PREPARED FOR

EPSOM AND EWELL BOROUGH COUNCIL

Strategic Flood Risk Assessment Level 2

Epsom and Ewell

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Date: September 2024
Version: 1.1

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Revision History

Version	Date	Description	Reviewed	Prepared	Approved
1.0	August 2024	Draft for client review	ER & NM	MD & NS	MM

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Acronyms and Abbreviations

Abbreviation	Definition
AEP	Annual Exceedance Probability
CFMP	Catchment Flood Management Plan
EA	Environment Agency
EEBC	Epsom and Ewell Borough Council
FRA	Flood Risk Assessment
FRMP	Flood Risk Management Plan
HR	Hazard Rating
LPA	Local Planning Authority
NPPF	National Planning Policy Framework
PPG	Planning Practice Guidance
RMA	Risk Management Authority
RoFSW	Risk of Flooding from Surface Water
SFRA	Strategic Flood Risk Assessment
TRBD	Thames River Basin District
TWUL	Thames Water Utilities Limited
WMS	Web Map Service

1 Introduction

Local Planning Authorities (LPAs) are required under the National Planning Policy Framework (NPPF) to develop a Strategic Flood Risk Assessment (SFRA) which should assess the risk to an area from flooding from all sources, now and in the future. It should take into account the impacts of climate change and assess the impacts of land use changes and development on flood risk.

Epsom and Ewell Borough Council (EEBC) has commissioned a Level 2 SFRA to support the development of their Local Plan, and is a continuation of the Level 1 SFRA, recently completed by Metis Consultants (Metis). This provides a detailed assessment from all sources of flood risk for specified sites requiring targeted assessments. The sources of flood risk assessed include fluvial, surface water, sewer, groundwater and artificial (reservoir) sources. A total of 22 sites were assessed as part of this Level 2 SFRA, as listed in *Section 2.2* of this report.

The purpose of the assessment is to provide the information necessary for the application of the Sequential Test, which identifies the potential development sites with the lowest risk of flooding and whether development can be made safe without increasing flood risk elsewhere. It enables developers to then provide appropriate flood risk mitigation for their site and outlines how this can be achieved. The Site Assessments similarly provide information to support the application of the Exception Test where required.

The key outputs of the Level 2 SFRA include a Screening Assessment for 40 available sites otherwise suitable for development (*Appendix A*), identifying which sites require a full Site Assessment. 22 sites were identified as requiring a Site Assessment (*Appendix B*). These provide an assessment of each flood source, with planning considerations and potential mitigation measures that may be required for the assessed site.

1.1 Background

Metis produced a new Level 1 SFRA for EEBC in August 2024. The Level 1 SFRA is written in line with the NPPF and Flood Risk and Coastal Change Planning Practice Guidance (PPG) and provides a strategic overview of all forms of flood risk throughout the study area. It provides the evidence base to inform the preparation of Local Plans and to ensure that development is steered away from areas identified as most at risk of flooding from all sources.

The PPG states that a Level 2 SFRA is required if:

- "you cannot allocate all land for development outside flood risk areas"
- "you can allocate land for development outside flood risk areas, but believe you may get high numbers of applications in flood risk areas on sites not identified in the local plan"

The Screening Assessment identified 20 sites which require assessment due to surface water flood risk, and a further two sites triggered a Site Assessment due to the significance of both fluvial flood risk and surface water flood risk. Therefore, a total of 22 sites were carried forward to the Level 2 SFRA for Site Assessments.

1.2 Policy

This Level 2 SFRA has been produced in line with national, regional, and local policy. The Level 1 SFRA was also produced in line with policy which is relevant to the Level 2 SFRA, however, there

are some policy requirements which specifically relate to Level 2 Site Assessments. These policies are put in place to ensure that flood risk is considered when making planning decisions about the design and location of any future development, including flood risk management features and structures. This ensures that development is located away from areas at greater risk of flooding to protect both people and property.

The Level 1 SFRA has a 'Policy Summary' section which provides an overview of the flood risk policies and requirements on national, regional and local levels. Local borough-specific policies and requirements are also referenced for each borough with a link to the key documents relating to flood risk.

1.2.1 National Policy

National policy which guides the requirements of SFRAs includes the NPPF and accompanying PPG, which contain information on when SFRAs (Levels 1 and 2) are required, and what level of detail they should contain. The NPPF and PPG also introduce the Sequential and Exception Tests. The Sequential Test compares the site which is proposed to be developed with other available sites to steer development towards the areas with the lowest flood risk. The Exception Test is required when the Sequential Test shows that it is not possible to locate development in an area with a lower risk of flooding. This is required for the following developments:

- Highly Vulnerable and in Flood Zone 2
- Essential Infrastructure in Flood Zone 3a or 3b
- More Vulnerable in Flood Zone 3a.

This Level 2 SFRA is structured to provide the basis for the application of this Test. Section 5.4.1 of the Level 1 SFRA provides further guidance on the application of the Sequential and Exception Tests.

The NPPF and PPG have both undergone revisions since the publication of the Level 1 SFRA. The NPPF was most recently revised in September 2023, and key changes were made in the 2021 revision which are relevant to this Level 2 SFRA. These changes include:

- Ensuring that plans consider all sources of flood risk.
- Incorporating appropriate flood resistant and resilient measures within developments to ensure they can quickly return to use after flood events without the need for significant refurbishment.
- Including the Flood Risk Vulnerability Classification within Annex 3.

The PPG was most recently updated in August 2022, which brought it in line with the latest updates in the 2021 NPPF revision. They key updates to the 2022 PPG include:

- The explicit inclusion of a climate change allowance within 'design flood' and the consideration of surface water flood risk.
- The Functional Floodplain starting point being redefined as the 3.3% annual exceedance probability (AEP) event (previously 5% AEP).
- The non-residential development lifetime starting point being set to 75 years.

The 2022 PPG also provided updated information on Sequential Testing, clarifying:

- When Sequential Tests should be applied, and when it is appropriate to move on to the Exception Test.
- Definitions of key terms such as 'reasonably available'.

- Roles and responsibilities, including an emphasis on LPAs to select an area of search and consider if the Sequential Test is passed.
- Approaches to improve efficiency and certainty.

Updated information on the Exception Test is also provided within the 2022 PPG, including:

- Definitions of relevant key terms (such as 'wider sustainability benefits to the community').
- A new section on how developments can demonstrate an overall reduction in flood risk.
- Demonstration of Flood Zone incompatibility, rather than showing whether the 'development is appropriate'.

1.2.2 Regional Policy

The latest version of the Thames River Basin District (TRBD) Flood Risk Management Plan (FRMP) was published in December 2022. This Plan outlines how risk management authorities (RMAs) will plan for and manage the risk of flooding to all communities within the TRBD during the current cycle, which runs from 2021 to 2027. Some of the measures set out to manage flood risk within this Plan include understanding available information such as flood risk maps, thereby including, but not limited to, mapping within this SFRA.

The Thames Catchment Flood Management Plan (CFMP) published by the EA in December 2009 serves to provide an overview of the present and future scale and extent of flooding within the River Thames catchment area. The Thames CFMP also outlines the preferred plan and strategic policies to manage flood risks sustainably over the next 50 to 100 years, considering climate change. This Plan identifies that there are opportunities to reduce flood risk through the appropriate design and layout of redevelopment, which will increase the resistance and resilience of properties to flood water and thus reduce the consequences of flooding.

This SFRA aids in understanding flood risk in Epsom and Ewell. It can be used by EEBC to identify areas where particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks.

1.2.3 Local Policy

EEBC's Local Plan was adopted in July 2007 and sets out the planning strategy and policies for the borough over the period 2007-2022. It sets out eight main issues that provide the focus of and objectives for the Local Plan, which include addressing a range of housing needs for a diverse and ageing population; managing the need for development with green belt constraints; and providing high environmental quality and provision of community facilities. The two overarching themes adopted by the Local Strategic Partnership are creating opportunities for all and supporting a society that recognises the needs of future generations.

As per Paragraph 167 of the revised NPPF, local plans should consider the current and future impacts of climate change. EEBC is now preparing a new Local Plan which will do this through Policy S15 and Policy S17. These will be integrated in the SFRA into recommendations.

EEBC's new Local Plan will set out the policies for the borough over the period 2022-2040. It will set out nine objectives, including providing housing taking the borough's constraints into account, protecting new development through the implementation of the necessary infrastructure and reducing the impact of the borough on climate change. This SFRA will aid in achieving some of the objectives set out in the new Local Plan.

1.2.4 Flood Zones

The Environment Agency (EA) have defined Flood Zones to show the probability of fluvial and / or tidal flooding. These Flood Zones provide indicative flood risk information and are used as part of the planning process as a tool in the Sequential and Exception Tests. The fluvial / tidal Flood Zones are defined within the PPG 'Flood Risk and Coastal Change' (Table 1). There are, however, no areas in Epsom and Ewell which are tidally influenced. All Flood Zones included in this assessment are defined as follows:

- **Fluvial Flood Zone 1** (Low Probability): Land having a less than 0.1% annual probability of river flooding.
- **Fluvial Flood Zone 2** (Medium Probability): Land having between a 1% and 0.1% annual probability of river flooding.
- **Fluvial Flood Zone 3a** (High Probability): Land having a 1% or greater annual probability of river flooding.
- **Fluvial Flood Zone 3b** (Functional Floodplain): Land that is deemed to be at the greatest risk of flooding from rivers, and where water must flow or be stored during times of flood. This includes land that has an annual probability of flooding from rivers of 1 in 30 years or greater (≥3.3% AEP), and land that is designed to flood (such as a flood attenuation scheme).

  NB (for Fluvial Flood Zone 3b): A defended extent has been used for the River Mole and an undefended extent for the Hogsmill River as the defended 1 in 30 year extent was not available for the Hogsmill River at the time of writing this report. Should this become available at a later date then it is recommended that these are updated in line with the PPG guidance.

1.2.5 Vulnerability Classifications

The flood risk vulnerability classification that is required for the Sequential Test is outlined in Annex 3 of the NPPF. It is summarised in *Table 1.1*.

Table 1.1 Flood risk vulnerability classifications (as outlined in Annex 3 of the NPPF).

Essential Infrastructure
• Essential transport infrastructure which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons e.g., infrastructure for electricity supply (including generation, storage and distribution systems). • Wind turbines / solar farms.
Highly Vulnerable
• Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent.
More Vulnerable
• Hospitals. • Residential institutions such as care homes, children's homes, social services homes, prisons and hostels. • Buildings used for dwelling houses, student residence, drinking establishments, nightclubs and hotels. • Non–residential uses for health services, nurseries and educational establishments. • Landfill and sites used for waste management facilities for hazardous waste. • Holiday or short-let caravans and camping sites (subject to a specific warning/evacuation plan).

Less Vulnerable
• Police, ambulance and fire stations which are not required to be operational during flooding. • Buildings used for shops; financial, professional, and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the More Vulnerable class; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do not need to remain operational during times of flood. • Sewage treatment works (with adequate pollution control measures to manage sewage during flooding). • Car parks.
Water Compatible
• Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel working. • Docks, marinas and wharves. • Navigation facilities. • Ministry of Defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

1.2.6 Flood Risk Vulnerability and Flood Zone Compatibility

The PPG Flood risk vulnerability and Flood Zone 'incompatibility' table provides guidance on the types of development that may be considered as suitable within each Flood Zone. It sets out some circumstances where the Exception Test will need to be applied following the Sequential Test. This is shown in *Table 1.2*.

Table 1.2 Flood risk vulnerability and Flood Zone 'incompatibility'.

Flood Zone	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test Required	✓	✓	✓
Zone 3a	Exception Test Required †	X	Exception Test Required	✓	✓
Zone 3b	Exception Test Required *	X	X	X	✓*

Key	
✓	Development is appropriate
X	Development should not be permitted
†	In Flood Zone 3a Essential Infrastructure should be designed and constructed to remain operation and safe in times of flood
*	In Flood Zone 3b Essential Infrastructure that has passed the Exception Test, and Water Compatible uses, should be designed and constructed to: • Remain operational and safe for users in time of flood. • Result in no net loss of floodplain storage. • Not impede water flows and not increase flood risk elsewhere.

2 Site Assessments

2.1 Purpose

The Site Assessments completed as a part of this Level 2 SFRA have two main purposes:

- Help LPAs apply the Sequential Test so that development is directed to areas that are at lowest risk of flooding.
- Provide the information needed to apply the Exception Test, checking whether a development can be built in a higher flood risk area.

The Site Assessments also provide recommendations and considerations for LPAs and prospective developers, to be used in conjunction with the guidance provided in Section 5 of the Level 1 SFRA and *Section 4* of this document. For further information on the Level 2 SFRA methodology, refer to *Section 3* of this document.

2.2 Locations Assessed

22 sites were assessed as part of this Level 2 SFRA. These are listed in *Table 2.1* and mapped in *Figure 2.1,* which is also shown in *Appendix C.* NB: no assessed site allocations are within the southern third of the borough.

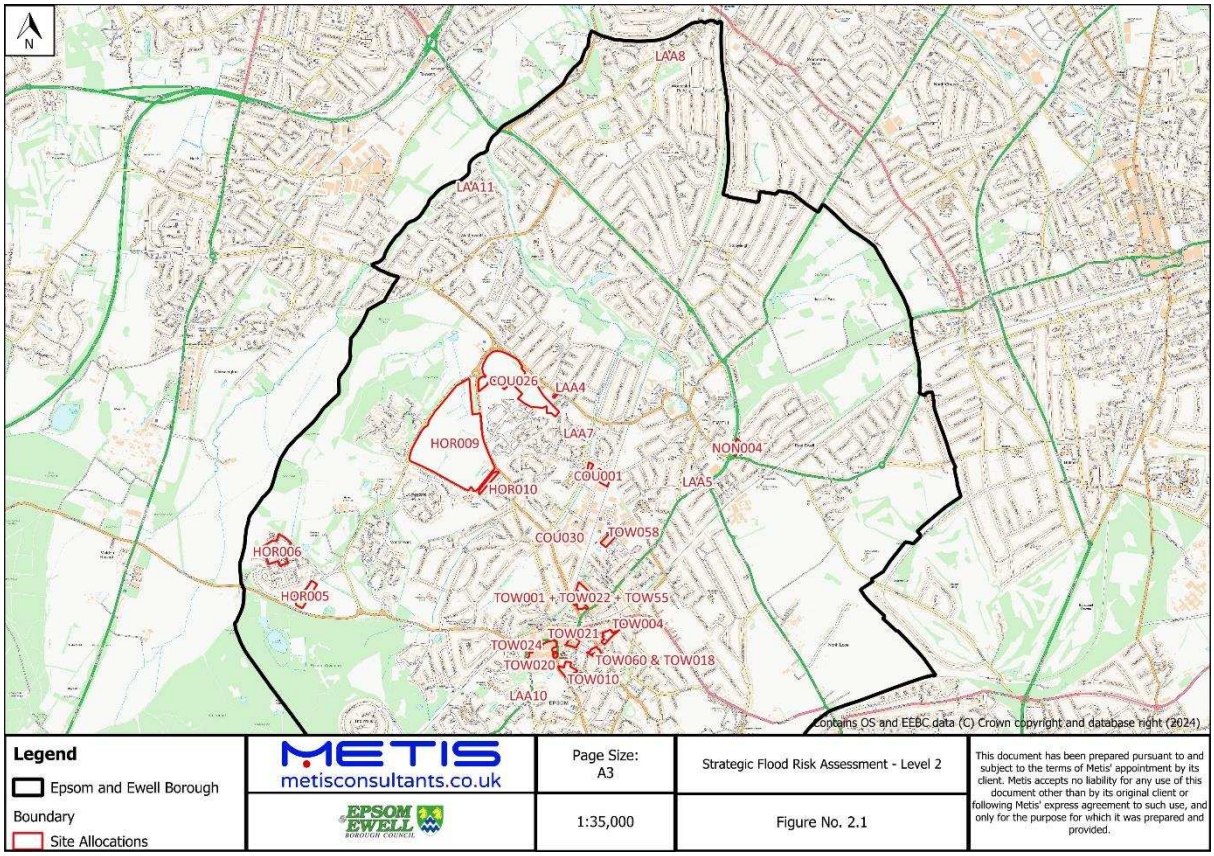


Figure 2.1: Borough map showing the location of the 22 sites targeted within the Level 2 SFRA.

Table 2.1 Summary of site allocations.

Site ID	Site Name	Proposed Use	Area (ha)
TOW024	Ashley Centre and Global House	Mixed use (including residential)	3.19
TOW020	Finachem House, 2-4 Ashley Road	Housing and commercial space	0.12
COU030	Blenheim House, 1 Blenheim Road	Housing/mixed (employment)	0.41
TOW058	Wilsons (Site 3)	Residential/mixed/employment	0.67
TOW010	Swail House	Residential	1.05
TOW021	Town Hall	Residential	0.74
TOW060 & TOW018	Police, Ambulance Station & Clinic	Residential (care home) – planning permission; residential	0.64
TOW004	Depot Rd and Upper High Street	Residential and decked car park	1.24
HOR006	Land at West Park (North)	Residential	3.77
HOR005	Land at West Park Hospital Site (South)	Housing, health care	1.80
HOR009	Horton Farm	Housing, education	37.90
HOR010	Chantilly Way	Housing/Flats	0.70
COU026	Hook Road Arena	Housing, leisure	13.74
NON004	Hatch Furlong Nursey	Housing	0.52
COU001	Gibraltar Crescent	Employment	1.59
TOW001 & TOW022 & TOW55	SGN & Depot Road & 20 Hook Rd	Mixed use (housing, leisure, commercial)	2.09
LAA4	Richards Field Car Park	Residential	0.07
LAA5	Esso Express, 26 Reigate Road	Residential	0.25
LAA7	Garages at Somerset Close & Westmorland Close	Residential	0.10
LAA8	46 The Avenue, Worcester Park	Residential	0.15
LAA10	64 South Street, Epsom	Residential	0.14
LAA11	Crane Court/Rowden Rd (Garage)	Residential	0.19

3 Methodology

3.1 Site Selection

A high-level Screening Assessment was undertaken on 40 sites during the production of the Level 1 SFRA to determine whether a Site Assessment was required (*Appendix A*). The following criteria was used to determine whether a Site Assessment was required:

"A Site Assessment is recommended where the extent of Flood Zone 2, Flood Zone 3a (fluvial), Flood Zone 3b (fluvial) and / or the Main River 1% AEP +35% climate change scenario) is greater than 0.0049% of the site area, and the RoFSW 1 in 1000-year extent exceeds 10% of the site."

For the 1 in 1000-year extent, 10% was chosen as a reasonable minimum percentage to assess the sites that are at risk of surface water flooding. This was deemed to represent both a precautionary and proportionate threshold, and whilst each site needs to be considered individually, employing a threshold of 10% should mean that there is sufficient space within the site to design the layout such as to avoid the need to locate the most vulnerable aspects of the development within the RoFSW 1 in 1000 year extent. There are 18 sites that are not identified as requiring a Site Assessment as the RoFSW 1 in 1000 year extent is below 10% coverage of the site, however, the risk of flooding at these sites should still be considered. These can be identified in the Screening Assessment (*Appendix A*).

Based on the aforementioned assessment criteria, 22 sites were identified to require a Site Assessment. 20 sites were triggered by surface water flood risk, and 2 sites were triggered by both fluvial flood risk and surface water flood risk.

3.2 Analysis

The Site Assessments were carried out using datasets provided by the EA, Thames Water Utilities Limited (TWUL) and EEBC, as well as data obtained from the Level 1 SFRA. Predicted flooding from surface water, sewer, fluvial, groundwater and artificial sources were analysed using the predicted proportion of each flood risk type within each site. The assessments for fluvial and surface water flood risks are based on the Flood Zones defined in the Level 1 SFRA. These are outlines of the predicted flood extents in both defended and undefended scenarios. The Flood Zones definitions are outlined in *Section 1.2.1*. The flood hazard rating (HR) used in the Site Assessments can be interpreted as shown in *Table 3.1*.

Table 3.1 Surface water flood risk hazard categories.

Hazard	Rating	Definition
Low	0.5 ≥ HR < 0.75	Caution – Flood Zone with shallow flowing water or deep standing water
Moderate	0.75 ≥ HR ≤ 1.25	Dangerous for some (i.e. children) – Danger: Flood Zone with deep or fast flowing water
Significant	1.25 > HR ≤ 2.0	Dangerous for most people – Danger: Flood Zone with deep fast flowing water
Extreme	HR > 2.0	Dangerous for all – Extreme danger: Flood Zone with deep fast flowing water

3.3 Assessment Template

Site Assessments were conducted on a specifically designed proforma. The sections included are summarised in *Table 3.2*.

Table 3.2 Site Assessment proforma details.

Section	Contents
Current and proposed use	Development use of each site assessed
Current and proposed vulnerability classification	Identified the sites vulnerability classification as outlined in *Section 1.2.2* For sites which may support a variety of different uses, the vulnerability classification is identified based on the most vulnerable use.
Risk summary	Percentage of the site area under each risk level for different types of flooding
Flood defences	Identifies if the site benefits from any fluvial flood defences
Flood Warning Areas	Identifies if the EA flood warning service is available at the site
Risk assessment	Data on risk from each flooding source, including flood depth, speed, hazard, duration, etc.
Flood mechanisms	For each flood source, how flood water behaves within the site
Site access / egress routes	Where flood-safe entry and exit routes should be located
Mitigation requirements	For each flood source, a list of mitigation measures to alleviate the flood risk for potential developments at the site. To be used in conjunction with the guidance provided in Tables 5-1, 5-2 of the Level 1 SFRA.
Safety of development	Analysis of how secure the development is against future flooding, including climate change considerations. This section also identifies if the site can be developed based on Exception Test criteria.

Seven site-specific maps are appended to each Site Assessment proforma (*Appendix B*). These are summarised in *Table 3.3*.

Table 3.3 Summary of maps.

Number	Figure	Description
1	Fluvial Flood Depth (1% AEP + 35% Climate Change Allowance Event)	Provides the maximum flood depth for the fluvial defended 1% AEP + 35% climate change flood event. Data was extracted from EA models. The 35% climate change event was chosen to review the maximum fluvial flood depth at the sites as it is closest to the 'higher' allowance peak river flow allowance for the London Management Catchment.
2	Fluvial Flood Hazard (1% AEP + 35% Climate Change Allowance Event)	Provides the maximum flood hazard for the fluvial defended 1% AEP + 35% climate change flood event. Data was extracted from EA models. The 35% climate change allowance was used.
3	Surface Water Flood Depth (1% AEP Rainfall Event)	Provides the predicted surface water flood depth across a site using EA RoFSW data for a 1% AEP event.
4	Surface Water Flood Hazard (1% AEP Rainfall Event)	Provides information on the predicted hazard of surface water flooding, based on EA RoFSW mapping for a 1% AEP event. Details about how hazard can be interpreted are shown in *Table 3.1*.

Number	Figure	Description
5	Sewer Flooding Records	Provides the sewer flood incidences recorded by TWUL at four-digit postcode resolution. This includes records from when incidents were first captured in the database up until 26/02/2024, when it was received from TWUL.
6	Areas Susceptible to Groundwater Flooding	Provides the strategic scale map of groundwater flood areas on a 1km grid. Data was extracted from EA models.
7	Reservoir Flood Risk - Wet day	Provides the individual flood extents for all large, raised reservoirs in the event that they were to fail and release the water held on a "wet day" when local rivers had already overflowed their banks. Data was extracted from EA models.

3.4 Data Sources

Different datasets were used in this assessment, a description of these datasets, their purpose and their source are outlined in *Table 3.4*.

Table 3.4 Datasets used in the Site Assessments.

Category	File name	Description	Data source	Purpose
Base map	Basemap	Polygons of streets, buildings, and other features in the area.	Ordnance Survey (OS) Master Map	Map creation.
	Epsom and Ewell borough boundary	Polygon demarcating the borough boundary.	OS Open Data	Defining study area; geographical boundary for other data needed.
	Statutory Main River Map	Line files showing the watercourses in the borough.	EA Web Map Service (WMS)	Determining locations of watercourses.
	Site Allocations for SFRA Suitable LAA sites 5-19 units	Polygons giving outlines of 40 proposed development sites in the borough.	EEBC 2024	Conducting screening and site level assessments.
Digital Terrain Model	LiDAR	Raster containing ground elevation data.	EA 2024	Determining low elevation areas susceptible to surface water flooding.
Flood defences	Reduction_In_Risk_Of_Flooding_From_Rivers_And_Sea	Polygons showing the areas that have reduced flood risk from rivers and sea due to the presence of flood defences.	EA WMS	Analysing how flood defences affect current and future fluvial flooding.

Category	File name	Description	Data source	Purpose
Flood Warning Areas	Flood_Warning_Areas	Polygon showing the areas where the EA Warning Service is available.	EA WMS	Determining if site users can sign up to the EA flood warning service.
Groundwater	Areas_Susceptible_to_Groundwater_Flood	Provides strategic scale map of areas susceptible to groundwater flooding on a 1km grid.	EA 2024	Analysing current groundwater flood risk.
Flood Map for Planning	Flood_Zone_2	Polygons showing land with annual probability of river flooding between 1% and 0.1%.	EA 2024	Prioritising sites for assessment.
	Flood_Zone_3	Polygons showing land having a 1% or greater annual probability of river flooding.	EA 2024	Prioritising sites for assessment.
	Flood_Zone_3b	Polygons showing land that has an annual probability of flooding from rivers of 3.3% or more. A defended layer has been used for the River Mole, and an undefended layer for the Hogsmill River as the defended 3.3% layer was not available for the Hogsmill River at the time of writing this report.	Level 1 SFRA	
Risk of Flooding from Surface Water (RoFSW)	RoFSW_1inXX_Extent	Polygons showing flood extent, depth, and hazard values for rainfall scenarios with a 3.33% AEP, 1% AEP and 0.1% AEP chance of occurring in any given year. Hazard calculated from flood depth and velocity.	EA 2024	Prioritising sites for assessment; Analysing current and future surface water flood risk; Creating surface water flood risk mitigation plan.
	RoFSW_1inXX_Depth			
	RoFSW_1inXX_Hazard			
Risk of Flooding from Reservoirs	Reservoir_Flood_Extent_Wet_Day	Map showing the largest area that might be flooded if a reservoir were to fail and release the water it holds on a wet day i.e. when rivers are at capacity.	EA 2024	Analysing current flood risk from reservoir breach.
Sewer flood records	Epsom and Ewell Sewer Flooding Records 26-2-2024 REDACTED	Database of historic sewer flooding incidents by four-digit postcode.	TWUL 2024	Sewer flood risk assessment.

Category	File name	Description	Data source	Purpose
Rivers	Hogsmill River	Data from EA-generated model of Hogsmill River.	EA 2015	Fluvial flood risk assessment (current and future); Determining climate Change allowance extents; Creating fluvial flood risk mitigation plan; Applying Exception Test.
	River Mole	Data from EA-generated model of River Mole.	EA 2017	

4 General Requirements

Table 4.1 outlines the general requirements that all the sites within this Level 2 SFRA must follow according to the NPPF. They have been referenced in the individual Site Assessments (*Appendix B*) to make it clear where they are appropriate to be applied to the site. Further information on the mitigation requirements can be found in Tables 5-1 and 5-2 of the Level 1 SFRA. These set out the requirements for all developments (Flood Zones 1, 2, 3a and 3b) and individual sites (from groundwater, sewer and artificial sources) as per the NPPF.

A climate change allowance of 35% has been used to set out the recommendations. This allowance is used for master planning purposes only. Developers submitting planning applications should refer to the Flood risk assessments (FRAs): climate change allowances guidance.

Table 4.1 General mitigation requirements for the site allocations.

No.	Mitigation Requirement	Applicable Area
4.1	There should be no net loss of floodplain storage within new developments. Only Essential Infrastructure (subject to the Exception Test) and Water Compatible infrastructure are permitted.	Flood Zone 3b
4.2	Flood storage compensation needs to be provided if permissible development decreases the volume of a fluvial floodplain or surface water flood area. The compensatory storage provided must equal or exceed the storage lost to ensure there will be no net loss of flood storage.	Flood Zone 3b and Flood Zone 3a, and the fluvial flood risk extent for the 1 in 100 year (1% AEP) plus climate change allowance (which covers parts of Flood Zone 2)
4.3	Flood Warning and Emergency Plans need to feature measures to manage residual and actual flood risk before, during, and after a flood, reducing the potential human impact of any flood event and making developments as resilient to flooding as possible. Key considerations can be found in the PPG. Cohesive emergency planning at site-specific and strategic level is essential to minimise the potential impact of an increased flood risk resulting from climate change and urban development. EEBC's Emergency Planning webpages and the Borough Emergency Plan (2023) detail the emergency situations that EEBC are prepared to deal with and their statutory duties during emergencies.	All
4.4	Residual risk should be mitigated through flood resilient / resistant designs and emergency planning to make sure the proper measures are in place to offer protection.	Entire area at risk
4.5	Development sites within 8m of a non-tidal main river, flood defence structure or culvert may require a Flood Risk Activity Permit.	8m buffer area around non-tidal main rivers
4.6	Development sites may require an approved ordinary watercourse consent.	Near ordinary watercourses

4.7	All basement rooms must have internal access and egress to a higher floor above the design flood level which can be utilised as part of emergency evacuation procedures.	Flood Zone 3a, Flood Zone 2
4.8	As part of any assessment for basement dwellings, evidence needs to be submitted to confirm the local water table level.	Flood Zone 3a, Flood Zone 2, Flood Zone 1
4.9	Finished ground floor levels must be set at 300mm above the 1 in 100-year (1% AEP) event (with a suitable climate change allowance) for any new 'Essential Infrastructure', 'Highly Vulnerable', 'More Vulnerable' and 'Less Vulnerable' development, and for any change of use developments that increase the vulnerability classification.	All

Appendix A – Screening Assessment

Appendix B – Site Assessments

- TOW024 Ashley Centre and Global House
- TOW020 Finachem House, 2-4 Ashley Road
- COU030 Blenheim House, 1 Blenheim Road
- TOW058 Wilsons (Site 3)
- TOW010 Swail House
- TOW021 Town Hall
- TOW060 & TOW018 Police, Ambulance Station & Clinic
- TOW004 Depot Rd and Upper High Street
- HOR006 Land at West Park (North)
- HOR005 Land at West Park Hospital Site (South)
- HOR009 Horton Farm
- HOR010 Chantilly Way
- COU026 Hook Road Arena
- NON004 Hatch Furlong Nursery
- COU001 Gibraltar Crescent
- TOW001 + TOW022 + TOW55 SGN + Depot Road + 20 Hook Rd
- LAA4 Richards Field Car Park
- LAA5 Esso Express, 26 Reigate Road
- LAA7 Garages at Somerset Close & Westmorland Close
- LAA8 46 The Avenue, Worcester Park
- LAA10 64 South Street, Epsom
- LAA11 Crane Court/Rowden Rd (Garage)

Appendix C – Locations Assessed

SITE ASSESSMENT - Gibralter Crescent

Address: Gibraltar Crescent, Epsom, KT19

Area: 1.59 **Ha**

Site Reference: COU001

Current Use	Proposed Use
Open land	Employment

Current Vulnerability Classification	Proposed Vulnerability Classification
Water-compatible development	Less Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	19.28	% of Site	<25	0	% of Site
FZ3a	5.98	% of Site	25-50	100	% of Site
FZ3b	1.4	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	1.18	% of Site	**Artificial**		
1 in 100*	2.13	% of Site	Reservoir	No	At risk?
1 in 1000*	32.24	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					14

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Time of onset	00.00	00.00	00.00	Hrs
Min. Depth	0.00	0.00	0.00	m
Max. Depth	1.52	1.77	2.02	m
Max. Velocity	0.67	0.71	0.78	m/s
Max Flood Level	31.92	32.19	32.45	m AOD
Max Ground Level	36.96	36.96	36.96	m AOD
Min Ground Level	30.71	30.71	30.71	m AOD
Max Flood Hazard	3.12	3.60	4.01	N/A
Duration of Flood	>27.75	>27.75	>27.75	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism

- The site is at risk of flooding from the Hogsmill River which flows in a northerly direction along the western site boundary.
- The western edge of the site is at risk of flooding in the 1 in 100 year flood event.
- Climate change is predicted to increase the flood extent, as well as the maximum flood depth, hazard and velocity.
- The site is predicted to be partially flooded from the onset along the western edge of the site and will remain flooded for in excess of 27.75 hours.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress

Safe access and egress routes should be directed across Longmead Road towards Sefton Road to the northwest of the site where fluvial flooding is not predicted.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements

- Only water compatible or essential uses (subject to the Exception Test) are permitted in FZ3b (the western edge of the site). There can be no increase in residential units in FZ3b. Development in this area which is located above the design flood level is still designated as functional floodplain.
- Self-contained basement dwellings and bedrooms are not permitted in FZ2 (the western area of the site).
- A FRA must be submitted as part of a planning application.
- Include appropriate flood resistance or resilience measures to address predicted flood depths.
- See SFRA Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9 for further development stipulations.
- Develop a Flood Emergency and Evacuation Plan for the site.
- Site users should be signed up to EA's Flood Warning Service.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.00 - 0.15	0.00 - 0.15	< 0.15	m
Max. Depth	> 1.20	> 1.20	> 1.20	m
Max. Velocity	1.00 - 2.00	> 2.00	> 2.00	m/s
Max. Hazard	1.25 - 2.00	> 2.00	> 2.00	N/A

*The 1 in 1000 extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism

- The site is currently at risk of surface water flooding, particularly along the western edge of the site.
- Longmead Road to the west of the site is predicted to be at high risk of surface water flooding.
- Climate change is not predicted to increase flood depths, velocity or hazard.

Site Access / Egress

Safe access routes should be directed towards Longmead Road and across to Sefton Road where there is a lower risk of flooding.

Figure 3 - RoFSW Flood Depth Map

Mitigation - Flood Risk Requirements

- Development should be directed away from the western area of the site where there is higher risk of surface water flooding.
- See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Surface Water Drainage

- All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma.
- Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG).
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Gibralter Crescent

SEWER

Risk Assessment

- The site falls within a postcode area where there are 14 reported flood incidents from sewer flooding.
- The site is assumed to be served by separate surface water and foul sewer networks.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having >=25% <50% susceptibility to groundwater flooding.
- The site is underlain by River Terrace superficial deposits and Lambeth Group bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.
- See SFRA - Level 2 Report mitigation requirement number 4.2 for compensatory flood storage stipulations.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is changing from open land to employment. The vulnerability classification is therefore increasing from 'Water-compatible development' to 'Less Vulnerable'.
- The site is currently open land, therefore an increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from the western edge of the site.
- Safe access routes should be directed towards Longmead Road and across to Sefton Road where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- Yes. The Hogsmill River runs along the western edge of the site, therefore any activity being undertaken within 8m of the bank of the river will require a flood risk activity permit. The development is not in the vicinity of an Ordinary Watercourse.

F. Can the site pass the Exception Test?

- No development is permitted along the western edge of the site in Flood Zone 3b. There can be no increase in residential units in FZ3b unless it is 'Water-compatible development' or 'Essential Infrastructure'.
- The Exception Test is not required for 'Less Vulnerable' development in Flood Zones 1 , 2 or 3a. Should the proposed vulnerability classification increase, then the site may be subject to the Exception Test.

Figure 1 - Fluvial Flood Depth Map

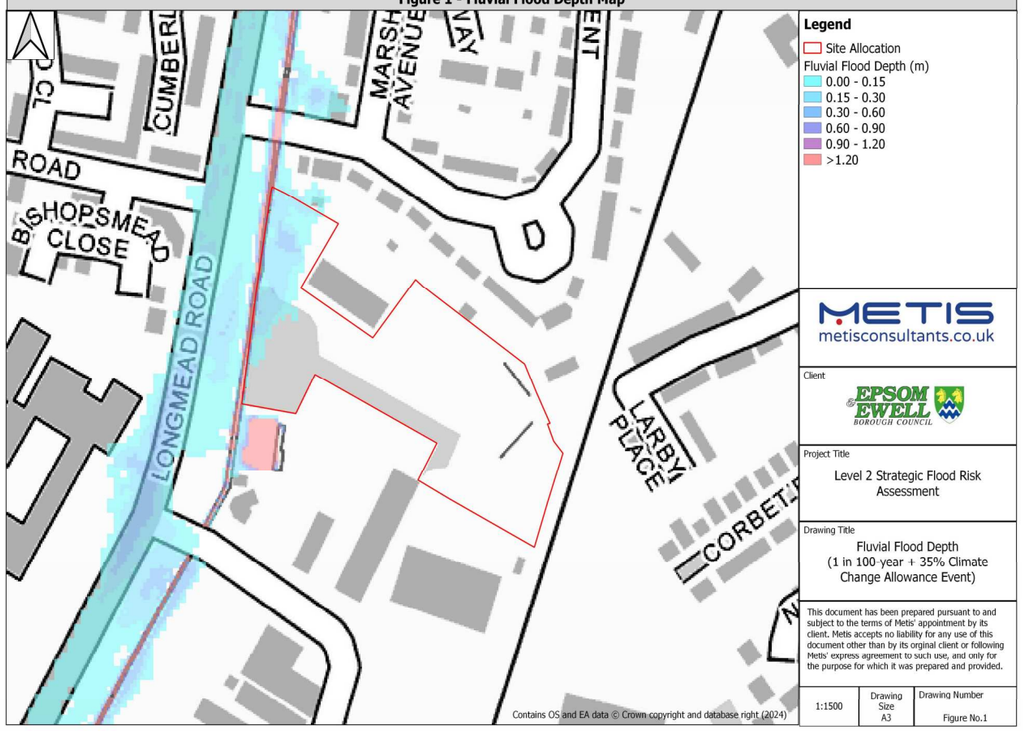


Figure 2 - Fluvial Flood Hazard Map

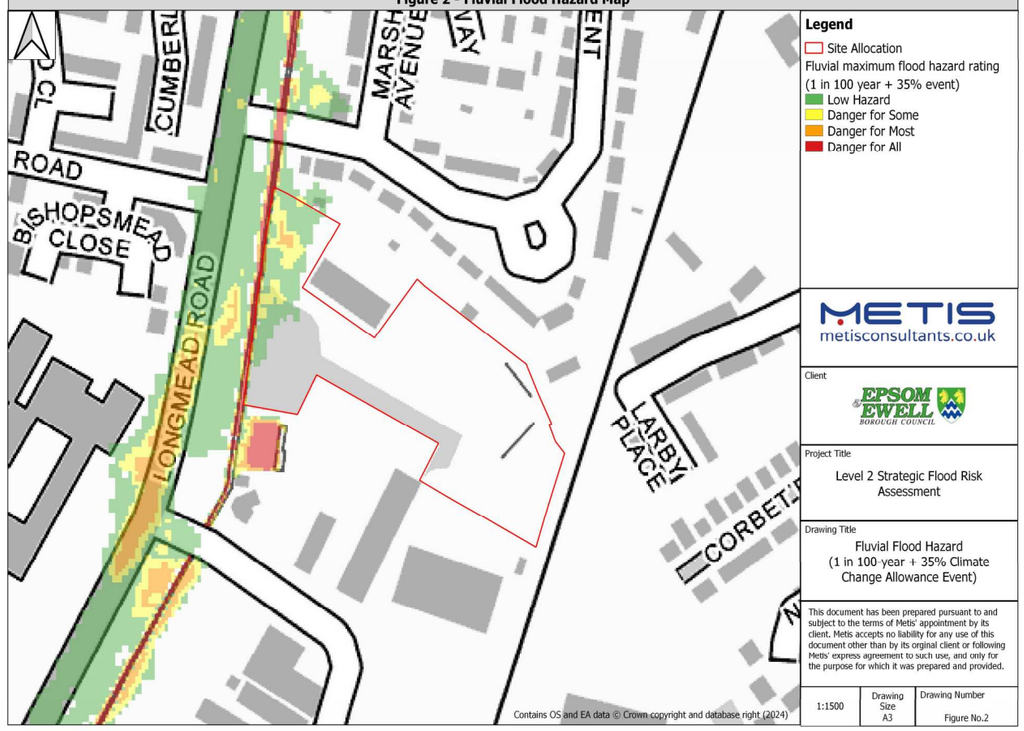


Figure 3 - RoFSW Flood Depth Map

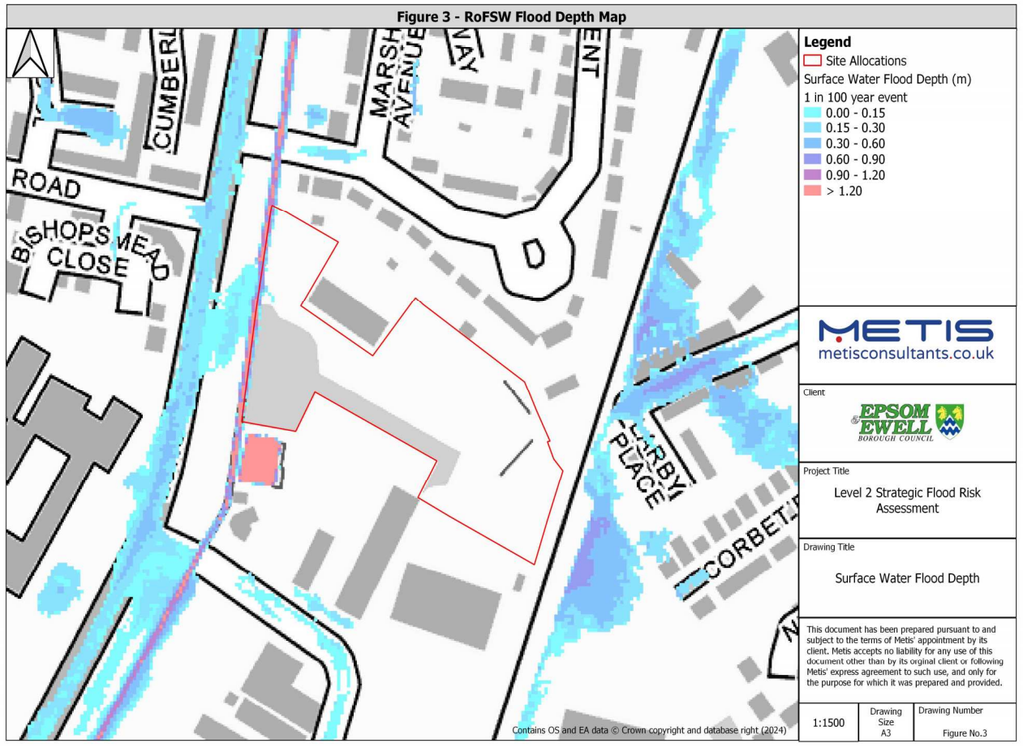


Figure 4 - RoFSW Flood Hazard Map

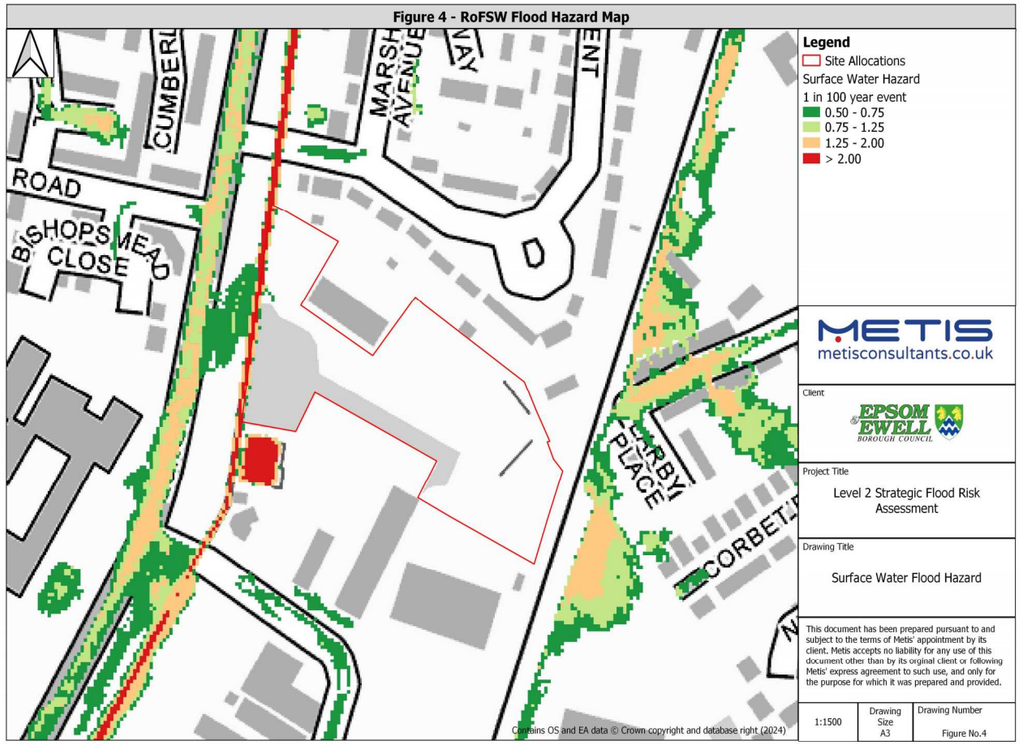


Figure 5 - Thames Water Sewer Flood Map

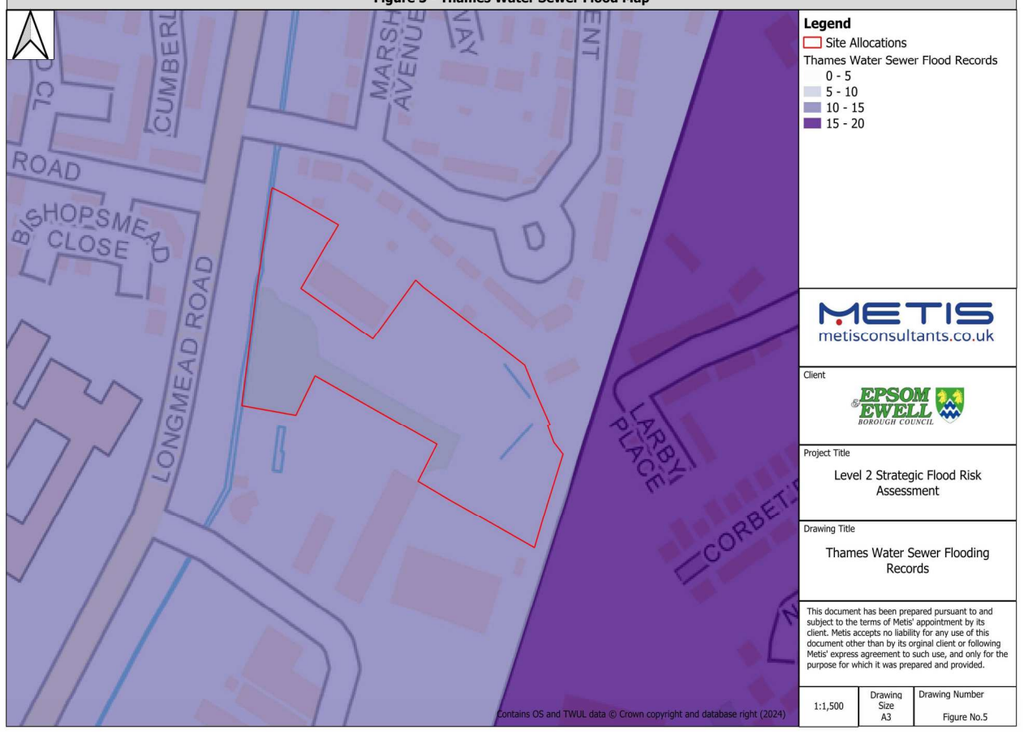


Figure 6 - Areas Susceptible to Groundwater Flooding Map

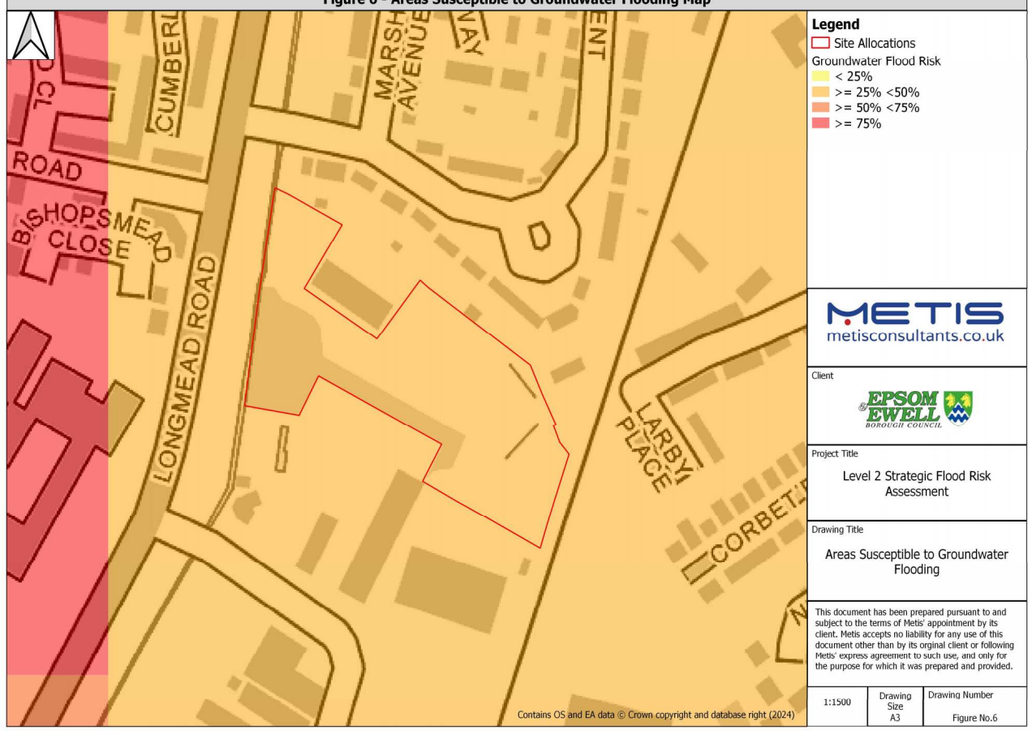
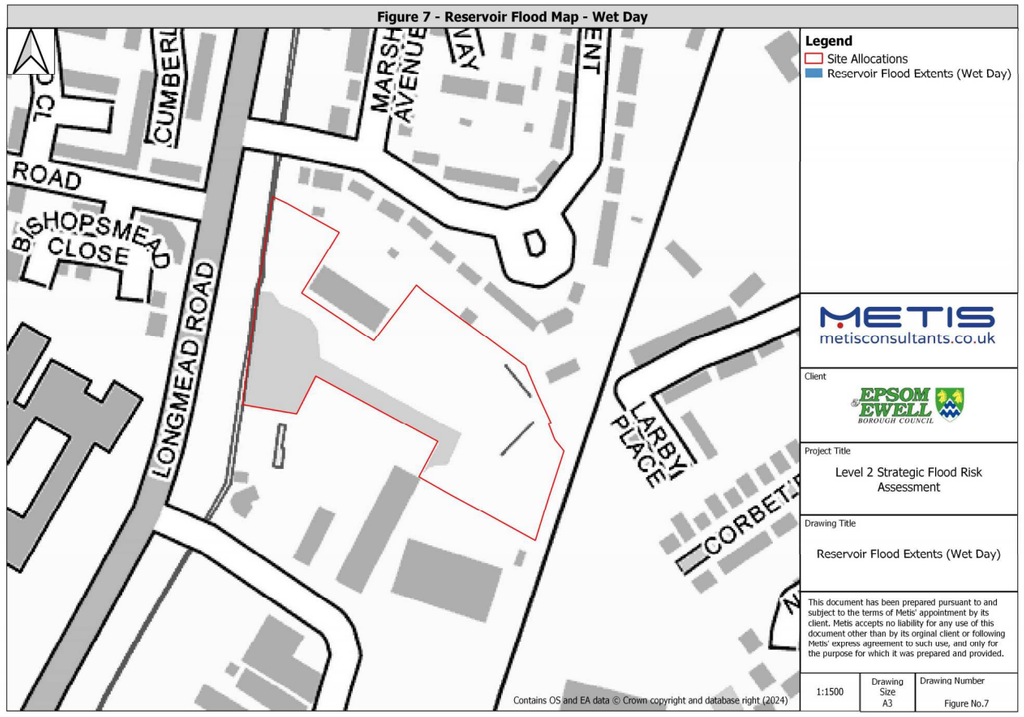


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Hook Road Arena

Address: Hook Road, Epsom, KT19 8QG

Area: 13.74 **Ha**

Site Reference: COU026

Current Use	Proposed Use
Greenfield	Residential / Leisure

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	100	% of Site
1 in 30*	0.14	% of Site	**Artificial**		
1 in 100*	1.64	% of Site			
1 in 1000*	10.2	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					6

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.15 - 0.30	0.00 - 0.15	0.00 - 0.15	m
Max. Depth	0.15 - 0.30	0.15 - 0.30	0.30 - 0.60	m
Max. Velocity	0.00 - 0.25	0.00 - 0.25	0.50 - 1.00	m/s
Max. Hazard	0.50 - 0.75	0.75 - 1.25	1.25 - 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
• The site is at high risk of surface water flooding, particularly along southern and eastern areas of the site. Most of the eastern areas are at low to medium risk. • Climate change will increase the maximum surface water depth, maximum velocity and maximum hazard of surface water flooding.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress
Safe access and egress routes should be directed to the north east of the site towards Chessington Road where there is a lower risk of flooding.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the southern and eastern areas of the site where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Hook Road Arena

SEWER

Risk Assessment

- The site falls within a postcode area where there are 6 reported flood incidents from sewer flooding.
- The site is served by foul and surface water sewers. There is also a combined sewer to the southeast of the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having >75% susceptibility to groundwater flooding.
- The site is underlain by River Terrace superficial deposits and London Clay Formation bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is changing from the 'Less vulnerable' to the 'More vulnerable' classification, as residential and leisure uses have been proposed.
- The site is mostly covered by green space.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from southern and eastern areas of the site.
- Safe access routes should be directed to the north east of the site towards Chessington Road where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

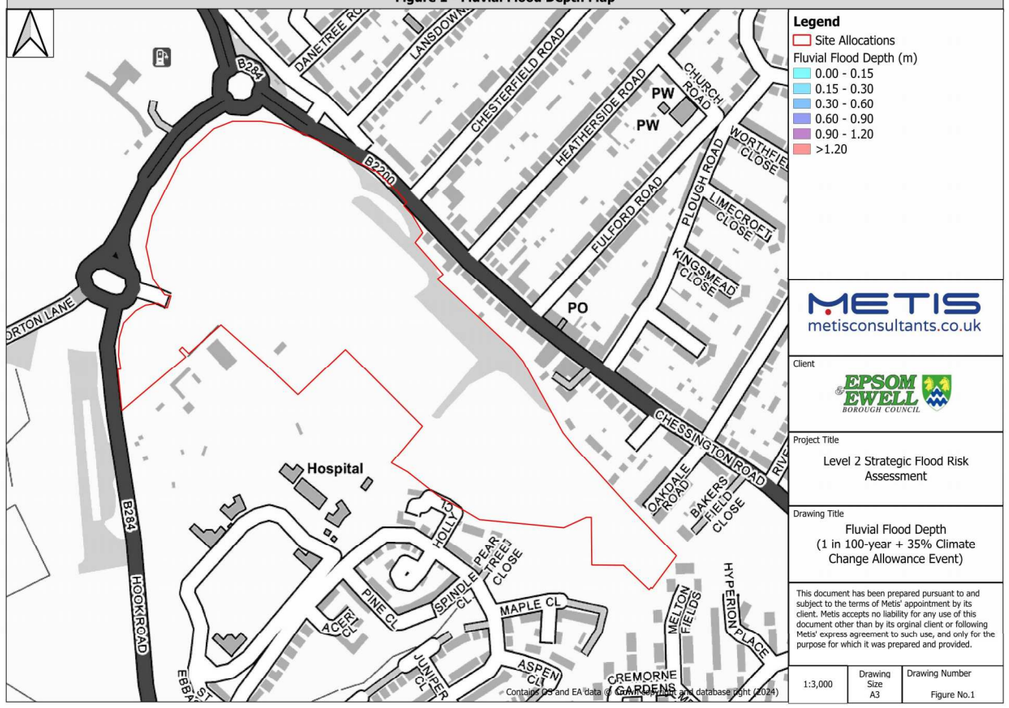
E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map



metisconsultants.co.uk

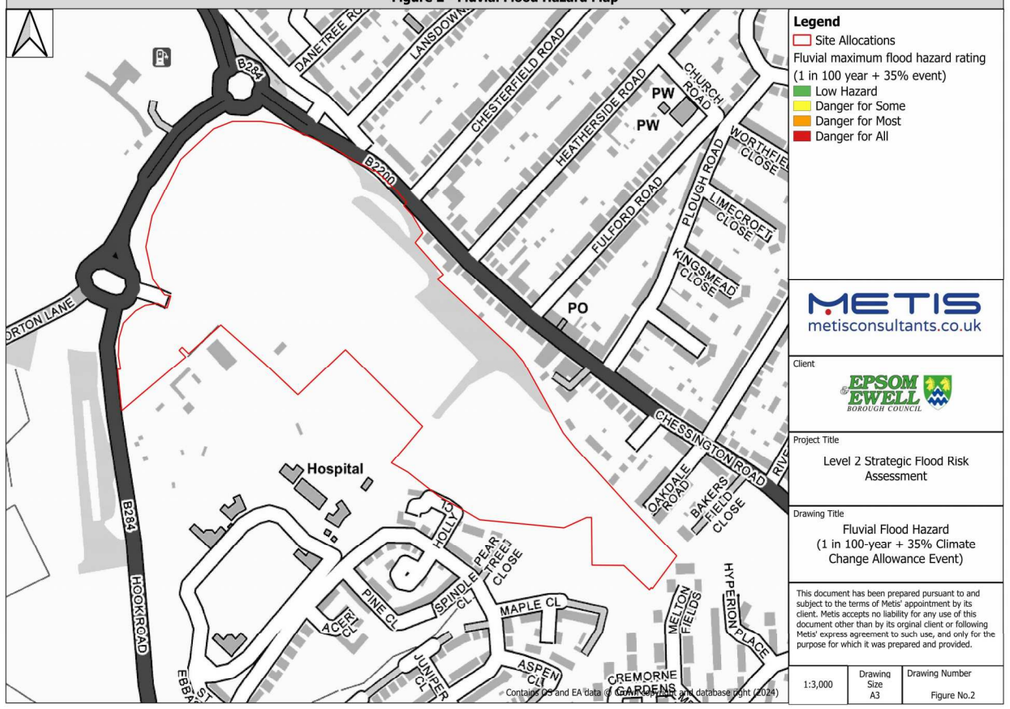
Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Fluvial Flood Depth (1 in 100-year + 35% Climate Change Allowance Event)

1:3,000	Drawing Size A3	Drawing Number Figure No.1

Figure 2 - Fluvial Flood Hazard Map



metisconsultants.co.uk

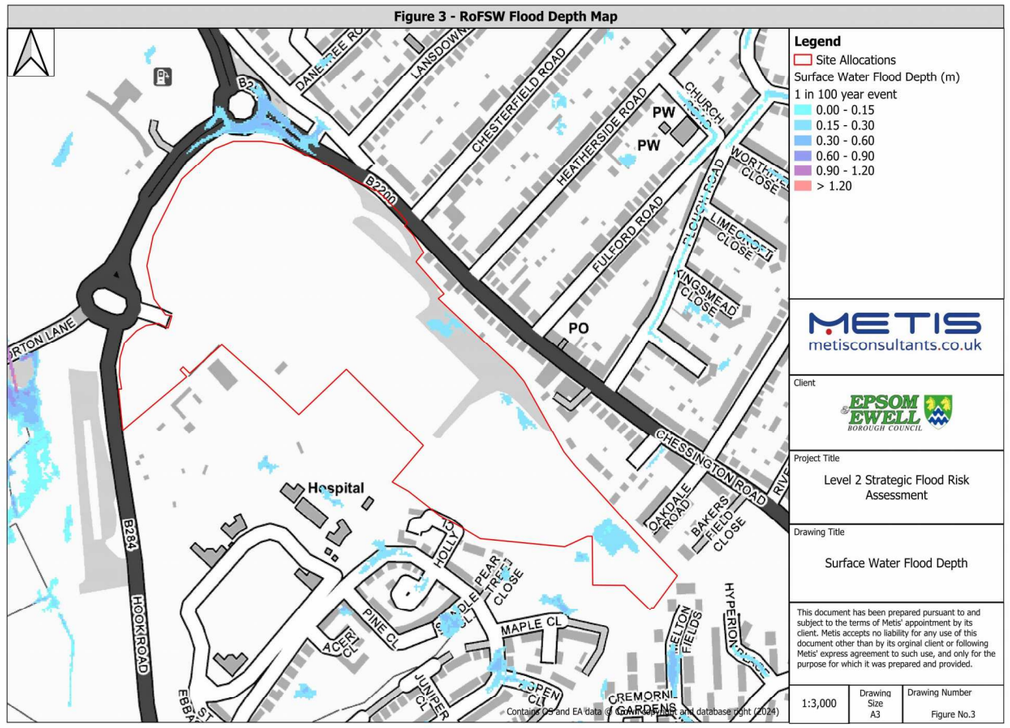
Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Fluvial Flood Hazard (1 in 100-year + 35% Climate Change Allowance Event)

1:3,000	Drawing Size A3	Drawing Number Figure No.2

Figure 3 - RoFSW Flood Depth Map



metisconsultants.co.uk

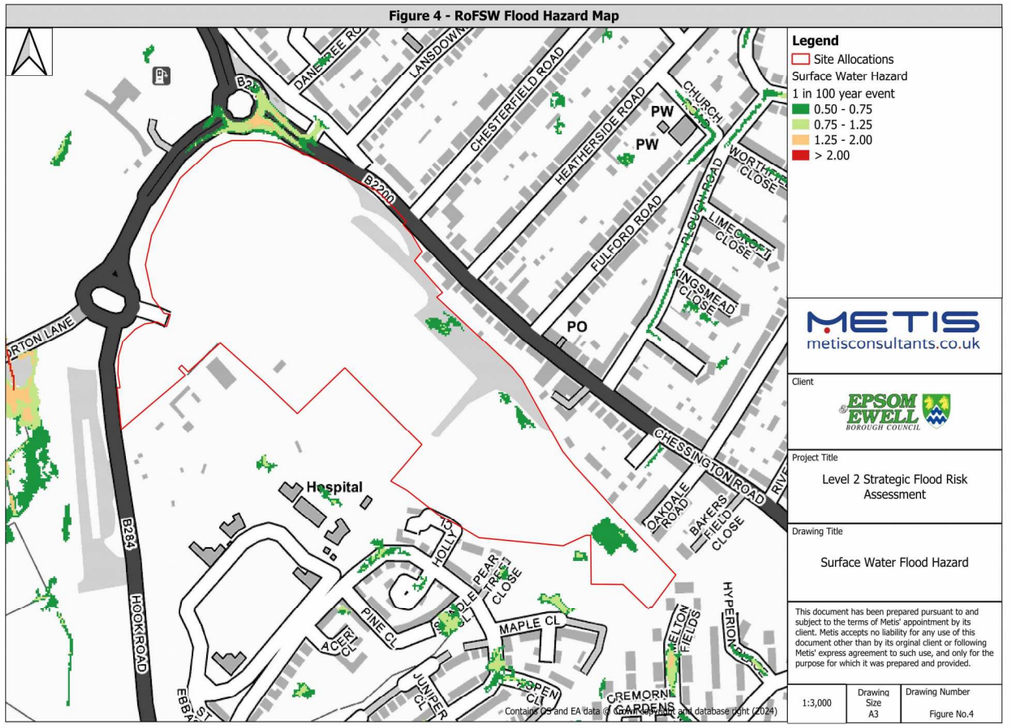
Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Surface Water Flood Depth

1:3,000	Drawing Size A3	Drawing Number Figure No.3

Figure 4 - RoFSW Flood Hazard Map



metisconsultants.co.uk

Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Surface Water Flood Hazard

1:3,000	Drawing Size A3	Drawing Number Figure No.4

Figure 5 - Thames Water Sewer Flood Map

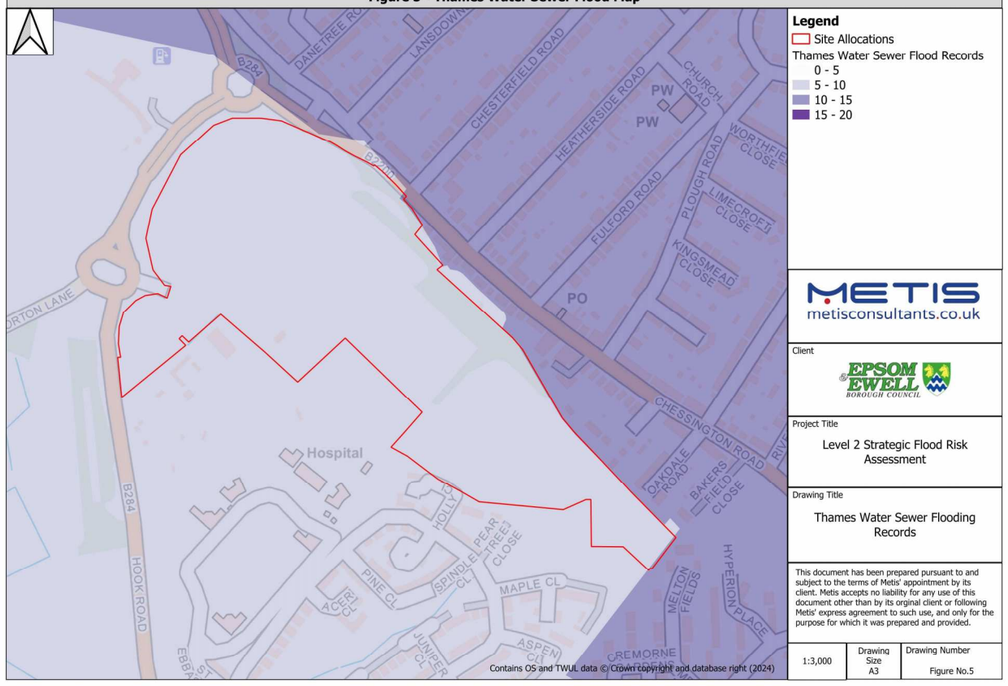


Figure 6 - Areas Susceptible to Groundwater Flooding Map

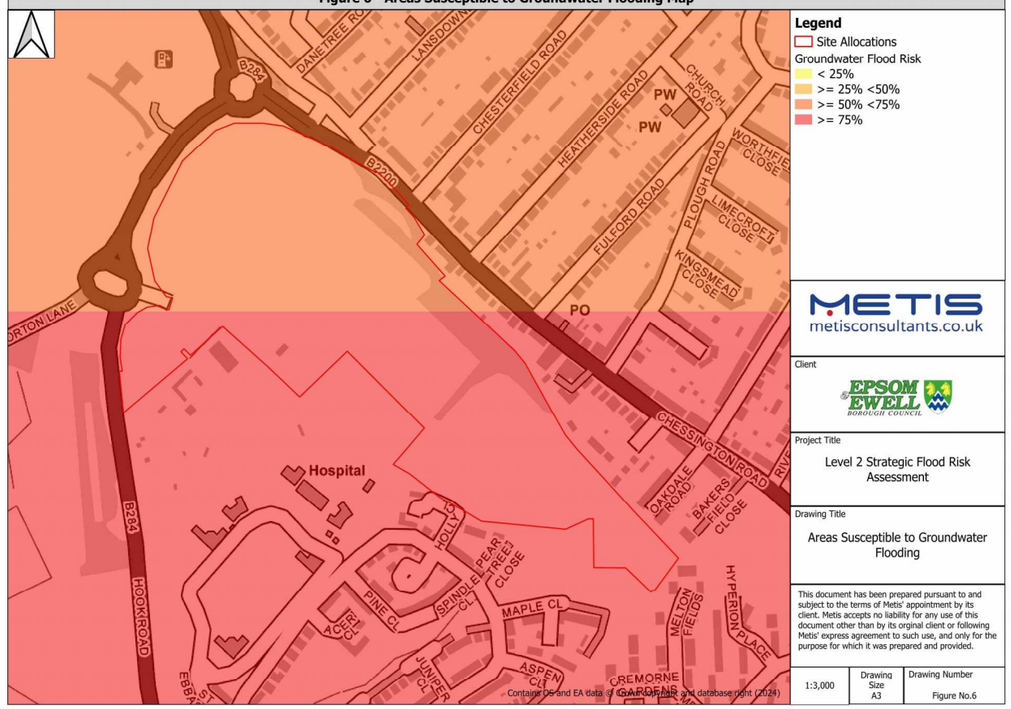
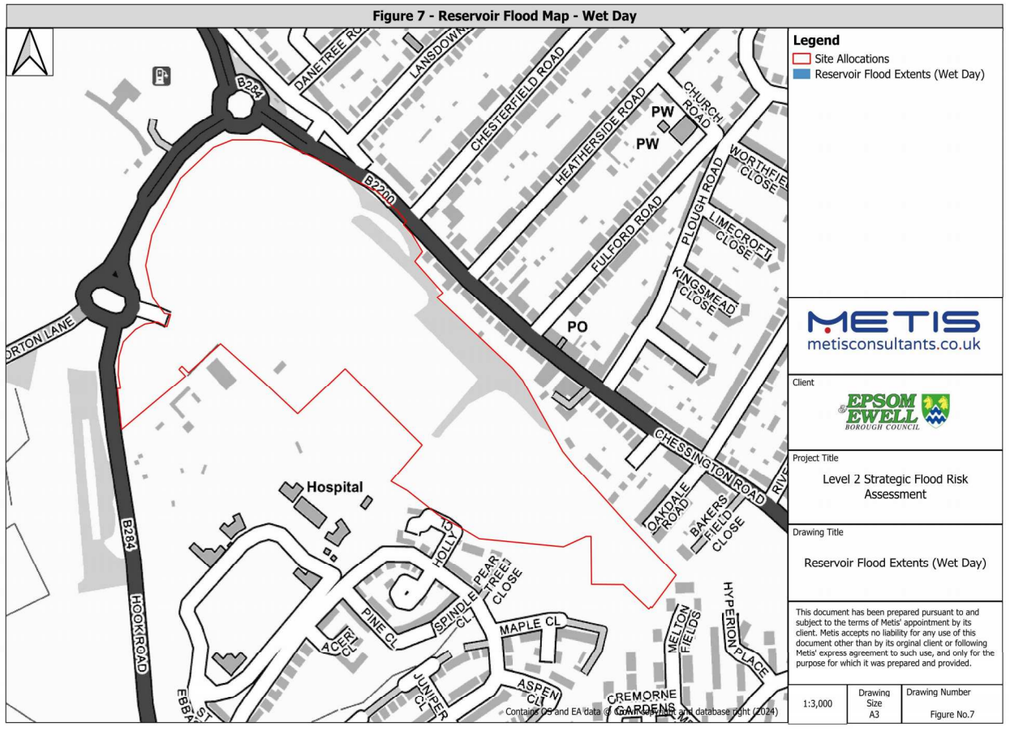


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Blenheim House, 1 Blenheim Road

Address:	1 Blenheim Road, Epsom, KT19 9AP
Area:	0.41 **Ha**
Site Reference:	COU030

Current Use	Proposed Use
Offices, gym, warehouse	Housing / mixed-se (employment)

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	97.72	% of Site	<25	0	% of Site
FZ3a	96.11	% of Site	25-50	0	% of Site
FZ3b	95.39	% of Site	50-75	100	% of Site
Surface Water			>75	0	% of Site
1 in 30*	53.31	% of Site	**Artificial**		
1 in 100*	59.54	% of Site	Reservoir	No	At risk?
1 in 1000*	97.36	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					14

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Time of onset	05.00	04.45	04.15	Hrs
Min. Depth	0.00	0.01	0.01	m
Max. Depth	0.45	0.49	0.53	m
Max. Velocity	0.43	0.38	0.38	m/s
Max Flood Level	37.89	37.91	37.93	m AOD
Max Ground Level	38.14	38.14	38.14	m AOD
Min Ground Level	37.44	37.44	37.44	m AOD
Max Flood Hazard	1.24	1.26	1.29	N/A
Duration of Flood	>22.75	>23	>23.5	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism

- The site is at risk of flooding from the Hogsmill River which flows to the northwest of the site.
- The majority of the site is at risk of flooding in the 1 in 100 year flood event.
- Climate change is predicted to increase the flood extent, as well as the flood depth, hazard and velocity.
- The site will flood in the early morning starting in the western areas of the site and will remain flooded for in excess of 22.75 hours.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress

Safe access and egress routes should be directed towards Blenheim Road to the east of the site where fluvial flooding is not predicted.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements

- Only water compatible or essential uses (subject to the Exception Test) are permitted in FZ3b (the majority of the site). There can be no increase in residential units in FZ3b. Development in this area which is located above the design flood level is still designated as functional floodplain.
- Self-contained basement dwellings and bedrooms are not permitted in FZ2 (the majority of the site).
- A FRA must be submitted as part of a planning application.
- Include appropriate flood resistance or resilience measures to address predicted flood depths.
- See SFRA Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9 for further development stipulations.
- Develop a Flood Emergency and Evacuation Plan for the site.
- Site users should be signed up to EA's Flood Warning Service.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.00 - 0.15	0.00 - 0.15	< 0.15	m
Max. Depth	0.30 - 0.60	0.60 - 0.90	0.90 - 1.20	m
Max. Velocity	1.00 - 2.00	1.00 - 2.00	> 2.00	m/s
Max. Hazard	1.25 - 2.00	1.25 - 2.00	> 2.00	N/A

*The 1 in 1000 extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism

- The site is currently at high risk of surface water flooding, in all areas surrounding the existing building.
- Part of Blenheim Road to the northeast of the site is predicted to be at risk from surface water flooding.
- Climate change is predicted to increase the maximum flood depth, velocity and hazard in the 1 in 1000 year scenario.

Site Access / Egress

Safe access routes should be directed towards the part of Blenheim Road to the south east of the site where there is a lower risk of flooding.

Figure 3 - RoFSW Flood Depth Map

Mitigation - Flood Risk Requirements

- Development should be directed away from the areas surrounding the existing building where there is higher risk of surface water flooding.
- See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Surface Water Drainage

- All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma.
- Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG).
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Blenheim House, 1 Blenheim Road

SEWER

Risk Assessment

- The site falls within a postcode area where there are 14 reported flood incidents from sewer flooding.
- The site is assumed to be served by separate surface water and foul sewer networks.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having >=50% <75% susceptibility to groundwater flooding.
- The site is underlain by River Terrace superficial deposits and London Clay Formation bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.
- See SFRA - Level 2 Report mitigation requirement number 4.2 for compensatory flood storage stipulations.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is changing from offices / gym / warehouse to housing and employment. The vulnerability classification is therefore increasing from 'Less Vulnerable' to 'More Vulnerable' development.
- The site is currently a brownfield site which is mostly impermeable, therefore opportunities to reduce surface water runoff by increasing the amount of green space at the site should be explored.
- Development must mitigate any increase in impermeable area to the site with flood plain compensation and runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- By not proposing residential development for this site and only proposing 'Water-compatible development' or 'Essential Infrastructure' uses.
- Safe access routes should be directed towards the part of Blenheim Road to the south east of the site where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not within 8m of a Main River or in the vicinity of an Ordinary Watercourse.

F. Can the site pass the Exception Test?

- No development other than 'Water-compatible development' or 'Essential Infrastructure' (subject to the Exception Test) is permitted in the majority of the site in Flood Zone 3b. There can be no increase in residential units in FZ3b. Therefore the proposed use of 'More Vulnerable' development is unlikely to be acceptable at this site.
- A change of use for the current building would also not be permitted if the proposed use would be 'More Vulnerable', given that the building curtilage is also located within Flood Zone 3b.

Figure 1 - Fluvial Flood Depth Map

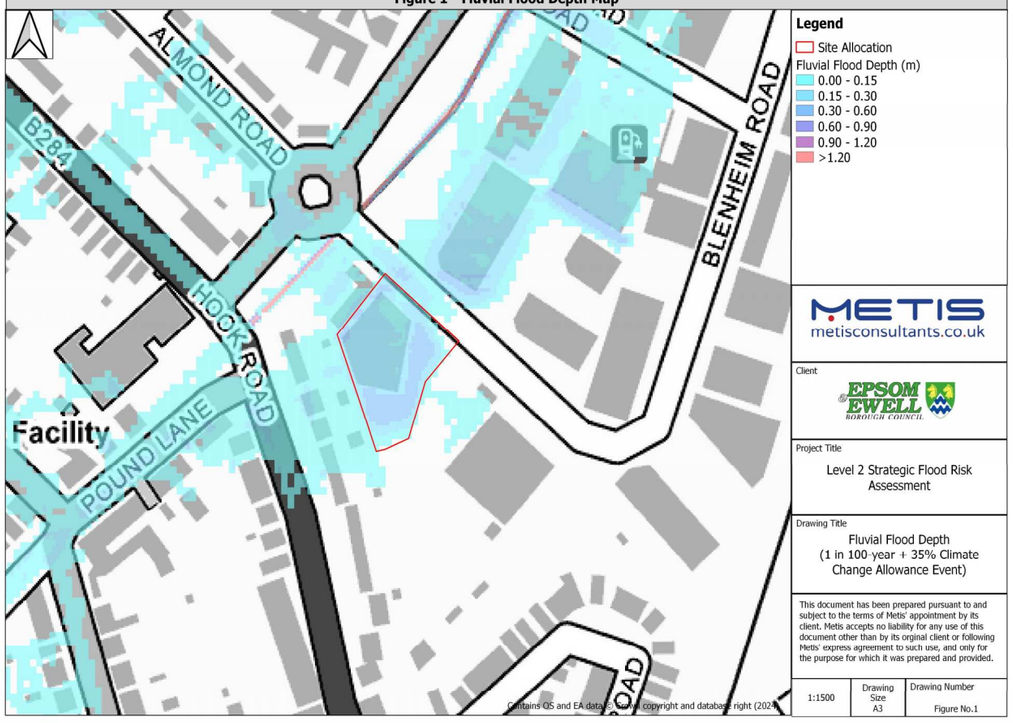


Figure 2 - Fluvial Flood Hazard Map

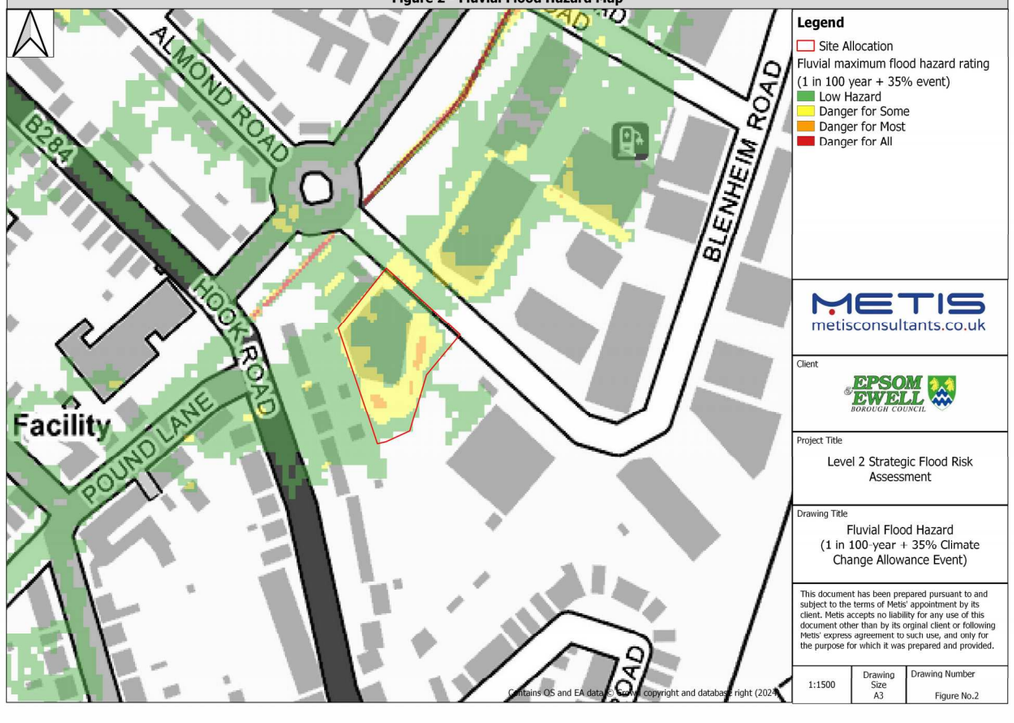


Figure 3 - RoFSW Flood Depth Map

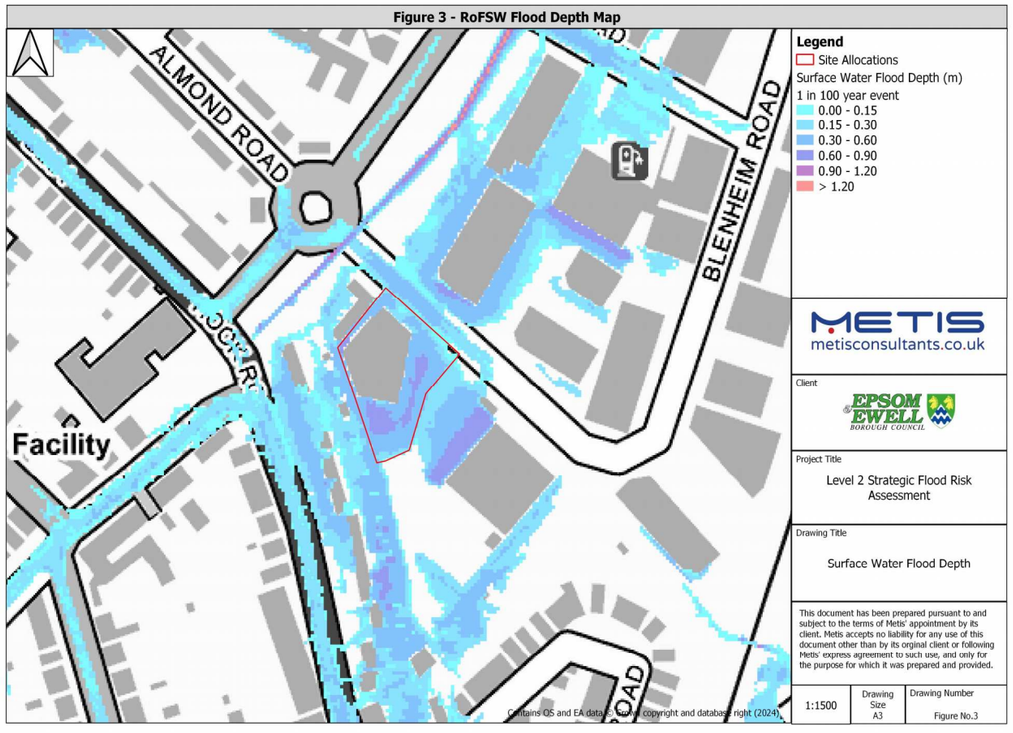


Figure 4 - RoFSW Flood Hazard Map

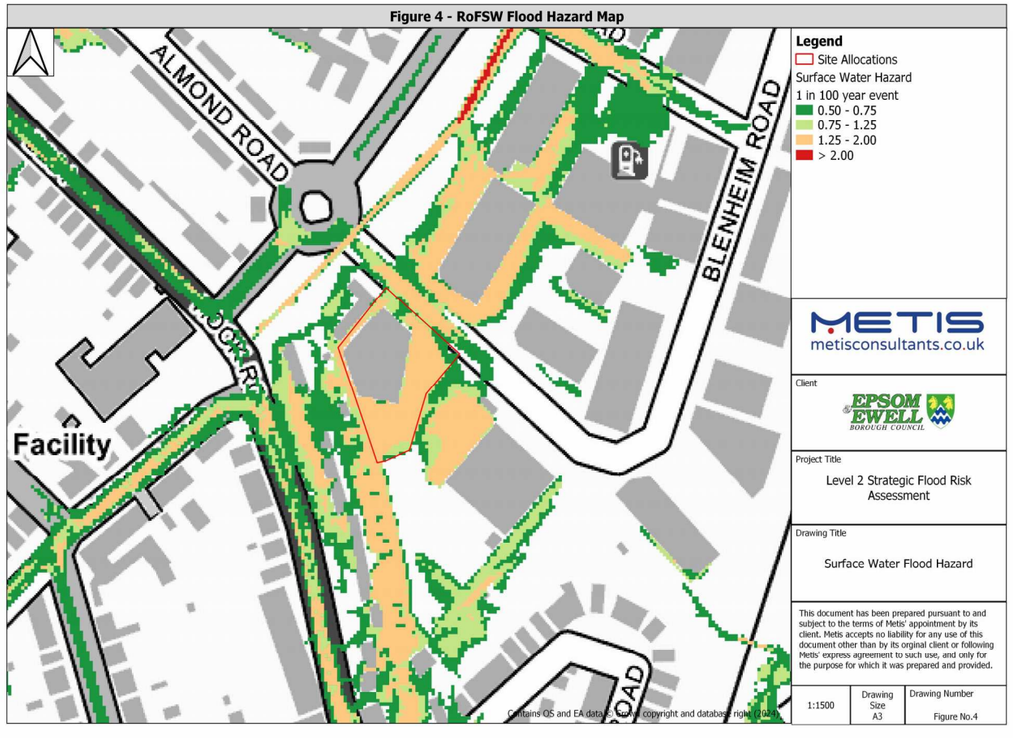


Figure 5 - Thames Water Sewer Flood Map

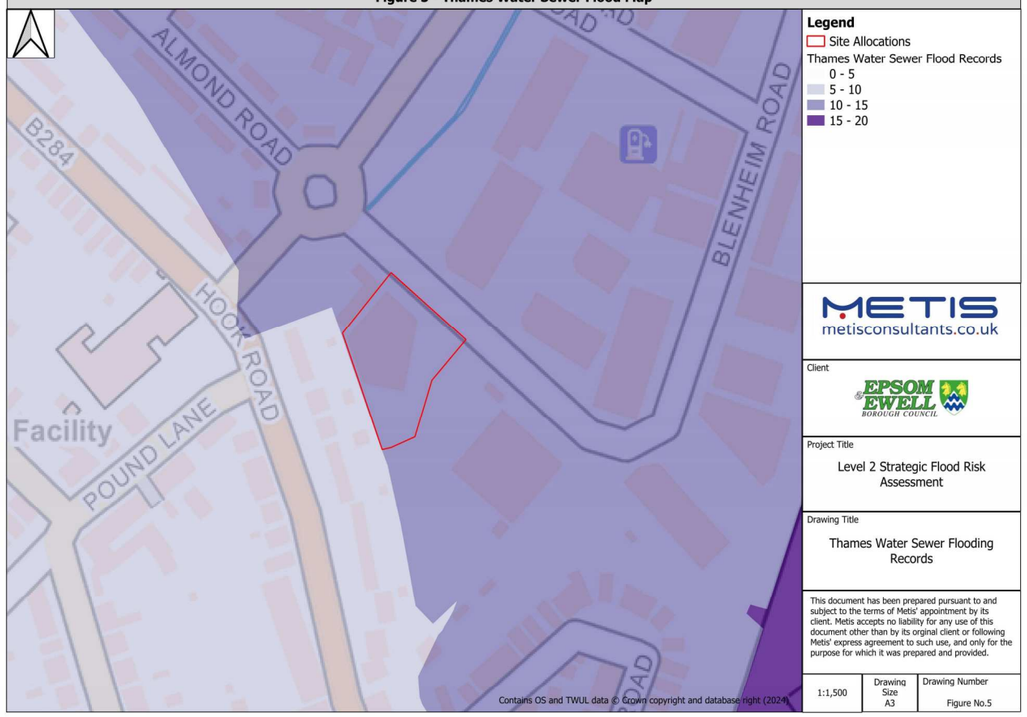


Figure 6 - Areas Susceptible to Groundwater Flooding Map

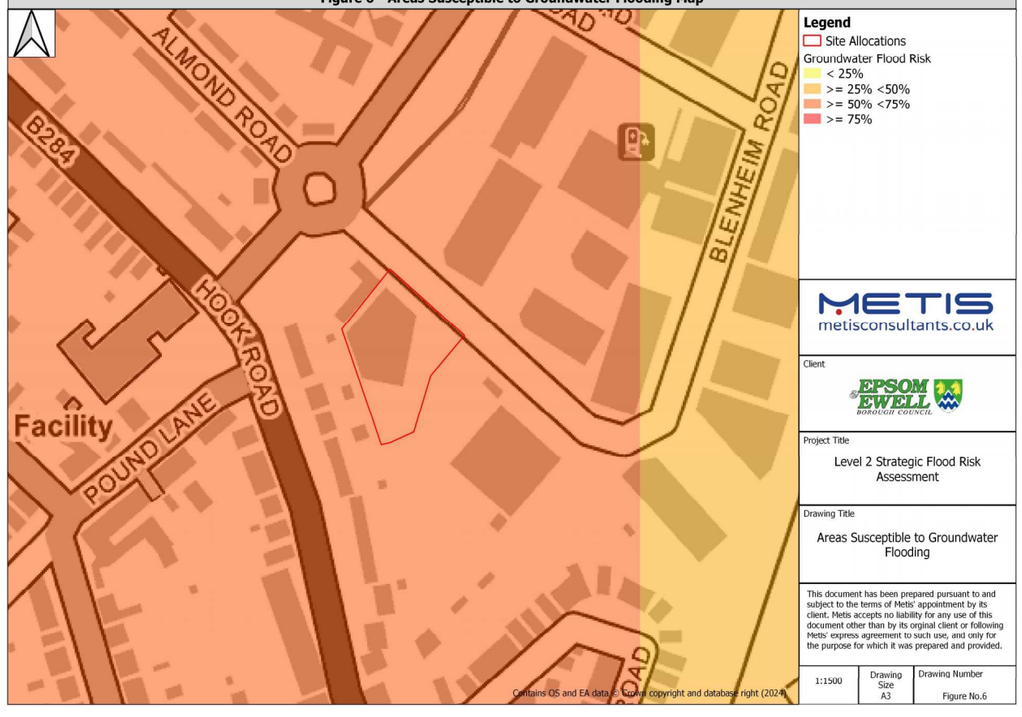
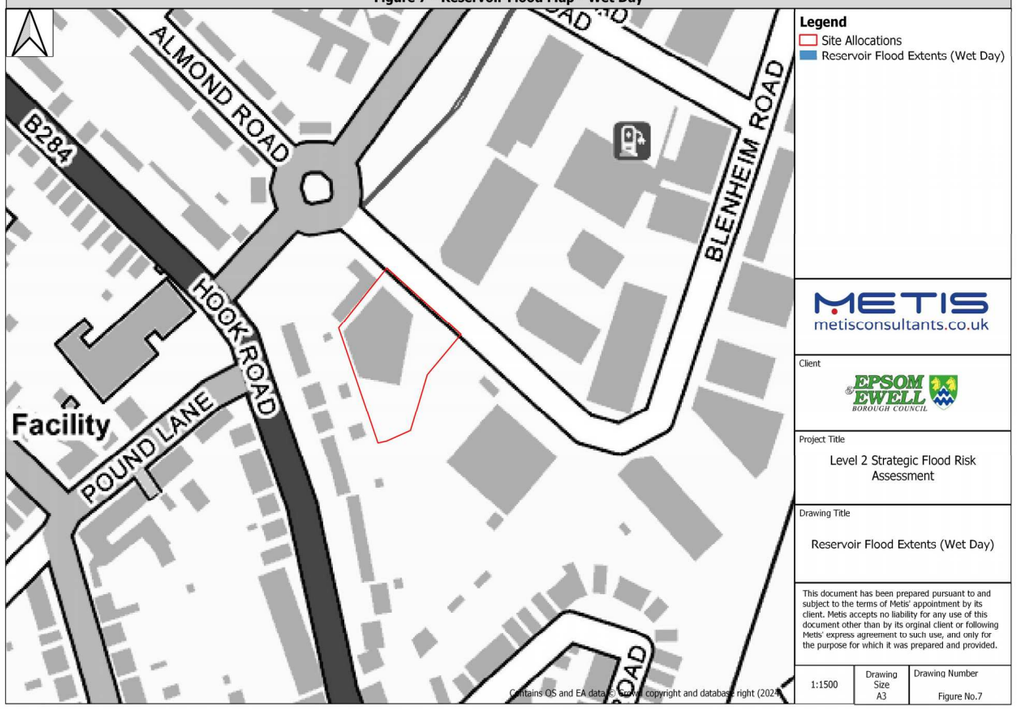


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Land at West Park Hospital Site (South)

Address: Richmond Crescent, Epsom, KT19 8PB

Area: 1.8 **Ha**

Site Reference: HOR005

Current Use	Proposed Use
Existing patient facilities	Housing, health care

Current Vulnerability Classification	Proposed Vulnerability Classification
More Vulnerable	More Vulnerable

Current Risk Summary

Fluvial / Tidal			Groundwater		
FZ2	0	% of Site	<25	100	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	3.65	% of Site	**Artificial**		
1 in 100*	5.2	% of Site	Reservoir	No	At risk?
1 in 1000*	11.2	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					6

* return periods for potential flood events

Flood Defences

There are no flood defences in the vicinity of the site.

Flood Warning Area

The EA Flood Warning Service is not available at this site

FLUVIAL / TIDAL

Risk Assessment (Defended)

Parameter	FZ3b	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)

Parameter	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism

N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress

N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements

N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment

Parameter	1 in 30	1 in 100	1 in 1000	Units
Min. Depth	0.00 - 0.15	0.00 - 0.15	< 0.15	m
Max. Depth	0.30 - 0.60	0.30 - 0.60	0.60 - 0.90	m
Max. Velocity	0.25 - 0.50	0.50 - 1.00	1.00 - 2.00	m/s
Max. Hazard	0.75 - 1.25	1.25 - 2.00	1.25 - 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism

- The site is at low to medium risk of surface water flooding in the eastern areas of complex towards Hollywood Park. The centre of the site towards Richmond Crescent is at high risk of surface water flooding
- Climate change is predicted to increase the maximum flood depth and velocity at the site.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress

Safe access and egress routes should be directed towards Christ Church Road to the south of the site where there is a lower risk of flooding. Egress should not be directed towards Richmond Crescent as there is flood risk in this area.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements

- Development should be directed away from the southern and central areas of the site where there is higher risk of surface water flooding.
- See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage

- All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma.
- Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG).
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Land at West Park Hospital Site (South)

SEWER

Risk Assessment

- The site falls within a postcode area where there are 6 reported flood incidents from sewer flooding.
- The site is served by separate surface water and foul sewer networks.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having < 25% susceptibility to groundwater flooding.
- The site is underlain by London Clay Formation - Clay and silt bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is remaining at classification 'More Vulnerable', as residential uses have been proposed.
- The site is currently a brownfield site with some green areas. The development should therefore limit its impact on flood risk in the area and reduce runoff rates to as close to the greenfield runoff rate as possible.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from the southern and central areas of the site where there is higher risk of surface water flooding.
- Safe access and egress routes should be directed towards Christ Church Road to the south of the site where there is a lower risk of flooding. Egress should not be directed towards Richmond Crescent as there is flood risk in this area.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- Exception test not required as site is not located in Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

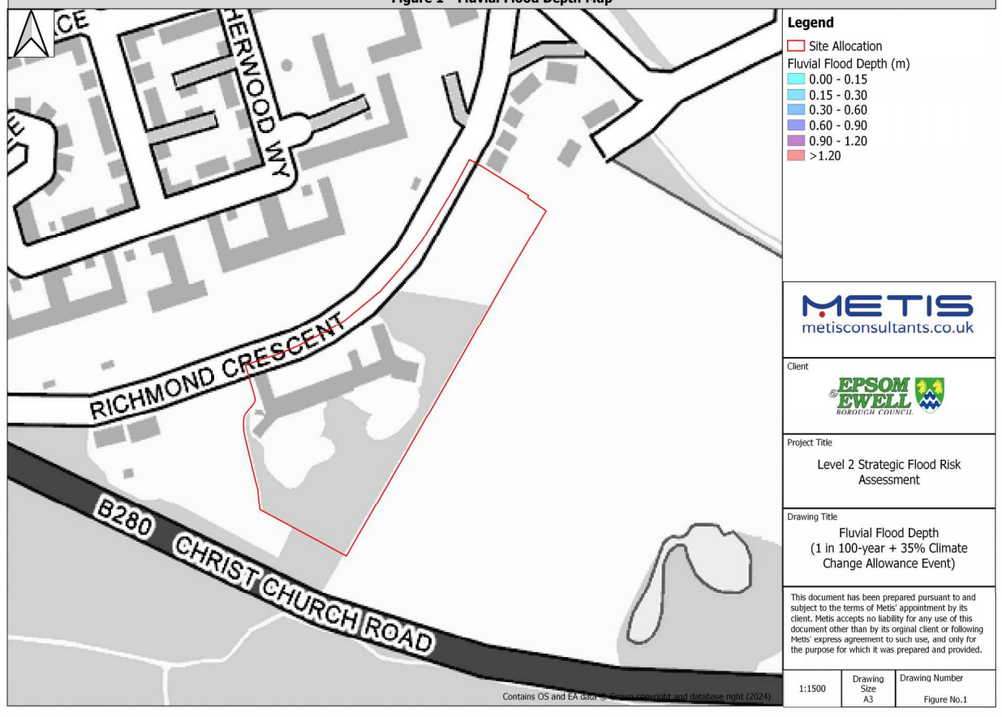


Figure 2 - Fluvial Flood Hazard Map

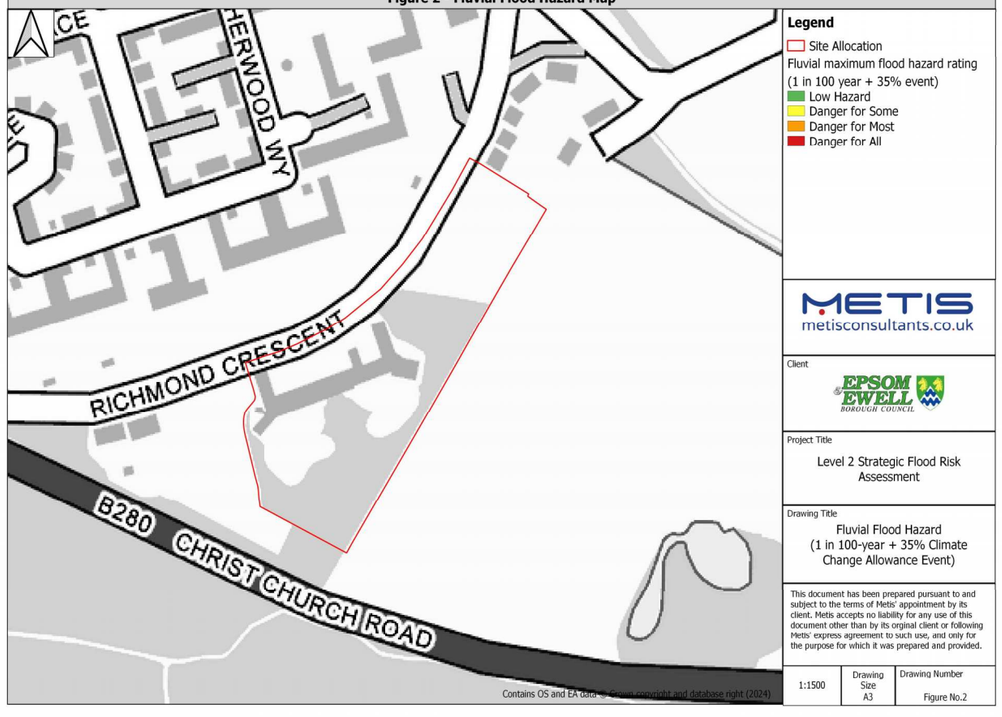


Figure 3 - RoFSW Flood Depth Map

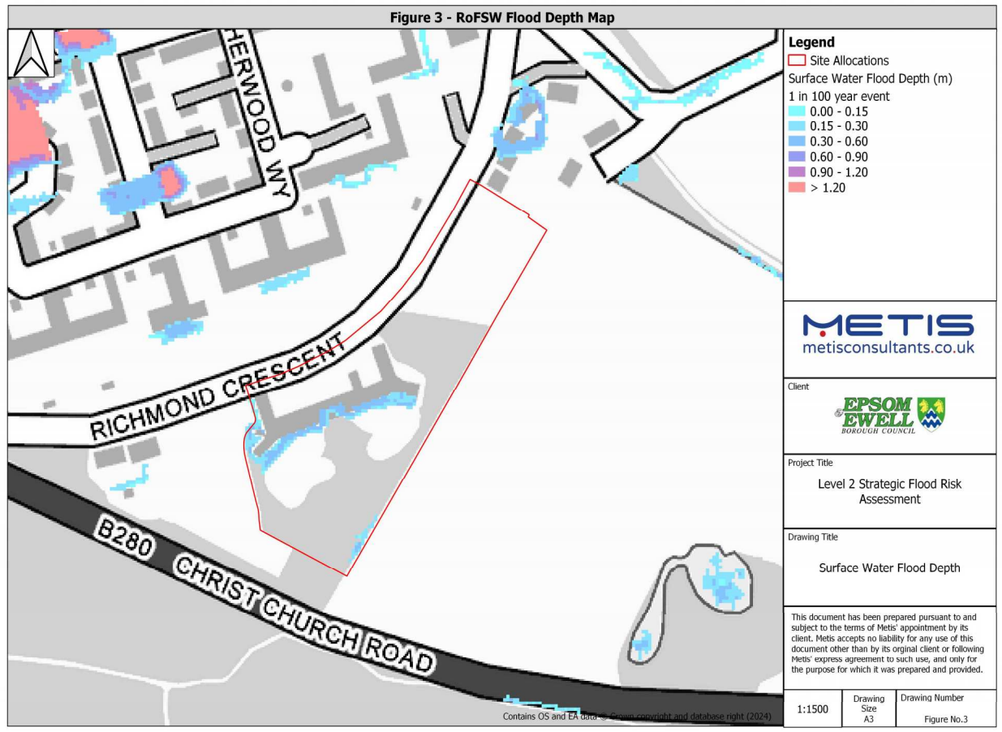


Figure 4 - RoFSW Flood Hazard Map

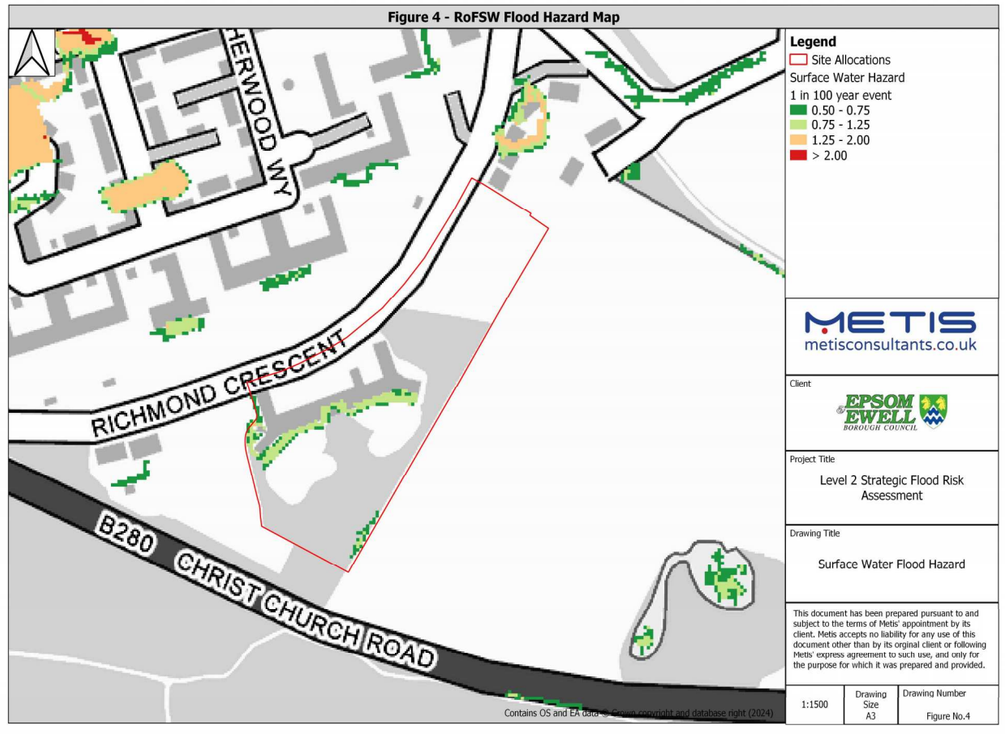


Figure 5 - Thames Water Sewer Flood Map

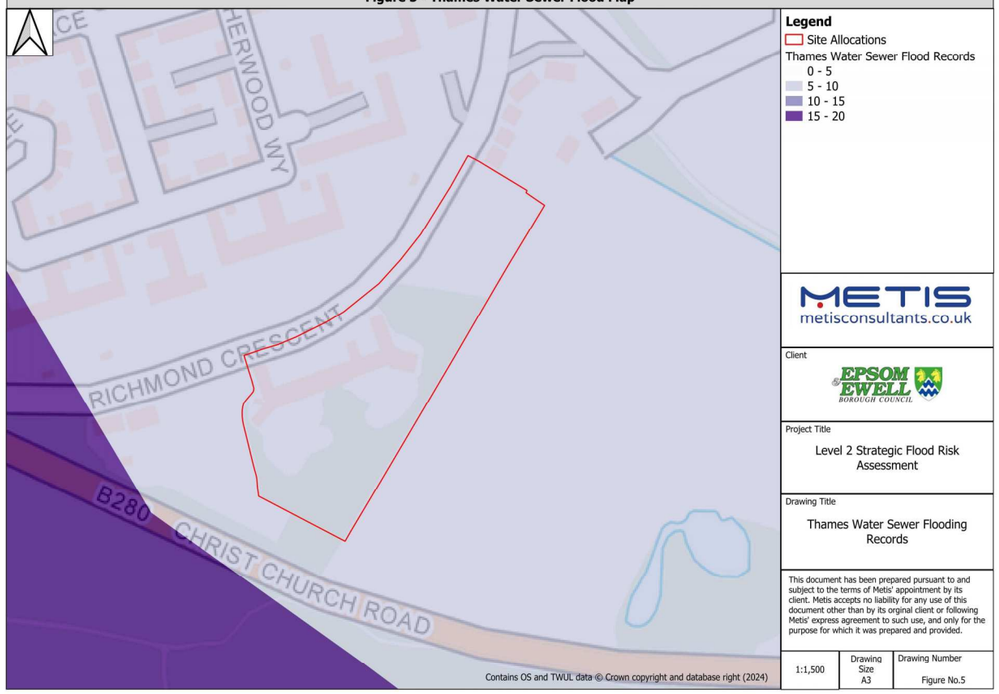


Figure 6 - Areas Susceptible to Groundwater Flooding Map

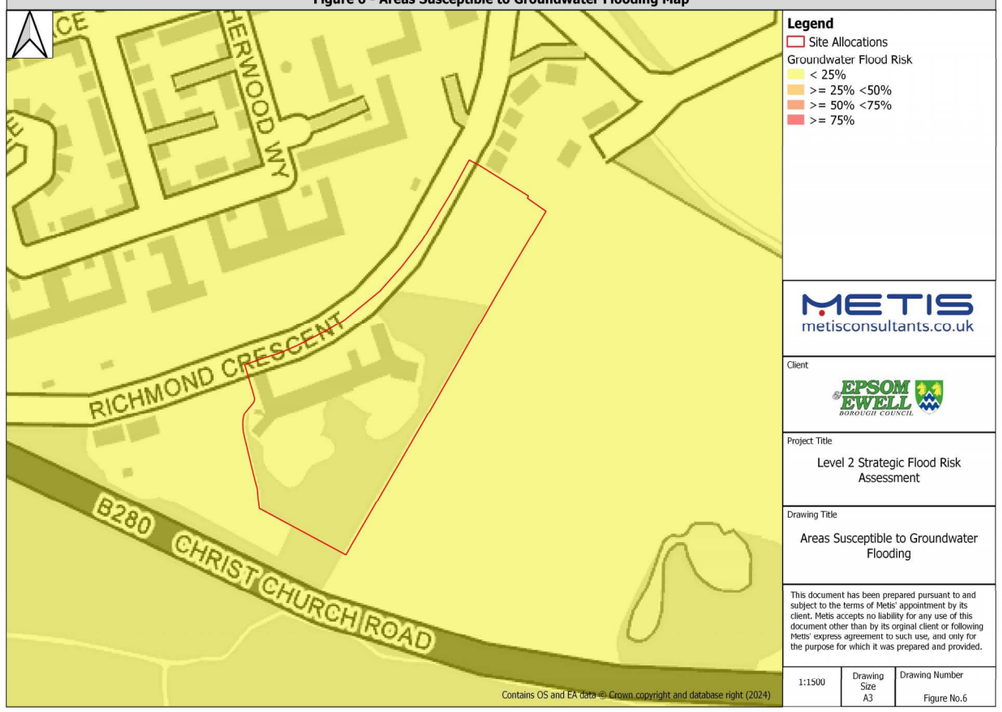
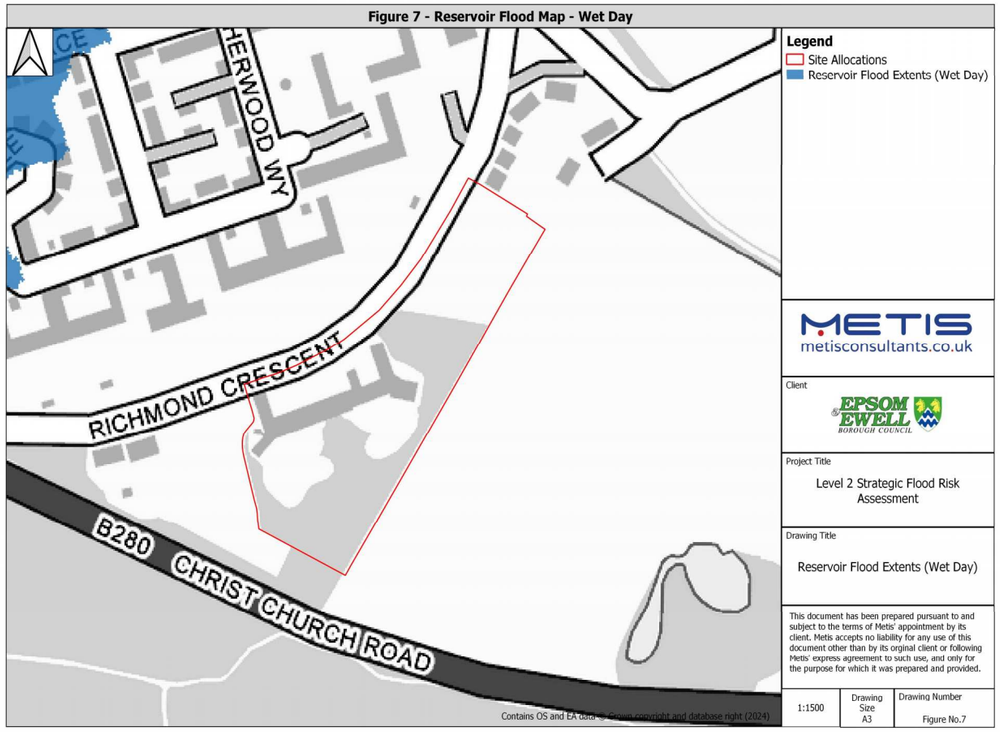


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Land at West Park (North)

Address:	Epsom, KT19 8JB
Area:	3.77 **Ha**
Site Reference:	HOR006

Current Use	Proposed Use
Existing patient facilities	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
More Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	100	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	1.52	% of Site	**Artificial**		
1 in 100*	11	% of Site	Reservoir	Yes	At risk?
1 in 1000*	33.91	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					6

* return periods for potential flood events

Flood Defences
There are no flood defences in the vicinity of the site.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism

N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress

N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements

N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.00 - 0.15	0.00 - 0.15	< 0.15	m
Max. Depth	0.30 - 0.60	0.30 - 0.60	0.60 - 0.90	m
Max. Velocity	0.25 - 0.50	1.00 - 2.00	> 2.00	m/s
Max. Hazard	0.75 - 1.25	1.25 - 2.00	> 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism

- The site is at low to medium risk of surface water flooding in the central, eastern and southern areas of the complex. The roads to the south of the site are at risk of flooding, with Farmside Place at high risk.
- Climate change is predicted to increase the maximum flood depth, hazard and velocity at the site.

Site Access / Egress

Safe access and egress routes should be directed to the east of the site along West Park Road where there is a lower risk of flooding. Egress should not be directed towards Osborne Way, Miller Place or Farmside Place as there is significant flood risk in these areas.

Figure 3 - RoFSW Flood Depth Map

Mitigation - Flood Risk Requirements

- Development should be directed away from the southern, eastern and central areas of the site where there is higher risk of surface water flooding.
- See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Surface Water Drainage

- All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma.
- Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG).
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Land at West Park (North)

SEWER

Risk Assessment

- The site falls within a postcode area where there are 6 reported flood incidents from sewer flooding.
- The site is served by separate surface water and foul sewer networks.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having < 25% susceptibility to groundwater flooding.
- The site is underlain by London Clay Formation - Clay and silt bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is at risk of flooding from the Epsom Common Great Pond reservoir.
- The reservoir extent map predicts that if this reservoir were to breach on a wet day, the site will be at risk of flooding.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

- Propose appropriate and proportionate risk management measures.
- A suitable emergency response plan should be put in place, including an emergency warning system in the event of a reservoir flooding incident.
- Local Authority Emergency Planning Officers must be consulted to create a reservoir failure emergency and evacuation plan.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is remaining at classification 'More Vulnerable', as residential uses have been proposed.
- The site is currently a brownfield site with hardstanding areas and little green space. This offers an opportunity to improve flood attenuation through the new development.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from the central, eastern and southern areas of the site where there is higher risk of surface water flooding.
- Safe access and egress routes should be directed to the east of the site along West Park Road where there is a lower risk of flooding. Egress should not be directed towards Osborne Way, Miller Place or Farmside Place as there is significant flood risk in this area.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- Exception test not required as site is not located in Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

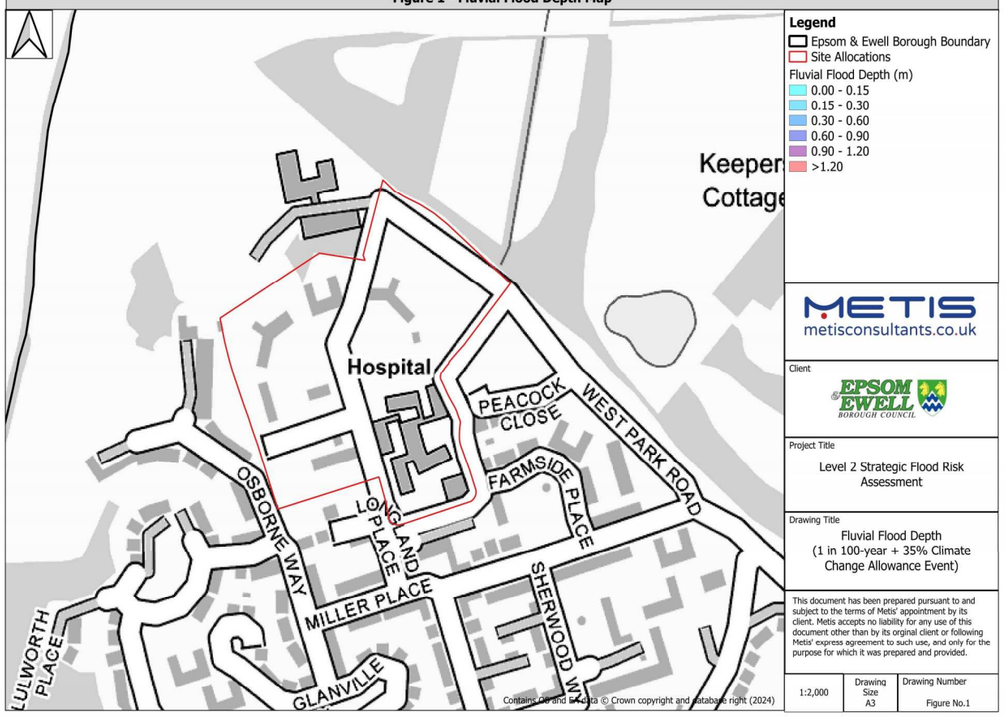


Figure 2 - Fluvial Flood Hazard Map

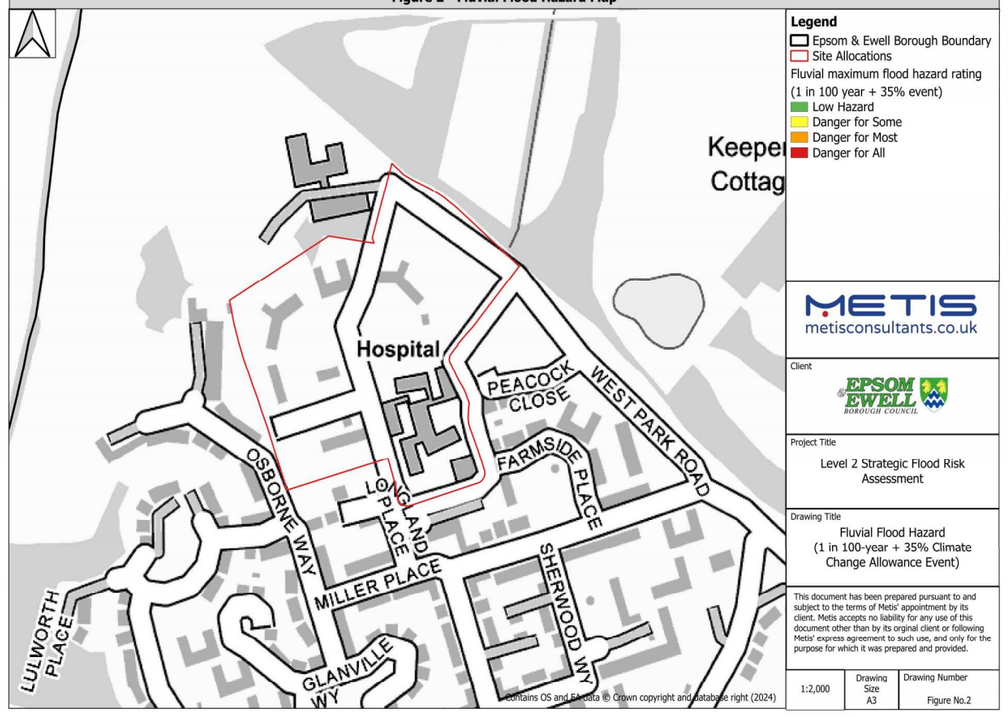


Figure 3 - RoFSW Flood Depth Map

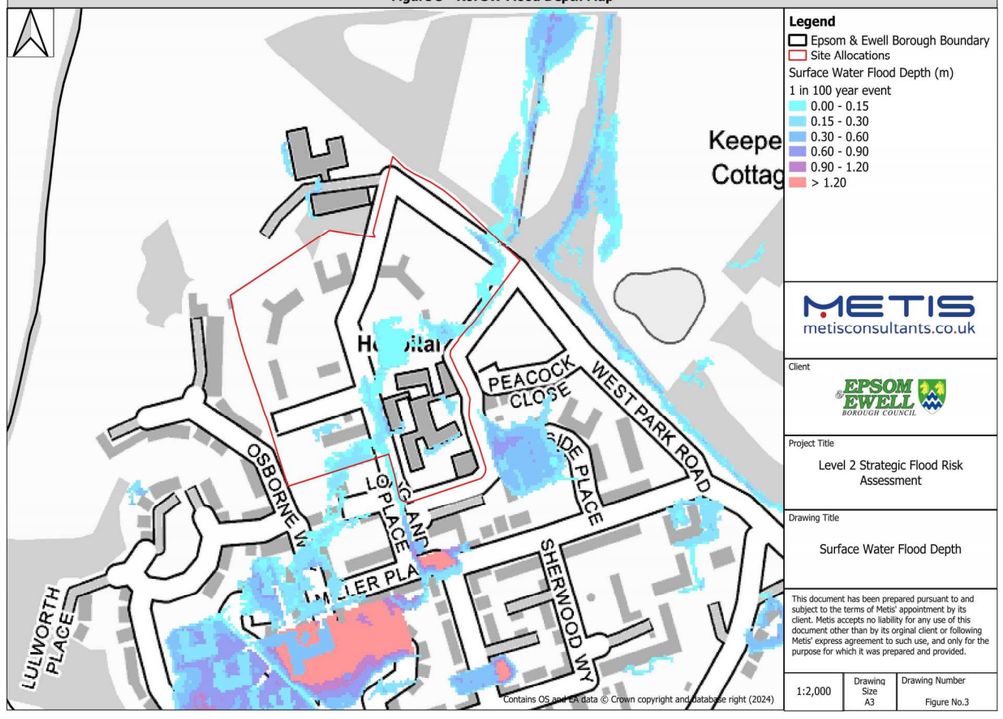


Figure 4 - RoFSW Flood Hazard Map

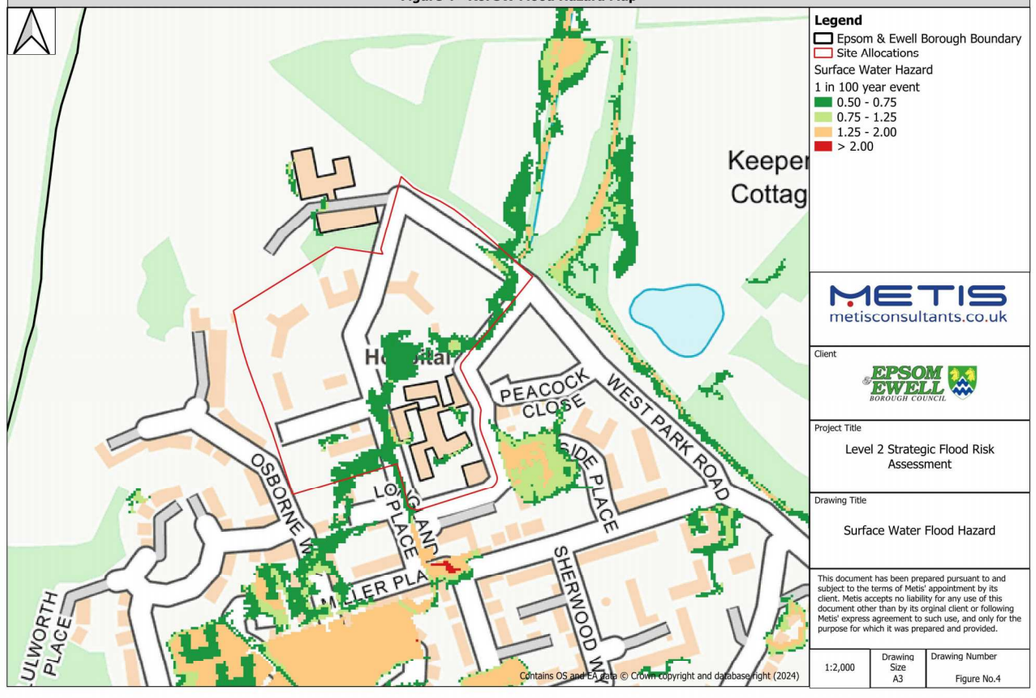
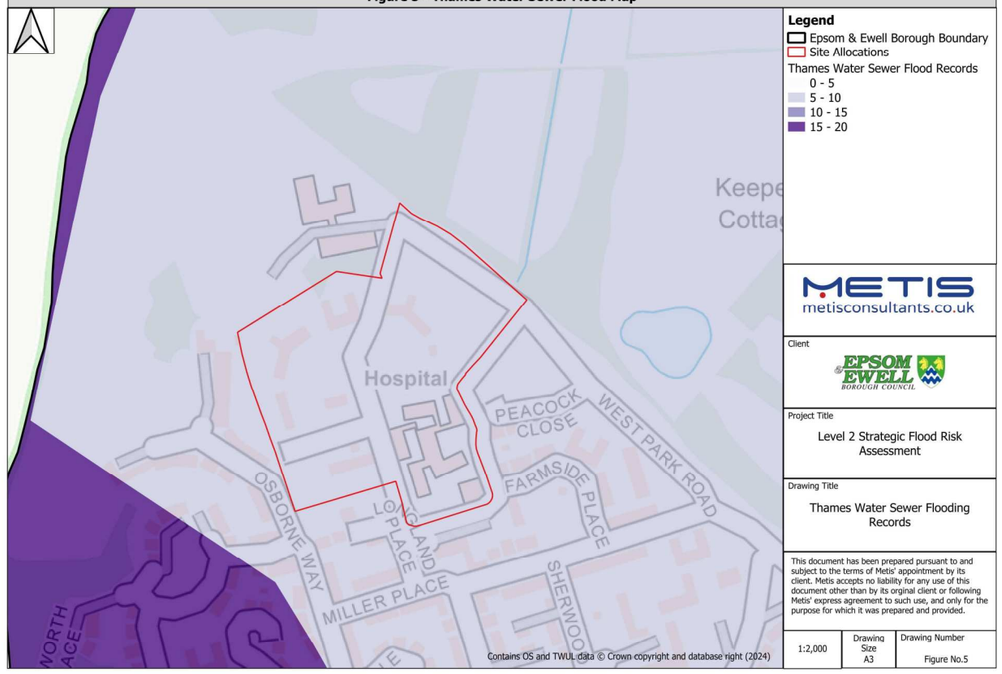


Figure 5 - Thames Water Sewer Flood Map



Legend
- Epsom & Ewell Borough Boundary
- Site Allocations

Thames Water Sewer Flood Records
- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20

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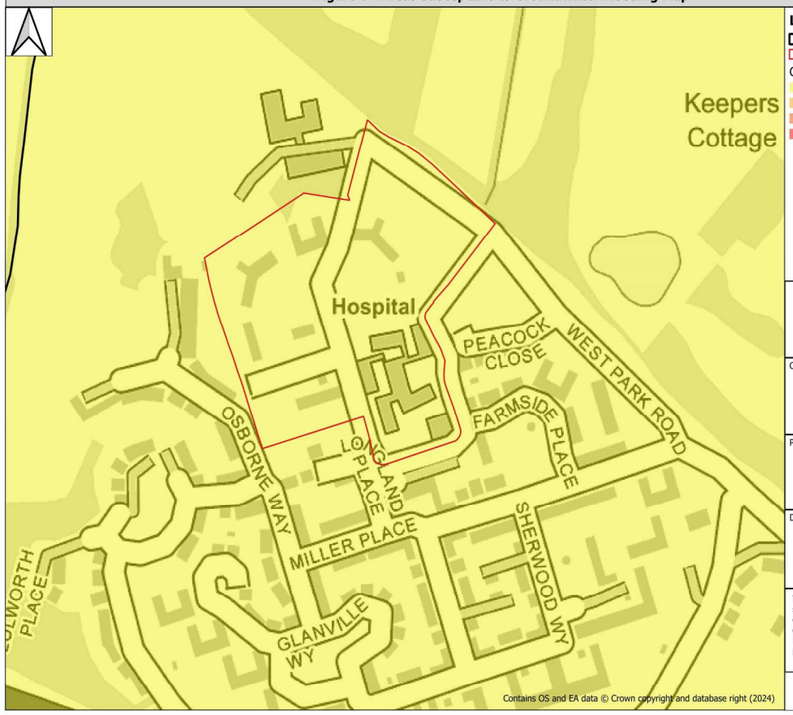
Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Thames Water Sewer Flooding Records

1:2,000	Drawing Size A3	Drawing Number Figure No.5

Figure 6 - Areas Susceptible to Groundwater Flooding Map



Legend
- Epsom & Ewell Borough Boundary
- Site Allocations

Groundwater Flood Risk
- < 25%
- >= 25% <50%
- >= 50% <75%
- >= 75%

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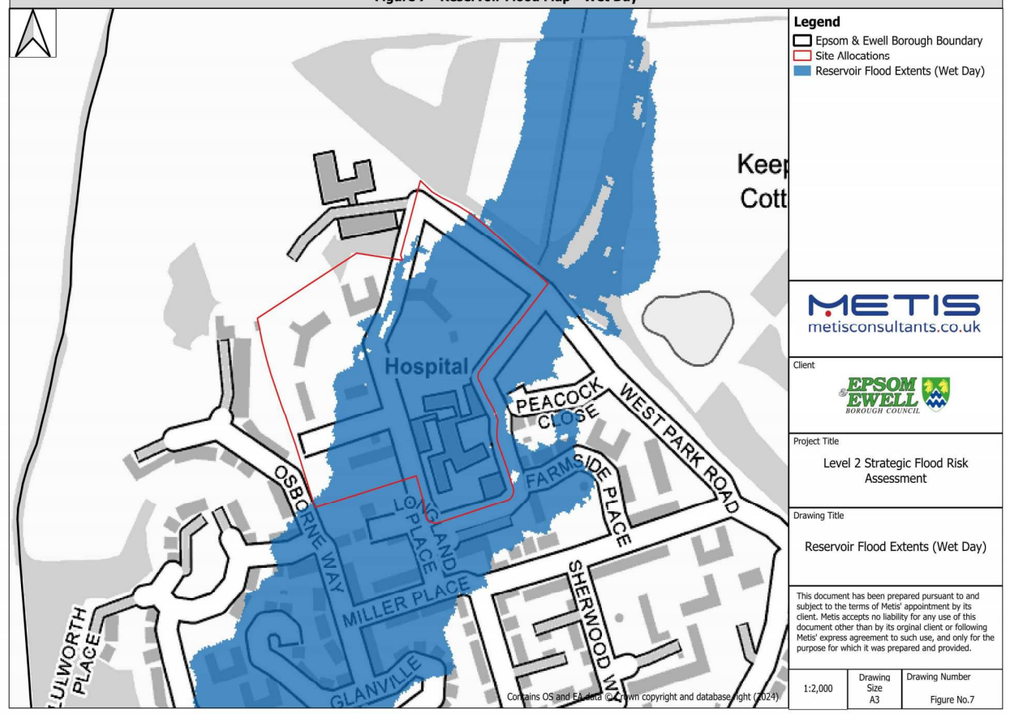
Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Areas Susceptible to Groundwater Flooding

1:2,000	Drawing Size A3	Drawing Number Figure No.6

Figure 7 - Reservoir Flood Map - Wet Day



Legend
- Epsom & Ewell Borough Boundary
- Site Allocations
- Reservoir Flood Extents (Wet Day)

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Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Reservoir Flood Extents (Wet Day)

1:2,000	Drawing Size A3	Drawing Number Figure No.7

SITE ASSESSMENT - Hornton farm

Address: Horton Lane, Epsom, KT19 8QQ

Area:	37.9 **Ha**
Site Reference:	HOR009

Current Use	Proposed Use
Agriculture, farm house, riding school and stables	Housing, education

Current Vulnerability Classification	Proposed Vulnerability Classification
More Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	54.91	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	45.09	% of Site
1 in 30*	0.79	% of Site	**Artificial**		
1 in 100*	2.56	% of Site	Reservoir	No	At risk?
1 in 1000*	13.03	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					6

* return periods for potential flood events

Flood Defences
There are no flood defences in the vicinity of the site.

Flood Warning Area
The EA Flood Warning Service is not available at this site

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism

N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress

N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements

N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.00 - 0.15	0.00 - 0.15	< 0.15	m
Max. Depth	0.60 - 0.90	> 1.20	> 1.20	m
Max. Velocity	1.00 - 2.00	1.00 - 2.00	> 2.00	m/s
Max. Hazard	1.25 - 2.00	> 2.00	> 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism

- The northern part of the park is at risk of surface water flooding, with some smaller areas at high risk. Additionally, Hornton Lane to the west of the site and a portion of Chantilly Way to the south of the site is at high risk of surface water flooding.
- Climate change is predicted to increase the maximum velocity of flooding.

Site Access / Egress

Safe access and egress routes should be directed to the north east of the site out of Hollywood Park via Hook Road (B284) where there is a lower risk of flooding. Egress should not be directed towards the north west of the park or towards Hornton Lane as there is significant flood risk in this area.

Figure 3 - RoFSW Flood Depth Map

Mitigation - Flood Risk Requirements

- Development should be directed away from the northern parts of the site where there is higher risk of surface water flooding.
- See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Surface Water Drainage

- All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma.
- Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG).
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Hornton farm

SEWER

Risk Assessment

• The majority of the site falls within a postcode area where there are 6 reported flood incidents from sewer flooding. A small part of the site falls within a postcode area where there is one incident of sewer flooding.
• The site is served by separate surface water and foul sewer networks.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

• Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
• Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

• The site is classified as being 54.91% <25% susceptibility to groundwater flooding and 45.09% >75% susceptibility to groundwater flooding.
• The site is underlain by London Clay Formation - Clay and silt bedrock geology. The eastern part of the site is underlain by River Terrace Deposits, and the remainder of the site has no superficial deposits.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

• Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
• If there is a potential level of impact, mitigation actions must be proposed.
• Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

• This site is not risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?
• Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?
• Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

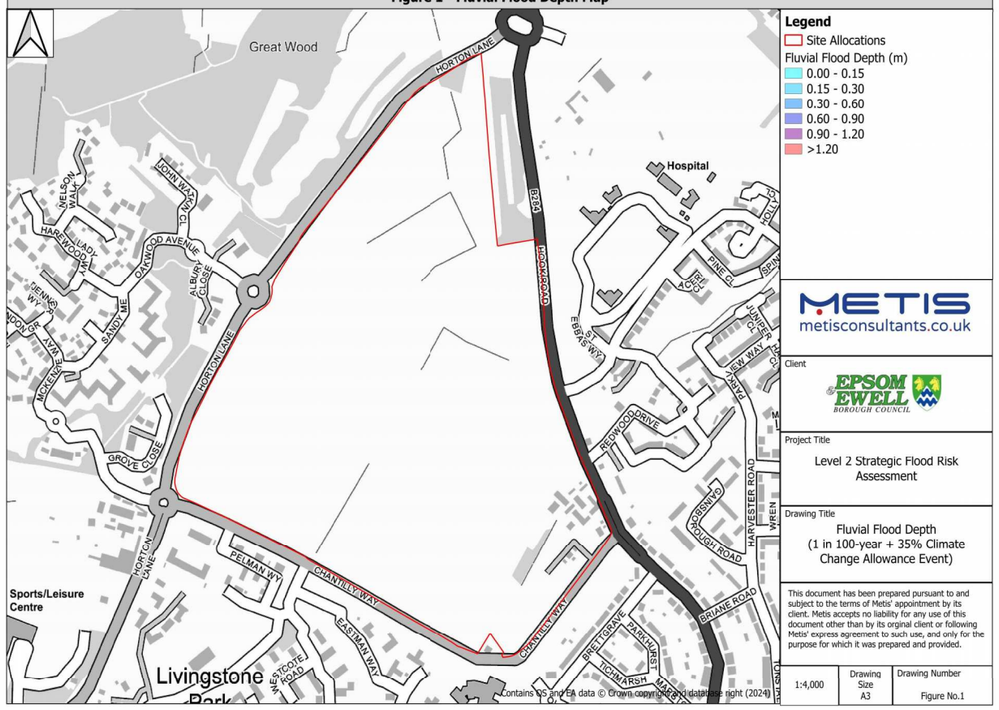
C. What is the cumulative impact of the development land use change and will flood risk increase?
• The development land use is remaining at classification 'More Vulnerable', as residential uses have been proposed.
• The majority of the site is greenfield with only a small part of the site that has been developed. This offers an opportunity to improve flood attenuation through the new development.
• Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?
• Direct development away from the northern parts of the site where there is higher risk of surface water flooding.
• Safe access and egress routes should be directed to the north east of the site out of Hollywood Park via Hook Road (B284) where there is a lower risk of flooding. Egress should not be directed towards the north west of the park or towards Hornton Lane as there is significant flood risk in this area.
• Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
• By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?
• No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?
• Exception test not required as site is not located in Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map



Legend
- Site Allocations

Fluvial Flood Depth (m)
- 0.00 - 0.15
- 0.15 - 0.30
- 0.30 - 0.60
- 0.60 - 0.90
- 0.90 - 1.20
- >1.20

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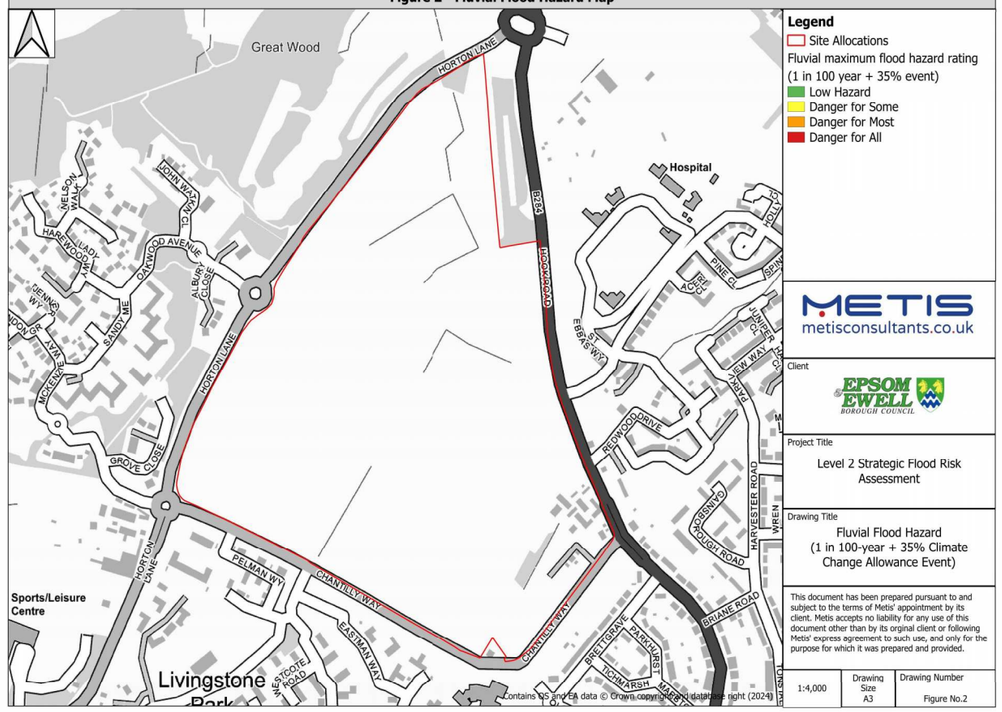
Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Fluvial Flood Depth (1 in 100-year + 35% Climate Change Allowance Event)

1:4,000	Drawing Size A3	Drawing Number Figure No.1

Figure 2 - Fluvial Flood Hazard Map



Legend
- Site Allocations

Fluvial maximum flood hazard rating (1 in 100 year + 35% event)
- Low Hazard
- Danger for Some
- Danger for Most
- Danger for All

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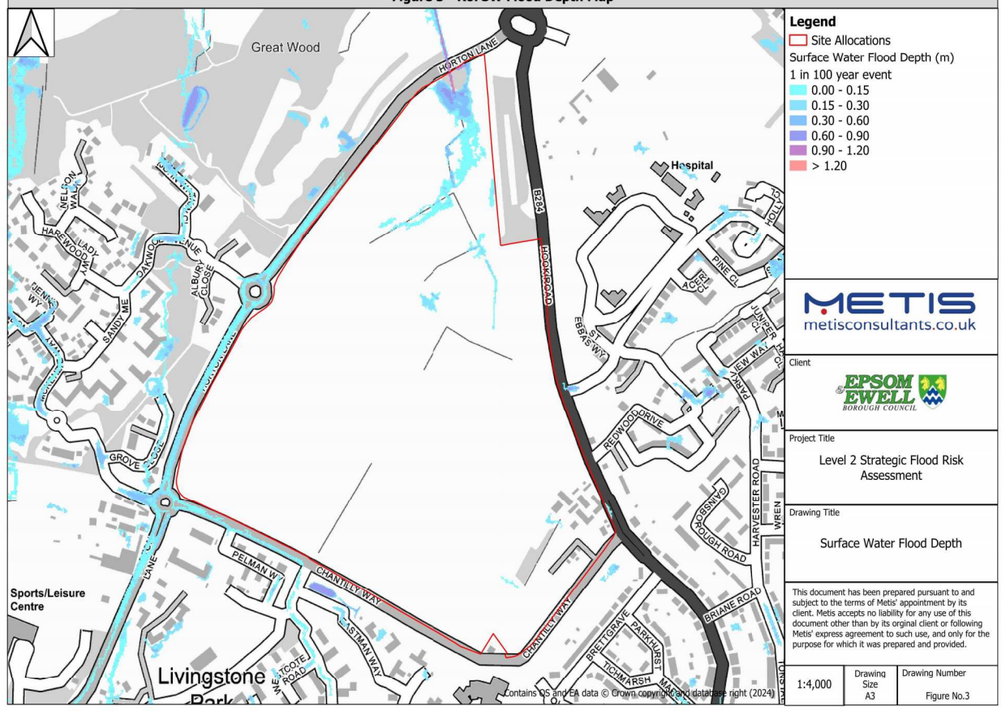
Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Fluvial Flood Hazard (1 in 100-year + 35% Climate Change Allowance Event)

1:4,000	Drawing Size A3	Drawing Number Figure No.2

Figure 3 - RoFSW Flood Depth Map



Legend
- Site Allocations

Surface Water Flood Depth (m)
1 in 100 year event
- 0.00 - 0.15
- 0.15 - 0.30
- 0.30 - 0.60
- 0.60 - 0.90
- 0.90 - 1.20
- > 1.20

METIS
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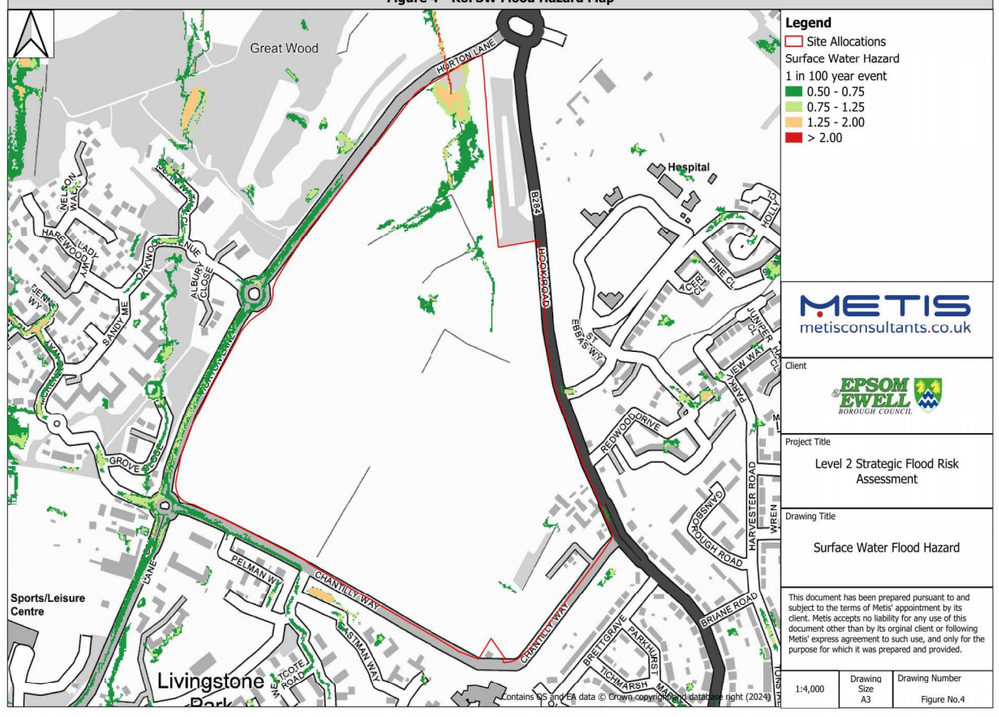
Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Surface Water Flood Depth

1:4,000	Drawing Size A3	Drawing Number Figure No.3

Figure 4 - RoFSW Flood Hazard Map



Legend
- Site Allocations

Surface Water Flood Hazard
1 in 100 year event
- 0.50 - 0.75
- 0.75 - 1.25
- 1.25 - 2.00
- > 2.00

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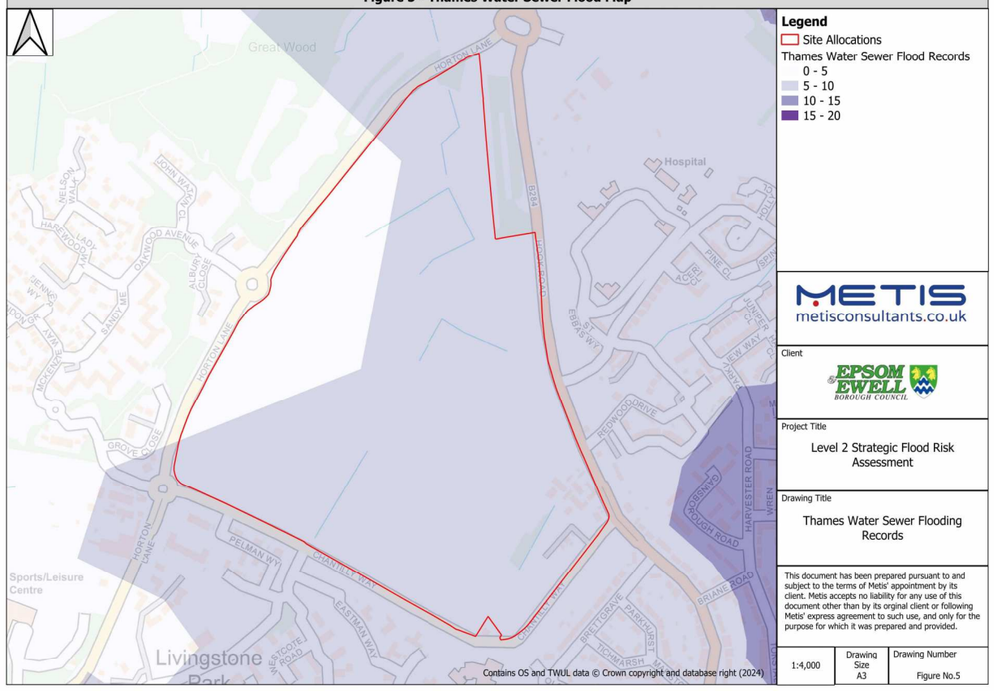
Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Surface Water Flood Hazard

1:4,000	Drawing Size A3	Drawing Number Figure No.4

Figure 5 - Thames Water Sewer Flood Map



Legend
- Site Allocations

Thames Water Sewer Flood Records
- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20

METIS metisconsultants.co.uk

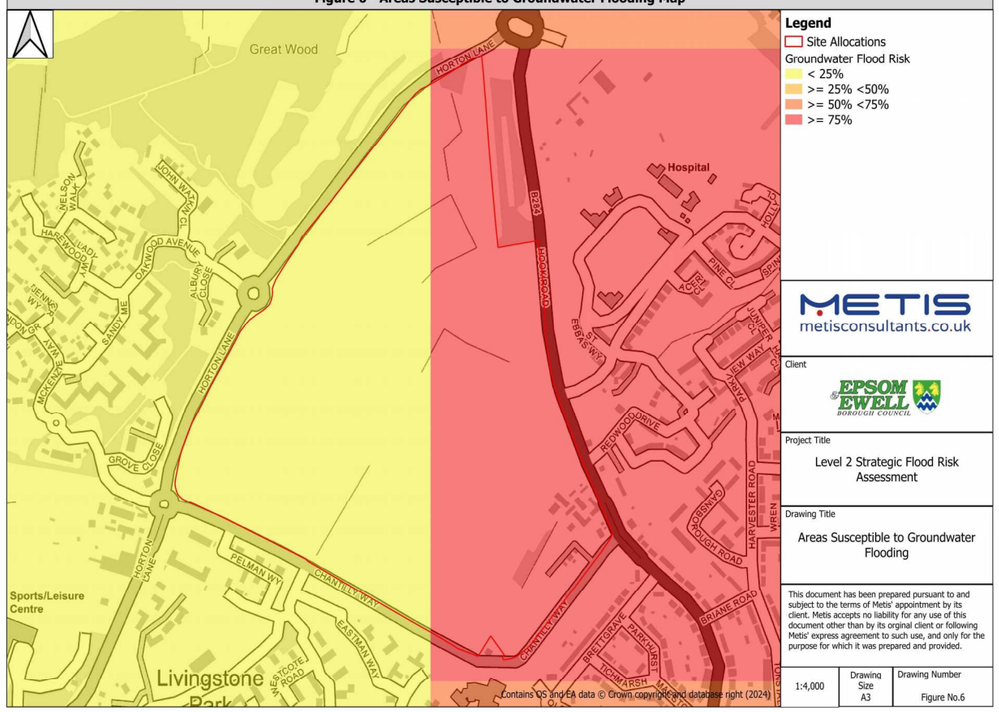
Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Thames Water Sewer Flooding Records

1:4,000	Drawing Size A3	Drawing Number Figure No.5

Figure 6 - Areas Susceptible to Groundwater Flooding Map



Legend
- Site Allocations

Groundwater Flood Risk
- < 25%
- >= 25% <50%
- >= 50% <75%
- >= 75%

METIS metisconsultants.co.uk

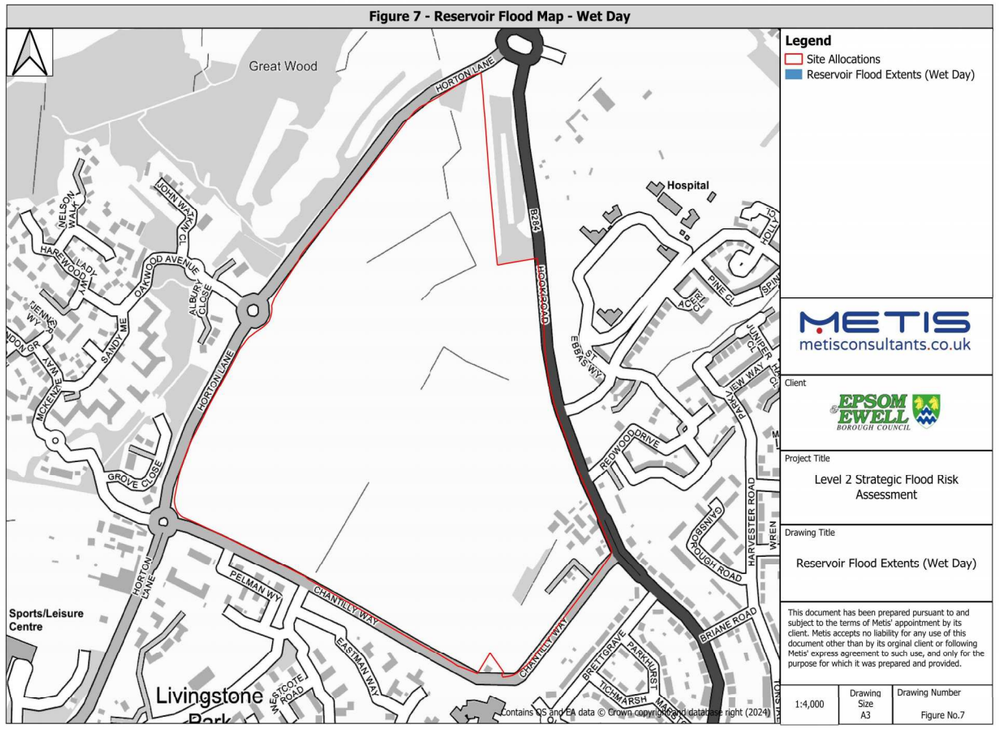
Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Areas Susceptible to Groundwater Flooding

1:4,000	Drawing Size A3	Drawing Number Figure No.6

Figure 7 - Reservoir Flood Map - Wet Day



Legend
- Site Allocations
- Reservoir Flood Extents (Wet Day)

METIS metisconsultants.co.uk

Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Reservoir Flood Extents (Wet Day)

1:4,000	Drawing Size A3	Drawing Number Figure No.7

SITE ASSESSMENT - Chantilly Way

Address: Chantilly Way, Epsom, KT19 8QY

Area: 0.7 **Ha**

Site Reference: HOR010

Current Use	Proposed Use
Greenfield	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	100	% of Site
1 in 30*	1.49	% of Site	**Artificial**		
1 in 100*	3.96	% of Site			
1 in 1000*	10.51	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					6

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism

N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress

N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements

N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.15 - 0.30	0.15 - 0.30	0.15 - 0.30	m
Max. Depth	0.30 - 0.60	0.30 - 0.60	0.60 - 0.90	m
Max. Velocity	0.00 - 0.25	0.25 - 0.50	0.25 - 0.50	m/s
Max. Hazard	0.75 - 1.25	0.75 - 1.25	1.25 - 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism

- The site is at high risk of surface water flooding, particularly at a small area in the north of the site.
- Climate change will increase the maximum surface water depth and maximum hazard of surface water flooding.

Site Access / Egress

Safe access and egress routes should be directed to the west of the site towards Chantilly Way or Hook Road to the north east where there is a lower risk of flooding.

Figure 3 - RoFSW Flood Depth Map

Mitigation - Flood Risk Requirements

- Development should be directed away from the northern areas of the site where there is higher risk of surface water flooding.
- See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Surface Water Drainage

- All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma.
- Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG).
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Chantilly Way

SEWER

Risk Assessment

- The site falls within a postcode area where there are 6 reported flood incidents from sewer flooding.
- The site is assumed to be served by separate surface water and foul sewer networks, given their proximity to the site. There is also a combined sewer near the south of the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having >75% susceptibility to groundwater flooding.
- The site is underlain by River Terrace superficial deposits on its northern side and London Clay Formation bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is changing from the 'Less vulnerable' to the 'More vulnerable' classification, as residential uses have been proposed.
- The site is mostly covered by green space.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from northern areas of the site.
- Safe access routes should be directed to the west of the site towards Chantilly Way or to the north east of the site towards Hook Road where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

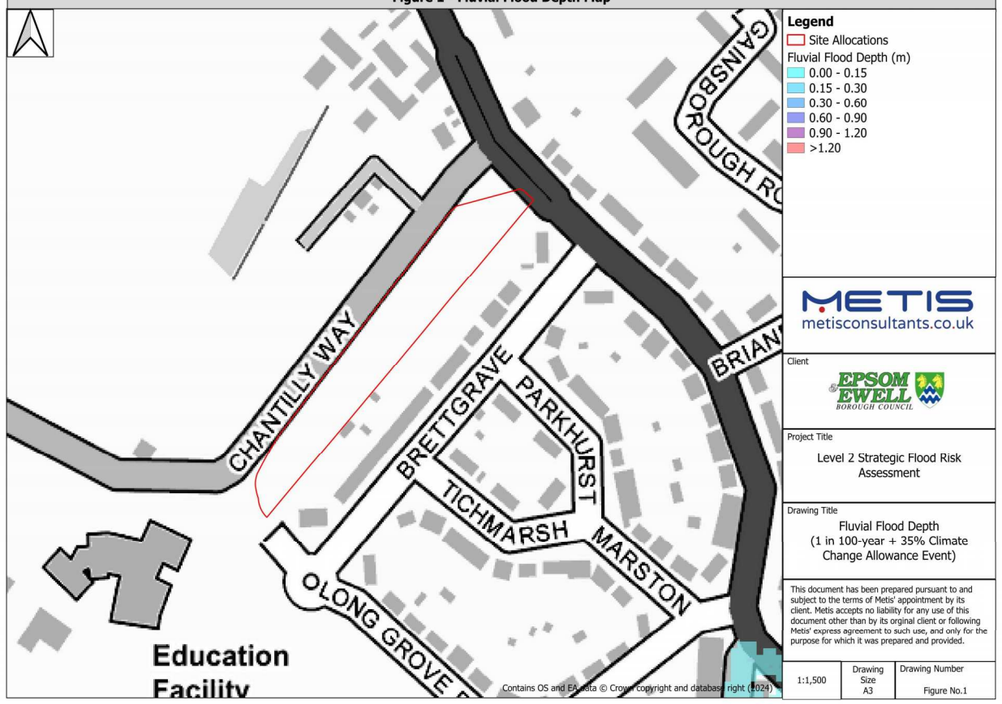


Figure 2 - Fluvial Flood Hazard Map

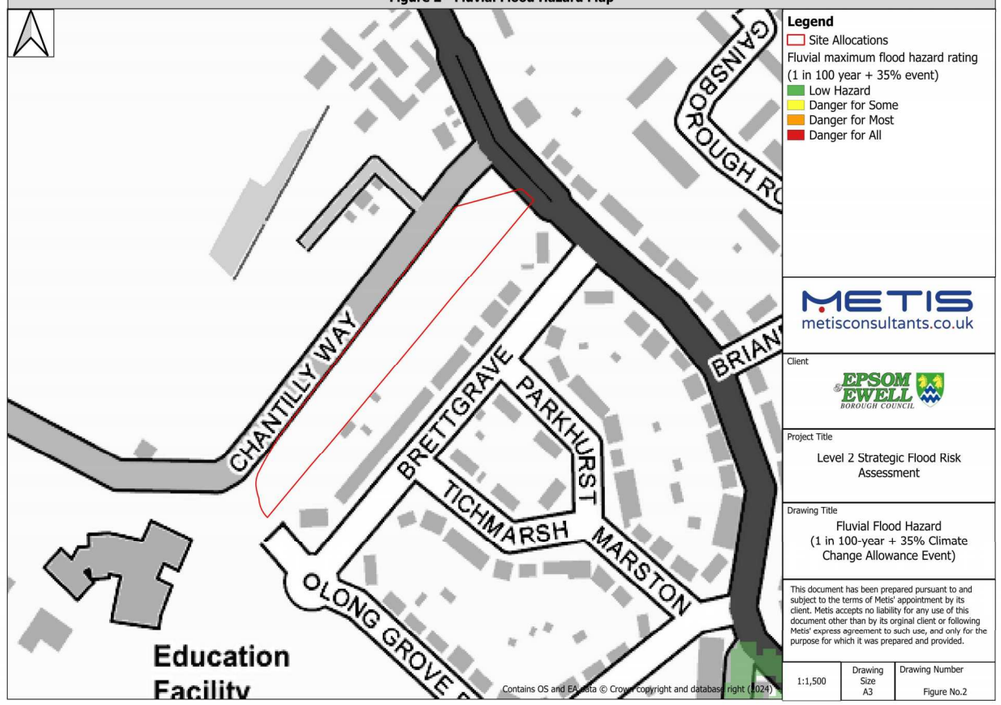


Figure 3 - RoFSW Flood Depth Map

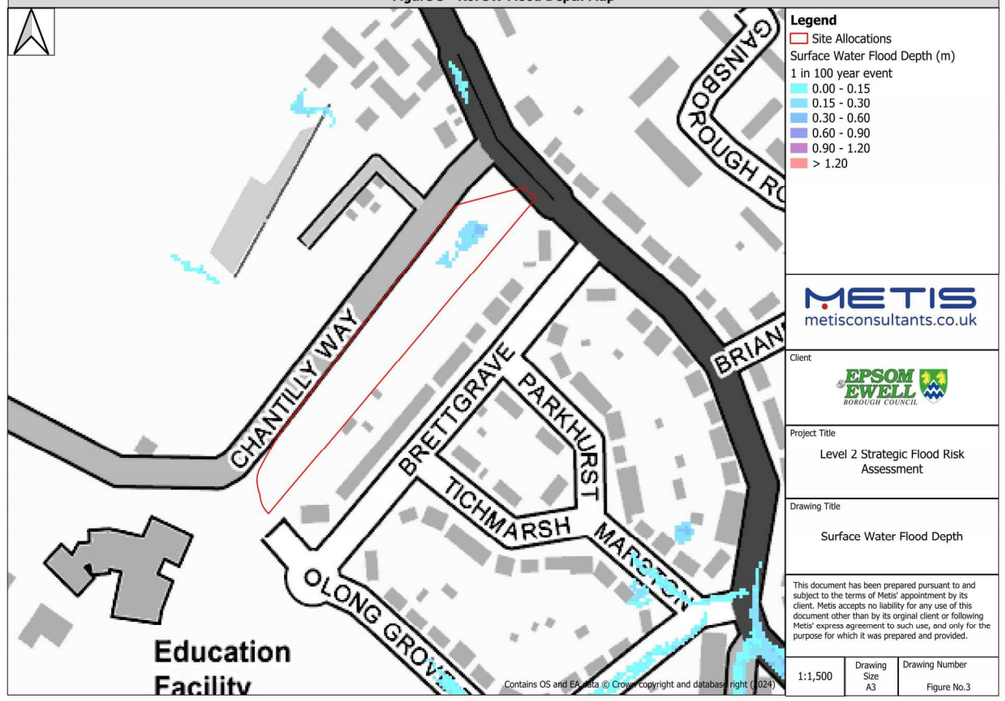


Figure 4 - RoFSW Flood Hazard Map

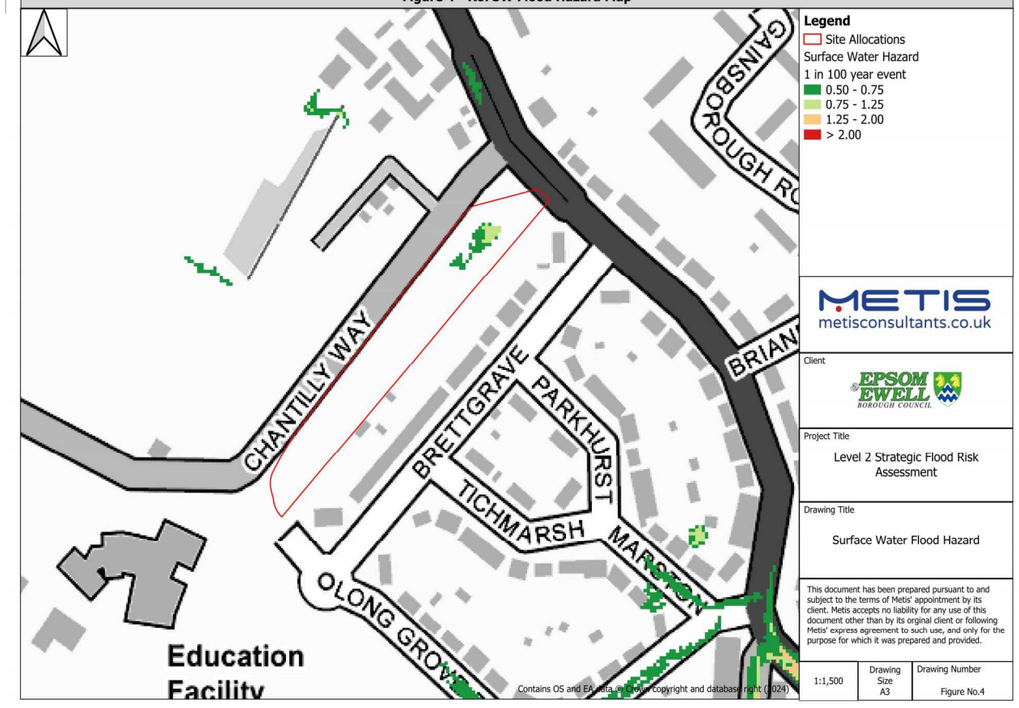


Figure 5 - Thames Water Sewer Flood Map

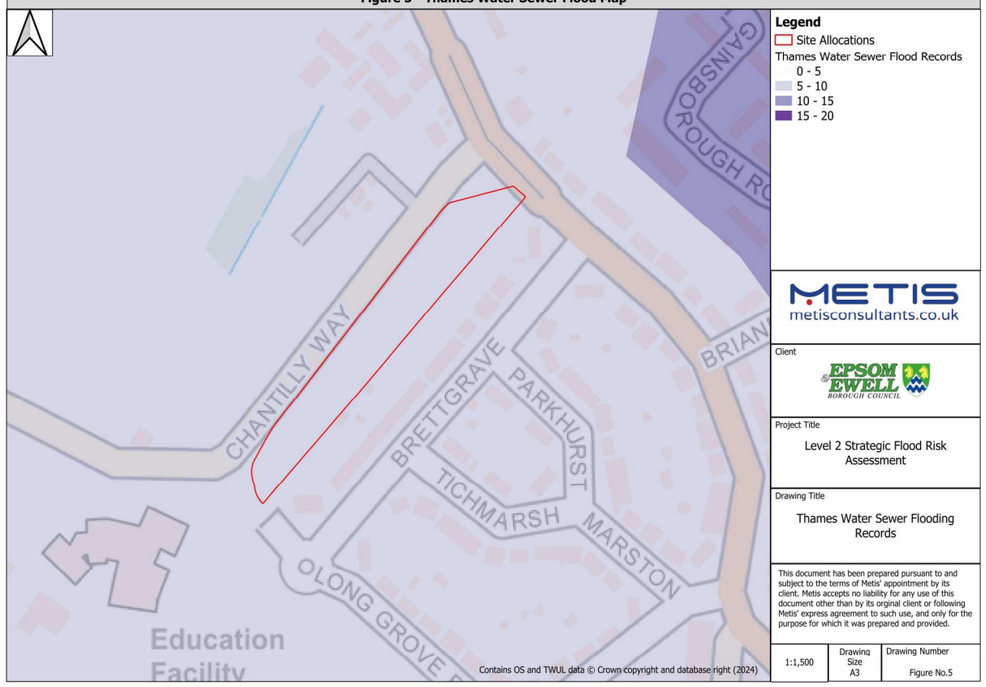


Figure 6 - Areas Susceptible to Groundwater Flooding Map

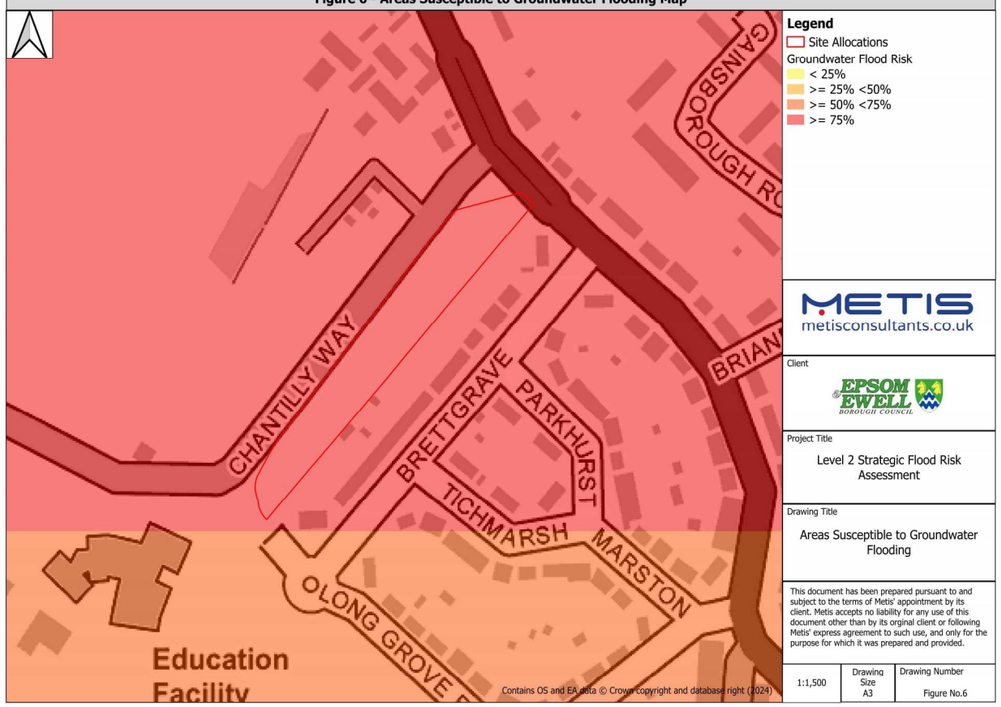
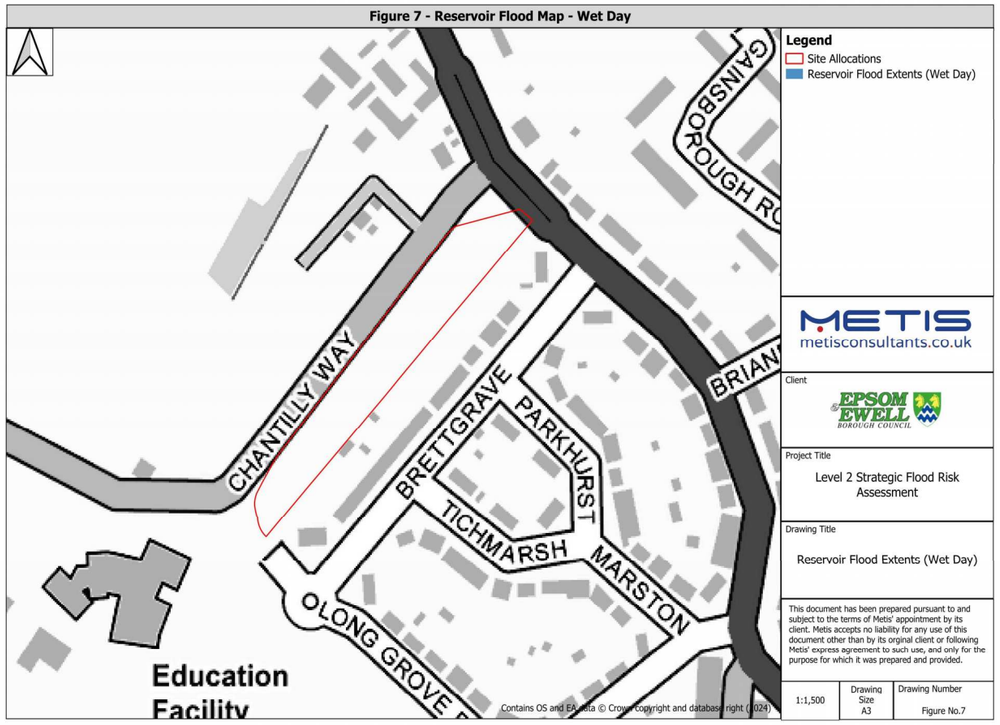


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - 64 South Street, Epsom

Address: 64 South Street, Epsom, KT18 7PE

Area: 0.14 **Ha**

Site Reference: LAA10

Current Use	Proposed Use
Small Business	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	100	% of Site
Surface Water			>75	0	% of Site
1 in 30*	0.07	% of Site	**Artificial**		
1 in 100*	10.01	% of Site			
1 in 1000*	34.42	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					16

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.15 - 0.30	0.00 - 0.15	0.00 - 0.15	m
Max. Depth	0.15 - 0.30	0.30 - 0.60	0.30 - 0.60	m
Max. Velocity	0.00 - 0.25	0.50 - 1.00	1.00 - 2.00	m/s
Max. Hazard	0.50 - 0.75	0.75-1.25	1.25 - 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
• The site is at low to medium risk of surface water flooding, particularly along its eastern parts. Dorking Road, to the south of the site, is at high risk of surface water flooding. • Climate change will increase the maximum velocity and maximum hazard of surface water flooding.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress
Safe access and egress routes should be directed to the northwest of the site towards St Margaret Drive where there is a lower risk of flooding.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the eastern areas of the site where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - 64 South Street, Epsom

SEWER

Risk Assessment

- The site falls within a postcode area where there are 16 reported flood incidents from sewer flooding.
- The site is assumed to be served by separate surface water and foul sewer networks, given their proximity to the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having 50-75% susceptibility to groundwater flooding.
- The site is underlain by River Terrace superficial deposits and Lambeth Group bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is changing from the 'Less vulnerable' to the 'More vulnerable' classification, as residential uses have been proposed.
- The site is mostly covered by impermeable areas with little green space. This offers an opportunity to improve flood attenuation through the new development.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from the eastern areas of the site.
- Safe access routes should be directed towards the northwest of the site towards St Margaret Drive where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

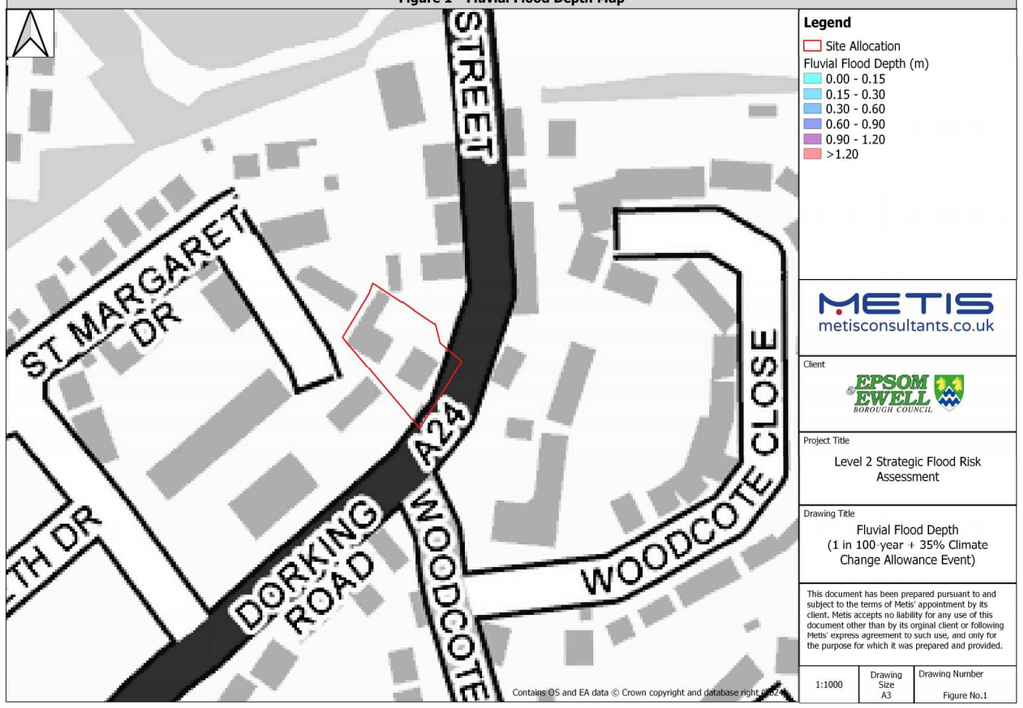
E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map



Legend
Site Allocation
Fluvial Flood Depth (m)
0.00 - 0.15
0.15 - 0.30
0.30 - 0.60
0.60 - 0.90
0.90 - 1.20
>1.20

METIS metisconsultants.co.uk

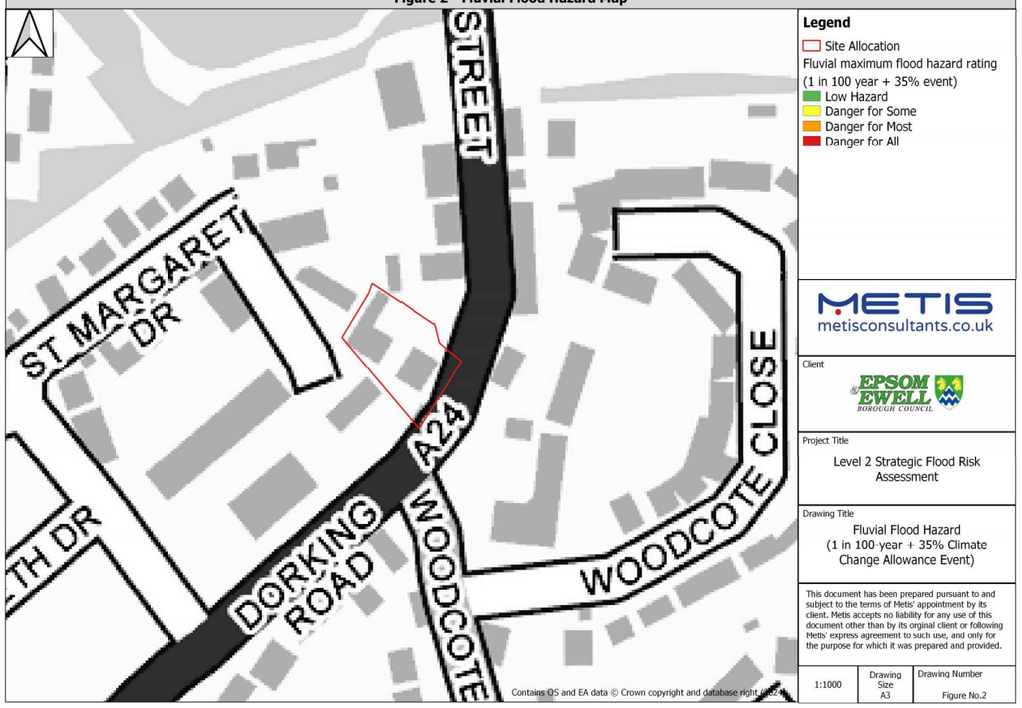
Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Fluvial Flood Depth (1 in 100 year + 35% Climate Change Allowance Event)

1:1000	Drawing Size A3	Drawing Number Figure No.1

Figure 2 - Fluvial Flood Hazard Map



Legend
Site Allocation
Fluvial maximum flood hazard rating (1 in 100 year + 35% event)
Low Hazard
Danger for Some
Danger for Most
Danger for All

METIS metisconsultants.co.uk

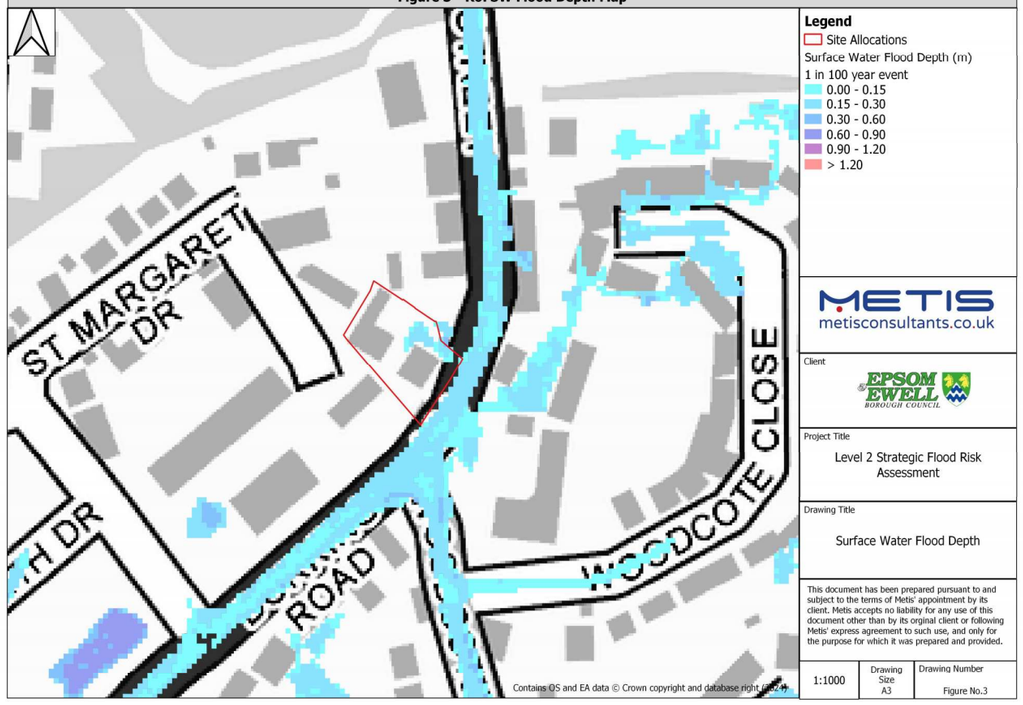
Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Fluvial Flood Hazard (1 in 100 year + 35% Climate Change Allowance Event)

1:1000	Drawing Size A3	Drawing Number Figure No.2

Figure 3 - RoFSW Flood Depth Map



Legend
Site Allocations
Surface Water Flood Depth (m)
1 in 100 year event
0.00 - 0.15
0.15 - 0.30
0.30 - 0.60
0.60 - 0.90
0.90 - 1.20
> 1.20

METIS metisconsultants.co.uk

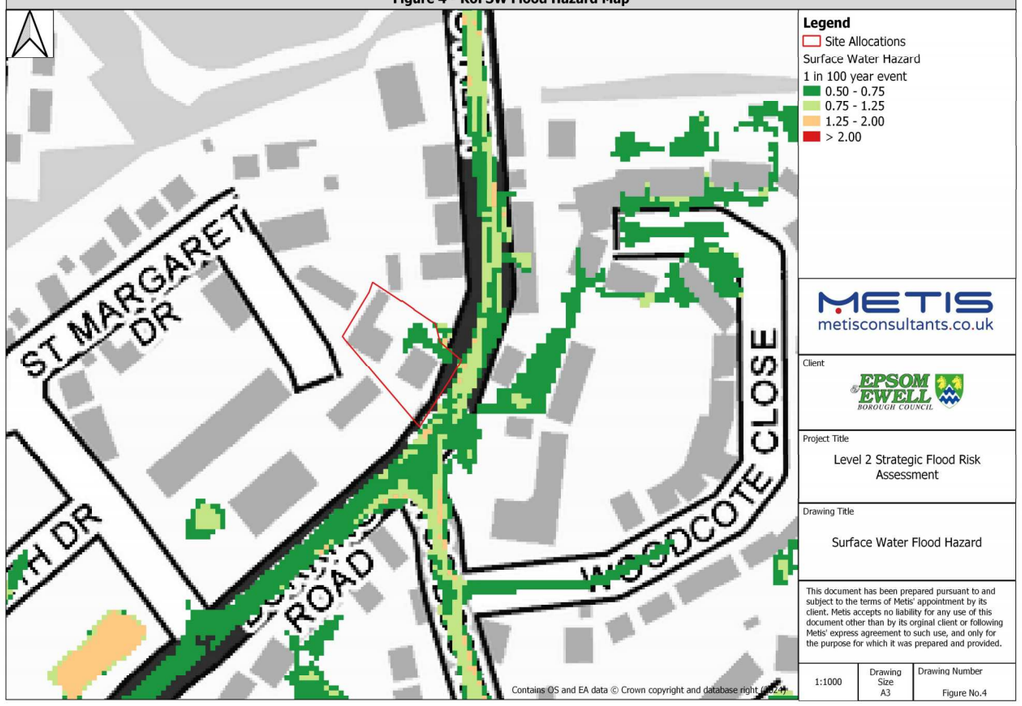
Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Surface Water Flood Depth

1:1000	Drawing Size A3	Drawing Number Figure No.3

Figure 4 - RoFSW Flood Hazard Map



Legend
Site Allocations
Surface Water Hazard
1 in 100 year event
0.50 - 0.75
0.75 - 1.25
1.25 - 2.00
> 2.00

METIS metisconsultants.co.uk

Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Surface Water Flood Hazard

1:1000	Drawing Size A3	Drawing Number Figure No.4

Figure 5 - Thames Water Sewer Flood Map

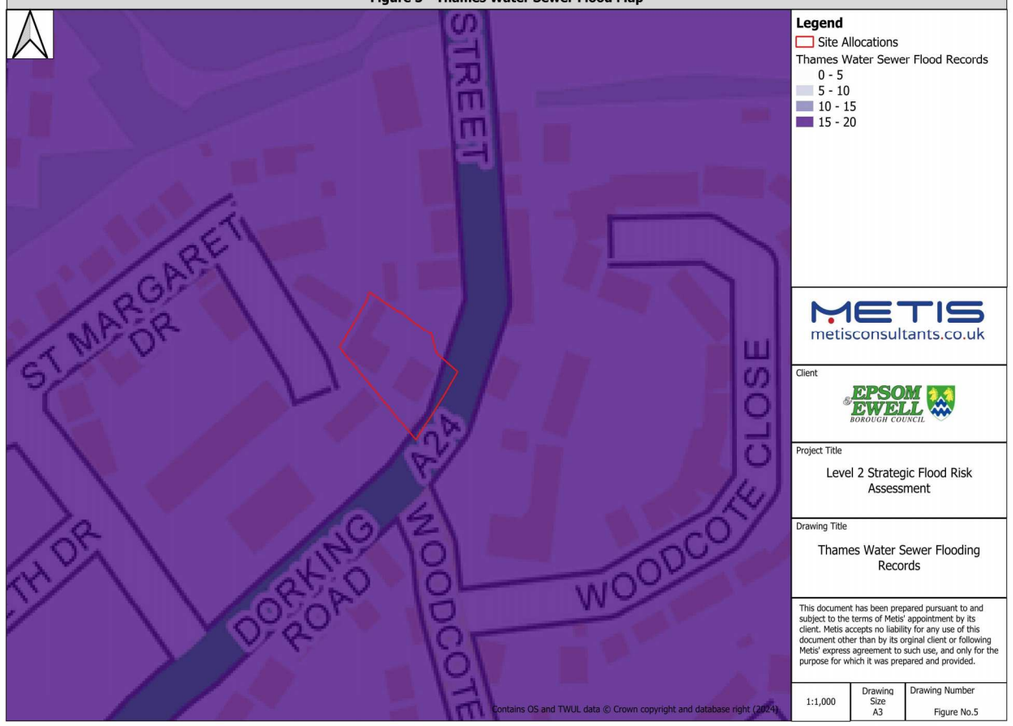


Figure 6 - Areas Susceptible to Groundwater Flooding Map

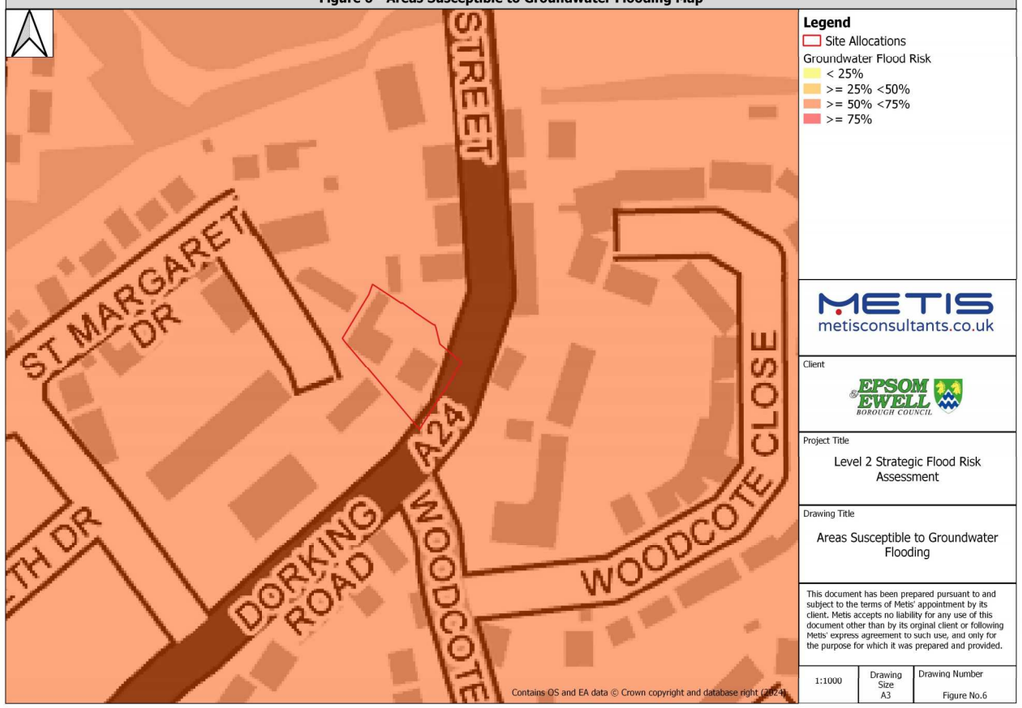
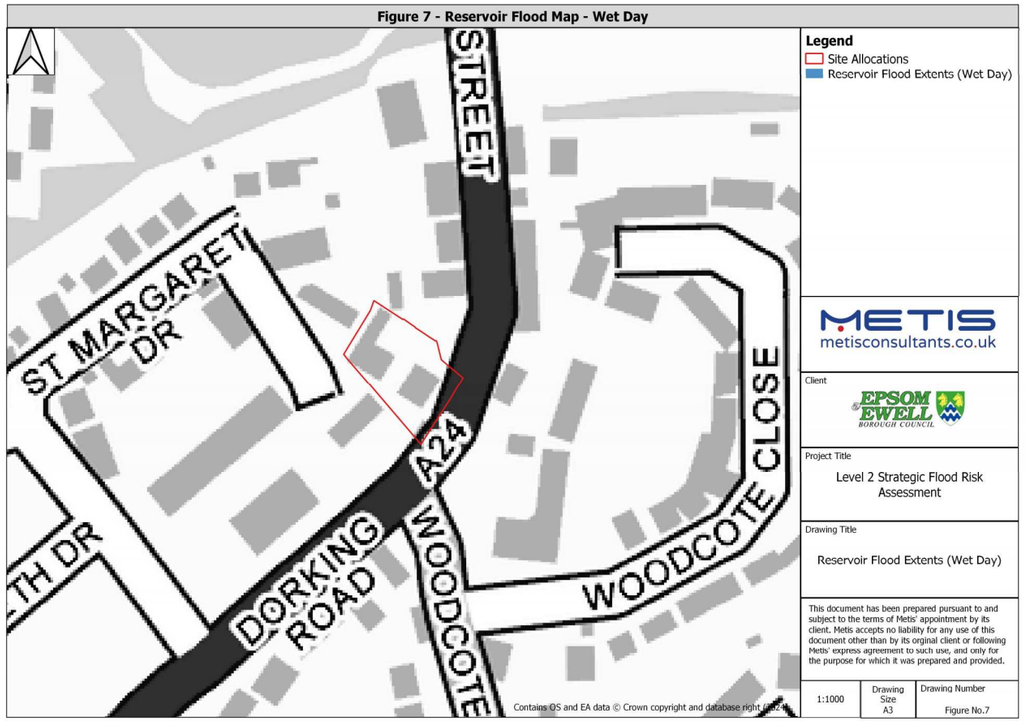


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Crane Court/Rowden Rd (Garage)

Address:	Epsom, KT19 9QD
Area:	0.19 **Ha**
Site Reference:	LAA11

Current Use	Proposed Use
Car Park	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	100	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	0	% of Site	**Artificial**		
1 in 100*	0	% of Site			
1 in 1000*	21.9	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					14

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences. There are flood defences located in the vicinity of the site along the River Hogsmill and the Bonesgate Stream.
Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	N/A	N/A	0.00 - 0.15	m
Max. Depth	N/A	N/A	0.30 - 0.60	m
Max. Velocity	N/A	N/A	0.50 - 1.00	m/s
Max. Hazard	N/A	N/A	0.75 - 1.25	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
• The central and northern areas of site are at low risk from surface water flooding. Rowden Road, at the north of the site, is at high risk from surface water flooding. • Climate change will increase the minimum and maximum depth, maximum velocity and maximum hazard of surface water flooding.

Site Access / Egress
Safe access and egress routes should be directed to the southwest of the site towards Bourne Way, Hogsmill Way or Millais Way where there is a lower risk of flooding.

Figure 3 - RoFSW Flood Depth Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the central and northern areas of the site where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Crane Court/Rowden Rd (Garage)

SEWER

Risk Assessment

- The site falls within a postcode area where there are 14 reported flood incidents from sewer flooding.
- The site is served by surface water sewers. There are also foul sewers located near the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having <25% susceptibility to groundwater flooding.
- The site is underlain by London Clay bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is changing from the 'Less vulnerable' to the 'More vulnerable' classification, as residential uses have been proposed.
- The site is mostly covered by impermeable areas with little green space. This offers an opportunity to improve flood attenuation through the new development.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from the central and northern areas of the site.
- Safe access routes should be directed to the southwest of the site towards Bourne Way, Hogsmill Way or Millais Way where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

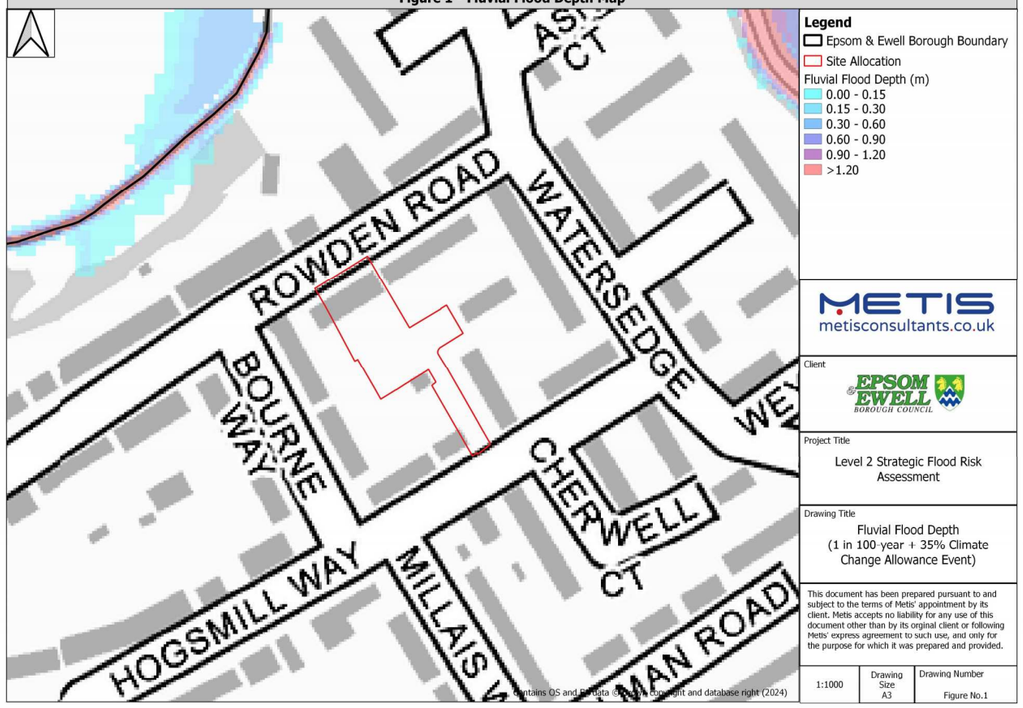


Figure 2 - Fluvial Flood Hazard Map

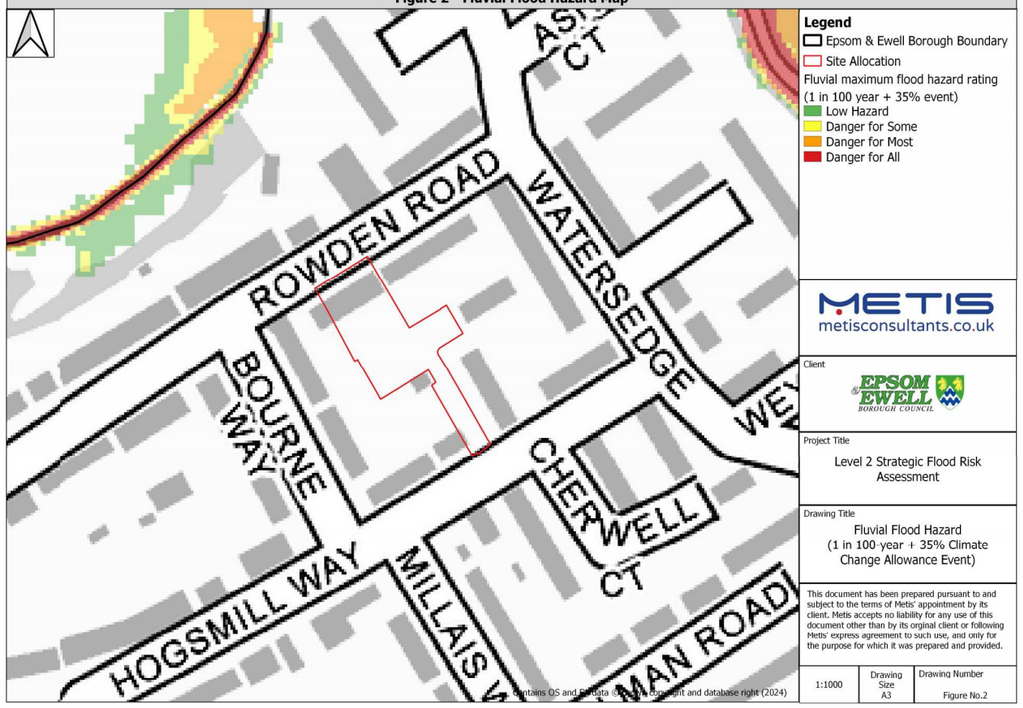


Figure 3 - RoFSW Flood Depth Map

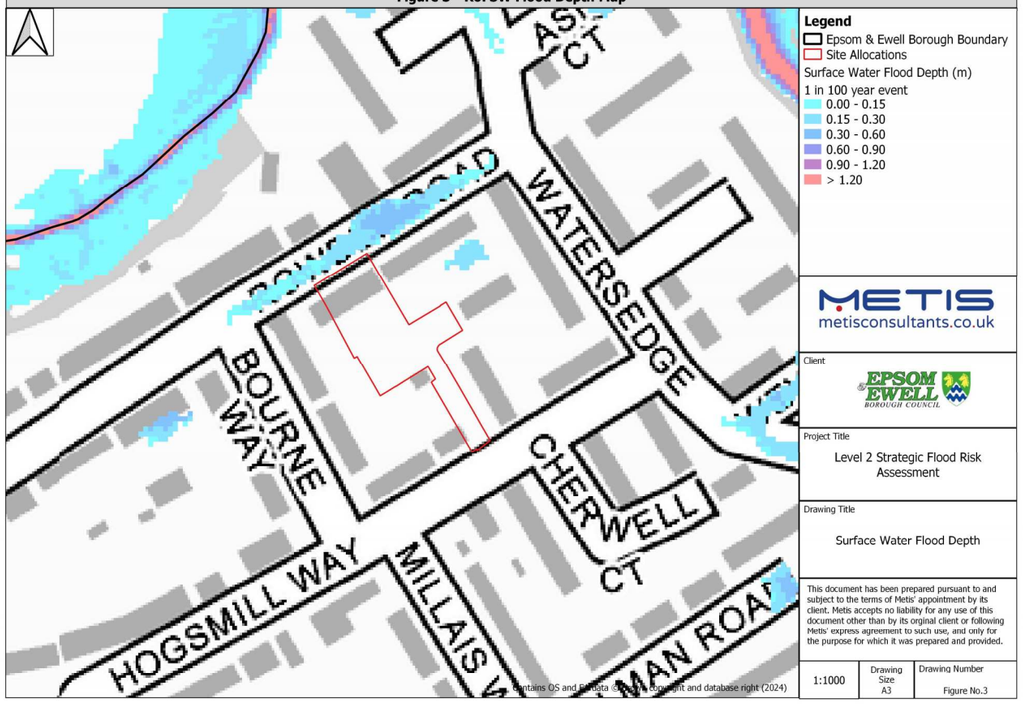


Figure 4 - RoFSW Flood Hazard Map

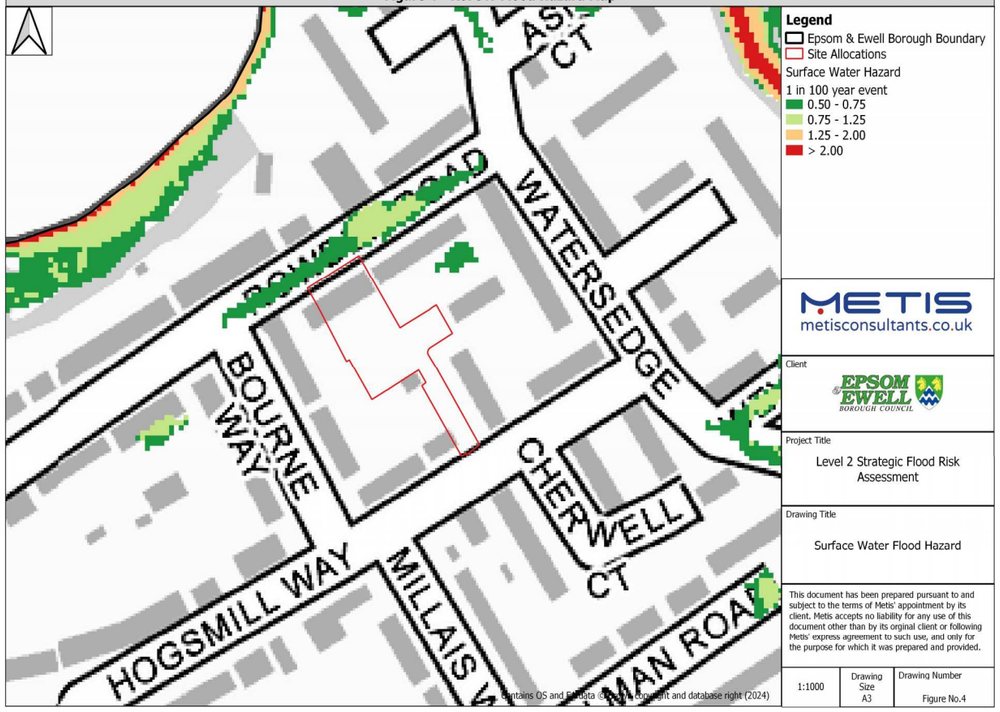


Figure 5 - Thames Water Sewer Flood Map

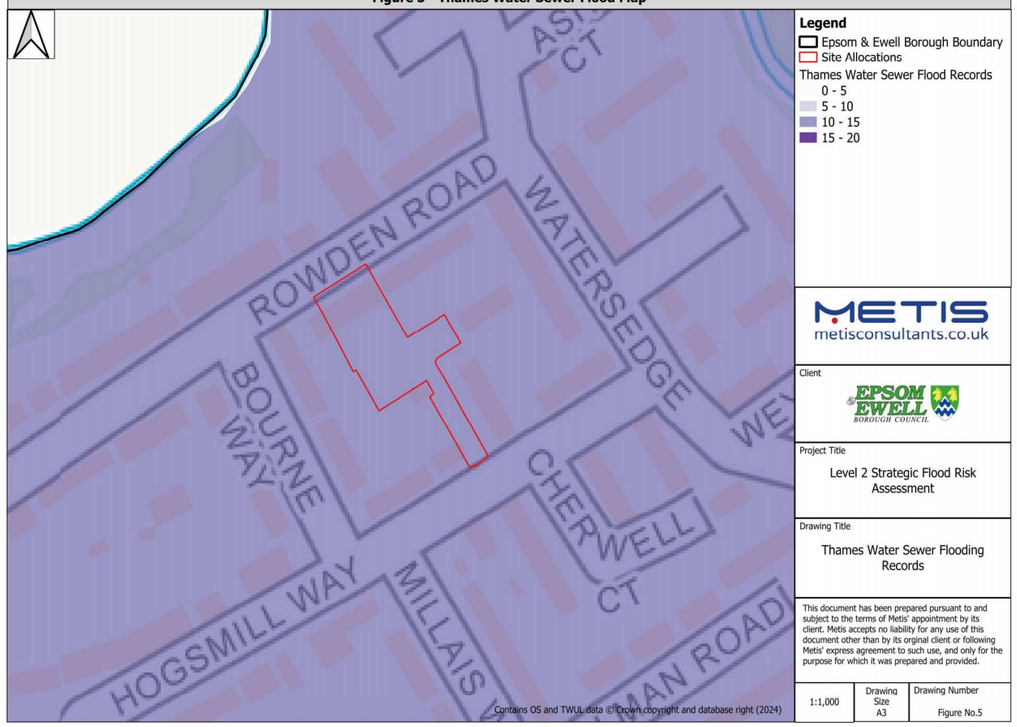


Figure 6 - Areas Susceptible to Groundwater Flooding Map

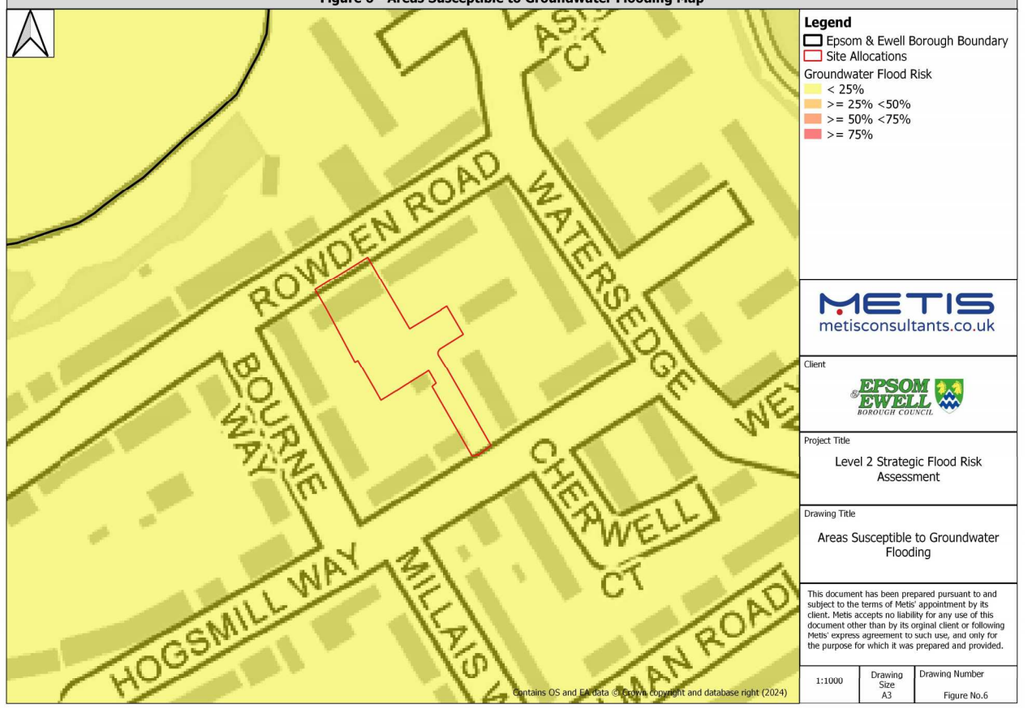
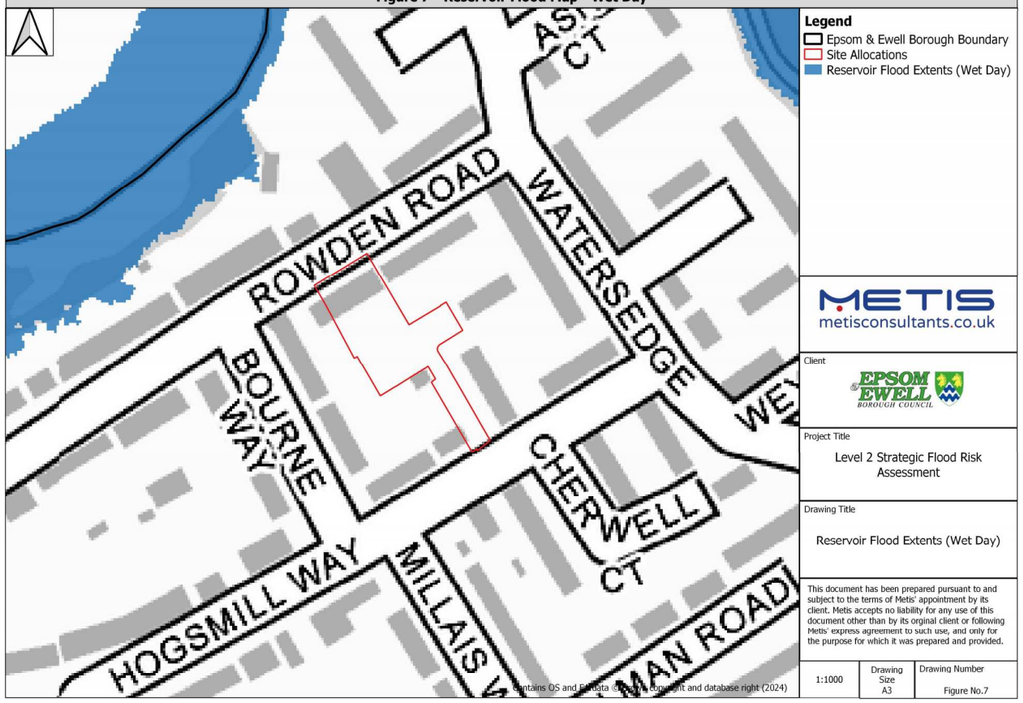


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Richards Field Car Park

Address:	2 Richards Field, Ewell, Epsom, KT19 9XH
Area:	0.07 **Ha**
Site Reference:	LAA4

Current Use	Proposed Use
Car Park	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary

Fluvial / Tidal			Groundwater		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	100	% of Site
1 in 30*	0	% of Site	**Artificial**		
1 in 100*	15.21	% of Site			
1 in 1000*	26.51	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					14

* return periods for potential flood events

Flood Defences

Site is not in an area benefitting from flood defences.

Flood Warning Area

The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)

Parameter	FZ3b	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)

Parameter	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism

N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress

N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements

N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment

Parameter	1 in 30	1 in 100	1 in 1000	Units
Min. Depth	N/A	0.15 - 0.30	0.00 - 0.15	m
Max. Depth	N/A	0.15 - 0.30	0.15 - 0.30	m
Max. Velocity	N/A	0.00 - 0.25	0.25 - 0.50	m/s
Max. Hazard	N/A	0.50 - 0.75	0.75 - 1.25	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism

- The site is at medium risk of surface water flooding, particularly along the south eastern areas.
- Climate change will increase the maximum velocity and maximum hazard of surface water flooding.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress

Safe access and egress routes should be directed to the northeast of the site towards Chessington Road where there is a lower risk of flooding.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements

- Development should be directed away from the eastern areas of the site where there is higher risk of surface water flooding.
- See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage

- All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma.
- Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG).
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Richards Field Car Park

SEWER

Risk Assessment

- The site falls within a postcode area where there are 14 reported flood incidents from sewer flooding.
- The site is served by separate surface water and foul sewer networks.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having >75% susceptibility to groundwater flooding.
- The site is underlain by River Terrace superficial deposits and London Clay bedrock geology.
- There have been groundwater flood incidents nearby, in the KT19 9XD postcode.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is changing from the 'Less vulnerable' to the 'More vulnerable' classification, as residential uses have been proposed.
- The site is mostly covered by impermeable areas with little green space. This offers an opportunity to improve flood attenuation through the new development.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from northern eastern areas of the site.
- Safe access routes should be directed to the northeast of the site towards Chessington Road where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

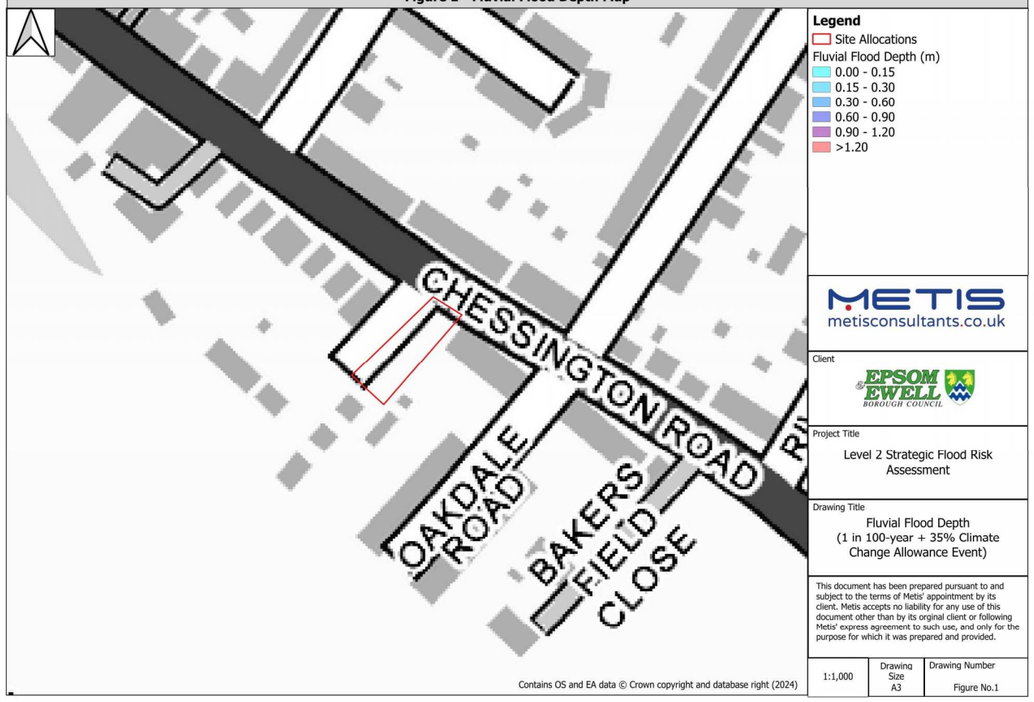
E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map



METIS
metisconsultants.co.uk

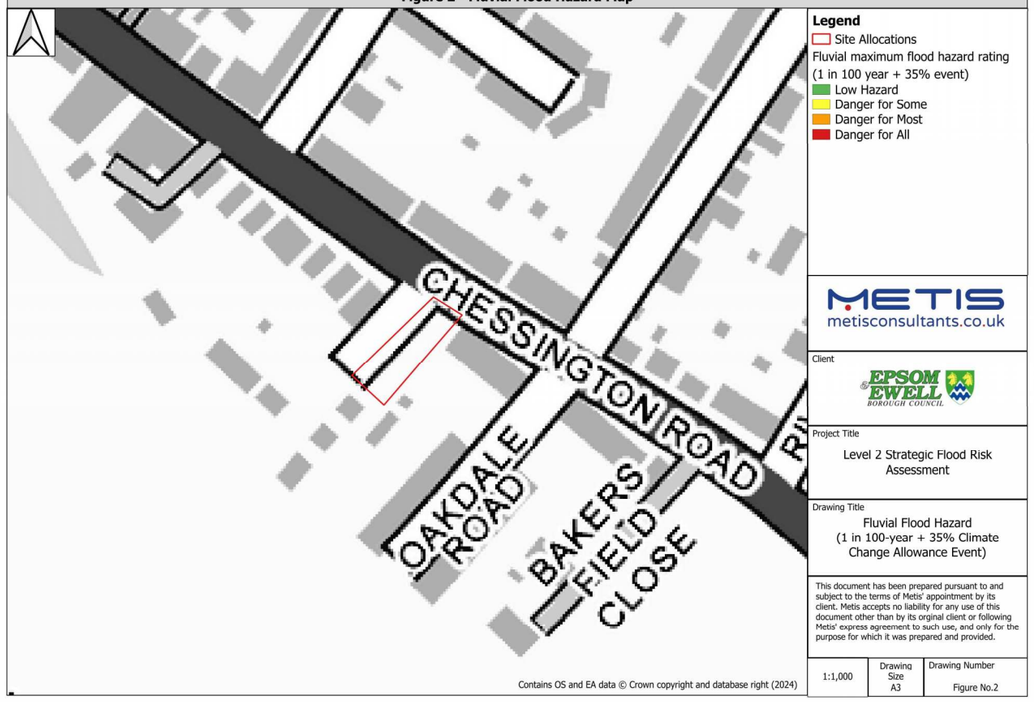
Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Fluvial Flood Depth (1 in 100-year + 35% Climate Change Allowance Event)

1:1,000	Drawing Size A3	Drawing Number Figure No.1

Figure 2 - Fluvial Flood Hazard Map



METIS
metisconsultants.co.uk

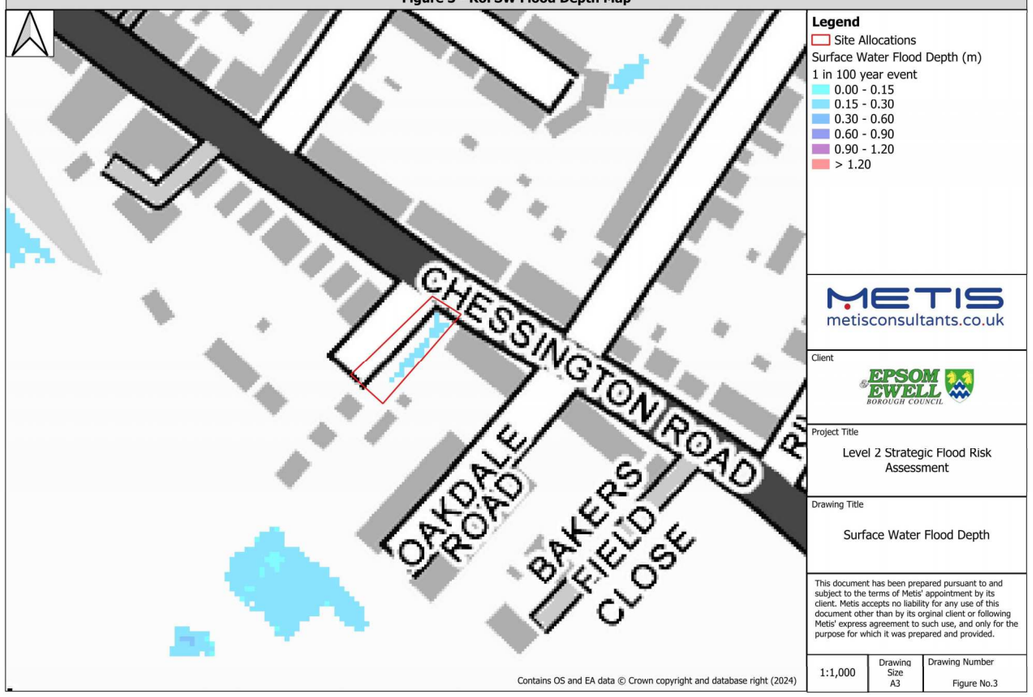
Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Fluvial Flood Hazard (1 in 100-year + 35% Climate Change Allowance Event)

1:1,000	Drawing Size A3	Drawing Number Figure No.2

Figure 3 - RoFSW Flood Depth Map



METIS
metisconsultants.co.uk

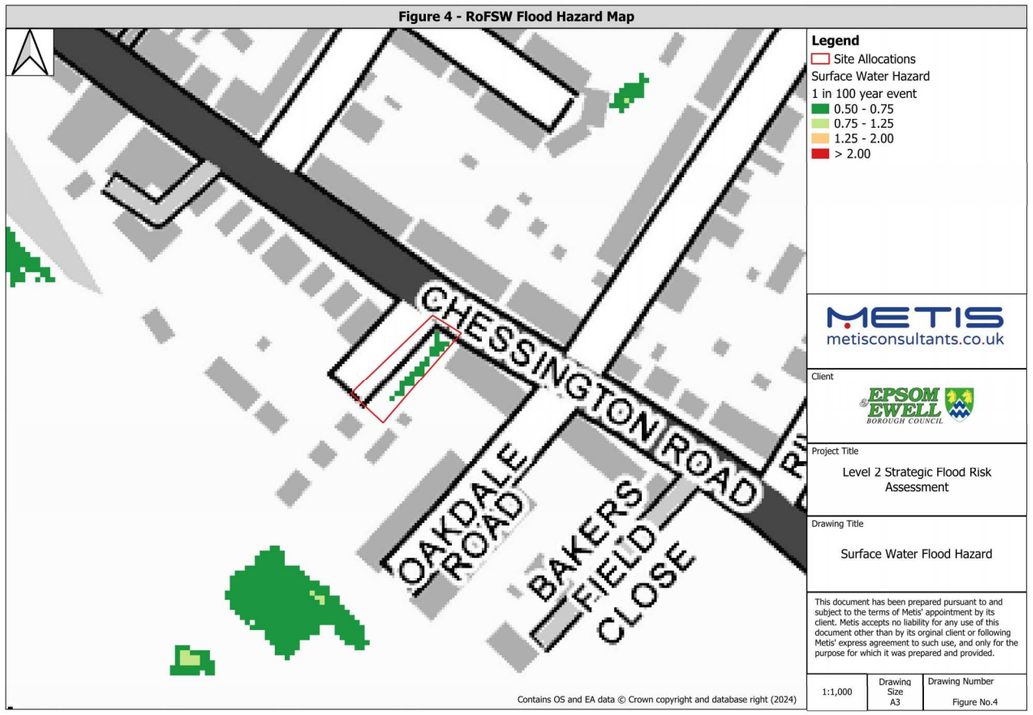
Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Surface Water Flood Depth

1:1,000	Drawing Size A3	Drawing Number Figure No.3

Figure 4 - RoFSW Flood Hazard Map



METIS
metisconsultants.co.uk

Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Surface Water Flood Hazard

1:1,000	Drawing Size A3	Drawing Number Figure No.4

Figure 5 - Thames Water Sewer Flood Map

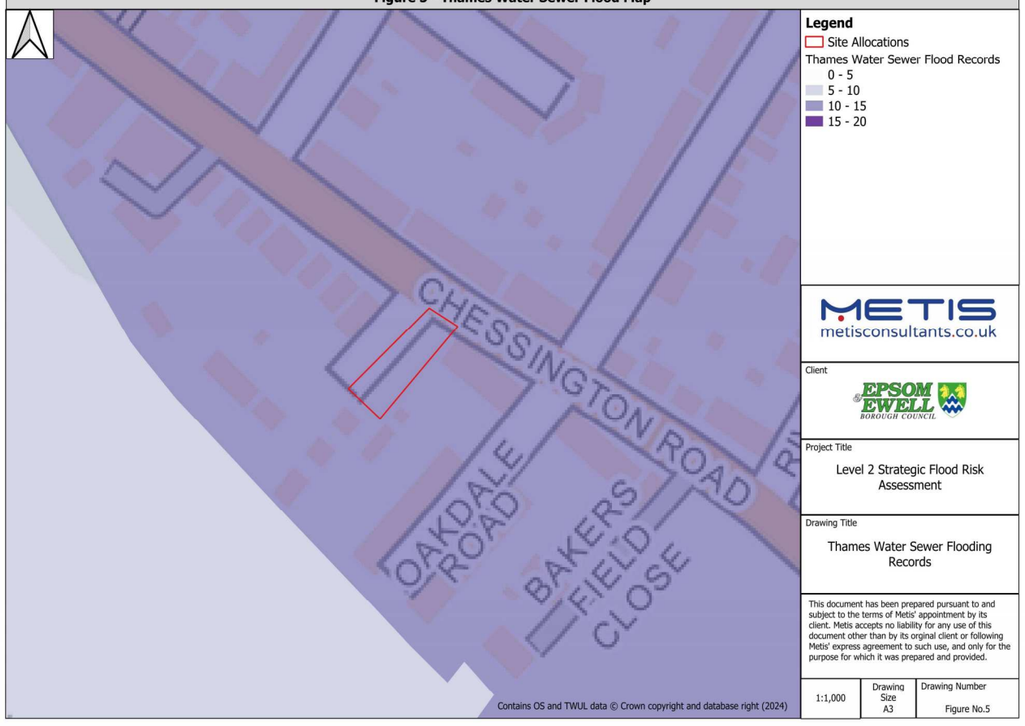


Figure 6 - Areas Susceptible to Groundwater Flooding Map

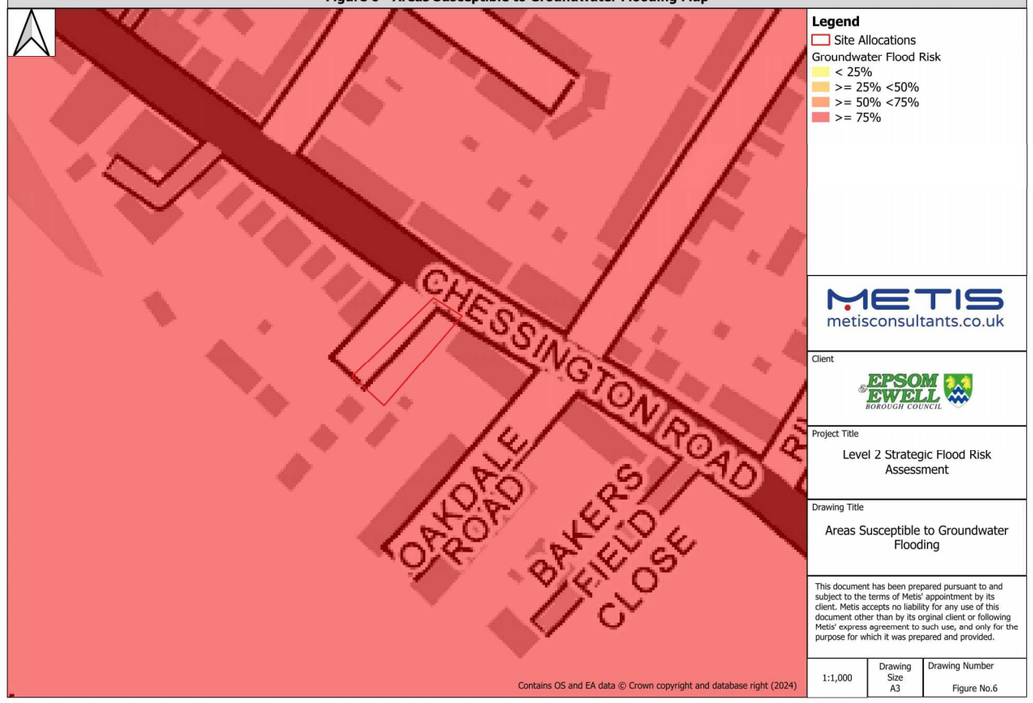
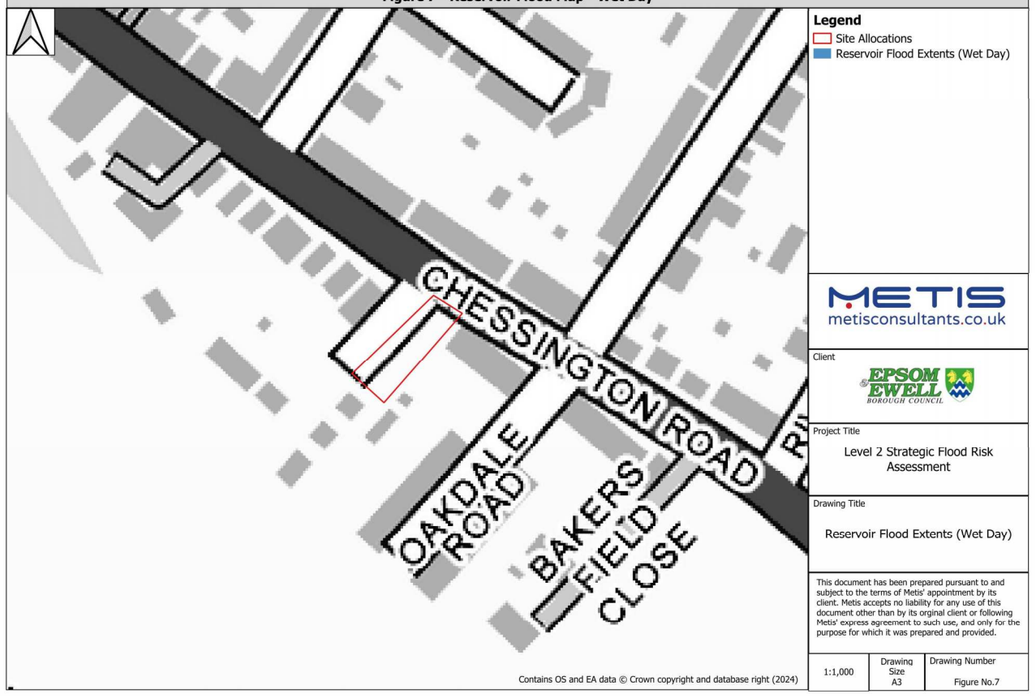


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Esso Express, 26 Reigate Road

Address:	26 Reigate Road, Ewell, Epsom, KT17 1PG
Area:	0.25 **Ha**
Site Reference:	LAA5

Current Use	Proposed Use
Car Park	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	100	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	0	% of Site	**Artificial**		
1 in 100*	9.62	% of Site			
1 in 1000*	23.81	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					20

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	N/A	0.00 - 0.15	0.00 - 0.15	m
Max. Depth	N/A	0.15 - 0.30	0.30 -0.60	m
Max. Velocity	N/A	1.00 - 2.00	> 2.00	m/s
Max. Hazard	N/A	0.75 - 1.25	1.25 - 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
• The site is at medium risk of surface water flooding, particularly along Reigate Road and surrounding the existing building to the north east of the site. • Climate change will increase the maximum surface water depth, maximum velocity and maximum hazard of surface water flooding.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress
Safe access and egress routes should be directed to the southwest of the site towards Ewell By-Pass where there is a lower risk of flooding.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the eastern areas of the site where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Esso Express, 26 Reigate Road

SEWER

Risk Assessment

- The site falls within a postcode area where there are 20 reported flood incidents from sewer flooding.
- The site is assumed to be served by a foul sewer network, given their proximity to the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having 25-50% susceptibility to groundwater flooding.
- The site is underlain by Thanet formation bedrock geology to the west and Lewes Nodular Chalk, Seaford Chalk and Newhaven Chalk to the east.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is changing from the 'Less vulnerable' to the 'More vulnerable' classification, as residential uses have been proposed.
- The site is covered by impermeable areas and some green space. This offers an opportunity to improve flood attenuation through the new development.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from eastern areas of the site.
- Safe access routes should be directed to the southwest of the site towards Ewell By-Pass where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

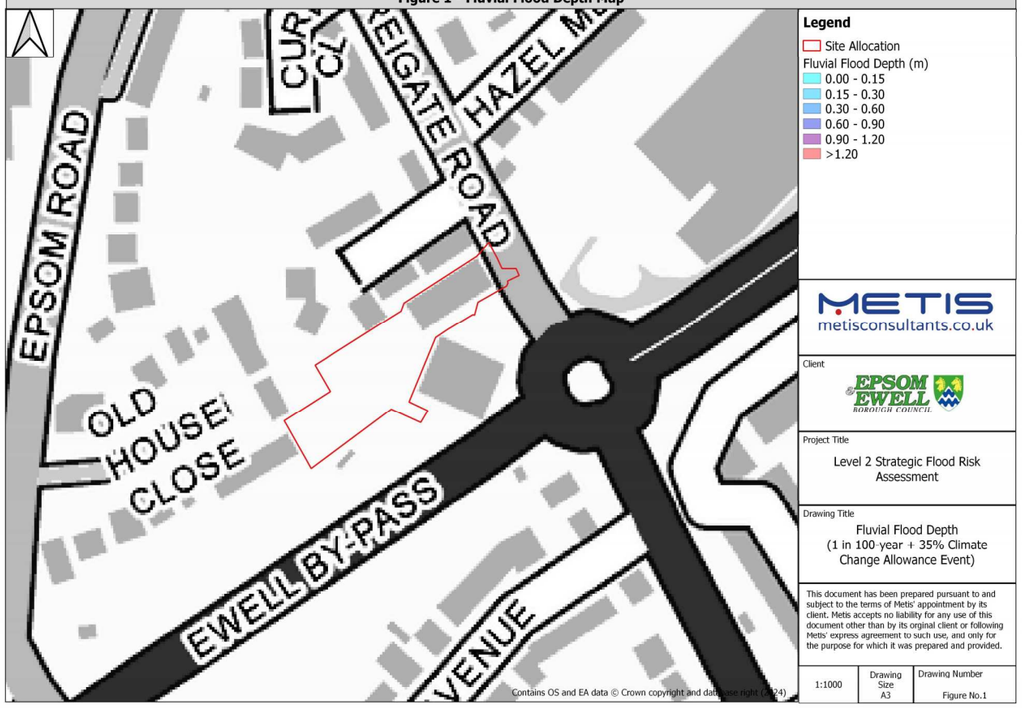


Figure 2 - Fluvial Flood Hazard Map

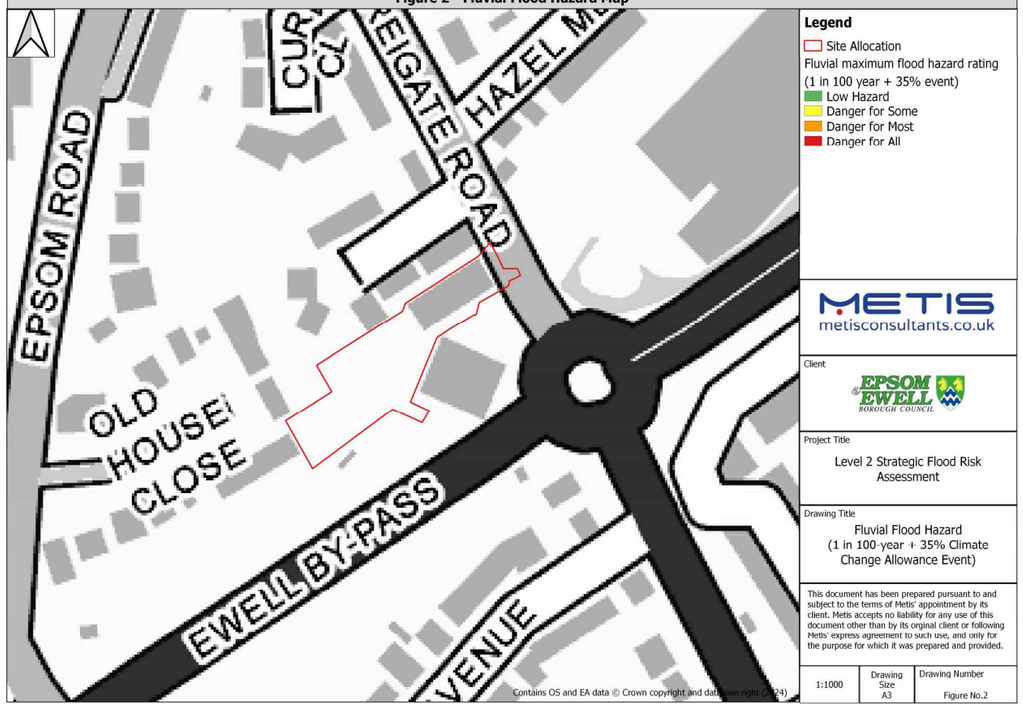


Figure 3 - RoFSW Flood Depth Map

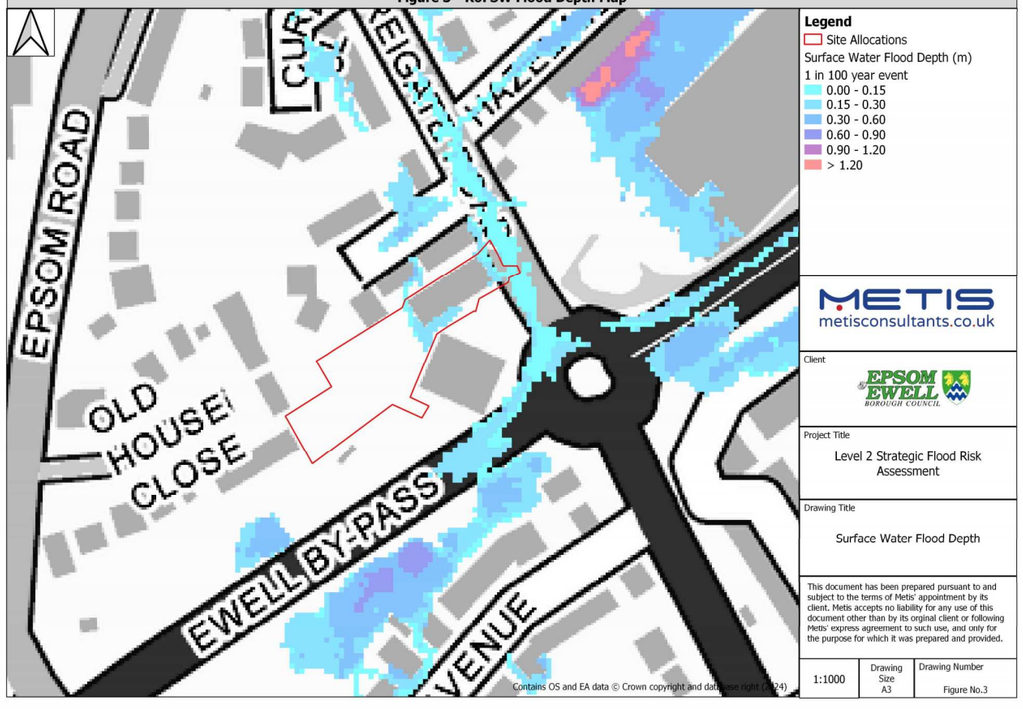


Figure 4 - RoFSW Flood Hazard Map

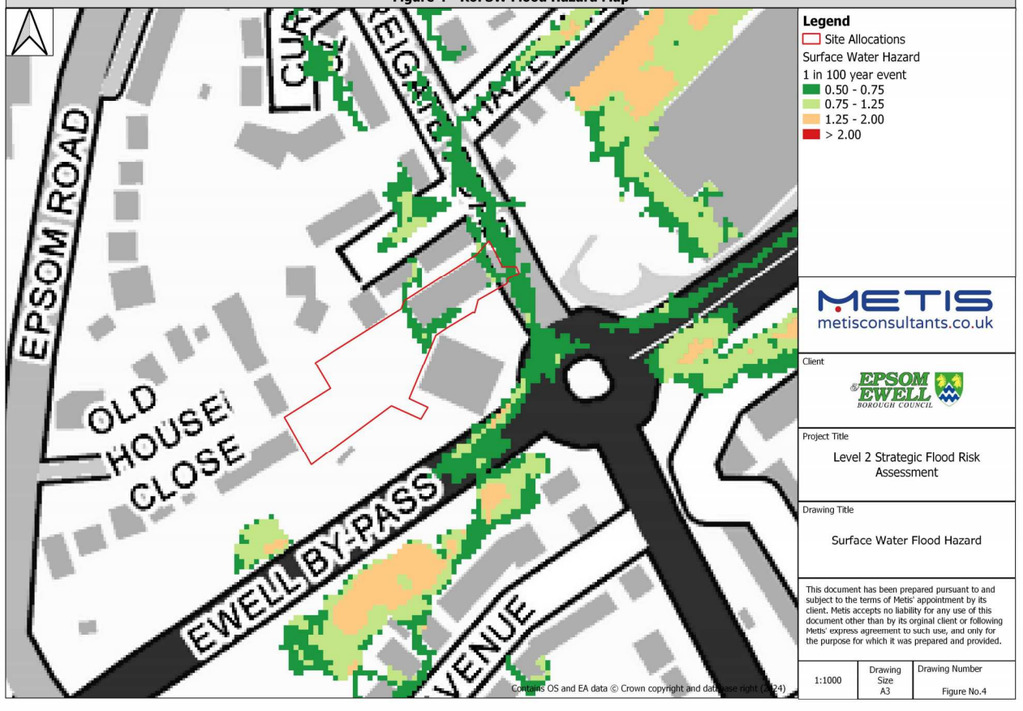


Figure 5 - Thames Water Sewer Flood Map

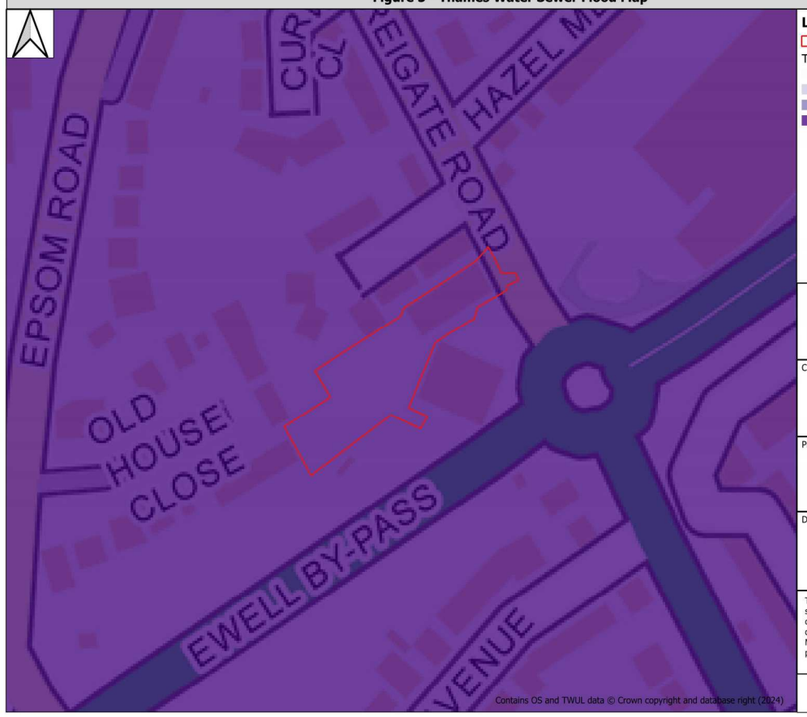


Figure 6 - Areas Susceptible to Groundwater Flooding Map

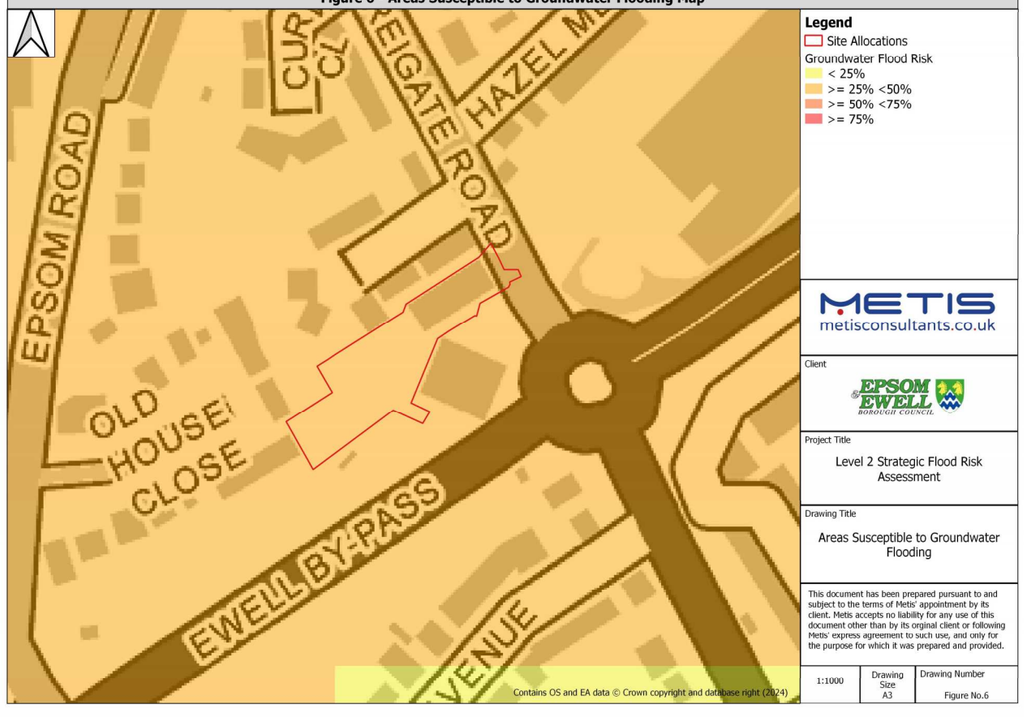
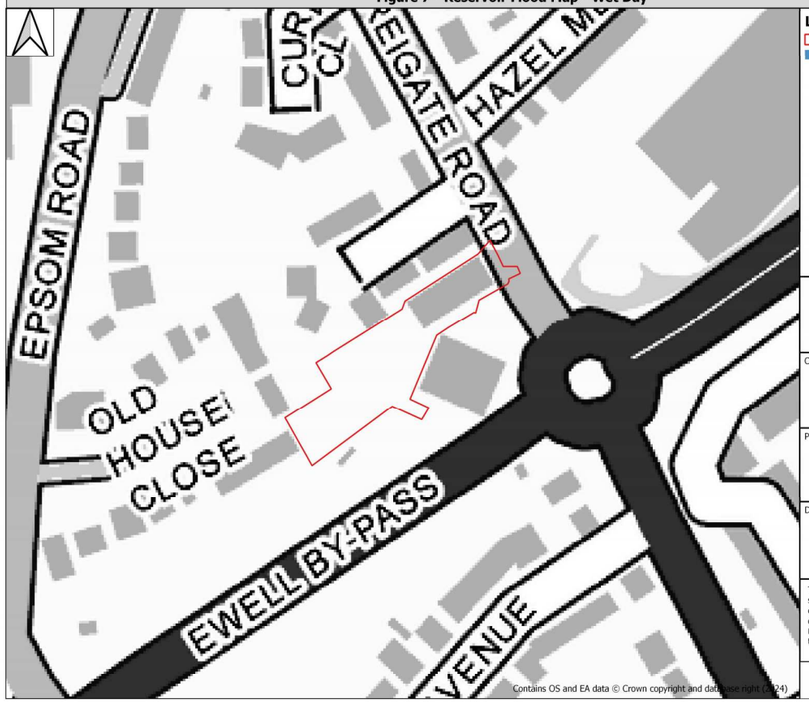


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Garages at Somerset Close & Westmorland Close

Address:	Epsom, KT19 9JJ
Area:	0.1 **Ha**
Site Reference:	LAA7

Current Use	Proposed Use
Car Park	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary

Fluvial / Tidal			Groundwater		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	100	% of Site
1 in 30*	8.19	% of Site	**Artificial**		
1 in 100*	10.65	% of Site			
1 in 1000*	15.41	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					14

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)

Parameter	FZ3b	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)

Parameter	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment

Parameter	1 in 30	1 in 100	1 in 1000	Units
Min. Depth	0.00 - 0.15	0.00 - 0.15	0.15 - 0.30	m
Max. Depth	0.15 - 0.30	0.15 - 0.30	0.30 - 0.60	m
Max. Velocity	0.00 - 0.25	0.25 - 0.50	0.25 - 0.50	m/s
Max. Hazard	0.50 - 0.75	0.75 - 1.25	0.75 - 1.25	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
•The site is at high risk of surface water flooding, particularly along Somerset Close at the centre of the site. •Climate change will increase the minimum and maximum surface water depth and maximum hazard of surface water flooding.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress
Safe access and egress routes should be directed to the north west of the site towards Hollymore Lane where there is a lower risk of flooding.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the central area of the site along Somerset Close where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Garages at Somerset Close & Westmorland Close

SEWER

Risk Assessment

- The site falls within a postcode area where there are 14 reported flood incidents from sewer flooding.
- The site is assumed to be served by separate surface water and foul sewer networks, given their proximity to the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having >75% susceptibility to groundwater flooding.
- The site is underlain by River Terrace superficial deposits and London Clay bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is changing from the 'Less vulnerable' to the 'More vulnerable' classification, as residential uses have been proposed.
- The site is mostly covered by impermeable areas with little green space. This offers an opportunity to improve flood attenuation through the new development.

D. How can the development reduce risk overall?

- Direct development away from central area of the site along Somerset Close.
- Safe access routes should be directed to the north west of the site towards Hollymore Lane where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

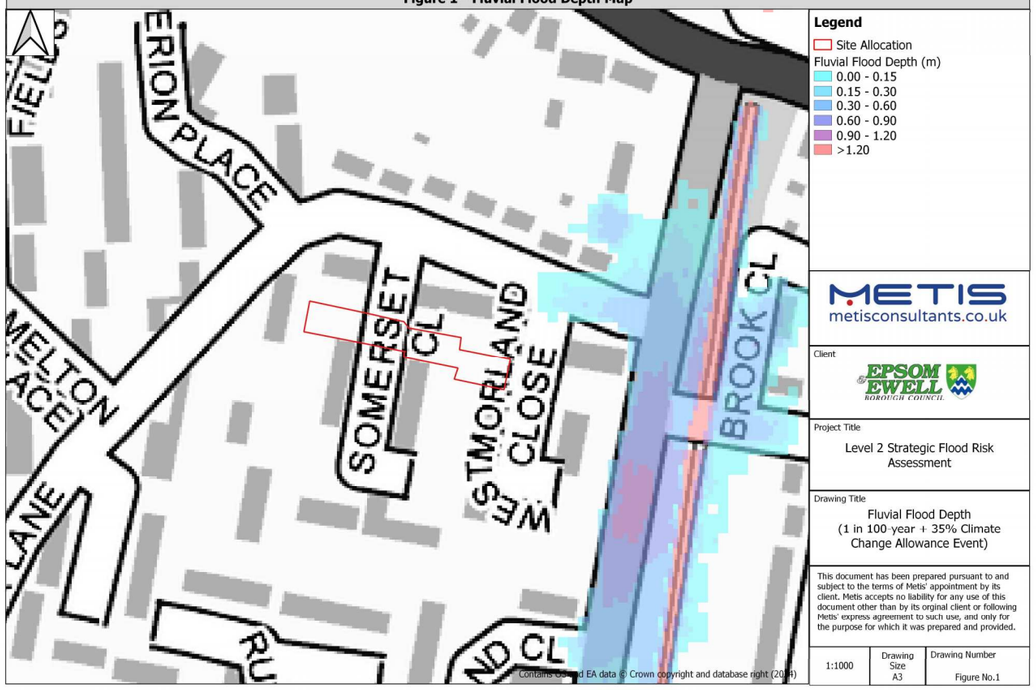


Figure 2 - Fluvial Flood Hazard Map

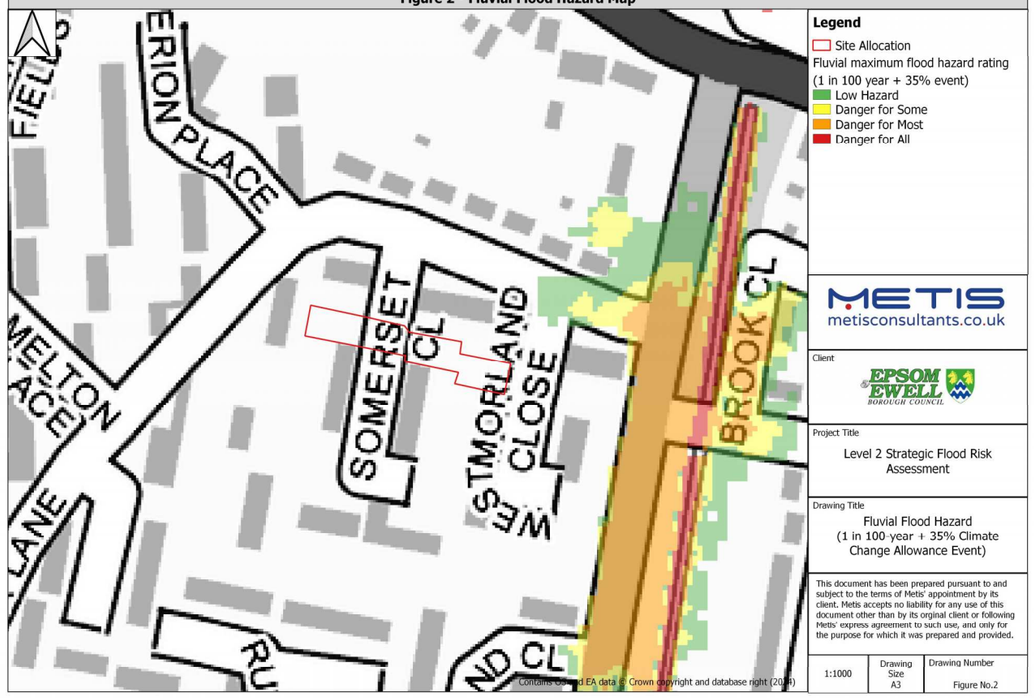


Figure 3 - RoFSW Flood Depth Map

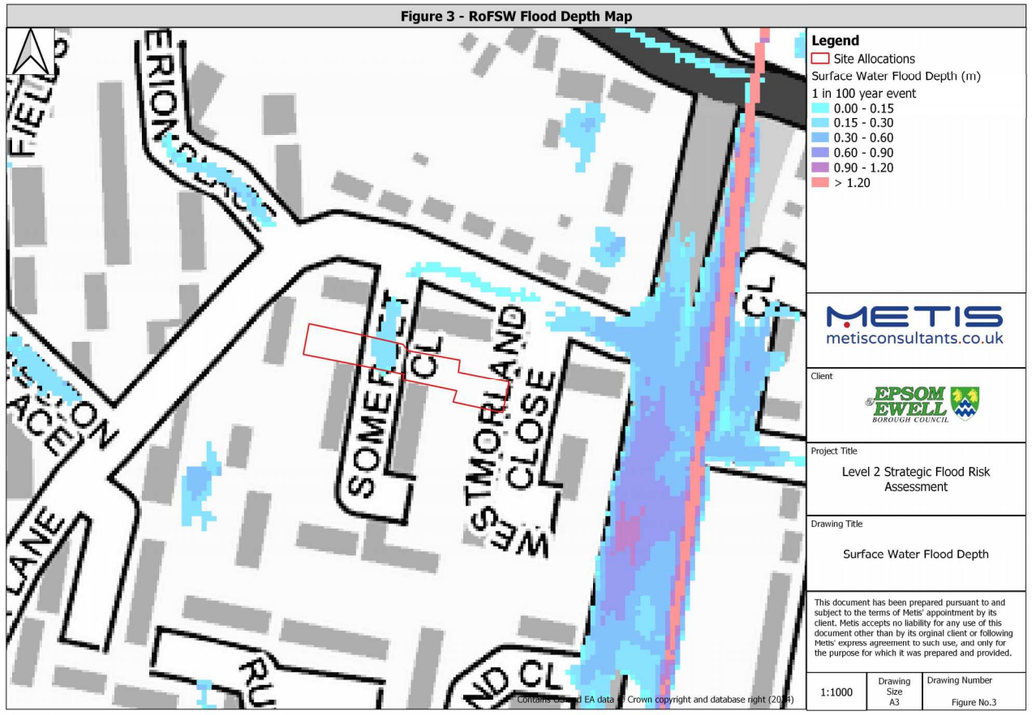


Figure 4 - RoFSW Flood Hazard Map

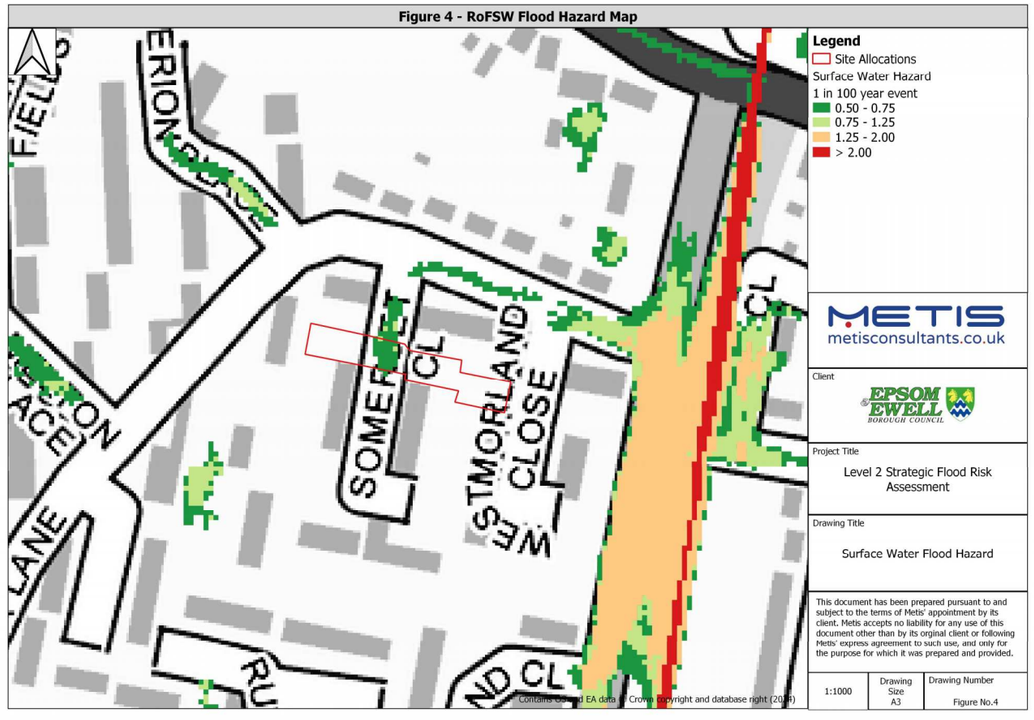
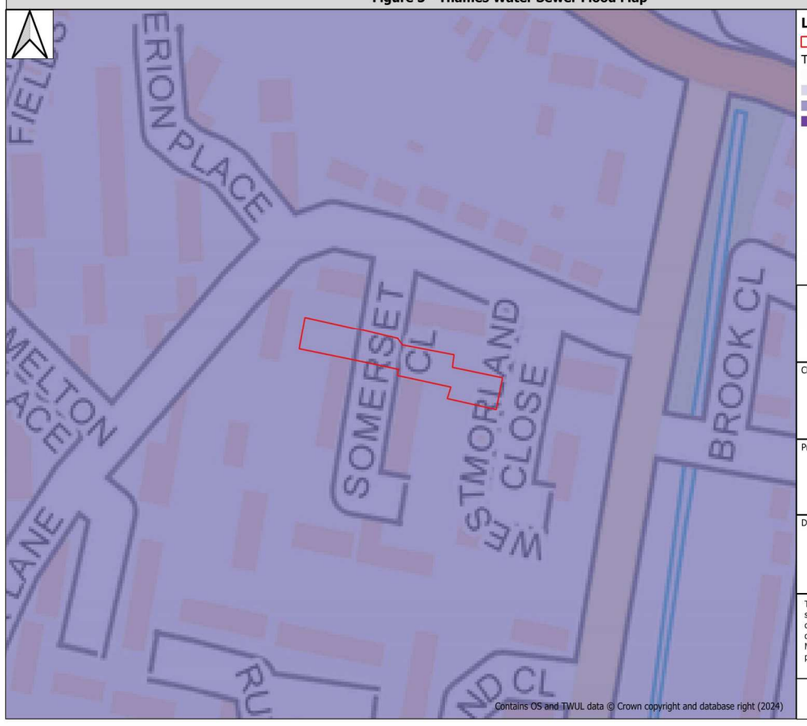


Figure 5 - Thames Water Sewer Flood Map



Legend
Site Allocations
Thames Water Sewer Flood Records
0 - 5
5 - 10
10 - 15
15 - 20

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Client
EPSOM & EWELL BOROUGH COUNCIL

Project Title
Level 2 Strategic Flood Risk Assessment

Drawing Title
Thames Water Sewer Flooding Records

1:1,000	Drawing Size A3	Drawing Number Figure No.5

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Legend
Site Allocations
Groundwater Flood Risk
< 25%
>= 25% <50%
>= 50% <75%
>= 75%

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Client
EPSOM & EWELL BOROUGH COUNCIL

Project Title
Level 2 Strategic Flood Risk Assessment

Drawing Title
Areas Susceptible to Groundwater Flooding

1:1000	Drawing Size A3	Drawing Number Figure No.6

Figure 7 - Reservoir Flood Map - Wet Day

Legend
Site Allocations
Reservoir Flood Extents (Wet Day)

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Client
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Project Title
Level 2 Strategic Flood Risk Assessment

Drawing Title
Reservoir Flood Extents (Wet Day)

1:1000	Drawing Size A3	Drawing Number Figure No.7

SITE ASSESSMENT - 46 The Avenue, Worcester Park

Address:	46 The Avenue, Worcester Park, KT4 7EY
Area:	0.15 **Ha**
Site Reference:	LAA8

Current Use	Proposed Use
Residential	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
More Vulnerable	More Vulnerable

Current Risk Summary

Fluvial / Tidal			Groundwater		
FZ2	0	% of Site	<25	100	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	0	% of Site	**Artificial**		
1 in 100*	0	% of Site			
1 in 1000*	10.28	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					0

* return periods for potential flood events

Flood Defences

Site is not in an area benefitting from flood defences.

Flood Warning Area

The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)

Parameter	FZ3b	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)

Parameter	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism

N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress

N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements

N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment

Parameter	1 in 30	1 in 100	1 in 1000	Units
Min. Depth	N/A	N/A	0.00 - 0.15	m
Max. Depth	N/A	N/A	0.30 - 0.60	m
Max. Velocity	N/A	N/A	0.50 - 1.00	m/s
Max. Hazard	N/A	N/A	0.75 - 1.25	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism

- The site is at low risk from surface water flooding, especially at the north of the existing building.
- Climate change will increase the minimum and maximum depth, maximum velocity and maximum hazard of surface water flooding.

Site Access / Egress

Safe access and egress routes should be directed to Shadbolt Close to the north west where there is a lower risk of flooding.

Figure 3 - RoFSW Flood Depth Map

Mitigation - Flood Risk Requirements

- Development should be directed away from the northern eastern and southern eastern areas of the site where there is higher risk of surface water flooding.
- See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Surface Water Drainage

- All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma.
- Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG).
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - 46 The Avenue, Worcester Park

SEWER

Risk Assessment

- The site is not predicted to be at sewer flood risk.
- The site falls within a postcode area where there are 0 reported flood incidents from sewer flooding.
- The site is assumed to be served by separate surface water and foul sewer networks, given their proximity to the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

N/A - No sewer flood risk is predicted at this site

GROUNDWATER

Risk Assessment

- The site is classified as having <25% susceptibility to groundwater flooding.
- The site is underlain by River Terrace superficial deposits and London Clay Formation bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is not changing. It is proposed to be used for residential uses.
- The site is covered partially by impermeable areas, but there are also gardens and green spaces throughout the site.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from northern eastern and southern eastern areas of the site where there is higher risk of surface water flooding.
- Safe access routes should be directed to Shadbolt Close to the north west.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

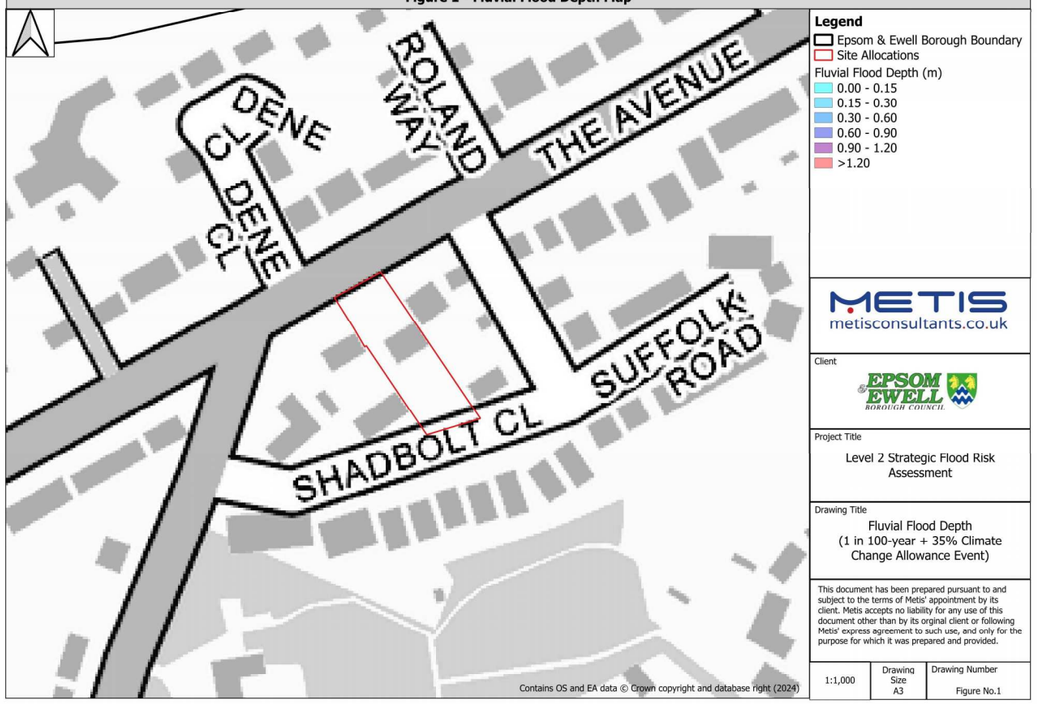


Figure 2 - Fluvial Flood Hazard Map

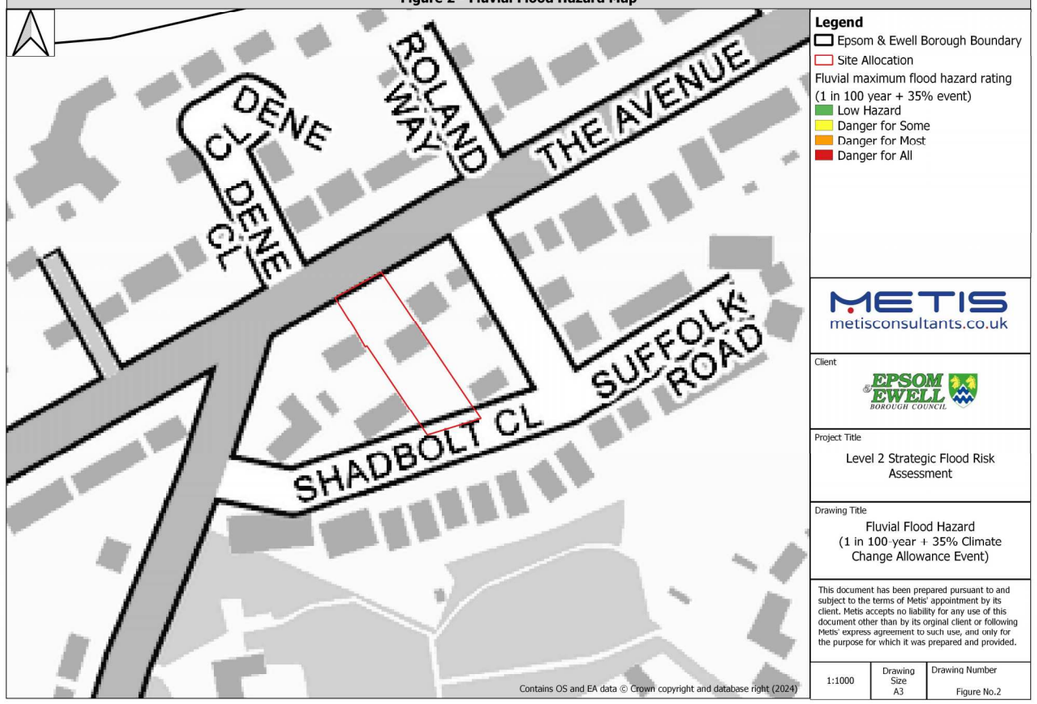


Figure 3 - RoFSW Flood Depth Map

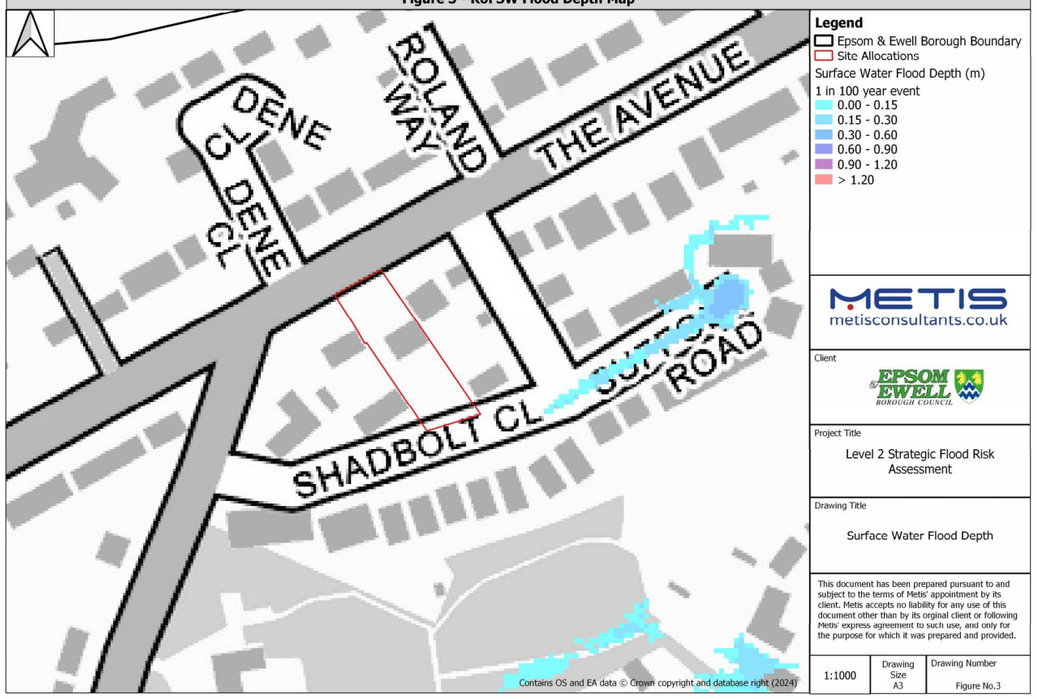


Figure 4 - RoFSW Flood Hazard Map

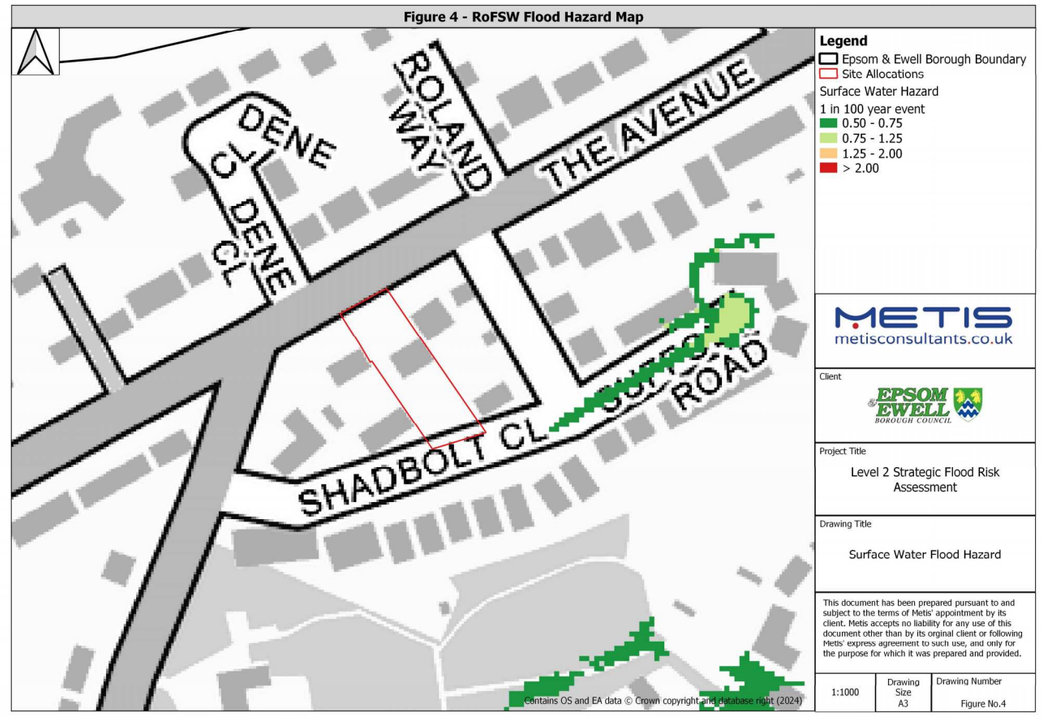
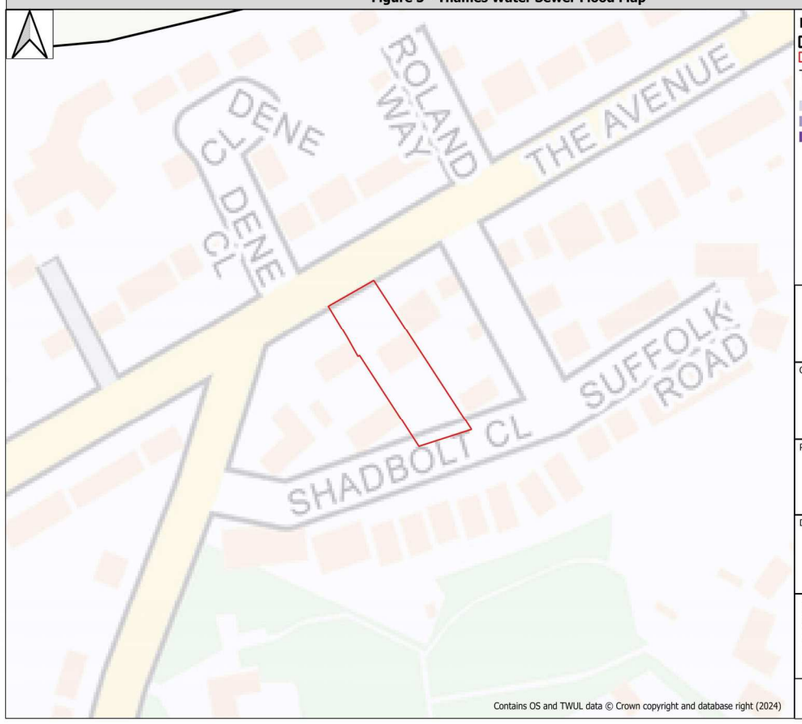


Figure 5 - Thames Water Sewer Flood Map



Legend
- Epsom & Ewell Borough Boundary
- Site Allocations

Thames Water Sewer Flood Records
- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20

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Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Thames Water Sewer Flooding Records

1:1,000	Drawing Size A3	Drawing Number Figure No.5

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Legend
- Epsom & Ewell Borough Boundary
- Site Allocations

Groundwater Flood Risk
- < 25%
- >= 25% <50%
- >= 50% <75%
- >= 75%

METIS metisconsultants.co.uk

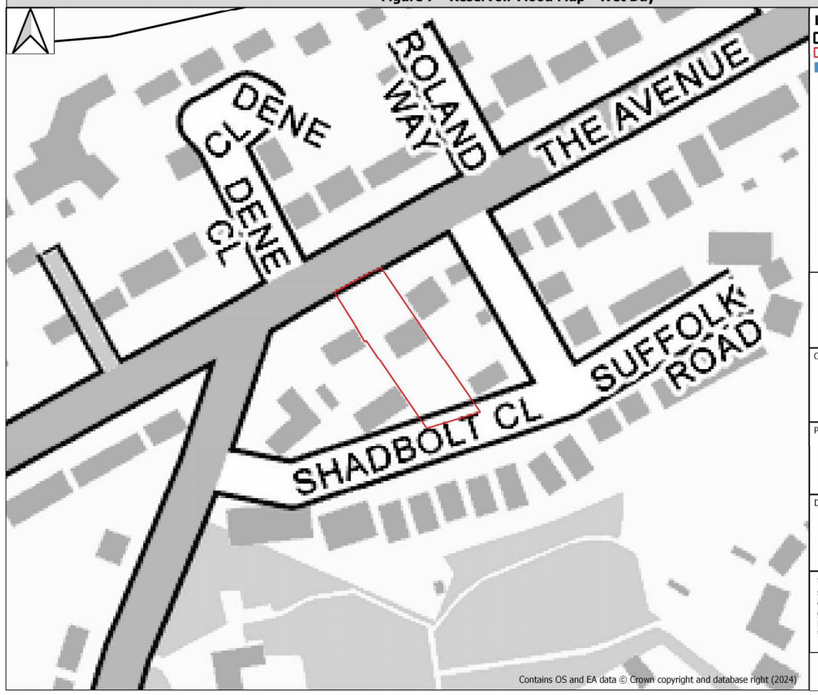
Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Areas Susceptible to Groundwater Flooding

1:1000	Drawing Size A3	Drawing Number Figure No.6

Figure 7 - Reservoir Flood Map - Wet Day



Legend
- Epsom & Ewell Borough Boundary
- Site Allocations
- Reservoir Flood Extents (Wet Day)

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Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Reservoir Flood Extents (Wet Day)

1:1000	Drawing Size A3	Drawing Number Figure No.7

SITE ASSESSMENT - Hatch Furlong Nursey

Address: Castle Way, Ewell, KT17 2PG

Area: 0.52 **Ha**

Site Reference: NON004

Current Use	Proposed Use
Brownfield/Greenfield	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	100	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	8.25	% of Site	**Artificial**		
1 in 100*	12.18	% of Site			
1 in 1000*	33.95	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					20

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	m
Max. Depth	0.30 - 0.60	0.30 - 0.60	0.60 - 0.90	m
Max. Velocity	0.50 - 1.00	0.50 - 1.00	1.00 - 2.00	m/s
Max. Hazard	1.25 - 2.00	1.25 - 2.00	> 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
• The site is at high risk of surface water flooding in the northern areas of the site. • Climate change will increase the maximum surface water depth, maximum velocity and maximum hazard of surface water flooding.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress
Safe access and egress routes should be directed to the south of the site towards Cheam Road and the Ewell By-Pass where there is a lower risk of flooding.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the northern areas of the site where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Hatch Furlong Nursey

SEWER

Risk Assessment

• The site falls within a postcode areas KT17 1 where there are 20 reported flood incidents from sewer flooding and KT17 1 where there are 9 reported flood incidents.
• The site is assumed to be served by separate surface water and foul sewer networks, given their proximity to the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

• Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
• Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

• The site is classified as having 25-50% susceptibility to groundwater flooding.
• The site is underlain by Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

• Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
• If there is a potential level of impact, mitigation actions must be proposed.
• Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

• This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?
• Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?
• Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

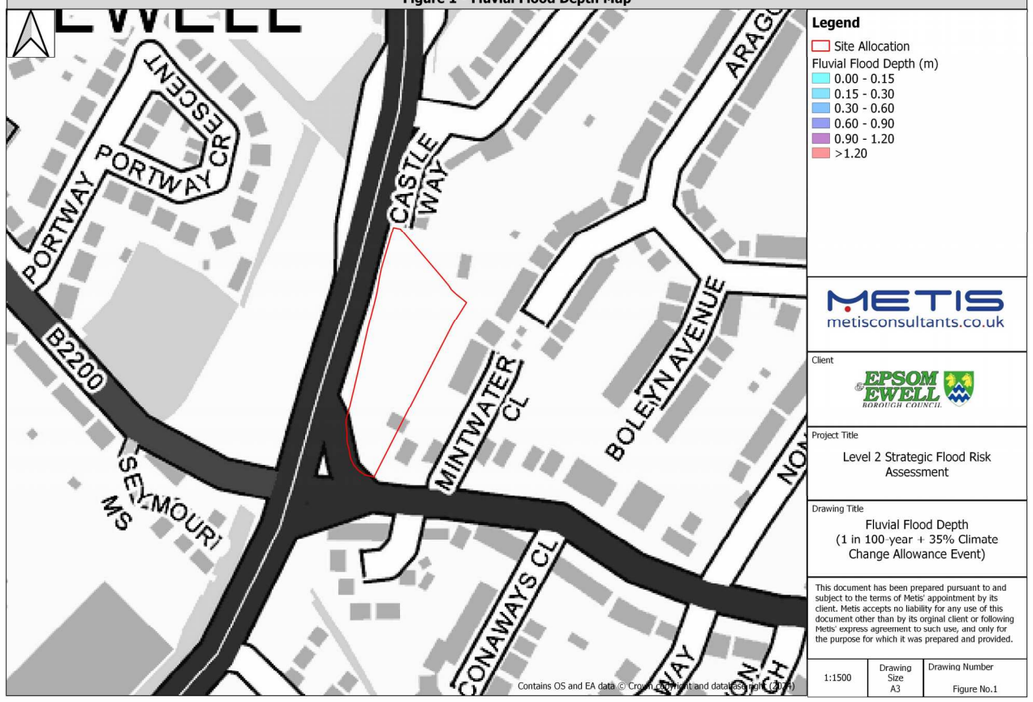
C. What is the cumulative impact of the development land use change and will flood risk increase?
• The development land use is changing from the 'Less vulnerable' to the 'More vulnerable' classification, as residential uses have been proposed.
• The site is currently a brownfield site with hardstanding areas and little green space. This offers an opportunity to improve flood attenuation through the new development.
• Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?
• Direct development away from northern areas of the site.
• Safe access routes should be directed to the south of the site towards Cheam Road and the Ewell By-Pass where there is a lower risk of flooding.
• Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
• By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?
• No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?
• The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map



METIS
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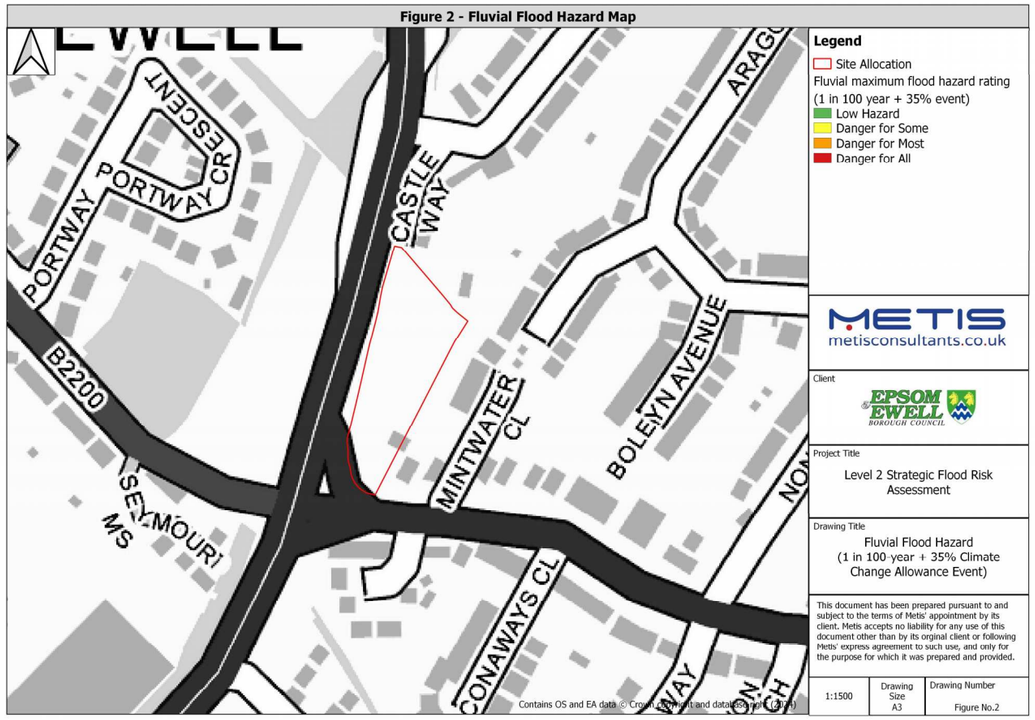
Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Fluvial Flood Depth (1 in 100 year + 35% Climate Change Allowance Event)

1:1500	Drawing Size A3	Drawing Number Figure No.1

Figure 2 - Fluvial Flood Hazard Map



METIS
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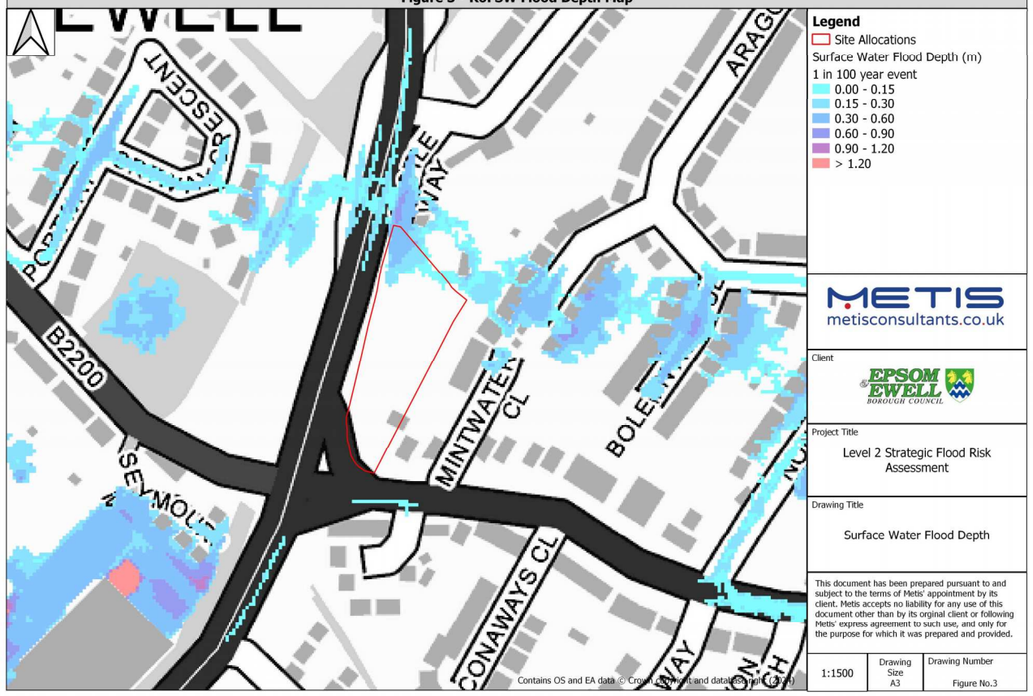
Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Fluvial Flood Hazard (1 in 100 year + 35% Climate Change Allowance Event)

1:1500	Drawing Size A3	Drawing Number Figure No.2

Figure 3 - RoFSW Flood Depth Map



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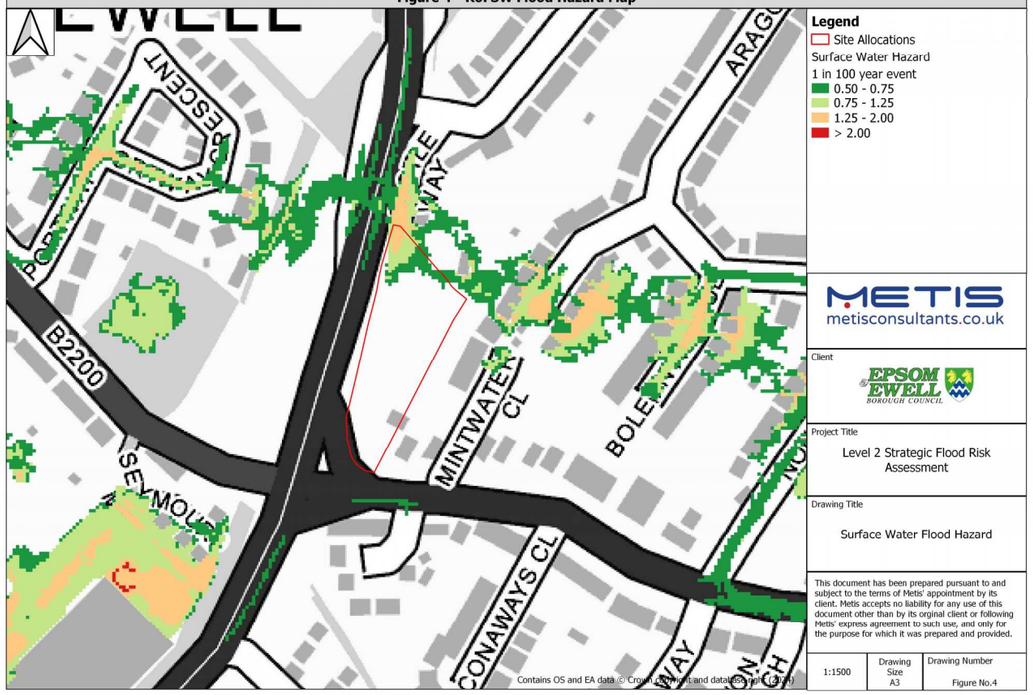
Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Surface Water Flood Depth

1:1500	Drawing Size A3	Drawing Number Figure No.3

Figure 4 - RoFSW Flood Hazard Map



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Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Surface Water Flood Hazard

1:1500	Drawing Size A3	Drawing Number Figure No.4

Figure 5 - Thames Water Sewer Flood Map

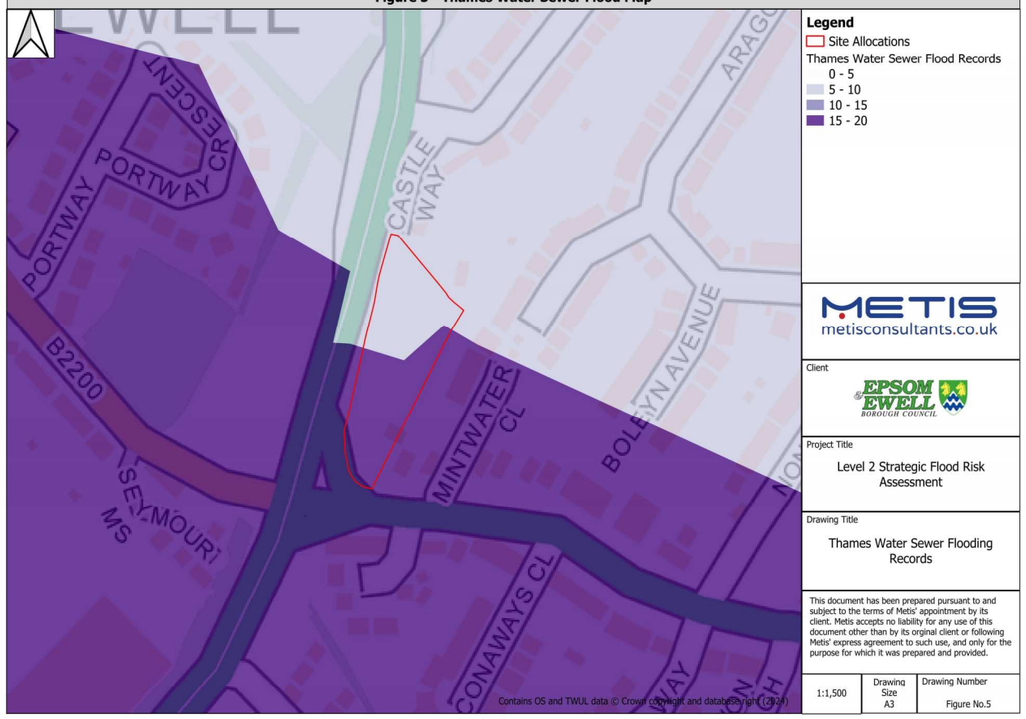


Figure 6 - Areas Susceptible to Groundwater Flooding Map

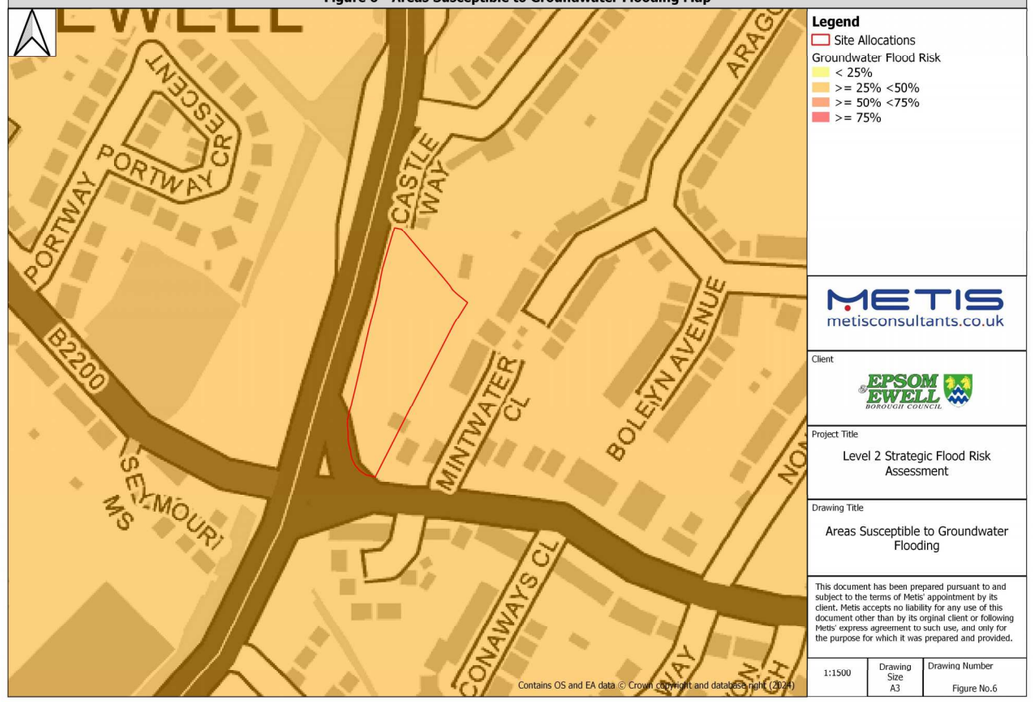
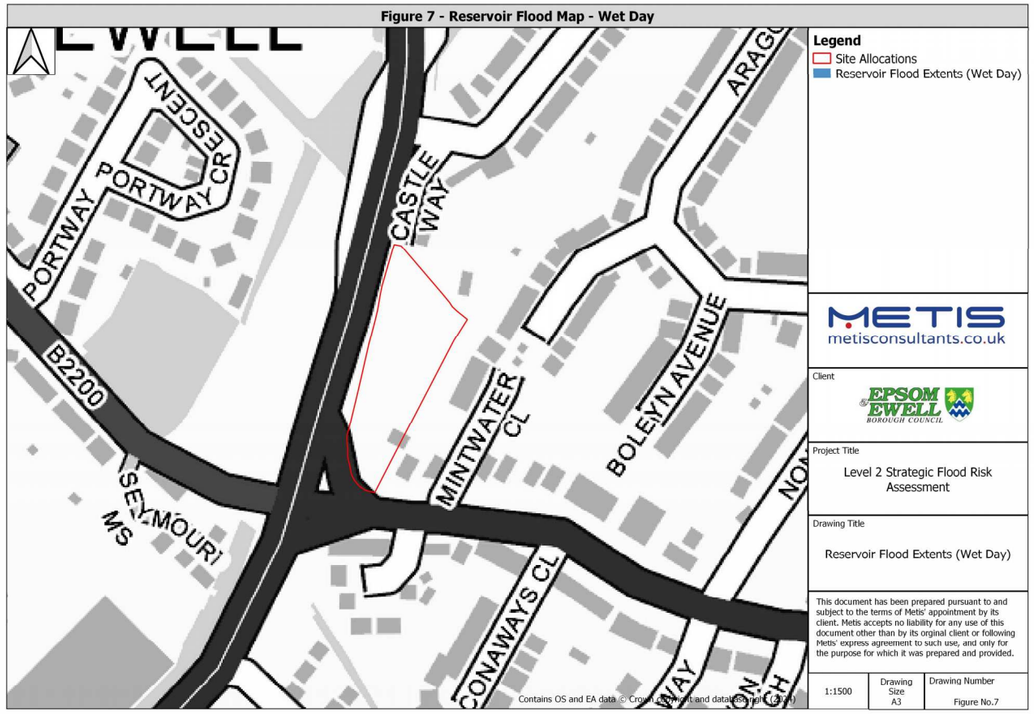


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - SGN + Depot Road + 20 Hook Rd

Address:	Epsom, KT19 8TH
Area:	2.09 **Ha**
Site Reference:	TOW001 + TOW022 + TOW55

Current Use	Proposed Use
Mixed use (Housing and Services)	Mixed use (Housing, Leisure, Commercial)

Current Vulnerability Classification	Proposed Vulnerability Classification
More Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	100	% of Site
Surface Water			>75	0	% of Site
1 in 30*	5.65	% of Site	**Artificial**		
1 in 100*	13.09	% of Site			
1 in 1000*	29.67	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					20

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	m
Max. Depth	0.60 - 0.90	0.60 - 0.90	> 1.20	m
Max. Velocity	1.00 - 2.00	1.00 - 2.00	> 2.00	m/s
Max. Hazard	1.25 - 2.00	1.25 - 2.00	> 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
• The site is at high risk of surface water flooding, particularly in the western parts of the site. • Climate change will increase the maximum depth, maximum velocity and maximum hazard of surface water flooding.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress
Safe access and egress routes should be directed to the northeast of the site towards East Street where there is a lower risk of flooding.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the western areas of the site where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - SGN + Depot Road + 20 Hook Rd

SEWER

Risk Assessment

- The site falls within a postcode area where there are 20 reported flood incidents from sewer flooding.
- The site is assumed to be served by separate surface water and foul sewer networks, given their proximity to the site. There are also combined sewers nearby the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having 50-75% susceptibility to groundwater flooding.
- The site is underlain by River Terrace superficial deposits and Lambeth Group bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The land use flood vulnerability classification will stay the same with the new development.
- The site is mostly covered by impermeable areas with little green space. This offers an opportunity to improve flood attenuation through the new development.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from western areas of the site.
- Safe access routes should be directed to the northeast of the site towards East Street where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

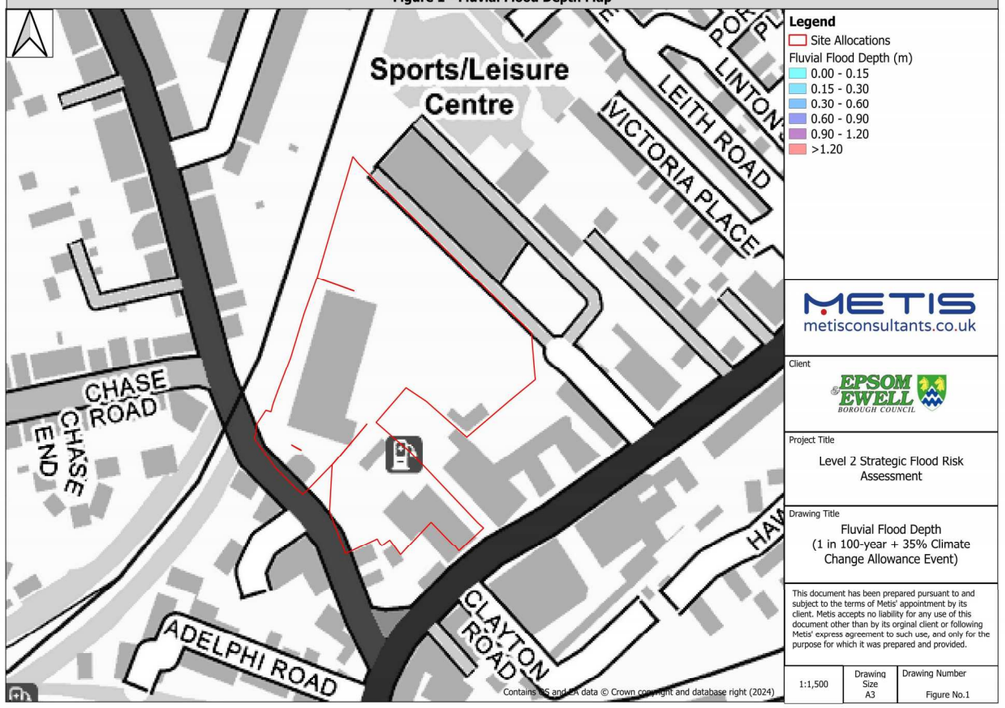


Figure 2 - Fluvial Flood Hazard Map

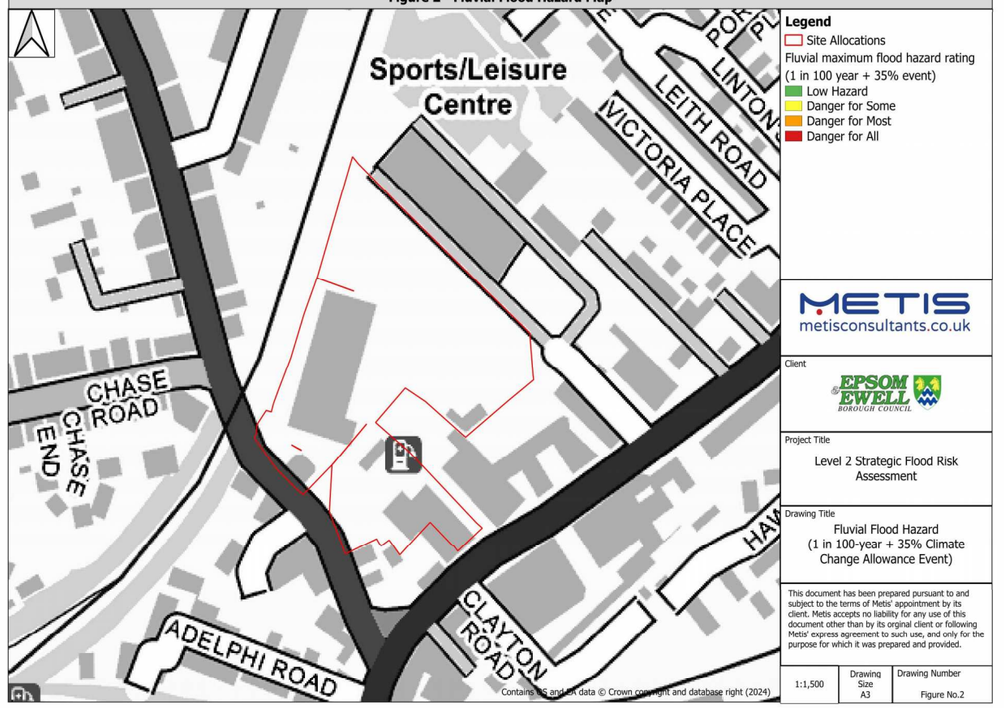


Figure 3 - RoFSW Flood Depth Map

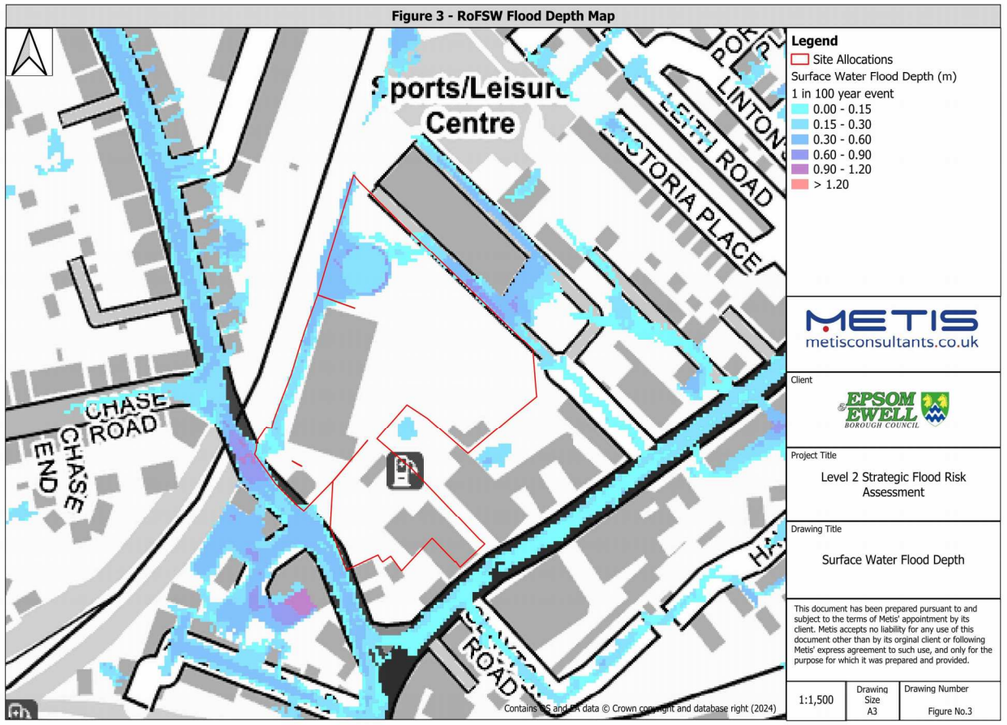


Figure 4 - RoFSW Flood Hazard Map

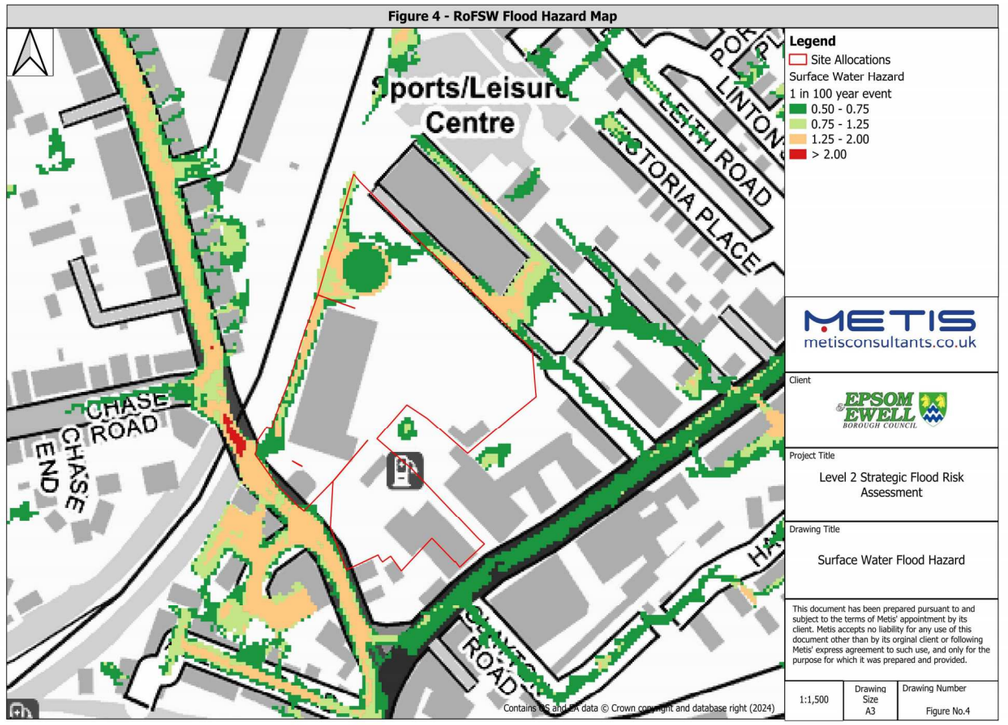


Figure 5 - Thames Water Sewer Flood Map

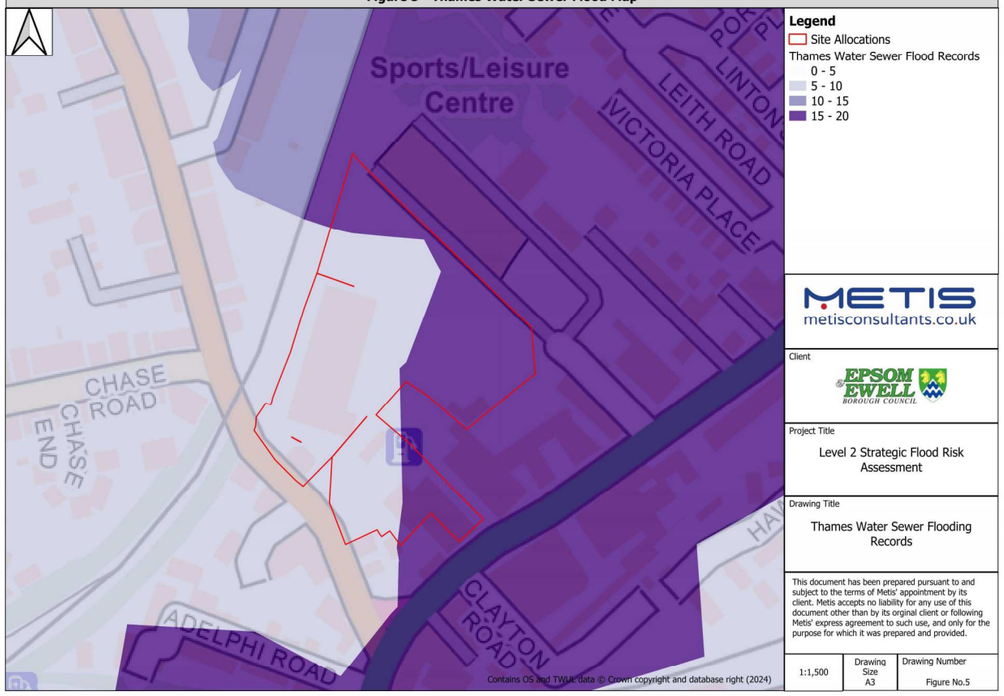


Figure 6 - Areas Susceptible to Groundwater Flooding Map

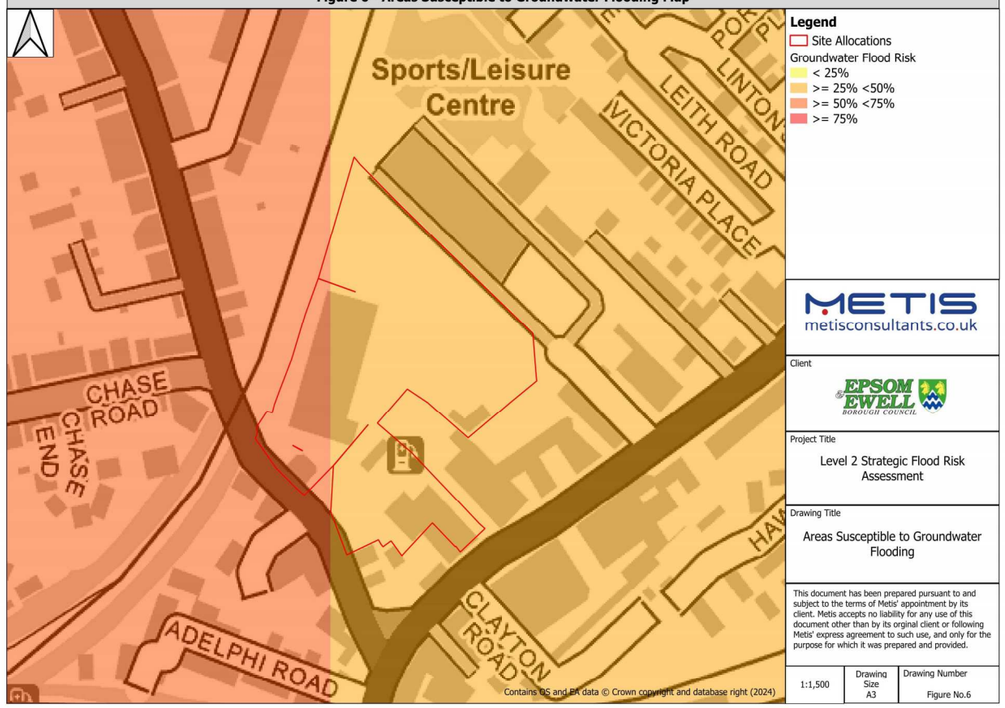
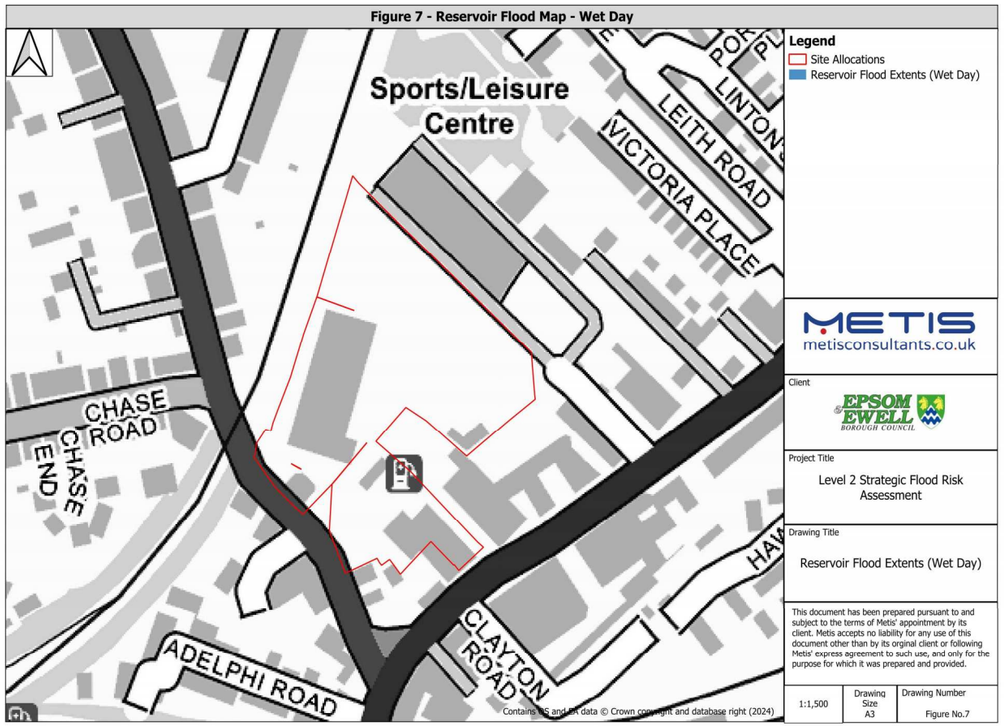


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Depot Rd and Upper High Street

Address: Depot Road, Epsom, KT17 4RN

Area:	1.24 **Ha**
Site Reference:	TOW004

Current Use	Proposed Use
Car Park	Residential and decked car park

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	100	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	0	% of Site	**Artificial**		
1 in 100*	0.06	% of Site	Reservoir	No	At risk?
1 in 1000*	15.38	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					6

* return periods for potential flood events

Flood Defences
There are no flood defences in the vicinity of the site.

Flood Warning Area
The EA Flood Warning Service is not available at this site

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.15 - 0.30	0.00 - 0.15	< 0.15	m
Max. Depth	0.15 - 0.30	0.15 - 0.30	0.60 - 0.90	m
Max. Velocity	0.00 - 0.25	0.00 - 0.25	1.00 - 2.00	m/s
Max. Hazard	0.50 - 0.75	0.75 - 1.25	1.25 - 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
• The site is at low risk of surface water flooding in the northern and south western areas of complex. Church Street and Pikes Hill are at high risk of surface water flooding (in the 1 in 30 year event). The eastern part of Upper High Street is also at high risk. • Climate change is predicted to increase the maximum flood depth, hazard and velocity at the site.

Site Access / Egress
Safe access and egress routes should be directed to the western part of Upper High Street where there is a lower risk of flooding. Egress should not be directed towards the eastern part of Upper High Street.

Figure 3 - RoFSW Flood Depth Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the northern and south western areas of the site where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Depot Rd and Upper High Street

SEWER

Risk Assessment

- The site falls within a postcode area where there are 6 reported flood incidents from sewer flooding.
- The site is served by separate surface water and foul sewer networks.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having >=25% <50% susceptibility to groundwater flooding.
- The site is underlain by Thanet Formation - Sand bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is moving from classification 'Less Vulnerable' to 'More Vulnerable' as residential uses have been proposed.
- The site is currently a brownfield site with hardstanding areas and little green space. This offers an opportunity to improve flood attenuation through the new development.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from the northern and south western areas of the site where there is a higher risk of surface water flooding.
- Safe access and egress routes should be directed to the western part of Upper High Street. Egress should not be directed to the eastern part of Upper High Street.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- Exception test not required as site is not located in Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

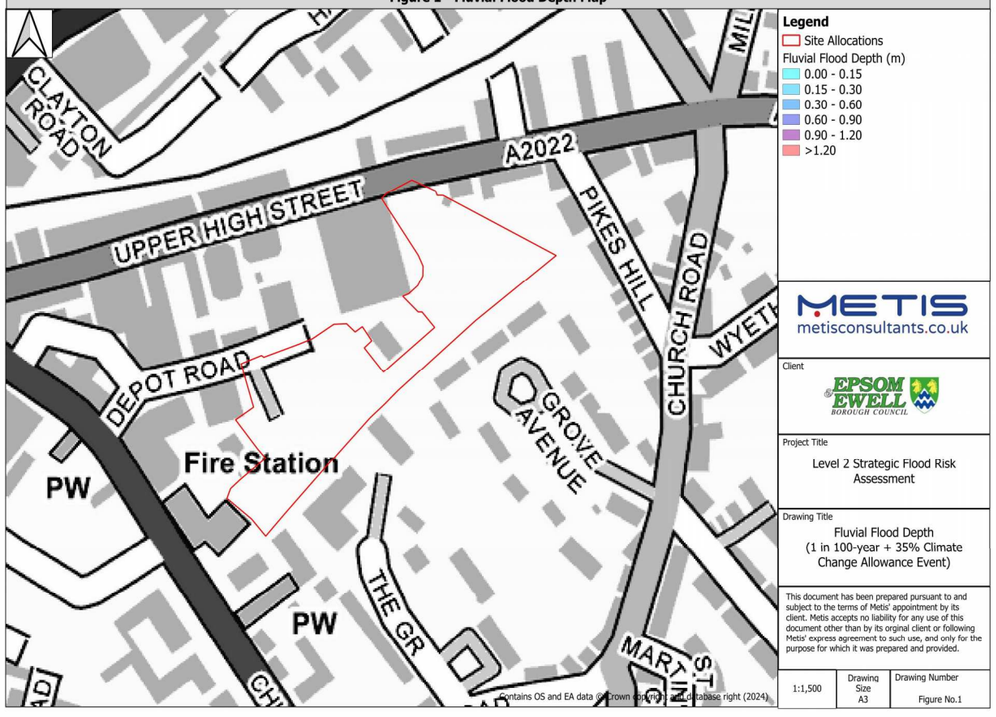


Figure 2 - Fluvial Flood Hazard Map

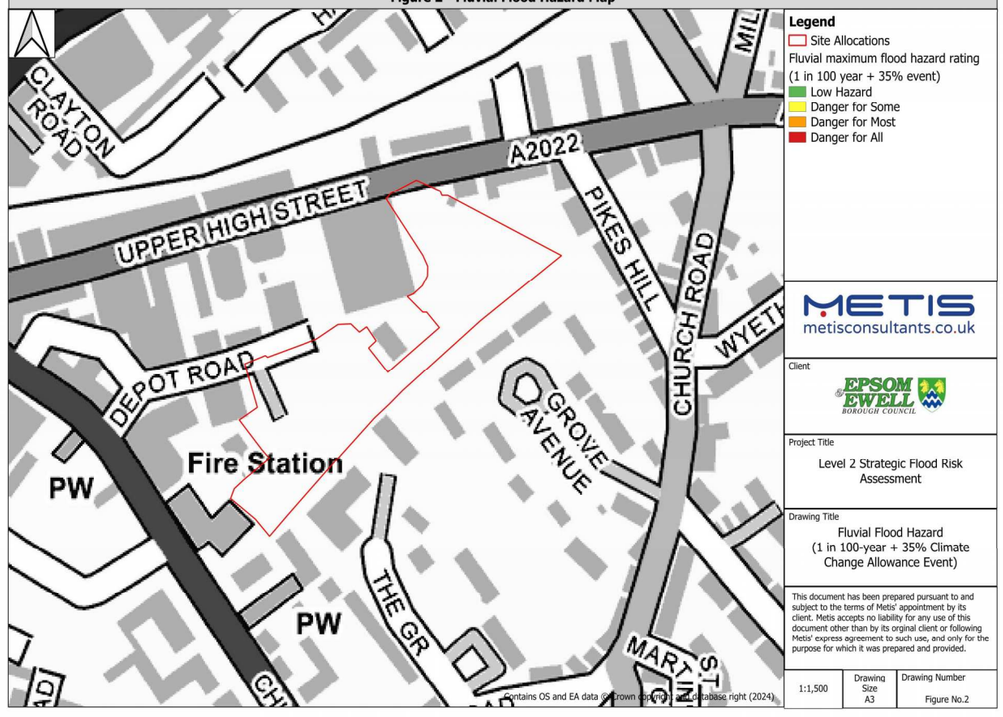


Figure 3 - RoFSW Flood Depth Map

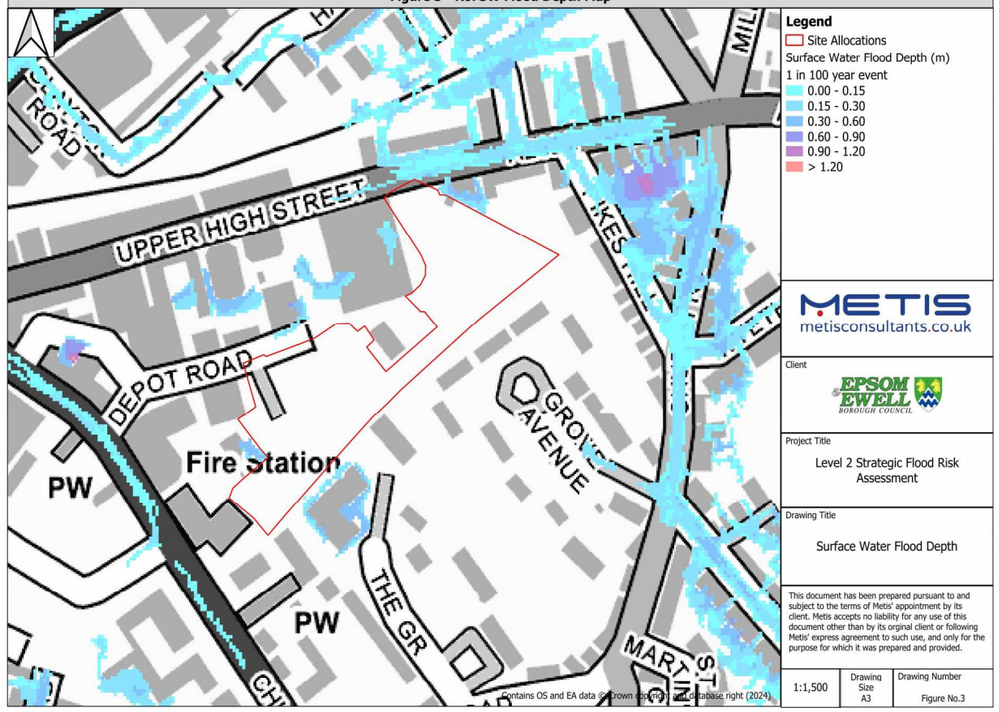


Figure 4 - RoFSW Flood Hazard Map

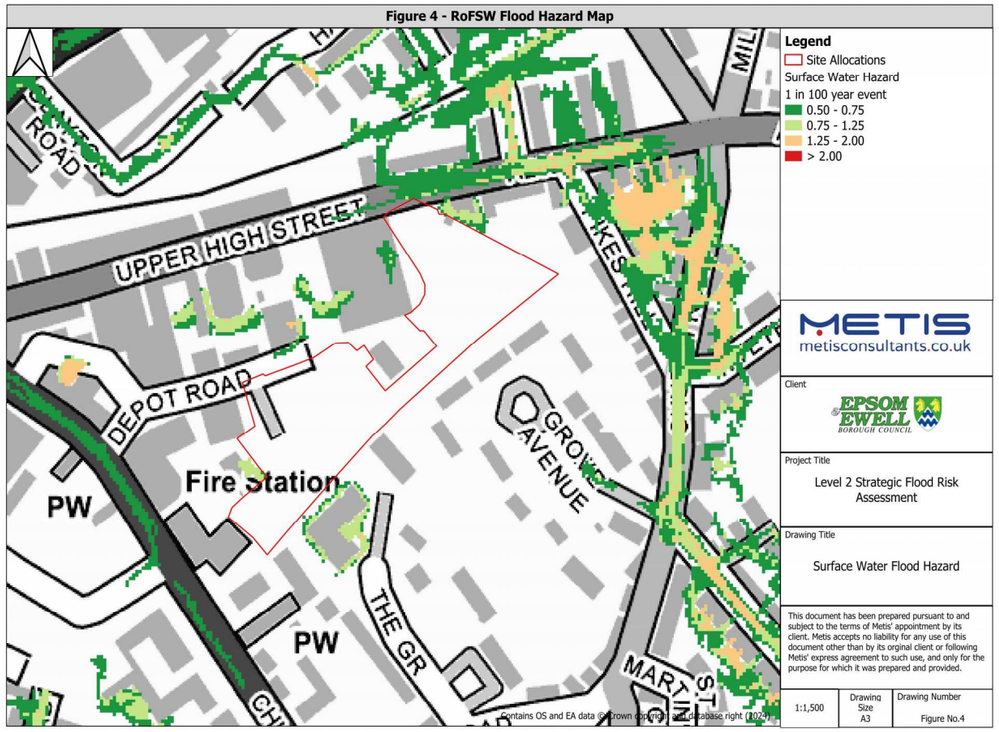


Figure 5 - Thames Water Sewer Flood Map

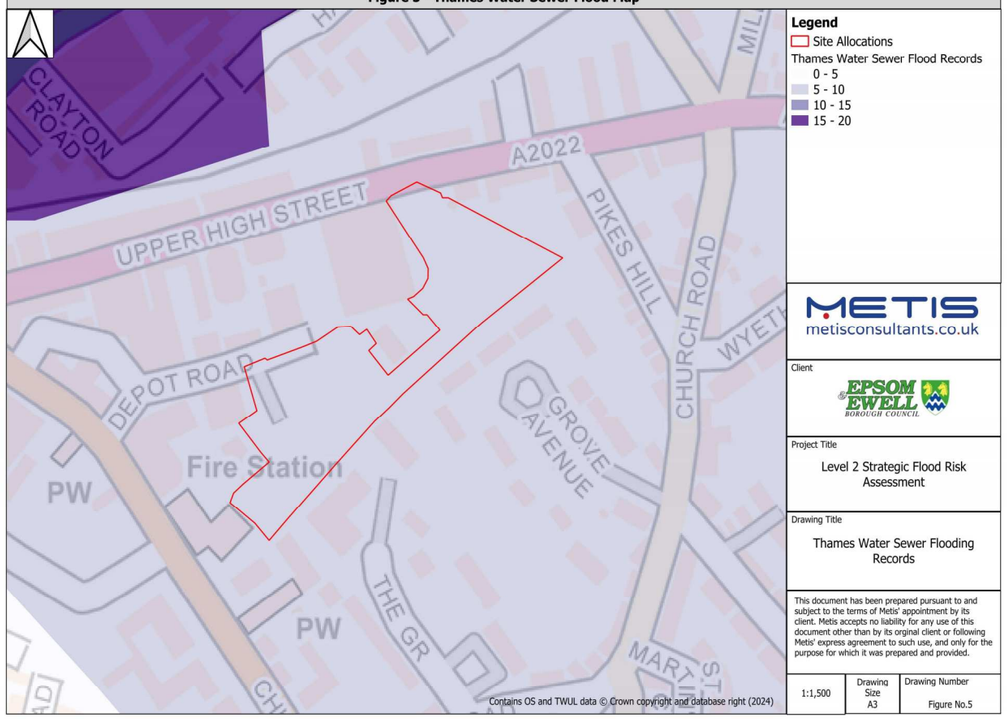


Figure 6 - Areas Susceptible to Groundwater Flooding Map

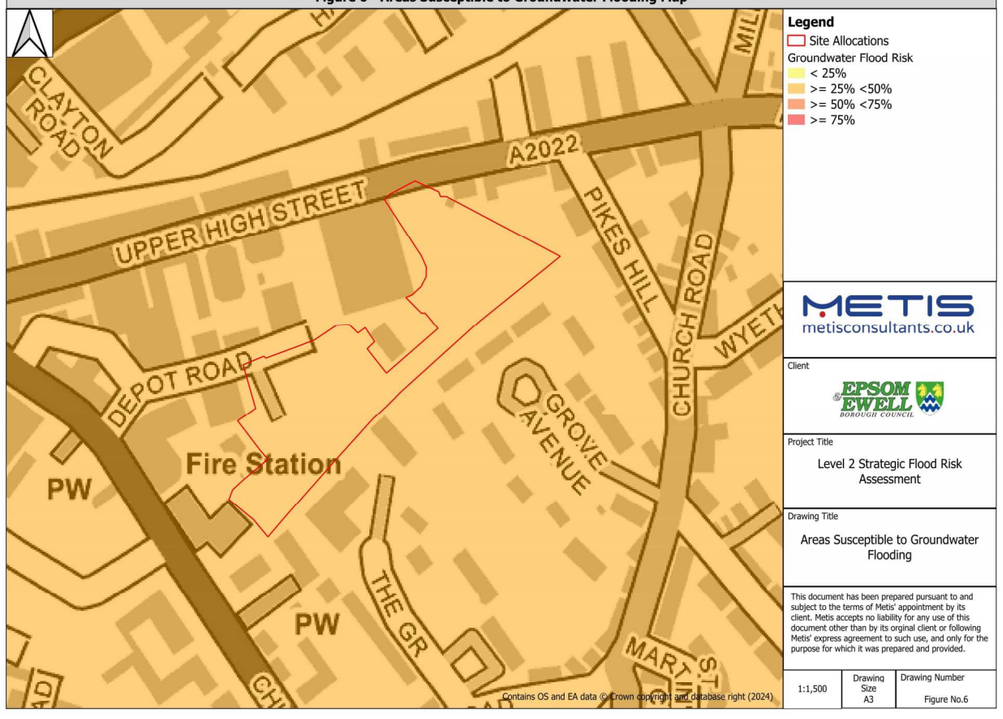
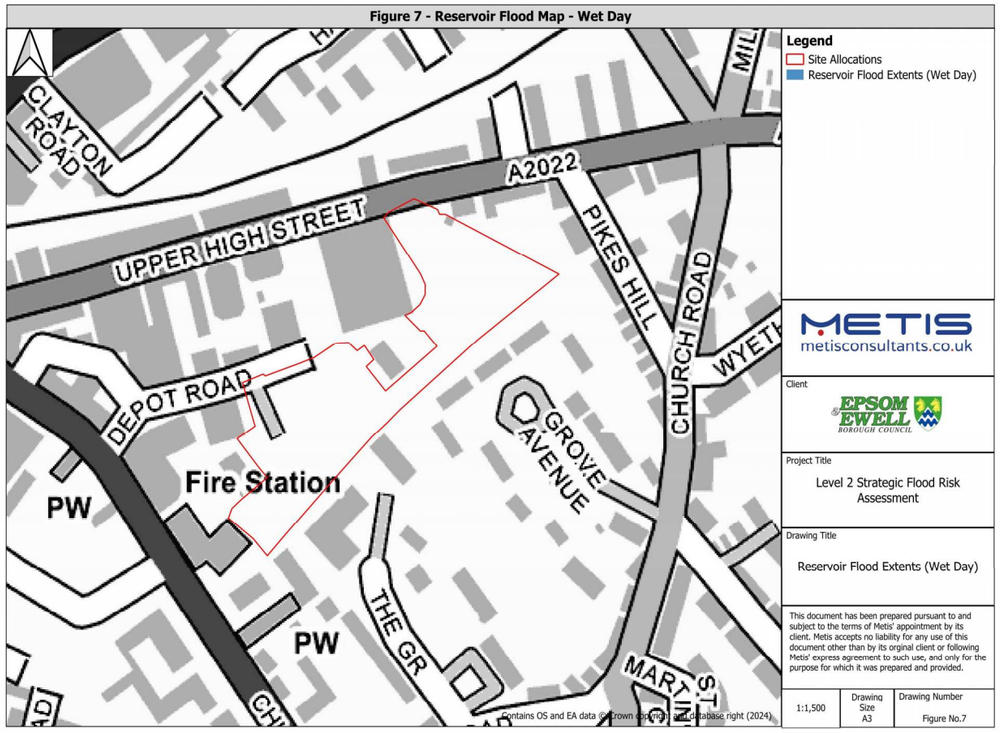


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Swail House

Address: 15 Ashley Road, Epsom, KT18 5AZ

Area:	1.05 **Ha**
Site Reference:	TOW010

Current Use	Proposed Use
Services	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	100	% of Site
Surface Water			>75	0	% of Site
1 in 30*	7.69	% of Site	**Artificial**		
1 in 100*	16.49	% of Site			
1 in 1000*	53.78	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					1

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.00 - 0.15	0.00 - 0.15	0.15 - 0.30	m
Max. Depth	> 1.20	> 1.20	> 1.20	m
Max. Velocity	0.50 - 1.00	1.00 - 2.00	> 2.00	m/s
Max. Hazard	1.25 - 2.00	> 2.00	> 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
• The site is at high risk of surface water flooding, particularly along the central and northern areas of the site. Ashley Road is at high risk of flooding. • Climate change will increase maximum velocity of surface water flooding.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress
Safe access and egress routes should be directed to the southeast of the site towards Heathcote Road where there is a lower risk of flooding.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the central and northern areas of the site where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Swail House

SEWER

Risk Assessment

• The site falls within a postcode area where there is 1 reported flood incident from sewer flooding.
• The site is assumed to be served by separate surface water and foul sewer networks, given their proximity to the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

• Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
• Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

• The site is classified as having 50-75% susceptibility to groundwater flooding.
• The site is underlain by River Terrace superficial deposits, Lambeth Group bedrock geology to the west of the site and Thanet Formation bedrock geology to the east of the site.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

• Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
• If there is a potential level of impact, mitigation actions must be proposed.
• Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

• This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?
• Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?
• Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?
• The development land use is changing from the 'Less vulnerable' to the 'More vulnerable' classification, as residential uses have been proposed.
• The site is covered by impermeable areas and green space.
• Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?
• Direct development away from the central and northern areas of the site.
• Safe access routes should be directed to the southeast of the site towards Heathcote Road where there is a lower risk of flooding.
• Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
• By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?
• No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?
• The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

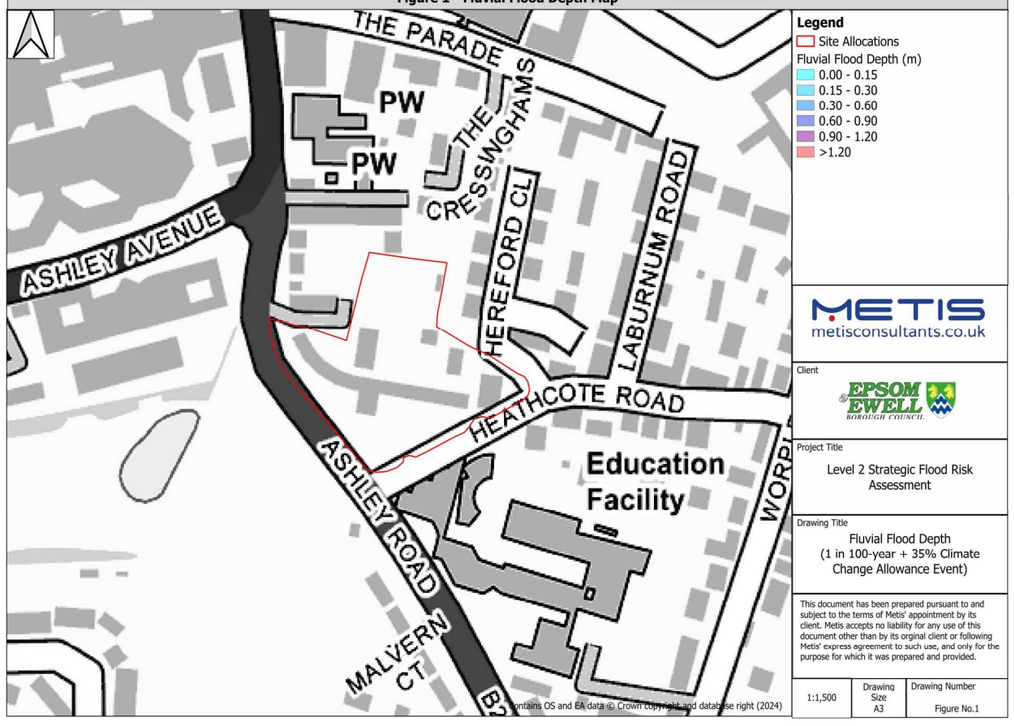


Figure 2 - Fluvial Flood Hazard Map

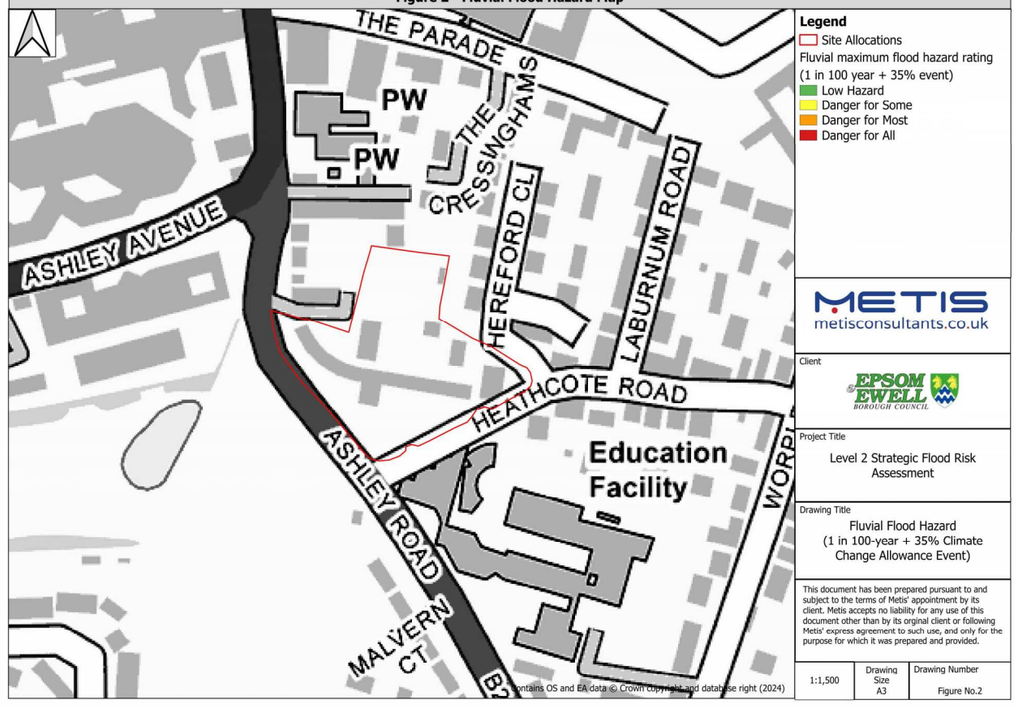


Figure 3 - RoFSW Flood Depth Map

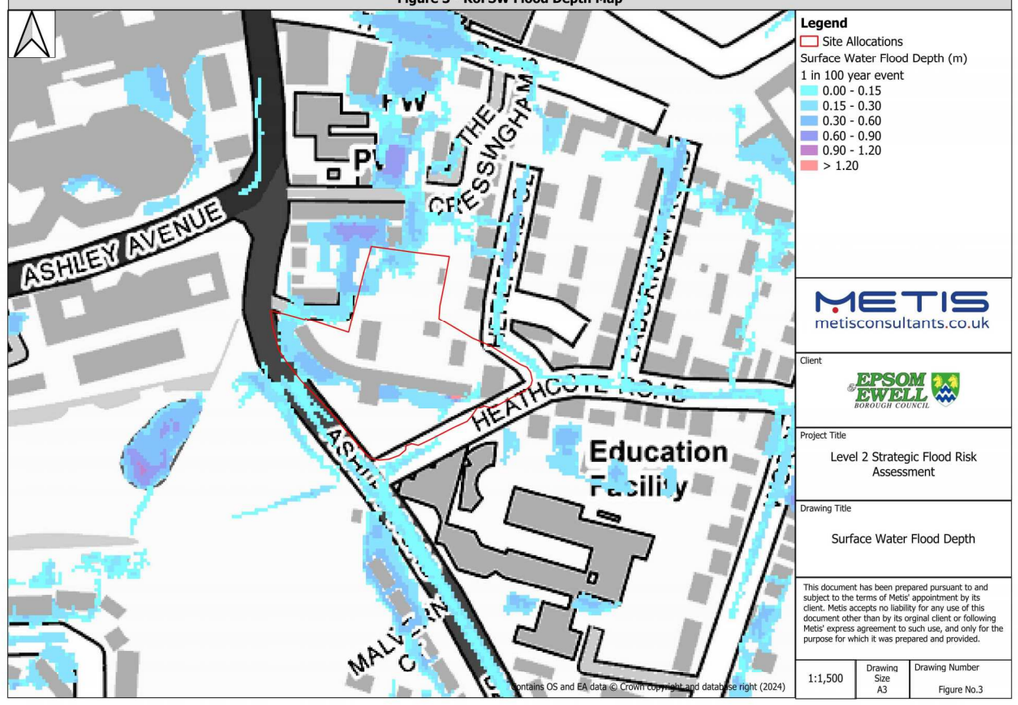


Figure 4 - RoFSW Flood Hazard Map

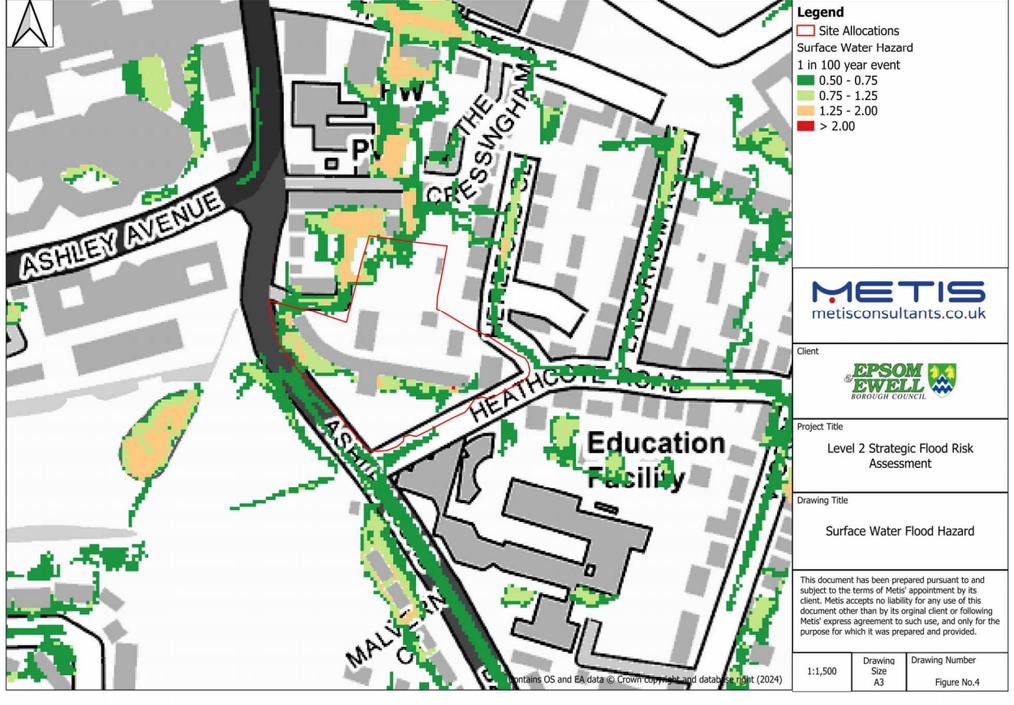


Figure 5 - Thames Water Sewer Flood Map

Legend
Site Allocations
Thames Water Sewer Flood Records
0 - 5
5 - 10
10 - 15
15 - 20

METIS
metisconsultants.co.uk

Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Thames Water Sewer Flooding Records

1:1,500	Drawing Size A3	Drawing Number Figure No.5

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Legend
Site Allocations
Groundwater Flood Risk
< 25%
>= 25% <50%
>= 50% <75%
>= 75%

METIS
metisconsultants.co.uk

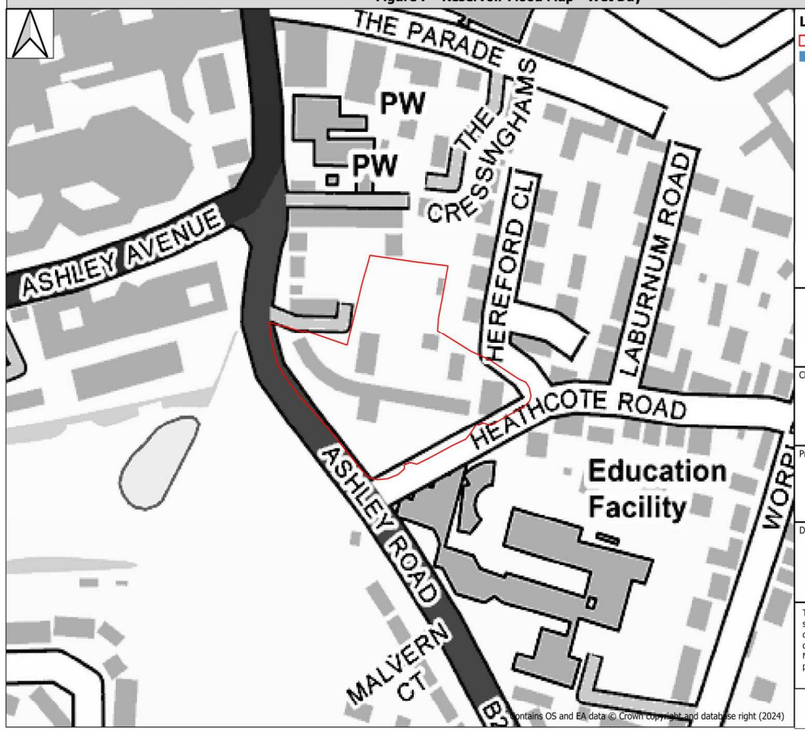
Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Areas Susceptible to Groundwater Flooding

1:1,500	Drawing Size A3	Drawing Number Figure No.6

Figure 7 - Reservoir Flood Map - Wet Day



Legend
Site Allocations
Reservoir Flood Extents (Wet Day)

METIS
metisconsultants.co.uk

Client: Epsom & Ewell Borough Council

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Reservoir Flood Extents (Wet Day)

1:1,500	Drawing Size A3	Drawing Number Figure No.7

SITE ASSESSMENT - Finachem House, 2-4 Ashley Road

Address:	2-4 Ashley Road, Epsom, KT18 5AX
Area:	0.12 **Ha**
Site Reference:	TOW020

Current Use	Proposed Use
Services	Housing and commercial space

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	100	% of Site
Surface Water			>75	0	% of Site
1 in 30*	0	% of Site	**Artificial**		
1 in 100*	11.96	% of Site			
1 in 1000*	15.66	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					1

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	N/A	0.15 - 0.30	0.00- 0.15	m
Max. Depth	N/A	0.30 -0.60	0.30 - 0.60	m
Max. Velocity	N/A	0.00 - 0.25	1.00 - 2.00	m/s
Max. Hazard	N/A	0.75 - 1.25	0.75 - 1.25	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
• The site is at medium risk of surface water flooding, particularly along the west of the site. • Climate change will increase the maximum velocity of surface water flooding.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress
Safe access and egress routes should be directed to the south of the site towards Ashley Avenue where there is a lower risk of flooding.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the western areas of the site where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Finachem House, 2-4 Ashley Road

SEWER

Risk Assessment

- The site falls within a postcode area where there is 1 reported flood incident from sewer flooding.
- The site is assumed to be served by separate surface water and foul sewer networks, given their proximity to the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having 50-75% susceptibility to groundwater flooding.
- The site is underlain by River Terrace superficial deposits and Lambeth Group bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- **The development land use is changing from the 'Less vulnerable' to the 'More vulnerable' classification, as residential uses have been proposed.**
- The site is mostly covered by impermeable areas with little green space. This offers an opportunity to improve flood attenuation through the new development.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from western areas of the site.
- Safe access routes should be directed to the south of the site towards Ashley Avenue where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

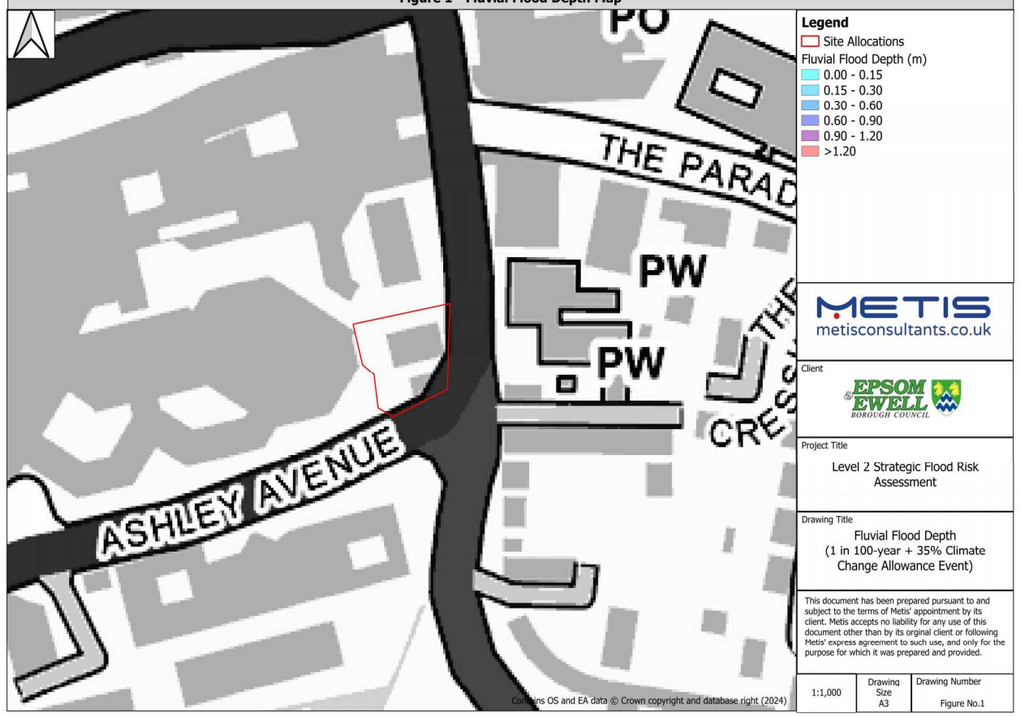


Figure 2 - Fluvial Flood Hazard Map

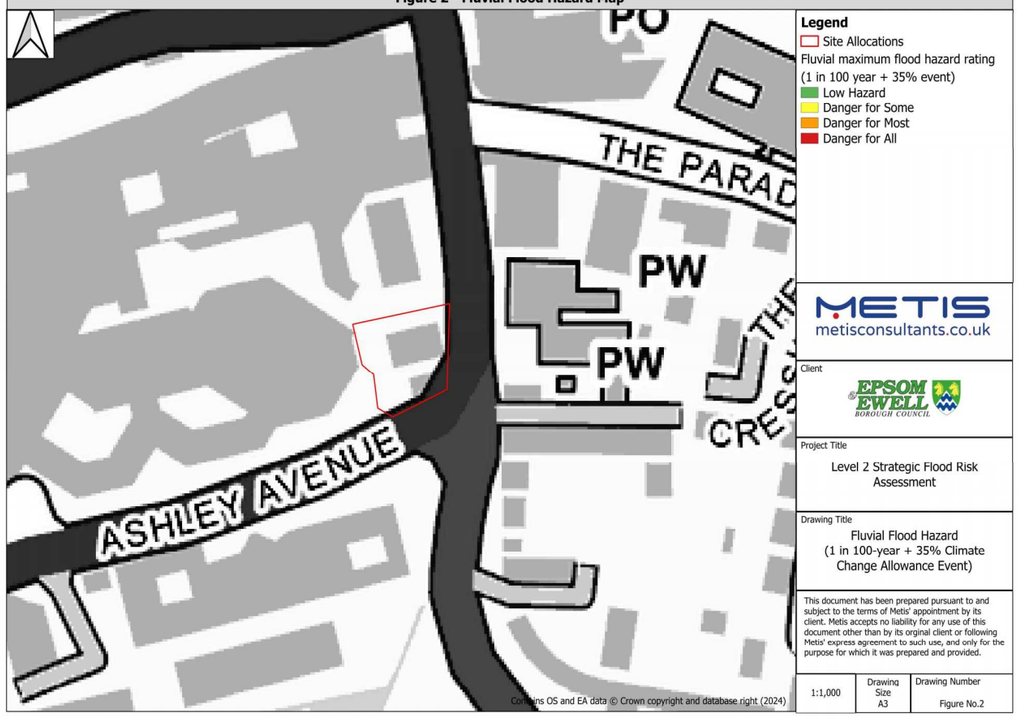


Figure 3 - RoFSW Flood Depth Map

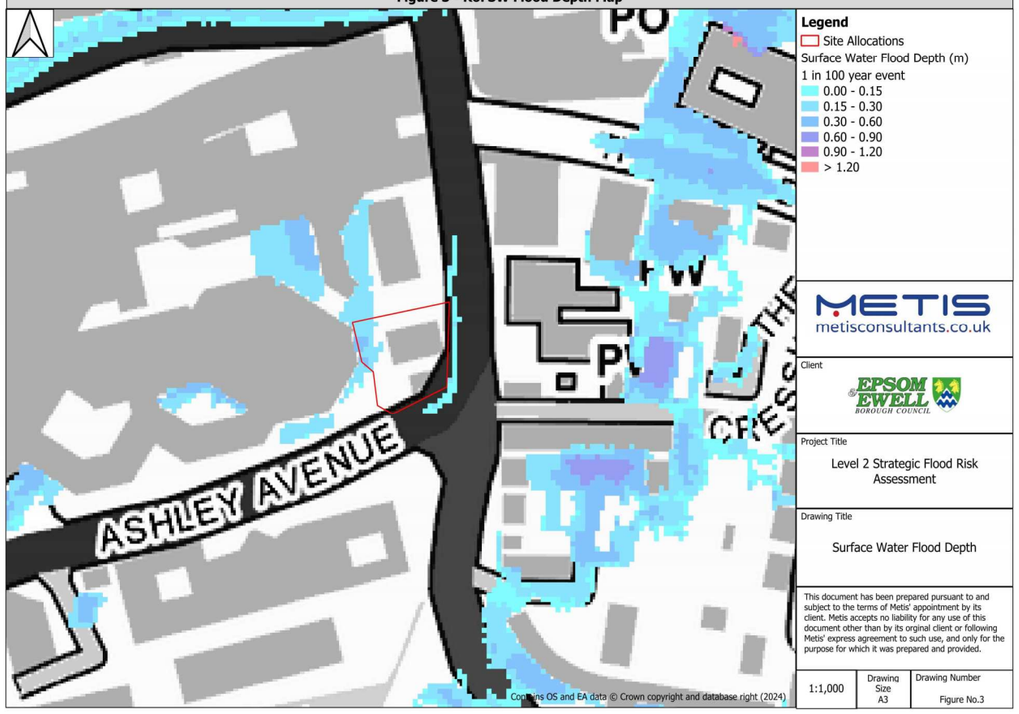


Figure 4 - RoFSW Flood Hazard Map

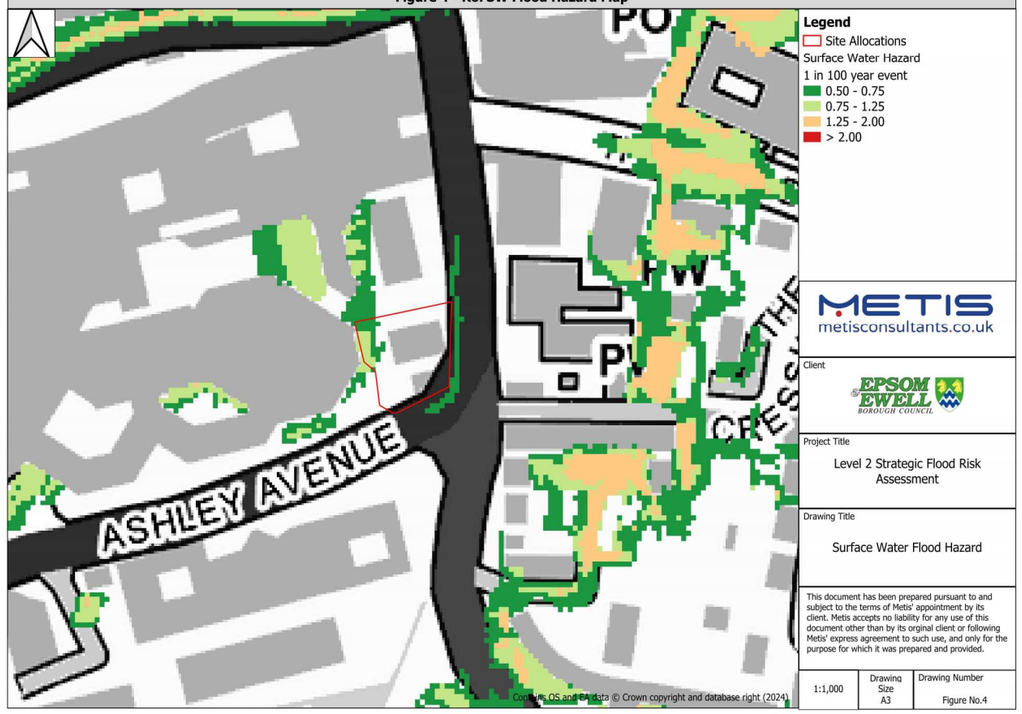


Figure 5 - Thames Water Sewer Flood Map

Figure 6 - Areas Susceptible to Groundwater Flooding Map

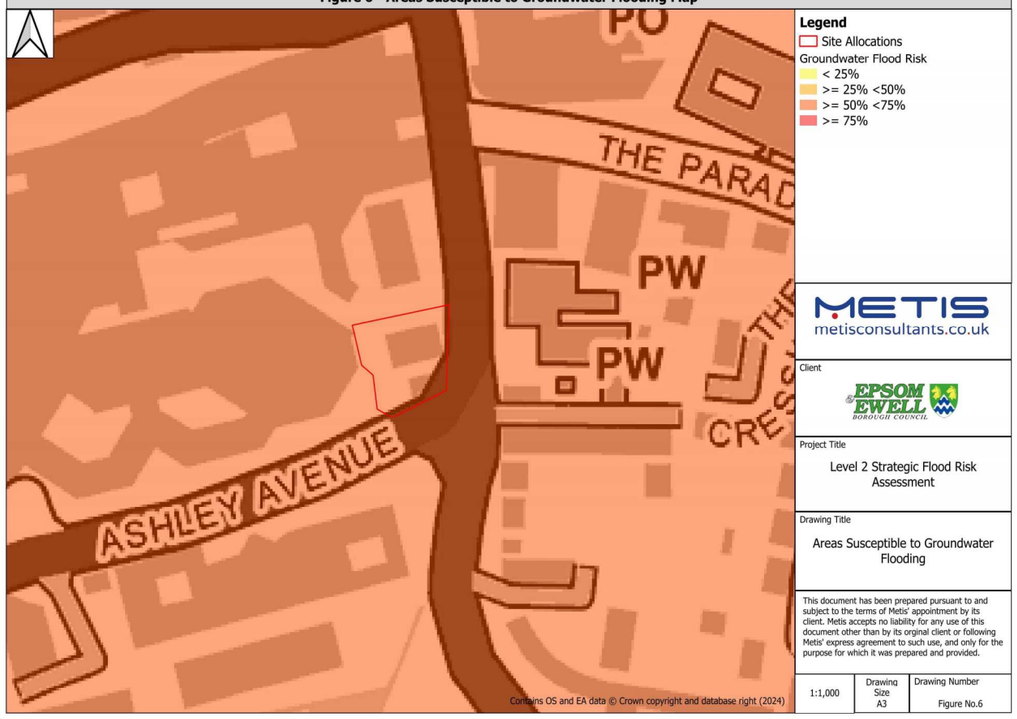
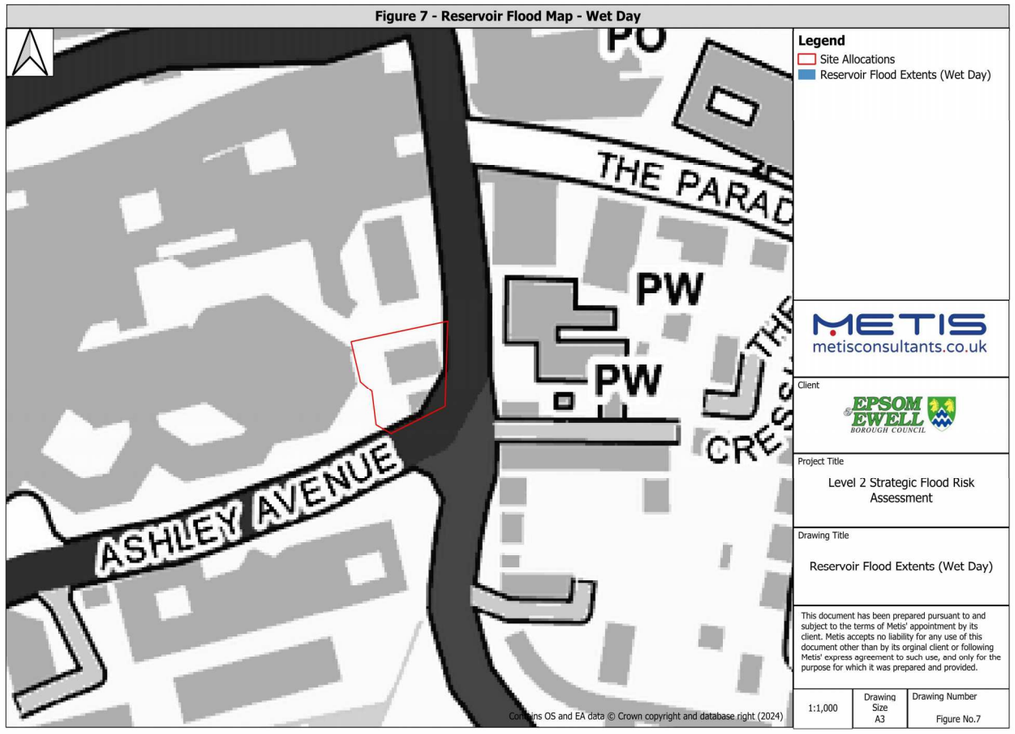


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Town Hall

Address: The Parade, Epsom KT19 5BY

Area: 0.74 **Ha**

Site Reference: TOW021

Current Use	Proposed Use
Town Hall	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary

Fluvial / Tidal			Groundwater		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	100	% of Site
Surface Water			>75	0	% of Site
1 in 30*	19.16	% of Site	**Artificial**		
1 in 100*	37.02	% of Site			
1 in 1000*	53.8	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					1

* return periods for potential flood events

Flood Defences

Site is not in an area benefitting from flood defences.

Flood Warning Area

The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)

Parameter	FZ3b	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)

Parameter	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism

N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress

N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements

N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment

Parameter	1 in 30	1 in 100	1 in 1000	Units
Min. Depth	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	m
Max. Depth	> 1.20	> 1.20	> 1.20	m
Max. Velocity	1.00 - 2.00	1.00 - 2.00	> 2.00	m/s
Max. Hazard	1.25 - 2.00	1.25 - 2.00	> 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism

- The site is at high risk of surface water flooding, particularly along west and north of the site along the parade.
- Climate change will increase the maximum velocity and maximum hazard of surface water flooding.

Site Access / Egress

Safe access and egress routes should be directed to the east of the site towards Dulshott Green where there is a lower risk of flooding.

Figure 3 - RoFSW Flood Depth Map

Mitigation - Flood Risk Requirements

- Development should be directed away from the western and northern areas of the site where there is higher risk of surface water flooding.
- See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Surface Water Drainage

- All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma.
- Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG).
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Town Hall

SEWER

Risk Assessment

- The site falls within a postcode area where there is 1 reported flood incident from sewer flooding.
- The site is assumed to be served by separate surface water and foul sewer networks, given their proximity to the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having 50-75% susceptibility to groundwater flooding.
- The site is underlain by River Terrace superficial deposits and Lambeth Group bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is changing from the 'Less vulnerable' to the 'More vulnerable' classification, as residential uses have been proposed.
- The site is mostly covered by impermeable areas with little green space. This offers an opportunity to improve flood attenuation through the new development.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from western and northern areas of the site.
- Safe access routes should be directed to the east of the site towards Dulshott Green where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

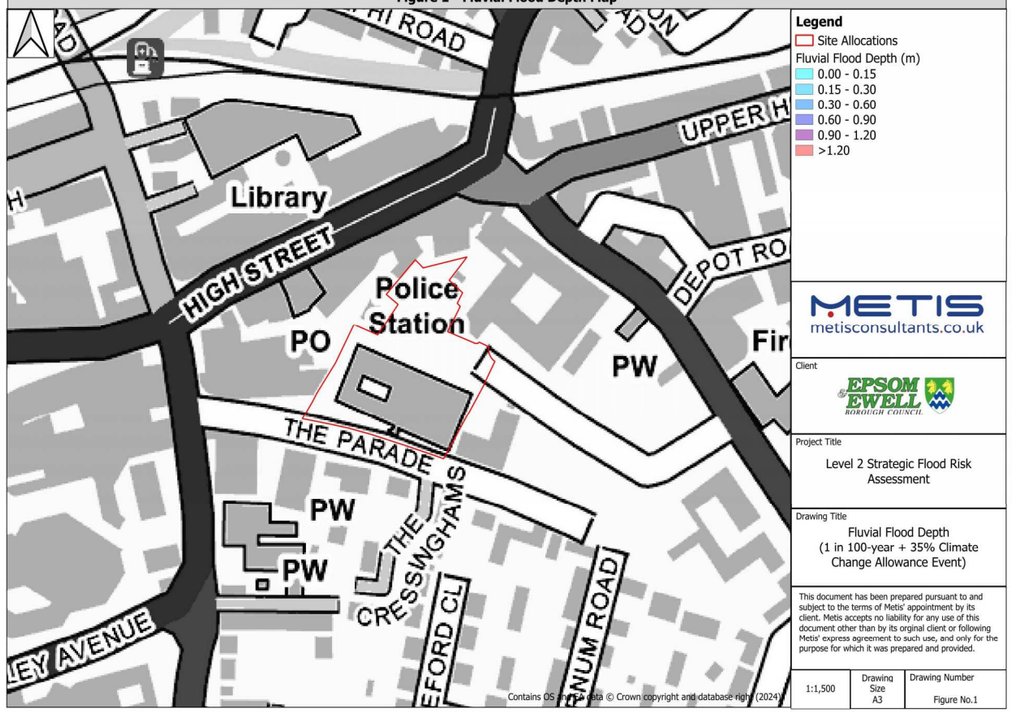


Figure 2 - Fluvial Flood Hazard Map

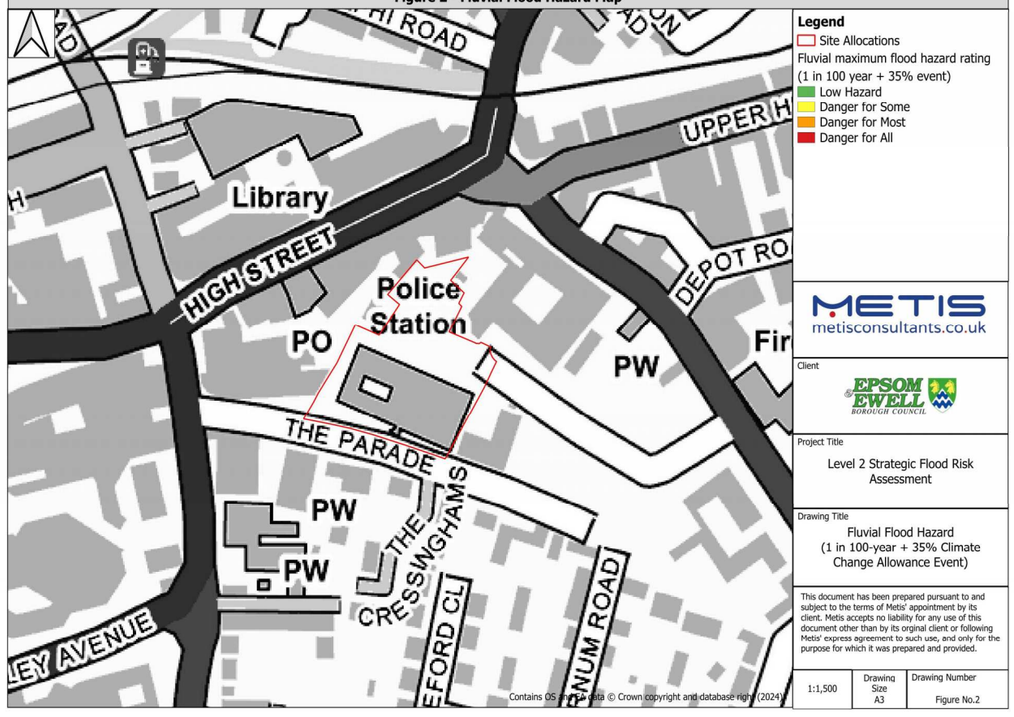


Figure 3 - RoFSW Flood Depth Map

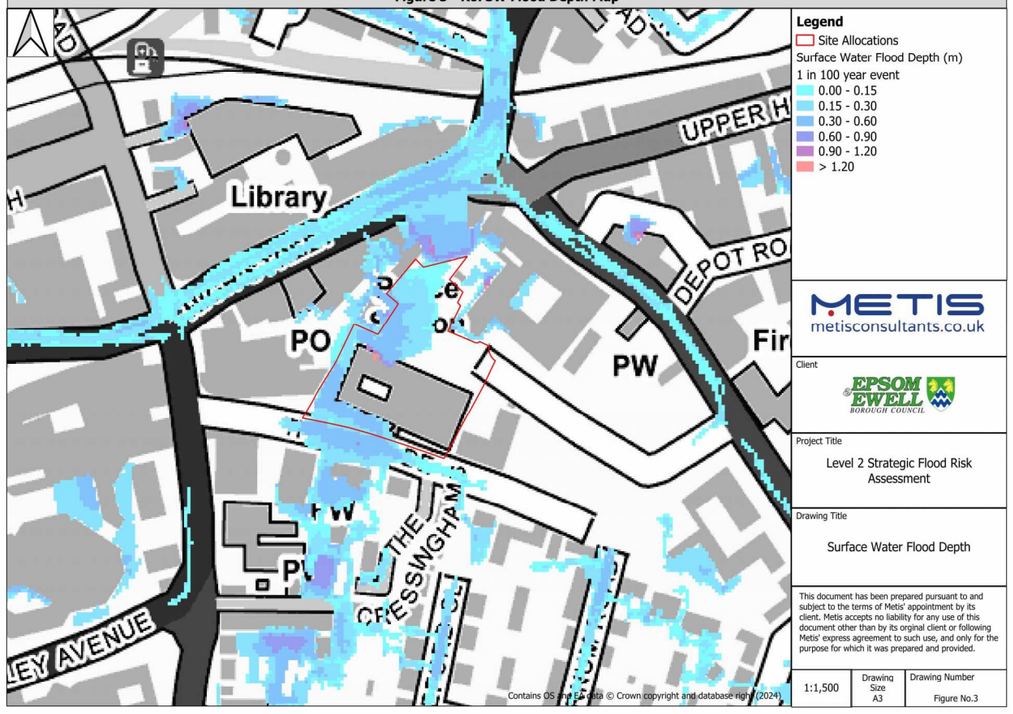


Figure 4 - RoFSW Flood Hazard Map

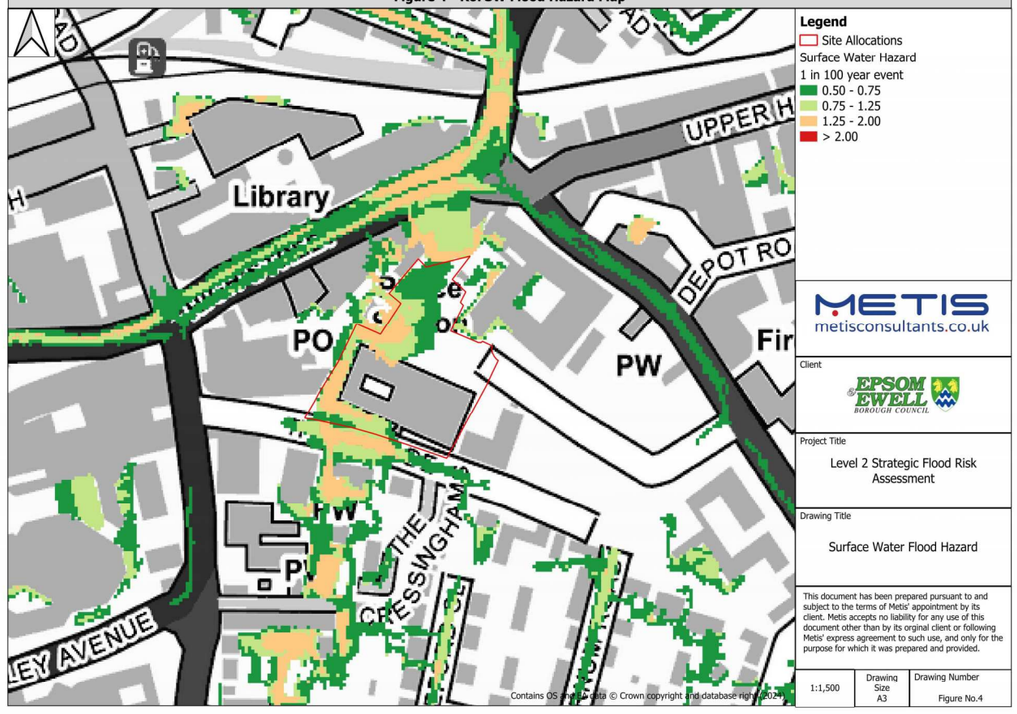


Figure 5 - Thames Water Sewer Flood Map

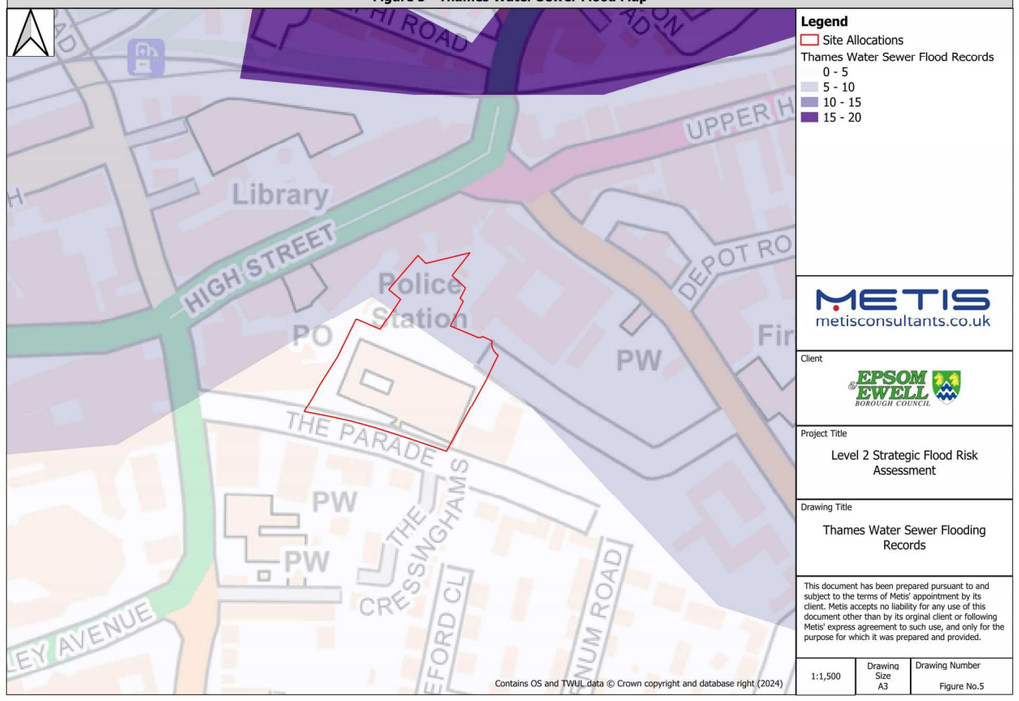


Figure 6 - Areas Susceptible to Groundwater Flooding Map

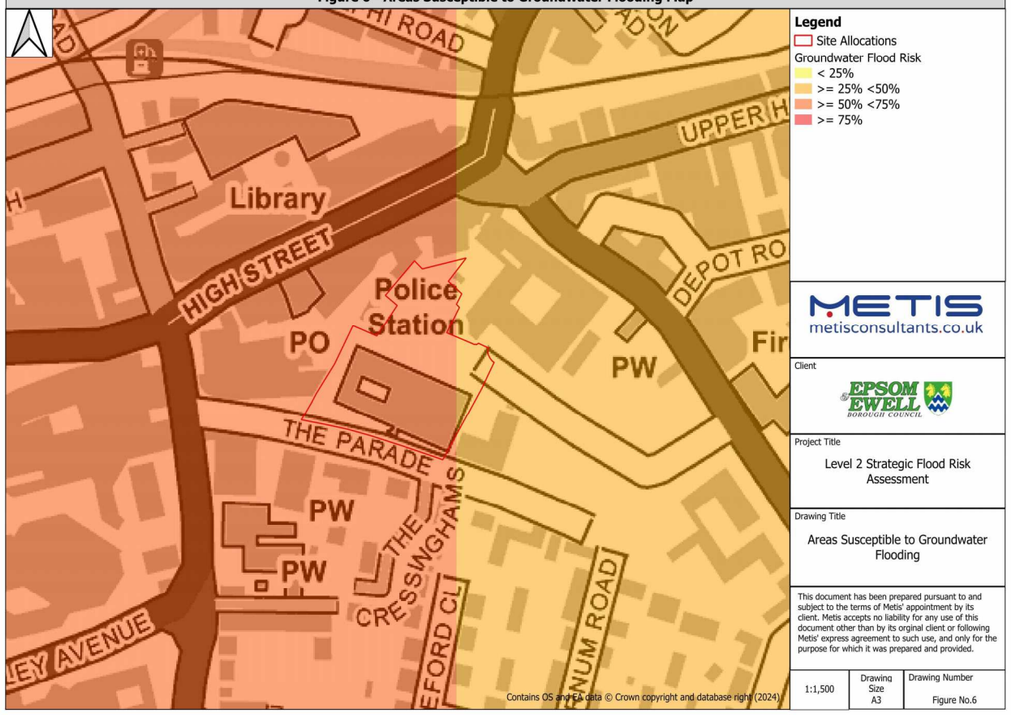
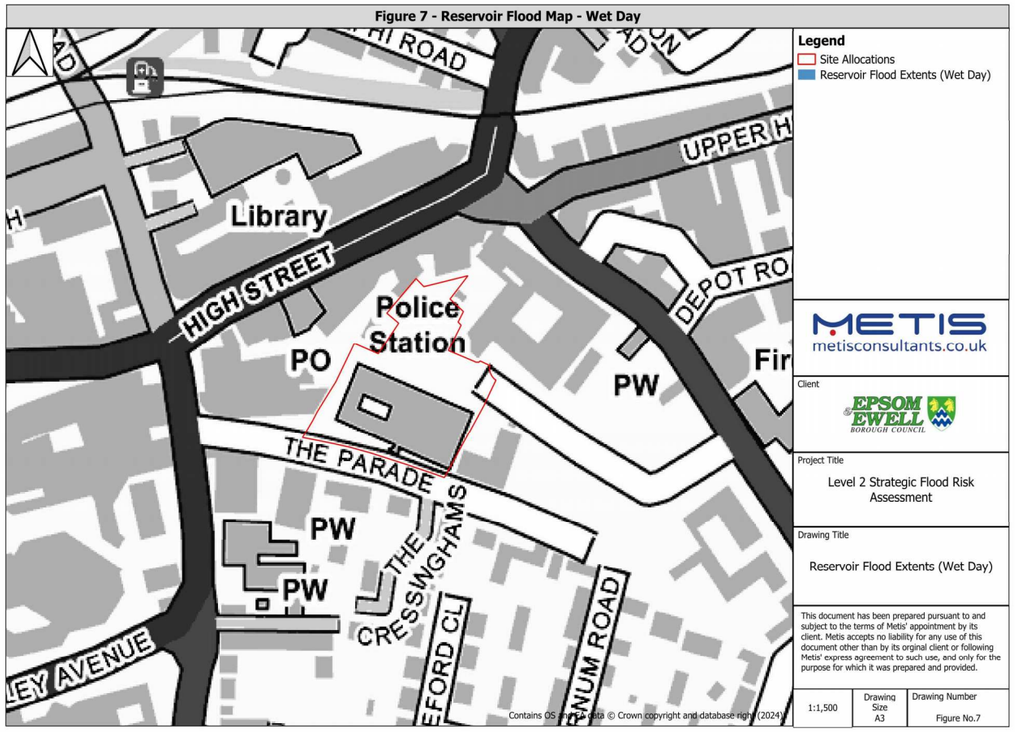


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Ashley Centre & Global House

Address: Ashley Road, Epsom, KT18 5AB

Area: 3.19 **Ha**

Site Reference: TOW024

Current Use	Proposed Use
Mixed Use (including residential)	Mixed Use (including residential)

Current Vulnerability Classification	Proposed Vulnerability Classification
More Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	0	% of Site
FZ3b	0	% of Site	50-75	100	% of Site
Surface Water			>75	0	% of Site
1 in 30*	3.22	% of Site	**Artificial**		
1 in 100*	6.81	% of Site			
1 in 1000*	11	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					1

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	m
Max. Depth	0.60 - 0.90	0.60 - 0.90	0.60 - 0.90	m
Max. Velocity	0.50 - 1.00	0.50 - 1.00	1.00 - 2.00	m/s
Max. Hazard	1.25 - 2.00	1.25 - 2.00	1.25 - 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
• There are small areas at high risk spread thoughout the site. • Climate change will increase the maximum velocity of surface water flooding.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress
Safe access and egress routes should be directed to the south of the site towards Ashley Avenue where there is a lower risk of flooding.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements
• Development should be directed away from areas of the site at high risk, particularly the southern and eastern areas. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Ashley Centre & Global House

SEWER

Risk Assessment

- The site falls within a postcode area where there is 1 reported flood incident from sewer flooding.
- There is a combined sewer to the north east of the site. There are separate foul and surface water sewers in proximity to the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having 50-75% susceptibility to groundwater flooding.
- The site is mostly underlain by Lambeth Group bedrock geology and River Terrace superficial deposits, however on its southern western side it is underlain by London Clay bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is not changing. It is proposed to be used for mixed use (including residential).
- The site is mostly covered by impermeable areas with little green space. This offers an opportunity to improve flood attenuation through the new development.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from areas of the site at high risk, particularly the southern and eastern areas.
- Safe access routes should be directed to the south of the site towards Ashley Avenue where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

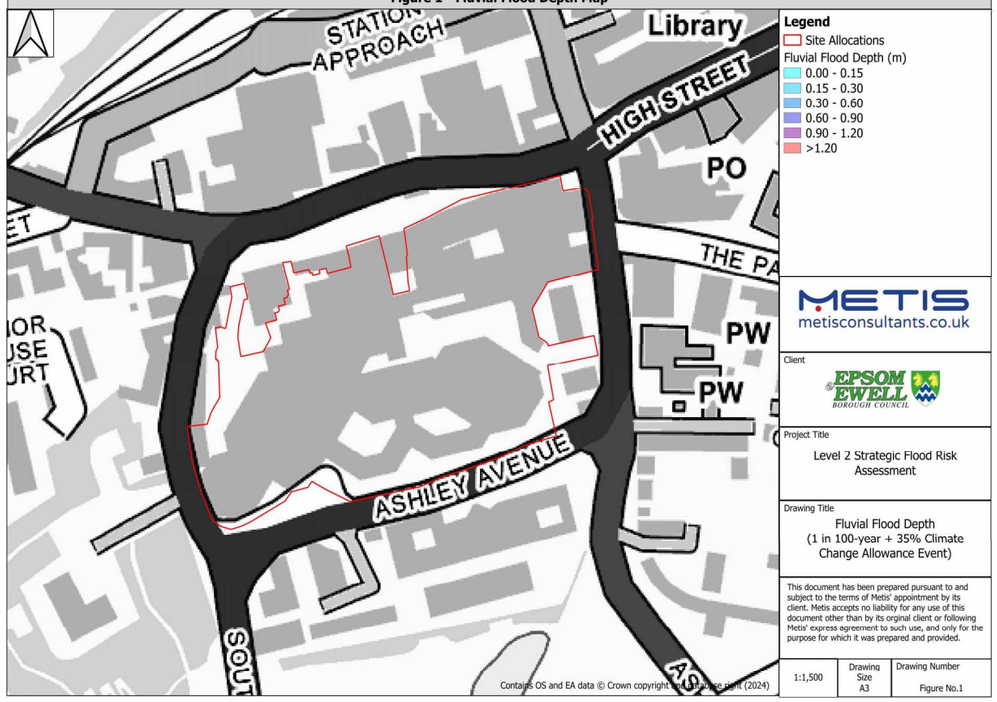


Figure 2 - Fluvial Flood Hazard Map

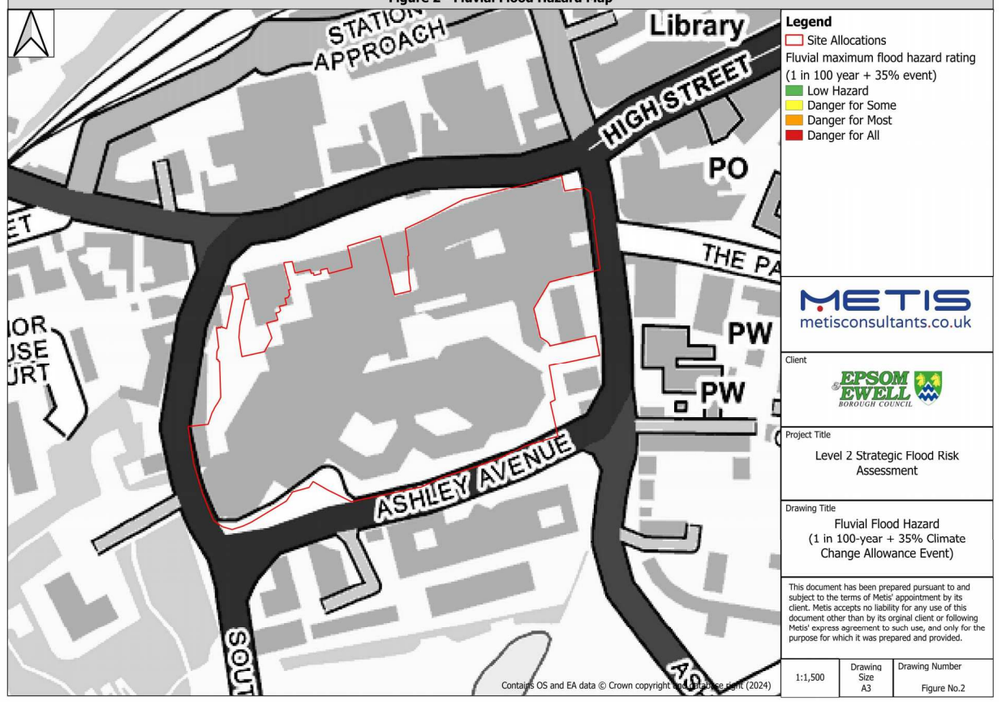


Figure 3 - RoFSW Flood Depth Map

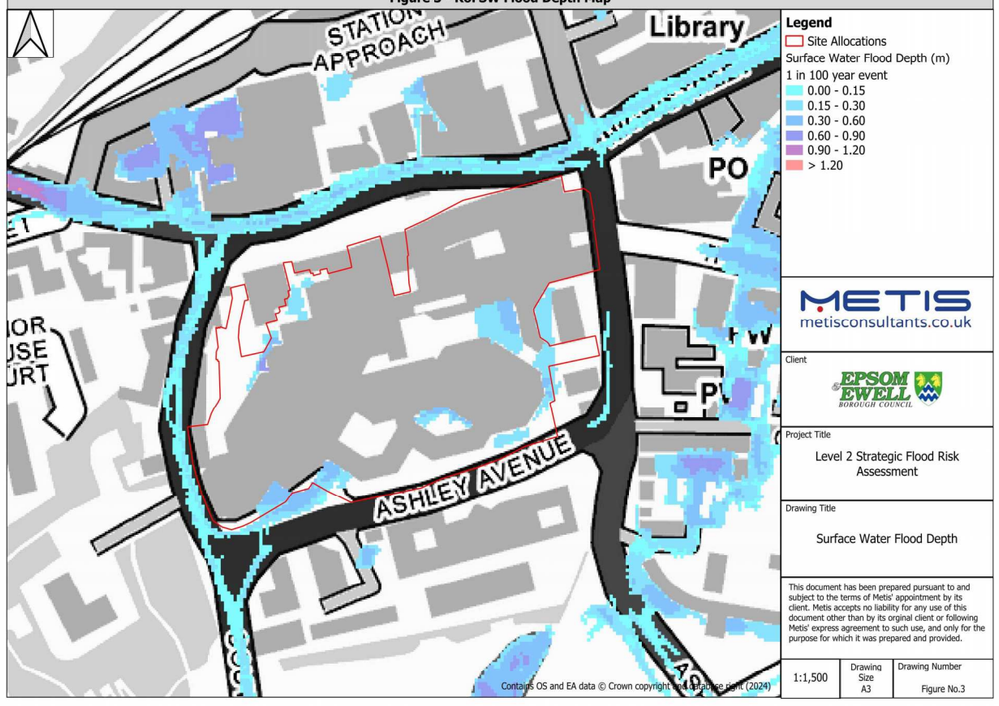


Figure 4 - RoFSW Flood Hazard Map

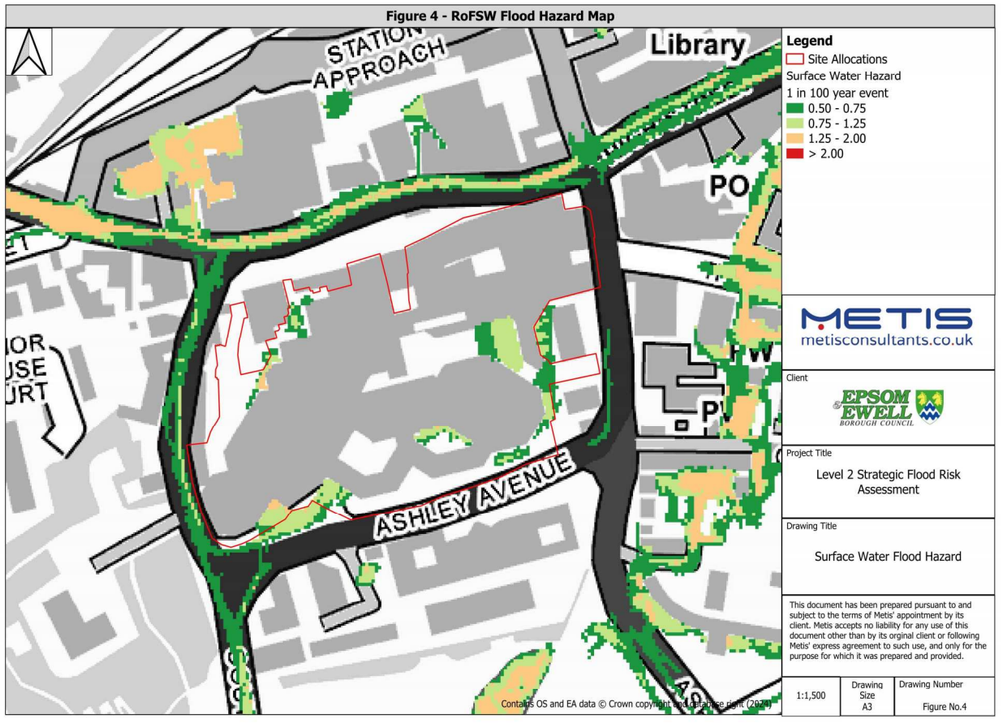
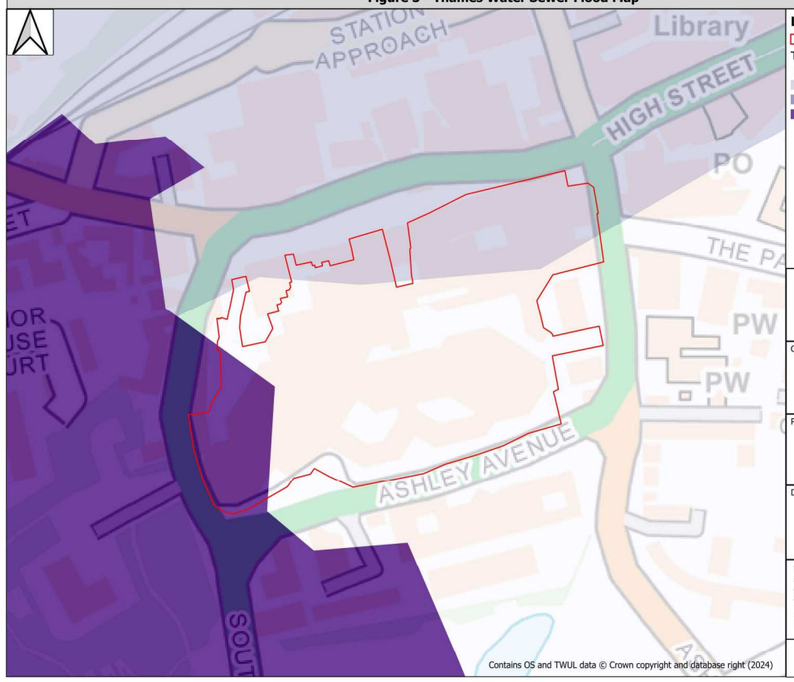


Figure 5 - Thames Water Sewer Flood Map



Legend
Site Allocations
Thames Water Sewer Flood Records
0 - 5
5 - 10
10 - 15
15 - 20

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Client
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Project Title
Level 2 Strategic Flood Risk Assessment

Drawing Title
Thames Water Sewer Flooding Records

1:1,500	Drawing Size A3	Drawing Number Figure No.5

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Legend
Site Allocations
Groundwater Flood Risk
< 25%
>= 25% <50%
>= 50% <75%
>= 75%

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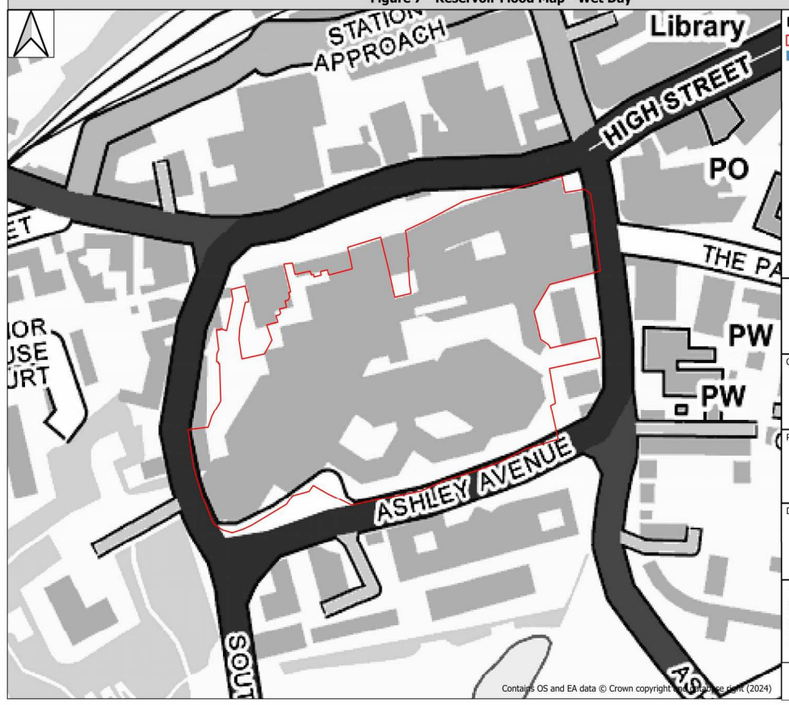
Client
EPSOM & EWELL BOROUGH COUNCIL

Project Title
Level 2 Strategic Flood Risk Assessment

Drawing Title
Areas Susceptible to Groundwater Flooding

1:1,500	Drawing Size A3	Drawing Number Figure No.6

Figure 7 - Reservoir Flood Map - Wet Day



Legend
Site Allocations
Reservoir Flood Extents (Wet Day)

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Project Title
Level 2 Strategic Flood Risk Assessment

Drawing Title
Reservoir Flood Extents (Wet Day)

1:1,500	Drawing Size A3	Drawing Number Figure No.7

SITE ASSESSMENT - Wilsons (Site 3)

Address: Kiln Lane, Epsom, KT17 1EG

Area: 0.67 **Ha**

Site Reference: TOW058

Current Use	Proposed Use
Commercial	Residential / Mixed / Employment

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	100	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	0.03	% of Site	**Artificial**		
1 in 100*	6.26	% of Site			
1 in 1000*	31.4	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					20

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	m
Max. Depth	0.15 - 0.30	0.15 - 0.30	0.30 - 0.60	m
Max. Velocity	0.00 - 0.25	0.50 - 1.00	1.00 - 2.00	m/s
Max. Hazard	0.50 - 0.75	0.75 - 1.25	1.25 - 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
• The site is at low to medium flood risk in the centre and south. • Climate change will increase the maximum surface water depth, maximum velocity and maximum hazard of surface water flooding.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress
Safe access and egress routes should be directed to the west of the site towards Conifer Park or the north west of the site towards Weston Road where there is a lower risk of flooding.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the southern and central areas of the site where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Wilsons (Site 3)

SEWER

Risk Assessment

- The site falls within a postcode area where there are 20 reported flood incidents from sewer flooding.
- The site is assumed to be served by separate surface water and foul sewer networks, given the existence of foul sewers at the site and the proximity of surface water sewers to the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having 25-50% susceptibility to groundwater flooding.
- The site is underlain by River Terrace superficial deposits on its north western side and Lambeth Group bedrock geology.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is changing from the 'Less vulnerable' to the 'More vulnerable' classification, as residential uses have been proposed.
- The site is mostly covered by impermeable areas with little green space. This offers an opportunity to improve flood attenuation through the new development.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from southern and central areas of the site.
- Safe access routes should be directed to the west of the site towards Conifer Park or the north west of the site towards Weston Road where there is a lower risk of flooding.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- The Exception Test is not required as the site is not located within Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

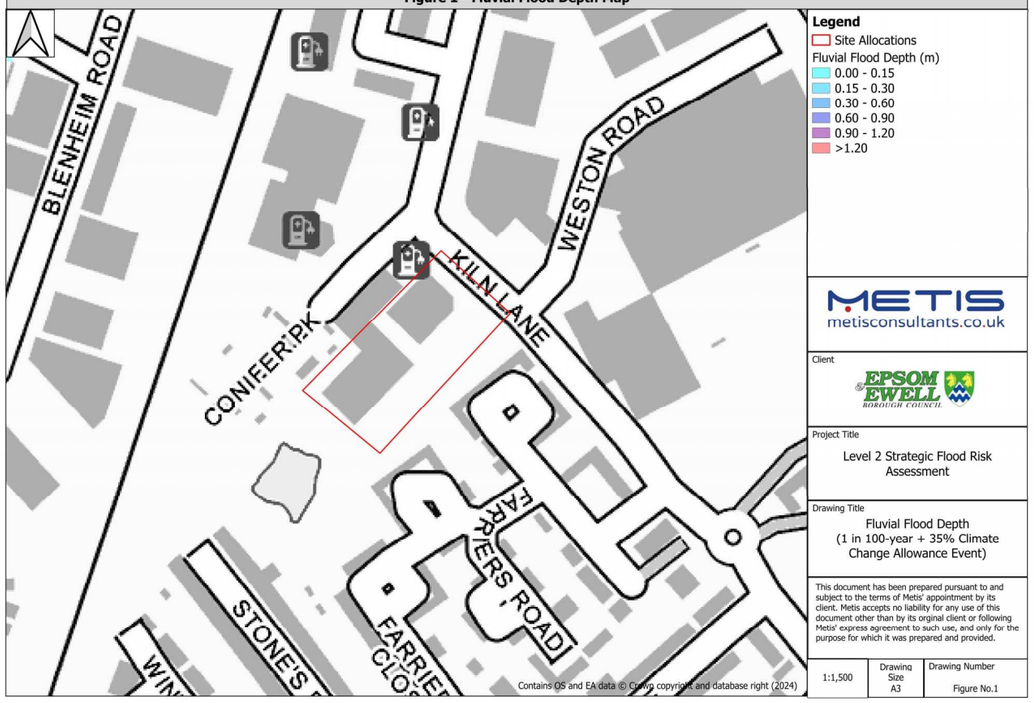


Figure 2 - Fluvial Flood Hazard Map

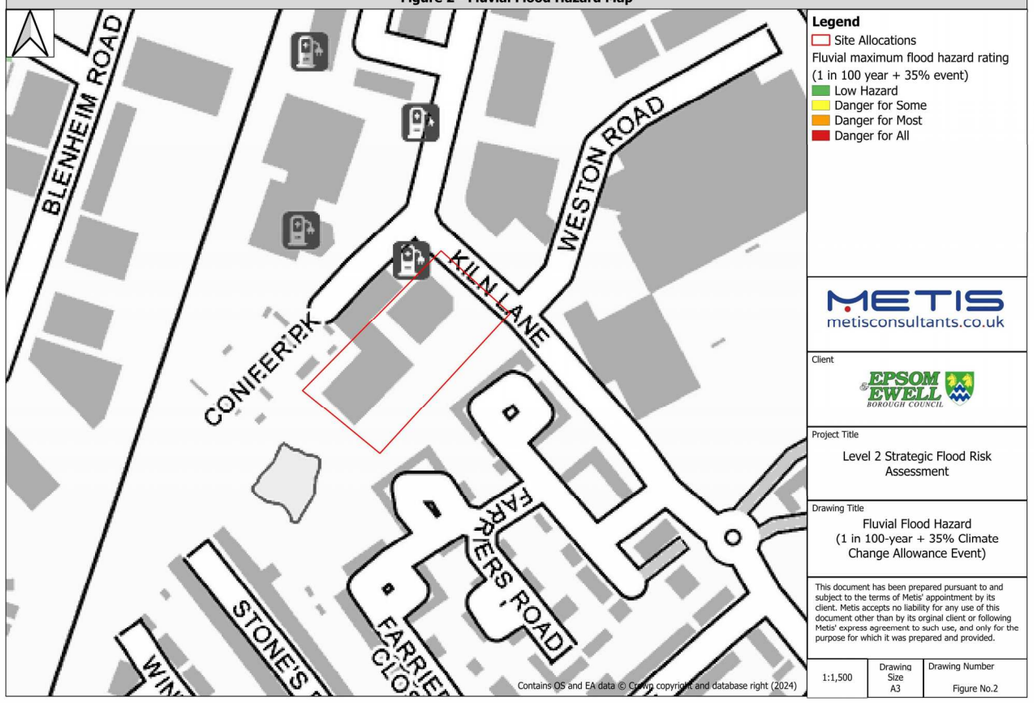


Figure 3 - RoFSW Flood Depth Map

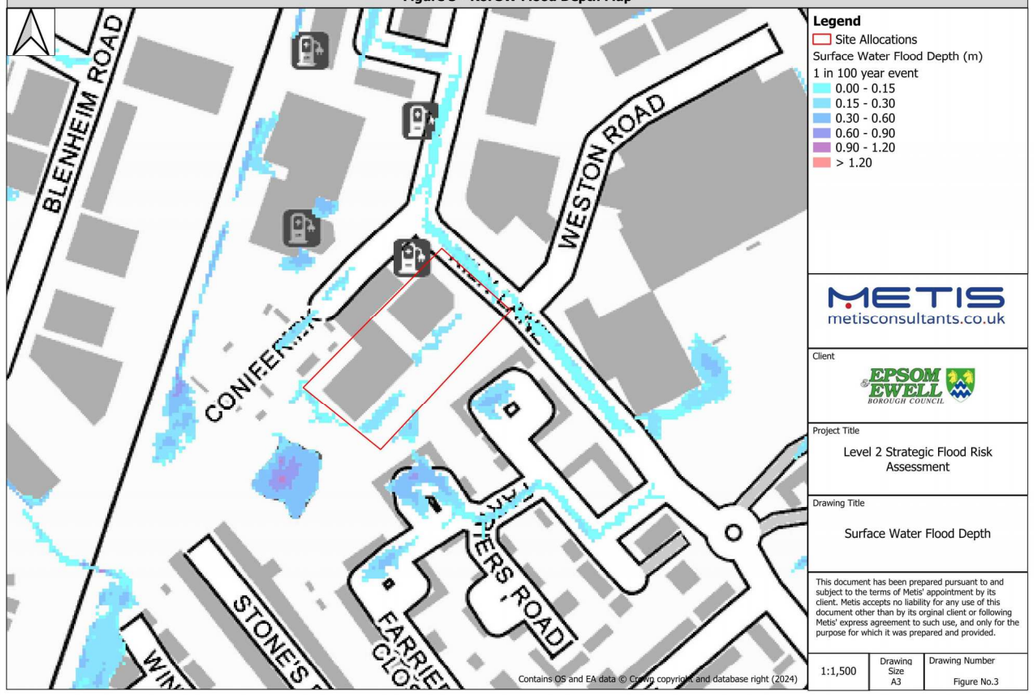


Figure 4 - RoFSW Flood Hazard Map

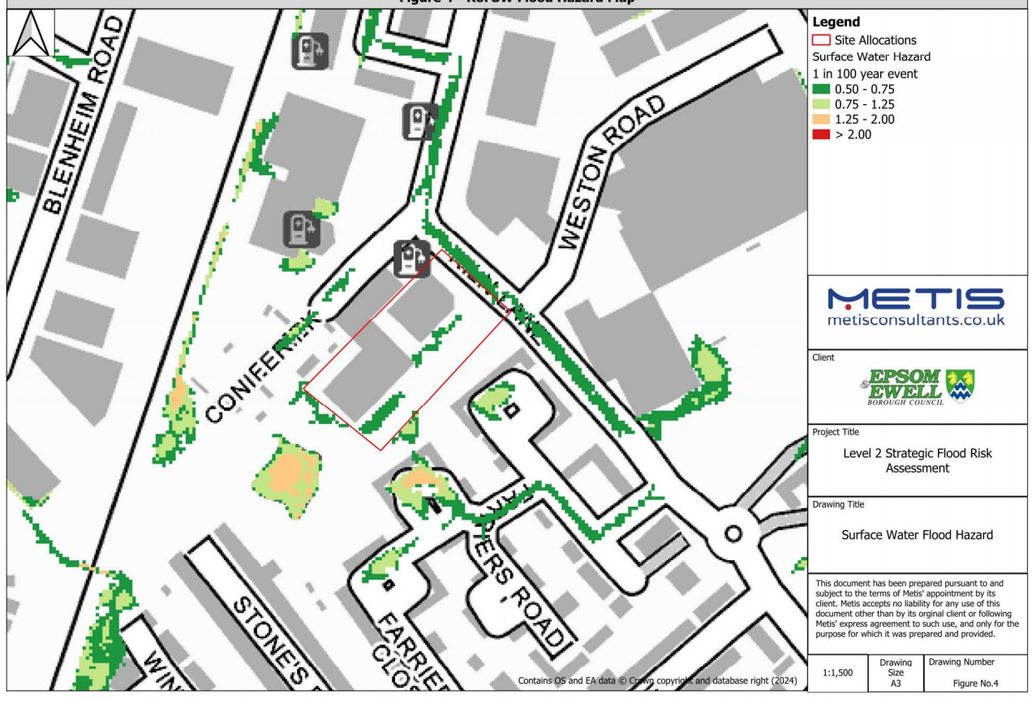


Figure 5 - Thames Water Sewer Flood Map

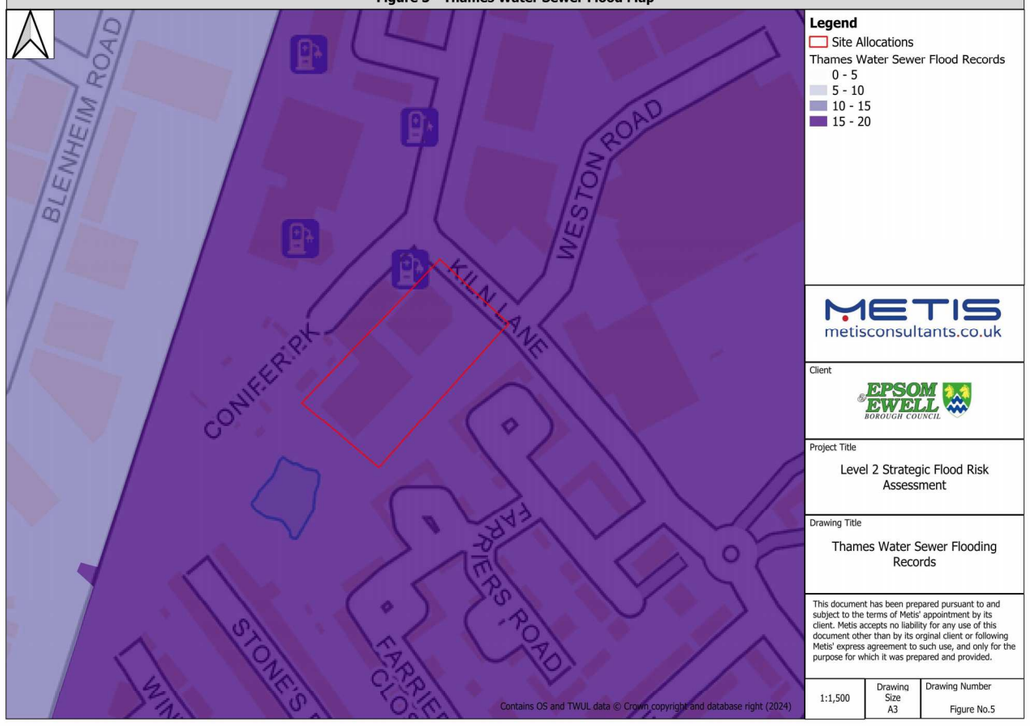


Figure 6 - Areas Susceptible to Groundwater Flooding Map

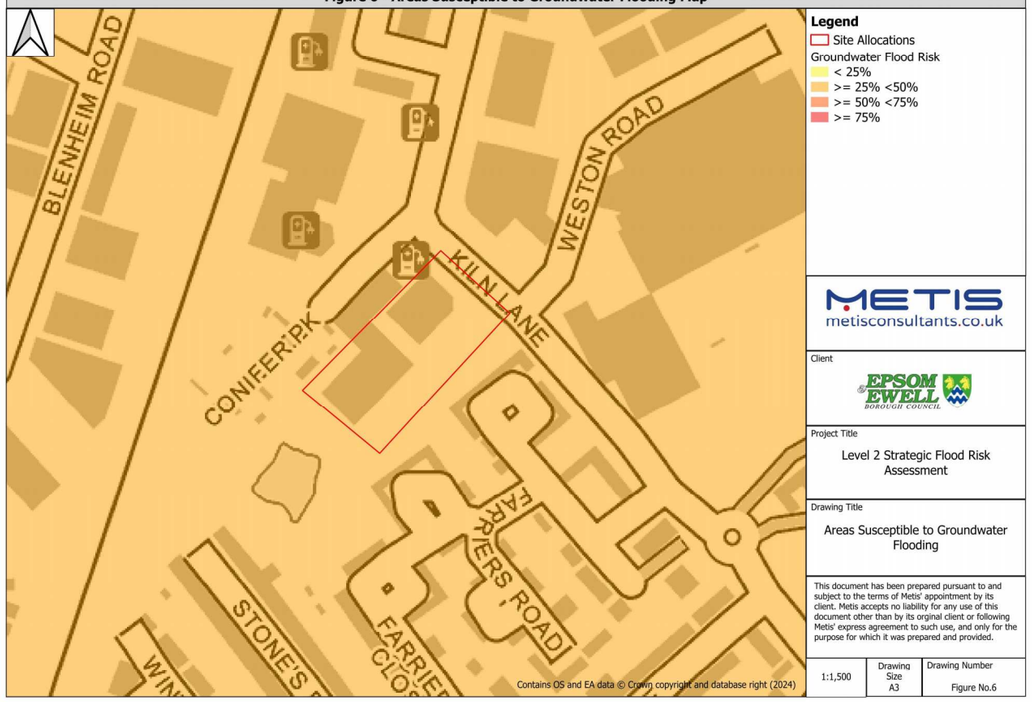
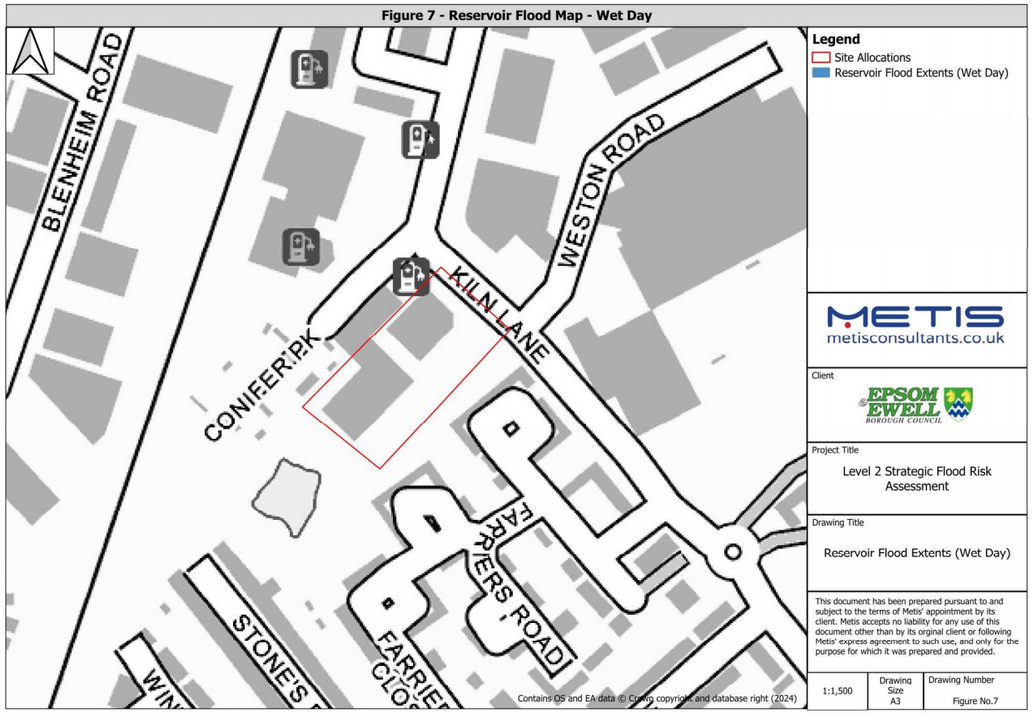


Figure 7 - Reservoir Flood Map - Wet Day



SITE ASSESSMENT - Police, Ambulance Station & Clinic

Address: Church Street, Epsom, KT18 5AB

Area:	0.64 **Ha**
Site Reference:	TOW060 & TOW018

Current Use	Proposed Use
Police & ambulance station (Class E & SuiGen), clinic	Residential (Care home) - planning permission; residential

Current Vulnerability Classification	Proposed Vulnerability Classification
More Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	100	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	0	% of Site	**Artificial**		
1 in 100*	10.54	% of Site	Reservoir	No	At risk?
1 in 1000*	33.1	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					6

* return periods for potential flood events

Flood Defences
There are no flood defences in the vicinity of the site.

Flood Warning Area
The EA Flood Warning Service is not available at this site

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	**FZ3b**	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

Risk Assessment (Undefended)			
Parameter	**FZ3a**	***FZ3a+CC**	**Units**
Speed of inundation	N/A	N/A	Hrs
Min. Depth	N/A	N/A	m
Max. Depth	N/A	N/A	m
Max. Velocity	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A
Duration of Flood	N/A	N/A	Hrs

Description of Flood Mechanism

N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress

N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements

N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	N/A	0.00 - 0.15	< 0.15	m
Max. Depth	N/A	0.30 - 0.60	0.30 - 0.60	m
Max. Velocity	N/A	0.50 - 1.00	1.00 - 2.00	m/s
Max. Hazard	N/A	0.75 - 1.25	1.25 - 2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism

- The site is at low to medium risk of surface water flooding in the central and southern areas of the complex. Laburnum Road to the south of the site is at high risk of surface water flooding, and Church Street to the north east is at low to medium risk
- Climate change is predicted to increase the maximum flood hazard and velocity at the site.

Site Access / Egress

Safe access and egress routes should be directed to the south east of the site towards Worple Road where there is a lower risk of flooding. Egress should not be directed to Church Street and Laburnum Road as there is significant flood risk in this area.

Figure 3 - RoFSW Flood Depth Map

Mitigation - Flood Risk Requirements

- Development should be directed away from the central and southern areas of the site where there is higher risk of surface water flooding.
- See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Surface Water Drainage

- All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma.
- Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG).
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Police, Ambulance Station & Clinic

SEWER

Risk Assessment

- The site falls within a postcode area where there are 6 reported flood incidents from sewer flooding.
- The site is served by separate surface water and foul sewer networks.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

- Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
- Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

- The site is classified as having >=25% <50% susceptibility to groundwater flooding.
- The site is underlain by Thanet Formation - Sand bedrock geology and superficial River Terrace Deposits.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

- Applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation.
- If there is a potential level of impact, mitigation actions must be proposed.
- Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

- This site is not risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

- Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?

- Yes. The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per Policy S15 and S17 of EEBC's New Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?

- The development land use is remaining at classification 'More Vulnerable', as residential uses have been proposed.
- The site is currently a brownfield site with hardstanding areas and little green space. This offers an opportunity to improve flood attenuation through the new development.
- Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.

D. How can the development reduce risk overall?

- Direct development away from the central and southern areas of the site where there is higher risk of surface water flooding.
- Safe access and egress routes should be directed to the south east of the site towards Worple Road and Laburnum Road where there is a lower risk of flooding. Egress should not be directed to Church Street as there is significant flood risk in this area.
- Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S15 in EEBC's draft Local Plan.
- By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

- No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

- Exception test not required as site is not located in Flood Zone 3a.

Figure 1 - Fluvial Flood Depth Map

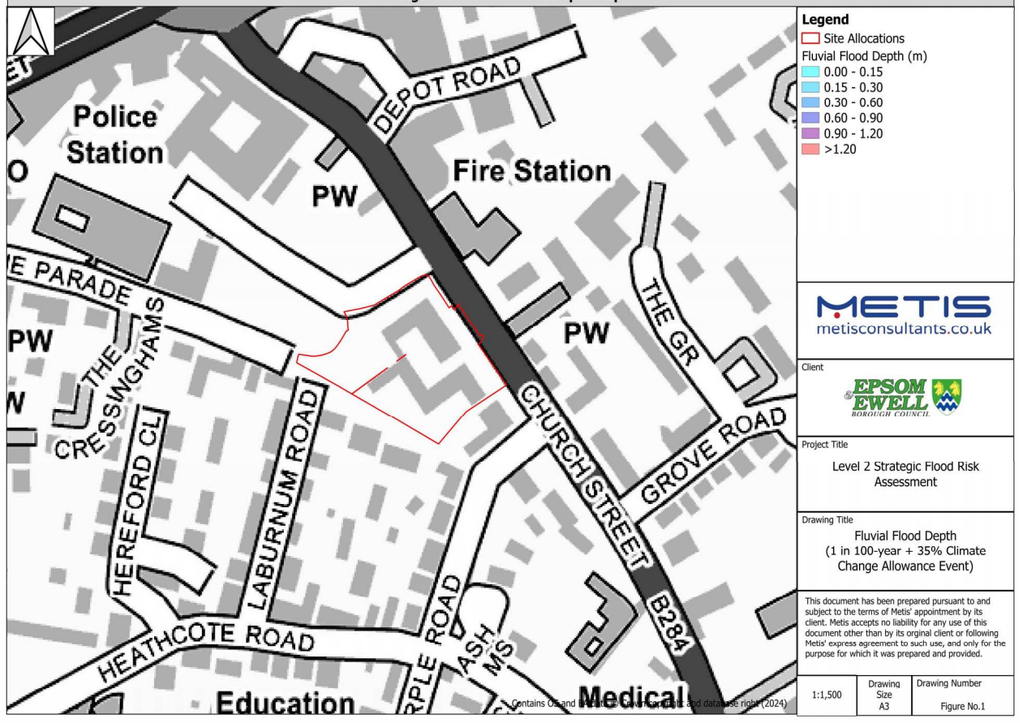


Figure 2 - Fluvial Flood Hazard Map

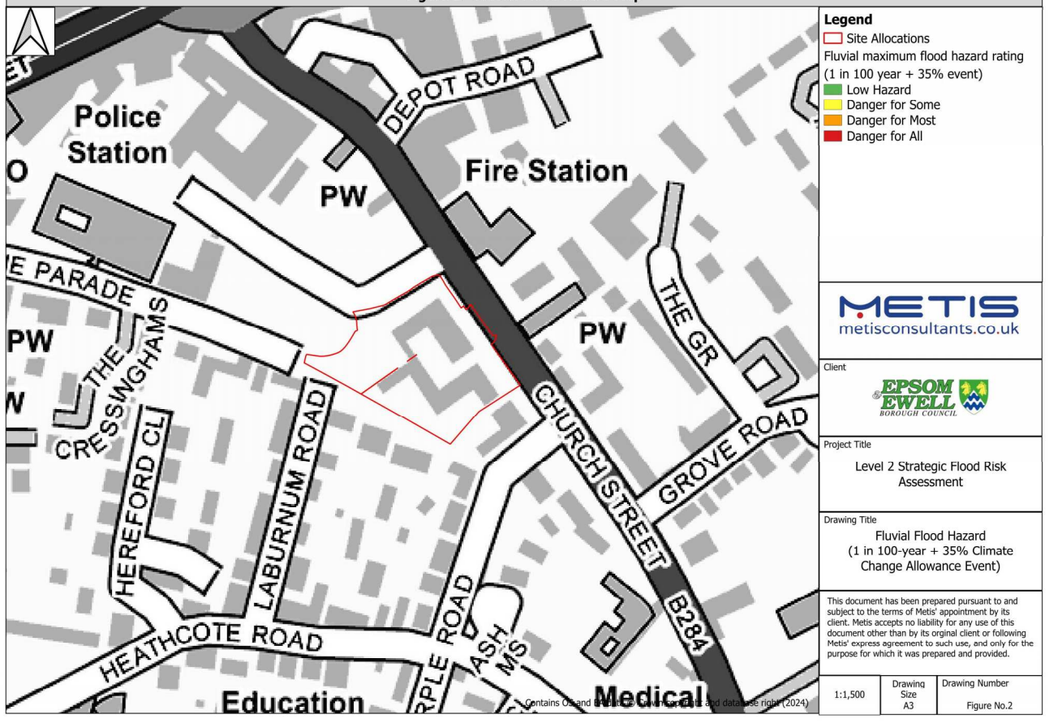


Figure 3 - RoFSW Flood Depth Map

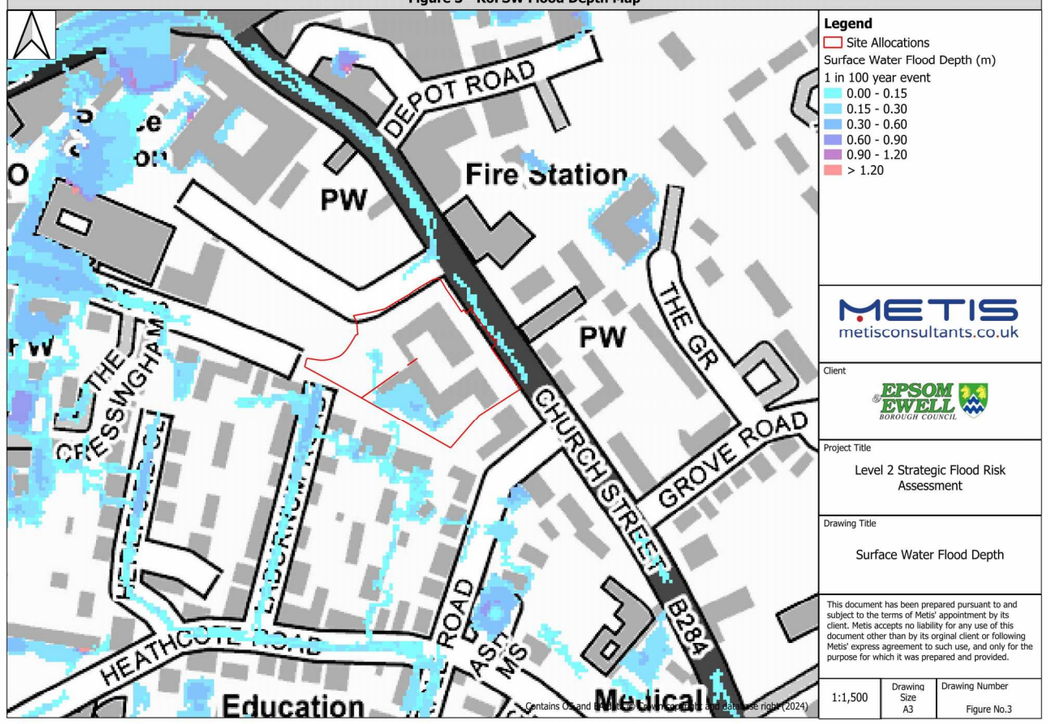


Figure 4 - RoFSW Flood Hazard Map

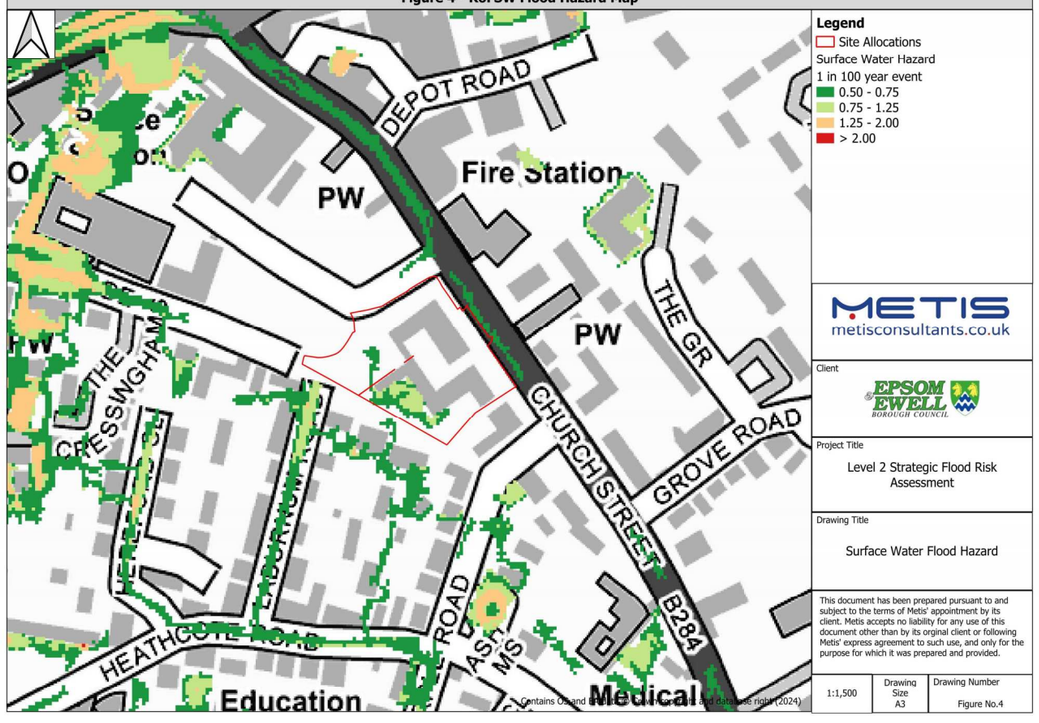
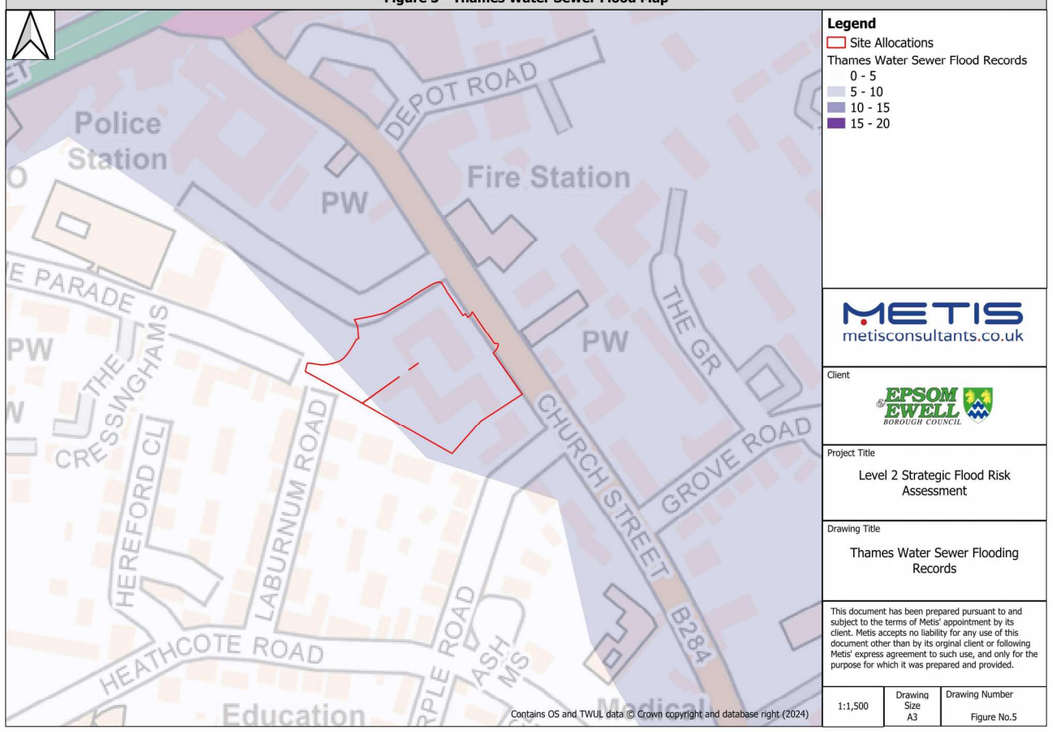


Figure 5 - Thames Water Sewer Flood Map



Legend
Site Allocations
Thames Water Sewer Flood Records
0 - 5
5 - 10
10 - 15
15 - 20

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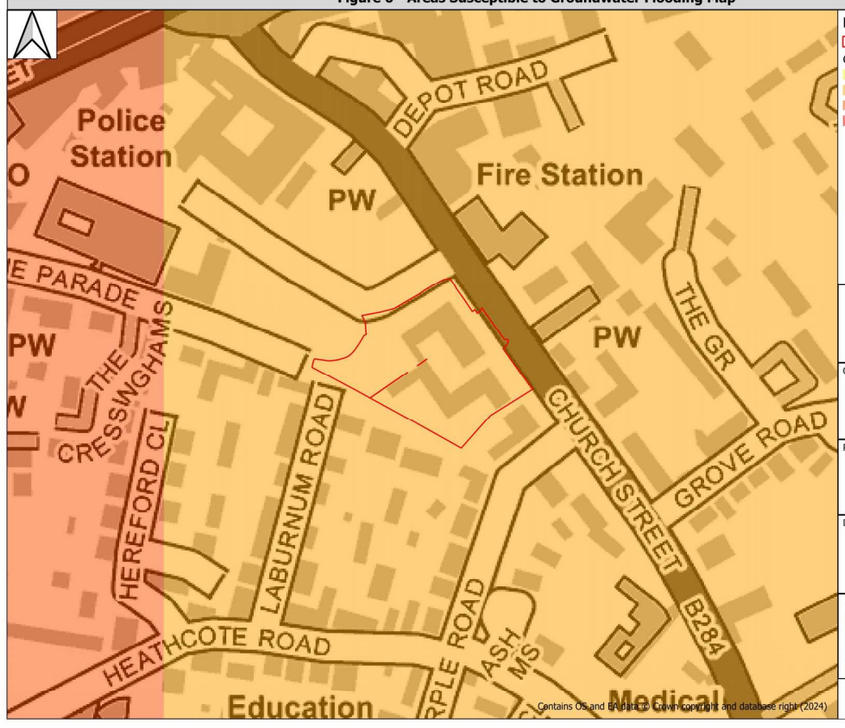
Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Thames Water Sewer Flooding Records

1:1,500	Drawing Size A3	Drawing Number Figure No.5

Figure 6 - Areas Susceptible to Groundwater Flooding Map



Legend
Site Allocations
Groundwater Flood Risk
< 25%
>= 25% <50%
>= 50% <75%
>= 75%

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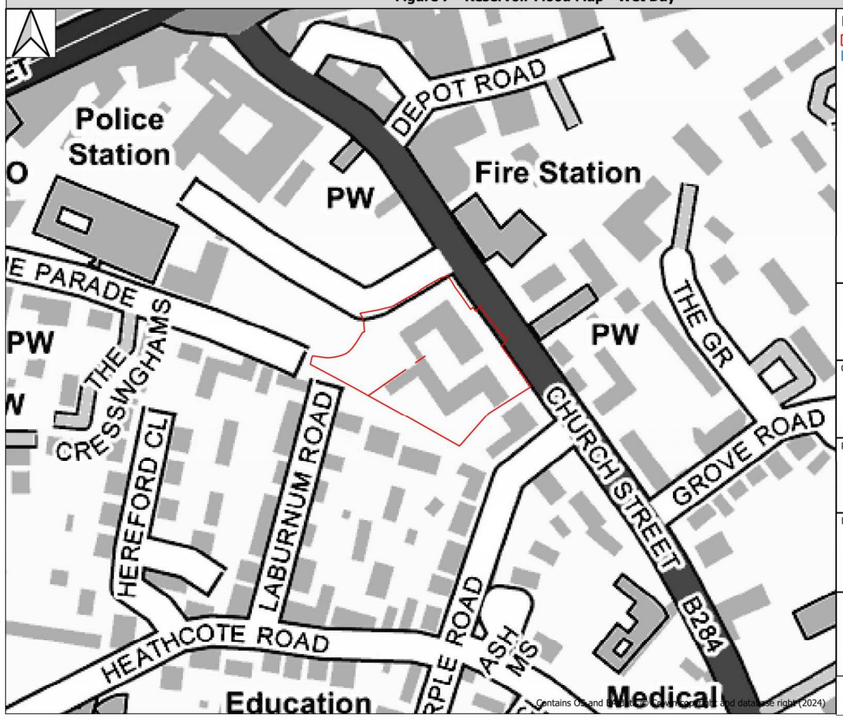
Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Areas Susceptible to Groundwater Flooding

1:1,500	Drawing Size A3	Drawing Number Figure No.6

Figure 7 - Reservoir Flood Map - Wet Day



Legend
Site Allocations
Reservoir Flood Extents (Wet Day)

METIS
metisconsultants.co.uk

Client: EPSOM & EWELL BOROUGH COUNCIL

Project Title: Level 2 Strategic Flood Risk Assessment

Drawing Title: Reservoir Flood Extents (Wet Day)

1:1,500	Drawing Size A3	Drawing Number Figure No.7