Former CAB Ruislip

Flood Risk Note & Drainage Strategy

November 2025

PREPARED FOR

London Borough of Hillingdon

Flood Risk Note & Drainage Strategy

Prepared By	Anna Wade
Reviewed By	Katrina Wylie
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Revisions

Date	Rev	Reason	Name
05/11/2025	01	Initial Issue	Katrina Wylie

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1. Introduction

This document has been prepared on behalf of the London Borough of Hillingdon to support the development of the Former CAB Ruislip site, London.

This report provides a full justification as to why the proposals for the site should be deemed acceptable in relation to flood risk and drainage.

This report has been created in support of the minor planning application for the proposed development. The report aims to assess it against the risk of flooding and to establish the principles of the drainage scheme in line with the National Planning Policy Framework (NPPF), Planning Practise Guidance (PPG) and the Non-Statutory Technical Guidance for Sustainable Drainage Systems, as well as Hillingdon's local policy and guidance.

2. Development Proposal

This planning application seeks permission for the redevelopment of the Former CAB site in Ruislip, Hillingdon, London, to provide 6no. residential units (4-bedroom, 8-person units) alongside associated public realm. Existing car parking is to be retained within the red line boundary outside of the proposed residential development area. Within this application is also the Winston Churchill Theatre Car Park land where car parking from this site is being reallocated.

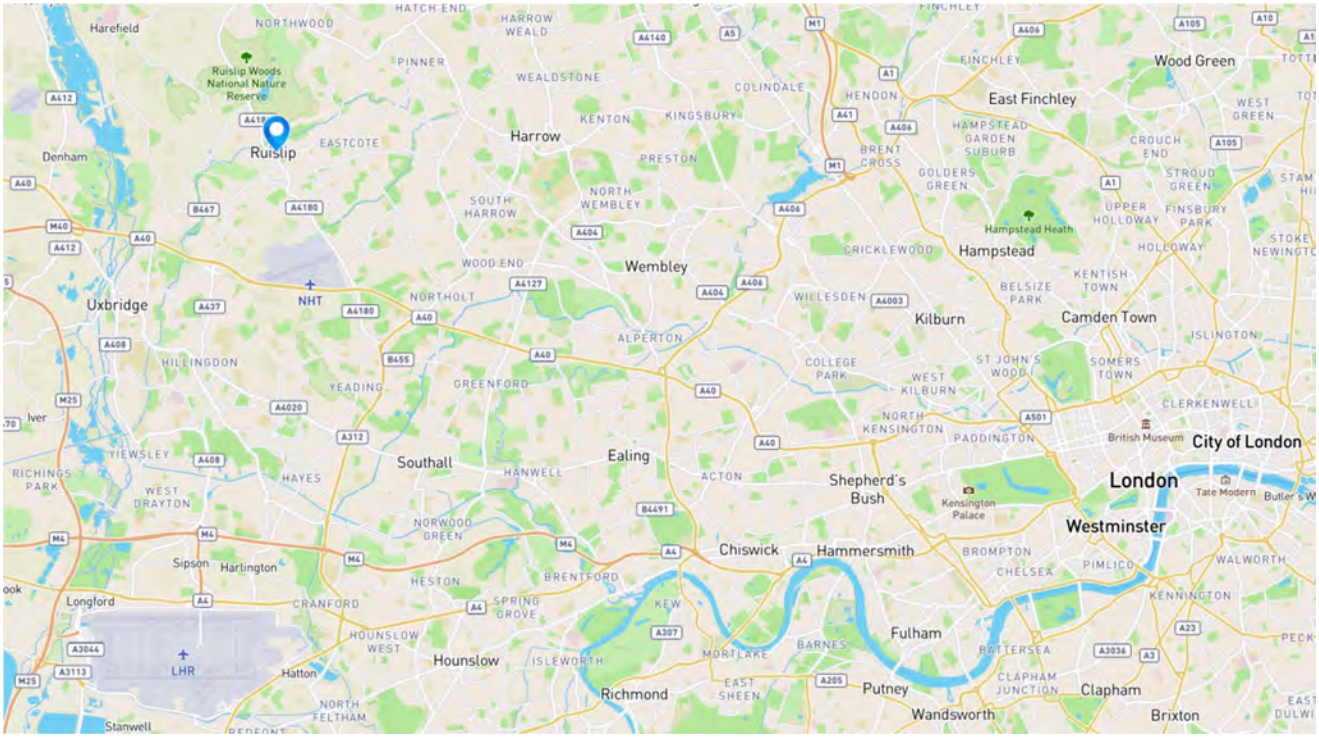
The proposed site arrangement can be seen in Figure 1 and further development proposals included in Appendix A.

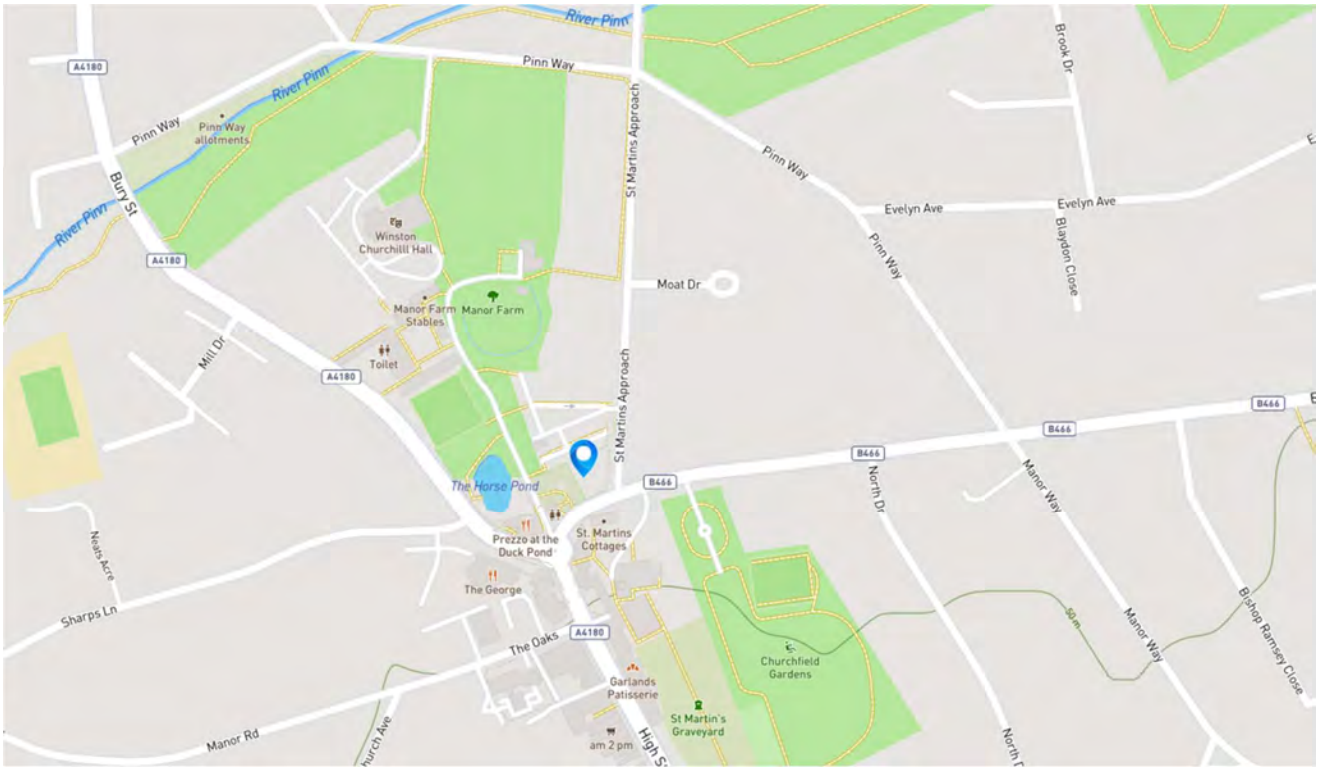
Figure 1: Site Plan of Ruislip Cab Site Development (Source: Hunters)

3. Existing Site

3.1. Site Description

The site is situated in Ruislip within the London Borough of Hillingdon. It is currently used as a public car park and is bound to the east by St Martins Approach road, to the north by housing, to the south by the Ruislip War Memorial, and to the west by a pond. The site address is St Martin's Approach, Ruislip, HA4 8BD.





3.2. Existing Site Drainage

The existing site comprises an asphalt car park. Although drainage survey information is not currently available, a review of google maps suggests surface water may drain towards a low point within the car park and then drain to soft. A topographical survey of the site is included in Appendix B.

There is no confirmed private drainage system; however, it is understood that the site is served by Thames Water surface water sewers located in St Martins Approach. It is also assumed that foul water sewers are located within the same road. The intention will be to drain the proposed development to these public sewers in St Martins Approach.

3.3. Geology

The British Geological Survey (BGS) information available online identifies the following geological succession underlying each site:

- Made ground: bricks, concrete and gravel
- London Clay: clay, pebbles and stone
- Reading Beds: clay, sand and black rock
- Chalk and flints

The closest available historical boreholes TQ08NE118 and TQ08NE119 (Southwest of site), TQ08NE9 (South of site) and TQ08NE162 (North of site), all show similar findings as summarised above.

4. Relevant Policy and Guidance

4.1. National Planning Policy Framework

Flood Risk Categorisation

The NPPF refers to the Flood Zones shown on the EA Flood Map for Planning (Rivers and Sea), and establishes the range of uses which are appropriate, or compatible for each Flood Zone. Table 1, extracted from the Flood Risk and Coastal Change PPG (Table 1), summarises the Flood Zones.

Table 1: Flood Zone

FLOOD ZONE	DEFINITION
ZONE 1 LOW PROBABILITY	Land having a less than 1 in 1,000 (0.1%) annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b)
ZONE 2 MEDIUM PROBABILITY	Land having between a 1 in 100 and 1 in 1,000 (1% and 0.1%) annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 (0.5% and 0.1%) annual probability of sea flooding. (Land shown in light blue on the Flood Map for Planning)
ZONE 3A HIGH PROBABILITY	Land having a 1 in 100 (1%) or greater annual probability of river flooding; or Land having a 1 in 200 (0.5%) or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map for Planning)
ZONE 3B FUNCTIONAL FLOODPLAIN	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: - Land having a 1 in 30 (3.3%) or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively - Land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding) Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (No separately distinguished from Zone 3a on the Flood Map)

Figure 2 indicates that site is located in Flood Zone 1.

Figure 2 - EA Flood Map for Planning (Source: https://flood-map-for-planning.service.gov.uk)

Flood risk vulnerability and flood zone compatibility

Annex 3 of the NPPR defines the type and nature of different development classifications in the context of their flood risk vulnerability. The site falls within the "More Vulnerable" classification, as shown presented in Table 2 replicated from Annex 3.

Table 2: Flood risk vulnerability classification

CLASSIFICATION	DESCRIPTION
MORE VULNERABLE	Hospitals Residential institutions such as residential care homes, children's homes, social services homes, prisons, and hostels. **Buildings used for dwelling houses, student halls of 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. Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

The flood risk vulnerability and flood zone 'incompatibility' extracted from the PPG (flood zone and coastal change, Table 2) is presented below.

Table 3: Flood risk vulnerability and flood zone 'incompatibility'

FLOOD ZONES	ESSENTIAL INFRASTRUCTURE	HIGHLY VULNERABLE	MORE VULNERABLE	LESS VULNERABLE	WATER COMPATIBLE
ZONE 1	√	√	√	√	√
ZONE 2	√	Exception Test Required	√	√	√
ZONE 3A	Exception Test Required †	×	Exception Test Required	√	√
ZONE 3B (FUNCTIONAL FLOODPLAIN)	Exception Test Required *	×	×	×	√
√ Development is appropriate		**× 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 (functional floodplain) 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 times of flood;
- Result in no net loss of floodplain storage;
- Not impede water flows and not increase flood risk elsewhere

The proposals for the development of the site fall within the category of more vulnerable under the definition of 'Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.'

More Vulnerable development is appropriate in Flood Zone 1 and does not require an exception test.

5. Hydrological Assessment

5.1. Flooding History

There is limited information relating to recent flooding history local to the area. The most recent flooding events reported in the Hillingdon Local Flood Risk Assessment, occurs through the course of 2020 and 2021, areas surrounding Bessingby Park in Ruislip (approximately 2km away) on several occasions. A flood investigation was carried out, following the Act Section 19 guidelines, which concluded that the primary cause of flooding was sewer flooding from surface and foul water sewers in Bessingby Park. This investigation led to a collaboration of authorities that resulted in a new flood alleviation measure being completed by the Council in 2022 within the park.

5.2. Fluvial Flood Risk

Flooding from rivers, also known as fluvial flooding, happens when the volume of flow in a river exceeds its capacity and the excess water spills out, or breaches the containment area. In the borough the principal rivers are the River Colne, the River Crane and the River Pinn. The closest being the River Pinn, as shown in Figure 3.

River flooding is generally more predictable. Environment Agency telemetry has been strategically placed on the river network to allow automatic monitoring of levels. When levels reach a certain height, warnings are triggered which would then prompt individual flood action plans to be implemented. The current level of the River Pinn at Ruislip is 0.15m and is steady and normal. The normal range is 0.14m to 1.20m. (Source: https://check-for-flooding.service.gov.uk/station/7005)

As shown in Figure 3, the EA Flood Risk from Rivers or the Sea Map indicates that the site is at no significant risk from fluvial flooding.

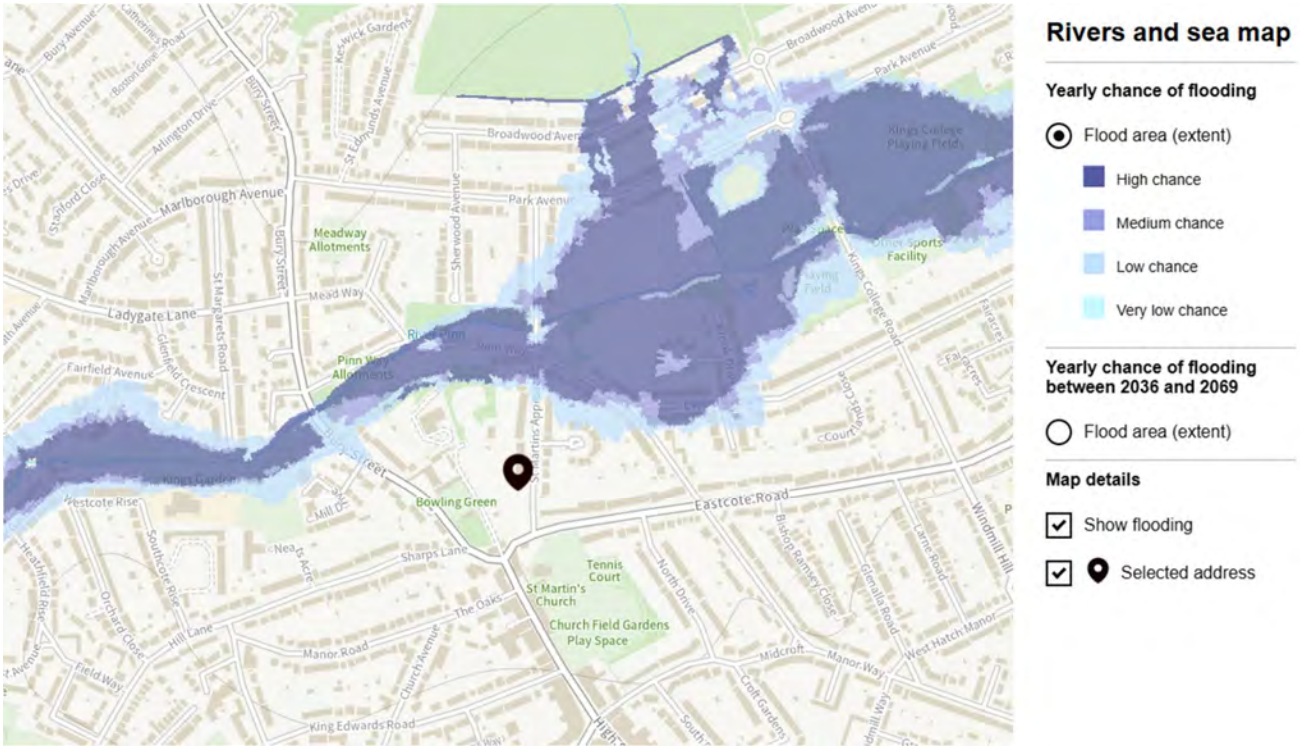


Figure 3 - Flood Risk from Rivers or Sea Map (Source: https://check-long-term-flood-risk.service.gov.uk/map)

5.3. Surface Water Flood Risk

Surface water flooding can occur as a result of either overland flow or ponding. Overland flow occurs following heavy or prolonged rainfall, or snow melt, where water can no longer be absorbed on the surface and results in surface run-off. Unless it is channelled elsewhere, the run-off travels overland, following the natural gradient of the land. Ponding occurs as the overland flow reaches natural depressions or blockages in the local topography.

As shown in Figure 4, the EA Flood Risk from Surface Water Map indicates that the site has a very low chance of surface water flooding.

In addition, Critical Drainage Areas (CDAs) have been mapped for the borough. From the critical drainage map found in Appendix C, the site is not located in a critical drainage area.

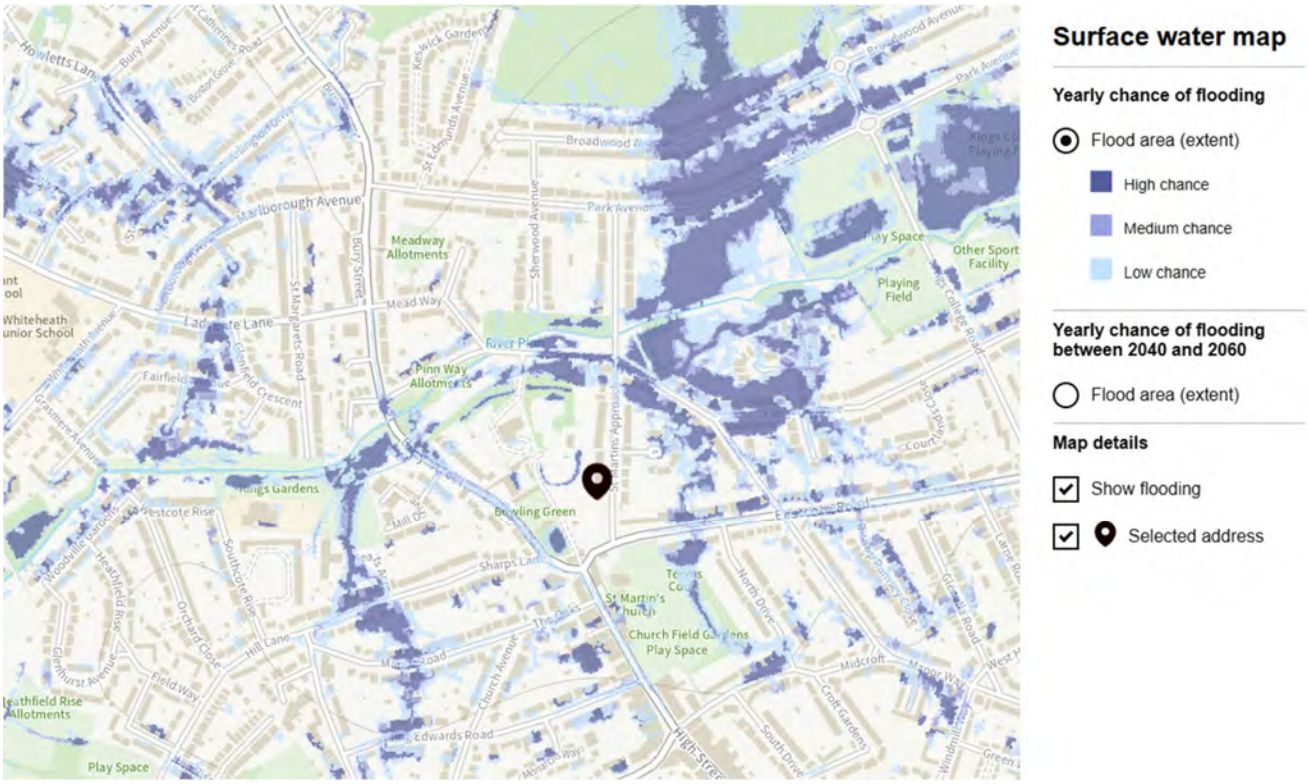


Figure 4 - Flood Risk from Surface Water Map (Source: https://check-long-term-flood-risk.service.gov.uk/map)

5.4. Tidal Flood Risk

The site is located approximately 20km from the nearest coastal body of water; the site is considered to have no significant risk from tidal flooding.

5.5. Groundwater Flood Risk

Groundwater flooding can occur on sites that are located on permeable ground. After a prolonged period of rainfall, a considerable rise in the water table can result in inundation for extended periods of time.

The only geotechnical data available is the BGS information available online, which identifies the site comprising of Made Ground, underlain by London Clay Formation. The borehole, TQ08NE162, find that the water level is present within the clay layer at approximately 2.9mBGL.

There are no basements proposed as part of the framework proposals, hence the risk of groundwater flooding to new properties is low.

Risk of flooding from groundwater is low.

5.6. Reservoir Flood Risk

Flooding from water bodies that are purposively controlled to hold water can occur because of a failure of the operational infrastructure. Purpose built reservoirs and canals are non-natural structures that are a potential source of flooding. Similarly, Charville Lane FSA (Flood Storage Area), Spout Lane Lagoon, and Ruislip Lido are designed to hold water and could cause flooding to areas of land within the borough as a result of failures in infrastructure.

It should be noted that the probability of these water bodies flooding is significantly reduced compared with other water bodies (i.e. natural watercourses) that are intrinsically linked with rainfall events.

The Reservoir Flood Map shown in Figure 5 shows there is no significant risk of reservoir flooding.

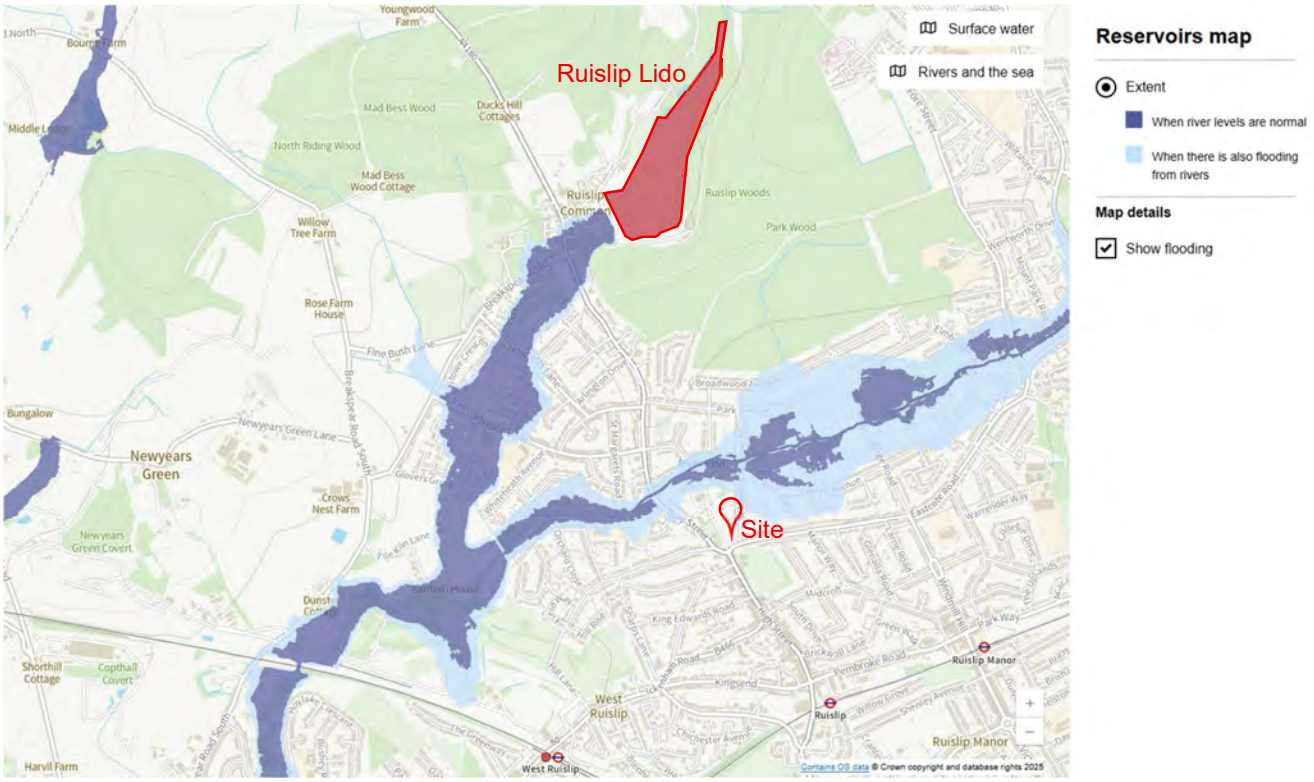


Figure 5- Flood Risk from Reservoir Map (Source: https://check-long-term-flood-risk.service.gov.uk/map)

5.7. Sewers Flood Risk

Sewer and highway drainage flooding occurs when the capacity of systems is exceeded, or the function of the system is impeded (e.g. tide locking), which results in the surcharging and/or failure of the system and water being forced to the surface via gullies, manholes, dedicated overflows or connected infrastructure (e.g. toilets).

Sewer flooding occurs when the public sewer network is over capacity and surcharge of this network occurs. Thames Water are the sewerage network provider for the area. Figure 6 from the Hillingdon SFRA shows that 6-10 sewer flooding incidents were recorded in the previous five years, based on data from 2011. This map can be seen in Appendix C.

As part of the proposed strategy for the site, positive drainage to the site will be introduced to serve new hard landscaping. This will be adequately sized for the design storm event and therefore the risk of flooding from sewers is low.

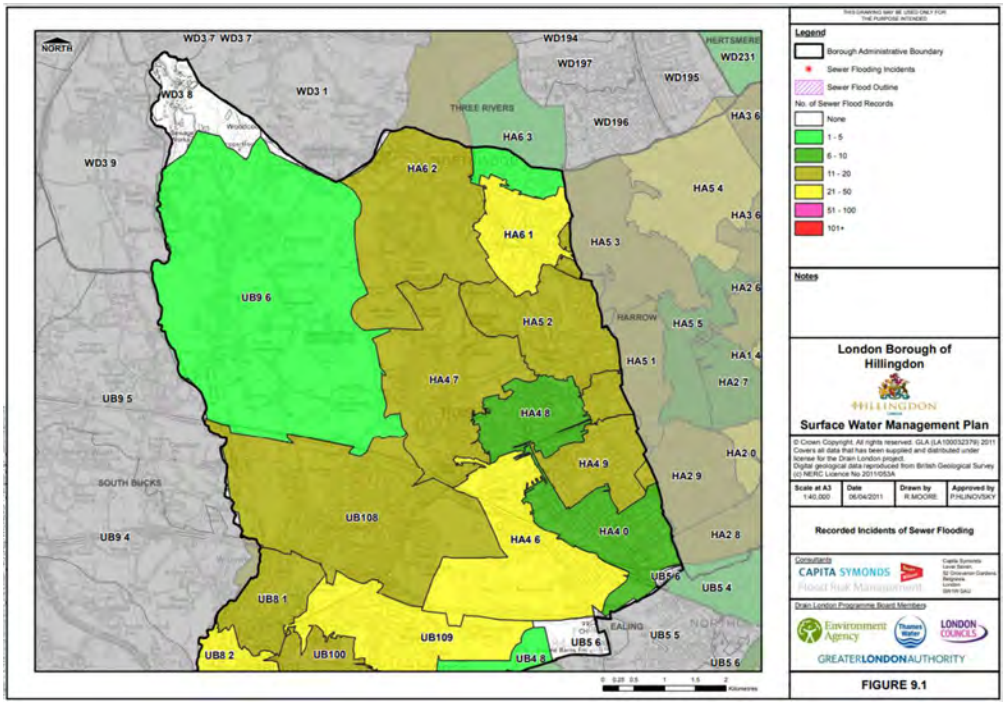


Figure 6 - Recorded Incidents of Sewer Flooding (Source: https://www.hillingdon.gov.uk/article/9164/Surface-Water-Management-Plan-maps)

5.8. Summary of Flood Risk

A summary of the flood risk to the site is shown in Table 4. Overall, flood risk to the site is …

Table 4 - Summary of Flood Risk

SOURCE OF FLOODING	RISK TO THE SITE
FLUVIAL	Low
SURFACE WATER	Low
TIDAL	Very Low
GROUNDWATER	Low
RESERVOIR	Low
SEWERS	Low

6. Proposed Surface Water Drainage Strategy

6.1. Point of Discharge

The National Planning Policy Framework (NPPF) Guidance - Flood risk and coastal change specifies the following hierarchy of drainage options for the discharge of surface water:

1. Into the ground (infiltration)
2. To a surface water body
3. To a surface water sewer, highway drain or another drainage system
4. To a combined sewer

An appraisal of the drainage hierarch follows, with a summary in Table 5:

Infiltration based system

Infiltration is not currently considered in this report as an appropriate means of surface water discharge. This is based on the following:

- The current understanding of the superficial geology of the site is that it is primary clay, which has typically poor infiltration rates.

Additionally, due to the extent of new development being proposed being localised to the portion of the site to the north-east where housing is proposed, the introduction of a soakaway is not deemed appropriate due to proximity to proposed foundations.

Surface Waterbody

The closest open waterbody to the site is the River Pinn. However, this is not considered a suitable means of surface water discharge as it is approximately 300m away.

Surface Water Sewer

The surface water drainage from the site is proposed to connect into the Thames Water surface water sewer running within St Martins Approach.

Table 5 - Summary of Point of Discharge

POINT OF DISCHARGE	SUITABILITY
GROUND	×
WATERBODY	×
SURFACE WATER SEWER	√
COMBINED SEWER	×
√ suitable × unsuitable	

6.2. Proposed Surface Water Attenuation & Sustainable Drainage Systems (SuDS)

As the site is a minor application, SuDS have been proposed commensurate to the scale of the development.

The extent of drainage interventions are limited to the north-east and south-east of the proposed site area, where construction is proposed. The intention of the proposed SuDS is to capture more frequent rain events to utilise these interventions are effectively as possible.

In the north-east, 6no. residential units are proposed. In this location, water butts are proposed for each of the residential units to provide storage of rainwater for reuse. It is also proposed to introduce permeable paving for the proposed car parking bays off St Martin's Approach, with 250mm deep Type 3 sub-base to provide attenuation and filtration. This equates to 138m2 permeable paving area, for each of the 6no car parking bays. The system will be lined with perforated drainage pipework to convey flows. Additionally, a 600mm deep filter trench is proposed along the western boundary of the residential gardens to intercept drainage from the car park.

In the south-east, the Former CAB site which is currently surrounded by hoarding will be resurfaced to provide car parking and soft landscaping area. It is proposed to provide a 300mm deep depressed bioretention basin with 1:3 slopes within this proposed landscaping to drain the proposed hard landscaping bays and provide attenuation storage.

The typical buildups used in determining the level of provided storage for each catchment can be seen in Table 6.

Proposed SuDS feature	Layer	Area (m2)		Depth (m)	Porosity	Storage Volume (m3)	Total Storage Volume (m3)
		Top Area	Base Area				
Water Butts	Not applicable – attenuation storage is not assumed for water butts						-
Permeable Paving	Sub-base	138		0.25	0.3	10.3	10.3
Filter Trench	Topsoil	22		0.3	0.2	1.3	3.3
	Sub-base			0.3	0.3	2	
Bioretention Basin	Void storage	38	16	0.3	1	7.8	7.8
						Total Storage Volume	21.4

Table 6: Typical SuDS Features Storage Parameters

6.3. Below Ground Drainage

It is intended to connect both surface water and foul water drainage flows from the development to the separate public sewers within St Martin's Approach.

For the surface water network, inspection chambers are proposed to serve the SuDS features and residential units, prior to connection to an outfall discharge manhole at the boundary. A channel drain is proposed to serve the boundary flows from the car park entrance.

For the foul water network, inspection chambers are proposed to serve discharge units from the residential units, prior to connection to the public sewer network.

In both cases, applications to Thames Water will be required for a Section 106 consent to connect, which would be undertaken prior to construction.

A sitewide below ground drainage network and SuDS strategy is included in Figure 7.

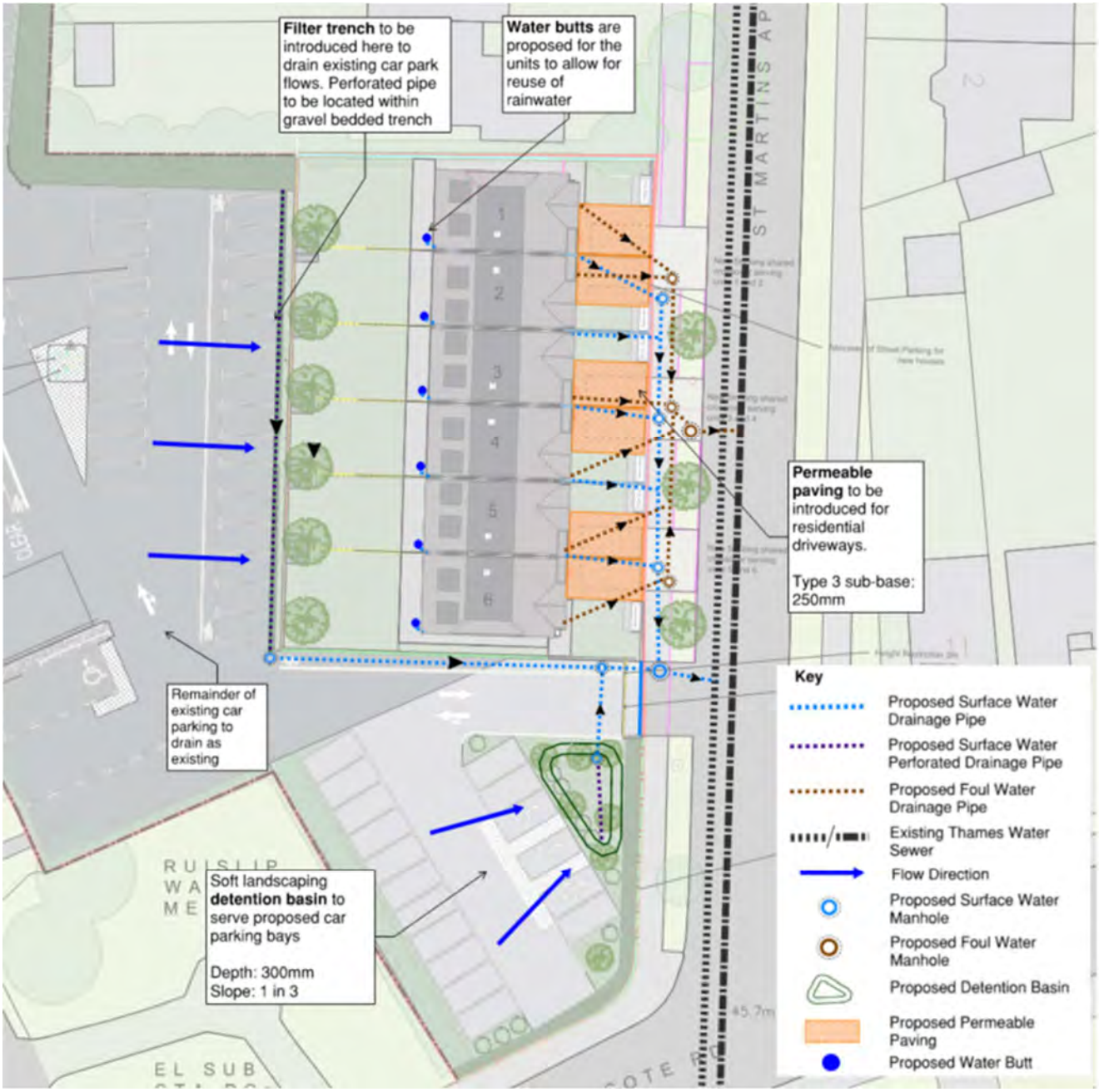


Figure 7: Proposed Drainage Strategy

7 Conclusion

The site is located in Flood Zone 1 and the proposed development is classified as ‘More Vulnerable’ in the Flood Risk Vulnerability Classification due to the building use being used for dwellings such as houses. As the site is located in Flood Zone 1 it is deemed acceptable for development without an Exception Test as per the NPPF. The hydrological assessment has identified the proposed development is at low risk from flooding from all sources

It is proposed to install separate drainage systems for foul and surface water, which will discharge to the existing Thames Water sewers running within St Martin’s Approach, the adjacent public highway.

As the proposals constitute a Minor Development, SuDS are proposed commensurate with the scale of the development, as per National Standards for Sustainable Drainage Systems (2025). Attenuation will be provided through permeable paving, filter trench and a detention basin. Water butts are also proposed for reuse of rainwater. The total attenuation provided as part of the Surface Water Drainage Strategy will be c.21.4m^3.

Appendix A – Development Proposals

Proposed Site Plan
1:200 @ A1

SITE LOCATION PLAN @1:1250
(Ruislip CAB / St Martins Approach Car Park)

N

Application Site Address:

Haydon Drive
Pinner
Hillingdon
HA5 2PW

Site Area: 1.24 acres / 0.50ha

- Application Boundary

LEGEND:

Boundary Treatment

Flank fence
2m high timber close board fencing with trellis
1.5m high brick wall and a 600mm trellis

Proposed rear garden party wall
1.2m high timber closed board fencing

Proposed rear garden fence
2m high timber closeboard fencing with trellis

Proposed front garden fence
300-600mm high brick dwarf wall with
215mm thick red brick

Proposed garden gate
2m tall timber close board gate

Proposed front refuse fence
900mm high brick with 200mm metal rim

Retained party wall
900mm high brick with 200mm metal rim

Retained height restriction barrier
Provide 2m max restriction height yellow barrier

Retained Existing barrier condition
Includes ant variation of fence

Retained Existing brick wall with hedge
The boundary should be continuous through

Soft Surfaces & Vegetation

Existing tree, retained

Existing tree, removed

Proposed Tree
Mixed species tree planting
(predominantly native)

Proposed Small Tree
Fastigiate tree or large shrub (native specie

Hard Surfaces

Existing Tarmac Surface
Macadam surface retained

New Tarmac
Same shade as existing

No. of car parking spaces	ST. MARTIN'S APPROACH	WINSTON CHURCHILL THEATRE
Existing	113	79
Proposed	74	114
Difference	-39	+ 35
Net gain in parking: -4 spaces		

0 1m 5m 10m 20m

Revision

N

project name: RUISLIP CAB SITE DEVELOPMENT
drawing reference: PROPOSED SITE PLAN
6x 3-STOREY (4B8P) TERRACED HOUSES
date: OCT 2024
sheet:
drawn: SATM
scale: 1:200@A1
checked: GH
job number: M10274
drawing number: APL004
revision:
status: PLANNING
cad ref: M10274_APL003_A_Proposed Site Plan_Ruislp CAB_.dwg

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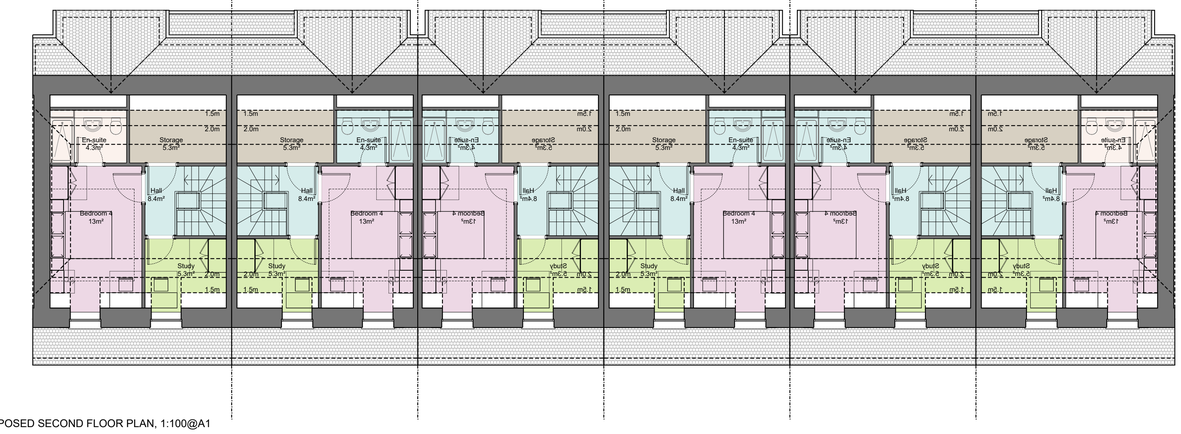
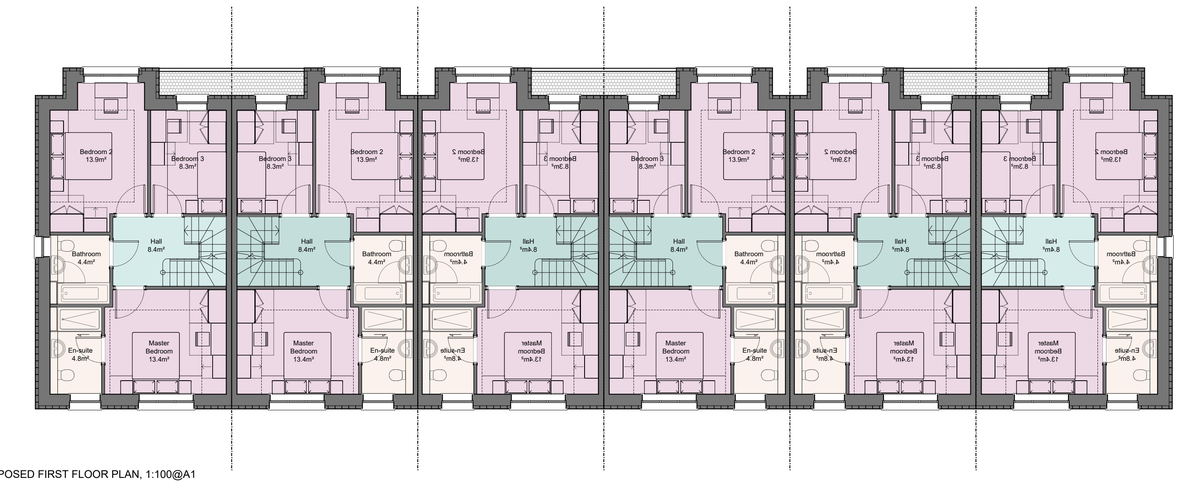
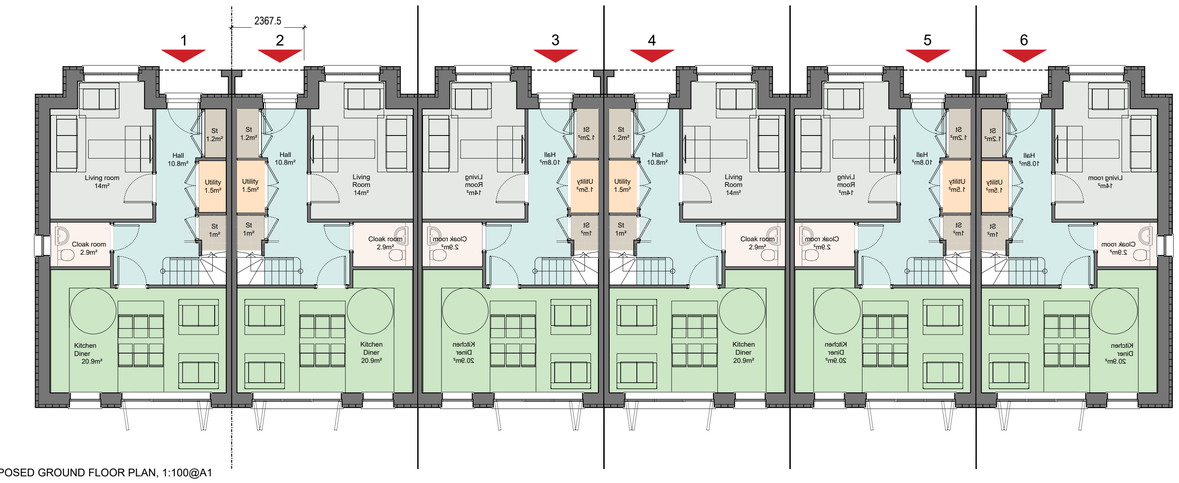
Space One Beadon Road
London W6 0EA
T 020 8237 8200
F 020 8741 2814
mail@hunters.co.uk
www.hunters.co.uk



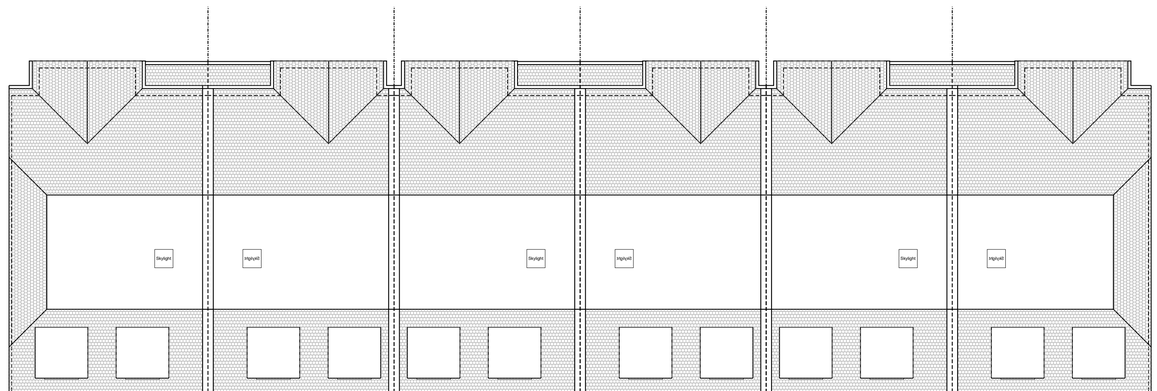
PROPOSED SECOND FLOOR PLAN, 1:100@A1



PROPOSED FIRST FLOOR PLAN, 1:100@A1



PROPOSED GROUND FLOOR PLAN, 1:100@A1



PROPOSED ROOF PLAN, 1:100@A1

SITE LOCATION PLAN, 1:1250@A1

Application Site Address:

Ruislip CAB,
St Martins Approach,
Ruislip,HA4 8BD

Site Area: 0.58ha (0.96 acres)

KEY:

- Application boundary
- Adjoining land in ownership of applicant

Schedule of Accommodation		
House #	Type	GIA
1	4b7p	150.6m²
2	4b7p	150.6m²
3	4b7p	150.6m²
4	4b7p	150.6m²
5	4b7p	150.6m²
6	4b7p	150.6m²

Key	
Kitchen Diner	
Living Room	
Hall	
Cloakroom / Bathroom	
Bedroom	
Study	
Store	
Utility	

0 1m 5m 10m 20m

1:100@A1

N

Revision

project name: RUISLIP CAB

drawing reference: PROPOSED RESIDENTIAL SCHEME FLOOR PLANS [GF, FF, SF & ROOF PLAN]

date: 20.10.2025
sheet:
drawn: STM
scale: 1:100@A1
checked: GH

job number: M10274
drawing number: ...
revision: A

status: PLANNING [DRAFT]

cad ref: M10274 APL004_A_Proposed Floor Plans_Ruislip CAB_1-100@A1.dwg

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Space One Beadon Road
London W6 0EA

T 020 8237 8200
F 020 8741 2814
mail@hunters.co.uk

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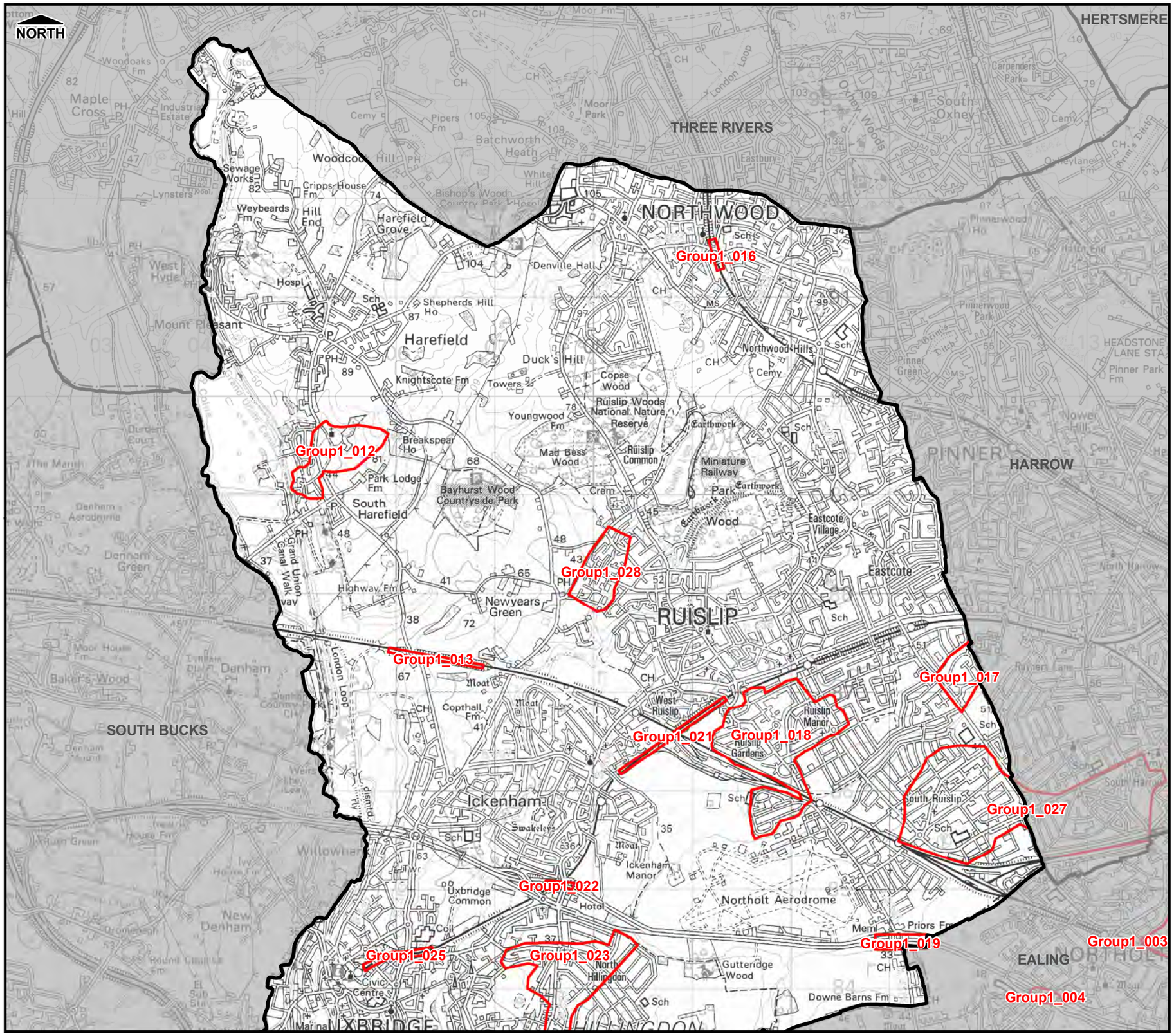
Appendix B – Topographical Survey

SITE 2
SITE 1
Carnegie
Bowls Club
Bowling Green
Car Park
Bowling Green
Car Park
Bowling Green
Car Park

Appendix C – Hillingdon SFRA Flood Maps



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

Legend

- Borough Administrative Boundary
- Critical Drainage Area

Notes

London Borough of Hillingdon

HILLINGDON LONDON

Surface Water Management Plan

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Scale at A3	Date	Drawn by	Approved by
1:40,000	15/04/2011	R.MOORE	P.HLINOVSKY

Critical Drainage Area Index Map

Consultants
CAPITA SYMONDS
Scott Wilson
Flood Risk Management
Capita Symonds
Level Seven,
52 Grosvenor Gardens,
Belgravia,
London
SW1W 0AU

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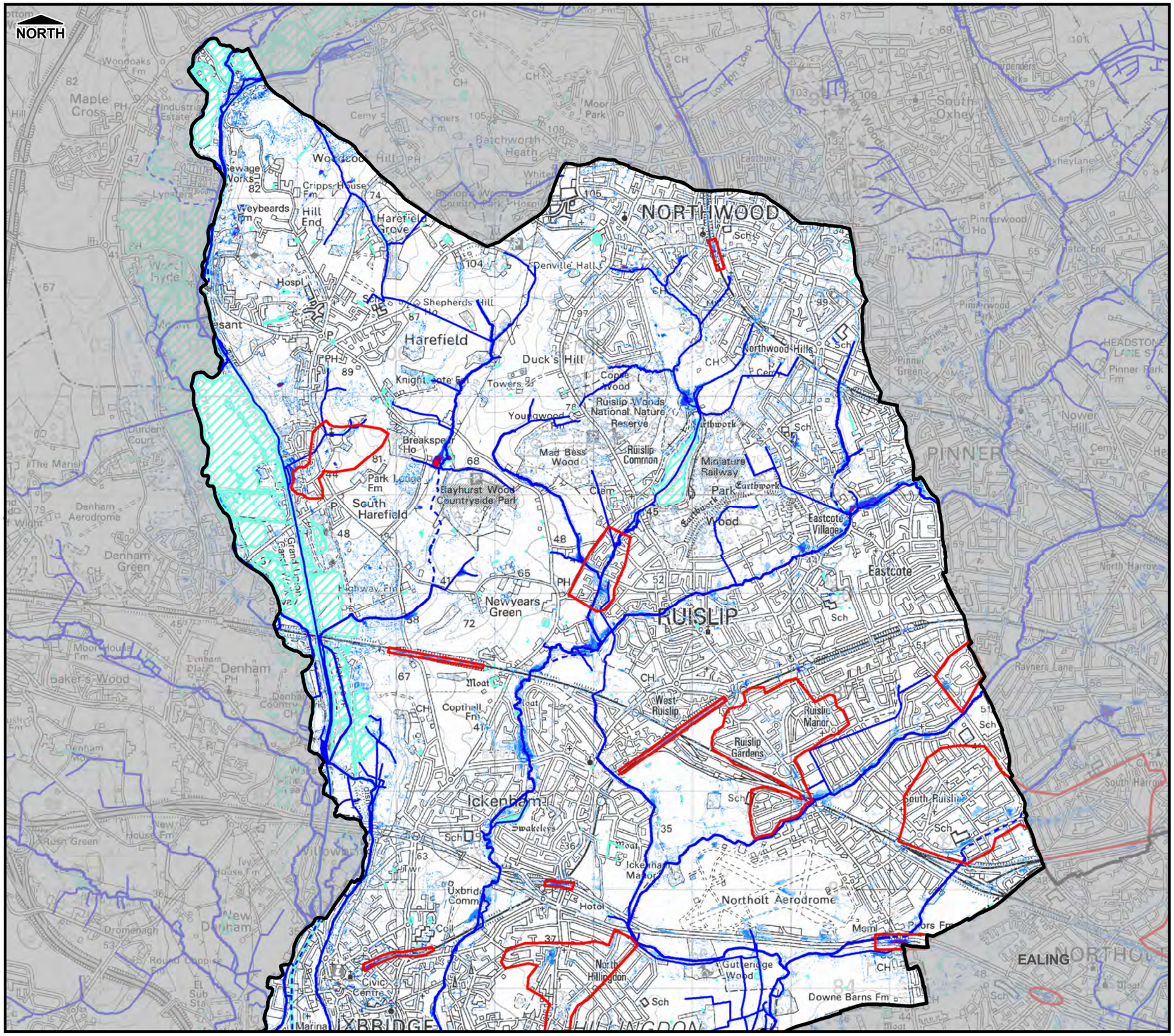
FIGURE 1.1

Filepath: L:\Environment\zwet\CS046913_DrainLondon_Tier2\Group1\ARC\mxds\GP1_Hillingdon_Fig1.1_CDA_Index.mxd



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

Legend

- Borough Administrative Boundary
- Main River
- Ordinary Watercourse
- Culverted Watercourse (Main River)
- Permanent Water Bodies
- Critical Drainage Area

Flood Depth

< 0.1m	0.5m - 1.0m
0.1m - 0.25m	1.0m - 1.5m
0.25m - 0.5m	> 1.5m

Notes

1. This map only shows the predicted likelihood of surface water flooding (this includes flooding from sewers, drains, small watercourses and ditches that occurs in heavy rainfall) for defined areas, and due to the coarse nature of the source data used, are not detailed enough to account for precise addresses.
2. Users of this map should refer to section 3.2 of the Surface Water Management Plan for a complete description of limitations and accuracy of the flood/hazard extents shown.

London Borough of Hillingdon

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Surface Water Management Plan

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Scale at A3	Date	Drawn by	Approved by
1:40,000	11/04/2011	R.MOORE	P.HLINOVSKY

Surface Water Depth (m)
1 in 30 Chance of rainfall event occurring in any given year (3.33% AEP)

Consultants
CAPITA SYMONDS Flood Risk Management
Scott Wilson
Capita Symonds
Level Seven,
52 Grosvenor Gardens,
Belgravia,
London
SW1W 0AU

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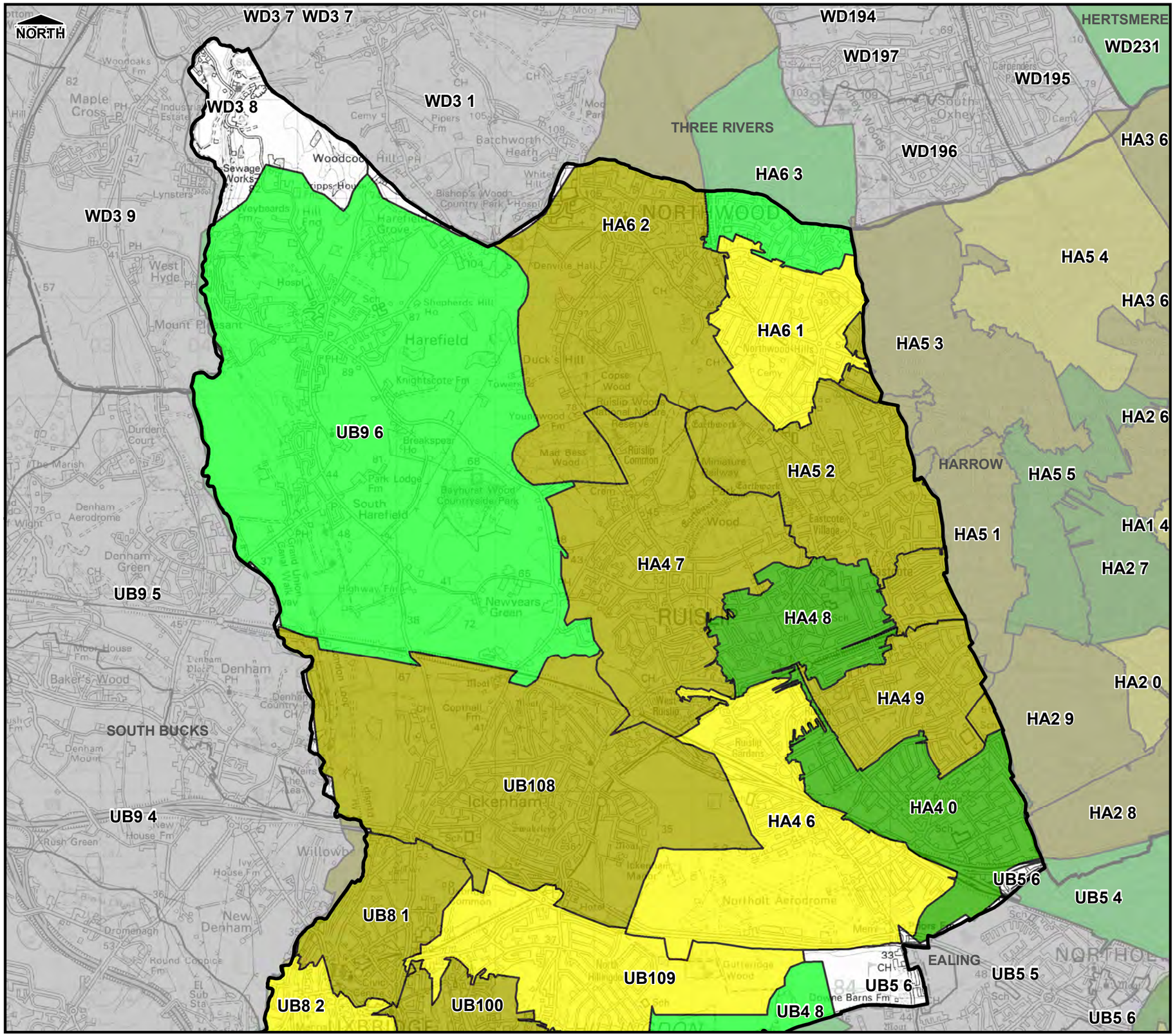
FIGURE 13.1

Filepath: L:\Environment\zwet\CS046913_DrainLondon_Tier2\Group1\ARC\mxds\GP1_Hillingdon_Fig13.1_Depth_30.mxd



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

Legend

- Borough Administrative Boundary
- Sewer Flooding Incidents
- Sewer Flood Outline

No. of Sewer Flood Records

- None
- 1 - 5
- 6 - 10
- 11 - 20
- 21 - 50
- 51 - 100
- 101+

Notes

London Borough of Hillingdon

Surface Water Management Plan

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Scale at A3	Date	Drawn by	Approved by
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Recorded Incidents of Sewer Flooding

Consultants
CAPITA SYMONDS Flood Risk Management
Scott Wilson
Capita Symonds
Level Seven,
52 Grosvenor Gardens,
Belgravia,
London
SW1W 0AU

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FIGURE 9.1

Filepath: L:\Environment\zwet\CS046913_DrainLondon_Tier2\Group1\ARC\mxds\GP1_Hillingdon_Fig9.1_SewerIncidents.mxd

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