanway Close and an external flap valve has been determined as not suitable.

Section 5 provides details of TW's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

10. Sub Area: Old Woking and Maybury

10.1. Sub Area Definition

This sub area covers the area of Old Woking and Maybury.

10.2. Location and Catchment Description

Old Woking and Maybury are located south east of Woking town centre. The Old Woking High Street consists of residential dwellings located along the south and north of the roadway as well as a few commercial units, shops, a petrol station and a pub. Multiple side roads are located to the north of the High Street which provide access to a densely populated residential area, while to the south of the residential properties along the southern boundary of the High Street are open fields, and Gresham Mill, a newly built residential development.

The TW surface water drainage system discharges runoff from the Old Woking area to a complex network of ditches and watercourses located within the field to the south of the High Street. This network of ditches and watercourses eventually discharge to the River Wey. The fields to the south of the High Street are part of the River Wey functional floodplain and are impacted by fairly regularly flooding.

The Old Woking Road runs from the eastern end of the High Street, stretching north towards Maybury. This area consists of predominantly residential estates to the west and open common ground and a golf course to the east. The Hoe Stream intersects the Old Woking Road just to the north of Old Woking.

Flooding was reported by residents as occurring on the High Street roadway in the first instance through the surcharging of the highway gullies. These highway gullies connect into the TW surface water sewers which discharge to the ditches at the rear of the High Street. This flooding was attributed to a combination of surface water flow as well as river water backing up the drainage network.

The High Street was closed, although many cars ignored the closure, causing bow waves as they drove through at speed and causing flood water to enter some properties, as property thresholds are lower than the roadway in some locations. The flood water was reported as coming quickly from the fields behind the residential dwellings across the fields, through the low lying properties along the High Street. At 08.00 on 25 December, river levels reached their peak. The High Street was closed and access to the Gresham Mill residential development was impassable although properties remained unaffected.

According to the EA online fluvial flood risk maps, the southern part of this sub area is at risk of fluvial flooding and is located in medium to high risk zones, with a medium to high chance of flooding from fluvial sources (greater than a 1 in 100 annual chance of flooding, with some areas at risk during events with an annual chance of 1 in 30 or greater). The flood risk maps do not take into account climate change and are designed only to give an indication of flood risk to an area of land and are not sufficiently detailed to show whether an individual property is at risk of flooding. Old Woking Road is a long road extending to the north. The road is at risk of fluvial flooding from the Wey and the Hoe Stream at its southern end, and from surface water flooding at various other points.

The return period of the level of flooding experienced in winter 2013/14 on the River Wey at Guildford (to the South) is estimated to be 20-30 years, while the return period on the Hoe Stream at Woking (South) is estimated to be 5-15 years.

Parts of the Old Woking (the south of Old Woking and the Old Woking Road) sub area are within a Flood Warning and Flood Alert Area. These are areas for which the EA provides free flood warnings.

The underlying geology to the south of the Old Woking High Street is London Clay formation (clay sand and silt) with alluvium superficial deposits (clay, silt, sand and gravel). To the north of the High Street, the superficial deposits are Kempton Park Gravel formation (sand and gravel). The Old Woking Road is underlain by London Clay formation (clay, sand and silt) and Lynch Hill Gravels , with bands of superficial deposits of alluvium (clay, silt, sand and gravel) and Kempton Park Gravel formation (sand and gravel). The Kempton Park Gravels, alluvium and Lynch Hill Gravels are associated with fluvial environments and can convey flood waters. The areas with the greatest potential for groundwater flooding to occur at the surface are; the south of Old Woking Road, Linden Way, High Street and Broadmead Road. There is limited potential for groundwater flooding to occur elsewhere in this sub area.

10.3. Identification of Relevant RMAs

Following a range of consultation events during and since the floods, the relevant RMAs in this sub area have been identified as being WBC, SCC and the EA.

10.4. Exercised Flood Risk Management Functions and Other Actions

Woking Borough Council

Actions prior to and during the flood incident

Sandbags were issued in the High Street area of Old Woking. This action prevented approximately 10 properties from internal flooding.

Actions since the flood incident

Since the floods, the ditch and watercourse system to the south of the High Street are full of sediment and debris, this is having a knock on effect on the local surface water drainage system in the surrounding area and impacting the storage capacity of future flood water in this area. In some locations the ditches are practically full of sediment. It is recommended that these ditches are cleared and debris removed. WBC has been working closely with SCC to get the ditches cleared.

To prevent the backflow of flood water entering the highway system, WBC have identified an option and recommend that flap valves are installed on all pipes greater than 300mm. These pipes are located within the ditches at the rear of the properties along the High Street.

A larger flood defence scheme is also being investigated jointly between the EA and WBC to determine if a scheme can be installed to reduce the probability of this magnitude event from flooding the residential area in the future. Funding opportunities are being investigated.

WBC has been liaising closely with affected residents in relation to the installation of property protection measures and the repair and renew grant. All impacted residents have applied and the property protection measures have been installed at each property.

WBC is working with residents to prepare individual flood plans to help them prepare if a flood event should happen again in the area.

Section 5 provides details of WBC's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

Surrey County Council

No flood risk management functions relevant to SCC have been identified as specific to the flood incident in this sub area.

Section 5 provides details of SCC's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

Environment Agency

Actions prior to and during the flood incident

A flood warning for the River Wey at Old Woking was issued at 23:35 on 24 December. The flood warning trigger level has since been adjusted at this location.

On 3 January, a further flood warning was issued. Although levels were high, property flooding was not reported. In February, levels were lower than in January and no further flood warnings were issued.

Actions since the flood incident

A larger flood defence scheme is also being investigated jointly between the EA and WBC to determine if a scheme can be installed to reduce the probability of this magnitude event from flooding the residential area in the future. Funding opportunities are being investigated. An initial assessment has been completed and the next stage of the project is to complete a business case which is due to be completed within the 2016/17 financial year.

Section 5 provides details of the EA's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

11. Sub Area: Horsell

11.1. Sub Area Definition

This sub area covers the area of Horsell (Woking) and Carthouse Lane.

11.2. Location and Catchment Description

The area around French's Wells is predominantly residential and lies to the east of Goldsworth Park and a small lake. Carthouse Lane is located approximately 1km to the north and crosses through predominantly farmland and an area of irrigated fields with ditches and small streams which join The Bourne south of Mimbridge.

During the winter of 2013/14 there were a number of instances of internal property flooding and road closures in the Horsell sub area.

According to the EA online fluvial flood risk maps, the French's Wells area is not at risk of fluvial flooding and is located in very low risk zones. It is however indicated to be at risk of surface water flooding. Carthouse Lane is crossed by two tributaries of the Bourne, with low flood risk (1 in 100 to 1 in 1000 annual chance) and is adjacent to a wide flood risk area at risk from the Bourne, with some areas at high risk (greater than 1 in 30 annual chance). The flood risk maps do not take into account climate change and are designed only to give an indication of flood risk to an area of land and are not sufficiently detailed to show whether an individual property is at risk of flooding.

Carthouse Lane is within the Windle Brook and Hale, Mill and Addlestone Bourne's flood alert area. The French's Wells road in Horsell is not within an EA Flood Warning or Flood Alert area.

Parts of the Horsell sub area are within a Flood Warning and Flood Alert Area. These are areas for which the EA provides free flood warnings.

The underlying geology of the area is Bagshot formation (sand), with a band of alluvium (clay, silt, sand and gravel) superficial deposits across Carthouse Lane in the location of the irrigated field and the Bourne Stream. Horsell is also underlain with superficial deposits of alluvium which are associated with fluvial environments and can convey flood waters. There is a limited potential for groundwater flooding to occur at the Section 19 locations within this sub area.

11.3. Identification of Relevant RMAs

Following a range of consultation events during and since the floods, the relevant RMAs in this sub area have been identified as being WBC, SCC and the EA.

11.4. Exercised Flood Risk Management Functions and Other Actions

No flood risk management functions relevant to any of the RMAs have been identified as specific to the flood incident in this sub area.

Section 5 provides details of all RMA's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

12. Sub Area: Sutton Green and Worplesdon

12.1. Sub Area Definition

This sub area covers the area of Sutton Green and Worplesdon.

12.2. Location and Catchment Description

During the winter of 2013/14 there were a number of instances of internal property flooding and road closures in the Sutton Green and Worplesdon sub area.

The area is located to the south west of Woking town centre, covering rural land adjacent to the small village of Sutton Green, close to the Woking/Guildford boundary.

Residential dwellings are located along the western side of New Lane, (which runs north from the village of Sutton Green to Moor Lane), while agricultural fields are located along the eastern side of New Lane. The area is drained via a series of ditches and piped watercourse which discharge to the Hoe Stream. Prey Heath Road is located to the north west of Sutton Green and south of the Hoe Stream.

Both ends of Prey Heath Road are at risk of fluvial flooding and are located in a high to medium risk zone, with an annual chance of flooding greater than 1 in 100. The other Section 19 roads in this sub area are not indicated to be at risk of fluvial flooding. The flood risk mapping do not take into account climate change and are designed only to give an indication of flood risk to an area of land and are not sufficiently detailed to show whether an individual property is at risk of flooding.

The EA surface water flood maps show that there is a risk of surface water flooding to New Lane and Moor Lane. In places, these roads act as natural flow routes. The EA surface water maps are based on topography and their accuracy is not as robust as the fluvial flood maps. However, they can be used to identify general flow routes.

The return period of the level of flooding experienced in winter 2013/14 on the River Wey at Guildford (to the South) is estimated to be 20-30 years, while the return period on the Hoe Stream at Woking (South) to the north east is estimated to be 5-15 years.

Parts of the Sutton Green and Worplesdon sub area (the eastern end of Prey Heath Road) are within a Flood Warning and Flood Alert Area. These are areas for which the EA provides free flood warnings.

The underlying geology of the area is Bagshot formation (sand), with superficial deposits of Kempton Park Gravels (sand and gravel) and alluvium which are associated with fluvial environments and can convey flood waters. The following Section 19 locations have the potential for groundwater flooding to occur at the surface; Broadmead Road, the south of Old Woking Road, High Street and Linden Way.

12.3. Identification of Relevant RMAs

Following a range of consultation events during and since the floods, the relevant RMAs in this sub area have been identified as being WBC and SCC.

12.4. Exercised Flood Risk Management Functions and Other Actions

Woking Borough Council

The ditches in the area are full of sediment and debris. In liaison with SCC the ditch network is being investigated, cleared and riparian owners established to help ensure future maintenance of the ditches. Main ditches have since been cleared along New Lane and Sutton Green Road.

In liaison with SCC, WBC has organised for the drainage network along the western side of New Lane to be jetted to remove any blockages. Manhole covers have been located along the drain run to aid in future maintenance and in order to assess the condition and capacity of the pipe.

WBC has been liaising closely with internally flooded residents in relation to the installation of property protection measures. However it has since been found that property protection measures are not suitable for the location due to lack of warning and the suitability of the buildings for such measures. A study has therefore been commissioned to assess suitable flood alleviation options in the area.

Section 5 provides details of WBC's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

Surrey County Council

Actions prior to and during the flood incident

Prey Heath Road was closed during the flooding for public safety.

Actions since the flood incident

The ditches in the area are full of sediment and debris. In liaison with WBC and Sutton Green Parish Council the ditch network is being investigated, cleared and riparian owners established to help ensure future maintenance of the ditches.

SCC is investigating an existing outfall at the northern end of the ditch. If no outfall is located, SCC will investigate possible solutions in conjunction with WBC, which may involve re-profiling the ditch to flow in a southerly direction as is the case with the remainder of the ditch.

Section 5 provides details of SCC's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

Environment Agency

No flood risk management functions relevant to the EA have been identified as specific to the flood incident in this sub area.

Section 5 provides details of the EA's wider flood risk management functions and other relevant actions prior to, during and since the flood incident.

13. Conclusion

The objective of this report is to investigate which RMAs had relevant flood risk management functions during the flooding and whether the relevant RMAs have exercised, or propose to exercise, their risk management functions (as per section 19(1) of the Flood and Water Management Act 2010). It should be noted that this duty to investigate does not guarantee that flooding problems will be resolved and cannot force others into action.

The report has identified that the EA and carried out actions in relation to the flooding experienced in Woking Borough over winter 2013/14. It has also been established that SCC and WBC did not have any direct flood risk management functions in responding to the flood event, but strategic functions and other supportive actions were taken, which have been outlined in the report.

13.1. Causes

There were approximately 40 incidents of internal property flooding in Woking. The main cause of the widespread flooding across Surrey was the exceptional and unprecedented amount of rainfall that fell over the months of December, January and February 2013/14, which in turn resulted in major flooding from fluvial, surface water, and sewer sources. The River Wey was the main source or fluvial flooding in the borough and is reported to have affected the Byfleet and Byfleet South & Wisley sub areas.

13.2. Flood Data

While systems are in place to record instances of flooding on a day-to-day basis, it was found that the data format and specific details of flooding records were inconsistent across different organisations. For example, approaches that generically recorded properties as “affected by flooding” did not make clear whether the property was flooded internally. This caused issues when collating the data into a central database, reducing the level of accuracy for some specific flooding records.

The information held by SCC on highway drainage assets and their condition is very limited in many areas, which can make it more difficult to identify the sources and cause of flooding in some instances. Information for smaller watercourses (privately owned or otherwise) is also very limited in some areas.

13.3. Role of Local Communities

In addition to the functions and actions carried out by RMAs, there are many ways in which residents and communities can reduce flood risk. Local flood forums existed in Surrey prior to the winter 13/14 flood event but many more have been set up in the aftermath of this event. The role of RMAs in these local groups is instrumental in educating the public on flood risk and supporting them in implementing their own action plans and resilience measures. These groups also play a vital role in feeding back critical information on localised flooding issues to support the authorities in better understanding local flood risk and identifying potential solutions to mitigate this risk.

There are still widespread occurrences of riparian watercourses and ditches that are not maintained. Keeping all watercourses well maintained will not (in itself) prevent flooding from major flood events but the lack of maintenance of some riparian owned ditches was certainly a contributing factor on the impact of the flooding experienced from the winter 13/14 flood event.

13.4. Looking Forward

A vast amount of information on historic flooding was gathered as a result of the winter 13/14 flood event. This data will help highlight the areas most at risk of flooding in Surrey, enable the prioritisation of drainage maintenance works and support business cases when bidding for Government contributions towards major flood defence schemes.

13.5. Recommendations

Based on the findings of this Section 19 investigation, it is recommended that:

- All RMAs continue to improve their cooperation, coordination and communication with one another, particularly with regard to their flood risk management functions and during times of emergency.
- All RMAs continue to raise awareness of flood risk and increase the resilience of communities and businesses to flood risk, across Surrey.
- SCC and the EA further develop public awareness and understanding of riparian responsibilities, in order to improve the condition of watercourses across Surrey.
- All RMAs review their current processes for data collection during a flood event, giving consideration to the best practice guidance produced by SCC and the EA.
- All RMAs pass any records of future property flooding in Surrey to SCC for collation in a central database.
- SCC undertake studies where there is significant groundwater flooding to better understand the nature of the flooding and the levels of risk.
- All RMAs review the benefits of proposed flood schemes in the 6 Year Programme of Flood and Coastal Erosion Risk Management Schemes and consider whether partnership contributions may be justified.
- SCC undertake detailed drainage surveys where asset information is limited or non-existent, prioritising areas at greatest risk of flooding.
- SCC formalise the process for investigating major flood events under the S19 duty and agree this process with the Surrey Flood Risk Partnership Board, to ensure efficient partnership working and data sharing for future investigations.
- In Old Woking and Maybury (High Street) WBC have recommended that flap valves are installed on all pipes greater than 300mm to prevent the backflow of flood water entering the highway system

13.6. Actions and on-going work

As well as the Flood Risk Management Functions carried out in the sub areas mentioned in this report, SCC plan to additional work within the Woking Borough:

- SCC is installing a coarse debris grill in the Rive Ditch, on Scotland Bridge Road (West Byfleet).
- SCC is also undertaking detailed modelling to identify flood alleviation options in Woking, Sheerwater and Woodhaml, as part of the Rive Catchment Appraisal.

14. Acknowledgements

Surrey County Council would like to thank the following organisations and groups for providing information and input into the Section 19 Flood Investigation Report:

- The Environment Agency
- Woking Borough Council
- Thames Water
- Atkins