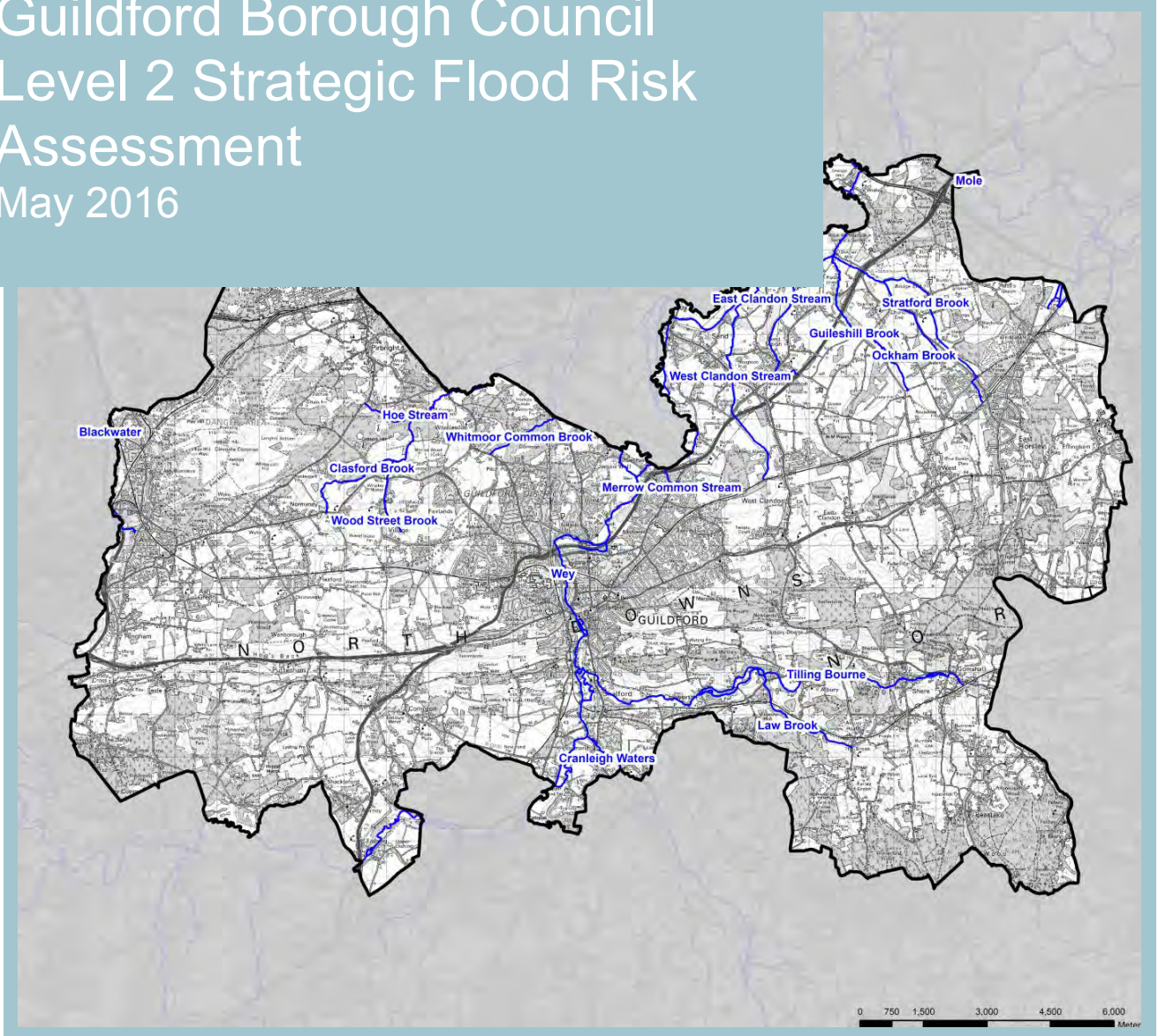


Guildford Borough Council Level 2 Strategic Flood Risk Assessment May 2016



Quality Management

Job No	CS074594		
Project	Guildford Borough Council Level 2 Strategic Flood Risk Assessment		
Location	P:\environment\ZWET\CS074594_Guildford_SFRA_update\SFRA2\Reports		
Title	Guildford Borough Council Level 2 Strategic Flood Risk Assessment		
Document Ref	Guildford Borough Council Level 2 Strategic Flood Risk Assessment	Issue / Revision	Final
Date	17 May 2016		
Prepared by 1	Thomas Godman		
Checked by	Nicole Shamier		
Authorised by	Chris Despins		

Revision Status / History

Rev	Date	Issue / Purpose/ Comment	Prepared	Checked	Authorised
1	May 2016	Draft for Submission to Guildford Borough Council	TG	NS	CD
2	May 2016	Final	TG	NS	CD

This document is the property of the Guildford Borough Council. If you have received it in error, please return it immediately to the above named Local Authority.

This report has been prepared by Capita Property and Infrastructure Limited with all reasonable skill, care and diligence within the terms of the Contract with the Client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

Contents

Executive Summary	1
1. Introduction	1
2. Level 2 Strategic Flood Risk Assessment requirements	3
3. Strategic Flood Risk Assessment Summary	4
3.1 Fluvial Flooding	4
3.2 Surface Water Flooding	5
3.3 Sewer Flooding	5
3.4 Flooding from Artificial Sources	5
3.5 Flood Risk Management Recommendations	5
3.6 How development can reduce flood risk overall	6
3.7 Reasonable prospect of compliance within the Exception Test	6
3.8 Flood Risk Suitability Score	6
4. Conclusion	10
5. References	11
6. Glossary and Notation	12
7. Appendix A – Site Proformas	14
7.1 Site 134 – The Plaza, Portsmouth Road, Guildford	15
7.2 Site 2229 – Guildford Cinema, Bedford Road, Guildford	21
7.3 Site 205 – North Street redevelopment, Guildford	27
7.4 Site 171 – Land and buildings at Guildford Railway Station, Guildford	33
7.5 Site 08 – 77 to 83 Walnut Tree Close, Guildford	39
7.6 Site 2183 – Kernal Court, Walnut Tree Close, Guildford	46
7.7 Site 2226 – Wey Corner, Walnut Tree Close, Guildford	52
7.8 Site 245 – Slyfield Regeneration Project, Guildford	58
7.9 Site 2186 – Broadford Business Park, Shalford	64
7.10 Site 53/54 – Land at former Wisley Airfield, Ockham	69
7.11 Site 975 – Land to the north of West Horsley	74
7.12 Site 240 – Land near Horsley Railway Station, Ockham Road North, East Horsley	78
7.13 Site 368 – Land to the south of Normandy and north of Flexford	82
7.14 Site 241 – Land at Whittles Drive, Aldershot Road, Normandy	86
7.15 Site 2106 – Lakeview, Lakeside Road, Ash Vale	90
8. Appendix B – Flood Risk Datasets	99
9. Appendix C – Planning Process	100

Tables

Table 3-1 Definition of Flood Zones within Guildford Borough	4
Table 3-2: Flood Risk Suitability Assessment Criteria	6
Table 3-3: Sites assessed as part of the Level 2 Strategic Flood Risk Assessment	7
Table 8-1 Flood risk datasets	99
Table B-9-1 Taking flood risk into account in the preparation of a Local Plan (DCLG, 2014)	100

Figures

Figure 3-1: Location of the sites assessed within the Level 2 Strategic Flood Risk Assessment	9
---	---

Executive Summary

The National Planning Policy Framework (NPPF) defines the Sequential Test as a risk-based approach to determine the suitability of development according to flood risk. In accordance with the NPPF, Local Planning Authorities are required to apply the Sequential Test at all stages of the planning process. This ensures that, where possible, developments are not located in areas considered to be at high risk of flooding.

If following the application of the Sequential Test, it is not possible for the proposed development to be located in areas with a lower probability of flooding; the Exception Test can be applied. For the technical part of the Exception Test to be passed it must be demonstrated that the development provides wider sustainability benefits (as addressed through a sustainability appraisal)¹. Secondly, it must be demonstrated that the development will be safe for its proposed lifespan, without increasing flood risk elsewhere, and where possible, will reduce flood risk overall.

Guildford Borough Council's Level 1 Strategic Flood Risk Assessment showed that necessary development could not all be accommodated in areas considered at low risk of flooding; therefore, a Level 2 Strategic Flood Risk Assessment was commissioned to provide the information necessary for the application of the Exception Test. This Level 2 Strategic Flood Risk Assessment assesses risk from river, groundwater, sewer, surface water or artificial sources of flooding for 16 proposed development sites, identified by Guildford Borough Council in its Land Availability Assessment.

In the Level 2 Strategic Flood Risk Assessment, each site was allocated a Flood Risk Suitability Score based upon the extent of flood risk on site and the ability for a development to avoid areas of flood risk, incorporate safe access and egress and include on site SuDS. The assessment used a sliding score whereby the site would score '1' if it was mainly located in Flood Zone 3b (at highest risk) and would score '5' if it was located fully within Flood Zone 1 (at lowest risk). Overall one site scored '5', seven sites scored '4', six sites scored '3' and two sites scored '1'; no sites scored '2'.

Any new development should be designed to ensure there would be safe access and egress during a flood. Development design should incorporate safe movement of people during a 1 in 100 year plus the appropriate climate change allowance 'design flood' as well as potential for evacuation before a more extreme flood. Although the Level 2 Strategic Flood Risk Assessment assists to inform whether the sites could be designed to manage the risks of flooding, the suitability of specific development designs must be tested through a site specific Flood Risk Assessment.

¹ <http://planningguidance.planningportal.gov.uk/blog/guidance/strategic-environmental-assessment-andsustainability-appraisal/sustainability-appraisal-requirements-for-local-plans/>

1. Introduction

Guildford Borough Council commissioned Capita to undertake a Level 2 Strategic Flood Risk Assessment. This study considers flood risk at 16 potential development sites identified by Guildford Borough Council's Land Availability Assessment. The results will assist Guildford Borough Council in understanding the flood risk posed to new development sites and will inform Guildford Borough Council's assessment of site suitability for inclusion in the Guildford Borough Council's new Local Plan.

This Level 2 Strategic Flood Risk Assessment follows on from the work which was included in the updated 2016 Level 1 Strategic Flood Risk Assessment² (Volume 1: Decision Support Document; Volume 2: Technical Report of the Strategic Flood Risk Assessment and Volume 3: Strategic Flood Risk Assessment Report Maps and associated figures). The Level 1 Strategic Flood Risk Assessment, which includes the sequential test and provides information on the strategic approach to managing flood risk, alongside local policy and background information, should be read in conjunction with this report. Appendix C shows how this Level 2 Strategic Flood Risk Assessment fits in with the planning policy process.

This Level 2 Strategic Flood Risk Assessment provides a more detailed assessment of flood risk at sites identified to be in Flood Zones 2 and 3, and provides mapping showing flood outlines for different flood scenarios, depth and velocity variances, taking account of the presence and likely performance of flood risk management infrastructure.

The NPPF provides the following detailed definition of flood zones:

- Flood Zone 1 is land assessed as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year;
- Flood Zone 2 is land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1%-0.1%), or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5%-0.1%) in any year;
- Flood Zone 3a is land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year and;
- Flood Zone 3b is land where water has to flow or be stored in times of flood (functional floodplain), usually defined as land which would flood with an annual probability of 1 in 20 (5%) or greater in any year.

Historically development has taken place within the functional floodplain, so Flood Zone 3b has been subdivided further in the Level 1 Strategic Flood Risk Assessment into Flood Zone 3b Developed, and Flood Zone 3b Undeveloped where developed land constitutes the footprint of buildings.

The NPPF does not provide flood zone definitions for groundwater, sewer, surface water or artificial sources of flooding. However flood risk from alternative sources is considered in this Level 2 Strategic Flood Risk Assessment. The application of the sequential approach in the planning process ensures that development can be safely and sustainably delivered.

The Level 2 Strategic Flood Risk Assessment has been split into the following chapters:

- **Level 2 Strategic Flood Risk Assessment requirements:** This chapter summarises the objectives of the Level 2 Strategic Flood Risk Assessment and details the requirements of the Level 2 Strategic Flood Risk Assessment in accordance with the

² Available online at <http://www.guildford.gov.uk/article/3968/Strategic-Flood-Risk-Assessment> Accessed May 2016

NPPF, Planning Practice Guidance (PPG) and Level 1 Strategic Flood Risk Assessment documents;

- **Strategic Flood Risk Assessment Summary:** This chapter lists the 16 proposed developments analysed within the Level 2 Strategic Flood Risk Assessment, outlines the methodology used to obtain the Flood Risk Suitability Scores for each proposed development, provides an explanation of the processes used to analyse the 16 proposed developments and the Flood Risk Management Recommendations;
- **References:** This chapter includes a list of the references used within the Level 2 Strategic Flood Risk Assessment for further reading;
- **Glossary:** This chapter includes a glossary of terms designed to assist non-technical users of the Level 2 Strategic Flood Risk Assessment.

A complete list of the proformas for the 16 proposed developments is found within Appendix A of the Level 2 Strategic Flood Risk Assessment.

The Level 2 Strategic Flood Risk Assessment does not replace, and should be read in conjunction with, both national and regional policy, including but not limited to, the NPPF, the PPG, the Level 1 Strategic Flood Risk Assessment, and the Guildford Borough new Local Plan. Furthermore, the Level 2 Strategic Flood Risk Assessment does not displace the responsibilities of catchment scale flood risk management plans, strategies, approaches and solutions, nor does it remove the requirement for appropriately focused site level Flood Risk Assessment (FRAs) at the planning application stage.

Please refer to Section 2.1 of the Level 1 Strategic Flood Risk Assessment: Decision Support Document for geographical information of Guildford Borough, including the size of the catchment, the main rivers and ordinary watercourses, topography, geology and direction of flows for the main watercourses within the catchment. Please refer to Section 2.3 of the Level 1 Strategic Flood Risk Assessment Volume 1: Decision Support Document for further information on historical flooding and the general mechanisms of flooding within Guildford Borough.

2. Level 2 Strategic Flood Risk Assessment requirements

This Level 2 Strategic Flood Risk Assessment has been developed in accordance with the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG) on Flood Risk and Coastal Change³.

The Level 1 Strategic Flood Risk Assessment applied the Sequential Test to steer new development towards areas with the lowest probability of fluvial flooding (Flood Zone 1) and out of medium and high fluvial flood risk areas (Flood Zones 2 and 3) and areas affected by other sources of flooding. The sequential approach aims to reduce the exposure of new development to flood risk and reduce the reliance on long-term maintenance and replacement of built flood defences.

This Level 2 Strategic Flood Risk Assessment has been commissioned because the evidence from the Level 1 Strategic Flood Risk Assessment showed that land outside areas at risk of flooding cannot appropriately accommodate all necessary development in Guildford borough.

The Level 2 Strategic Flood Risk Assessment:

- Supports applications of the Exception Test by providing more detailed evidence of flood risk at a site level;
- Considers the nature of flood hazard using detailed hydraulic modelling;
- Supports the application of the onsite Sequential Test, which ensures development is primarily situated in the lowest areas of flood risk onsite;
- Considers current and proposed flood risk management, such as flood defences and flood warnings;
- Recommends high level solutions to safeguard new development from the consequences of flooding in its proposed lifetime (assumed as 50 years for commercial properties and 100 years for residential properties); and
- Recommends mitigation techniques which help to avoid increasing flood risk elsewhere.

The sequential approach aims to reduce the exposure of new development to flood risk and reduce the reliance on long-term maintenance and replacement of built flood defences.

For highly vulnerable development proposed in Flood Zone 2, essential infrastructure or more vulnerable development proposed in Flood Zone 3a or essential infrastructure proposed in Flood Zone 3b, planning consent can only be given to development proposals which pass the Exception Test. The Exception Test ensures that new development located in areas at risk of flooding (because no suitable alternative sites are available) satisfactorily manage flood risk to people and property by remaining safe and operational for users in times of flood⁴.

It is expected that redevelopments, particularly in Flood Zone 3b Developed, will contribute to a reduction in flood risk. Following application of the Sequential Test and the Exception Test, a Local Plan may allocate redevelopment of developed sites in the functional floodplain when flood risk betterment, appropriate mitigation and risk management can be achieved and implemented. Redevelopment within the functional floodplain should only be considered when there are no reasonably available alternatives at a lower risk of flooding, no increase in development vulnerability or intensification in use and when the Sequential Test and Exception Tests have been passed.

³ Available online at <http://planningguidance.communities.gov.uk/> Accessed May 2016

⁴ Level 1 Strategic Flood Risk Assessment Volume 1: Decision Support Document.

3. Strategic Flood Risk Assessment Summary

The Level 2 Strategic Flood Risk Assessment determines the risk of flooding from various sources (fluvial, surface water, sewer and artificial sources) occurring at each proposed development site. Full extents of site boundaries have been used where applicable during the analysis to fully capture the information in regards to flood risk. In some cases, the proposed site allocation extent in the new Local Plan is smaller than in this Level 2 SFRA. The site reference numbers in the Level 2 SFRA correspond with the site reference numbers in the Land Availability Assessment.

The following methodology was used in order to facilitate the application of the Sequential Test and the technical part of the Exception Test for 16 proposed developments:

3.1 Fluvial Flooding

The risk of fluvial flooding was investigated using a combination of detailed hydraulic modelling and the Environment Agency (EA) Flood Zones. The 2009 Lower Wey hydraulic model, Guileshill Brook hydraulic model and Blackwater Model (2007) have been used to assess fluvial flood risk in Guildford borough. Where detailed hydraulic modelling is available, this was used in place of the EA Flood Zone data to define fluvial flood risk, as per Table 3-1.

Table 3-1 Definition of Flood Zones within Guildford Borough

Flood Zone	Probability of fluvial flooding	Definition
Flood Zone 1	Low probability	Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Flood Zones 2 and 3)
Flood Zone 2	Medium Probability	Land having between a 1% and 0.1% annual probability of river flooding; or Land having between a 2% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Flood Zone 3a	High Probability	Land having a 1% or greater annual probability of river flooding; or Land having a 2% or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Flood Zone 3b	The functional floodplain	Flood Zone 3b Developed – Land having a 5% or greater annual probability of river flooding, which is additionally within the building footprint of land already developed – in accordance with the Level 1 Strategic Flood Risk Assessment definition. This Flood Zone comprises of land where water has to flow or be stored in times of flood. This is not separately distinguished from Zone 3a on the Flood Map
		Flood Zone 3b Undeveloped – Land having a 5% or greater annual probability of river flooding, which is not within the building footprint of land already developed – in accordance with the Level 1 Strategic Flood Risk Assessment definition. This Flood Zone comprises of land where water has to flow or be stored in times of flood. This is not separately distinguished from Zone 3a on the Flood Map

Residual fluvial flood risk, which considers breach or overtopping of flood risk management infrastructure, was determined for the Lower Wey, Guileshill Brook and the River Blackwater using the undefended model scenarios.

The following steps were taken in the assessment:

- The proportion of land within each of the EA's Flood Zones 1, 2 and 3 was identified for each proposed development site.
- Flood defences, flood alleviation schemes and flood warning systems which benefit the site were identified. It is noted that the EA is currently leading a project which appraises options for a new flood alleviation scheme in Guildford town; the results of which will be available later in 2016.
- Fluvial flood risk was determined using the modelled flood depth outlines for a 1 in 1000 year return period, a 1 in 100 year return period and a 1 in 20 year return period.
- Hazard mapping was undertaken where data was available.

Hazard mapping – Flood risk hazard mapping was undertaken for sites in the Lower Wey catchment. The flood risk hazard mapping was formulated using the UK Hazard Rating formula, as proposed in DEFRA's (2006) The Flood Risks to People Guidance⁵. In order to assess the severity of flood risk hazards and recommend solutions, the following were considered:

- flood probability;
- flood depth (where 2D data is available);
- flood velocity (where velocity data is available);
- rate of onset of flooding; and
- duration of flood

3.2 Surface Water Flooding

The risk of flooding from surface water was determined using the EA's Risk of Flooding from Surface Water mapping, more commonly referred to as the UFMfSW. The risk of surface water flooding in a modelled 1 in 100 year return period scenario was considered.

3.3 Sewer Flooding

The risk of sewer flooding at each site was determined using the postcode DG5 register incident count (provided by Thames Water Utilities Ltd for the Level 1 Strategic Flood Risk Assessment), which counts the number of internal and external sewer incidents which have occurred within the postcode area of the site.

3.4 Flooding from Artificial Sources

The risk of flooding from artificial sources was determined using the EA's Risk of Flooding from Reservoirs mapping to assess the flood depth of any reservoir over 25000m³ of water, which has breached its flood defences. Determining the risk of flooding from all reservoirs less than 25,000m³, canals and lakes used a high level desktop approach, using aerial photography and topographic data.

3.5 Flood Risk Management Recommendations

This Level 2 Strategic Flood Risk Assessment also provides policy recommendations for flood risk management relevant for each of the 16 developments. This included, but was not limited to:

⁵ DEFRA (2006) The Flood Risks to People Methodology, Flood Risks to People Phase 2. Available online at http://sciencesearch.defra.gov.uk/Document.aspx?Document=FD2321_3436_TRP.pdf Accessed May 2016

- The inclusion of Sustainable Urban Drainage Systems (SuDS);
- Raising ground floor levels above the modelled 1 in 100 plus climate change flood depths;
- Contacting the EA in regards to Main River Permit or Guildford Borough Council in regards to an Ordinary Watercourse Consent; and
- Safe access / egress calculations, identifying if safe emergency access and egress can be made to each unit of a development in accordance with EA guidance.

For further details on the implementation and technical guidance of SuDS designs please refer to Section 9 of the Level 1 Strategic Flood Risk Assessment Volume 1: Decision Support Document⁶, Section 5.7 to 5.13 of the Level 2 Strategic Flood Risk Assessment Volume 2: Technical Report ⁷and the CIRIA SuDS Manual (2015⁸). For wider reading of SuDS designs and policies please refer to Section 5 of this Level 2 Strategic Flood Risk Assessment.

3.6 How development can reduce flood risk overall

Following the Flood Risk Management policy recommendations this Level 2 Strategic Flood Risk Assessment provides advice on how the proposed development can reduce the overall flood risk of the site, so that flood risk betterment, appropriate mitigation and risk management can be achieved and implemented.

3.7 Reasonable prospect of compliance within the Exception Test

This Level 2 Strategic Flood Risk Assessment also comments on whether the development proposed has a reasonable prospect of complying with the technical part of the Exception Test. This is a general recommendation based upon the assessment of flood risk conducted for the Level 2 Strategic Flood Risk Assessment and should not be regarded as planning approval. It is recommended that the developer communicate with Guildford Borough Council for further advice.

3.8 Flood Risk Suitability Score

A Flood Risk Suitability Score was allocated based upon the levels of flood risk on site and the ability for that site to develop were it to avoid areas at high flood risk, incorporating safe access and egress and including on-site SuDS. Table 3-2 shows the Flood Risk Suitability Assessment Criteria used for each of the 16 proposed developments.

Table 3-2: Flood Risk Suitability Assessment Criteria

Score	Criteria
1	Site is mainly in Flood Zone 3b
2	Site is mainly in Flood Zone 3a
3	Site is mainly in Flood Zone 2
4	Site is mainly in Flood Zone 1 but affected by Flood Zone 2, 3a and 3b
5	Site is fully in Flood Zone 1

⁶ Available online at http://www.guildford.gov.uk/media/20760/Guildford-Borough-SFRA-Volume-1-Decision-Support-Document/pdf/Guildford_Borough_SFRA_Volume_1_Decision_Support_Document.pdf Accessed May 2016

⁷ Available online at http://www.guildford.gov.uk/media/20761/Guildford-Borough-SFRA-Volume-2-Technical-Report/pdf/Guildford_Borough_SFRA_Volume_2_Technical_Report.pdf Accessed May 2016

⁸ Available online at http://www.ciria.org/Memberships/The_SuDs_Manual_C753_Chapters.aspx Accessed May 2016

A site would score '1' if it were mainly situated within Flood Zone 3b (regarded as at high risk of fluvial flooding), whereas a site would score '5' if it were located fully within Flood Zone 1 (regarded as at low risk of fluvial flooding).

Figure 3-1 illustrates the locations of the proposed developments within Guildford Borough. Table 3-3 outlines the proposed development sites and the proportion which overlaps with Flood Zones 2, 3a and 3b (both Flood Zone 3b Developed and Flood Zone 3b Undeveloped).

Note that land in Flood Zones 3a and 3b will also be in Flood Zone 2 and Flood Zone 1. Flood Zone 2 is considered to be at risk from fluvial flooding during events greater than 1% and less than 0.1%. Thus, if an area is considered to be at risk from fluvial flooding during events with an annual probability of less than 1% (i.e. areas within Flood Zone 3a and 3b) the area will also be considered to be at risk of fluvial flooding in Flood Zone 2 and Flood Zone 1 areas. For example in Site 2229 (Guildford cinema), 79.5% of the site is considered to be at risk of flooding with a 5% or greater annual probability of river flooding and the entire site is considered to be at risk of fluvial flooding with a 1% or greater annual probability of flooding. Therefore, the percentage overlap for the site gives Flood Zone 3a 20.5% (100% in Flood Zone 3a - 79.5% in Flood Zone 3b) and Flood Zone 2 0.0% (100% Flood Zone 2 - 100% Flood Zone 3a) and 0.0% Flood Zone 1 (100% Flood Zone 1 - 100% Flood Zone 1).

Table 3-3: Sites assessed as part of the Level 2 Strategic Flood Risk Assessment

ID	Address	% overlap with Flood Zone 1	% overlap with Flood Zone 2	% overlap with Flood Zone 3a	% overlap with Flood Zone 3b	Size of site (ha.)	Flood Risk Suitability Score (1 is of most concern, 5 is of least concern)
134	The Plaza, Portsmouth Road, Guildford, GU2 4DH	93.9	6.1	0.0	0.0	0.38	3
2229	Guildford Cinema, Bedford Road, Guildford, GU1 4SJ	0.0	0.0	20.5	79.5 (23.9% Flood Zone 3b Developed)	0.8	1
205	North Street redevelopment, Guildford, GU1 4PU	75.2	22.3	2.5	0.0	3.7	3
171	Land and buildings at Guildford Railway Station, Guildford, GU1 4JY	95.9	4.1	0.0	0.0	2.2	4
08	77 to 83 Walnut Tree Close, Guildford, GU1 4UH	0.0	0.0	1.7	98.3 (51.2% Flood Zone 3b Developed)	3.58	1
2183	Kernal Court, Walnut Tree Close, Guildford, GU1 4UD	100	0.0	0.0	0.0	0.55	5
2226	Wey Corner, Walnut Tree Close, Guildford, GU1 4TT	71.7	16.4	11.9	0.0	0.38	3

ID	Address	% overlap with Flood Zone 1	% overlap with Flood Zone 2	% overlap with Flood Zone 3a	% overlap with Flood Zone 3b	Size of site (ha.)	Flood Risk Suitability Score (1 is of most concern, 5 is of least concern)
245	Slyfield Area Regeneration Project, Guildford, GU1 1QE	85.9	11.4	0.3	2.4 <i>(0.0% Flood Zone 3b Developed)</i>	40	4
2186	Broadfield Business Park, Shalford, GU4 8DW	32.4	65.5	2.1	0.0	1.5	3
53/54	Land at former Wisley Airfield, Ockham, GU23 6PX	Site 53: 96.8 Site 54: 96.5	Site 53: 0.3 Site 54: 3.5	Site 53: 2.9 Site 54: 0.0	Site 53: 0.0 Site 54: 0.0	86	4
975	Land to the north of West Horsley, KT24 6PE	80.2	2.4	17.4	0.0	8	4
240	Land near Horsley Railway Station, Ockham Road North, East Horsley, KT24 6LH	69.1	2.7	28.2	0.0	5.1	4
368	Land to the south of Normandy and north of Flexford, GU3 2DG	98	0.5	1.5	0.0	72.2	4
241	Land at Whittles Drive, Aldershot Road, Normandy, GU3 2BE	73.7	20.3	6.0	0.0	2.8	3
2106	Lakeview, Lakeside Road, Ash Vale, GU12 5AD	72.7	9.6	17.7	0.0	0.55	4
2258	Land at Garlick's Arch, Send Marsh/Burnt Common and Ripley, GU23 7LN	80.0	9.5	4.0	6.5	38.1	3

The 16 sites assessed were at varying levels of flood risk. Four sites (2229, 08, 245, 2258) include a proportion of land in the functional floodplain, two of which are situated in a Flood Zone 3b Developed. An additional 9 sites include a proportion of land in Flood Zone 3a. Sites with areas situated within Flood Zone 1 can be designed in a way which places properties away from areas at high flood risk. Sites which were classified as "Site is mainly in Flood Zone 1 but affected by Flood Zone 2, 3a and 3b", which would score the site a '4', and also were considered to be at risk of surface water flooding during the 1% pluvial event were upgraded to a score of '3'.

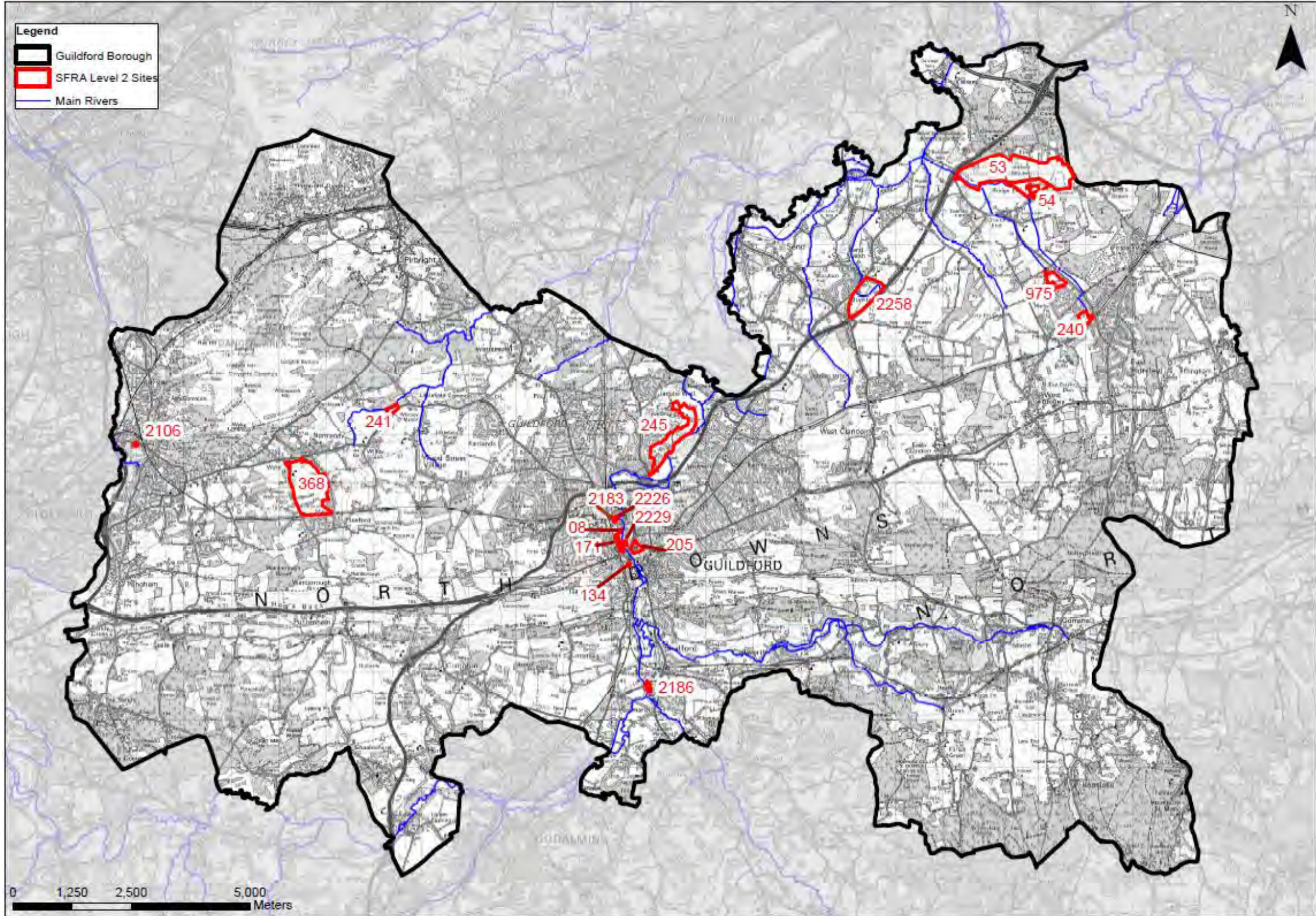


Figure 3-1: Location of the sites assessed within the Level 2 Strategic Flood Risk Assessment

4. Conclusion

This Level 2 Strategic Flood Risk Assessment considered 16 potential development sites based in Flood Zones 2 and 3 (i.e. at medium or high risk from river flooding).

Sustainability scores were used to differentiate sites based upon the ease in which to manage flood risk and avoid increasing flood risk, as shown in Table 3-2.

One site was awarded the best score of '5' and seven sites were awarded a high score of '4'; here it is feasible that all development could be placed within the safest areas with the lowest flood risk.

Six sites were scored a '3'; the majority of these sites were in Flood Zone 2 where more work would be required at the drainage strategy stage to ensure that flood risk could be managed on site.

Two sites were awarded the worst score of '1'; here the majority of the site was in Flood Zone 3 (at the highest risk of flooding) and it would be unlikely that these development sites would pass the technical part of the Exception Test, unless only flood compatible development occurred on site which did not increase flood risk elsewhere. However, following the application of the Sequential and Exception test, a Local Plan policy may consider allocating redevelopment of developed sites in the functional floodplain (as shown in Sites 2229 and 08) when flood risk betterment, appropriate mitigation and risk management can be achieved and implemented. In the case of site allocations, redevelopment of developed land within the functional floodplain should only be considered when there are no reasonably available alternatives at less risk of flooding, and when the Sequential and technical part of the Exception test has been passed. There should also be no increase in development vulnerability or intensification in use.

Many of these sites could benefit from flood management infrastructure currently being planned in the Wey catchment. The EA is currently leading work to appraise new flood alleviation schemes in Guildford town; the results of which will be available later in 2016. There is an opportunity for development to contribute to plans through the Section 106 or Community Infrastructure Levy process.

Despite the presence of flood defences, developments should plan to manage residual risks of river flooding (due to overtopping or breach) and surface water flooding risks. For new development to be fully sustainable over their lifetime, it is expected that they include Sustainable Urban Drainage Systems (SuDS); raise ground floor levels above the modelled 1 in 100 plus climate change flood depths; and identify safe emergency access and egress during a flood.

5. References

- Surrey County Council Preliminary Flood Risk Assessment (June 2011)
- Thames Catchment Flood Management Plan: Summary Report. (December 2009)
- National Planning Policy Framework. Department for Communities and Local Government (March 2012)
- Planning Practice Guidance: Flood Risk and Coastal Change. Department for Communities and Local Government (March 2014)
- Guildford Multi Agency Flood Plan. Guildford Borough Council (November 2014)
- Lower Wey Remodelling Flood Study Modelling Report. Mott MacDonald (December 2009)
- River Blackwater Flood Study Final Flood Mapping report. Peter Brett Associates (August 2007)
- River Wey Flood Mapping Study. Atkins (February, 2006)
- Designing for Exceedance in Urban Drainage – good practice (C635). CIRIA (May 2006)
- Planning for SuDS – making it happen (C687). CIRIA (December 2010)
- The SuDS Manual (C753). CIRIA (November 2015)
- Site Handbook for the Construction of SuDS (C698D). CIRIA (February 2007)
- Sustainable Drainage Systems. Hydraulic, structural and water quality advice (C609). CIRIA (May 2004)
- Guidance on the Permeable Surfacing of Front Gardens. Department for Communities and Local Government (May 2009)
- Promoting Sustainable Drainage Systems: Design Guidance for Islington. Robert Bray Associates Ltd, Islington Borough (March 2012)
- Sustainable Drainage Systems (SuDS) – an introduction. EA (May 2003)

6. Glossary and Notation

Term	Definition
Annual Exceedance Probability (AEP)	The probability of an event occurring within any one given year.
Attenuation	In the context of this report - the storing of water to reduce peak discharge of water
Breach	An opening – For example in the sea defences
Catchment Flood Management Plan	A high-level planning strategy through which the EA works with their key decision makers within a river catchment to identify and agree policies to secure the long-term sustainable management of flood risk.
Culvert/culverted	A channel or pipe that carries water below the level of the ground.
EA Flood Zone 1	Low probability of flooding. Probability of fluvial or tidal flooding is less than 0.1%.
EA Flood Zone 2	Moderate probability of flooding. Probability of fluvial flooding is 0.1 – 1%. Probability of tidal flooding is 0.1 – 0.5 %.
EA Flood Zone 3a	High probability of flooding. Probability of fluvial flooding is 1% (1 in 100 years) or greater. Probability of tidal flooding is 0.5%(1 in 200 years)
EA Flood Zone 3b	This area is defined as the Functional floodplain (see EA Flood Zone 3b Developed / undeveloped for further details)
EA Flood Zone 3b Developed	An area within the functional floodplain which is currently developed i.e. the current building footprint of the site within the functional floodplain
EA Flood Zone 3b Undeveloped	An area within the functional floodplain which is not currently developed e.g. greenfield land.
Estuary	A tidal basin , where a river meets the sea, characterised by wide inlets
Exception Test	To pass the Exception Test, it must be shown that new development located in areas at risk of flooding satisfactorily manages flood risk to people and property. It must be demonstrated that development can provide wider sustainability benefits to the community that outweigh flood risk and that the development will be safe from flood risk in its lifetime. Furthermore, the development must not increase flood risk elsewhere or where possible, the development should reduce flood risk overall.
Flood defence	Infrastructure used to protect an area against floods as floodwalls and embankments; they are designed to a specific standard of protection (design standard).
Floodplain	Area adjacent to river, coast or estuary that is naturally at risk of flooding.
Flood Resilience	Strategies aimed at flood protection, usually at the property level
Flood Risk	The level of flood risk is the product of the frequency or likelihood of the flood events and their consequences (such as loss, damage, harm, distress and disruption)
Flood Risk Assessment	Considerations of the flood risks inherent in a project, leading to the development actions to control, mitigate or accept them.
Flood storage	A temporary area that stores excess runoff or river flow often ponds or reservoirs.
Flood Zone	The extent of how far flood waters are expected to reach.
Fluvial	Relating to the actions, processes and behaviour of a water course (river or stream)
Fluvial flooding	Flooding by a river or a watercourse.
functional floodplain	Land where water has to flow or be stored in times of flood. This is defined within the PPG as the EA's Flood Zone 3b, with a 5% (1 in 20 year) probability of fluvial flooding.
GIS	Geographic Information System – A mapping system that uses computers to store, manipulate, analyse and display data
Greenfield	Previously undeveloped land.

Groundwater	Water that is in the ground, this is usually referring to water in the saturated zone below the water table.
Highly Vulnerable Developments	Developments that are at highest risk of flooding.
Hydraulic Modelling	A computerised model of a watercourse and floodplain to simulate water flows in rivers too estimate water levels and flood extents.
Infrastructure	Physical structures that form the foundation for development.
Local Plan	Guildford's statutory new development plan, comprising Part 1 (Strategic Policies and Sites) and Part 2 (Development Management and Site Allocations) – due for public release later in 2016.
Local Planning Authority	The local authority or council empowered by law to exercise statutory planning functions for its administrative area.
Mitigation measure	An element of development design which may be used to manage flood risk or avoid an increase in flood risk elsewhere.
Overland Flow	Flooding caused when intense rainfall exceeds the capacity of the drainage systems or when, during prolonged periods of wet weather, the soil is so saturated such that it cannot accept any more water.
Overtopping	Water carried over the top of a defence structure due to the wave height exceeding the crest height of the defence.
Residual Flood Risk	The remaining flood risk (such as from overtopping and breach) after risk reduction measures have been taken into account.
Return Period	The average time period between rainfall or flood events with the same intensity and effect.
Riparian Owner	Owners of land adjoining, above, or with a watercourse running through it. Riparian owners have rights and responsibilities associated with river management.
Risk	The probability or likelihood of an event occurring.
River Catchment	The areas drained by a river
Sequential Test	To pass the Sequential Test, a Local Authority must demonstrate that they steered development to areas of lowest flood risk.
Sewer flooding	Flooding caused by a blockage or overflowing in a sewer or urban drainage system.
Standard of Protection	The flood event return period above which significant damage and possible failure of the flood defences could occur.
Storm surge	A high rise in sea level due to the winds of the storm and low atmospheric pressure.
Sustainability	To preserve /maintain a state or process for future generations.
Sustainable drainage system	Methods of management practices and control structures that are designed to drain surface water in a more sustainable manner than some conventional techniques.
Sustainable development	Development that meets the needs of the present without compromising the ability of future generations meeting their own needs
1 in 100 year event	Event that on average will occur once every 100 years. Also expressed as an event, which has a 1% probability of occurring in any one year.
1 in 100 year design standard	Flood defence that is designed for an event, which has an annual probability of 1%. In events more severe than this the defence would be expected to fail or to allow flooding.
Windfall sites	Sites which have not been specifically identified as available in the Local Plan process. They normally comprise previously-developed sites that have unexpectedly become available, such as land within Flood Zone 3b Developed.

7. Appendix A – Site Proformas

7.1 Site 134 – The Plaza, Portsmouth Road, Guildford

Site Number	134	Site Name	The Plaza, Portsmouth Road, Guildford
Site Location	GU2 4DH	Grid Reference	SU 99376 49274
Location Plan			
Description	<p>This site is located in the town centre of Guildford on Portsmouth Road. The site has been vacant for many years, but is considered to be a prominent redevelopment site. There are private flood defences located within Guildford's town centre that provide some level of protection from fluvial flooding from the River Wey to the site. The site lies approximately 115m west of the River Wey. The site is being considered for future residential development.</p>		

Risk Assessment	
Defences	
	The site currently benefits from private (riparian owned) flood defences, which run through Guildford town centre.
Mapping	
<p>KEY:</p> <p>Red line boundary</p> <p>Main River</p> <p>Other River</p> <p>Defence line extent</p>	
Flood Zones	<p>RD</p> <p>A small portion of the site, along the north eastern boundary, lies within lands classified as Flood Zone 2.</p> <p>Flood Zone 1 – 93.9%</p> <p>Flood Zone 2 – 6.1%</p> <p>Flood Zone 3 – 0%</p> <p>The detailed modelling overleaf shows the extent of flooding during the 1 in 20 year (Flood Zone 3b), 1 in 100 year (Flood Zone 3a) and 1 in 1000 year (Flood Zone 2) return periods.</p>

Sources of Flooding

Fluvial

The site lies within the flood extent of detailed hydraulic modelling, which has been modelled as part of the 2009 Lower Wey fluvial model. The north eastern corner of the site is predicted to be at risk of fluvial flooding from the River Wey in the north east corner during the 1 in 1000 year fluvial event or greater; however, the majority of the site is not predicted to be at risk from fluvial flooding during the 1 in 1000 year event or less.

KEY:

Red line boundary

Main River

Other River

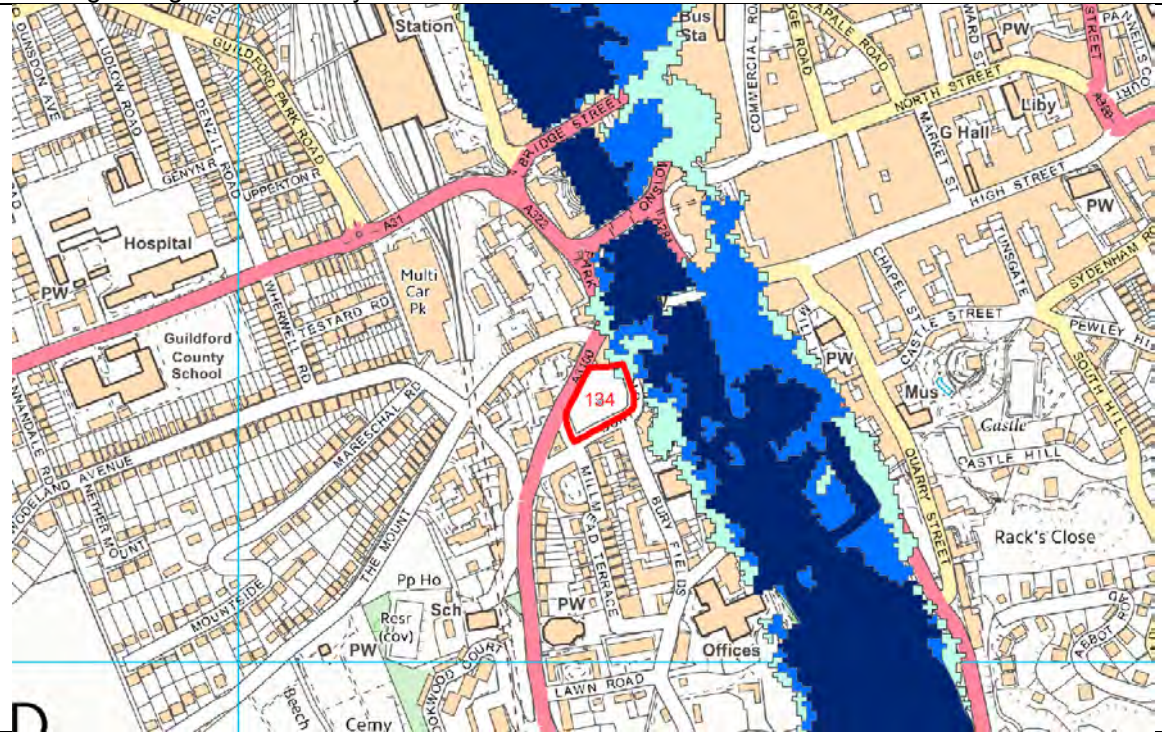
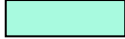
Lower Wey
(2009) 1 in 20yr
undefended



Lower Wey
(2009) 1 in 100yr
undefended



Lower Wey
(2009) 1 in 1000yr



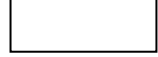
KEY:

Red line
boundary

Main River

Lower Wey
(2009) 1 in 100yr
hazard
mapping:

Caution (Very low
hazard)



Moderate (Danger
for some)



Significant (Danger
for Most)

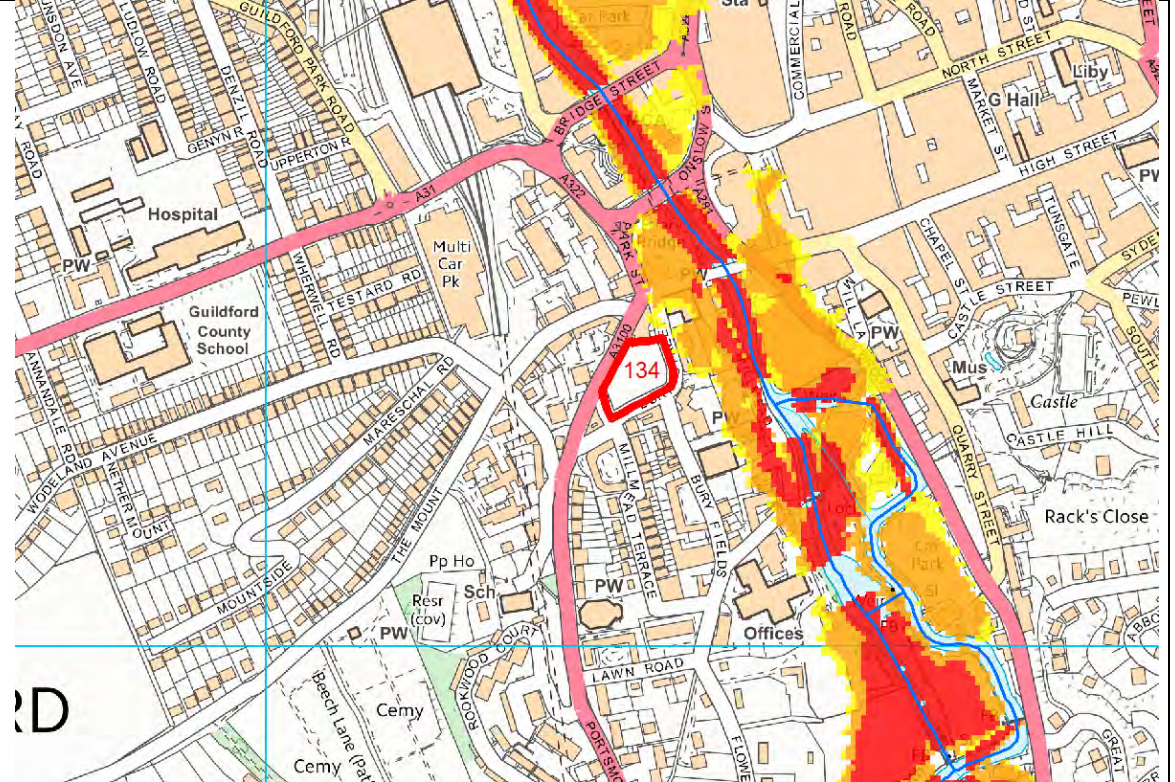


Extreme (Danger
for all)



Hazard Mapping

Hazard mapping has been modelled to observe the level of danger people within the site are in. The hazard mapping indicates that the entire site is located within lands with a hazard classification of Caution. This corresponds to a very low hazard for the site.



<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> • To reduce flood risk, development should be avoided within the area classified as Flood Zone 2. Placing sleeping accommodation on the ground floor in areas of flood risk should be avoided. • The surface water drainage system should be designed to accommodate storage during the 1 in 30 year pluvial event or less and be designed to manage surface water exceedance events. The layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes. • Safe access and egress to the site is achievable to the south west of the site onto Millmead Terrace.
<p>Reasonable prospect of compliance within the Exception Test?</p>	<p>A large percentage of the site is considered to be developable without the need for extensive flood risk management work. Development should be focused in areas within Flood Zone 1 in order to pass the technical part of the Exception Test.</p>
<p>Flood Risk Suitability Score</p>	<p>3</p>

7.2 Site 2229 – Guildford Cinema, Bedford Road, Guildford

Site Number	2229	Site Name	Guildford Cinema, Bedford Road, Guildford
Site Location	GU1 4SJ	Grid Reference	SU 99362 49677
Location Plan			
KEY:	<p>Red line boundary</p> <p>Main River</p> <p>*Other Rivers</p> <p>*Where other indicates: Drains, culverts, streams, brooks etc.</p>		
Description	<p>The site is located within Guildford town centre, with the River Wey directly to the west of the site, Bedford Road multi-storey car park to the east, the Crown Court to the north, and Bedford road surface car park to the south. The site is comprised of retail buildings, small areas of green space (alongside the river bank) and other hard impermeable surfaces (such as car parking, footpaths and roads).</p>		

Risk Assessment

Defences

The site currently benefits from private (riparian owned) flood defences that run through Guildford town centre.

Mapping

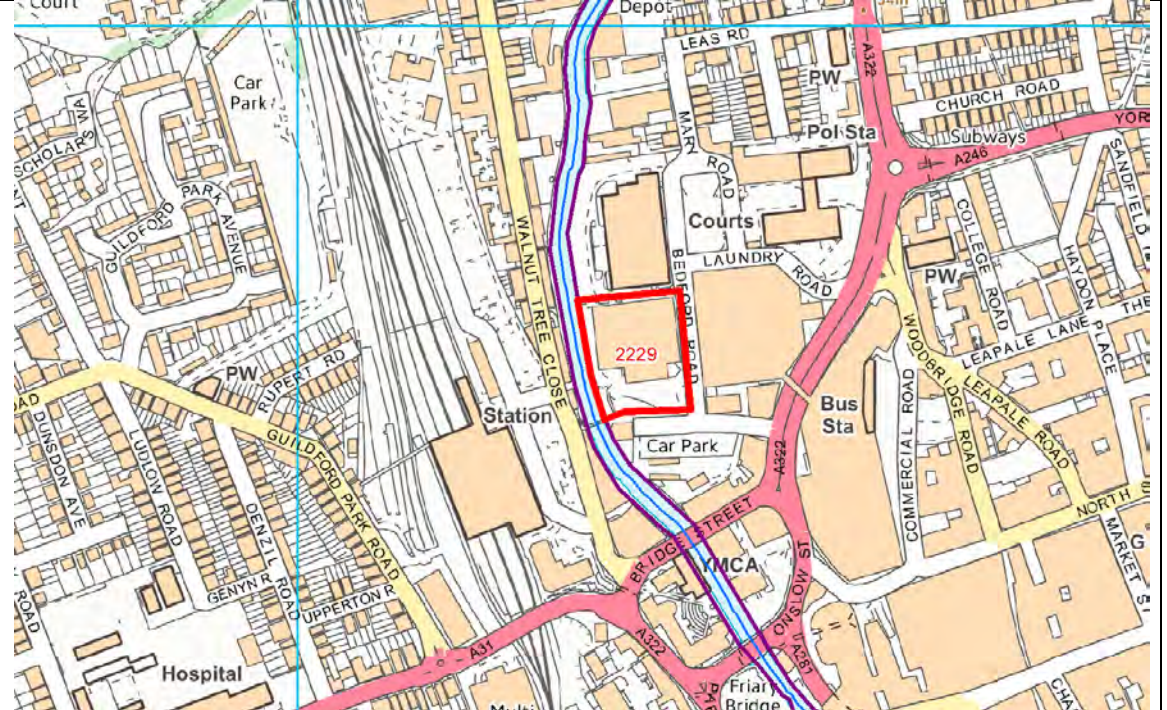
KEY:

Red line boundary

Main River

Other River

Defence line extent



Flood Zones

The site is entirely located within Flood Zone 3. 79.5% of the site is within Flood Zone 3b, which is the functional floodplain. 23.9% of the site lies within Flood Zone 3b developed, which is the developed land within the functional floodplain. The detailed modelling shows the extent of flooding during the 1 in 20 year (Flood Zone 3b), 1 in 100 year (Flood Zone 3a) and 1 in 1000 year (Flood Zone 2) return period scenarios.

Sources of Flooding

Fluvial

KEY:

Red line
boundary

Main River

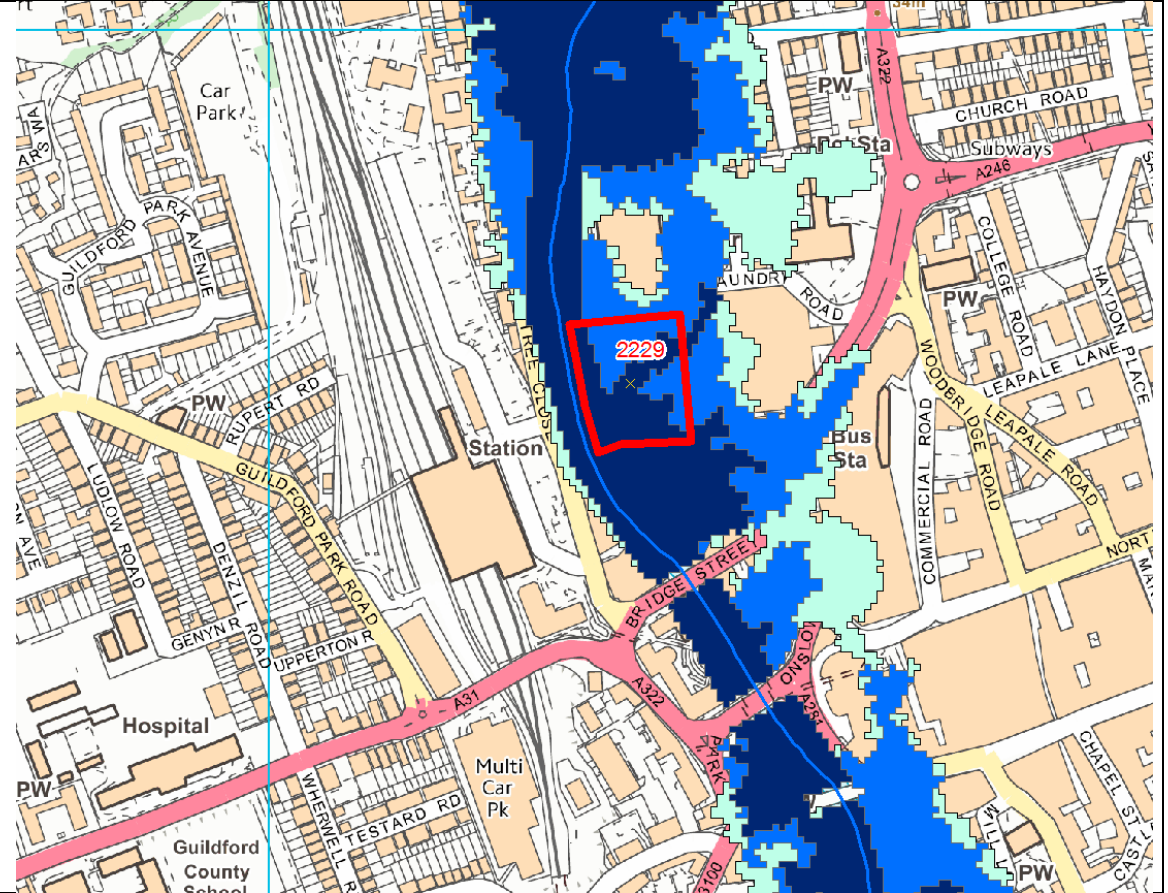
Other River

Lower Wey
(2009) 1 in
20yr
undefended

Lower Wey
(2009) 1 in
100yr
undefended

Lower Wey
(2009) 1 in
1000yr
undefended

The site lies within the flood extent of the 2009 Lower Wey fluvial model. The Lower Wey (2009) fluvial model illustrates that the entire site is predicted to flood during the 1 in 100 year fluvial event or greater and that 79.5% of the site is predicted to flood during the 1 in 20 year fluvial event or greater. The entire site is considered to be at high risk of fluvial flooding.



Hazard Mapping

The entire site is located within Flood Zone 3, with 79.5% of the site within the functional floodplain, thus hazard (velocity-depth) mapping has been modelled to observe the level of danger to people from fluvial flood risk. The hazard mapping shows that the majority of the site is predicted to be at significant hazard, with danger for most. There are three areas to the north west, south west and south east of the site which are predicted to be a moderate hazard, with danger for some.

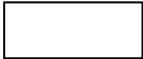
KEY:

Red line
boundary

Main River

Lower Weir
(2009) 1 in
100yr hazard
mapping:

Caution (Very low
hazard)



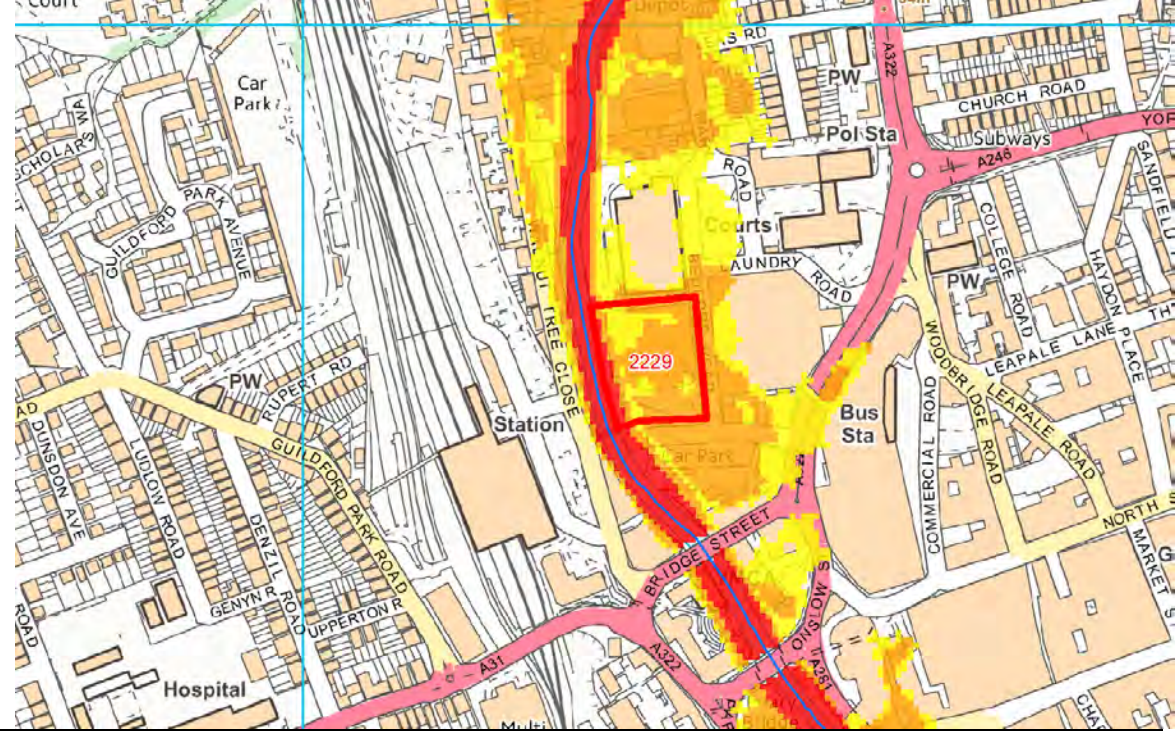
Moderate
(Danger for
some)



Significant
(Danger for Most)



Extreme (Danger
for all)



Surface Water/Sewer

KEY:

Red line boundary

Main River

Other River

Surface water extent (1 in 100 year)

The surface water modelling demonstrates that surface water ponding is predicted to occur within the paved areas of the site, particularly along the site boundaries and within the south west of the site, during the 1 in 100 year pluvial event or greater.



Artificial Sources

The site falls outside of the maximum extent of reservoir flooding. Furthermore, there are no reservoirs, lakes or canals in close proximity to the site. The site is considered at low risk of flooding from artificial sources.

Summary of flood risk from all sources of flooding

- Flooding from Fluvial sources – The entire site is located within Flood Zone 3, with 79.5% of the site situated within Flood Zone 3b and 23.9% of the site located within Flood Zone 3b developed.
- The hazard mapping shows that the majority of the site is predicted to be at significant hazard, with danger for most along the western boundary of the site.
- Flooding from Surface Water sources – The site is predicted to flood along the paved areas surrounding the boundaries of the site, with additional surface water ponding predicted in the south west paved area of the site, during the 1 in 100 year pluvial event or greater.
- Flooding from Artificial Sources – The site is considered to be at low risk from flooding from artificial sources.





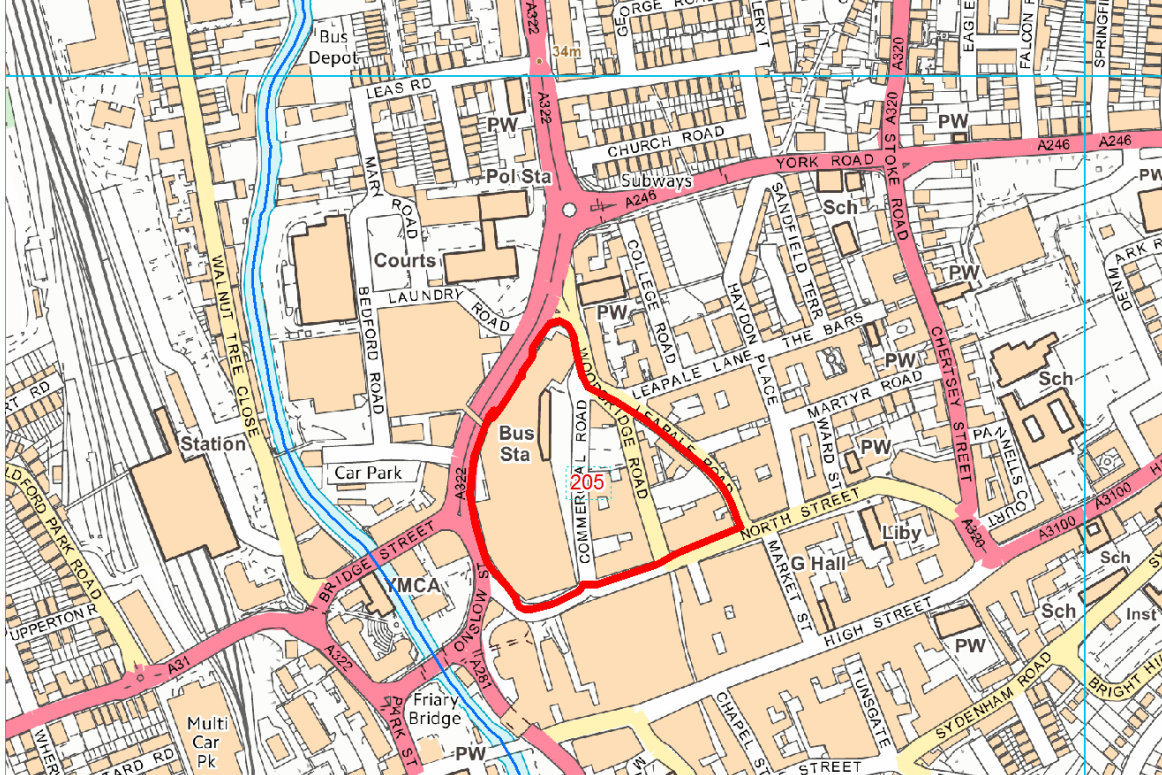
Risk Management – Guidance is provided in the following section to inform policy development

Flood Risk Management Recommendations

- Flood risk is an important consideration when granting planning permission at this site.
- More vulnerable land uses must be avoided on the site.
- New development types which would be suitable for the site (with respect to flood risk) according to Planning Guidance are water compatible development including docks, marinas and wharves, amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms, navigation facilities, and water-based recreation (excluding sleeping accommodation). Furthermore, essential infrastructure such as essential transport and utility infrastructure and wind turbines may be suitably located here. A full list of compatible development types can be found at <http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/flood-zone-and-flood-risk-tables/table-2-flood-risk-vulnerability-classification/>
- Although existing defences provide some flood risk reduction, overtopping during low

	<p>probability flood scenarios and breach of defences are a cause of flood risk on site. In this case where there is currently a building (cinema) on site, if a developer is not planning on changing building use, it may be possible for the redevelopment to have part of their footprint within the area marked as Flood Zone 3 if it is contained within the existing building's footprint. Locating building(s) outside of the Flood Zone 3 extent, however, would be preferable. An important first step early in the planning process would be to consult with the Environment Agency to verify whether it is possible to develop within Flood Zone 3 on the existing building footprint. . In order to make the planning application more favourable, the developer should ensure that the footprint of the redevelopment does not exceed the footprint of the existing building; the surrounding entrances for access/egress into proposed building(s) should be raised above the predicted flood levels; and flood resilient measures such as those embedded within part 2 of the CIRIA report 'Improving the flood performance of new buildings' should be incorporated within the redevelopment design.</p> <ul style="list-style-type: none"> • If redevelopment occurs, appropriate set back distances from the watercourses should be agreed with the Environment Agency and Guildford Borough Council. This could be up to 16 metres; however, it is more likely to be between 5 metres and 8 metres. • Opportunities to provide flood storage capacity on site should be considered. • The open land on the site to the south of the existing restaurant and cinema is predominantly hard surfaced and impermeable. Run-off from the site could be reduced by increasing permeable surface (e.g. grassed areas) in place of the hard surface, and re-siting building footprints to provide a wider green buffer alongside the river. • Existing vehicle and pedestrian access would remain, and Walnut Bridge will be replaced, providing access from Guildford railway station. Safe access and egress could be achievable if the replacement Walnut Bridge were raised 300mm above the 1 in 100 year plus climate change flood level as the bridge onto Walnut Tree Close would be leading people onto an area outside the 1 in 100 year plus climate change flood level and into an area which has 'a very low hazard' rating. • Any works that lie in, over, under or next to a main river will require flood defence consent from the Environment Agency under the Water Resources Act 1991 and the current level of flood protection must be maintained throughout those works. Works affecting ordinary watercourses now require the consent of the Local Authority. Additional consents under the Land Drainage Act may be required if a culvert or structure, such as a weir, is proposed to control flow on any ordinary watercourse.
<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> • A contribution to River Wey flood defences should be considered as well as the opportunity to reduce flood risk to downstream areas through increasing flood storage capacity on site. • The surface water drainage system should be designed to accommodate storage of events up to the 1 in 30 year event and designed to manage surface water exceedance events. The layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes.
<p>Reasonable prospect of compliance within the Exception Test?</p>	<p>The site lies within the functional floodplain (Flood Zone 3b), with 23.9% of the site situated within Flood Zone 3b developed. Following application of the Sequential Test and Exception Test, a Local Plan policy may consider allowing redevelopment in the functional floodplain when flood risk betterment, appropriate mitigation and risk management can be achieved and implemented. A new development cannot increase development vulnerability or intensification of use. This will likely preclude many types of development being considered on this site, unless the development is water compatible or essential infrastructure.</p>
<p>Flood Risk Suitability Score</p>	<p>1</p>

7.3 Site 205 – North Street redevelopment, Guildford

Site Number	205	Site Name	North Street redevelopment, Guildford
Site Location	GU1 4PU	Grid Reference	SU 99572 49548
Location Plan KEY:  line boundary  Main River  *Other Rivers  *Where other indicates:			
Description	<p>The site is situated in Guildford town centre. It is bounded to the south by North Street, to the east by Leapale Road and to the west and north by Onslow Street. The existing land use within the site boundary is retail (comparison), residential flats, restaurants and cafes, offices, bus station, surface car parks, basement car park and servicing, and vacant land. The centre of the site lies approximately 200m away from the River Wey, which lies to the west of the site. The River Wey runs through Guildford town centre, flowing south to north.</p>		

Risk Assessment

Defences

The site currently benefits from private (riparian owned) flood defences, which run through Guildford town centre.

Mapping

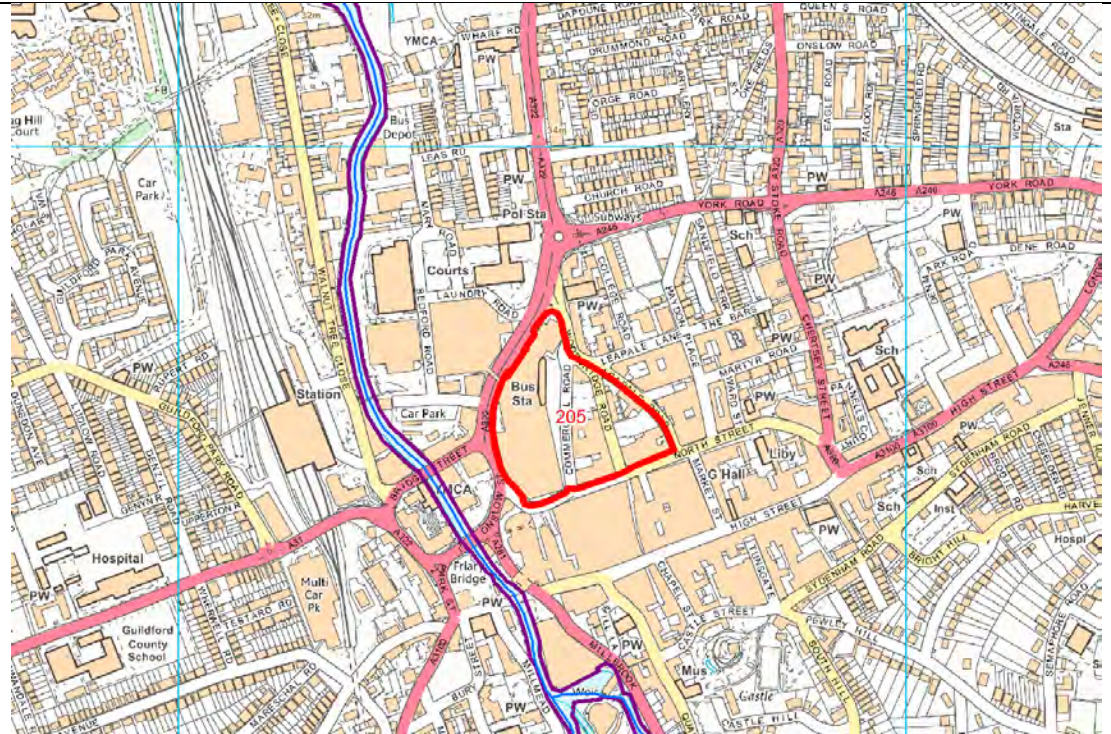
KEY:

Red line
boundary

Main River

Other River

Defence line
extent



Flood Zones

A majority of the site lies in lands classified as Flood Zone 1. The area to the west of the site is located in Flood Zone 2; a small area to the north west of the site is identified as within Flood Zone 3.

Flood Zone 1: 75.2%

Flood Zone 2: 22.3%

Flood Zone 3: 2.5%

The detailed modelling overleaf shows the extent of flooding during the 1 in 20 year (Flood Zone 3b), 1 in 100 year (Flood Zone 3a) and 1 in 1000 year (Flood Zone 2) return periods.

Sources of Flooding

Fluvial

KEY:

Red line
boundary

Main River

Other River

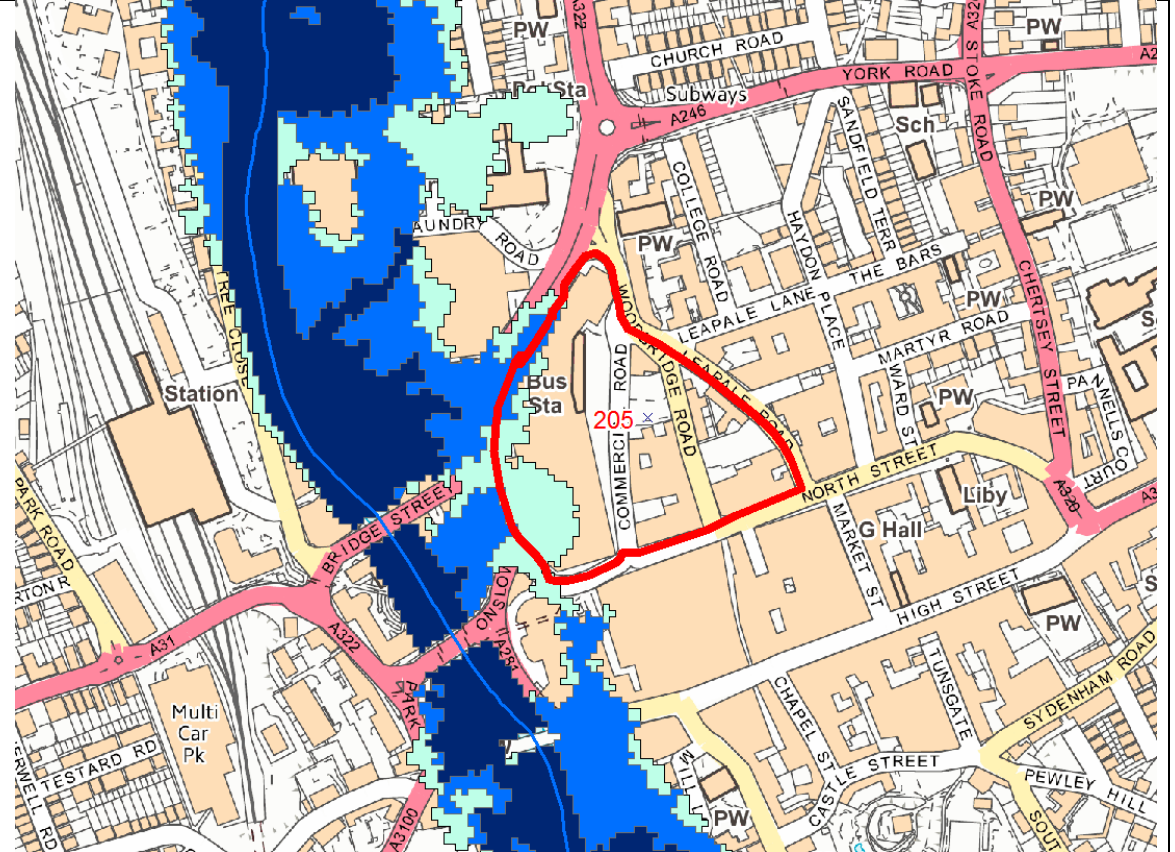
Lower Wey
(2009) 1 in
20yr
undefended

Lower Wey
(2009) 1 in
100yr
undefended

Lower Wey
(2009) 1 in
1000yr
undefended

Multi
Car
Pk

The site lies within the flood extent of detailed hydraulic modelling, which has been modelled as part of the 2009 Lower Wey fluvial model. The Lower Wey (2009) fluvial model shows that western area of the site, which is adjacent to Onslow Street, is predicted to flood during the 1 in 1000 year event or greater. Furthermore, the north western boundary is considered to be at risk of fluvial flooding during the 1 in 100 year fluvial event or greater. Therefore, the north western boundary of the site is considered to be at high risk of fluvial flooding. The remainder of the site is considered to be at low risk of fluvial flooding.



Hazard Mapping

The western side of the site is situated within Flood Zone 2, with the north western boundary located within Flood Zone 3; therefore, hazard mapping has been modelled to observe the level of danger people within the site are in. The hazard mapping illustrates that the north west boundary of the site is predicted to be a moderate hazard, with danger for some. A small area of the north western boundary is predicted to be a significant hazard, with danger for most – as shown in the expanded image.

KEY:

Red line
boundary

Main River

Lower Wey
(2009) 1 in 100yr
hazard

mapping:

Caution (Very low hazard)



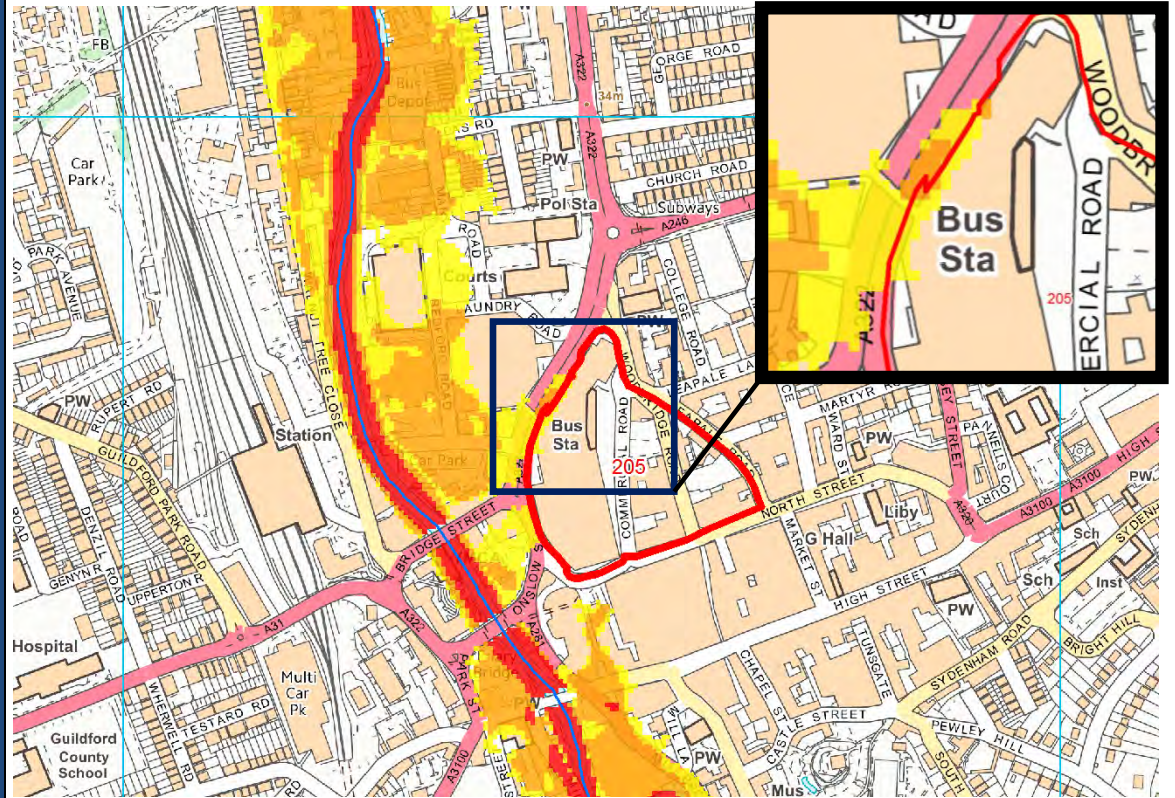
Moderate (Danger for some)

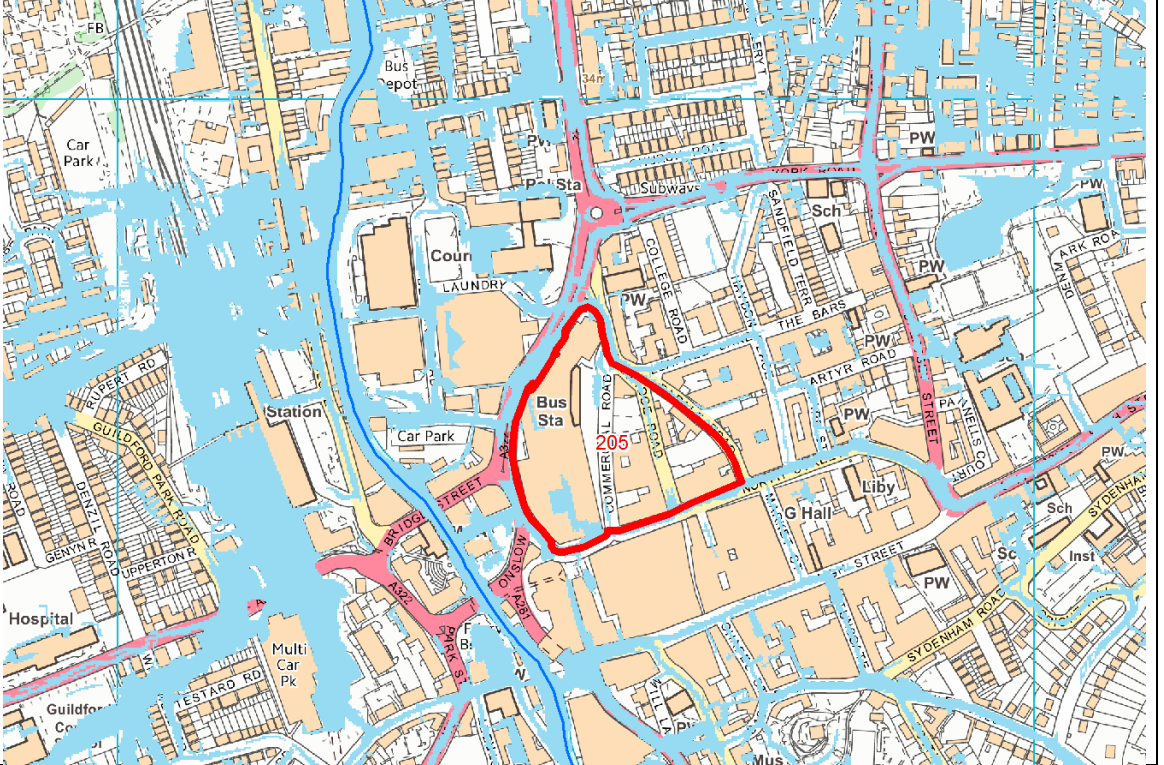


Significant (Danger for Most)



Extreme (Danger for all)



<p>Surface Water/Sewer</p> <p>KEY:</p> <p>Red line boundary</p> <p>Main River</p> <p>Other River</p> <p>Surface water extent (1 in 100 year)</p> 	<p>Surface water ponding is predicted in the south western corner of the site during the 1 in 100 year pluvial event or greater. Furthermore, overland flow paths are observed along the road network within the site, in particular down both Commercial Road and Woodbridge Road. The remainder of the site is considered to be at low risk of surface water flooding.</p>
<p>Artificial Sources</p>	<p>The site falls outside of the maximum extent of reservoir flooding. Furthermore, there are no reservoirs, lakes or canals in close proximity to the site. Thus the site is considered at low risk of flooding from artificial sources.</p>
<p>Summary of flood risk from all sources of flooding</p>	<ul style="list-style-type: none"> • Flooding from Fluvial sources – Low for the majority of the site, with areas of Medium – High risk. 22.3% of the site (along the western boundary) is classified as Flood Zone 2 with a small pocket of Flood Zone 3 (centred at SU 99441 49663). • Flooding from Surface Water sources – Areas to the south and along the roads are predicted to flood during 1 in 100 year pluvial event; the remainder of the site is considered at low risk of surface water flooding. • Flooding from Artificial sources – Low for the majority of the site.

Risk Management – Guidance will be provided in the following section to inform policy development

<p>Flood Risk Management Recommendations</p>	<ul style="list-style-type: none"> • As the site is within the town centre and is previously developed, the use of infiltrating SuDS may not be suitable. As such use of roof-based source control measures like green roofs and rainwater harvesting is encouraged. Non-infiltrating SuDS like cellular storage or attenuation tanks will likely be required for attenuation storage. • A surface water drainage strategy will be required to mitigate the surface water flood risk and a remediation strategy will be required to mitigate the effects of any ground contamination, if present. • Highly Vulnerable and More Vulnerable developments should be avoided within areas predicted to be at increased risk of flooding. • Thames Water has raised concerns regarding water supply capacity for this site and advised that the current network is unlikely to be able to support the anticipated demand from this development. It has also raised concerns regarding adequacy of wastewater infrastructure; therefore any further development proposals in relation to the wastewater infrastructure, will likely need to be supported by additional drainage infrastructure.
<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> • Developments within the site are encouraged to achieve a reduction in existing runoff rates / volumes where possible to mitigate effects of cumulative development in this area. • Safe access and egress to the site is achievable to the south of Site 205.
<p>Reasonable prospect of compliance within the Exception Test?</p>	<p>A small proportion of the site (2.5% of the total site area) lies within the Flood Zone 3a extent. The Exception Test is required to assess if More Vulnerable development can be supported within Flood Zone 3a. Proposed development should be constrained to areas classified at a lower flood risk to maximise the likelihood of passing the technical part of the Exception Test</p>
<p>Flood Risk Suitability Score</p>	<p>3</p>

7.4 Site 171 – Land and buildings at Guildford Railway Station, Guildford

Site Number	171	Site Name	Land and buildings at Guildford Railway Station, Guildford
Site Location	GU1 4JY	Grid Reference	SU 99120 49933
Location Plan			
KEY:	<p>Red line boundary</p> <p>Main River</p> <p>*Other Rivers</p> <p>*Where other indicates: Drains, culverts, streams, brooks etc.</p>		
Description	<p>The site lies in Guildford town centre, situated to the east of the railway tracks. It is comprised of station buildings including offices and retailing, and associated car and cycle parking... The site lies adjacently to the west of the River Wey. The River Wey runs through Guildford town centre, flowing south to north.</p>		

Risk Assessment

Defences

The site currently benefits from private (riparian owned) flood defences, which run through Guildford town centre.

Mapping

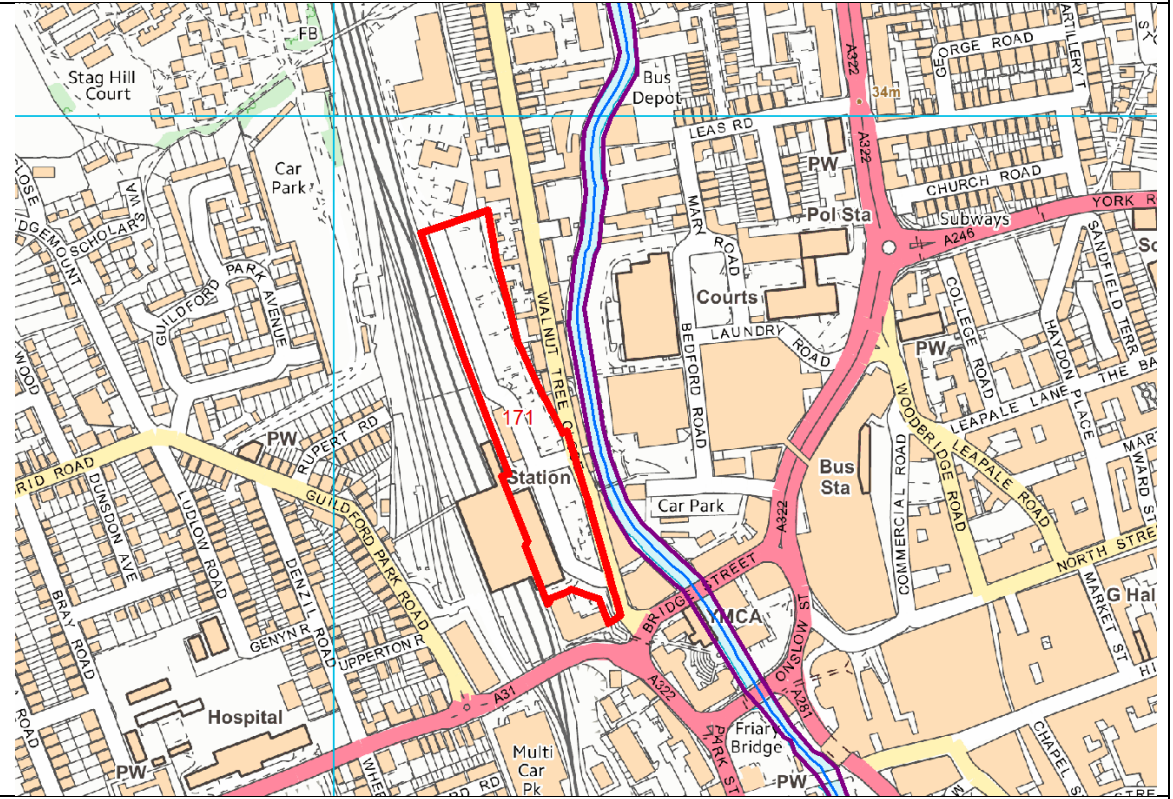
KEY:

Red line
boundary

Main River

Other River

Defence line
extent



Flood Zones

The east of the site lies partially in Flood Zone 2. The railway tracks themselves lie within Flood Zone 1 and a portion of the station's grounds lie within Flood Zone 2.

Flood Zone 1: 95.9%

Flood Zone 2: 4.1%

Flood Zone 3: 0%

The detailed modelling overleaf shows the extent of flooding during the 1 in 20 year (Flood Zone 3b), 1 in 100 year (Flood Zone 3a) and 1 in 1000 year (Flood Zone 2) return periods.

Sources of Flooding

Fluvial

Actual Risk

The site lies within the flood extent of detailed hydraulic modelling, which has been modelled as part of the 2009 Lower Wey fluvial model. The Lower Wey (2009) fluvial model indicates that the majority of the site is not predicted to flood from fluvial sources during the 1 in 1000 year fluvial event or greater. A very small area along the eastern boundary of the site is predicted to be at risk from fluvial flooding during the 1 in 1000 year event. Therefore, the majority of the site is considered at low risk of fluvial flooding; however, the eastern boundary of the site is considered at moderate risk of fluvial flooding.

KEY:

Red line
boundary

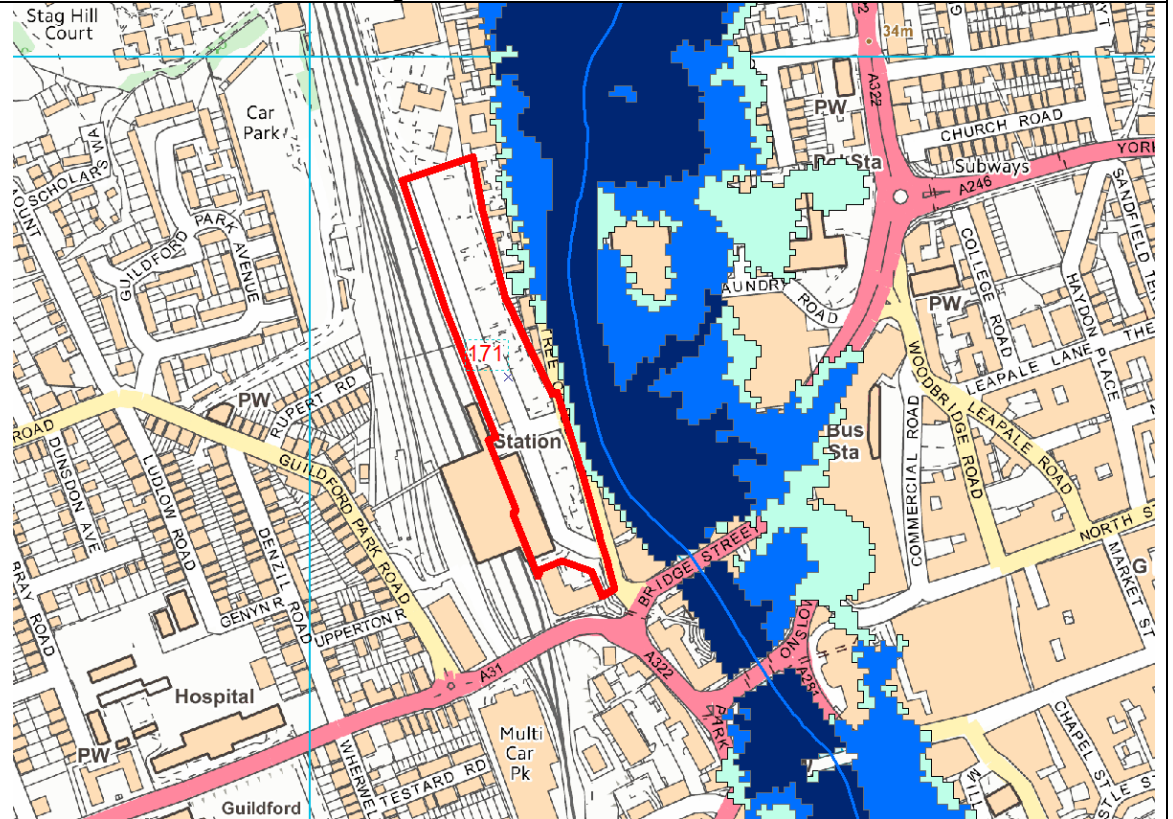
Main River

Other River

Lower Wey
(2009) 1 in
20yr
undefended

Lower Wey
(2009) 1 in
100yr
undefended

Lower Wey
(2009) 1 in
1000yr
undefended



Hazard Mapping

Hazard mapping has been modelled to observe the level of danger people within the site are in. The hazard mapping indicates that the entire site is located within lands with a hazard classification of Caution. This corresponds to a very low hazard for the site.

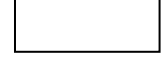
KEY:

Red line
boundary

Main River

Lower Wey
(2009) 1 in 100yr
hazard
mapping:

Caution (Very low hazard)



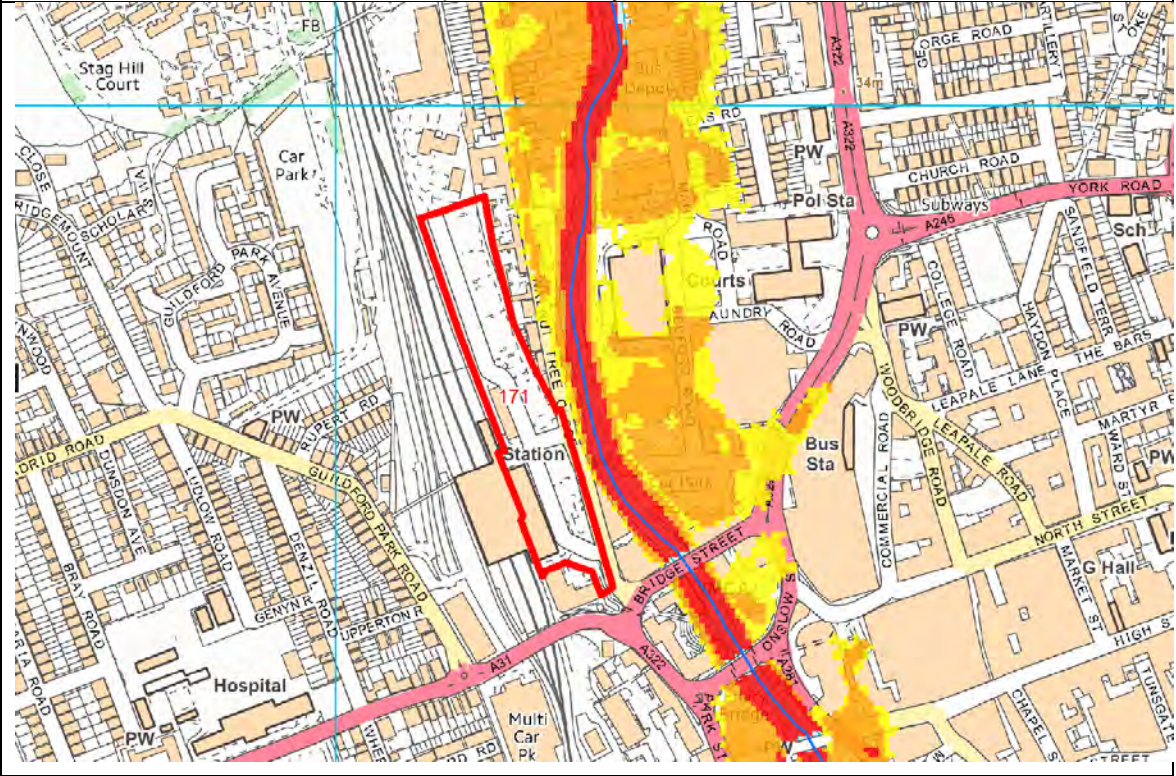
Moderate (Danger for some)

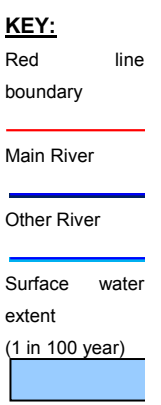



Significant (Danger for Most)



Extreme (Danger for all)



<p>Surface Water/Sewer</p> <p>KEY:</p> <p>Red line boundary</p> <p>Main River</p> <p>Other River</p> <p>Surface water extent (1 in 100 year)</p> 	<p>The site lies within an area predicted to flood during the 1 in 100 year pluvial event or greater. As shown in the map below, surface flood risk is predicted to be highest within the northern portion of the site.</p> 
<p>Artificial Sources</p>	<p>The site falls outside of the maximum extent of reservoir flooding. Furthermore, there are no reservoirs, lakes or canals in close proximity to the site. Thus the site is considered at low risk of flooding from artificial sources.</p>
<p>Summary of flood risk from all sources of flooding</p>	<ul style="list-style-type: none"> • Flooding from Fluvial sources – Low for the majority of the site. A small portion of the site along the eastern boundary (circa 4.1% of the total area) is classified as Flood Zone 2. • Flooding from Surface Water sources – Flooding during 1 in 100 year pluvial event for approximately 50% of the site, with surface water flood risk constrained to the north of the site. • Flooding from Artificial sources – Low for the majority of the site.

Risk Management – Guidance will be provided in the following section to inform policy development

<p>Flood Risk Management Recommendations</p>	<ul style="list-style-type: none"> • As the site is previously developed land, development may result in an increase or a decrease in surface water runoff, depending upon the existing proportion of hardstanding (and whether surface water runoff rate restrictions are in place within the site). Surface water runoff should be restricted to Greenfield runoff rate, or where not possible, development should aim to provide a betterment over existing conditions where runoff controls are not existent. • Surface water should be appropriately managed through the use of a SuDS management train for the site. • As the site is previously developed and within the town centre, the use of infiltrating SuDS may not be suitable. As such use of roof-based source control measures like green roofs and rainwater harvesting is encouraged. Non-infiltrating SuDS like cellular storage or attenuation tanks will likely be required for attenuation storage. • Ground floor levels should be above surrounding ground levels to prevent ingress of surface water runoff. A best practice approach is for finished floor levels and the level of any opening into any basement should be greater than 300mm above the maximum flood level, up to and including the 1 in 100 year return period event. • In light of the above, a flood risk assessment will be required to support the planning application and it would focus on the management of surface water/fluvial flooding.
<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> • Developments within the site are encouraged to achieve a reduction in existing runoff rates / volumes where possible to mitigate effects of cumulative development in this area. • The developer should try to avoid development within the area shown to be in Flood Zone 2. • Safe access and egress to the site is achievable to the south of the site onto Bridge Street.
<p>Reasonable prospect of compliance within the Exception Test?</p>	<p>A large percentage of the site is developable without the need to carry out any extensive flood risk management work. Development should be focused in areas within Flood Zone 1 in order to pass the technical part of the Exception Test.</p>
<p>Flood Risk Suitability Score</p>	<p>4</p>

7.5 Site 08 – 77 to 83 Walnut Tree Close, Guildford

Site Number	08	Site Name	77 to 83 Walnut Tree Close, Guildford
Site Location	GU1 4UH	Grid Reference	SU 99217 49946
Location Plan	<p>KEY: Red line boundary Main River *Other Rivers *Where other indicates: Drains, culverts, streams, brooks etc.</p>		
Description	<p>The site is located within Guildford town centre. The site is bounded to the west by Walnut Tree Close, to the east by the River Wey and to the south and the north by office and industrial units. The site is currently comprised of business (B1) and warehouse (B8) uses and other hard impermeable surfaces (such as car parking, footpaths and roads) and some trees and scrub (found along the eastern boundary). The top of bank towpath of the River Wey runs alongside the entire eastern boundary of the site. There are two vehicular accesses to the site (one to the north west and one to the south west), both leading onto Walnut Tree Close.</p>		

Risk Assessment

Defences

The site currently benefits from private (riparian owned) flood defences that run through Guildford town centre.

Mapping

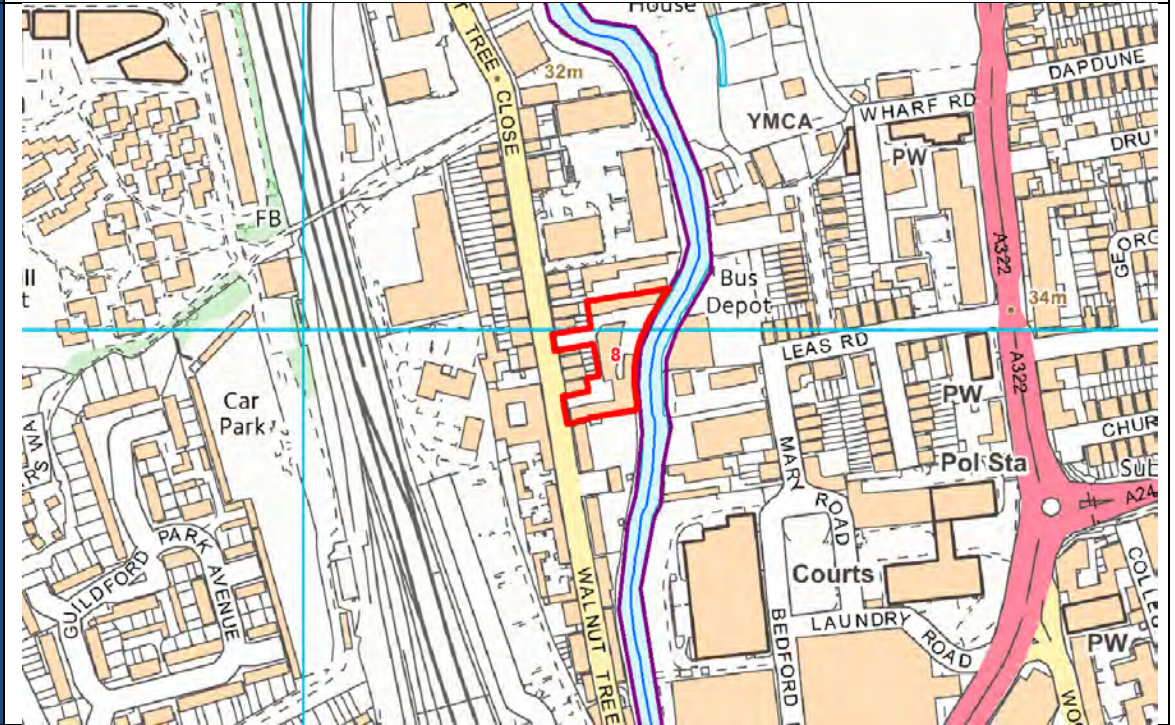
KEY:

Red line boundary

Main River

Other River

Defence line extent



Flood Zones

The site is 100% located within Flood Zone 3, with 98.3% of the site located within Flood Zone 3b, which is the functional floodplain. Furthermore, 51.2% of the site is within Flood Zone 3b developed, which is the developed land within the functional floodplain. Developed land within the functional floodplain, as defined in the Guildford SFRA Level 1, constitutes the footprint of the building. The detailed modelling shows the extent of flooding during the 1 in 20 year (Flood Zone 3b), 1 in 100 year (Flood Zone 3a) and 1 in 1000 year (Flood Zone 2) return periods.

Sources of Flooding

Fluvial

KEY:

Red line boundary

Main River

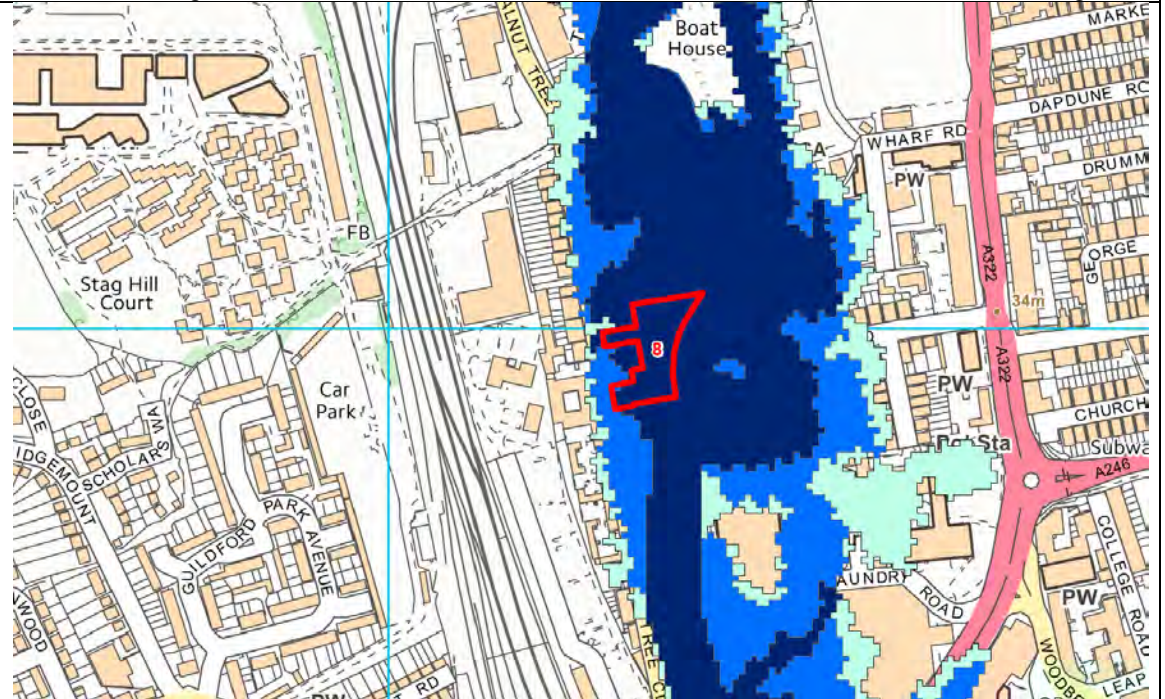
Other River


Lower Wey (2009) 1 in 20yr undefended

Lower Wey (2009) 1 in 100yr undefended

Lower Wey (2009) 1 in 1000yr undefended

The site lies within the flood extent of detailed hydraulic modelling, which has been modelled as part of the 2009 Lower Wey fluvial model. The Lower Wey (2009) fluvial flood model shows that almost the entire site is predicted to flood during the 1 in 20 year fluvial event or greater, with a small area to the south western entrance of the site predicted to flood during the 1 in 100 year fluvial event or greater. Thus the entire site is considered to be at high risk of fluvial flooding.



<p>Surface Water/Sewer</p> <p>KEY:</p> <p>Red line boundary</p> <p>Main River</p> <p>Other River</p> <p>Surface water extent (1 in 100 year)</p> 	<p>The surface water flood modelling illustrates that surface water ponding is predicted to occur within the car parking area to the south of the site during the 1 in 100 year pluvial event. The remainder of the site is not predicted to flood during the 1 in 100 year pluvial event, thus is considered to be at low risk of surface water flooding.</p>
<p>Artificial Sources</p>	<p>The site falls outside of the maximum extent of reservoir flooding. Furthermore, there are no reservoirs, lakes or canals in close proximity to the site and the site is considered at low risk of flooding from artificial sources.</p>
<p>Summary of flood risk from all sources of flooding</p>	<ul style="list-style-type: none"> • Flooding from Fluvial sources – The entire site is located within Flood Zone 3, with 51.2% of the site situated within Flood Zone 3b developed, which is the fluvial floodplain. The whole site is predicted to flood during the 1 in 100 year fluvial event by the Lower Wey (2009) fluvial flood model and is considered to be at high risk of fluvial flooding. The hazard mapping shows that the eastern boundary of the site is predicted to be at extreme hazard, with danger for all; the majority of the site is predicted to be at significant hazard, with danger for most. • Flooding from Surface Water sources – There is an area of surface water ponding, in the south car park, predicted during the 1 in 100 year pluvial event. However, the majority of the site is considered to be at low risk of surface water flooding. • Flooding from Artificial sources – The site is considered to be at low risk from flooding from an artificial source.
<p>Risk Management – Guidance is provided in the following section to inform policy development</p>	
<p>Flood Risk Management Recommendations</p>	<ul style="list-style-type: none"> • Almost the entire site (98.3%) is located within Flood Zone 3b, which is the functional floodplain, with over 51% of the site located within Flood Zone 3b developed. Thus flood risk is an important consideration when granting planning permission at this site. • New development types which would be suitable for the site (with respect to flood risk) according to Planning Guidance are water compatible development including docks, marinas and wharves, amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms, navigation facilities, and water-based recreation (excluding sleeping accommodation). Furthermore, essential infrastructure such as essential transport and utility infrastructure and wind turbines may be suitably located here. A full list of compatible development types can be found at http://planningguidance.communities.gov.uk/blog/guidance/flood-

[risk-and-coastal-change/flood-zone-and-flood-risk-tables/table-2-flood-risk-vulnerability-classification/](#)

- The Exception Test must be passed for essential infrastructure developments to take place in this zone.
- Following the application of the Sequential Test and the Exception Test, a Local Plan Development Management policy may consider allowing redevelopment of developed sites within the Functional Floodplain only when flood risk betterment, appropriate mitigation and risk management can be achieved and implemented.
- As the site lies within Flood Zone 3b developed, there should be no increase in development vulnerability or intensification in use.
- Although existing private (riparian owned) defences may protect the area from low level flooding, during a low probability event, overtopping and breach of defences are a possible cause of flooding within the site boundary. Therefore, if a developer is not planning on changing building use, it may be possible for the redevelopment to have part of their footprint within the area marked as Flood Zone 3 if it is contained within the existing building's footprint. Although locating building(s) outside of Flood Zone 3 is preferable it is not feasible for this site. An important first step early in the planning process would be to consult with the Environment Agency to verify whether it is possible to develop within Flood Zone 3 on the existing building footprint. In order to encourage the Environment Agency's agreement, the developer should ensure that the footprint of the redevelopment does not exceed the footprint of the existing building; the surrounding entrances for access/egress into proposed building(s) should be raised above the predicted flood levels; and flood resilient measures such as those embedded within part 2 of the CIRIA report 'Improving the flood performance of new buildings' should be incorporated within the redevelopment design.
- If redevelopment occurs, appropriate set back distances from the watercourses should be agreed with both the Environment Agency and Guildford Borough Council. This could be up to 16 metres; however, it is more likely to be between 5 metres and 8 metres.
- Opportunities to provide flood storage capacity on site should be considered.
- Although the current land use of the site is highly impermeable it is not thought that the addition of green spaces / SuDS would sufficiently reduce flood risk due to the high risk of fluvial flooding.
- The current site access/egress routes onto Walnut Tree Close would remain, as there is no feasible alternative access/egress route from the site which are not in Flood Zone 3. It is advised that developers should investigate the feasibility of incorporating flood resilience measures to one of the access/egress routes so that safe access/egress is provided for emergency access to the site.
- In accordance with the NPPF a safe access/egress route to an area wholly outside of the 1 in 100 year plus climate change fluvial event flood extent, classified with a 'very low hazard' rating, is required for every unit within the proposed development. The extent of the 1 in 100 year plus climate change fluvial event flood extent means it is unlikely that a proposed raised walkway can feasibly be designed which is i) at a height above the 1 in 100 year plus climate change flood level, ii) situated within an area classified as having a 'very low hazard' rating and iii) which would provide a route to an area having a 'very low hazard rating'. If safe access/egress routes cannot be provided for all units within the proposed development then the technical part of the Exception Test will not be passed.
- Where a route with a 'very low hazard' rating is not possible the Guildford Borough Council may deem an evacuation plan a suitable approach to mitigate the risk posed. It

	<p>is recommended that those proposing a redevelopment should take advice from the emergency services when producing an evacuation plan for the development as part of the Flood Risk Assessment.</p> <ul style="list-style-type: none"> Any works that lie in, over, under or next to a main river will require flood defence consent from the Environment Agency under the Water Resources Act 1991 and the current level of flood protection must be maintained throughout those works. Works affecting ordinary watercourses now require the consent of the Local Authority (Guildford Borough Council). Additional consents under the Land Drainage Act may be required if a culvert or structure, such as a weir, is proposed to control flow on any ordinary watercourse.
<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> A contribution to River Wey flood defences should be considered as well as the opportunity to reduce flood risk to downstream areas through increasing flood risk storage capacity on site. The surface water drainage system should be designed to accommodate storage of events up to the 1 in 30 year event and be designed to manage surface water exceedance events. The layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes. It is advised that the feasibility of mitigating flood risk for at least one of the two primary access/egress routes linking onto Walnut Tree Close be undertaken to provide a raised access/egress route above the predicted flood level for the 1 in 100 year fluvial event in order to grant safe emergency access/egress to the site.
<p>Reasonable prospect of compliance within the Exception Test?</p>	<p>The site lies within almost entirely within the functional floodplain (Flood Zone 3b), with over half of the site situated within Flood Zone 3b developed, which is the developed land within the functional floodplain. Following application of the Sequential Test and Exception Test, a Local Plan policy may consider allowing redevelopment in the functional floodplain when flood risk betterment, appropriate mitigation and risk management can be achieved and implemented. A new development cannot increase development vulnerability or intensification of use. This will likely preclude many types of development being considered in this part of the site, unless the development is water compatible or essential infrastructure.</p>
<p>Flood Risk Suitability Score</p>	<p>1</p>

7.6 Site 2183 – Kernal Court, Walnut Tree Close, Guildford

Site Number	2183	Site Name	Kernal Court, Walnut Tree Close, Guildford
Site Location	GU1 4UD	Grid Reference	SU 99076 50231
Location Plan			
KEY:	<p>Red line boundary</p> <p>Main River</p> <p>*Other Rivers</p> <p>*Where other indicates: Drains, culverts, streams, brooks etc.</p>		
Description	<p>The site is located within Guildford urban area. It is bounded to the east by Walnut Tree Close, to the south and north by residential properties and to the west by a storage area and railway lines. The site is currently used for warehousing and industrial purposes, with three main buildings on the site and associated hard standing for parking. The site centre lies approximately 115 metres away from the River Wey.</p>		

Risk Assessment

Defences

The site currently benefits from private (riparian owned) flood defences, which run through Guildford town centre.

Mapping

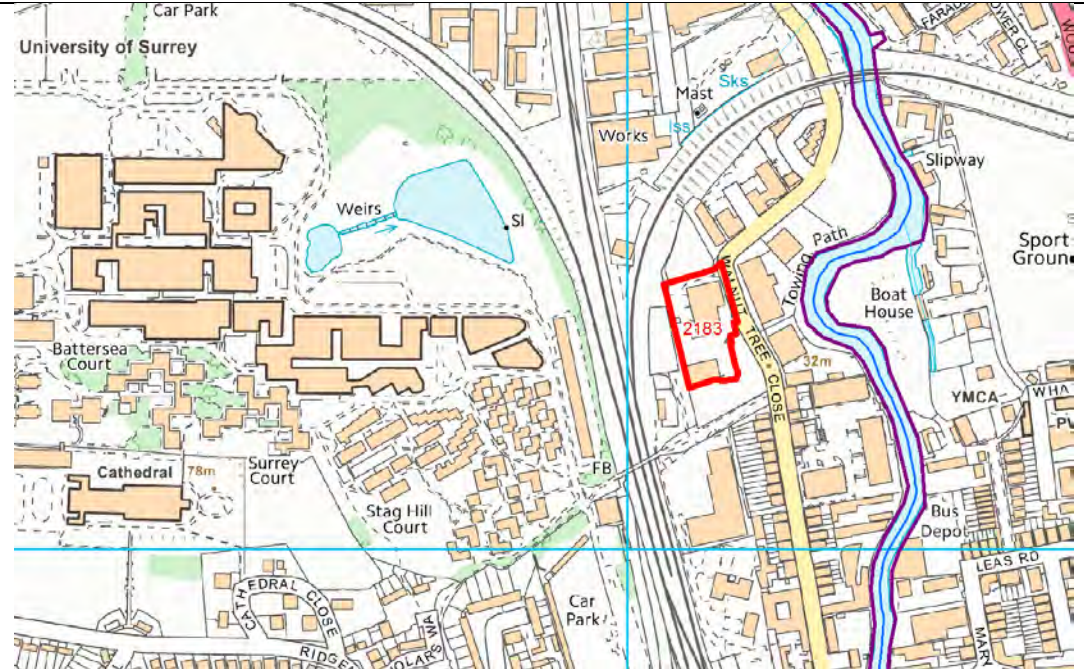
KEY:

Red line boundary

Main River

Other River

Defence line extent



Flood Zones

The detailed modelling overlaid shows the extent of flooding during the 1 in 20 (Flood Zone 3b), 1 in 100 (Flood Zone 3a) and 1 in 1000 year (Flood Zone 2) return periods. The detailed modelling demonstrates that the site is entirely within Flood Zone 1 as it is not predicted to flood during the 1 in 1000 year fluvial return period. The detailed hydraulic modelling supersedes the EA Flood Zone extents.

Sources of Flooding

Fluvial

KEY:

Red line
boundary

Main River

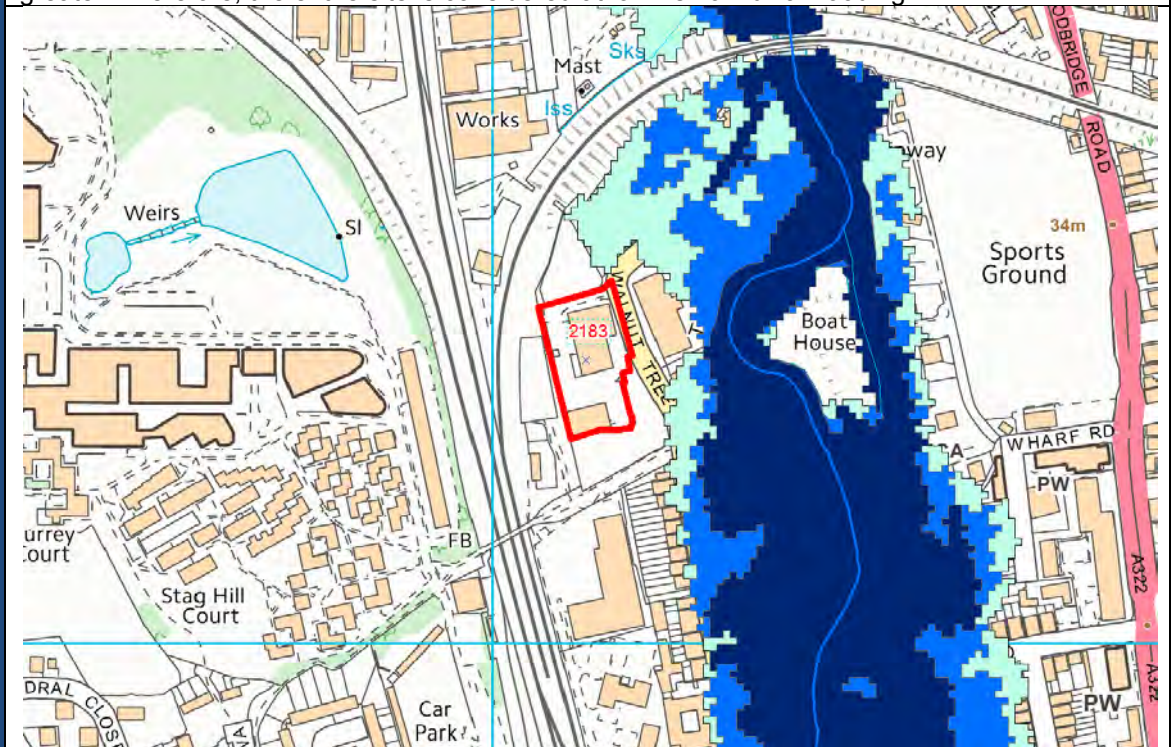
Other River

Lower Wey
(2009) 1 in
20yr
undefended

Lower Wey
(2009) 1 in
100yr
undefended

Lower Wey
(2009) 1 in
1000yr
undefended

The site lies in close proximity to detailed hydraulic modelling, which has been modelled as part of the 2009 Lower Wey fluvial model. The Lower Wey (2009) fluvial flood modelling shows that the site is not predicted to flood from the River Wey during the 1 in 1000 year fluvial event or greater. Therefore, the entire site is considered at low risk of fluvial flooding.



KEY:

Red line boundary

Main River

Lower Weir
(2009) 1 in 100yr
hazard mapping:
Caution (Very low hazard)

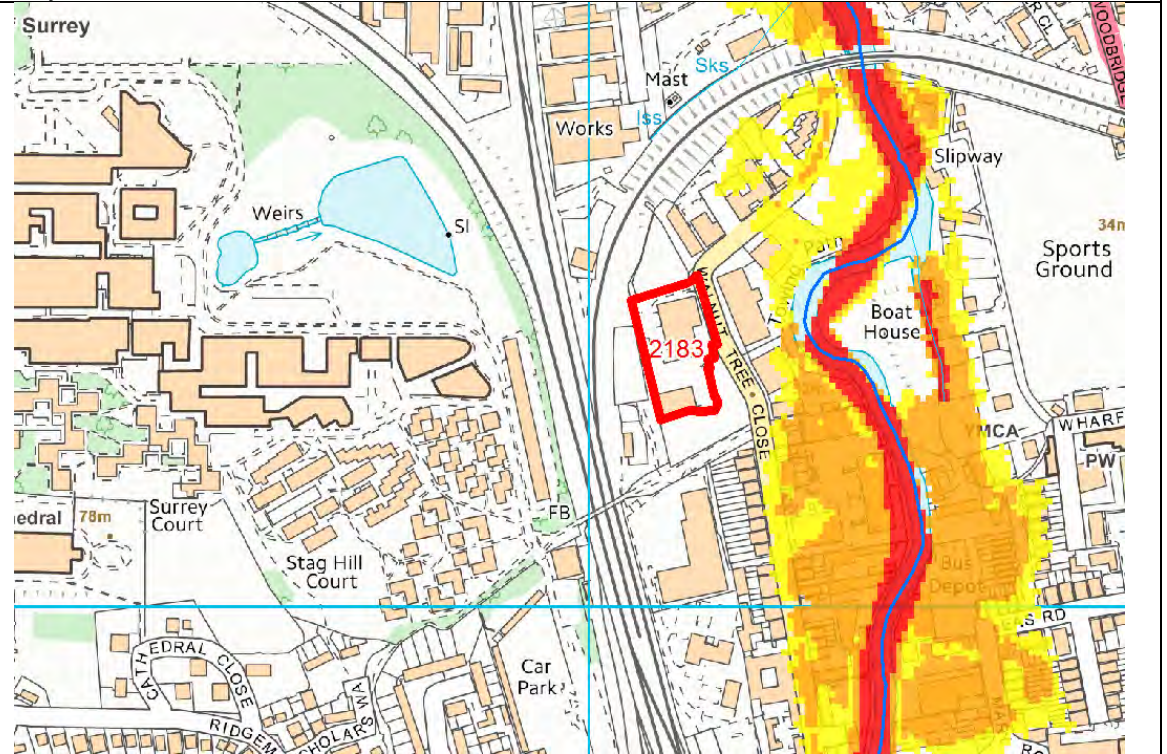
Moderate (Danger for some)

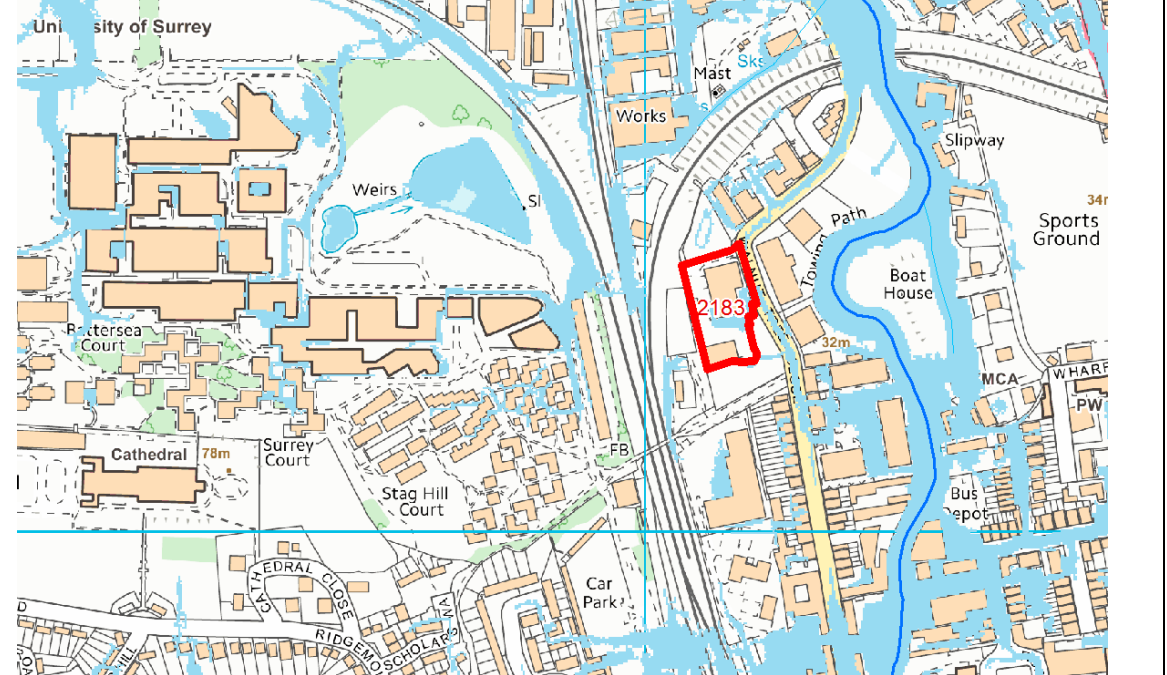
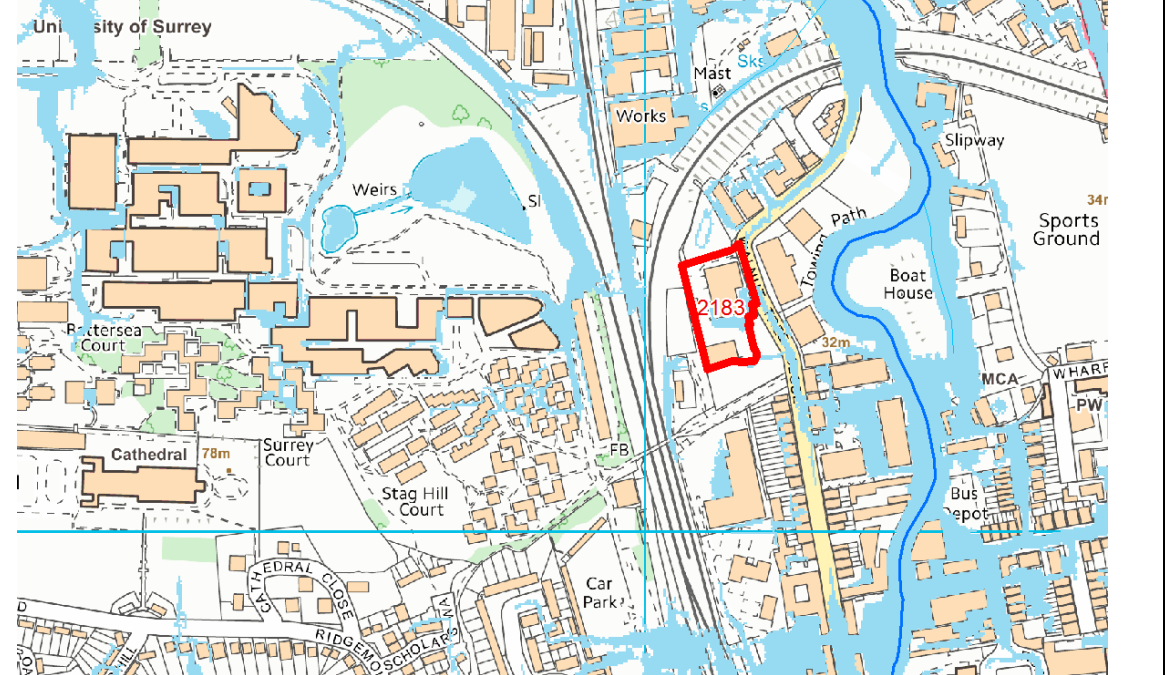
Significant (Danger for Most)

Extreme (Danger for all)

Hazard Mapping

Hazard mapping has been modelled to observe the level of danger to people (based on depth and velocity). The hazard mapping predicts that the entire site is to be a cautionary hazard, with very low hazard for the entire site.



Surface Water/Sewer	<p>The surface water modelling demonstrates that the majority of the site is not predicted to flood during the 1 in 100 year pluvial event, thus is considered at low risk of pluvial flooding. A small area of surface water ponding is predicted to the centre of the site.</p>
<p>KEY:</p> <p>Red line boundary</p> <p>Main River</p> <p>Other River</p> <p>Surface water extent (1 in 100 year)</p> 	
Artificial Sources	<p>The site falls outside of the maximum extent of reservoir flooding. Furthermore, there are no reservoirs, lakes or canals in close proximity to the site. Thus the site is considered at low risk of flooding from artificial sources.</p>
Summary of flood risk from all sources of flooding	<ul style="list-style-type: none"> • Flooding from Fluvial sources – The entire site is located within Flood Zone 1; it is not predicted to flood during the 1 in 1000 year fluvial event or greater. Thus, the site is considered to be at low risk of fluvial flooding. • Flooding from Surface Water sources – Surface water ponding is predicted within the central area of the site during the 1 in 100 year pluvial event. • Flooding from Artificial sources – Low for the entire site.
<p>Risk Management – Guidance will be provided in the following section to inform policy development</p>	
Flood Risk Management Recommendations	<ul style="list-style-type: none"> • The site should provide flood storage capacity and permeable areas in order to avoid increasing the risk of flooding downstream. • The surface water drainage system should be designed to accommodate storage of events up to the 1 in 30 year event and be designed to manage surface water exceedance events. The layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes. • Appropriate set back distances from the watercourse near the site should be agreed with both the Environment Agency and Guildford borough Council. This could be up to 16 metres however; it is more likely to be between 5 metres and 8 metres.
How can development reduce flood risk overall?	<ul style="list-style-type: none"> • Developments within the site are encouraged to achieve a reduction in existing runoff rates / volumes where possible, to mitigate effects of cumulative development in this area. • Safe access and egress to the site is not achievable to the west of the site due to the railway line. It is recommended the primary access route be made to the south east of the site, linking onto Walnut Tree Close.
Reasonable prospect of compliance within the Exception Test?	<p>The entire site is within Flood Zone 1, with none of the site predicted to flood during the 1 in 1000 year fluvial event in the detailed fluvial modelling. Therefore, in accordance with the PPG, the Sequential Test and the Exception Test will not be required.</p>

Flood Risk
Suitability
Score

5

Risk Assessment

Defences

The site currently benefits from private (riparian owned) flood defences, which run through Guildford town centre.

Mapping

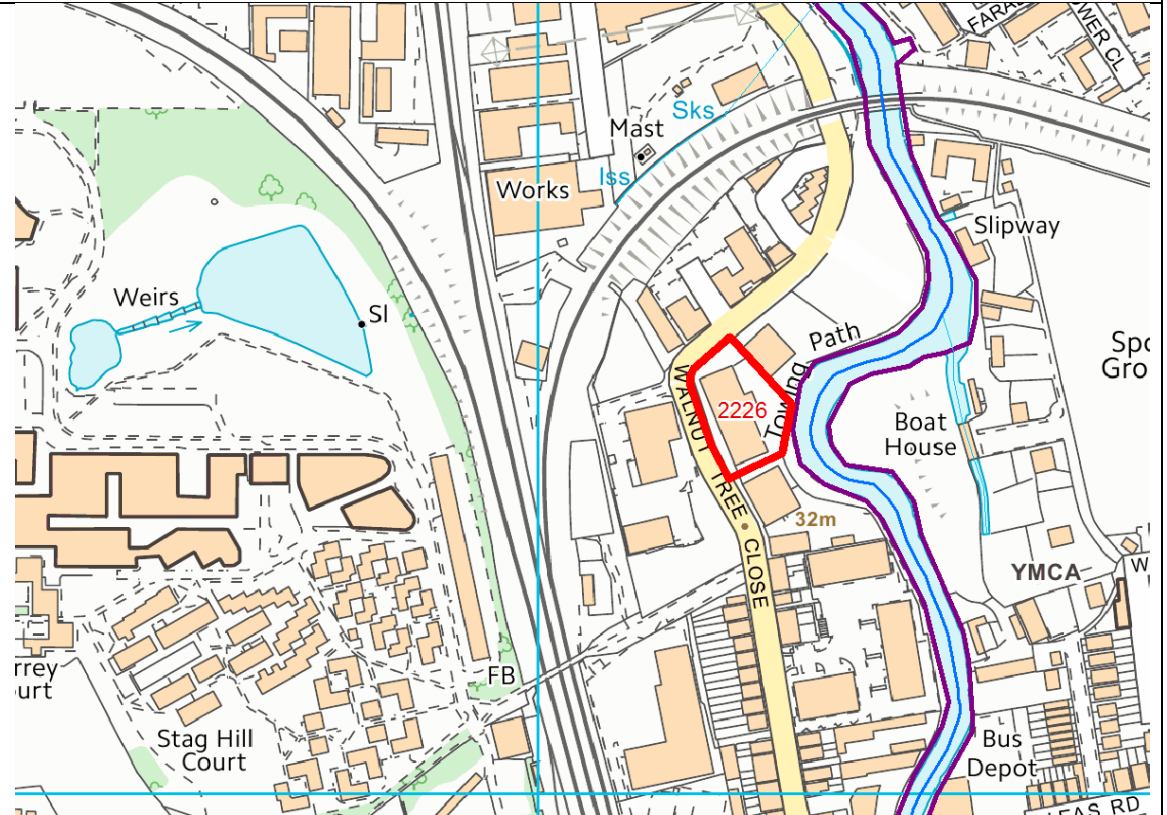
KEY:

Red line boundary

Main River

Other River

Defence line extent



Flood Zones

The east of the site lies within Flood Zone 3, the north east of the site lies partially within Flood Zone 2. However, the majority of the site is located within Flood Zone 1.

The detailed modelling overleaf shows the extent of flooding during the 1 in 20 year (Flood Zone 3b), 1 in 100 year (Flood Zone 3a) and 1 in 1000 year (Flood Zone 2) return periods. The detailed hydraulic modelling has been used to supersede the EA Flood Zone mapping.

KEY:

Red line boundary

Main River

Lower Weir

Lower Weir (2009) 1 in 100yr hazard mapping:

Caution (Very low hazard)

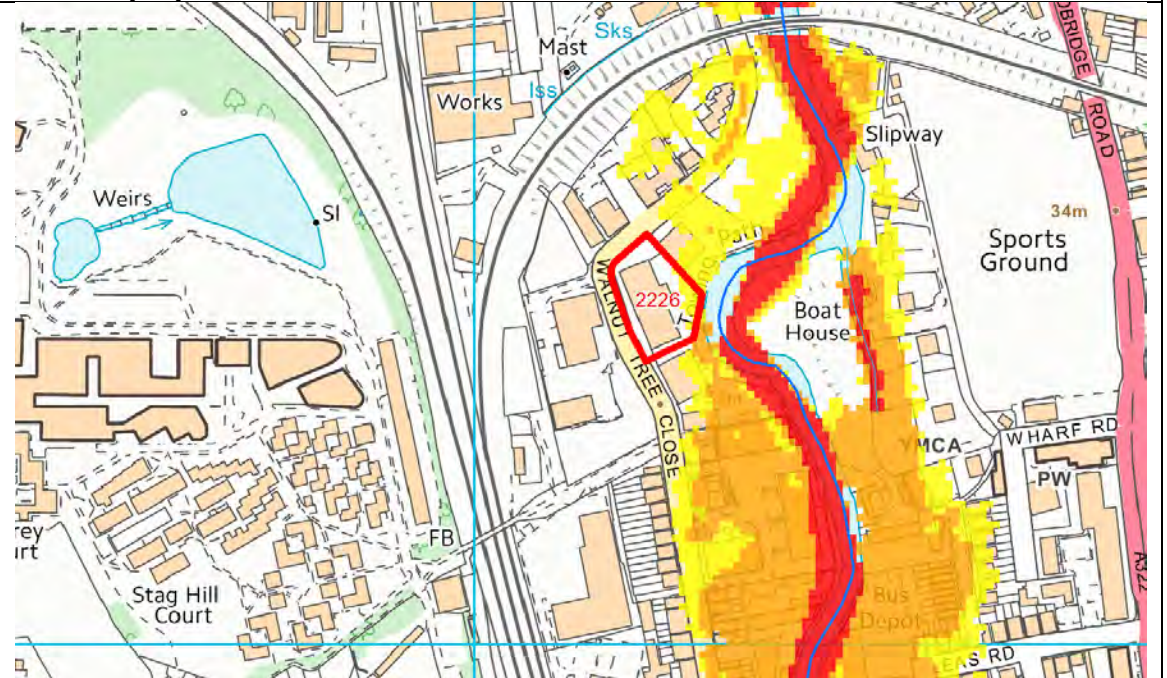
Moderate (Danger for some)

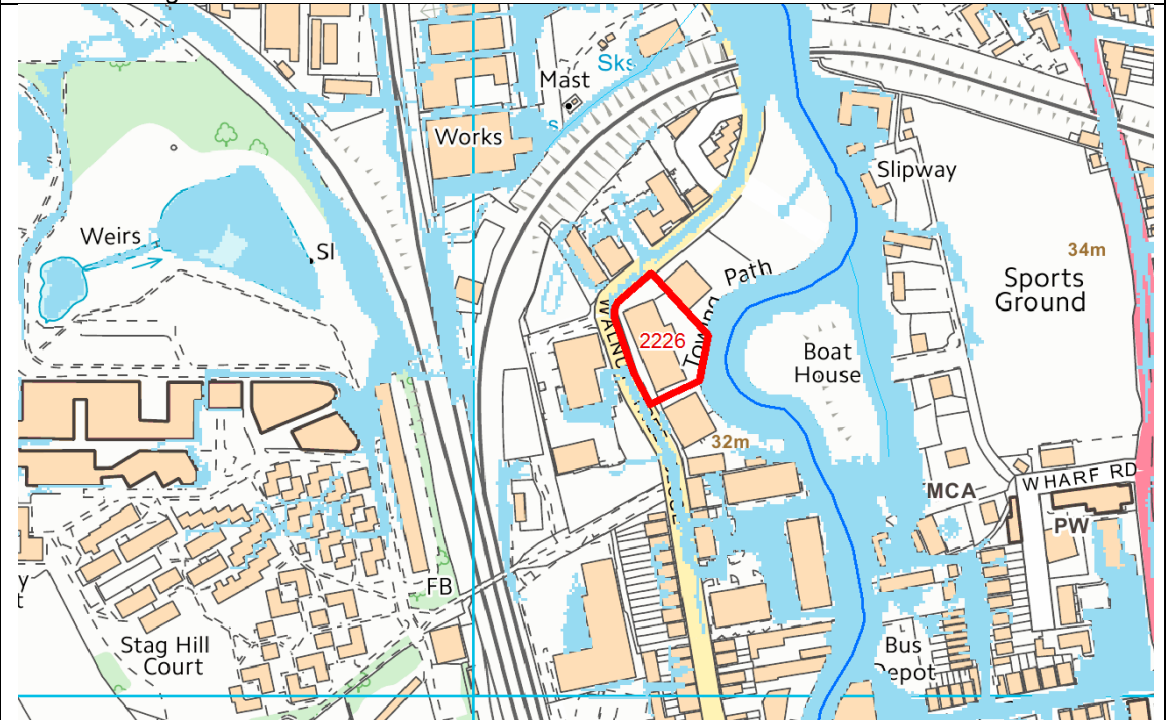
Significant (Danger for Most)

Extreme (Danger for all)

Hazard Mapping

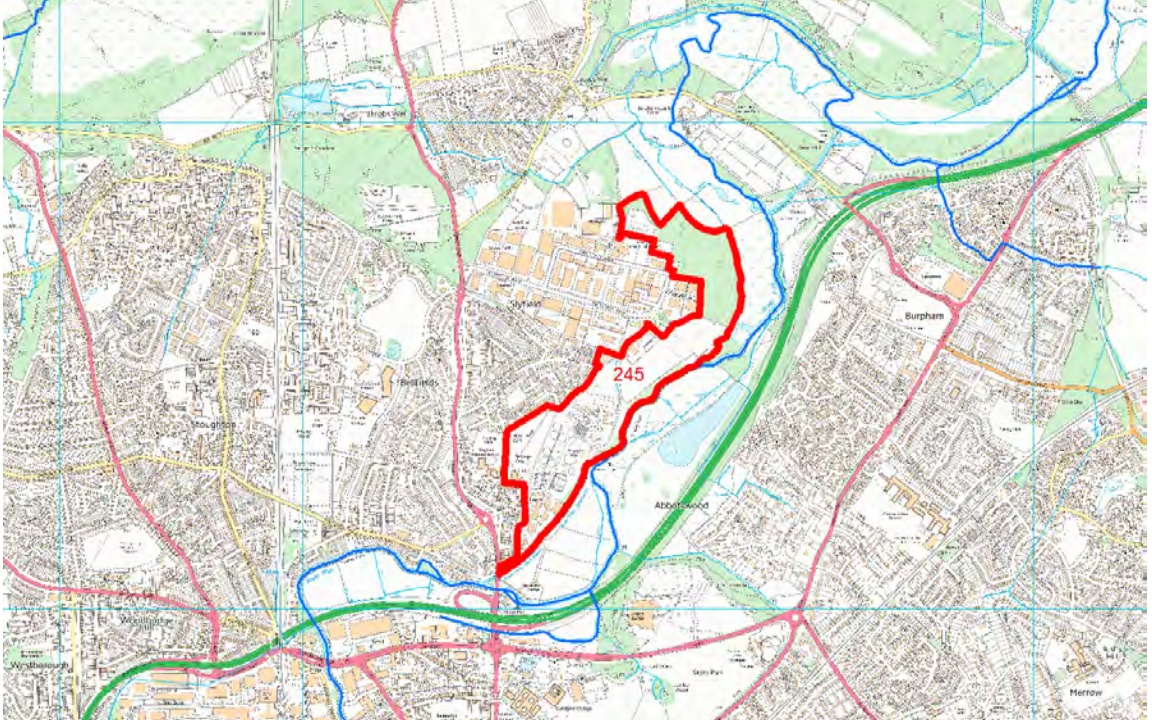
The site is located within Flood Zone 2 and Flood Zone 3 and hazard mapping has been modelled to observe the level of danger people within the site are in. The hazard mapping shows that the eastern boundary of the site is predicted to be a moderate hazard, with danger for some. The remainder of the site is predicted to be a cautionary hazard, with very low hazard for the majority of the site.



<p>Surface Water/Sewer</p> <p>KEY:</p> <p>Red line boundary</p> <p>Main River</p> <p>Other River</p> <p>Surface water extent (1 in 100 year)</p> 	<p>The surface water flood modelling shows that the site is not predicted to flood during the 1 in 100 year pluvial event or greater. Therefore, the site is considered to be at low risk of surface water flooding.</p>
<p>Artificial Sources</p>	<p>The site falls outside of the maximum extent of reservoir flooding. Furthermore, there are no reservoirs, lakes or canals in close proximity to the site. Thus the site is considered at low risk of flooding from artificial sources.</p>
<p>Summary of flood risk from all sources of flooding</p>	<ul style="list-style-type: none"> • Flooding from Fluvial sources – The site is predominantly in Flood Zone 2; however, the eastern boundary of the site is located within Flood Zone 3. The site lies outside of Flood Zone 3b developed. The hazard mapping shows that the eastern boundary of the site is predicted to be a moderate hazard, with danger for some. • Flooding from Surface Water sources – The entire site is considered to be at low risk of surface water flooding. • Flooding from Artificial sources – The site is considered to be at low risk from flooding from artificial sources.
<p>Risk Management – Guidance will be provided in the following section to inform policy development</p>	
<p>Flood Risk Management Recommendations</p>	<ul style="list-style-type: none"> • Development should be avoided adjacent to the flood corridor within the eastern edge that is within Flood Zone 3. Placing sleeping accommodation on the ground floor in areas of flood risk should be avoided. • Appropriate set back distances from the watercourse on site should be agreed with both the Environment Agency and Guildford Borough Council. This could be up to 16 metres however; it is more likely to be between 5 metres and 8 metres. • Any works that lie in, over, under or next to a main river will require flood defence consent from the Environment Agency under the Water Resources Act 1991 and the current level of flood protection must be maintained throughout those works. Works affecting ordinary watercourses now require the consent of Guildford Borough Council. Additional consents under the Land Drainage Act may be required if a culvert or structure, such as a weir, is proposed to control flow on any ordinary watercourse.
<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> • Development of flood defences should be considered as well as the opportunity to reduce flood risk to downstream areas through increasing flood storage capacity within the site. • Developments within the site are encouraged to achieve a reduction in existing runoff rates / volumes where possible, to mitigate effects of cumulative development in this

	<p>area.</p> <ul style="list-style-type: none"> • The surface water drainage system should be designed to accommodate storage of events up to the 1 in 30 year event and be designed to manage surface water exceedance events. The layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes. • Safe access and egress to the site is achievable to the west of site onto Walnut Tree Close.
<p>Reasonable prospect of compliance within the Exception Test?</p>	<p>It should be noted that some of the site area is predicted to lie within Flood Zone 3. Should development be avoided in these areas, and appropriate SuDS developed on site to avoid any increase in flood risk, it is likely that the site could pass the technical part of the Exception Test.</p>
<p>Flood Risk Suitability Score</p>	<p>3</p>

7.8 Site 245 – Slyfield Regeneration Project, Guildford

Site Number	245	Site Name	Slyfield Area Regeneration Project, Guildford
Site Location	GU1 1QE	Grid Reference	SU 99902 51249
Location Plan	 <p>KEY: Red line boundary Main River *Other Rivers *Where other indicates: Drains, culverts, streams, brooks etc.</p>		
Description	<p>The site is within Guildford urban area, adjacent to Slyfield Industrial Estate. It is within Stoke ward and close to Bellfields on its south west side, and is separated on its east side from the Burpham/Abbots Wood area of Guildford by the A3. Jacobs Well village is to the north west, with Clay Lane to the north of the site. The site currently accommodates many uses; sewage treatment works, former landfill site, Council depot, community hall and allotments. There is also part of the site that is Greenfield, with trees at the northern and southern site boundaries. The River Wey also runs along the site boundary, hugging the middle eastern section.</p>		

Risk Assessment

Defences

The site currently benefits from private (riparian owned) flood defences, which run through Guildford town centre.

Mapping

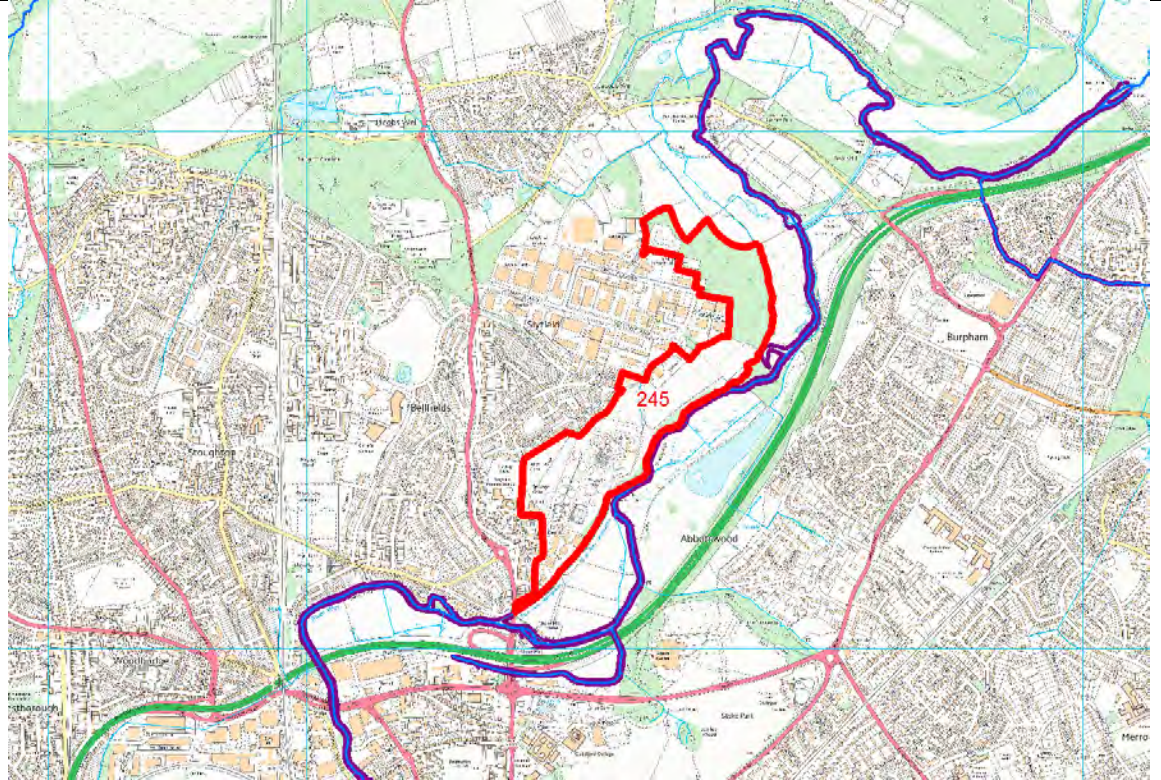
KEY:

Red line boundary

Main River

Other River

Defence line extent



Flood Zones

This site predominantly lies within lands classified as Flood Zone 1. Lands classified as Flood Zone 2, Flood Zone 3a and Flood Zone 3b are indicated along the entire eastern boundary of the site. These flood zones are associated with the River Wey, located to the east of the site.

- Flood Zone 1: 85.9%
- Flood Zone 2: 11.4%
- Flood Zone 3a: 0.3%
- Flood Zone 3b: 2.4%

The detailed modelling shows the extent of flooding during the 1 in 20 year (Flood Zone 3b), 1 in 100 year (Flood Zone 3a) and 1 in 1000 year (Flood Zone 2) return periods.

Sources of Flooding

Fluvial

The site lies within the flood extent of detailed hydraulic modelling, which has been modelled as part of the 2009 Lower Wey fluvial model. The Lower Wey (2009) fluvial model shows that the majority of the site is not predicted to flood during the 1 in 1000 year fluvial event or less. The south of the site is predicted to flood during the 1 in 1000 year fluvial event or greater and small areas of the eastern boundary are predicted to flood during the 1 in 20 year fluvial event or greater; these areas are largely centred around TQ 00238 51660 – as shown in the expanded image. Thus the majority of the site is considered to be at low risk from fluvial flooding; however, there are some small parts of the site along the eastern boundary considered to be at high risk of fluvial flooding. The defences that run through Guildford may reduce flood risk, however the level of protection provided by the private defences is not known.

KEY:

Red line
boundary

Main River

Other River

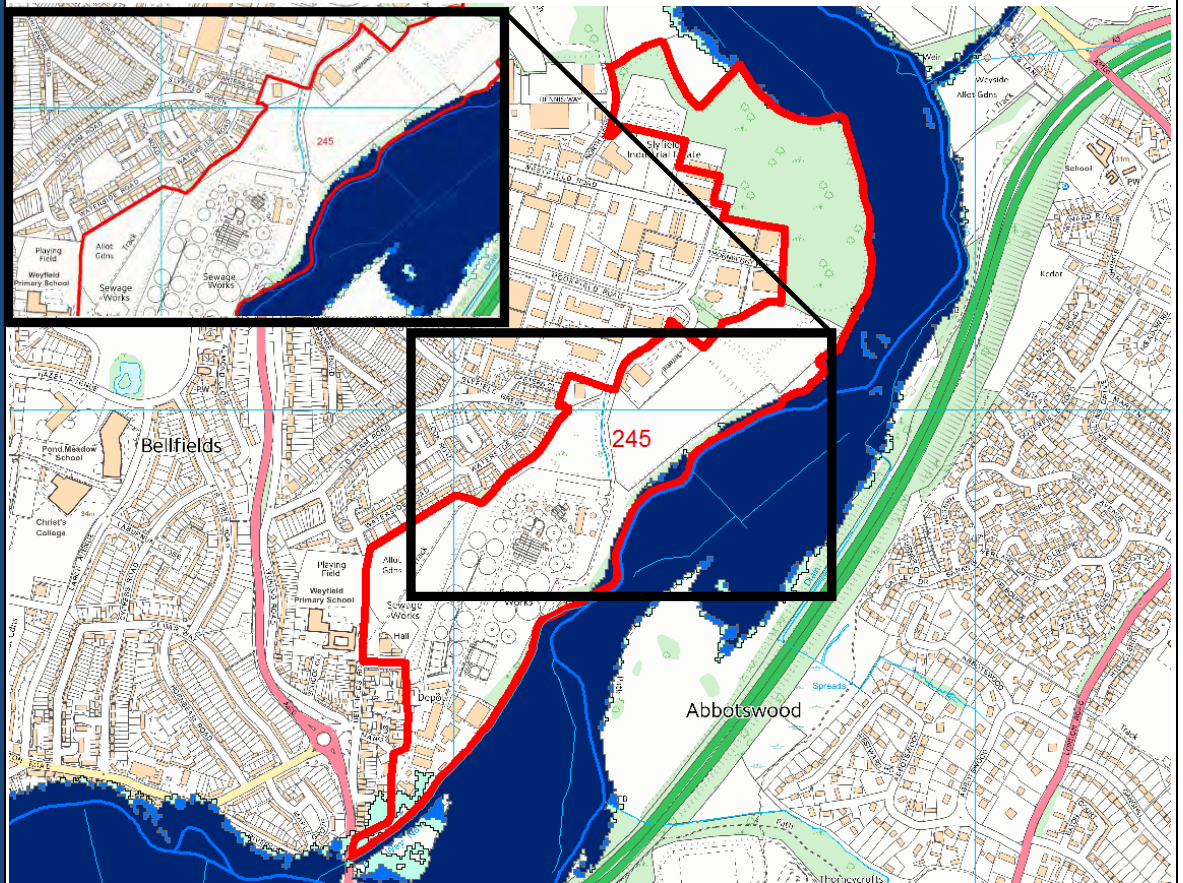
Lower Wey
(2009) 1 in
20yr
undefended



Lower Wey
(2009) 1 in
100yr
undefended



Lower Wey
(2009) 1 in
1000yr
undefended



Hazard Mapping

The eastern boundary of the site is within Flood Zone 3b; therefore, hazard mapping has been modelled to observe the level of danger people within the site are in. The hazard mapping indicates that the centre of the site along the eastern boundary (largely centred around TQ 00238 51660) is predicted to be an extreme hazard, considered a danger for all. This hazard is reduced moving west to a significant hazard, moderate hazard and the remaining area within the site classified as caution (very low hazard).

KEY:

Red line
boundary

Main River

Lower Wey
(2009) 1 in
100yr hazard
mapping:

Caution (Very low hazard)



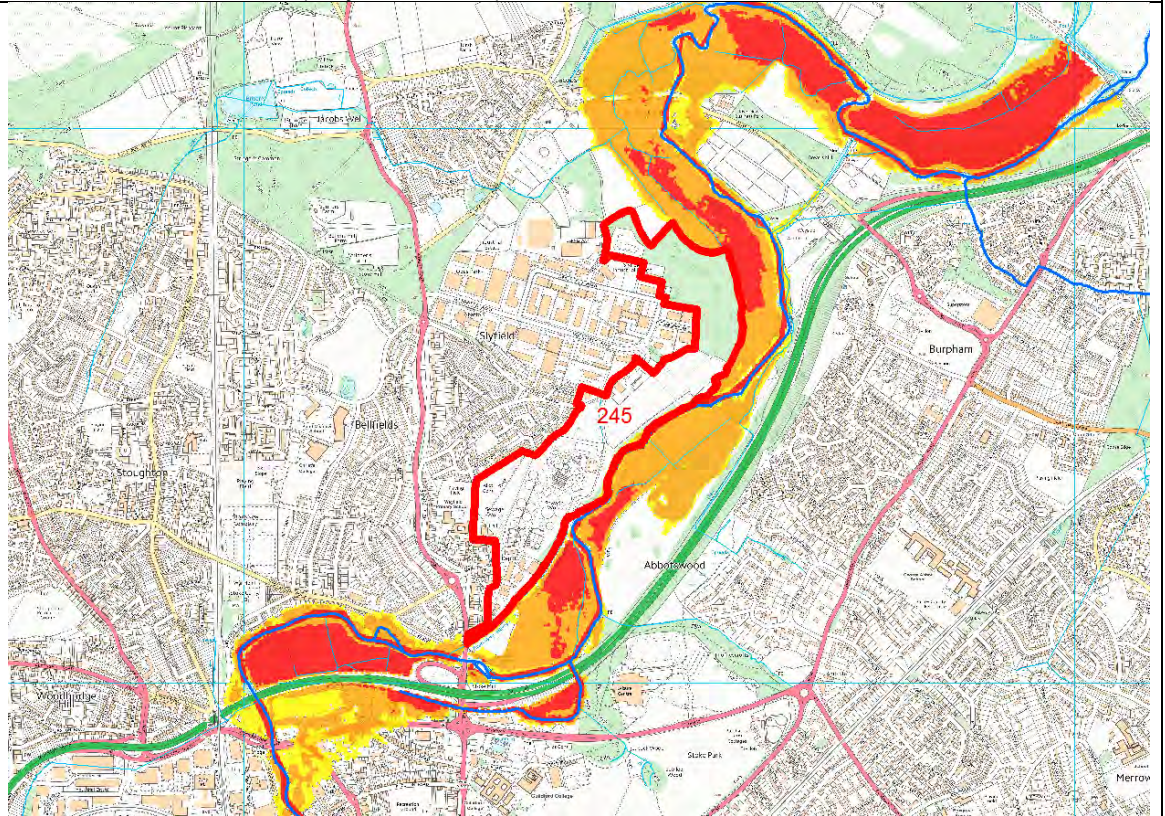
Moderate
(Danger for some)

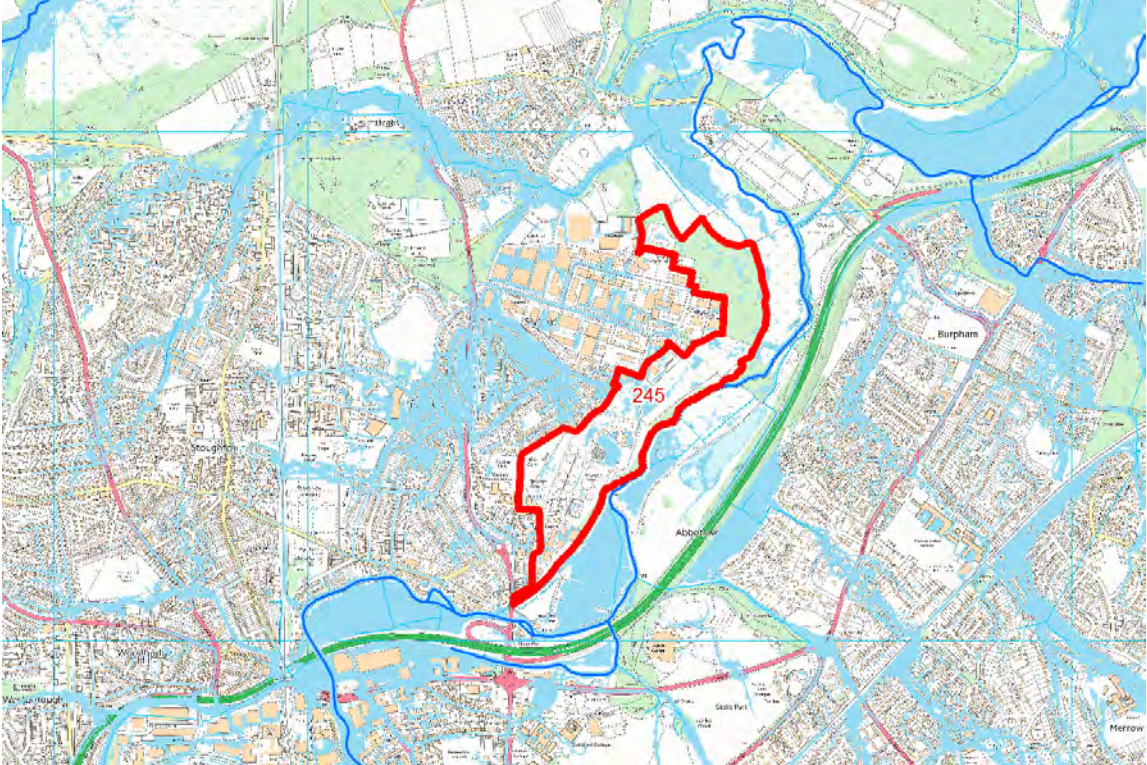
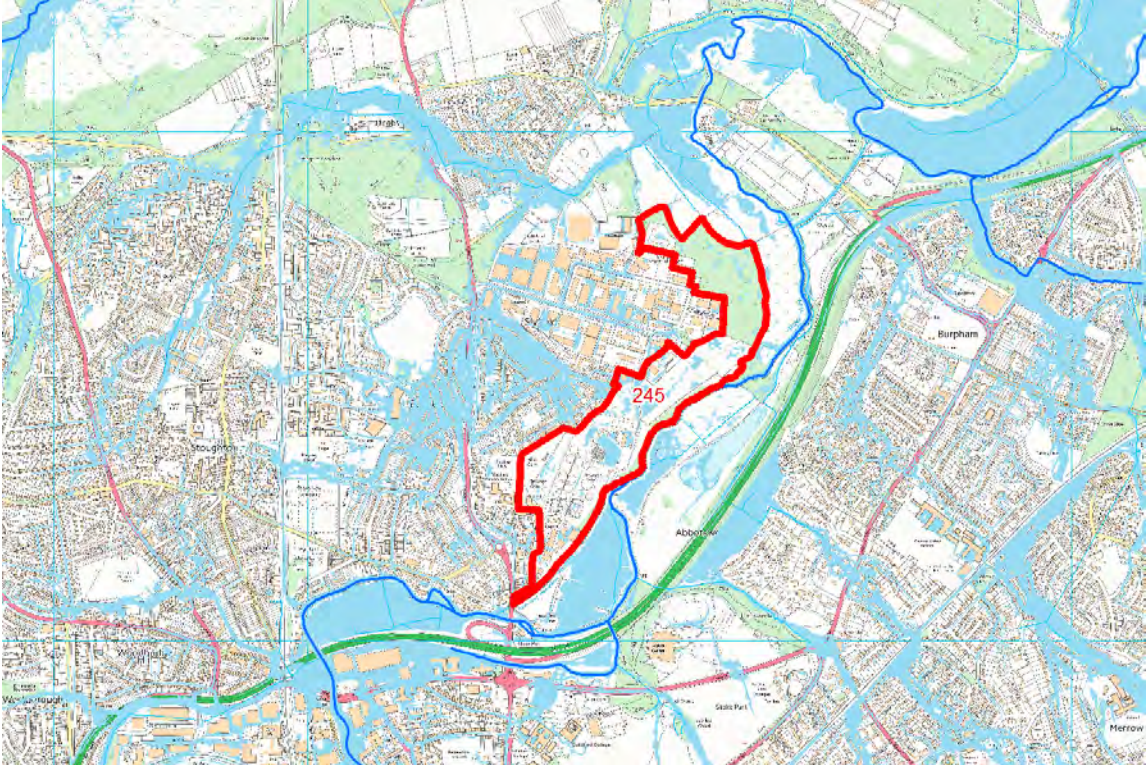


Significant
(Danger for Most)



Extreme (Danger for all)



<p>Surface Water/Sewer</p>	<p>The site is predicted to be at risk of surface water flooding in several localised areas across the site. Within the southern portion of the site the surface water flood risk appears to correspond with areas of hardstanding, whereas in the centre and northern parts of the site this corresponds to topographic lows within the open grass areas</p>
<p>KEY: Red line boundary Main River Other River Surface water extent (1 in 100 year)</p> 	
<p>Artificial Sources</p>	<p>The site falls outside of the maximum extent of reservoir flooding. Furthermore, there are no reservoirs, lakes or canals in close proximity to the site. Thus the site is considered at low risk of flooding from artificial sources.</p>
<p>Summary of flood risk from all sources of flooding</p>	<ul style="list-style-type: none"> • Flooding from Fluvial sources – Low for the majority of the site. 11.4% of the site lies within Flood Zone 2 and 2.4% is classified as Flood Zone 3b, along the eastern boundary of the site. • Flooding from Surface Water sources – Low to Medium for the majority of the site. Surface water ponding predicted in some hardstanding areas in the southern part of the site and in topographic lows in the centre and north of the site. • Flooding from Artificial Sources – Low for the majority of the site.
<p>Risk Management – Guidance will be provided in the following section to inform policy development</p>	
<p>Flood Risk Management Recommendations</p>	<ul style="list-style-type: none"> • Appropriate set back distances from the watercourse on site should be agreed with both the Environment Agency and Guildford Borough Council. This could be up to 16 metres however; it is more likely to be between 5 and 8 metres. • Any works taking place within, or near, a Main River will require a Flood Defence Consent from the Environment Agency under the Water Resources Act 1991 and the current level of flood protection must be maintained throughout those works. Works affecting ordinary watercourses now require the consent of the Local Authority. Additional consents under the Land Drainage Act may be required if a culvert or structure, such as a weir, is proposed to control flow on any ordinary watercourse. • As some development will take place on greenfield land, any development is likely to result in an increase in surface water runoff. Surface water runoff should be appropriately managed through a SuDS management train for the site. • The use of infiltrating SuDS may not be advisable for this site given potential ground contamination from historic development near the site. It is recommended that infiltration

	<p>testing and a contaminated lands assessment be undertaken to determine the suitability of infiltration devices within the site. The use of non-infiltrating SuDS practices may be required depending upon the findings of ground investigations for the site.</p> <ul style="list-style-type: none"> • A surface water drainage strategy will be required to mitigate the surface water flood risk. • Avoid more vulnerable land uses around specific highlighted areas at risk of flooding. • Opportunities to reduce flood risk to downstream areas through increasing the storage capacity of the watercourse on the site should be considered.
<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> • Development of flood defences should be considered as well as the opportunity to reduce flood risk to downstream areas through increasing the storage capacity of watercourses near the site. • Developments within the site are encouraged to achieve a reduction in existing runoff rates / volumes where possible to mitigate effects of cumulative development in this area. • Safe access and egress to the site should be achievable to the west of the site boundary.
<p>Reasonable prospect of compliance within the Exception Test?</p>	<p>A small area along the eastern boundary of Site 245 is shown to be within the Flood Zone 2 and Flood Zone 3b, which is in the functional floodplain (largely centred around TQ 00238 51660). Should development be avoided in these areas, and appropriate SuDS developed on site to avoid any increase in flood risk, it is likely that the site could pass the technical part of the Exception Test.</p>
<p>Flood Risk Suitability Score</p>	<p>4</p>

7.9 Site 2186 – Broadford Business Park, Shalford

Site Number	2186	Site Name	Broadford Business Park, Shalford
Site Location	GU4 8DW	Grid Reference	SU 99782 46808
Location Plan	<p>KEY: Red line boundary Main River *Other Rivers *Where other indicates: Drains, culverts, streams, brooks etc.</p>		
Description	<p>The site is located adjacent to the River Wey, west of Shalford. The site consists of five commercial buildings and associated car parking. The site is close to Shalford village, a predominately residential area. Proximity to the river side provides leisure activities and access to open space.</p>		

Risk Assessment

Defences

The site is not currently protected by any flood defences.

Flood Zones

The site lies predominantly in Flood Zone 2. Small parts of the site lie within Flood Zone 1 to the south of the site and the western boundary lies fractionally into Flood Zone 3b, which is within the functional floodplain.

- Flood Zone 1: 32.4%
- Flood Zone 2: 65.5%
- Flood Zone 3: 2.1%

The detailed modelling below shows the extent of flooding during the 1 in 20 year (Flood Zone 3b), 1 in 100 year (Flood Zone 3a) and 1 in 1000 year (Flood Zone 2) return periods.

Sources of Flooding

Fluvial

The site lies within the flood extent of detailed hydraulic modelling, which has been modelled as part of the 2009 Lower Wey fluvial model. The Lower Wey (2009) fluvial flood risk model shows that the western boundary of the site is predicted to flood during the 1 in 20 year fluvial event or greater. The northern half of the site is predicted to flood during the 1 in 1000 year fluvial event or greater. The south of the site is not predicted to flood during the 1 in 1000 year fluvial event or less.

KEY:

Red line boundary

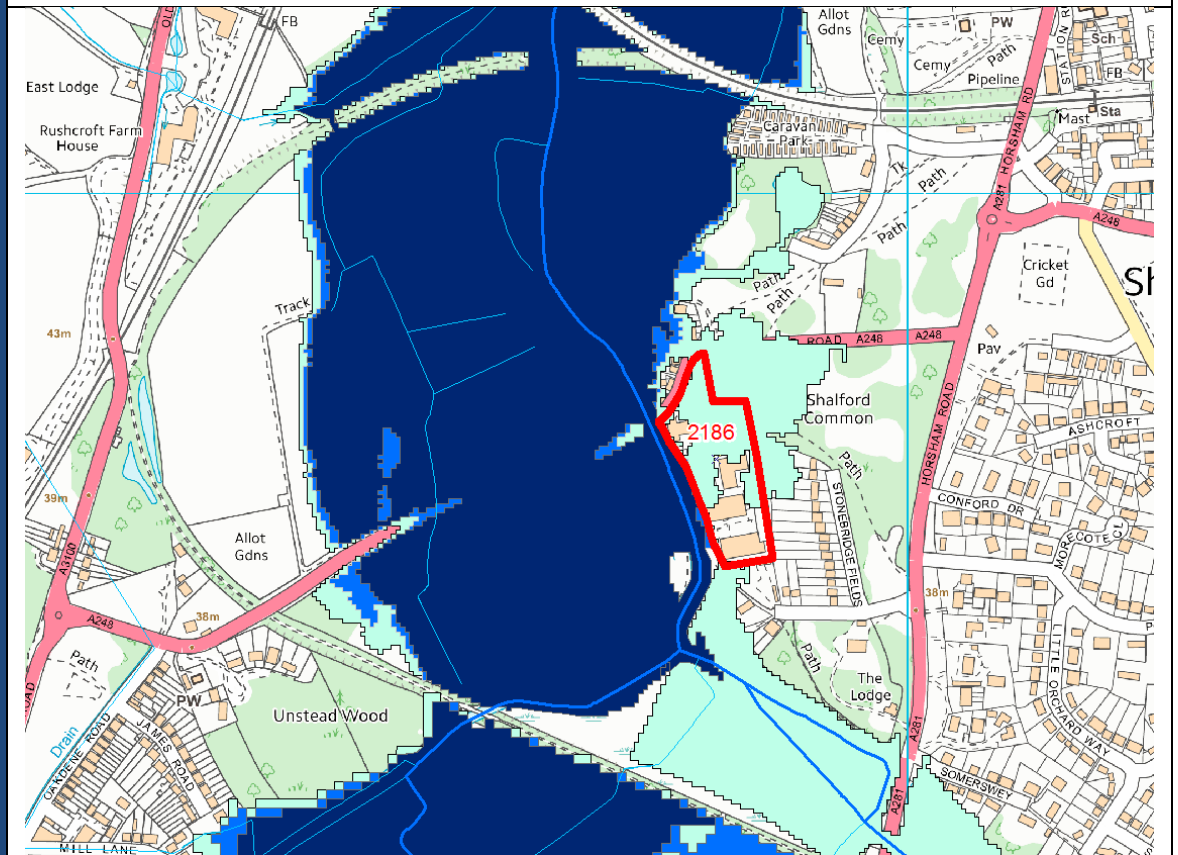
Main River

Other River

Lower Wey (2009) 1 in 20yr undefended

Lower Wey (2009) 1 in 100yr undefended

Lower Wey (2009) 1 in 1000yr undefended



Surface Water/Sewer

Small areas of surface water ponding are predicted to form in the north of the site during the 1 in 100 year pluvial flood event. The remainder of the site is not predicted to flood during the 1 in 100 year pluvial event.

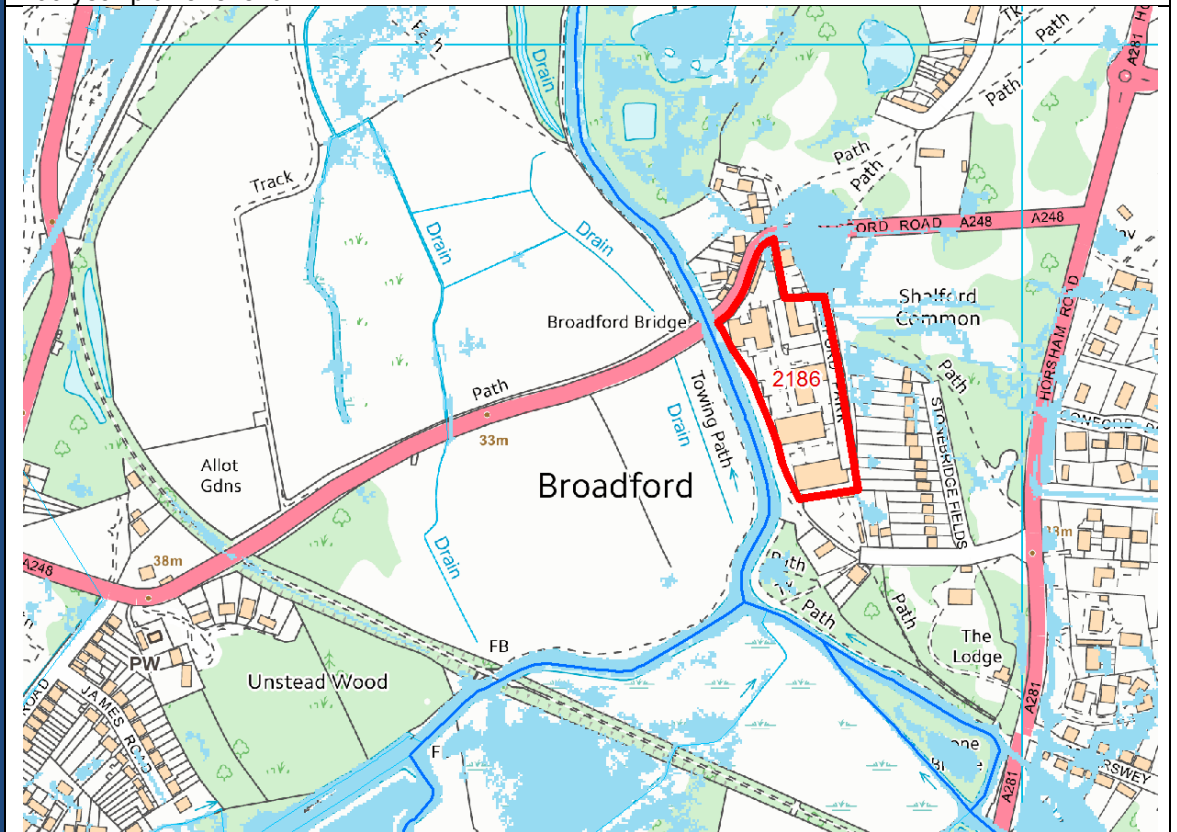
KEY:


Red line
boundary

Main River

Other River

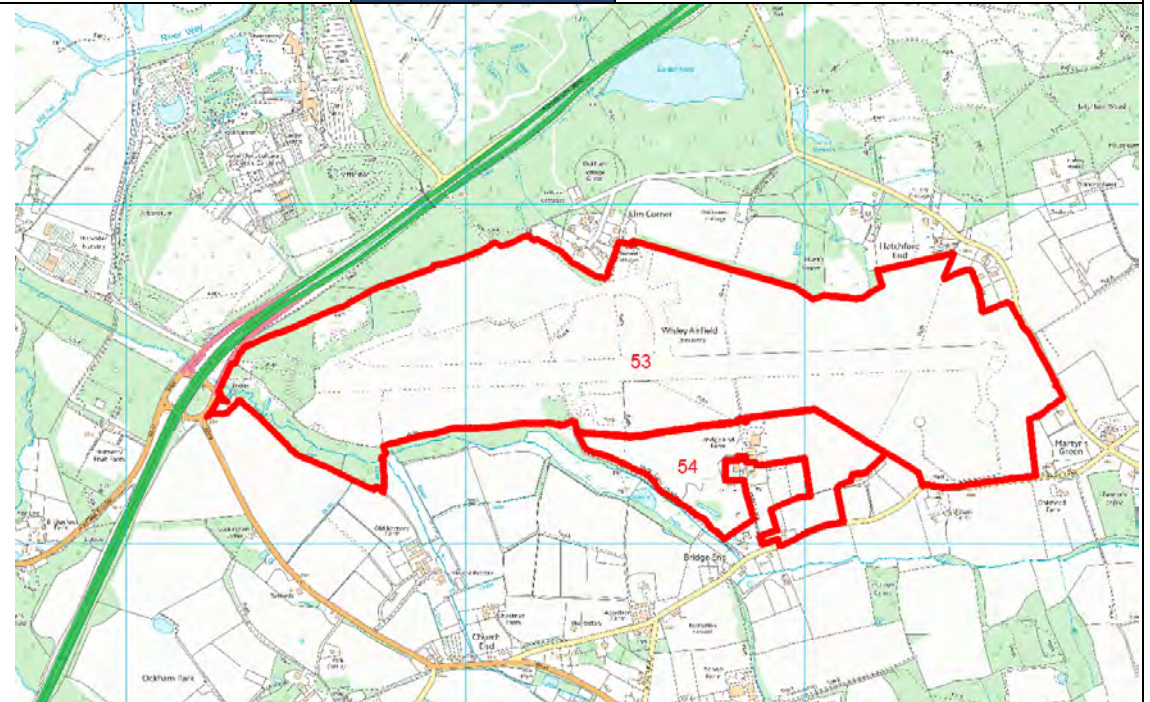
Surface water extent
(1 in 100 year)



<p>Artificial Sources</p>	<p>The western boundary of the site is identified as an area at risk of flooding from reservoirs. This means that if the upstream reservoir were to breach/fail the western boundary of the site is predicted to flood. However, it must be noted that the likelihood of reservoir breach events are extremely low. The remainder of the site is considered at low risk of reservoir flooding. There are no other lakes, canals or other artificial sources of flooding surrounding the site. Thus the majority of the site is considered to be at low risk of flooding from artificial sources.</p>
<p>KEY:</p> <ul style="list-style-type: none"> Red line boundary Main River Other River Max Reservoir Flood Outline 	
<p>Summary of flood risk from all sources of flooding</p>	<ul style="list-style-type: none"> • Flooding from Fluvial sources – The northern area of the site is located within Flood Zone 2, the western boundary of the site is located within Flood Zone 3b, which is the functional floodplain. • Flooding from Surface Water sources – Surface water ponding issues are predicted in the north of the site during the 1 in 100 year or greater pluvial event. However, the majority of the site is considered to be at low risk of surface water flooding. • Flooding from Artificial sources – The western boundary of the site is considered to be at risk of reservoir flooding.
<p>Risk Management – Guidance will be provided in the following section to inform policy development</p>	
<p>Flood Risk Management Recommendations</p>	<ul style="list-style-type: none"> • Development within the edge of the flood corridor to the western fringes of the site and the northern fringes of the site should be avoided. Development could be appropriate if it is focused on the areas outside of the flood risk areas identified. • Appropriate set back distances from the watercourse near the site should be agreed with both the Environment Agency and Guildford Borough Council. This could be up to 16 metres however; it is more likely to be between 5 metres and 8 metres. • Any works that lie in, over, under or next to a main river will require flood defence consent from the Environment Agency under the Water Resources Act 1991 and the current level of flood protection must be maintained throughout those works. Works affecting ordinary watercourses now require the consent of Guildford Borough Council. Additional consents under the Land Drainage Act may be required if a culvert or structure, such as a weir, is proposed to control flow on any ordinary watercourse.
<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> • Development of or contribution to flood defences should be considered as well as the opportunity to reduce flood risk to downstream areas by providing flood storage capacity. • Developments within the site are encouraged to achieve a reduction in existing runoff

	<p>rates / volumes where possible, to mitigate effects of cumulative development in this area. The surface water drainage system should be designed to accommodate storage of events up to the 1 in 30 year event and be designed to manage surface water exceedance events. The layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes.</p> <ul style="list-style-type: none"> • Safe access and egress to the site is achievable to the north and east of the site.
<p>Reasonable prospect of compliance within the Exception Test?</p>	<p>It should be noted that the western boundary of the site is shown within Flood Zone 3b, which is the functional floodplain. Following the application of the Sequential Test and the Exception Test a Local Development Management policy may consider allowing redevelopment of developed sites in the Functional Floodplain only when flood risk betterment, appropriate mitigation and risk management can be achieved and implemented. Table 3 of the Planning Practice Guidance states that the Sequential and Exception Tests do not need to be applied for changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site. Therefore, a change in use from office to residential could be permitted, if safe access and egress routes could be made. It is advised that future development, if permitted, not increase impermeable footprint within the predicted flood extent.</p>
<p>Flood Risk Suitability Score</p>	<p>3</p>

7.10 Site 53/54 – Land at former Wisley Airfield, Ockham

Site Number	53/54	Site Name	Land at former Wisley Airfield, Ockham
Site Location	GU23 6PX	Grid Reference	TQ 07551 57515
Location Plan	 <p>KEY: Red line boundary Main River *Other Rivers *Where other indicates: Drains, culverts, streams, brooks etc.</p>		
Description	<p>This site is a former airfield and farmland. The majority of the site is greenfield, with some previously developed land comprised of hard impermeable surfaces (including road runway, roads and footpaths). The site lies to the south of Elm Lane, to the north of Ockham Road and Hatch Lane near Bridge End Farm and the eastern boundary is bounded by Old Lane. There is a Main River, Stratford Brook, which flows in a north westerly direction along the southern boundary of the site. Stratford Brook is a tributary of the Mill Tail which flows into the River Wey at Wisley Golf Course (approximately 1.5km north east of site).</p> <p>There is no detailed modelling available for the Stratford Brook; therefore an assessment of flood risk has been made using indicative mapping data from Environment Agency.</p>		

Risk Assessment

Flood Zones

Sites 53-54 are primarily Flood Zone 1, with a small portion of Site 54 in Flood Zone 2 and parts of Site 53 (along the south western boundary) in Flood Zone 3.

Site 53:
Flood Zone 1: 96.8%
Flood Zone 2: 0.3%
Flood Zone 3: 2.9%

Site 54:
Flood Zone 1: 96.5%
Flood Zone 2: 3.5%
Flood Zone 3: 0%

KEY:

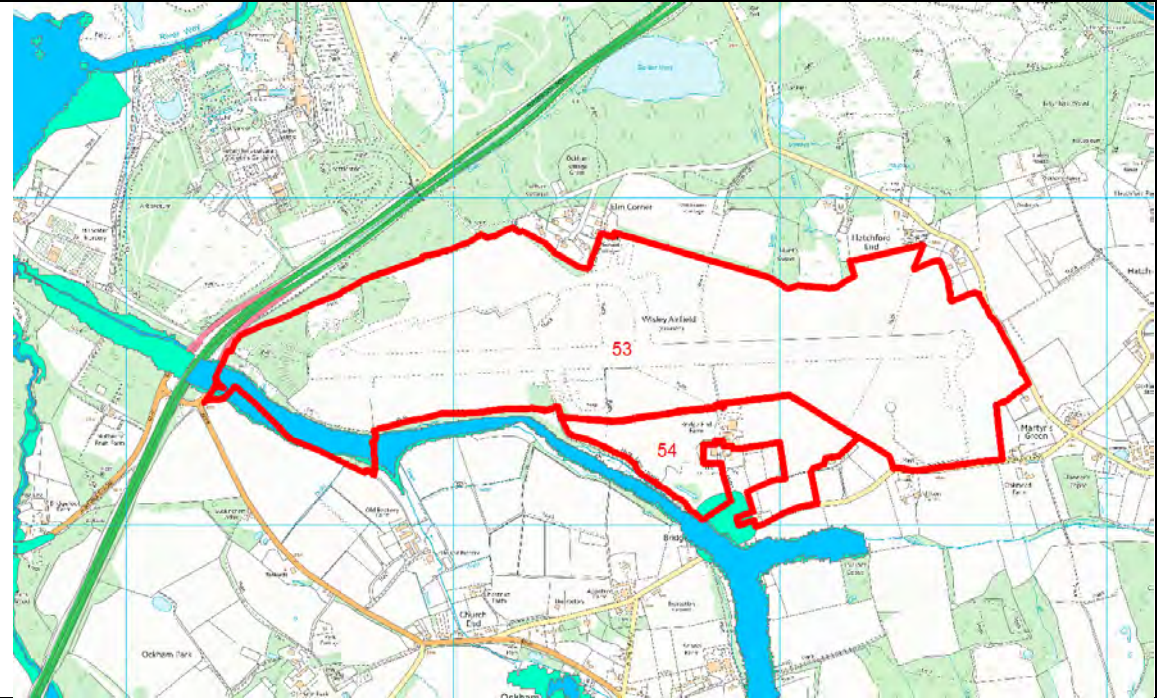
Red line
boundary

Main River

Other River

EA Flood Zone 2

EA Flood Zone 3



Defences and Flood Warning

The site currently does not benefit from flood defences. The site is also located outside of an Environment Agency Flood Warning Area.

Sources of Flooding

Fluvial

KEY:

Red line
boundary

Main River

Other River

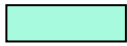
Lower Wey
(2009) 1 in 20yr
undefended



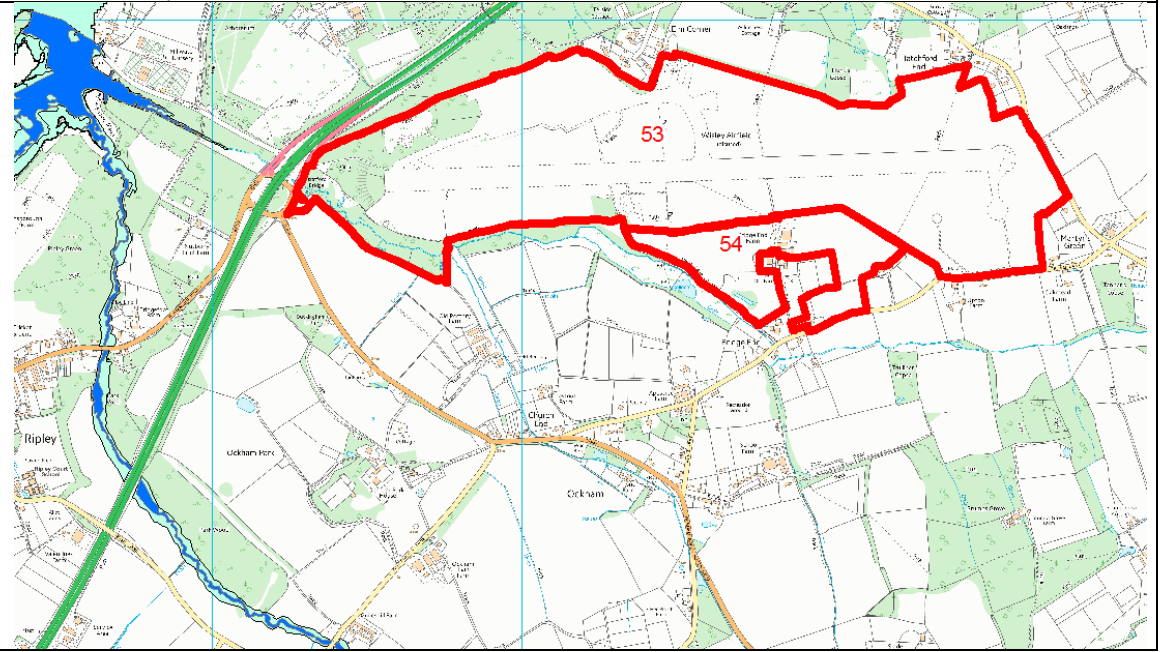
Lower Wey
(2009) 1 in 100yr
undefended

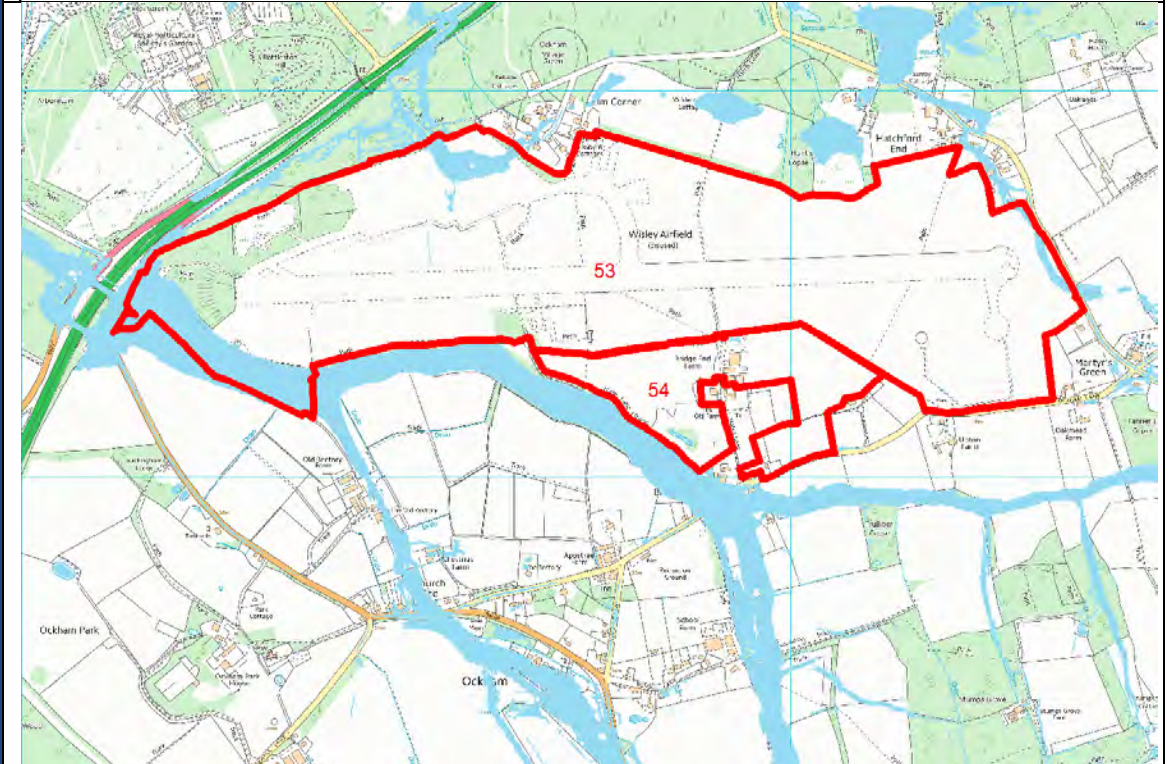
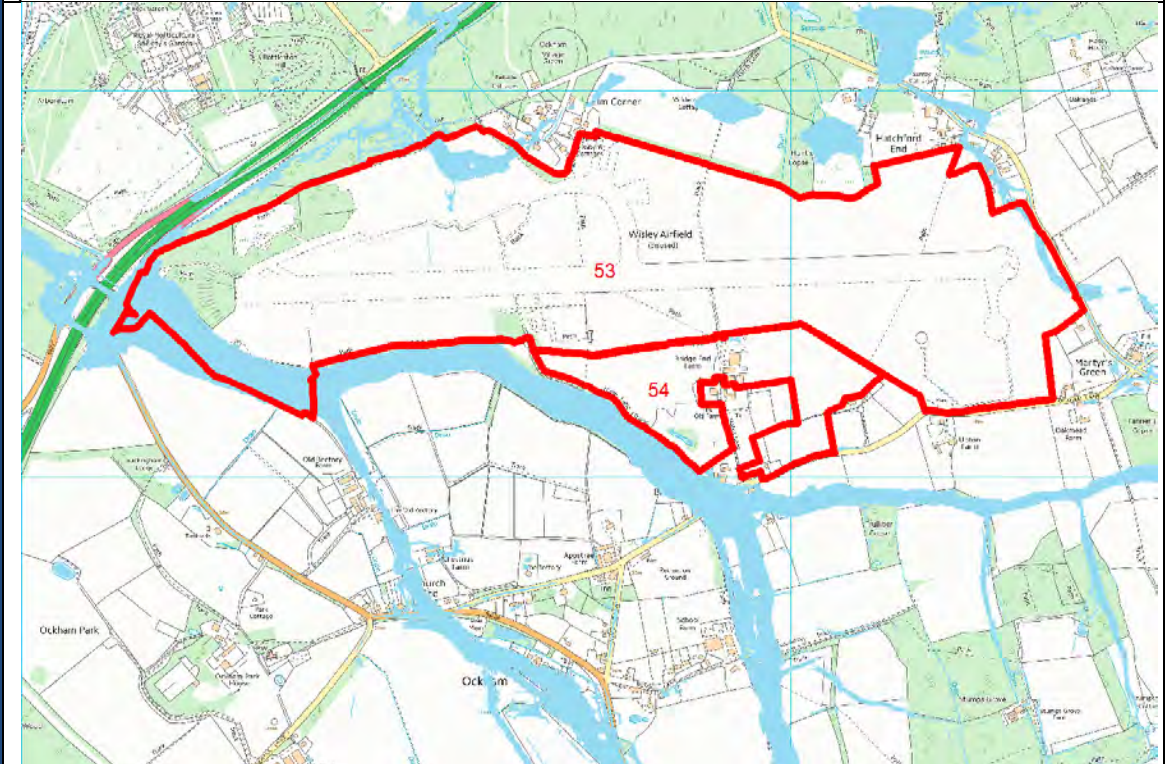


Lower Wey
(2009) 1 in
1000yr
undefended



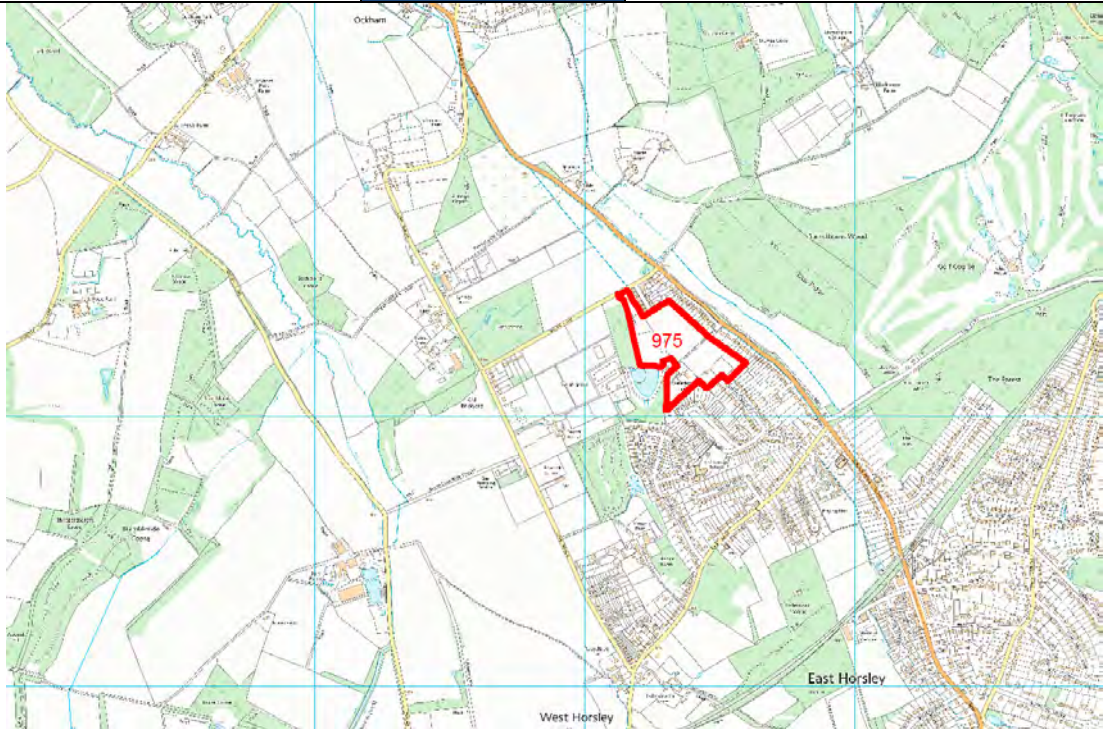
The fluvial flood risk modelling, which has been modelled as part as the 2009 Lower Wey fluvial model, does not incorporate Stratford Brook, thus the fluvial flood risk has been measured using the Environment Agency indicative Flood Maps for Rivers and Seas. The majority of the site is situated within Flood Zone 1; therefore, it is considered to be at low risk from fluvial flooding. The south west of Site 53 is located within Flood Zone 3 so it is considered to be at high risk of fluvial flooding (centred at TQ 06598 57334). The southern boundary of Site 54 is situated within Flood Zone 2, thus is considered to be at moderate risk of fluvial flooding (TQ 07876 57069).



<p>Surface Water/Sewer</p>	<p>The majority of the site is predicted to be at very low risk of surface water flooding. There are some portions of the site where surface water ponding is predicted. Surface water ponding is predicted along the south western boundary of Site 53, and generally corresponds to the extent classified as Flood Zone 3. Another area of surface water ponding is predicted in the north of Site 53. This predicted ponding corresponds to the area of demolished buildings in the northern portion of the site.</p>
<p>KEY:</p> <p>Red line boundary</p> <p>Main River</p> <p>Other River</p> <p>Surface water extent (1 in 100 year)</p> 	
<p>Artificial Sources</p>	<p>The site falls outside of the maximum extent of reservoir flooding and is therefore at low risk from reservoir flooding. There is however a lake to the north of the site called Bolder Mere that should be monitored for overtopping/breaching during times of heavy rain or abnormally long periods of consistent rainfall.</p>
<p>Summary of flood risk from all sources of flooding</p>	<ul style="list-style-type: none"> • Flooding from Fluvial sources – Low for the majority of the site. 2.9% of Site 53 lies within Flood Zone 3 and 3.5% of Site 54 is classified as Flood Zone 2. • Flooding from Surface Water sources – Low for the majority of the site. Surface water ponding predicted during the 1 in 100 year pluvial event along south western boundary of Site 53. • Flooding from artificial sources– Low for the entire site.
<p>Risk Management – Guidance will be provided in the following section to inform policy development</p>	
<p>Flood Risk Management Recommendations</p>	<ul style="list-style-type: none"> • Appropriate set back distances from the watercourse on site should be agreed with both the Environment Agency and Guildford Borough Council. This could be up to 16 metres however; it is more likely to be between 5 metres and 8 metres. • Any works taking place within, or near, a Main River will require a Flood Defence Consent from the Environment Agency under the Water Resources Act 1991 and the current level of flood protection must be maintained throughout those works. Works affecting ordinary watercourses now require the consent of the Local Authority. Additional consents under the Land Drainage Act may be required if a culvert or structure, such as a weir, is proposed to control flow on any ordinary watercourse. • As the site is primarily Greenfield any development is likely to result in an increase in surface water runoff, however this can be appropriately managed through a SuDS

	<p>management train for the site.</p> <ul style="list-style-type: none"> • A surface water drainage strategy will be required to mitigate the surface water flood risk. • The use of infiltrating SuDS may not be advisable for this site given potential ground contamination. The use of non-infiltrating SuDS practices may be required depending upon the findings of ground investigations for the site. • Avoid More Vulnerable land uses around specific highlighted areas at risk of flooding. • Opportunities to reduce flood risk to downstream areas through increasing the storage capacity of watercourse on the sites should be considered.
<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> • Developments within the site are encouraged to achieve a reduction in existing runoff rates / volumes where possible, to mitigate effects of cumulative development in this area. • The developer should avoid development within the area shown to be at risk of fluvial flooding from the Stratford Brook. • All SuDS measures are suitable depending on the final layout and results of permeability testing of the insitu soils. It is recommended that infiltration testing is undertaken to determine the suitability of infiltration devices within the site. • The current proposed development has two primary access points, one to the west of the site at the Ockham interchange roundabout and the second to the east of the site linking into Old Lane. A third existing access route, linking to Ockham Lane, is to be retained and used as an emergency access point for the development. Safe access and egress to the site is achievable from the access route to the east of the site, linking onto Old Lane, and the route linking onto Ockham Lane. The primary access route into the site from the Ockham Interchange roundabout is situated within Flood Zone 3, and is within an area at risk of surface water flooding from the 1 in 100 year return period event. It is advised that in order to ensure that this primary access route into the site permits safe access / egress during a flood event that the feasibility of implementing flood risk mitigation works to protect the access route be investigated. If this investigation finds that protecting the access route is not feasible it is recommended that the access route to the east, linking onto Old Lane, should be considered as the primary access / egress route into the site.
<p>Reasonable prospect of compliance within the Exception Test?</p>	<p>A small area east of Site 53 and south of Site 54 is shown to be within the Flood Zone 3. Should development be avoided in these areas, and appropriate SuDS developed on site to avoid any increase in flood risk, there is a good chance that the site could pass the technical part of the Exception Test.</p>
<p>Flood Risk Suitability Score</p>	<p>4</p>

7.11 Site 975 – Land to the north of West Horsley

Site Number	975	Site Name	Land to the north of West Horsley
Site Location	KT24 6PE	Grid Reference	TQ 08333 55291
Location Plan			
KEY:	<p>Red line boundary</p> <p>Main River</p> <p>*Other Rivers</p> <p>*Where other indicates: Drains, culverts, streams, brooks etc.</p>		
Description	<p>The site is located between Green Lane, Ockham Road North and Horsley Campsite. Residential properties are located to the east and south of the site. The site is comprised of a number of separate fields and includes a residential property in large grounds to the south. A drain and culvert are situated to the east of the site.</p>		

Risk Assessment

Flood Zones

The area as a whole is predominantly in Flood Zone 1. However, the north east of the site lies within Flood Zone 3.

Flood Zone 1: 80.2%
Flood Zone 2: 2.4%
Flood Zone 3: 17.4%

KEY:

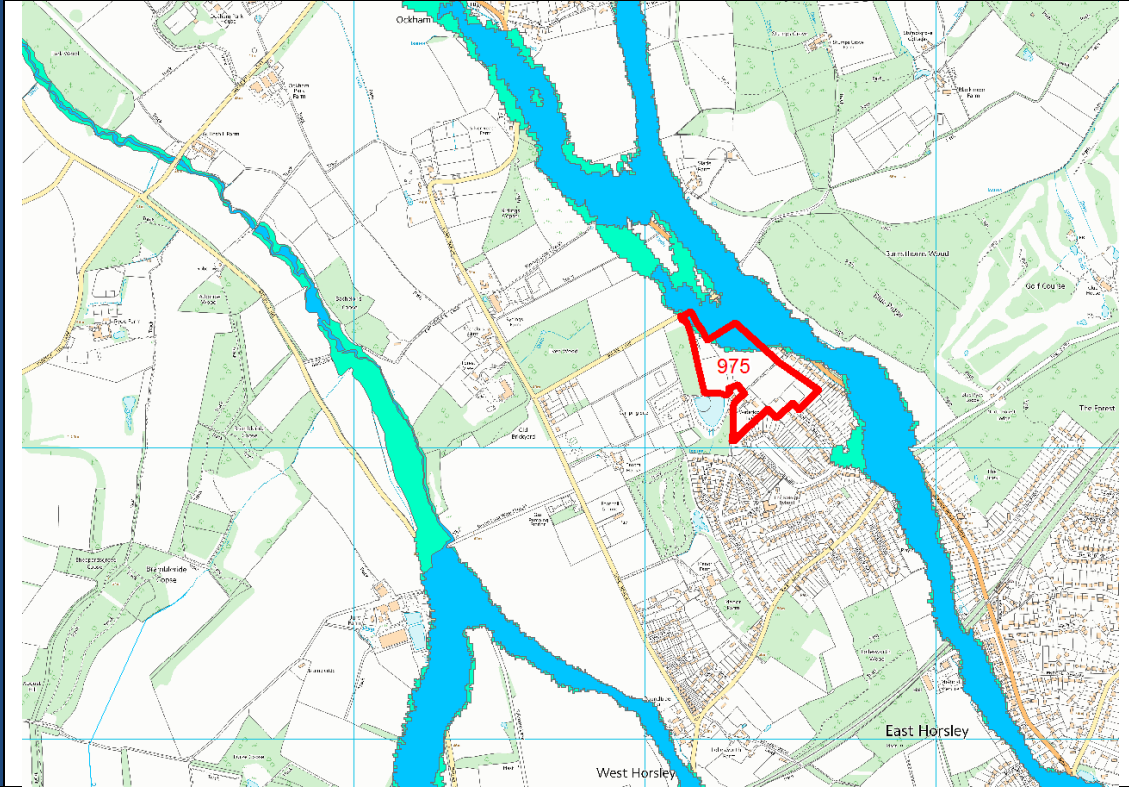
Red line boundary

Main River

Other River


EA Flood Zone 2

EA Flood Zone 3



Defences

The site is not currently protected by any flood defences.

Sources of Flooding	
Fluvial	The site lies outside the extent of detailed fluvial modelling, thus the fluvial flood risk has been measured using the Environment Agency indicative Flood Maps for Rivers and Seas. The Environment Agency indicative Flood Maps for Rivers and Seas demonstrate that the north east of the site is situated within Flood Zone 3, thus it is considered at high risk of fluvial flooding. The remainder of the site is located within Flood Zone 1 and is considered at low risk of fluvial flooding.
Surface Water/Sewer	The surface water modelling shows that the site is predicted to flood in the north west of the site during the 1 in 100 year pluvial event or greater. Other areas of surface water ponding are demonstrated in the centre of the site during the predicted 1 in 100 year return period event flood depth outlines.
<p>KEY:</p> <p>Red line boundary</p> <p>Main River</p> <p>Other River</p> <p>Surface water extent (1 in 100 year)</p> 	
Artificial Sources	The site falls outside of the maximum extent of reservoir flooding. Furthermore, there are no reservoirs, lakes or canals in close proximity to the site. Thus the site is considered at low risk of flooding from artificial sources.
Summary of flood risk from all sources of flooding	<ul style="list-style-type: none"> • Flooding from Fluvial sources – Low for the majority (80.2%) of the site. Approximately 17.4% of the site is situated within Flood Zone 3. • Flooding from Surface Water sources – The north west of the site is predicted to flood during the 1 in 100 year pluvial event, thus is considered at risk of surface water flooding. • Flooding from Artificial sources – The site is at low risk from flooding from artificial sources.
Risk Management – Guidance will be provided in the following section to inform policy development	
Flood Risk Management Recommendations	<ul style="list-style-type: none"> • More vulnerable land uses should be avoided in the highlighted areas at risk of flooding (particularly the north of the site). • Creating flood storage (e.g. an attenuation pond) in the north of the site would be beneficial for flood risk management within the area.
How can development reduce flood risk overall?	<ul style="list-style-type: none"> • Development of flood storage should be considered. • Developments within the site are encouraged to achieve a reduction in existing runoff rates / volumes where possible, to mitigate effects of cumulative development in this area. The surface water drainage system should be designed to accommodate storage of events up to the 1 in 30 year event and be designed to manage surface water exceedance events. The layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes.

	<ul style="list-style-type: none"> • Safe access and egress to the site should be achievable to the south of site. The major road to the east is within Flood Zone 3 and the major road to the west is at risk of surface water flooding, so a safe access and egress point to the south would avoid the area becoming a 'dry island'.
Reasonable prospect of compliance within the Exception Test?	<p>An area to the north east of the site is shown to be within the Flood Zone 3. Should development be avoided in these areas, and appropriate SuDS developed on site to avoid any increase in flood risk, it is likely that the site could pass the technical part of the Exception Test.</p>
Flood Risk Suitability Score	4

7.12 Site 240 – Land near Horsley Railway Station, Ockham Road North, East Horsley

Site Reference Number	240	Site Name	Land near Horsley Railway Station, Ockham Road North, East Horsley
Site Location	KT24 6LH	Grid Reference	TQ 08969 54432
Location Plan KEY: Red line boundary Main River *Other Rivers *Where other indicates: Drains, culverts, streams, brooks etc.			
Description	The site is located in East Horsley, with its southern boundary along the Horsley railway line. The site consists of two fields located behind a row of residential properties along Ockham Road North. The site is well contained and is bounded by the railway line and trees.. The site adjoins the village settlement and is predominantly Greenfield land. Just to the east of the site and on the site boundary lies a drain and culvert.		

Risk Assessment

Flood Zones

A majority of the site lies in lands classified as Flood Zone 1. However, the central part of the site is situated within areas of Flood Zone 3 and Flood Zone 2. The extent the Flood Zone 3 coincides with a Main River flowing in a northerly direction, which traverses the site near the site's eastern boundary.

Flood Zone 1: 69.1%
Flood Zone 2: 2.7%
Flood Zone 3: 28.2%

KEY:

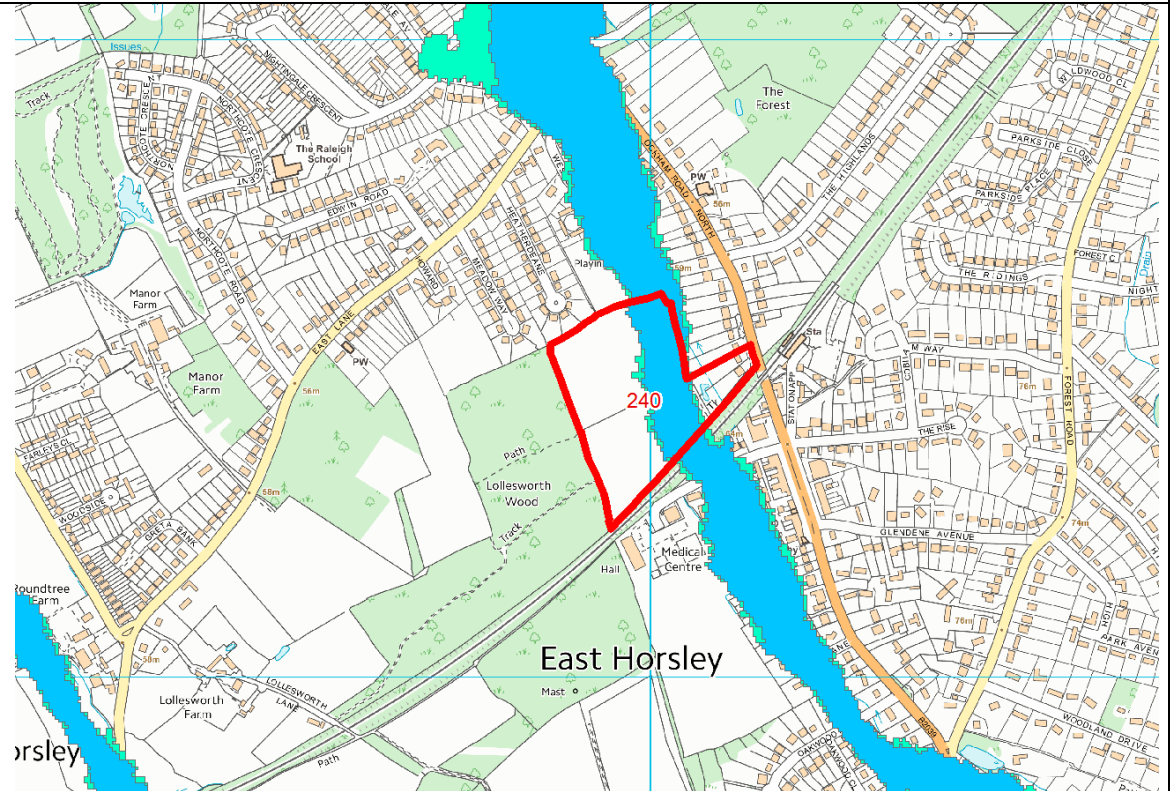
Red line boundary

Main River

Other River

EA Flood Zone 2

EA Flood Zone 3

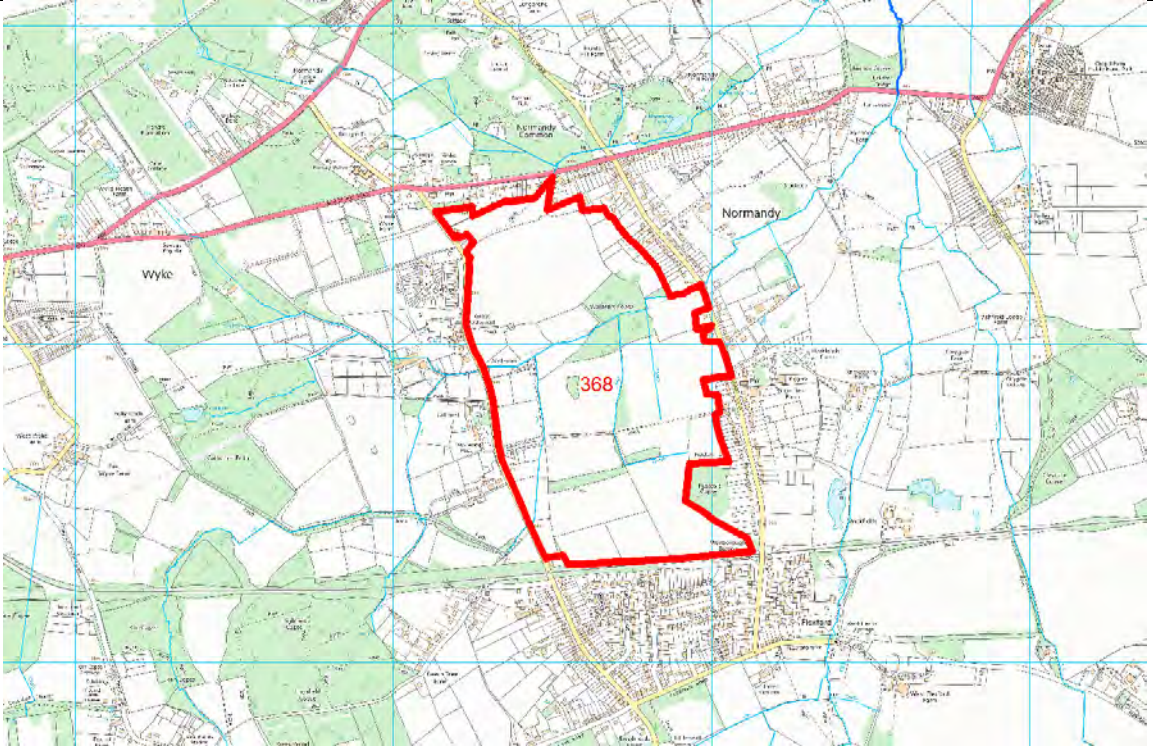


Defences

The site is not currently protected by any flood defences.

	<ul style="list-style-type: none"> • Avoid more vulnerable land uses around specific highlighted areas at risk of flooding such as those parts of the site that lie within Flood Zone 3. • As the site is located within an area of increased surface water flood risk [Hotspot 10 – The Horsleys] appropriate action should be taken to mitigate surface water flood risk. A best practice approach is for finished floor levels and the level of any opening into any basement should be greater than 300mm above the maximum flood level, up to and including the 1 in 100 year return period event. • As the site contributes to wider catchment surface water flooding issues the post-development run-off should be limited as practical. • Opportunities to reduce flood risk to downstream areas through increasing the storage capacity of the watercourse on the site should be considered.
<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> • Development of flood defences should be considered as well as the opportunity to reduce flood risk to downstream areas through increasing the storage capacity of watercourses near the site. • Developments within the site are encouraged to achieve a reduction in existing runoff rates / volumes where possible to mitigate effects of cumulative development in this area. • The developer should avoid development within the area shown to be at risk of flooding from the nearby drains and watercourse. • All SuDS measures are suitable depending on the final layout and results of permeability testing of the insitu soils. It is recommended that infiltration testing is undertaken to determine the suitability of infiltration devices within the site. • Currently 28.2% of the site is modelled to be within Flood Zone 3 by the Environment Agency's Indicative Flood Map for Rivers and Seas. However, no detailed hydraulic modelling has previously taken place along this watercourse; an improved representation of the watercourse could reduce the extent of Flood Zone 3 within the site. It is noted that some work has been started by the site proposer to this effect. • Safe access and egress to the site should be achievable to the north of site. It may be possible to achieve access, linking the site to Ockham Road North if a walkway was built above the predicted level of flooding. As the flood depths and detailed topographic mapping are not currently available further investigation into this would be required to verify the feasibility of this option.
<p>Reasonable prospect of compliance within the Exception Test?</p>	<p>A small area east of Site 240 is shown to be within the Flood Zone 3. Should development be avoided in these areas, and appropriate SuDS developed on site to avoid any increase in flood risk, there is a good chance that the site could pass the technical part of the Exception Test.</p>
<p>Flood Risk Suitability Score</p>	<p>4</p>

7.13 Site 368 – Land to the south of Normandy and north of Flexford

Site Number	368	Site Name	Land to the south of Normandy and north of Flexford
Site Location	GU3 2DG (Postcode of Glaziers Lane)	Grid Reference	SU 92696 50851
Location Plan			
Description	<p>The site is located between Normandy and Flexford with Westwood Lane to the west of the site, the A323 to the north, Glaziers Lane to the east and the railway line to the south of the site. The site is mainly Greenfield consisting of a number of fields separated by areas of woodland, tree belts and hedgerows. The site has potential for up to three access points, two from Westwood Lane and one off Glaziers lane. The site is also within close proximity to Wanborough train station. The site lies approximately 3.7km away from the River Blackwater.</p>		

KEY:

Red line
boundary

Main River

*Other Rivers

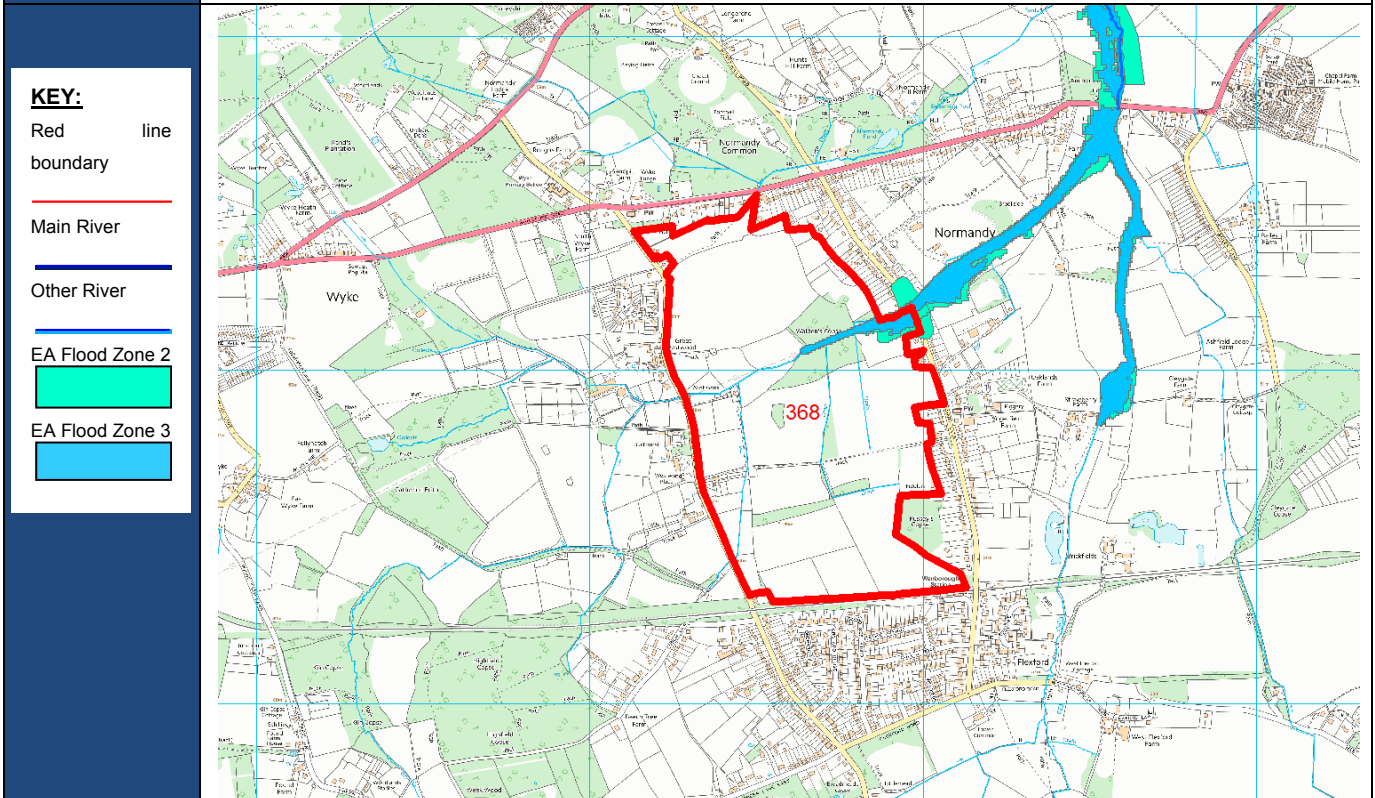
*Where other
indicates:

Drains,
culverts,
streams,
brooks etc.

Risk Assessment

Flood Zones Site 368 is predominantly comprised of lands classified as Flood Zone 1. A very small portion of the site is classified as Flood Zone 2 (0.5%) and Flood Zone 3 (1.5%).

Flood Zone 1: 98%
 Flood Zone 2: 0.5%
 Flood Zone 3: 1.5%



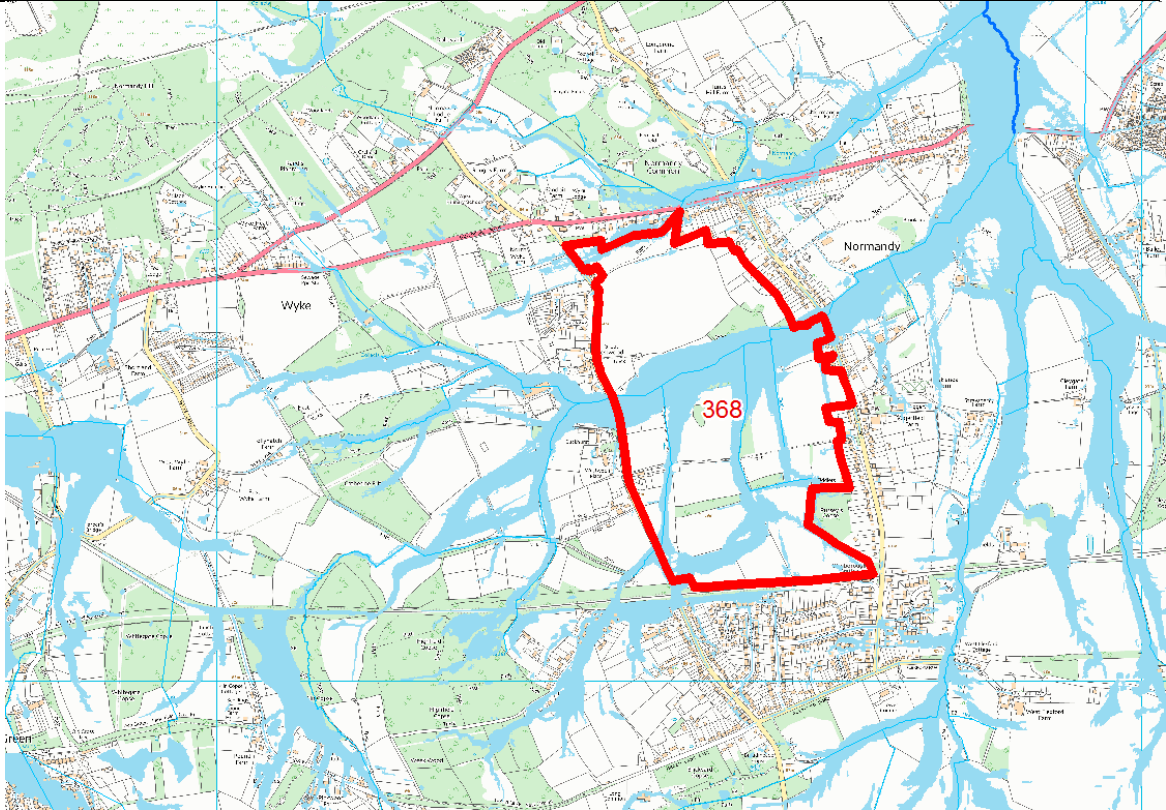
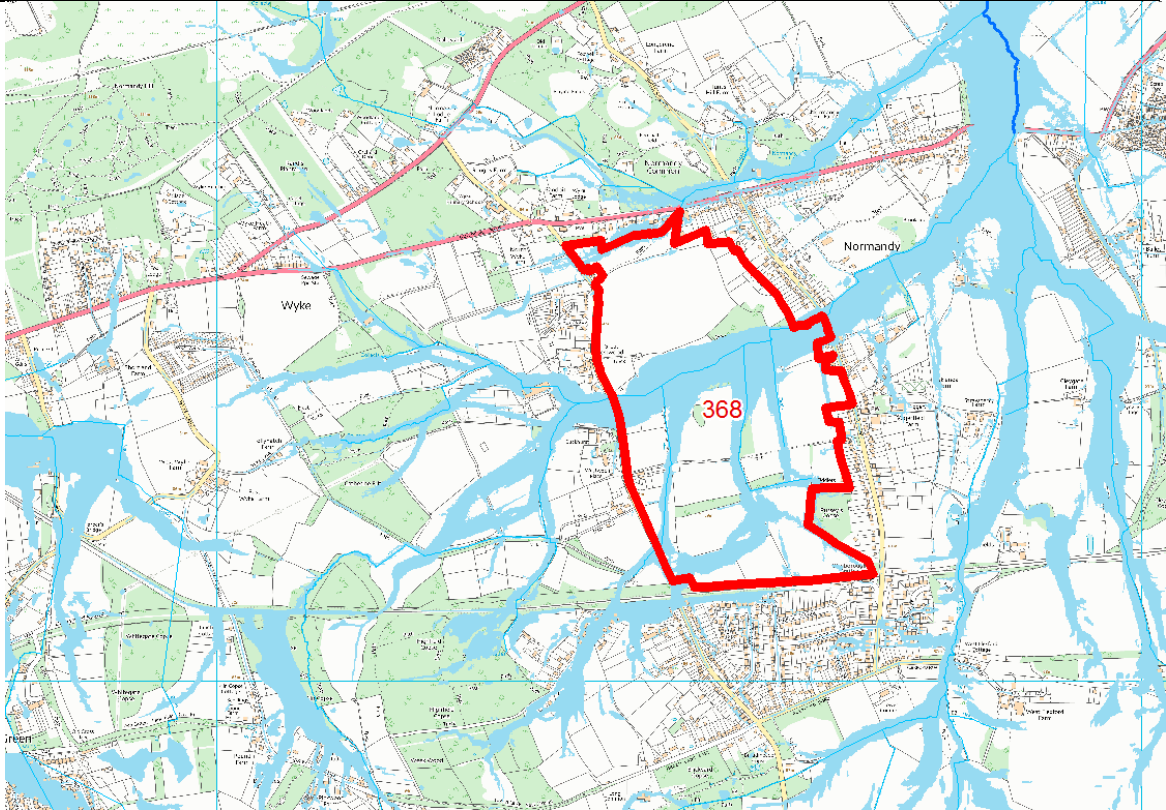
Defences and Flood Warning

The site currently does not benefit from flood defences. The site is also located outside of an Environment Agency Flood Warning Area.

Sources of Flooding

Fluvial The site lies outside of the extent of detailed fluvial flood risk modelling, thus the fluvial flood risk has been measured using the Environment Agency indicative Flood Maps for Rivers and Seas. The majority of the site is situated within Flood Zone 1, thus it is considered to be at low risk of fluvial flooding. However, a small area to the north east of the site is within Flood Zone 3, thus this area is considered to be at high risk of fluvial flooding.

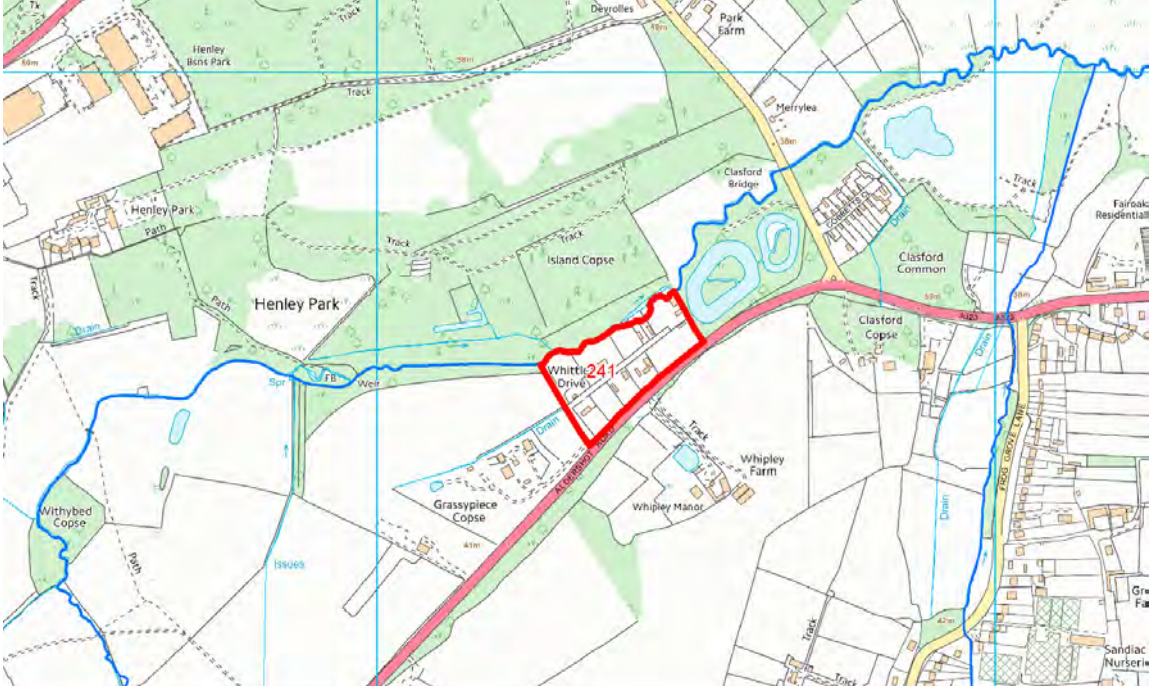
Surface Water/Sewer The surface water modelling illustrates that the centre of the site is predicted to flood during the 1 in 100 year pluvial event. The areas at risk for surface water flooding correspond with the drains / watercourses present within the site.

<p>KEY:</p> <p>Red line boundary</p> <p>Main River</p> <p>Other River</p> <p>Surface water extent (1 in 100 year)</p> 	
<p>Artificial Sources</p>	<p>The site falls outside of the maximum extent of reservoir flooding. Furthermore, there are no reservoirs, lakes or canals in close proximity to the site. Thus the site is considered at low risk of flooding from artificial sources.</p>
<p>Summary of flood risk from all sources of flooding</p>	<ul style="list-style-type: none"> • Flooding from Fluvial sources – Low for the majority of the site; however, the north east of the site is considered at high risk of fluvial flooding. • Flooding from Surface Water sources – Low to Medium for the majority of the site. Surface water flood risk is predicted surrounding the drains / watercourses within the site. • Flooding from Artificial sources – Low for the majority of the site.

Risk Management – Guidance will be provided in the following section to inform policy development

<p>Flood Risk Management Recommendations</p>	<ul style="list-style-type: none"> • Appropriate set back distances from the watercourse on site (Stanford Brook) should be agreed with both the Environment Agency and Guildford Borough Council. This could be up to 16 metres however; it is more likely to be between 5 metres and 8 metres. • A detailed flood risk assessment will be required for any planning application within the site because it is considered at high risk of surface water flooding. • It is recommended that a full catchment study of surface water flooding take place in the area surrounding the site. • Clear exceedance flow routes of any flooding should be clearly presented within any planning application • Any works that lie in, over, under or next to a main river will require a Flood Defence Consent from the Environment Agency under the Water Resources Act 1991 and the current level of flood protection must be maintained throughout those works. Works affecting ordinary watercourses now require the consent of Guildford Borough Council. Additional consents under the Land Drainage Act may be required if a culvert or structure, such as a weir, is proposed to control flow on any ordinary watercourse. • Avoid more vulnerable land uses around specific highlighted areas at risk of flooding. • Opportunities to reduce flood risk to downstream areas through increasing the storage capacity of the watercourse and drains on the sites should be considered
<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> • Development should be avoided within areas of increased flood risk (Flood Zones 2 and 3). • The surface water drainage system should be designed to accommodate storage of events up to the 1 in 30 year event and be designed to manage surface water exceedance events. The layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes. • Safe access and egress to the site is achievable to the north east and north west of Site 368.
<p>Reasonable prospect of compliance within the Exception Test?</p>	<ul style="list-style-type: none"> • A small area in Site 368 (centred at SU 92889 51141) lies within lands classified as Flood Zone 3. Should development be avoided in this area, and appropriate SuDS developed on site to avoid any increase in flood risk, it is likely that the site could pass the technical part of the Exception Test.
<p>Flood Risk Suitability Score</p>	<p>4</p>

7.14 Site 241 – Land at Whittles Drive, Aldershot Road, Normandy

Site Number	241	Site Name	Land at Whittles Drive, Aldershot Road, Normandy
Site Location	GU3 2BE	Grid Reference	SU 94396 52536
Location Plan	 <p>KEY: Red line boundary Main River *Other Rivers *Where other indicates: Drains, culverts, streams, brooks etc.</p>		
Description	<p>The site is located between the north east of Normandy and north west of Fairlands. The land is flat, and is accessed by the Aldershot Road. The site accommodates 12 Travelling Showpeople plots and is comprised of mobile homes, equipment and hard impermeable surfaces (such as roads and footpaths). There is a watercourse that runs along the north western site boundary.</p>		

Risk Assessment

Flood Zones

The site is largely located within Flood Zone 1. The northern boundary of the site lies within Flood Zone 2 and a small area of the site lies within Flood Zone 3.

Flood Zone 1: 73.7%

Flood Zone 2: 20.3%

Flood Zone 3: 6.0%

KEY:

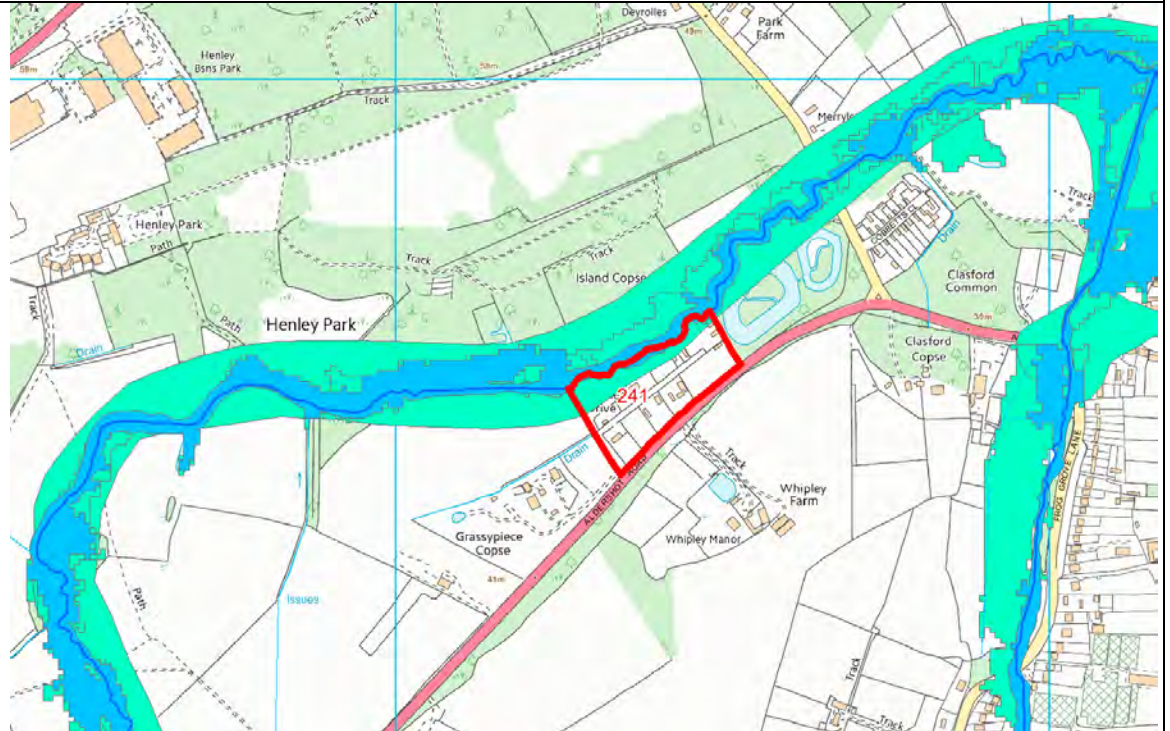
Red line
boundary

Main River

Other River

EA Flood Zone 2

EA Flood Zone 3



Defences

The site is not currently protected by any flood defences.

Sources of Flooding	
Fluvial	<p>The site lies outside of the extent of detailed fluvial flood risk modelling, thus the fluvial flood risk has been measured using the Environment Agency indicative Flood Maps for Rivers and Seas. The Environment Agency indicative Flood Maps for Rivers and Seas demonstrate that the northern boundary of the site is situated within Flood Zone 3, thus it is considered to be at high risk of fluvial flooding. The area of Flood Zone 2 which extends from the northern boundary of the site towards the centre is considered to be at moderate risk of fluvial flooding. The remainder of the site is located within Flood Zone 1 and is considered at low risk of fluvial flooding.</p>
Surface Water/Sewer	<p>The surface water modelling shows that the majority of the site is predicted to flood during the 1 in 100 year pluvial event with exception to a small section in the eastern corner of the site, which is considered to be at low risk of surface water flooding.</p>
<p>KEY:</p> <p>Red line boundary</p> <p>Main River</p> <p>Other River</p> <p>Surface water extent (1 in 100 year)</p>	
Artificial Sources	<p>The site falls outside of the maximum extent of reservoir flooding. Furthermore, there are no reservoirs, lakes or canals in close proximity to the site. Thus the site is considered at low risk of flooding from artificial sources.</p>
Summary of flood risk from all sources of flooding	<ul style="list-style-type: none"> • Flooding from Fluvial sources – Low for the majority (73.7%) of the site. 20.3% of the site is classified as Flood Zone 2 and 6% of the site is within Flood Zone 3. Areas of increased flood risk correspond to the main river flowing along the northern boundary of the site. • Flooding from Surface Water sources – Surface water ponding is predicted across the majority of the site during the 1 in 100 year pluvial event. • Flooding from Artificial sources – Low across the site.
Risk Management – Guidance will be provided in the following section to inform policy development	
Flood Risk Management Recommendations	<ul style="list-style-type: none"> • Appropriate set back distances from the watercourse on site should be agreed with both the Environment Agency and Guildford Borough Council. This could be up to 16 metres; however; it is more likely to be between 5 metres and 8 metres. • Any works that are within, or adjacent to, a Main River will require flood defence consent from the Environment Agency under the Water Resources Act 1991 and the current level of flood protection must be maintained throughout those works. Works affecting ordinary watercourses now require the consent of Guildford Borough Council. Additional consents under the Land Drainage Act may be required if a culvert or structure, such as a weir, is

	<p>proposed to control flow on any ordinary watercourse.</p> <ul style="list-style-type: none"> As a majority of the site is predicted to be at risk of surface water flooding ground floor levels of any future development should be raised above surrounding ground levels to prevent the ingress of surface water runoff into the property. A best practice approach used by developers is for finished floor levels and the level of any opening into any basement should be greater than 300mm above the maximum flood level predicted for the 1 in 100 year return period event. Development should be avoided within the northern areas of the site; only non-vulnerable land uses should be developed within the areas of Flood Zone 2 to the north of the site. Opportunities to increase the storage capacity of the watercourse within the site, to reduce flood risk to downstream areas, should be considered.
<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> Development of flood defences should be considered as well as the opportunity to reduce flood risk to downstream areas through increasing the storage capacity of watercourses near the site. Developments within the site are encouraged to achieve a reduction in existing runoff rates / volumes where possible, to mitigate effects of cumulative development in this area. The developer should avoid development within the area shown to be at risk of flooding from the nearby watercourse. The surface water drainage system should be designed to accommodate storage of events up to the 1 in 30 year event and be designed to manage surface water exceedance events. The layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes. Safe access and egress to the site should still be achievable through Aldershot Road
<p>Reasonable prospect of compliance within the Exception Test?</p>	<p>A small area north of Site 241 is shown to be within the Flood Zone 3. Should development be avoided in these areas, and appropriate SuDS developed on site to avoid any increase in flood risk, it is likely that the site could pass the technical part of the Exception Test.</p>
<p>Flood Risk Suitability Score</p>	<p>3</p>

7.15 Site 2106 – Lakeview, Lakeside Road, Ash Vale

Site Number	2106	Site Name	Lakeview, Lakeside Road, Ash Vale
Site Location	GU12 5AD	Grid Reference	SU 88904 51821
Location Plan			
KEY:	<p>Red line boundary</p> <p>Main River</p> <p>*Other Rivers</p> <p>*Where other indicates: Drains, culverts, streams, brooks etc.</p>		
Description	<p>The site is located to the south of Lakeside Road. It is completely enclosed to the west, south and east by Lakeside Park. The site is comprised of small buildings, mobile home, other hard surfaces (car park, footpaths and road) and grassed areas.</p>		

Risk Assessment

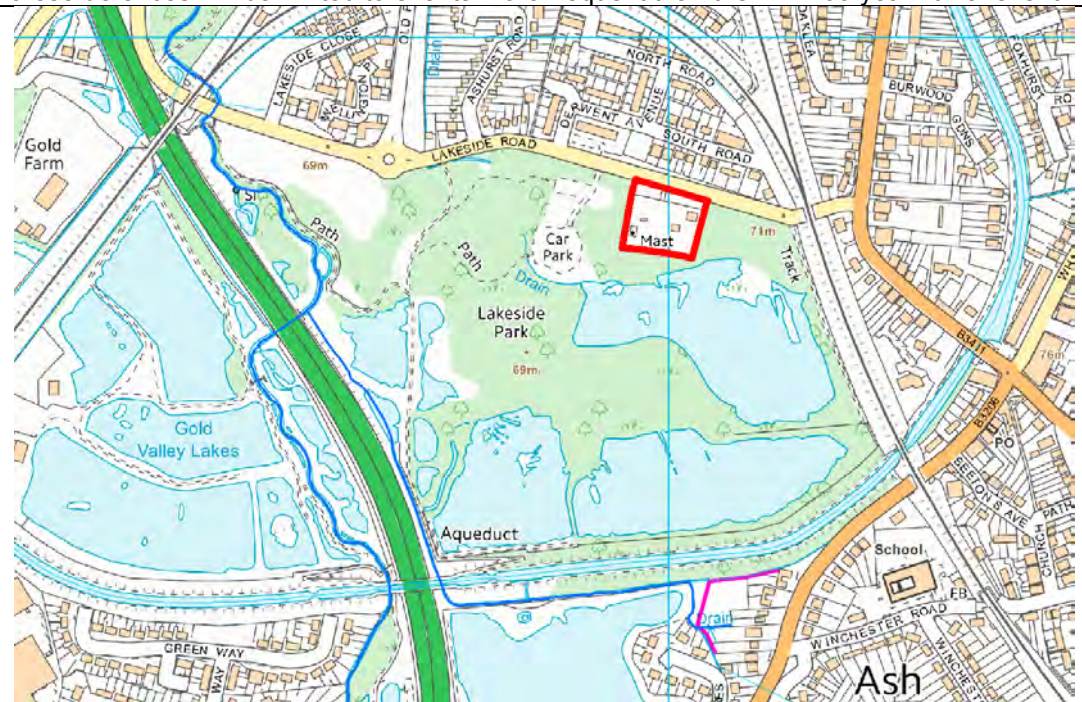
Defences

There are Environment Agency defences shown to be south of the site. However, the site is not shown as lying within an Area Benefitting from Defence, as such the protection provided by these defences will be limited to events more frequent than the 1 in 100 year fluvial event.

Mapping

KEY:

- Red line boundary
- Main River
- Other River
- National defence line extent

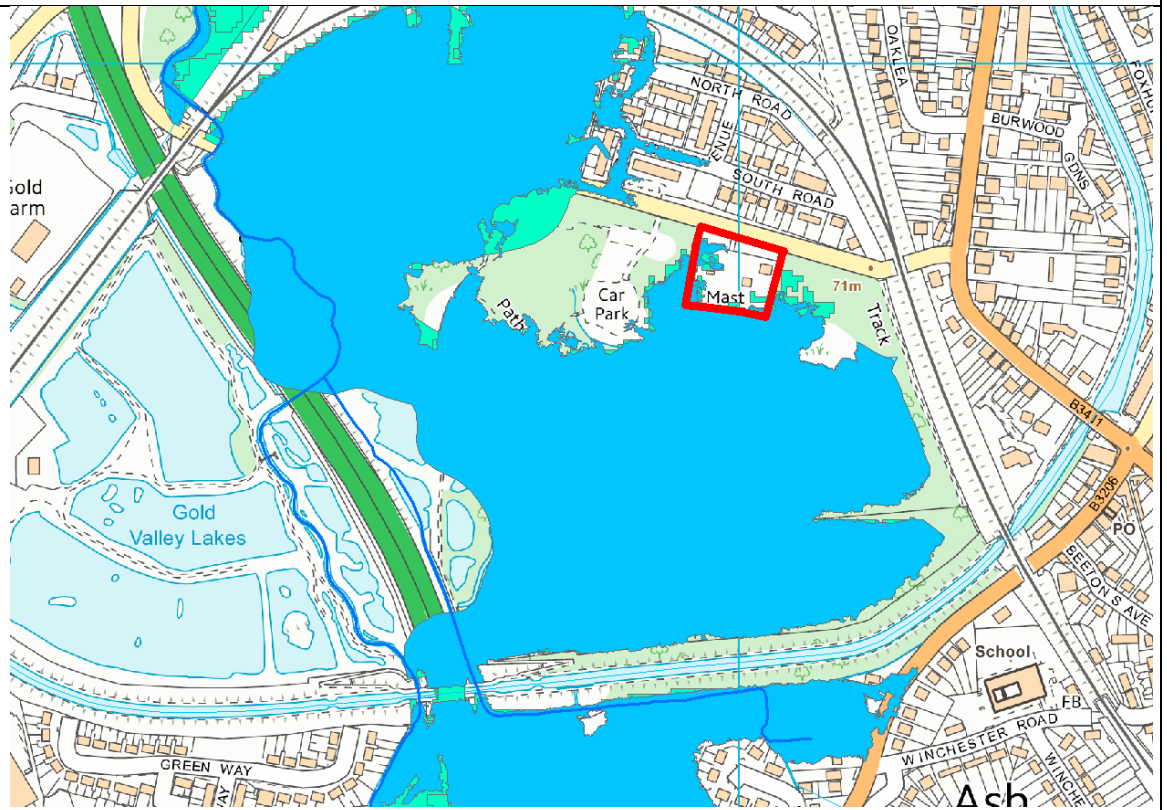


Flood Zones

Although the site lies predominantly in Flood Zone 1, parts of the western and southern boundaries lie within Flood Zones 2 and 3.
 Flood Zone 1: 72.7%
 Flood Zone 2: 9.6%
 Flood Zone 3: 17.7%

KEY:

- Red line boundary
- Main River
- Other River
- EA Flood Zone 2
- EA Flood Zone 3



Sources of Flooding

Fluvial

The site lies within the flood extent of detailed hydraulic modelling, which has been modelled as part of the 2007 Blackwater fluvial model. The fluvial modelling from the Blackwater (2007) fluvial model illustrates that the site is predicted to flood from the River Blackwater during the 1 in 100 year fluvial event along the southern and western boundaries of the site. Therefore, these areas are considered at high risk of fluvial flooding.

KEY:

- Red line boundary
- Main River
- Other River
- Blackwater (2007) 1 in 20yr undefended
- Blackwater (2007) 1 in 100yr undefended



Surface Water/Sewer

The majority of the site is considered to be at low risk from surface water flooding. The surface water flood modelling shows that only a small area of surface water ponding is predicted, in the north west of the site, during the 1 in 100 year pluvial event or greater.

KEY:

- Red line boundary
- Main River
- Other River
- Surface water extent (1 in 100 year)

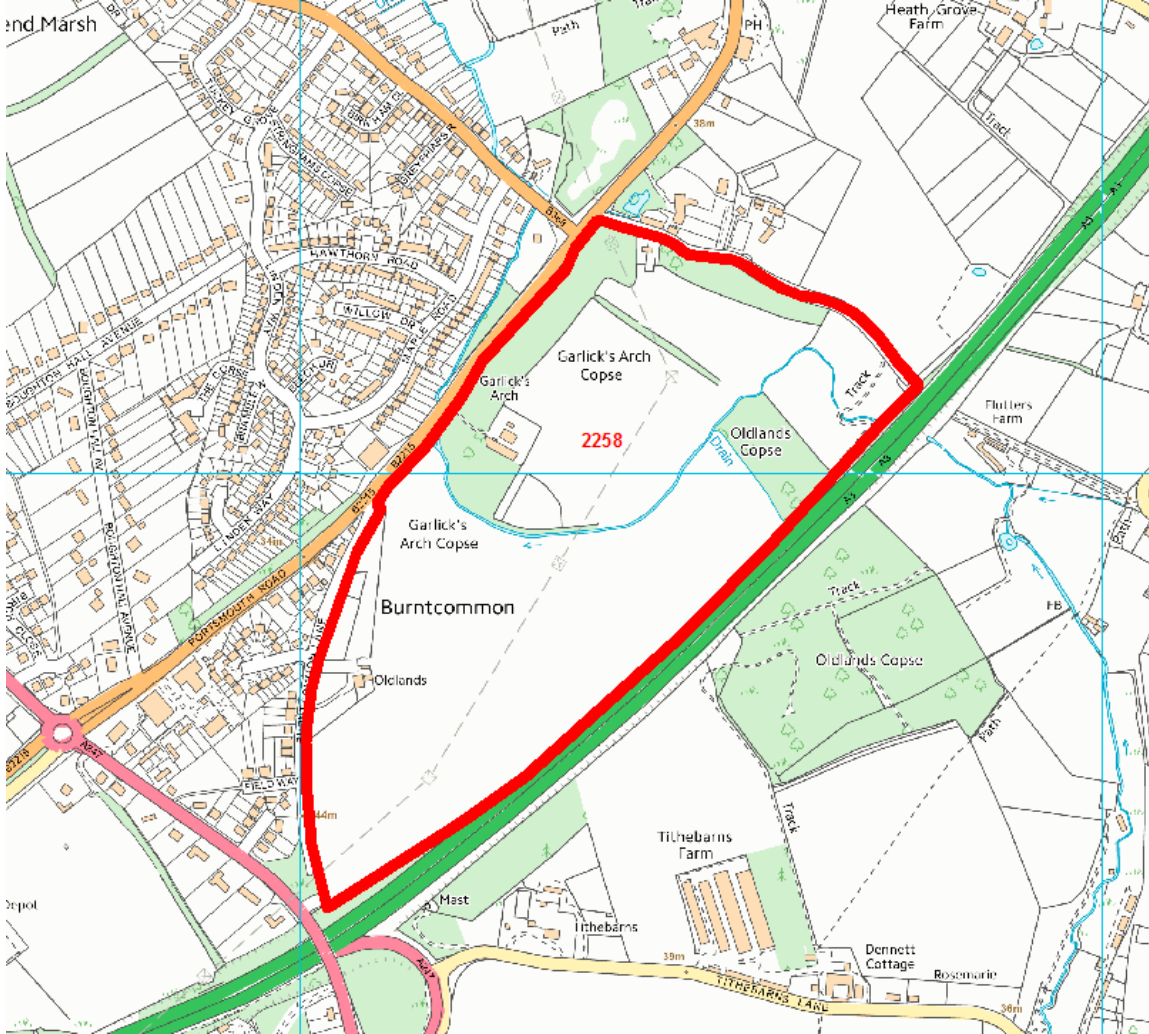


Artificial Sources

The site falls outside of the maximum extent of reservoir flooding. Furthermore, there are no reservoirs, lakes or canals in close proximity to the site. Thus the site is considered at low risk of flooding from artificial sources.

Summary of flood risk from all sources of flooding	<ul style="list-style-type: none"> • Flooding from Fluvial sources – The site is mainly within Flood Zone 1 (approximately 72.7% of the site). A small portion of the site, located in the south western corner of the site is affected by Flood Zone 2 and 3 (9.6% and 17.7%, respectively). • Flooding from Surface Water sources – The site is at low risk of surface water flooding. • Flooding from Artificial sources – The site is at low risk from flooding from artificial sources.
Risk Management – Guidance will be provided in the following section to inform policy development	
Flood Risk Management Recommendations	<ul style="list-style-type: none"> • More vulnerable land uses around specific highlighted areas at risk of flooding such as those parts of the site that lie within Flood Zone 3 should be avoided. • Tree removal on site should be avoided as these provide useful infiltration benefits. Opportunities to reduce flood risk to downstream areas through increasing flood storage capacity and including permeable areas should be optimised.
How can development reduce flood risk overall?	<ul style="list-style-type: none"> • Developments within the site are encouraged to achieve a reduction in existing runoff rates / volumes where possible, to mitigate effects of cumulative development in this area. The surface water drainage system should be designed to accommodate storage of events up to the 1 in 30 year event and be designed to manage surface water exceedance events. The layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes. • The developer should avoid development within the area shown to be at risk of flooding (in the south western corner of the site). • Access and egress can be achieved from the site onto Lakeside Road.
Reasonable prospect of compliance within the Exception Test?	<p>The west of the site is shown to be within Flood Zone 3. Development classified as Highly Vulnerable would not pass the technical part of the Exception Test; however, should Highly Vulnerable development be avoided in these areas, and appropriate SuDS developed on site to avoid any increase in flood risk elsewhere, there is a good chance that the site could pass the technical part of the Exception Test.</p>
Flood Risk Suitability Score	4

7.16 Land at Garlick's Arch, Send Marsh/Burnt Common and Ripley

Site Reference Number	2258	Site Name	Land at Garlick's Arch, Send Marsh / Burnt Common and Ripley
Site Location	GU23 7LN	Grid Reference	TQ 04295 54982
Location Plan	 <p>KEY:</p> <ul style="list-style-type: none"> Red line boundary Main River *Other Rivers *Where other indicates: Drains, culverts, streams, brooks etc. 		
Description	<p>The site is located at Send Marsh/Burnt Common and Ripley, to the north east of Guildford. The site is bounded by the A3 to the south east and east, residential properties to the south west, Portsmouth Road to the west and by a wooded area to the north of the site. The site is considered Greenfield (with the exception of the builders yard), with areas in the north, north west and east of the site containing land designated as Ancient Woodland. Furthermore, there is a Tree Preservation Order for an area of trees in the north west of the site. The site is not currently protected by any flood defences. There is an unnamed watercourse which runs through the centre of the site. The site is being considered for residential land use and up to 7,000 sqm of light industrial use and/or general industrial and/or storage and distribution.</p>		

Risk Assessment

Defences

The site is not currently protected by any flood defences.

Flood Zones

The majority of the site lies in land classified as Flood Zone 1. However, the central part of the site is situated within areas of Flood Zone 2, Flood Zone 3a and Flood Zone 3b undeveloped, which is the functional floodplain.

Flood Zone 1: 80.0%
Flood Zone 2: 9.5%
Flood Zone 3a: 4.0%
Flood Zone 3b (undeveloped): 6.5%

The detailed modelling overleaf shows the extent of flooding during the 1 in 20 year (Flood Zone 3b), 1 in 100 year (Flood Zone 3a) and 1 in 1000 year (Flood Zone 2) return periods.

Sources of Flooding

Fluvial

The site lies within the flood extent of detailed hydraulic modelling, which was developed as part of the 2009 Lower Wey fluvial model. The detailed hydraulic modelling predicts that the centre of the site (adjacent to the unnamed watercourse) is at risk from fluvial flooding during the 1 in 20 year fluvial scenario or greater. The detailed hydraulic modelling predicts the site is at risk of a 1 in 1000 year fluvial flood along a wider extent of the western and eastern boundaries of the site. The remaining majority of the site is not predicted to be at risk from fluvial flooding during the 1 in 1000 year scenario or less.

KEY:

Red line
boundary

Main River

Other River

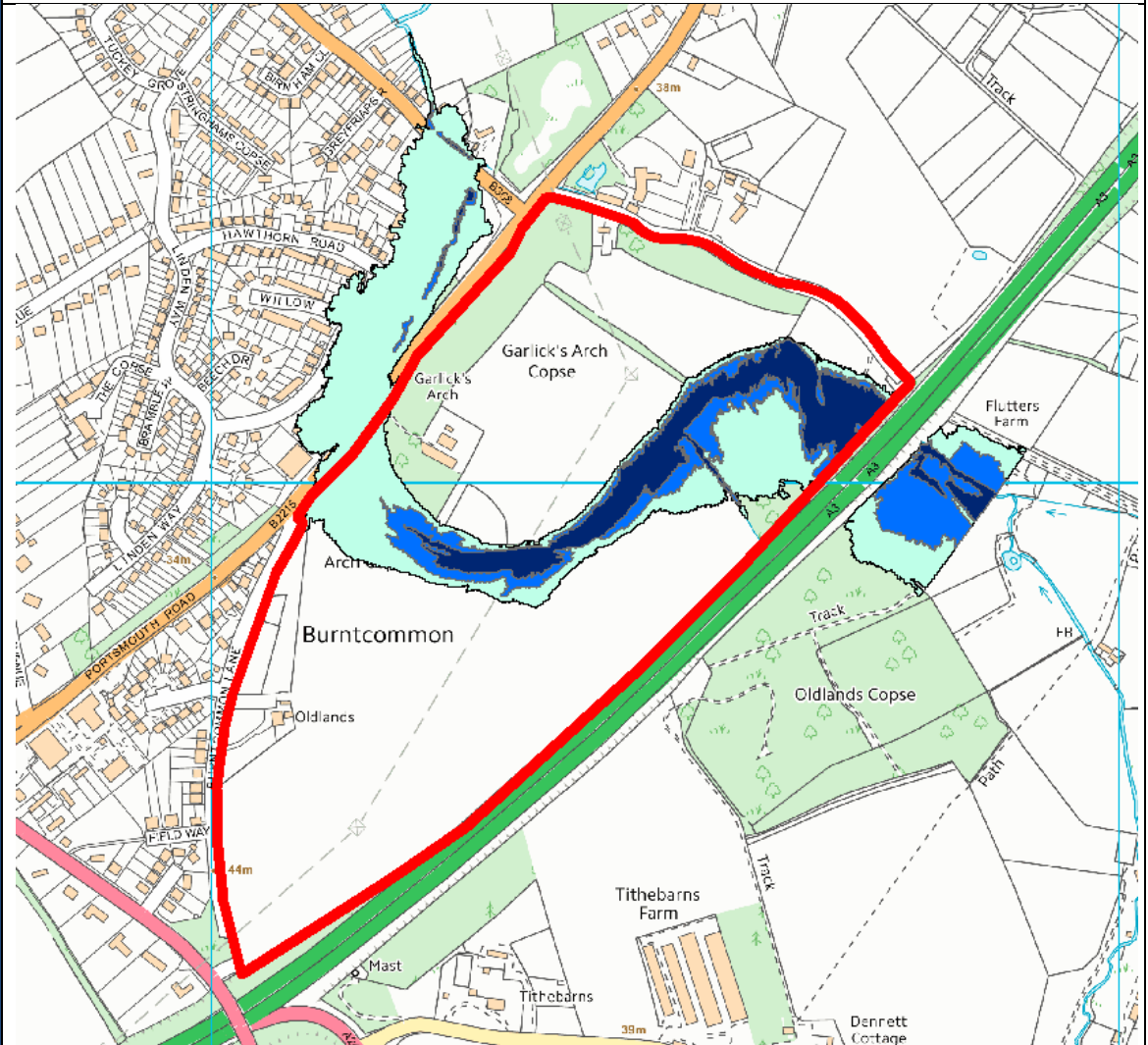
Lower Wey
(2009) 1 in
20yr
undefended



Lower Wey
(2009) 1 in
100yr
undefended

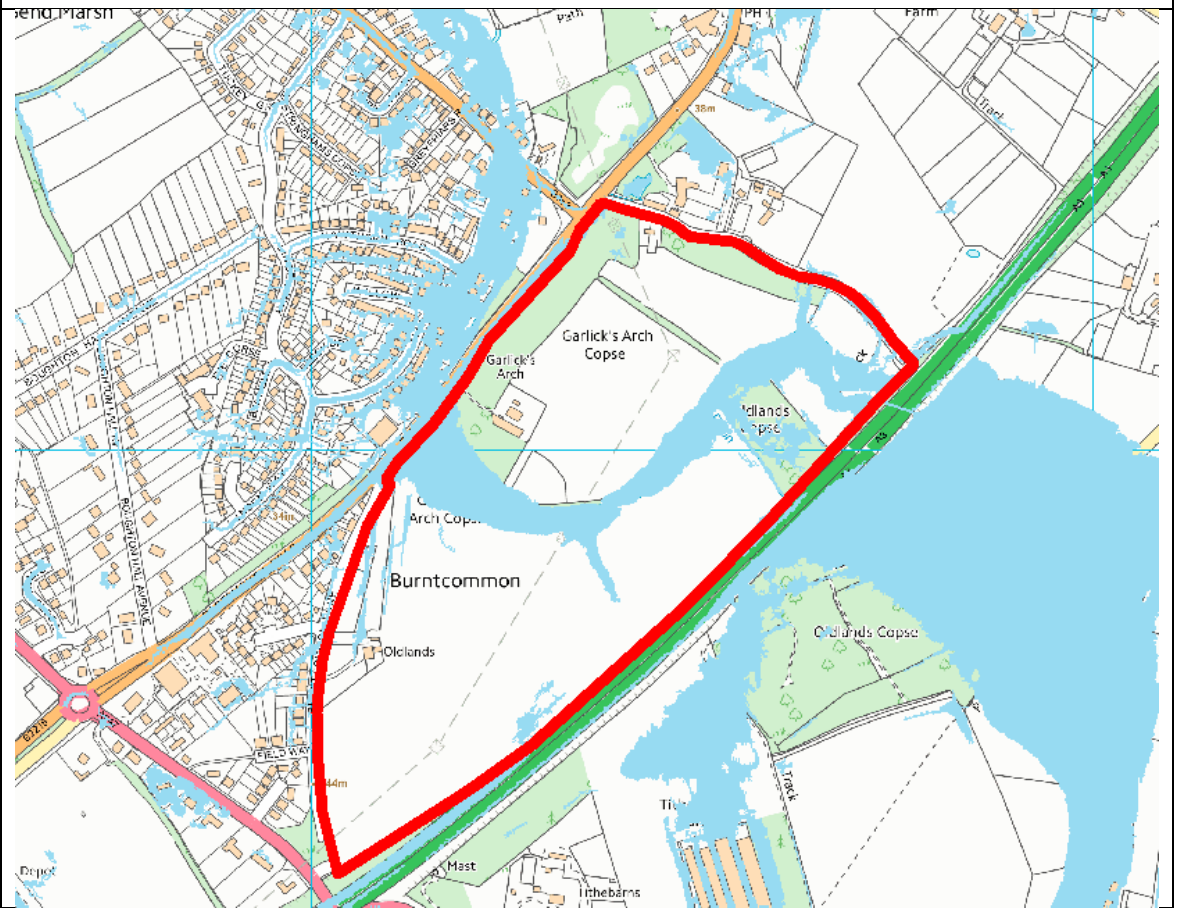
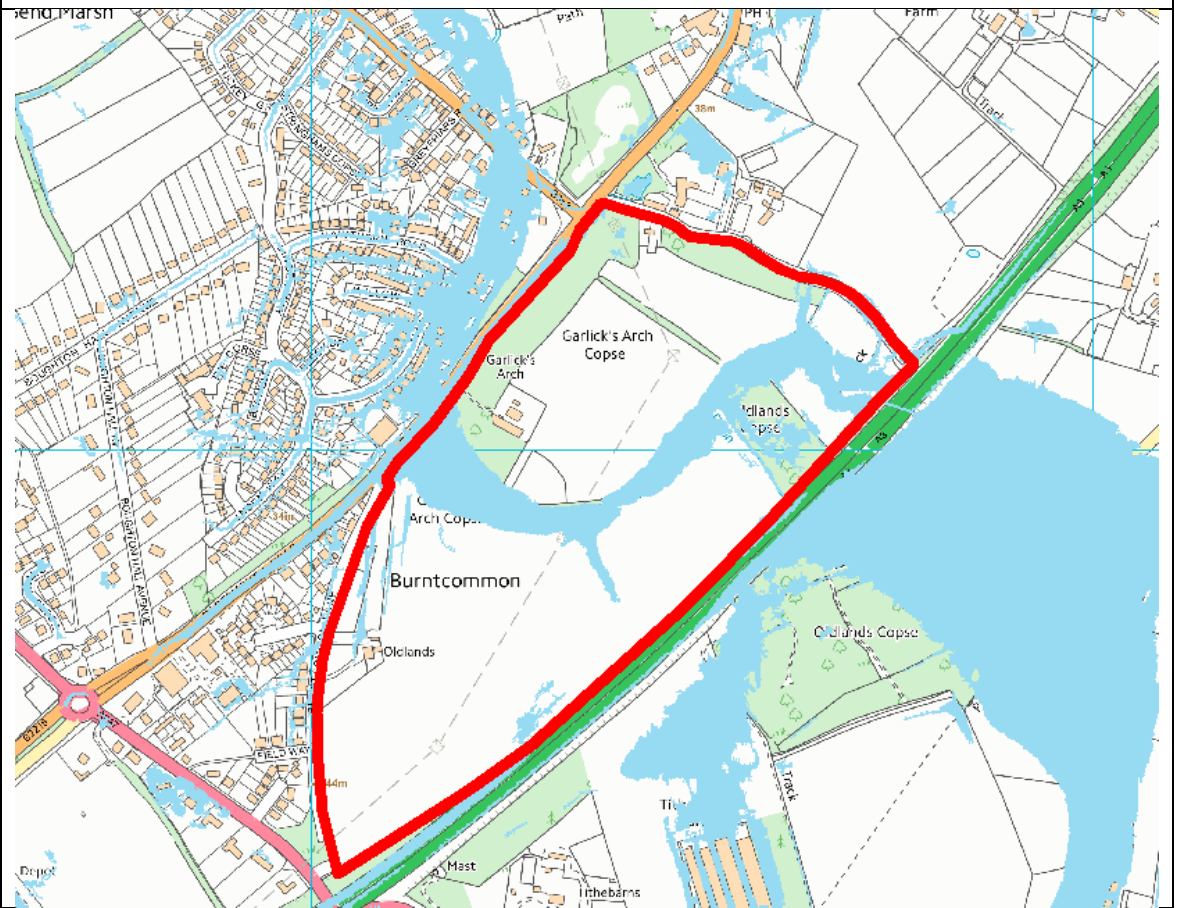


Lower Wey
(2009) 1 in
1000yr
undefended



Hazard mapping

The 2D detailed hydraulic modelling, which intersects the site boundary, is not available. Therefore, it has not been possible to derive hazard mapping for the site at this time. Hazard mapping could be undertaken as part of detailed hydraulic modelling for the Flood Risk Assessment, if the development is proposed within the Flood Zone 2 and Flood Zone 3 extents within the site.

<p>Surface Water/Sewer</p>	<p>The majority of the site is predicted to be at low risk of surface water flooding. However, the area adjacent to the watercourse within the site is predicted to be at risk of surface water flooding during the 1 in 100 year event or greater. Additionally small areas of surface water ponding are predicted within the site during the 1 in 100 year pluvial event or greater to the south east, north west and south western areas of the site.</p>
<p>KEY:</p> <p>Red line boundary</p> <p>Main River</p> <p>Other River</p> <p>Surface water extent (1 in 100 year)</p> 	
<p>Artificial Sources</p>	<p>The site falls outside of the maximum extent of reservoir flooding. Furthermore, there are no reservoirs, lakes or canals in close proximity to the site. Thus the site is considered to be at low risk of flooding from artificial sources.</p>
<p>Summary of flood risk from all sources of flooding</p>	<ul style="list-style-type: none"> • Flooding from fluvial sources –the majority (80%) of the site is at low risk. However, part of the site is considered to be at high risk of fluvial flooding. 6.5% of the site is situated within Flood Zone 3b (undeveloped) and 4.0% of the site is situated within Flood Zone 3a. • Flooding from surface water sources – the majority of the site is at low risk, however, adjacent to the watercourse and small areas to the south east, north west and south west is at risk from localised surface water flooding. • Flooding from Artificial sources –the entire site is at low risk.

Risk Management – Guidance will be provided in the following section to inform policy development

<p>Flood Risk Management Recommendations</p>	<ul style="list-style-type: none"> • Appropriate set back distances from the watercourse on site should be agreed with both the Environment Agency and Guildford Borough Council. This could be up to 16 metres; however, it is more likely to be between 5 metres and 8 metres. • Any works that take place within, or adjacent to, a Main River may require a Flood Defence Consent from the Environment Agency under the Water Resources Act 1991 and the current level of flood protection must be maintained throughout those works. Works affecting ordinary watercourses now require the consent of Guildford Borough Council. Additional consents under the Land Drainage Act may be required if a culvert or structure, such as a weir, is proposed to control flow on any ordinary watercourse. • Avoid more vulnerable land uses around specific highlighted areas at risk of flooding such as those parts of the site that lie within Flood Zone 3. • Opportunities to reduce flood risk to downstream areas through increasing the storage capacity of the watercourse on the site should be considered. • Felling trees can increase run off rates, and be a source of increased flood risk. Maintaining the areas of woodland on site would be very beneficial and may be statutory as regards the tree preservation order.
<p>How can development reduce flood risk overall?</p>	<ul style="list-style-type: none"> • Development should be avoided within the area classified as Flood Zone 2 and 3. Placing sleeping accommodation on the ground floor in areas of flood risk should be avoided. • Sustainable drainage systems, which reduce flood risk to downstream areas, should be developed. The absorption capacity provided by the woodland should be maintained. • All SuDS measures are suitable depending on the final layout and results of permeability testing of the insitu soils. It is recommended that infiltration testing is undertaken to determine the suitability of infiltration devices within the site. • Developments within the site are encouraged to achieve a reduction in existing runoff rates / volumes where possible to mitigate effects of cumulative development in this area. • The developer should avoid development within the area shown to be at risk of flooding from the nearby drains and watercourse. • Safe access and egress to the site should be achievable to the west along Portsmouth Road, to the south of the site via Burnt Common Lane or to the north of the site onto Kiln Lane.
<p>Reasonable prospect of compliance within the Exception Test?</p>	<p>A large percentage of the site is considered to be developable without the need for extensive flood risk management work. Development should be focused in areas within Flood Zone 1, primarily to the south of the site, in order to pass the technical part of the Exception Test.</p>
<p>Flood Risk Suitability Score</p>	<p style="text-align: center;">3</p>

8. Appendix B – Flood Risk Datasets

Flood risk information was provided by Guildford Borough Council and the EA in the form of flood incident databases, flood outlines and hydraulic models. The following table outlines the data used in the preparation of Level 2 Strategic Flood Risk Assessment.

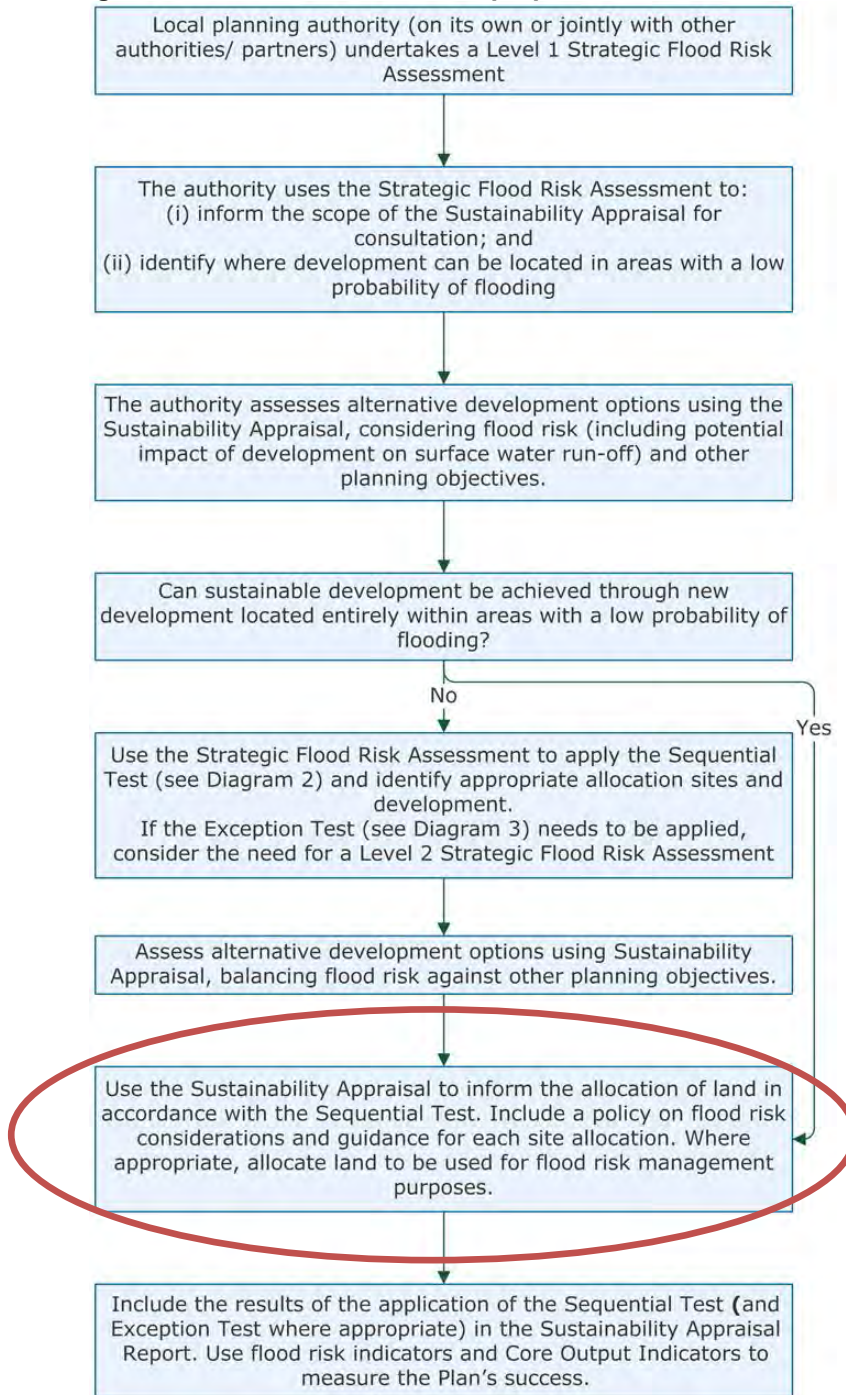
Table 8-1 Flood risk datasets

Data	Description	Owner / Author
Lower Wey Modelling Study	Study undertaken by Mott Macdonald for the EA in 2009. Model outlines for the 20%, 5%, 2%, 1% 1%+CC and 0.1% AEP events.	EA
River Blackwater Flood Risk Mapping Study	Study undertaken by JBA for the EA. Model outlines for the 20%, 1% and 1%+CC AEP events.	EA
Guileshill Brook Modelling	Detailed hydraulic modelling created by Capita as part of a site-specific Flood Risk Assessment. Model outlines for the 5%, 2%, 1%, 1% + cc	
Historic Flood Data	GIS outlines showing recorded outlines and updated Historic Flood Map.	EA
Flood Risk and Flood Alert Areas	GIS outlines showing the EA flood alert and flood warning areas covering Guildford Borough Council	EA
Statutory Main Rivers	Watercourses layer – line data only at 1:10000 scale	EA
Detailed River Network	Watercourses layer – line data only at 1:10000 scale	EA
Risk of Flooding from Reservoirs Information	GIS layer showing the areas at risk of flooding from Reservoirs	EA
Flood Map	Flood Zone 2, Flood Zone 3, Defences, Areas Benefitting From Defences.	EA
Updated Flood Map for Surface Water	Second generation flood map for surface water generated from a digital terrain model.	EA
Historic Flood Incident Database	List of identified wetspots within Guildford Borough Council (for public use)	Surrey County Council
Historical Flood Records	Wetspot database identifying areas reported to flood along roads within the Borough.	Surrey County Council
Thames Catchment Flood Management Plan	Composed by the EA in December 2009, outlines flood risk management across the West Thames catchment	EA
Preliminary Flood Risk Assessment	Composed by Surrey County Council, June 2011	Downloaded from Internet
Sewer Flooding Information	DG5 extract for Guildford Borough Council	Thames Water
Mapping	The 2009 OS Mapping (50k and 250k) was re-used under a new licence (2014) from the Ordnance Survey.	Guildford Borough Council
Flood Risk from Groundwater Information	GIS layer showing areas at risk of groundwater flooding	British Geological Society
Detailed SuDS suitability Map	GIS layer containing detailed information surrounding ground suitability for sustainable drainage systems.	British Geological Society

9. Appendix C – Planning Process

The planning process is derived from Planning Practice Guidance (DCLG, 2014). This Level 2 Strategic Flood Risk Assessment feeds into the stage circled below; it recommends flood risk considerations and provides guidance on the flood risk management of each site allocation. This information will feed into the Sustainability Appraisal Report for the Guildford Borough Council new Local Plan.

Table B-9-1 Taking flood risk into account in the preparation of a Local Plan (DCLG, 2014)



**Capita Property and Infrastructure Ltd
65 Gresham Street
London
EC2V 7NQ**

Tel +44 (0)1342 333530

www.capita.co.uk