

Strategic Flood Risk Assessment Level 2

Prepared for



LONDON BOROUGH OF
HARROW

London Borough of Harrow



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Acronyms and Abbreviations

Abbreviation	Definition
AEP	Annual Exceedance Probability
Harrow	London Borough of Harrow
EA	Environment Agency
FRA	Flood Risk Assessment
HR	Flood Hazard Rating
LPA	Local Planning Authority
NPPF	National Planning Policy Framework
OS	Ordnance Survey
PPG	Planning Practice Guidance
RoFSW	Risk of Flooding from Surface Water
SFRA	Strategic Flood Risk Assessment
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.

The London Borough of Harrow (Harrow) has commissioned a Level 2 SFRA to support the development of their [Local Plan](#). 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 and canal) sources. A total of 18 site allocations 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 the 41 allocated sites (*Appendix A*), which identifies which sites require a full Site Assessment. Site Assessments have been produced for each of the 18 sites that were identified (*Appendix B*) which provides an assessment of each flood source, with planning considerations and potential mitigation measures that may be required for the assessed site.

1.1 Background

Harrow, together with the West London Boroughs of Ealing, Barnet, Brent, Hounslow, and Hillingdon, completed their joint [Level 1 SFRA](#) in 2018. It was written in line with the and [Flood Risk and Coastal Change Planning Practice Guidance](#) (PPG) and [NPPF](#) 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 18 sites which require assessment due to surface water flood risk, one of which was also triggered due to the significance of fluvial flood risk. These sites have therefore been analysed in more detail in the 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 assessments, and some policy updates which have taken place since the publication of the Level 1 SFRA. These are referenced within *Section 1.2.1*. The 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 makes sure that development is steered away from areas at greater risk of flooding to protect both people and property.

The Level 1 SFRA has a section on '[Planning and Policy Framework](#)' which provides an overview of the flood risk policies and requirements on national, regional and sub-regional 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

The national policy which guides the requirements of SFRAs includes the [NPPF](#) and accompanying [PPG](#), which contain information on producing both Level 1 and Level 2 SFRAs, such as when they are required, and what level of detail they should contain. The [NPPF](#) and [PPG](#) also introduce both 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 developments which are: Highly Vulnerable and in Flood Zone 2, Essential Infrastructure in Flood Zone 3a or 3b, or More Vulnerable in Flood Zone 3a. This Level 2 SFRA is structured to provide the basis for the application of this Test. [Section 4.2.1 of the Level 1 SFRA](#) provides further guidance on the application of the Sequential and Exception Tests.

Both the [NPPF](#) and [PPG](#) have 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. This includes:

- 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.
- Inclusion of 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. The 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 is now the 3.3% annual exceedance probability (AEP) event (previously 5% AEP).
- The non-residential development lifetime starting point is set at 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 London Plan](#) (2021) sets out an integrated economic, environmental, transport and social framework for the development of London. Policy SI 12 of the London Plan states that Local Authorities should use their SFRA to identify areas where particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. These actions must be informed by the [Thames River Basin District Flood Risk Management Plan](#).

1.2.3 Local Policy

Harrow’s draft [Local Plan](#) has two policies which are directly linked to flood risk management in the borough. These are ‘Policy CN3: Reducing Flood Risk’ and ‘Policy CN4: Sustainable Drainage’. This Level 2 assessment has also informed the drafting of design principles for individual development sites as set out in the draft [Local Plan](#). Policy CN3 provides requirements and guidance to address flood risk as part of development proposals. The Level 2 SFRA will provide site-specific recommendations to help developers to meet these policy aims.

1.2.4 Flood Zones

The Environment Agency (EA) have defined Flood Zones to show the probability of fluvial and / or tidal flooding. The 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 no areas in the borough which are tidally influenced. As recommended in the Level 1 SFRA, Harrow have also defined an additional Flood Zone 3a to account for predicted surface water flood risks across the borough. 'Flood Zone 3a' has therefore been split into 'fluvial' and 'surface water' subsets, where the surface water flood risk uses the extents predicted for up to and including the 1% AEP return period events. It should be noted that a site may be in both the fluvial and surface water extents of Flood Zone 3a – in such cases the policy requirements should work in tandem with equal importance. 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.
- Surface Water Flood Zone 3a (High Probability): Land within the EA's Risk of Flooding from Surface Water (RoFSW) flood risk extents predicted for up to and including the 1% annual probability of surface water flooding.
- Fluvial Flood Zone 3b (Functional Floodplain): Land within EA modelled fluvial flood risk extents predicted for up to and including the 3.3% AEP return period events (the 2% AEP event is used where the 3.3% AEP fluvial model is not available in line with EA guidance), allowing for the impact of flood defences. It also includes land featured as part of the EA's Flood Storage Areas dataset.

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](#), these are summarised below.

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 1.1*.

Table 1.1: 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 operational 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 major purposes:

- Help LPAs apply the Sequential Test so that development is directed to areas that are at least 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 6](#) 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

82 sites were screened to determine whether they required a site assessment based on their risk of flooding. 18 sites were assessed as part of this Level 2 SFRA, based on the methodology described in [Section 3](#). These are listed in [Table 2.1](#) and mapped in [Figure 2.1](#).

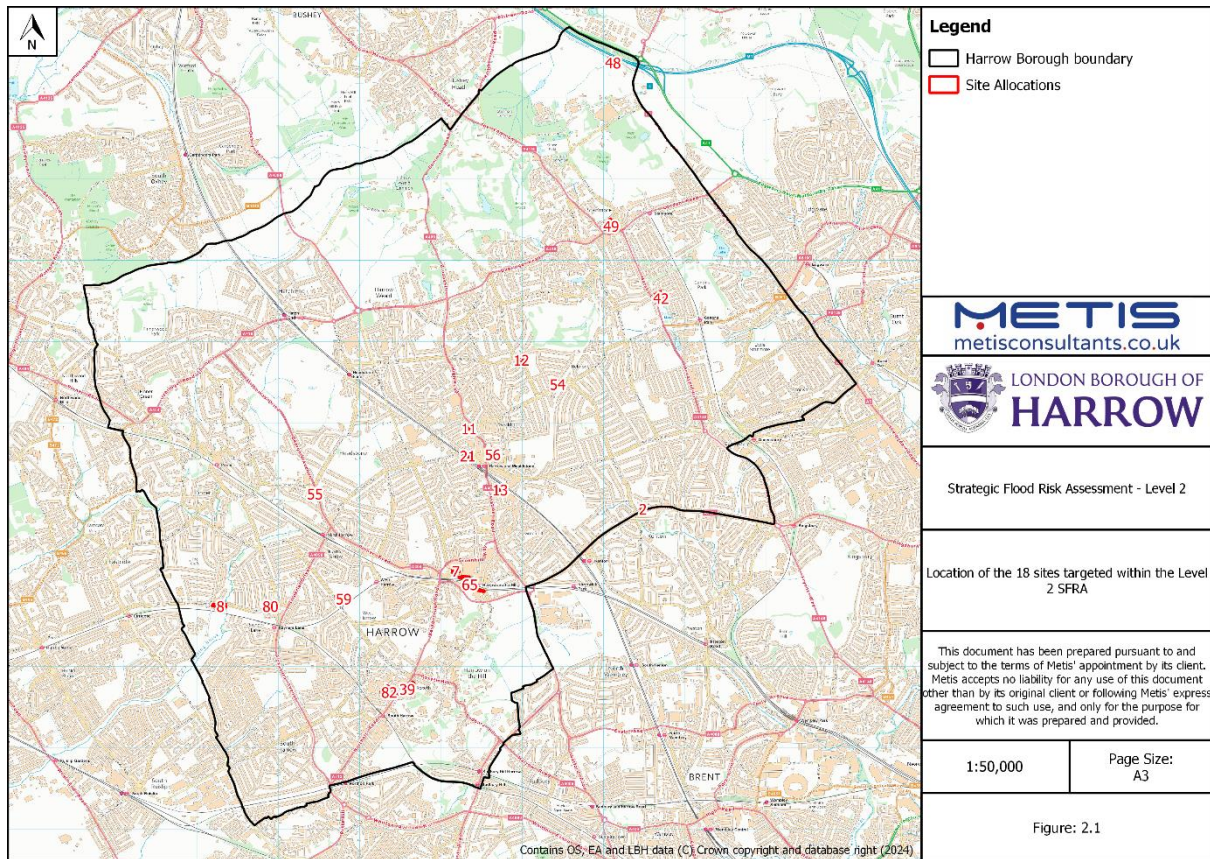
The sites which did not require an assessment should be prioritised for development, in accordance with guidance on the [Sequential Test](#). The sites identified in [Table 2.1](#) have been reviewed to determine whether they can pass the exception test, however, should not be developed if another site at lower risk of flooding can deliver the required development needs for the borough. Developers should consult Harrow LPA if they are planning to develop in an area at high risk of flooding to ensure that there are no other appropriate sites.

Table 2.1: Summary of Site Allocations.

Site ID	Site Name	Proposed Use	Area (ha)
2	Kenton Road	Residential	
	Telephone Exchange	Town centre uses Community uses	0.08
7	Queen's House Carpark	Residential and appropriate town centre uses	0.32
8	Pinner Telephone Exchange	Residential	0.51
11	Iceland Wealdstone	Residential and Retail	0.22
12	Vernon Lodge	Specialised older persons accommodation.	0.36

Site ID	Site Name	Proposed Use	Area (ha)
13	Wealdstone Parole Office	Hostel accommodation Replacement employment (industrial or related) use	0.17
21	Carpark Ellen Webb Drive	Residential Hotel Appropriate town centre uses	0.32
39	Northolt Road Nursery and Carpark at rear of 27 Northolt Road	Residential Nursery Office	0.30
42	Marsh Lane Gas Holders	Residential	0.88
48	Watling Farm	Expanded number of gypsy and traveller pitches	1.06
49	Anmer Lodge	Residential Town centre uses Car parking	1.37
54	Belmont Clinic	Health care centre Community or town centre uses Residential	0.37
55	North Harrow Methodist Church	Church and community facilities Residential Limited level of retail use appropriate for an edge of centre location	0.34
56	Travis Perkins Wealdstone	Industrial (or related) Residential	0.43
59	Brethrens Meeting Hall, The Ridgeway	School Uses on remaining part of site as appropriate	1.39
65	Harrow on the Hill	Residential Rail and bus transportation hub Appropriate town centre uses	1.10
80	Harrow West Conservative Association	Community or employment space Residential	0.16
82	140 Northolt Road, South Harrow	Supermarket Residential development NHS Floorspace	1.57

Figure 2.1. Location of the 18 sites targeted within the Level 2 SFRA.



3 Methodology

3.1 Site Selection

A high-level Screening Assessment was undertaken on these sites to determine whether a Site Assessment was required (*Appendix A*). The criteria used to determine whether a Site Assessment was required is as follows:

“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 0.49% of the site area, and the Flood Zone 3a (surface water) extent exceeds 5% of the site.”

5% has been 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 and on its own merits, employing a threshold as low as 5% should mean that there is sufficient space within the site to design the layout to avoid the need to locate the most vulnerable aspects of the development within the Flood Zone 3a (surface water) extent.

3.2 Analysis

The Site Assessments were carried out using datasets provided by the EA, Thames Water Utilities Limited (TWUL) and Harrow. Data was also 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 was taken from can be interpreted as shown in *Table 3.1*.

Table 3.1: Surface water flood risk hazard categories.

Hazard	Rating	Definition
Low	$0.5 \geq HR < 0.75$	Caution – Flood Zone with shallow flowing water or deep standing water
Moderate	$0.75 \geq HR \leq 1.25$	Dangerous for some (i.e. children) – Danger: Flood Zone with deep or fast flowing water
Significant	$1.25 > HR \leq 2.0$	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 <i>Section 1.2.2</i> . 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 is benefitting 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.
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.

Table 3.3 summarizes the contents of the web mapping that will be produced to accompany the Site Assessments.

Table 3.3: Summary of maps.

Figure	Description
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 the closest data available to the 'higher' allowance

Figure	Description
	peak river flow allowance for the London Management Catchment.
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.
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. This is a detailed representation of the Flood Zone 3a (Surface Water) extent as defined in the Level 1 SFRA and <i>Section 1.2.1</i> .
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 <i>Table 3.1</i> .
Thames Water Utilities Limited (TWUL) Sewer Flooding Records	Provides the sewer flood incidences recorded by TWUL at four-digit postcode resolution.
Areas Susceptible to Groundwater Flooding	Provides the strategic scale map of groundwater flood areas on a 1km grid.
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.

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
	Harrow borough boundary	Polygon demarcating the borough boundary	OS Open Data	Defining study area; geographical boundary for other data needed
	OS Open Rivers	Line files showing the watercourses in the borough	OS Open Data	Determining locations of watercourses
	Reg19 sites Final	Polygons giving outlines of sites in the borough	Harrow 2024	Conducting screening and site level assessments
Digital Terrain Model	LiDAR	Raster containing ground elevation data	EA 2023	Determining low elevation areas susceptible to surface water flooding
Flood defences	Spatial_Flood – Defences (without standardised attributes)	Lines showing EA flood defences which have a standard of protection equal to or better than 1% AEP for rivers and 0.5% AEP from the sea. (Some additional defences are also shown).	EA Web Map Service (WMS)	Analysing how flood defences affect current and future fluvial flooding
	Spatial_Flood – Defences (incl. standardised attributes)	Lines showing all flood defences currently owned, managed or inspected by the EA	EA WMS	

Category	File name	Description	Data source	Purpose
	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	
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 2010	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 within EA modelled fluvial flood risk extents predicted for up to and including AEP extents (2% where 3.3% was not available), and land included within the EA's Flood Storage Areas dataset	Level 1 SFRA (2024 update)	
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	EA 2024	Prioritising sites for assessment; Analysing current and future surface water flood risk;
	RoFSW_1inXX_Depth			

Category	File name	Description	Data source	Purpose
	RoFSW_1inXX_Hazard	of occurring in any given year. Hazard calculated from flood depth and velocity.		Creating surface water flood risk mitigation plan
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	REDACTED - Harrow Sewer Flooding Data - All Dates	Database of historic sewer flooding incidents by four-digit postcode	TWUL 2024	Sewer flood risk assessment
Rivers	Pinn15_Product_6	Data from EA-generated model of River Pinn	EA 2015	Fluvial flood risk assessment (current and future); Determining climate Change allowance extents; Creating fluvial flood risk mitigation plan; Applying Exception Test
	Crane08_P6	Data from EA-generated model of River Crane	EA 2008	
	Product_6_BrentModel_Updates_0514	Data from EA-generated model of River Brent	EA 2014	

4 General Requirements

Table 4.1 outlines the general requirements that all the sites within this Level 2 SFRA must follow. 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 4.1, 4.2, 4.3, and 4.4 of the [Level 1 SFRA](#). These set out the requirements for major developments, minor developments, change of use (including changes to prior approval developments), and individual sites (from other flood risk sources).

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. The fluvial Flood Zones in the borough can be viewed in the Level 1 SFRA [Webmap](#).

Table 4.1: General mitigation requirements for the site allocations.

No.	Mitigation Requirement	Applicable Area	
		Fluvial	Surface Water
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 and Flood Zone 3a	Flood Zone 3a (1% AEP event)
4.2	Flood resistance measures should be considered where predicted flood depths are less than 0.3m. Flood resilience measures should be considered where predicted flood depths are greater than 0.6m. Predicted flood depths between 0.3m and 0.6m should be analysed on a case-by-case basis to determine if resistance measures are sufficient. Design plans should show floor levels (relative to Ordnance Datum) and predicted flood depths.	All	
4.3	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. Where developments are proposed and within Flood Zone 3a (surface water), floodplain compensation must account for	Flood Zone 3b and Flood Zone 3a	Flood Zone 3a (1% AEP event)

	predicted flood depths for the 3.3% AEP and 1% AEP RoFSW mapping or depths predicted by site specific modelling.		
4.4	Flood Warning and Emergency Plans need to feature measures to manage 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 . <i>*Not required for minor and change of use developments where it can be demonstrated that neither a site-specific FRA, drainage strategy, or the second requirement of the Exception Test is necessary.</i>	All	
4.5	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	
4.6	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	
4.7	Development sites within specified distances of ordinary watercourses may require an approved ordinary watercourse consent.	5m buffer area around ordinary watercourses	
4.8	All non-habitable 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. *No habitable basements are permitted in areas of medium or high flood risk.	Flood Zone 3a, Flood Zone 2	Flood Zone 3a (1% AEP event)
4.9	As part of any assessment for non-habitable basement rooms, evidence needs to be submitted to confirm the local water table level. *No habitable basements are permitted in areas of medium or high flood risk.	Flood Zone 3a, Flood Zone 2, Flood Zone 1	Flood Zone 3a (1% AEP event)

Appendix A

Screening Assessment

SFRA ID	Name	Address	Proposed Use	Vulnerability Classification	Site Area (ha)	FZ2 (% of site area)	FZ3a (Fluvial & Tidal - % of site area)	FZ3b (Fluvial & Tidal - % of site area)	Main River 35% CC (% of site area)	FZ3a (Surface Water - % of site area)	1 in 30yr RoFSW Extent (% of site area)	Surface Water Flood Risk Increase due to Climate Change (not currently in 1 in 30yr RoFSW, but in 1 in 100yr RoFSW)	Groundwater Susceptibility Banding	Sewer Flooding?	Reservoir Flooding?	Sequential Test Required?	Exception Test Required?	Site Assessment Required?
1	Harrow View Telephone Exchange	54 Harrow View, Harrow, HA1 1RQ	Residential	More Vulnerable	0.28	0.00	0.00	0.00	0.00	0.00	0.00	NO	<25%	YES	NO	NO	NO	NO
2	Kenton Road Telephone Exchange	5 Kenton Park Parade, Kenton Road, London, HA3 8DH	Residential Town centre uses Community uses	More Vulnerable	0.08	6.24	0.00	0.00	2.96	1.45	0.05	NO	<25%	YES	YES	YES	YES	YES
4	Travellers Rest, Kenton Road	Kenton Road, Harrow, HA3 8AT	Hotel Public house Residential Town centre uses	More Vulnerable	0.69	0.00	0.00	0.00	0.00	1.44	0.00	YES	<25%	YES	NO	YES	YES	NO
6	Former Royal Mail Sorting Office, Elmgrove Road	Elmgrove Road, Harrow, HA1 2RF	Industrial Residential	More Vulnerable	0.3059	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO	NO
7	Queen's House Carpark	2 Kymberley Road, London, HA1 1PT	Residential Town centre appropriate use Reprovision of carpark spaces	More Vulnerable	0.32	0.00	0.00	0.00	0.00	9.63	1.08	NO	N/A	YES	NO	YES	YES	YES
8	Pinner Telephone Exchange	Exchange Walk, Pinner, HA5 5AD	Residential	More Vulnerable	0.5109	68.40	11.87	6.16	26.05	7.46	6.54	NO	<25%	YES	NO	YES	YES	YES
11	Iceland Wealdstone	83, 88 High Street, Harrow, HA3 5DL	Residential Retail	More Vulnerable	0.22	0.00	0.00	0.00	0.00	17.05	12.60	NO	<25%	YES	NO	YES	YES	YES
12	Vernon Lodge	654 Kenton Lane, Harrow, HA3 7LH	Specialist older persons accommodation	More Vulnerable	0.3556	0.00	0.00	0.00	0.00	23.24	11.82	NO	N/A	YES	NO	YES	YES	YES
13	Wealdstone Parote Office	Roslyn Crescent, Harrow, HA1 2SU	Hostel accommodation Replacement employment (industrial or related) use	More Vulnerable	0.1654	0.00	0.00	0.00	0.00	13.29	0.02	NO	<25%	YES	NO	YES	YES	YES
21	Carpark Elen Webb Drive	Elen Webb Drive, London, HA3 5DB	Residential Hotel Appropriate town centre uses Reprovision of car parking spaces	More Vulnerable	0.32	0.00	0.00	0.00	0.00	12.51	9.68	NO	<25%	YES	NO	YES	YES	YES
33	Former Kodak Administration Offices	3312 Headstone Drive, Harrow, HA1 4TY	Flexible employment space Residential	More Vulnerable	0.4711	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO	NO
35	Stanmore Station Carpark	London Road, Stanmore, HA7 4PD	Residential Car parking	More Vulnerable	1.39	0.00	0.00	0.00	0.00	2.07	0.00	YES	N/A	YES	NO	YES	YES	NO
36	Canons Park Station Carpark	229 Donnefield Avenue, Edgware, HA8 6RL	Residential	More Vulnerable	0.43	0.00	0.00	0.00	0.00	0.90	0.00	YES	N/A	YES	NO	YES	YES	NO
38	Hatch End Telephone Exchange	Uxbridge Road, Pinner, HA5 4JB	Residential Appropriate Town centre use (within designated shopping frontage)	More Vulnerable	0.3783	0.00	0.00	0.00	0.00	0.01	0.00	YES	N/A	YES	NO	YES	YES	NO
39	Northolt Road Nursery and Carpark at rear of 27 Northolt Road	27 Northolt Road, South Harrow, Harrow, HA2 0LS	Residential Nursery Office	More Vulnerable	0.2987	0.00	0.00	0.00	0.00	5.83	1.90	NO	N/A	YES	NO	YES	YES	YES
42	Marsh Lane Gas Holders	Edgware, HA8 6TL	Residential	More Vulnerable	0.88	0.00	0.00	0.00	0.00	9.96	1.80	NO	<25%	YES	NO	YES	YES	YES
43	Tesco Station Road	Station Road, Harrow, HA1 2TU	Supermarket Residential	More Vulnerable	2.28	0.00	0.00	0.00	0.00	0.68	0.00	YES	N/A	YES	NO	YES	YES	NO
44	Poet's Corner & Milton Road	Milton Road, Harrow, HA1 2XY	Residential Retail NHS Floorspace Community floorspace	More Vulnerable	4.46	0.00	0.00	0.00	0.00	3.81	1.62	NO	<25%	YES	NO	YES	YES	NO
47	RNOH	Stanmore, HA7 4AP	Hospital Facility Research and innovation institutions (connected to the Hospital Facility) Green Belt Residential	More Vulnerable	41.11	0.00	0.00	0.00	0.00	3.69	2.19	NO	<25%	YES	NO	YES	YES	NO
48	Watling Farm	Watling Farm Close, London, Stanmore, HA7 4UY	Gypsy and traveller pitches	Highly Vulnerable	1.0610	0.00	0.00	0.00	0.00	11.60	6.52	NO	<25%	YES	NO	YES	NO	YES
49	Anmer Lodge	Coverdale Close, Stanmore, HA7 3DJ	Residential Town centre uses Car parking	More Vulnerable	1.37	0.00	0.00	0.00	0.00	21.23	7.49	NO	N/A	YES	NO	YES	YES	YES

SFRA ID	Name	Address	Proposed Use	Vulnerability Classification	Site Area (ha)	FZ2 (% of site area)	FZ3a (Fluvial & Tidal - % of site area)	FZ3b (Fluvial & Tidal - % of site area)	Main River 35% CC (% of site area)	FZ3a (Surface Water - % of site area)	1 in 30yr RoFSW Extent (% of site area)	Surface Water Flood Risk Increase due to Climate Change (not currently in 1 in 30yr RoFSW, but in 1 in 100yr RoFSW)	Groundwater Susceptibility Banding	Sewer Flooding?	Reservoir Flooding?	Sequential Test Required?	Exception Test Required?	Site Assessment Required?
50	Rayners Lane Station Carpark	Rayners Lane, Harrow, HA2 9SJ	Residential Car parking Town centre uses (eastern part of site only)	More Vulnerable	0.85	0.00	0.00	0.00	0.00	3.37	1.81	NO	<25%	YES	NO	YES	YES	NO
51	Harrow Arts Centre	171 Uxbridge Road, Pinner, HA5 4EA	Arts centre and associated uses	Less Vulnerable	0.73	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO	NO
52	Kodak	Harrow, HA1 4TY	Residential Industrial and employment Retail F1 class uses	More Vulnerable	14.9960	0.00	0.00	0.00	0.00	2.06	0.64	NO	<25%	YES	NO	YES	YES	NO
53	Roxeth Library & Clinic	Northolt Road, South Harrow, Harrow, HA2 8EQ	Community uses Town centre uses NHS Floorspace Residential	More Vulnerable	0.13	0.00	0.00	0.00	0.00	0.00	0.00	NO	<25%	YES	NO	NO	NO	NO
54	Belmont Clinic	516 Kenton Lane, Stanmore, Harrow, HA3 7LT	Health care centre Community or town centre uses Residential	More Vulnerable	0.37	0.00	0.00	0.00	0.00	5.50	0.00	YES	N/A	YES	NO	YES	YES	YES
55	North Harrow Methodist Church	Pinner Road, Harrow, HA2 6EQ	Church and community facilities Residential Limited level of retail use appropriate for an edge of centre location	More Vulnerable	0.3354	0.00	0.00	0.00	0.00	5.24	0.00	YES	N/A	YES	NO	YES	YES	YES
56	Travis Perkins Wealdstone	24-42 Palmerston Road, Harrow, HA3 7RR	Industrial (or related) Residential	More Vulnerable	0.4316	25.14	0.00	0.00	0.00	0.00	0.00	NO	<25%	YES	NO	YES	NO	YES
57	Havelock Place	Havelock Place, Harrow, HA1 1LJ	Residential Town centre uses Public Realm	More Vulnerable	0.9480	0.00	0.00	0.00	0.00	3.00	1.81	NO	N/A	YES	NO	YES	YES	NO
59	Brethrens Meeting Hall, The Ridgeway	Harrow, HA2 7DA	School Uses on remaining part of site as appropriate	More Vulnerable	1.39	0.00	0.00	0.00	0.00	10.89	3.11	NO	N/A	YES	NO	YES	YES	YES
64	15-29 College Road	15-29 College Road, Harrow, HA1 1BA	Residential Town centre uses Public Realm	More Vulnerable	0.3765	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO	NO
65	Harrow on the Hill	Harrow, HA1 1BB	Residential Rail and bus transportation hub Appropriate town centre uses	More Vulnerable	1.18	0.00	0.00	0.00	0.00	8.73	6.01	NO	N/A	YES	NO	YES	YES	YES
71	Byron Quarter	Harrow, HA3 5BD	Residential Leisure and community uses Car-parking NHS floorspace	More Vulnerable	5.74	0.00	0.00	0.00	0.00	2.44	1.09	NO	<25%	YES	NO	YES	YES	NO
72	Grange Farm	South Harrow, Harrow, HA2 0DD	Residential Community hub Open space	More Vulnerable	4.08	0.00	0.00	0.00	0.00	1.52	0.42	NO	N/A	YES	NO	YES	YES	NO
74	Peel Road	Peel Road, Harrow, HA3 7QX	Residential Car parking Place of worship Civic or community uses	More Vulnerable	0.5146	0.00	0.00	0.00	0.00	0.00	0.00	NO	<25%	YES	NO	NO	NO	NO
76	Wolstenholme	Rectory Lane, Stanmore, HA7 4AQ	Specialist older person housing	More Vulnerable	0.2503	0.00	0.00	0.00	0.00	0.00	0.00	NO	N/A	YES	NO	NO	NO	NO
77	Greenhill Way	Greenhill Way, Harrow, HA1 1LE	Residential Town centre uses NHS Floorspace Community/civic uses Public House Car parking	More Vulnerable	1.8428	0.00	0.00	0.00	0.00	0.02	0.00	YES	N/A	YES	NO	YES	YES	NO
78	Station Road East, Harrow	Station Road, Harrow, HA1 1NA	Residential Town Centre uses	More Vulnerable	0.8805	0.00	0.00	0.00	0.00	1.59	0.00	YES	N/A	YES	NO	YES	YES	NO
79	Harrow School Estate & John Lyon School	Harrow	Refurbishment/redevelopment of school buildings, sports facilities and enhancement of playing fields	More Vulnerable	112.71	0.00	0.00	0.00	0.00	3.38	1.60	NO	N/A	YES	NO	YES	YES	NO
80	Harrow West Conservative Association	209 Headstone Lane, Harrow, HA2 6ND	Community or employment space Residential	More Vulnerable	0.1592	0.00	0.00	0.00	0.00	18.26	1.34	NO	<25%	YES	NO	YES	YES	YES

SFRA ID	Name	Address	Proposed Use	Vulnerability Classification	Site Area (ha)	FZ2 (% of site area)	FZ3a (Fluvial & Tidal - % of site area)	FZ3b (Fluvial & Tidal - % of site area)	Main River 35% CC (% of site area)	FZ3a (Surface Water - % of site area)	1 in 30yr RoFSW Extent (% of site area)	Surface Water Flood Risk Increase due to Climate Change (not currently in 1 in 30yr RoFSW, but in 1 in 100yr RoFSW)	Groundwater Susceptibility Banding	Sewer Flooding?	Reservoir Flooding?	Sequential Test Required?	Exception Test Required?	Site Assessment Required?
82	140 Northolt Road, South Harrow	140 Northolt Road, South Harrow, HA2 0EG	Supermarket Residential development NHS Floorspace Open Space	More Vulnerable	1.5664	0.00	0.00	0.00	0.00	11.35	4.41	NO	N/A	YES	NO	YES	YES	YES

SFRA ID

1. If proposed use of site is unknown, then vulnerability classification is assumed to be 'more vulnerable' (residential)
2. Travellers pitches sites have been given a 'Highly Vulnerable' classification as these sites could be either 'Highly vulnerable' or 'More Vulnerable' dependent on the property type
3. Sites with 0% of areas in FZ2 and FZ3a/b do not require the Sequential Test (on the basis that other forms of flood risk are generally manageable on a site by site basis)
4. Less vulnerable sites within FZ2 and 3a/b require the Sequential Test
5. More vulnerable sites within FZ2 and 3a/b require the Sequential Test
6. More vulnerable sites in FZ3a require the Sequential and Exception Tests
7. Highly vulnerable sites in FZ2 require the Sequential and Exception Tests
8. Highly vulnerable sites are not suitable in FZ3 a/b
9. Water Compatible use in FZ2 and 3a/b require the Sequential Test
10. Site assessment is recommended where the site is within FZ2, FZ3a (fluvial), FZ3b (fluvial), Main River +CC, or above 5% is within FZ3a (surface water)
11. Flood Zone 3a for surface water is defined using the full 1 in 100 extent from the EA Risk of Flooding from Surface Water Map

Appendix B

Site Assessments

SITE ASSESSMENT - Kenton Road Telephone Exchange

Address: 5 Kenton Park Parade, Kenton Road, London, HA3 8DH

Area: 0.08 Ha
Site Reference: 2

Current Use	Proposed Use
Commercial and Residential	Residential Town centre uses Community uses

Current Vulnerability Classification	Proposed Vulnerability Classification
More Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			Groundwater		
FZ2	6.24	% 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*	0.05	% of Site	Artificial		
1 in 100*	1.45	% of Site	Reservoir	Yes	At risk?
1 in 1000*	38.1	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					255

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.

* return periods for potential flood events

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 (Un defended)			
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 from fluvial flooding from the Wealdstone Brook, especially in the western part of the site. There is no detailed flood data available for the site.

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

Mitigation / FRA Requirements

- Development should be directed away from the north west of the site where there is higher risk of surface water flooding.
- If basements are proposed, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9 for additional basement stipulations.
- 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 Section 4 mitigation requirement numbers 4.2, 4.4 and 4.5 for further development stipulations.
- Develop a Flood Emergency and Evacuation Plan for the site.
- Site users should be signed up to the EA's Flood Warning Service.

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	0.00 - 0.15	m
Max. Depth	0.15 - 0.30	0.30 - 0.60	> 1.20	m
Max. Velocity	0.00 - 0.25	0.00 - 0.25	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 medium risk of surface water flooding, however there is a small portion at higher risk, along the northwest of the site. The areas outside the west of the site are at high risk.
- Climate change will increase the depth and maximum velocity of surface water flooding.

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

Mitigation - Flood Risk Requirements

- Development should be directed away from the north west of the site where there is higher risk of surface water flooding.
- Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5.
- For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

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 Policy SI 13 of the London Plan.
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Kenton Road Telephone Exchange

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within a postcode area where there are 255 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. 	<ul style="list-style-type: none"> The site is classified as having <25% susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is at high risk of flooding from Bentley Priory reservoir.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<ul style="list-style-type: none"> 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

<p>A. Can the development be future proofed for climate change considerations?</p> <ul style="list-style-type: none"> Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations. <p>B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?</p> <ul style="list-style-type: none"> 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 London Plan Policy SI 13. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 for compensatory flood storage stipulations. <p>C. What is the cumulative impact of the development land use change and will flood risk increase?</p> <ul style="list-style-type: none"> The development land use is not changing. The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development. 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. <p>D. How can the development reduce risk overall?</p> <ul style="list-style-type: none"> Direct development away from north west of the site. Safe access and egress routes should be directed to the east of the site towards Kenton Road where there is a lower risk of flooding. By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff. By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3. <p>E. Will development require a flood risk permit/watercourse consent?</p> <ul style="list-style-type: none"> No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse. <p>F. Can the site pass the Exception Test?</p> <ul style="list-style-type: none"> Yes. The Exception Test is required for this site as 1.45% of the site area is in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'. This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).
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SITE ASSESSMENT - Queen's House Carpark

Address: 2 Kymberley Road, London, HA1 1PT

Area: 0.32 Ha
Site Reference: 7

Current Use	Proposed Use
Multi-Level Carpark	Residential and appropriate town centre uses

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	0	% of Site
1 in 30*	1.08	% of Site	Artificial		
1 in 100*	9.63	% of Site	Reservoir	NO	At risk?
1 in 1000*	20.71	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					82

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.

* return periods for potential flood events

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 (Un defended)			
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.

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

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	0.30 - 0.60	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	0.75 - 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
<ul style="list-style-type: none"> The site is at high risk of surface water flooding, particularly along the south east of the site. 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 north west of the site towards Kymberley Road where there is a lower risk of flooding.

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the southern eastern areas of the site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Queen's House Carpark

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within a postcode area where there are 82 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 nearby the site. 	<ul style="list-style-type: none"> The site is classified as having no susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

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

- Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations.

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 London Plan Policy SI 13.
- See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 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 'less vulnerable' to 'more vulnerable'.
- The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development.
- 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?

- Direct development away from south west of the site.
- Safe access and egress routes should be directed to the north west of the site towards Kymberley Road where there is a lower risk of flooding.
- By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff.
- By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3.

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

- No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse.

F. Can the site pass the Exception Test?

- Yes. The Exception Test is required for this site as 9.63% of the site area is in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'.
- This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).

SITE ASSESSMENT - Pinner Telephone Exchange

Address: Exchange Walk, Pinner, HA5 5AD

Area: 0.51 Ha
Site Reference: 8

Current Use	Proposed Use
Car Park and Services	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			Groundwater		
FZ2	68.4	% of Site	<25	100	% of Site
FZ3a	11.87	% of Site	25-50	0	% of Site
FZ3b	6.16	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	6.54	% of Site	Artificial		
1 in 100*	7.46	% of Site	Reservoir	No	At risk?
1 in 1000*	23.18	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					117

Flood Defences
Site is in an area benefitting from flood defences.
Flood Warning Area
The EA Flood Warning Service is available at this site.

* return periods for potential flood events

FLUVIAL / TIDAL

Risk Assessment (Defended)				
Parameter	FZ3b	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/D	N/D	N/D	Hrs
Min. Depth	N/D	N/D	N/D	m
Max. Depth	N/D	N/D	N/D	m
Max. Velocity	N/D	N/D	N/D	m/s
Max Flood Level	N/D	N/D	N/D	m AOD
Max Ground Level	50.45	50.45	50.45	m AOD
Min Ground Level	41.67	41.67	41.67	m AOD
Max Flood Hazard	N/D	N/D	N/D	N/A
Duration of Flood	N/D	N/D	N/D	Hrs

* The +35% Climate Change Allowance event is reviewed

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

Description of Flood Mechanism

- The site is at risk from fluvial flooding from Yeading Brook, especially on its eastern part. There is no detailed flood data available for the site.
- The flood risk extent for the climate change scenario for the Yeading Brook covers the entire site.
- Climate change is predicted to increase the flood depth, hazard, velocity and flood levels in the defended scenario.

Site Access / Egress

Site access and egress routes will be directed to the west of the site towards Cannon Lane where there is a lower risk of fluvial flooding.

Mitigation / FRA Requirements

- Only 'Water Compatible' or 'Essential' uses (subject to the Exception Test) are permitted in FZ3b.
- Self-contained habitable basements and bedrooms are not permitted in FZ3a. See SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9 for additional basement stipulations.
- 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 Section 4 mitigation requirement numbers 4.2 and 4.3 for further development stipulations.
- Develop a Flood Emergency and Evacuation Plan for the site.
- Site users should be signed up to the 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	0.00 - 0.15	m
Max. Depth	0.90 - 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 the east of the site.
- 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 west of the site towards Cannon Lane where there is a lower risk of flooding.

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.
- Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5.
- For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

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 Policy SI 13 of the London Plan.
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Pinner Telephone Exchange

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within a postcode area where there are 117 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. 	<ul style="list-style-type: none"> The site is classified as having <25% susceptibility to groundwater flooding. The site is underlain by Lambeth Group bedrock geology and Alluvium superficial deposits to the east. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

<p>A. Can the development be future proofed for climate change considerations?</p> <ul style="list-style-type: none"> Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations. <p>B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?</p> <ul style="list-style-type: none"> 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 London Plan Policy SI 13. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 for compensatory flood storage stipulations. <p>C. What is the cumulative impact of the development land use change and will flood risk increase?</p> <ul style="list-style-type: none"> The development land use is changing from 'less vulnerable' to 'more vulnerable'. The site is 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 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. <p>D. How can the development reduce risk overall?</p> <ul style="list-style-type: none"> Direct development away from eastern areas of the site. Safe access and egress routes should be directed to the west of the site towards Cannon Lane where there is a lower risk of flooding. By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff. By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3. <p>E. Will development require a flood risk permit/watercourse consent?</p> <ul style="list-style-type: none"> Yes. The site is located within 8m of a Main River, Yeading Brook, therefore a flood risk activity permit will be needed. No, the site is not located within 5m of an Ordinary Watercourse, therefore a watercourse consent will not be needed. <p>F. Can the site pass the Exception Test?</p> <ul style="list-style-type: none"> Yes. The Exception Test is required for this site as 7.46% of the site area is in Flood Zone 3a (surface water) and 11.87% of the site area is in Flood Zone 3a (fluvial) and the proposed vulnerability classification is 'More Vulnerable'. The Exception Test is not required in Flood Zone 3b (Fluvial) as 'More Vulnerable' development is not permitted. Only 'Water Compatible' development is permitted in Flood Zone 3b (fluvial). 'Essential Infrastructure' is acceptable in Flood Zone 3b (fluvial) subject to the Exception Test. This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).

SITE ASSESSMENT - Iceland Wealdstone

Address: 83, 88 High Street, Harrow, HA3 5DL	Area: 0.22 Ha
	Site Reference: 11

Current Use	Proposed Use
Supermarket and surface level carpark	Residential and Retail

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*	12.6	% of Site	Artificial		
1 in 100*	17.05	% of Site	Reservoir	No	At risk?
1 in 1000*	30.86	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					137

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.

* return periods for potential flood events

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 (Un defended)			
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.

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

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	0.30 - 0.60	0.60 - 0.90	> 1.20	m
Max. Velocity	0.25 - 0.50	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
<ul style="list-style-type: none"> The site is at high risk of surface water flooding, particularly along the centre of the site. High Street, at the east of the site, is at high risk of surface water flooding. Climate change will increase the depth and maximum velocity of surface water flooding.

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

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the central areas of the site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Iceland Wealdstone

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within a postcode area where there are 137 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. 	<ul style="list-style-type: none"> The site is classified as having <25% susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

<p>A. Can the development be future proofed for climate change considerations?</p> <ul style="list-style-type: none"> Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations. <p>B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?</p> <ul style="list-style-type: none"> 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 London Plan Policy SI 13. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 for compensatory flood storage stipulations. <p>C. What is the cumulative impact of the development land use change and will flood risk increase?</p> <ul style="list-style-type: none"> The development land use is changing from 'less vulnerable' to 'more vulnerable'. The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development. 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. <p>D. How can the development reduce risk overall?</p> <ul style="list-style-type: none"> Direct development away from central areas of the site. Safe access and egress routes should be directed to the west of the site towards Wolseley Road where there is a lower risk of flooding. By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff. By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3. <p>E. Will development require a flood risk permit/watercourse consent?</p> <ul style="list-style-type: none"> No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse. <p>F. Can the site pass the Exception Test?</p> <ul style="list-style-type: none"> Yes. The Exception Test is required for this site as 17.05% of the site area in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'. This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).

SITE ASSESSMENT - Vernon Lodge

Address: 654 Kenton Lane, Harrow, HA3 7LH

Area: 0.36 Ha
Site Reference: 12

Current Use	Proposed Use
Vacant former hostel accommodation	Specialised older persons accommodation

Current Vulnerability Classification	Proposed Vulnerability Classification
N/A	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	0	% of Site
1 in 30*	11.82	% of Site	Artificial		
1 in 100*	23.24	% of Site	Reservoir	No	At risk?
1 in 1000*	43.15	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode				155 / 169	

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.

* return periods for potential flood events

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 (Un defended)			
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.

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

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	0.60 - 0.90	0.60 - 0.90	m
Max. Velocity	1.00 - 2.00	1.00 - 2.00	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
<ul style="list-style-type: none"> The site is at high risk of surface water flooding, particularly around the west and north part of the existing building in the site. There is no increase in surface water flood depth, velocity or hazard due to climate change. However, there is an increase in surface water flood extent due to climate change.

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

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the northern and western areas of the site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Vernon Lodge

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within two postcode areas. There are 169 and 155 reported flood incidents from sewer flooding in HA3 7 and HA7 2 respectively. The site is assumed to be served by separate surface water and foul sewer networks, given their proximity to the site. 	<ul style="list-style-type: none"> The site is classified as having no susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

<p>A. Can the development be future proofed for climate change considerations?</p> <ul style="list-style-type: none"> Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations. <p>B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?</p> <ul style="list-style-type: none"> 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 London Plan Policy SI 13. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 for compensatory flood storage stipulations. <p>C. What is the cumulative impact of the development land use change and will flood risk increase?</p> <ul style="list-style-type: none"> The development land use is changing to 'more vulnerable'. The site is covered by impermeable areas with some green spaces. This offers an opportunity to improve flood attenuation through the new development. 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. <p>D. How can the development reduce risk overall?</p> <ul style="list-style-type: none"> Direct development away from northern and western areas of the site. Safe access and egress routes should be directed to the north of the site towards Mountside where there is a lower risk of flooding. By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff. By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3. <p>E. Will development require a flood risk permit/watercourse consent?</p> <ul style="list-style-type: none"> No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse. <p>F. Can the site pass the Exception Test?</p> <ul style="list-style-type: none"> Yes. The Exception Test is required for this site as 23.24% of the site area in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'. This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).

SITE ASSESSMENT - Wealdstone Parole Office

Address: Rosslyn Crescent, Harrow, HA1 2SU

Area: 0.17 Ha
Site Reference: 13

Current Use	Proposed Use
Vacant, former parole office	Hostel accommodation Replacement employment (industrial or related) use

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*	0.02	% of Site	Artificial		
1 in 100*	13.29	% of Site	Reservoir	No	At risk?
1 in 1000*	99.73	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					94

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.

* return periods for potential flood events

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 (Un defended)			
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.

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

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	0.15 - 0.30	0.30 - 0.60	0.90 - 1.20	m
Max. Velocity	0.00 - 0.25	0.50 - 1.00	1.00 - 2.00	m/s
Max. Hazard	0.50 - 0.75	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
<ul style="list-style-type: none"> The site is at medium risk of surface water flooding, particularly along the south east of the site. Climate change will increase the depth and maximum velocity of surface water flooding.

Site Access / Egress
Safe access and egress routes should be directed to the southwest corner of the site towards Rosslyn Crescent where there is a lower risk of flooding.

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the south east of the site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Wealdstone Parole Office

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within a postcode area where there are 94 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. 	<ul style="list-style-type: none"> The site is classified as having <25% susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

- A. Can the development be future proofed for climate change considerations?**
- Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations.
- 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 London Plan Policy SI 13.
 - See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 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 'less vulnerable' to 'more vulnerable'.
 - The site is 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 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?**
- Direct development away from south east of the site.
 - Safe access and egress routes should be directed to the southwest corner of the site towards Rosslyn Crescent where there is a lower risk of flooding.
 - By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff.
 - By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3.
- E. Will development require a flood risk permit/watercourse consent?**
- No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse.
- F. Can the site pass the Exception Test?**
- Yes. The Exception Test is required for this site as 13.29% of the site area in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'.
 - This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).

SITE ASSESSMENT - Carpark Ellen Webb Drive

Address: Ellen Webb Drive, London, HA3 5DB

Area: 0.32 Ha
Site Reference: 21

Current Use	Proposed Use
Car Park	Residential Hotel Appropriate town centre uses, re-provision of car parking spaces

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*	9.68	% of Site	Artificial		
1 in 100*	12.51	% of Site	Reservoir	No	At risk?
1 in 1000*	24.02	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					137

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.

* return periods for potential flood events

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 (Un defended)			
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.

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

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	>1.20	>1.20	>1.20	m
Max. Velocity	1.00-2.00	0.25-0.50	0.50-1.00	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
<ul style="list-style-type: none"> The site is at high risk of surface water flooding, particularly in the northwest of the site The intersection of Ellen Webb Drive and Headstone Drive, is at high risk of surface water flooding. Climate change will increase the maximum velocity of surface water flooding and increase the extent of flood risk.

Site Access / Egress
<ul style="list-style-type: none"> Safe access and egress routes should be directed to the north of the site towards Ellen Webb Drive where there is a lower risk of flooding. The upstream and downstream intersections of Ellen Webb Drive are at high risk of surface flooding.

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the west side of the site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Carpark Ellen Webb Drive

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within a postcode area where there are 137 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. 	<ul style="list-style-type: none"> The site is classified as having <25% susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

- A. Can the development be future proofed for climate change considerations?**
- Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations.
- 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 London Plan Policy SI 13.
 - See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 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 'less vulnerable' to 'more vulnerable'.
 - The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development.
 - 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?**
- Direct development away from the north west of the site.
 - Safe access and egress routes should be directed to the north of the site towards Ellen Webb Drive where there is a lower risk of flooding.
 - By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff.
 - By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3.
- E. Will development require a flood risk permit/watercourse consent?**
- No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse.
- F. Can the site pass the Exception Test?**
- Yes. The Exception Test is required for this site as 12.51% of the site area in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'.
 - This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).

SITE ASSESSMENT -Northolt Road Nursery and Carpark at rear of 27 Northolt Road

Address: 27 Northolt Road, South Harrow, Harrow, HA2 0LS

Area: 0.3 Ha
Site Reference: 39

Current Use	Proposed Use
Current council nursery and carpark	Residential Nursery Office

Current Vulnerability Classification	Proposed Vulnerability Classification
Car Park - Less Vulnerable Children Centre - More Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			Groundwater		
FZ2	0	% of Site	<25	N/A	% of Site
FZ3a	0	% of Site	25-50	N/A	% of Site
FZ3b	0	% of Site	50-75	N/A	% of Site
Surface Water			>75	N/A	% of Site
1 in 30*	1.9	% of Site	Artificial		
1 in 100*	5.83	% of Site	Reservoir	No	At risk?
1 in 1000*	22.71	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					169

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.

* return periods for potential flood events

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 (Un defended)			
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.

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

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	0.50-1.00	1.00-2.00	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
<ul style="list-style-type: none"> Both sites are at high risk of surface water flooding, particularly along the west of the sites. The Car Park is at greater risk than the Children Centre. Northolt Road, to the west of the both sites, is at high risk of surface water flooding. Climate change will increase the depth of surface water flooding.

Site Access / Egress
<ul style="list-style-type: none"> Car Park - Safe access and egress routes should be directed to the northeast of the site towards Brigade Close where there is a lower risk of flooding. Children Centre - Safe access and egress routes should be directed to the east of the site towards Grange Road where there is a lower risk of flooding.

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the northwest side of the both sites where there is higher risk of surface water flooding. For the Carpark, comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9. For the Children Centre, comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2, 4.4 and 4.5.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT -Northolt Road Nursery and Carpark at rear of 27 Northolt Road

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within a postcode area where there are 169 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. 	<ul style="list-style-type: none"> The site is classified as having no susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, then the 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

- A. Can the development be future proofed for climate change considerations?**
- Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations.
- 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 London Plan Policy SI 13.
 - See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 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 'less vulnerable' to 'more vulnerable' for car park and the development land use is not changed for children centre .
 - The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development.
 - 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?**
- Direct development away from the northwest site for car park and children centre.
 - Car Park - Safe access and egress routes should be directed to the northeast of the site towards Brigade Close where there is a lower risk of flooding.
 - Children Centre - Safe access and egress routes should be directed to the east of the site towards Grange Road where there is a lower risk of flooding.
 - By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff.
 - By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3.
- E. Will development require a flood risk permit/watercourse consent?**
- No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse.
- F. Can the site pass the Exception Test?**
- Yes. The Exception Test is required for this site as 5.83% of the site area in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'.
 - This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).

SITE ASSESSMENT - Marsh Lane Gas Holders

Address: Edgware, HA8 6TL	Area: 0.88 Ha
	Site Reference: 42

Current Use	Proposed Use
Former gas holders site, currently unused	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*	1.8	% of Site	Artificial		
1 in 100*	9.96	% of Site	Reservoir	No	At risk?
1 in 1000*	44.84	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					344

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.

* return periods for potential flood events

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 (Un defended)			
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.

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

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	0.30-0.60	0.60-0.90	m
Max. Velocity	0.00-0.25	1.00-2.00	1.00-2.00	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
<ul style="list-style-type: none"> The site is at high risk of surface water flooding, particularly along the west of the site. Marsh Lane, at the west of the site, is at high risk of surface water flooding. Climate change will increase the depth and maximum hazard of surface water flooding.

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

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the west side of the site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable, especially due to the potential risk for groundwater contamination.

SITE ASSESSMENT - Marsh Lane Gas Holders

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within a postcode area where there are 344 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. 	<ul style="list-style-type: none"> The site is classified as having <25% susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. The site is a former gas works and there is the potential for groundwater contamination. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues or water quality 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

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

- Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations.

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 London Plan Policy SI 13.
- See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 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 'less vulnerable' to 'more vulnerable'.
- The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development.
- 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?

- Direct development away from the west of the site.
- Safe access and egress routes should be directed to the northeast of the site towards Wychwood Avenue where there is a lower risk of flooding.
- By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff.
- By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3.

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

- No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse.

F. Can the site pass the Exception Test?

- Yes. The Exception Test is required for this site as 9.96% of the site area in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'.
- This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).

SITE ASSESSMENT - Watling Farm

Address: Watling Farm Close, London, Stanmore, HA7 4UY

Area: 1.06 Ha
Site Reference: 48

Current Use	Proposed Use
Gypsy and traveller pitches	Expanded number of gypsy and traveller pitches

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	Highly 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*	6.52	% of Site	Artificial		
1 in 100*	11.6	% of Site	Reservoir	No	At risk?
1 in 1000*	43.24	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					84

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.

* return periods for potential flood events

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 (Un defended)			
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.

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

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	0.90-1.20	>1.20	m
Max. Velocity	1.00-2.00	>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
<ul style="list-style-type: none"> The site is at high risk of surface water flooding, particularly along the centre of the site. Watling Farm Close, at the centre of the site, is at high risk of surface water flooding. Climate change will increase the depth and maximum hazard of surface water flooding and the extent of flood risk.

Site Access / Egress
Watling Farm Close is at high risk of surface water flooding and is the only direct route out of the Farm. A safe 'haven' should be provided to the southeast of the site, where flood risk is not predicted.

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> 'Highly Vulnerable' development should not be permitted at this site within Flood Zone 3a (surface water). Development must comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2, 4.4 and 4.5. If 'More Vulnerable' development is proposed within Flood Zone 3a (surface water) then development must comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1 and 4.3.

Mitigation - Surface Water Drainage
Not applicable for the proposed use.

SITE ASSESSMENT - Watling Farm

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within a postcode area where there are 84 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. 	<ul style="list-style-type: none"> The site is classified as having <25% susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

<p>A. Can the development be future proofed for climate change considerations?</p> <ul style="list-style-type: none"> Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient stipulations. <p>B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?</p> <ul style="list-style-type: none"> The site can be made safe for development throughout its lifetime through the incorporation of a 'safe haven' and ensuring development occurs outside of Flood Zone 3a (surface water). See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 for compensatory flood storage stipulations. <p>C. What is the cumulative impact of the development land use change and will flood risk increase?</p> <ul style="list-style-type: none"> The development land use is changing from 'Less Vulnerable' to 'Highly Vulnerable'. The site is covered by permeable areas. Development should not be permitted at this site within Flood Zone 3a (surface water). <p>D. How can the development reduce risk overall?</p> <ul style="list-style-type: none"> Direct development away from centre of the site. Safe access and egress routes should be directed to the southeast of the site where there is a lower risk of flooding. A 'safe haven' should be designated due to the risk on Watling Farm Close. By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding. By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3. However, development should not be permitted at this site within Flood Zone 3a (surface water). <p>E. Will development require a flood risk permit/watercourse consent?</p> <ul style="list-style-type: none"> No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse. <p>F. Can the site pass the Exception Test?</p> <ul style="list-style-type: none"> The Exception Test is not required for this site if 'Highly Vulnerable' development is proposed within Flood Zone 3a (surface water) as the development would not be permitted.
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SITE ASSESSMENT - Anmer Lodge

Address: Coverdale Close, Stanmore, HA7 3DJ

Area: 0.37 Ha
Site Reference: 49

Current Use	Proposed Use
Car park	Residential Town centre uses Car parking

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			Groundwater		
FZ2	0	% of Site	<25	N/A	% of Site
FZ3a	0	% of Site	25-50	N/A	% of Site
FZ3b	0	% of Site	50-75	N/A	% of Site
Surface Water			>75	N/A	% of Site
1 in 30*	7.49	% of Site	Artificial		
1 in 100*	21.23	% of Site	Reservoir	No	At risk?
1 in 1000*	56.02	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					135 / 84

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.

* return periods for potential flood events

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 (Un defended)			
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.

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

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	0.60-0.90	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	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
<ul style="list-style-type: none"> The site is at high risk of surface water flooding, particularly along the southeast of the site. Climate change will increase the depth, maximum velocity and maximum depth of surface water flooding.

Site Access / Egress
Safe access and egress routes should be directed to the southwest of the site towards Rainsford Close and Coverdale Close where there is a lower risk of flooding.

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the southeast side of the site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Anmer Lodge

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within two postcode areas where there are 135 and there are 84 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. 	<ul style="list-style-type: none"> The site is classified as having no susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, then the 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

- A. Can the development be future proofed for climate change considerations?**
- Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations.
- 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 London Plan Policy SI 13.
 - See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 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 'less vulnerable' to 'more vulnerable'.
 - The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development.
 - 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?**
- Direct development away from the southeast of the site.
 - Safe access and egress routes should be directed to the southwest of the site towards Rainsford Close and Coverdale Close where there is a lower risk of flooding.
 - By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff.
 - By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3.
- E. Will development require a flood risk permit/watercourse consent?**
- No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse.
- F. Can the site pass the Exception Test?**
- Yes. The Exception Test is required for this site as 21.23% of the site area in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'.
 - This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).

SITE ASSESSMENT - Belmont Clinic

Address: 516 Kenton Lane, Stanmore, Harrow, HA3 7LT

Area: 0.37 Ha
Site Reference: 54

Current Use	Proposed Use
Medical centre	Health care centre Community or town centre uses 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	0	% of Site
1 in 30*	0	% of Site	Artificial		
1 in 100*	5.5	% of Site	Reservoir	No	At risk?
1 in 1000*	9.53	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					169 / 255

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.

* return periods for potential flood events

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 (Un defended)			
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.

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

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	0.00 - 0.25	0.50 - 1.00	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
<ul style="list-style-type: none"> The site is at medium risk of surface water flooding, particularly in the centre of the site. 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 south west of the site towards Kenton Lane where there is a lower risk of flooding.

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the centre of the site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Belmont Clinic

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within three different postcode areas where there are 155, 169 and 255 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. 	<ul style="list-style-type: none"> The site is classified as having no susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

<p>A. Can the development be future proofed for climate change considerations?</p> <ul style="list-style-type: none"> Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations. <p>B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?</p> <ul style="list-style-type: none"> 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 London Plan Policy SI 13. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 for compensatory flood storage stipulations. <p>C. What is the cumulative impact of the development land use change and will flood risk increase?</p> <ul style="list-style-type: none"> The development land use is changing from 'less vulnerable' to 'more vulnerable'. The site is 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 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. <p>D. How can the development reduce risk overall?</p> <ul style="list-style-type: none"> Direct development away from centre of the site. Safe access and egress routes should be directed to the south west of the site towards Kenton Lane where there is a lower risk of flooding. By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff. By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3. <p>E. Will development require a flood risk permit/watercourse consent?</p> <ul style="list-style-type: none"> No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse. <p>F. Can the site pass the Exception Test?</p> <ul style="list-style-type: none"> Yes. The Exception Test is required for this site as 5.5% of the site area in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'. This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).
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SITE ASSESSMENT - North Harrow Methodist Church

Address: Pinner Road, Harrow, HA2 6EQ	Area: 0.3354 Ha
	Site Reference: 55

Current Use	Proposed Use
Church, associated hall and Scout Hall	Church and community facilities Residential Limited level of retail use appropriate for an edge of centre

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	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	0	% of Site	Artificial		
1 in 100*	5.24	% of Site	Reservoir	No	At risk?
1 in 1000*	14.27	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					86

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.

* return periods for potential flood events

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.

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

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	0.00-0.00	0.00-0.15	<0.15	m
Max. Depth	0.00-0.00	0.15-0.30	0.30-0.60	m
Max. Velocity	0.00-0.00	0.25-0.50	1.00-2.00	m/s
Max. Hazard	0.00-0.00	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
<ul style="list-style-type: none"> The site is at moderate risk of surface water flooding, particularly in the south area of the site. Climate change will increase the maximum depth, velocity and hazard of surface water flooding.

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

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the southern areas of the site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - North Harrow Methodist Church

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within a postcode area where there are 86 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. 	<ul style="list-style-type: none"> The site is classified as having no susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

<p>A. Can the development be future proofed for climate change considerations?</p> <ul style="list-style-type: none"> Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations. <p>B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?</p> <ul style="list-style-type: none"> 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 London Plan Policy SI 13. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 for compensatory flood storage stipulations. <p>C. What is the cumulative impact of the development land use change and will flood risk increase?</p> <ul style="list-style-type: none"> The development land use remains as 'more vulnerable'. The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development. 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. <p>D. How can the development reduce risk overall?</p> <ul style="list-style-type: none"> Direct development away from south area of the site. Safe access and egress routes should be directed to the northeast of the site towards Pinner Road where there is a lower risk of flooding. By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff. By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3. <p>E. Will development require a flood risk permit/watercourse consent?</p> <ul style="list-style-type: none"> No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse. <p>F. Can the site pass the Exception Test?</p> <ul style="list-style-type: none"> Yes. The Exception Test is required for this site as 5.24% of the site area is in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'. This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).
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SITE ASSESSMENT - Travis Perkins Wealdstone

Address: 24-42 Palmerston Road, Harrow, HA3 7RR	Area: 0.4316 Ha
	Site Reference: 56

Current Use	Proposed Use
Current Travis Perkins builders merchant and An adjacent car yard	Industrial (or related) Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			Groundwater		
FZ2	25.14	% 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	Reservoir	No	At risk?
1 in 1000*	4.45	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					169

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.

* return periods for potential flood events

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
The east of the site is at low risk of fluvial flooding from the Wealdstone Brook.

Site Access / Egress
Site access and egress routes will be directed to the south of the site towards Palmerston Road where there is a lower risk of fluvial flooding.

Mitigation / FRA Requirements
<ul style="list-style-type: none"> 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 4.2 and 4.3 for further development stipulations. Develop a Flood Emergency and Evacuation Plan for the site. Site users should be signed up to the EA's Flood Warning Service.

SURFACE WATER

Risk Assessment				
Parameter	1 in 30	1 in 100	1 in 1000	Units
Min. Depth	0.00-0.00	0.00-0.00	0.15-0.30	m
Max. Depth	0.00-0.00	0.00-0.00	0.30-0.60	m
Max. Velocity	0.00-0.00	0.00-0.00	0.25-0.50	m/s
Max. Hazard	0.00-0.00	0.00-0.00	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
<ul style="list-style-type: none"> The site is at low risk of surface water flooding along it's eastern side. Climate change will increase the maximum depth, velocity and hazard of surface water flooding.

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

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the southeast areas of the site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Travis Perkins Wealdstone

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within a postcode area where there are 169 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. 	<ul style="list-style-type: none"> The site is classified as having <25% susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?
<ul style="list-style-type: none"> Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations.
B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?
<ul style="list-style-type: none"> 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 London Plan Policy SI 13. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 for compensatory flood storage stipulations.
C. What is the cumulative impact of the development land use change and will flood risk increase?
<ul style="list-style-type: none"> The development land use is changing from 'less vulnerable' to 'more vulnerable'. The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development. 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?
<ul style="list-style-type: none"> Direct development away from southeast area of the site. Safe access and egress routes should be directed to the southeast of the site towards Palmerston Road and west towards George Gange Way where there is a lower risk of flooding. By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff. By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3.
E. Will development require a flood risk permit/watercourse consent?
<ul style="list-style-type: none"> No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse.
F. Can the site pass the Exception Test?
<ul style="list-style-type: none"> The Exception Test is not required as the site is not located within Flood Zone 3a.

SITE ASSESSMENT - Brethrens Meeting Hall, The Ridgeway

Address: Harrow, HA2 7DA	Area: 1.39 Ha				
	Site Reference: 59				
Current Use		Proposed Use			
Religious meeting hall		School Uses on remaining part of site as appropriate			
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	0	% of Site
1 in 30*	3.11	% of Site	Artificial		
1 in 100*	10.89	% of Site	Reservoir	No	At risk?
1 in 1000*	40.61	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					80 / 194

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.

* return periods for potential flood events

FLUVIAL / TIDAL

Risk Assessment (Defended)					Description of Flood Mechanism N/A - No fluvial / tidal risk is predicted at this site.	Site Access / Egress N/A - No fluvial / tidal risk is predicted at this site.	Mitigation / FRA Requirements N/A - No fluvial / tidal risk is predicted at this site.
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				

SURFACE WATER

Risk Assessment					Site Access / Egress Safe access and egress routes should be directed towards The Ridgeway where there is a lower risk of flooding and road access.	Mitigation - Flood Risk Requirements • Development should be directed away from the south corner of the site where there is higher risk of surface water flooding. • Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. • For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.	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 Policy SI 13 of the London Plan. • Ground investigations are required to confirm whether infiltration SuDS are suitable.
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	0.60-0.90	0.90-1.20	m			
Max. Velocity	1.00-2.00	1.00-2.00	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							
<ul style="list-style-type: none"> The site is at high risk of surface water flooding, particularly along the southwest boundary / west side of the site. Climate change will increase the maximum depth and extent of surface water flooding. 							

SITE ASSESSMENT - Brethrens Meeting Hall, The Ridgeway

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within two postcode areas where there are 80 and 194 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. 	<ul style="list-style-type: none"> The site is classified as having no susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed, the 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

<p>A. Can the development be future proofed for climate change considerations?</p> <ul style="list-style-type: none"> Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations. <p>B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?</p> <ul style="list-style-type: none"> 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 London Plan Policy SI 13. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 for compensatory flood storage stipulations. <p>C. What is the cumulative impact of the development land use change and will flood risk increase?</p> <ul style="list-style-type: none"> The development land use is changing from 'less vulnerable' to 'more vulnerable'. The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development. 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. <p>D. How can the development reduce risk overall?</p> <ul style="list-style-type: none"> Direct development away from south corner and west of the site. Safe access and egress routes should be directed towards The Ridgeway where there is a lower risk of flooding and road access. By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff. By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3. <p>E. Will development require a flood risk permit/watercourse consent?</p> <ul style="list-style-type: none"> No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse. <p>F. Can the site pass the Exception Test?</p> <ul style="list-style-type: none"> Yes. The Exception Test is required for this site as 10.89% of the site area is in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'. This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).

SITE ASSESSMENT - Harrow on the Hill

Address: Harrow, HA1 1BB	Area: 1.10 Ha
	Site Reference: 65

Current Use	Proposed Use
Train station Multi-level and surface level carpark Bus interchange and Office building	Residential Rail and bus transportation hub Appropriate town centre uses

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	0	% of Site
1 in 30*	6.01	% of Site	Artificial		
1 in 100*	8.73	% of Site	Reservoir	No	At risk?
1 in 1000*	17.34	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					162 / 92

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.

* return periods for potential flood events

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.

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

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	0.60-0.90	0.90-1.20	m
Max. Velocity	0.50-1.00	1.00-2.00	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
<ul style="list-style-type: none"> The site is at high risk of surface water flooding, particularly along Station Approach. Climate change will increase the maximum depth and extent of surface water flooding.

Site Access / Egress
Safe access and egress routes should be directed to the northwest of the northern site towards College Road and southwest of the southern site towards Lowlands Road where there is a lower risk of flooding.

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the northern area of the northern site and southeast area of the southern site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Harrow on the Hill

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within three postcode areas where there are 162, 94 and 82 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. 	<ul style="list-style-type: none"> The site is classified as having no susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

<p>A. Can the development be future proofed for climate change considerations?</p> <ul style="list-style-type: none"> Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations. <p>B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?</p> <ul style="list-style-type: none"> 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 London Plan Policy SI 13. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 for compensatory flood storage stipulations. <p>C. What is the cumulative impact of the development land use change and will flood risk increase?</p> <ul style="list-style-type: none"> The development land use is changing from 'less vulnerable' to 'more vulnerable'. The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development. 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. <p>D. How can the development reduce risk overall?</p> <ul style="list-style-type: none"> Direct development away from the northern area of the northern site and southeast area of the southern site. Safe access and egress routes should be directed to the northwest of the northern site towards College Road and southwest of the southern site towards Station Approach where there is a lower risk of flooding. By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff. By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3. <p>E. Will development require a flood risk permit/watercourse consent?</p> <ul style="list-style-type: none"> No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse. <p>F. Can the site pass the Exception Test?</p> <ul style="list-style-type: none"> Yes. The Exception Test is required for this site as 6.01% of the site area in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'. This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).
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SITE ASSESSMENT - Harrow West Conservative Association

Address: 10 Village Way, Rayners Lane,
Pinner HA5 5AF

Area: 0.16 Ha
Site Reference: 80

Current Use	Proposed Use
Political Party Office and Car Park	Community or employment space 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*	1.34	% of Site	Artificial		
1 in 100*	18.26	% of Site	Reservoir	No	At risk?
1 in 1000*	100	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					117

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.

* return periods for potential flood events

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 (Un defended)			
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.

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

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	0.30 - 0.60	m
Max. Depth	0.30 - 0.60	0.30 - 0.60	> 1.20	m
Max. Velocity	0.00 - 0.25	0.50 - 1.00	1.00 - 2.00	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
<ul style="list-style-type: none"> The site is at high risk of surface water flooding, particularly along the west and north of the site. Climate change will increase the depth, maximum velocity and maximum hazard of surface water flooding.

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

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the north and west of the site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - Harrow West Conservative Association

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within a postcode area where there are 117 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. 	<ul style="list-style-type: none"> The site is classified as having <25% susceptibility to groundwater flooding. The site is underlain by Lambeth Group bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

- A. Can the development be future proofed for climate change considerations?**
- Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations.
- 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 London Plan Policy SI 13.
 - See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 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 'less vulnerable' to 'more vulnerable'.
 - The site is 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 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?**
- Direct development away from north and west of the site.
 - Safe access and egress routes should be directed to the south of the site towards Village Way where there is a lower risk of flooding.
 - By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff.
 - By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3.
- E. Will development require a flood risk permit/watercourse consent?**
- No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse.
- F. Can the site pass the Exception Test?**
- Yes. The Exception Test is required for this site as 18.26% of the site area in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'.
 - This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).

SITE ASSESSMENT - 140 Northolt Road, South Harrow

Address: 140 Northolt Road, South Harrow, Harrow, HA2 0EG

Area: 1.57 Ha
Site Reference: 82

Current Use	Proposed Use
Supermarket and surface level carpark	Supermarket Residential development NHS Floorspace, Open 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	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	4.41	% of Site	Artificial		
1 in 100*	11.35	% of Site	Reservoir	No	At risk?
1 in 1000*	40.06	% of Site			
Sewer Flooding					
No. Incidents within the predominant postcode					169 / 358

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.

* return periods for potential flood events

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 (Un defended)			
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.

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

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	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 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
<ul style="list-style-type: none"> The site is at high risk of surface water flooding, particularly along the south east of the site. Climate change will increase the depth, maximum velocity and maximum hazard of surface water flooding.

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

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Development should be directed away from the southern area of the site where there is higher risk of surface water flooding. Comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.1, 4.2, 4.3, 4.4 and 4.5. For developments that will include basements, see SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.8 and 4.9.

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> 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 Policy SI 13 of the London Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - 140 Northolt Road, South Harrow

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	Risk Assessment	Risk Assessment
<ul style="list-style-type: none"> The site falls within two postcode areas where there are 169 and 358 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. 	<ul style="list-style-type: none"> The site is classified as having no susceptibility to groundwater flooding. The site is underlain by London Clay Formation bedrock geology. 	<p>This site is not at risk of flooding from reservoirs.</p>
Mitigation Requirements	Mitigation Requirements	Mitigation Requirements
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> If basements are proposed in the development, 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. 	<p>N/A - No reservoir risk is predicted at this site.</p>

PLANNING CONSIDERATIONS

Safety of Development

- A. Can the development be future proofed for climate change considerations?**
- Yes. See SFRA - Level 2 Report Section 4 mitigation requirement number 4.2 for the required flood resistant / resilient building stipulations.
- 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 London Plan Policy SI 13.
 - See SFRA - Level 2 Report Section 4 mitigation requirement number 4.3 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 'less vulnerable' to 'more vulnerable'.
 - The site is 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 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?**
- Direct development away from the southern area of the site.
 - Safe access and egress routes should be directed to the southeast of the site towards Northolt Road where there is a lower risk of flooding.
 - By complying with Policy CN3 and CN4 in Harrow's draft Local Plan through demonstrating that the development will be resilient and resistant to all relevant sources of flooding, and incorporating SuDS where necessary to control discharge rates to reduce surface water runoff.
 - By complying with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.2 and 4.3.
- E. Will development require a flood risk permit/watercourse consent?**
- No, the site is not located within 8m of a Main River or 5m of an Ordinary Watercourse.
- F. Can the site pass the Exception Test?**
- Yes. The Exception Test is required for this site as 11.35% of the site area in Flood Zone 3a (surface water) and the proposed vulnerability classification is 'More Vulnerable'.
 - This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see 'Mitigation - Flood Risk Requirements' and 'Mitigation - Surface Water Drainage' boxes).