JOHN DAVIES ASSOCIATES
Consulting Engineers

212 SWAKELEY ROAD
UXBRIDGE
UB10 8AY

Flood Risk Assessment & Drainage Strategy

(Rev B)

4th JULY 2024

Issue Sheet.

Prepared	Date		Checked	Date
MJM	12-10-23		MJM	12-10-23

Revisions	Comment	Date
A	Initial Issue	12-10-23
B	Layout Updated	04-07-24

The report is based on the information that has been acquired and / or made available to John Davies Associates Limited via the various searches and consultations undertaken as part of the Flood Risk Assessment. In some cases, anecdotal information has been relied upon, where documented evidence has been lacking.

The conclusions drawn in the following report are considered correct although any subsequent additional information may allow refinement of the conclusions.

All work carried out in preparing this report has utilised and is based upon John Davies Associates current professional knowledge and understanding of current UK standards and codes, technology and legislation. Changes in this legislation and guidance may occur at any time in the future and cause any conclusions to become inappropriate or incorrect.

This report has been prepared using information contained in maps and documents prepared by others. John Davies Associates can accept no responsibility for the accuracy of such information.

EXECUTIVE SUMMARY

Site Description

Site Area	3188m² (0.32ha)
Existing Use	Existing dwelling and outbuildings
Proposed Use	Single Dwelling

Flood Risk

Flood Zone	1 (one)
Surface Water	Very Low
Reservoirs	None
Sewers	None known.
Ground Water	Low Risk

Drainage Strategy

Existing Impermeable Area	0.145ha
Proposed Impermeable Area	0.095ha
Proposed Discharge Rate	1.4 l/s
Proposed Outfall	Public Sewer
1 in 100 Year + CC Storage	52m³ in sub-base of permeable paving

Table of Contents

1 Introduction

1.1 John Davies Associates has been commissioned by J79 Studio Architects Limited, to undertake a Flood Risk Assessment (FRA) and Drainage Strategy in connection with the proposed development 212 Swakeley Road. The proposal is for the demolition of the existing dwelling and outbuildings and then the construction of a new 2 storey building with car parking to the front. (See Appendix A for layout).

1.2 This FRA has been produced to demonstrate how risk from all sources of flooding to the site itself and risk to others will be managed, in order to satisfy the requirements, set out in the NPPF – National Planning Policy Framework.

2 Site Description

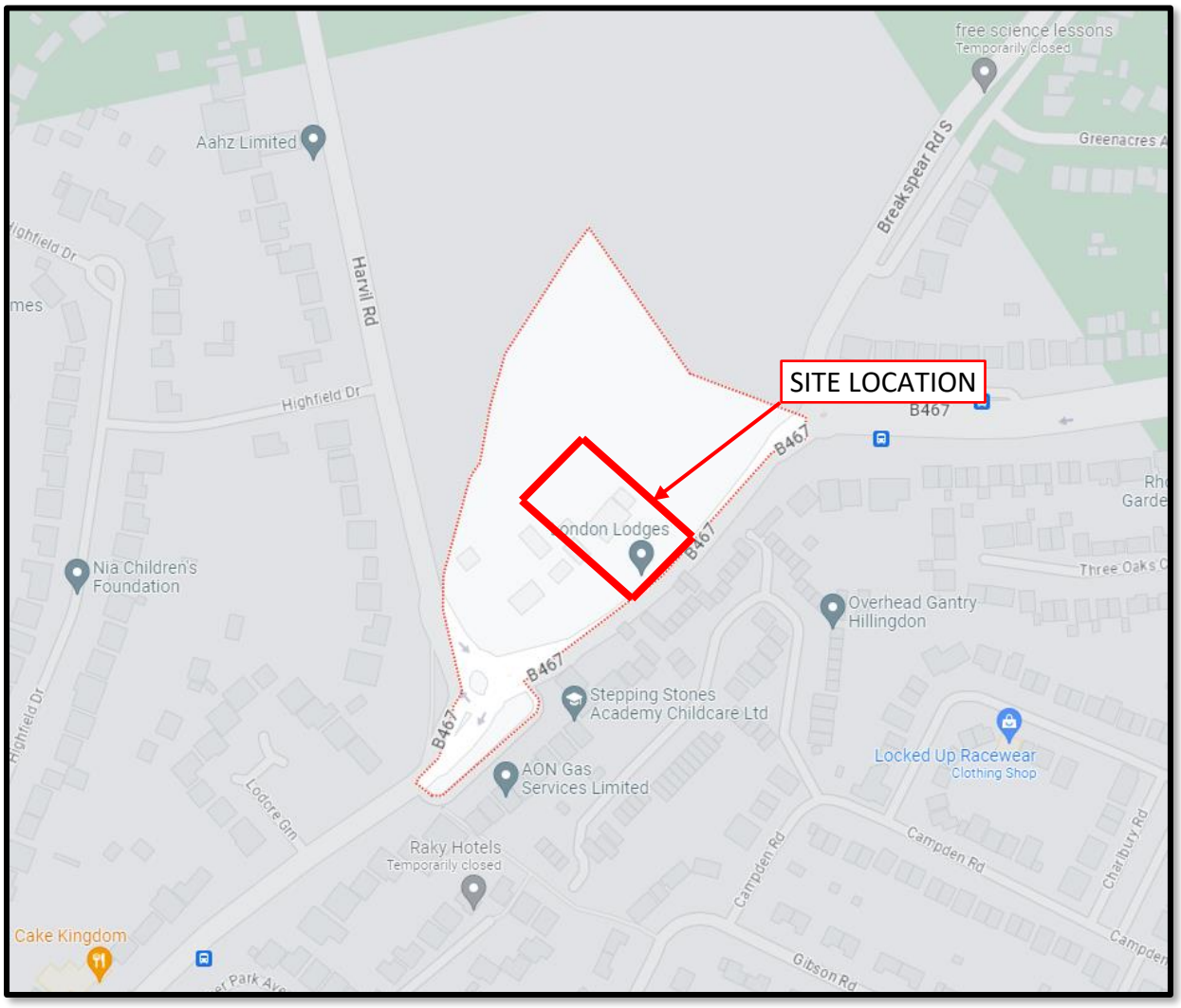
2.1 The site is located off Swakeley Road and the over site area is 3188m² (0.32ha) and can be found at co-ordinates 506618E, 186185N and the nearest postcode is UB10 8AY.

2.2 The site is located within a predominantly residential area, to the north and east of the site are open fields, to the south of the site is Swakeley Road, beyond which is more housing and to the west of the site is 214 Swakeley Road.

3 Site Levels

3.1 At the time of writing this report no topographical survey was available, however from mapping we can see the land falls towards the north.

4 Site Location



5 Aerial Photograph

6 Existing Flood Risk.

6.1 National Planning Policy Framework (NPPF) Paragraphs 155-165 refers to the risk based Sequential Test aiming to steer new development to areas at the lowest probability of flooding (Zone 1).

6.2 Paragraph's 158 & 159 of the NPPF states that

> *"158. The aim of the sequential test is to steer new development to areas with the lowest risk of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding."*

> *"159. If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in national planning guidance."*

7 Existing Geology / Hydrogeology

7.1 At the point of writing this report no Ground Investigatory works had been undertaken, we have therefore consulted with the BGS website and as expected in this area the site is underlain with London Clays. (See Appendix B for BGS data.)

8 Environment Agency Consultation

8.1 Consultation has been had with the Environment Agency (EA) and they have confirmed that the site is located in Flood Zone 1 and they have no records of any historic flooding in this area. (See Appendix C for EA Correspondence).

9 Sewerage Undertaker Consultation.

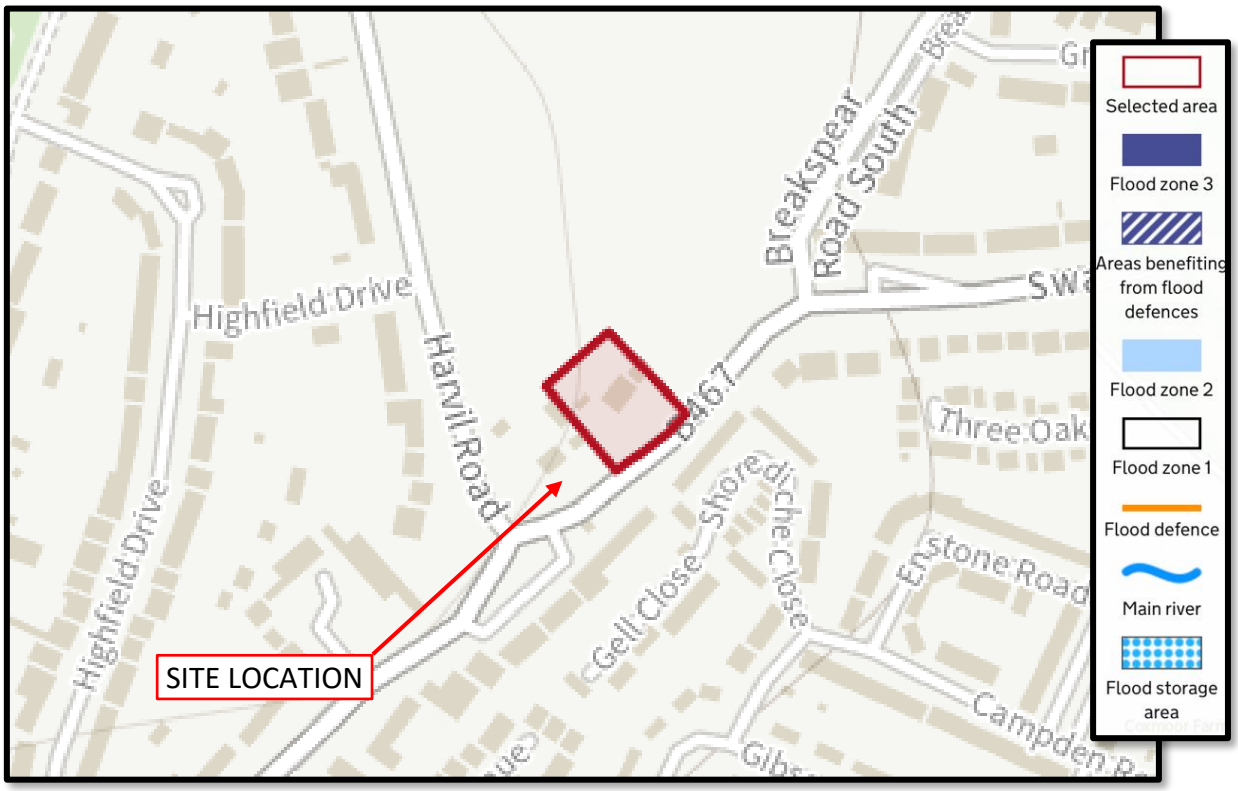
9.1 Thames Water is the sewerage undertaker in this location, no correspondence had been received at the time of writing.

10 Flood Risk Assessment

10.1 The National Planning Policy Framework (NPPF) aims to avoid inappropriate development in areas at risk of flooding, directing development away from high-risk areas and avoiding increasing or reducing the risk of flooding elsewhere.

10.2 The flood risk assessment will use a sequential approach to assess the site to avoid development in flood risk areas and to manage the residual risks and take into account the effect of climate change. The 'Sequential Test' will start with consideration of the Flood Zones in the vicinity of the site. Where development is proposed within a flood zone an 'Exception Test' may also be necessary in accordance with the National Planning Policy Framework guidance.

10.3 As per the (EA) flood map below, the existing site is in **Flood Zone 1.**



10.4 These flood zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood map for planning (River and Seas) available on the Environment Agency's website.

11 Sequential Test

11.1 This risk-based test has the aim of steering new development to area at the lowest probability of flooding, it is broken down into 3 tables, the first of which identifies the risk based on Flood zone as per below, of which this site is within **FLOOD ZONE 1**.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.(Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. 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. (Not separately distinguished from Zone 3a on the Flood Map)

11.2 The second table then identifies the vulnerability class of the site dependant on the sites proposed used, and within this table this site falls into the **MORE VULNERABLE** classification as shown below:

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.

11.3 Finally, Table 3 determines the need for the Exception test based upon the results from tables 1 and 2 previously identified, in this instance the development is **appropriate** and therefore the exception test is required.

Flood Zones	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 †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.

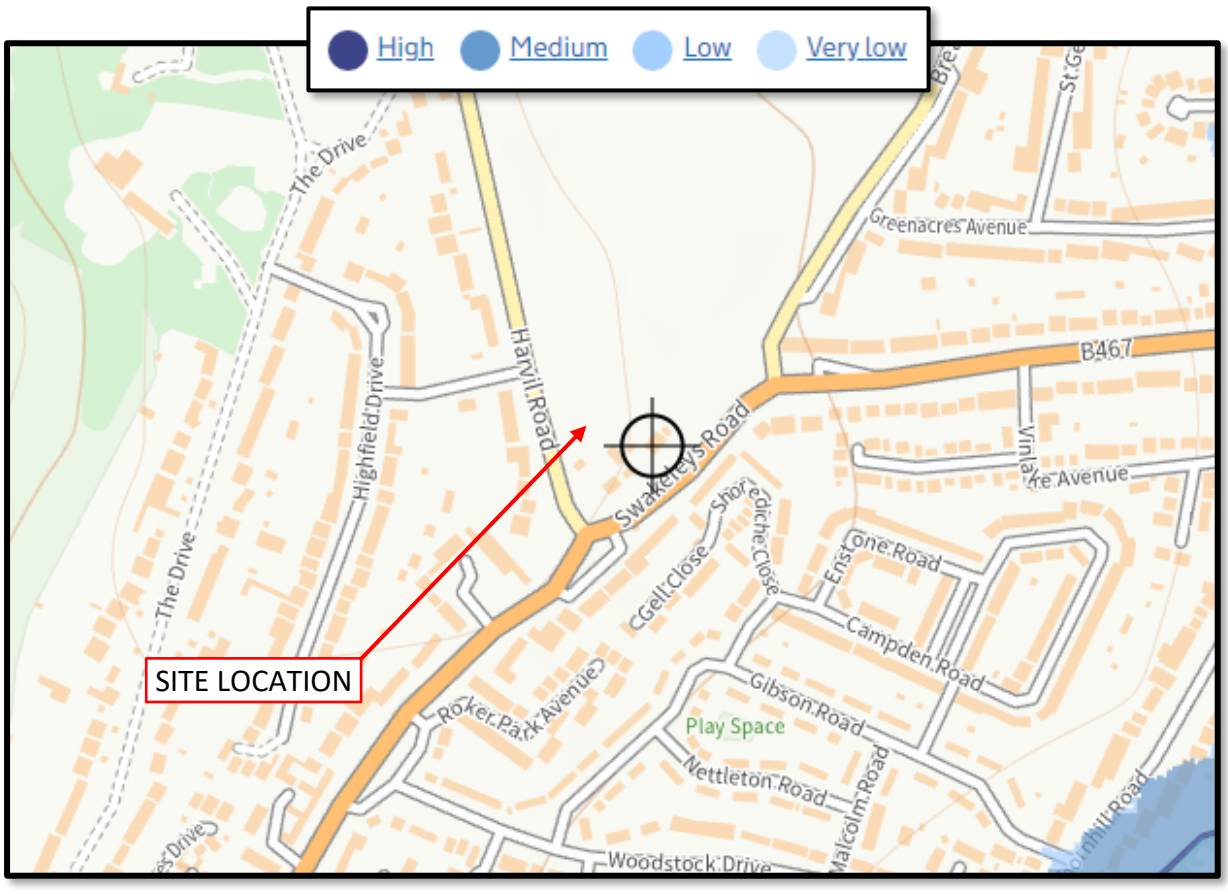
12 Exception Test

12.1 The site has passed the Sequential test and therefore the exception test is not required.

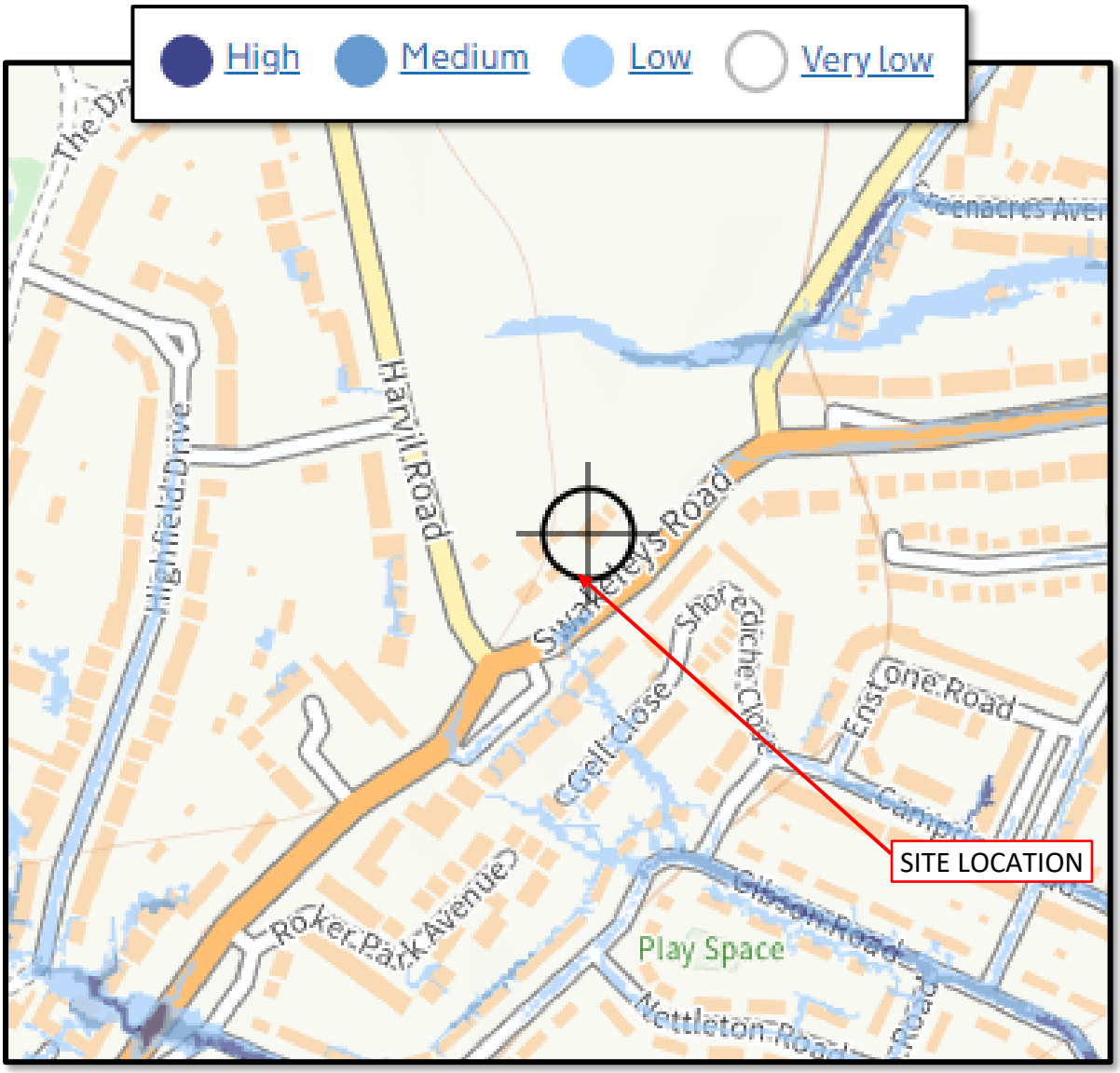
13 Sources of Potential Flooding

SOURCE OF FLOODING	POTENTIAL RISK				DESCRIPTION
	HIGH	MEDIUM	LOW	NONE	
Fluvial			X		See paragraph 13.1
Pluvial			X		See paragraph 13.2
Reservoirs				X	See paragraph 13.3
Sewers				X	No known sewer flooding
Groundwater			X		Low ground water expected
Proposed Development			X		See paragraph 13.4

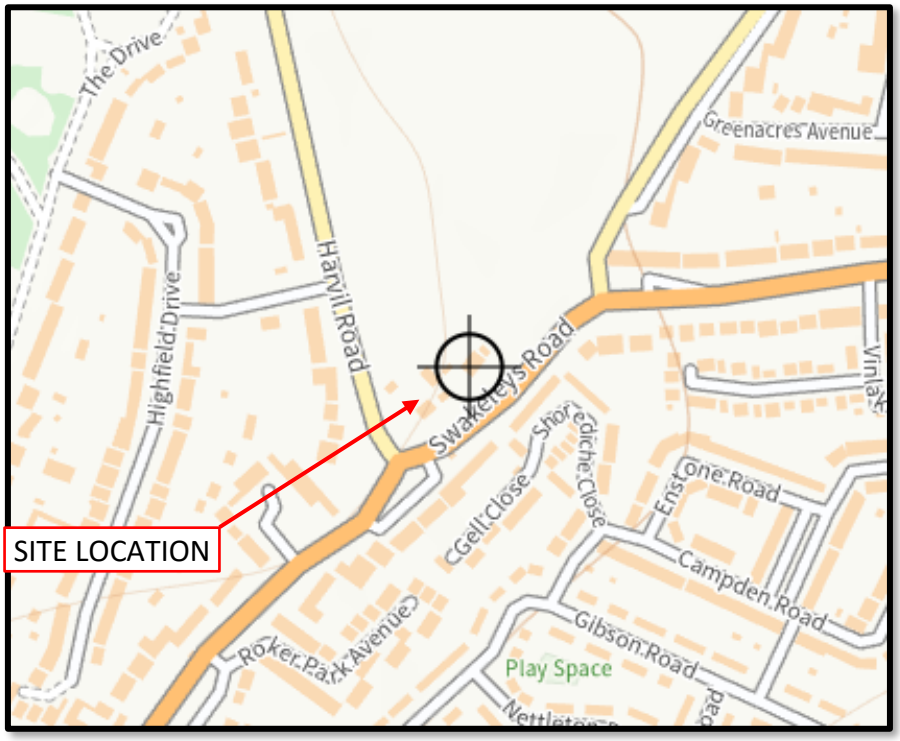
13.1 The (EA) flood mapping service on their website identifies that part of the site has a **Very Low** risk of fluvial flooding as identified on the map below.



13.2 The (EA) flood mapping service on their website identifies the areas at risk from surface water flooding, it can be seen from the below map that a small part of the site to the rear is at a **Very Low** risk of surface water flooding which is generated by rainfall.



13.3 The (EA) flood mapping service on their website identifies the areas at risk from reservoirs flooding through failure to the reservoir or over topping but only in conjunction with river flooding, as per the map below then the site is **not** at risk of flooding should the reservoir fail.



13.4 The proposed development needs to be considered when looking at the risks of flooding both on site and the surrounding areas and downstream of the proposed outfall to ensure that the development does not create flooding elsewhere. Therefore, any risk of increase of flooding would be mitigated though a SUDS surface water drainage scheme.

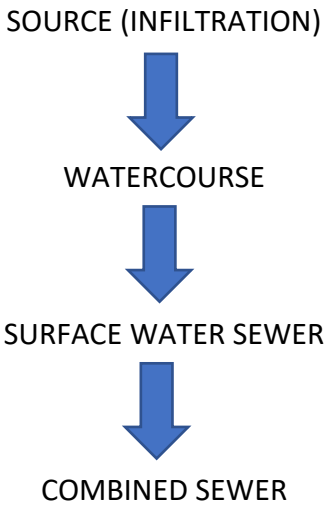
14 Flood Mitigation

14.1 The site is not at risk of flooding and therefore there are no mitigation measures being proposed.

15 Drainage Strategy

Surface Water

15.1 In accordance with the SUDS hierarchy when considering surface water drainage then consideration to each of the below discharge options should be considered in sequence:



15.2 In accordance with the BGS website and the expected ground conditions then we are expecting soakaways not to be viable, we are therefore discounting the use of soakaways.

15.3 Next in the SUDS hierarchy would be to discharge to a water course, as the nearest watercourse appears to be 0.5 miles to the south of the site then discharge tot a watercourse has been discounted.

15.4 Therefore it is proposed to discharge the surface water to the public sewer located in Swakeley Road via the existing connections on site that served the previous property.

15.5 The site currently has a large dwelling on there as well as various outbuilding meaning the site is Brownfield and as such would discharge as follows:

2.78 x 0.145 x 50 = 20 l/s

15.6 However wherever possible the sites should be returned back to the equivalent greenfield runoff rates, which for this site are as follows: (see appendix D for greenfield calc):

QBar = 1.4 l/s
1 in 1Year = 1.19 l/s
1 in 30 Year = 3.22 l/s
1 in 100 Year = 4.47 l/s

15.7 Normally small orifices would be at risk of blockages, but if they are run through a SUDS feature such as permeable paving then this is greatly reduced, therefore it is proposed to restrict the flow to the equivalent QBar rate of **1.4l/s**.

15.8 The site is therefore proposed to discharge to the public sewer at a rate of 1.4 l/s with attenuation provided on site in the sub-base of the permeable paving, sized to accommodate the 1 in 100 year + 40% climate change rainfall event. (See Appendix E for the drainage layout and Appendix F for drainage calcs).

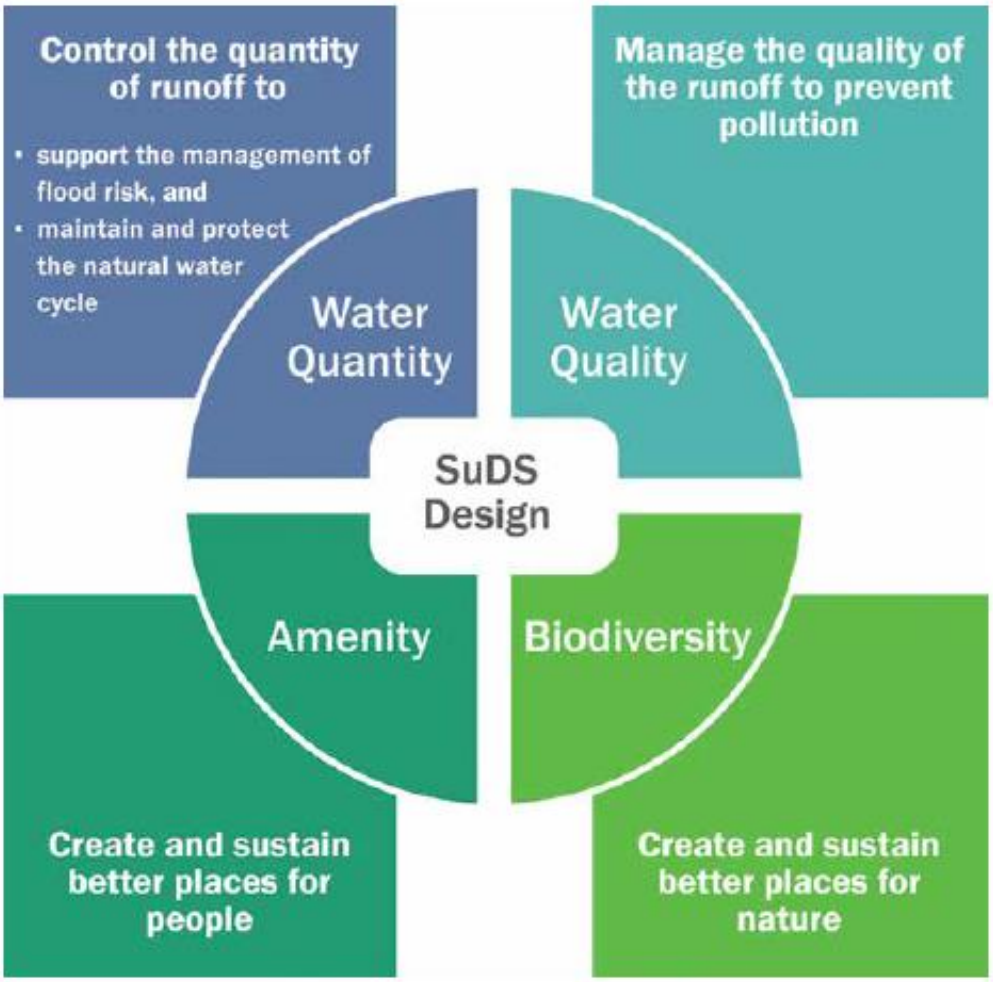
15.9 In addition to the above Hillingdon council produce a Sustainable Drainage proforma that needs to be completed and accompany any SUDS drainage scheme, a copy of this can be found in Appendix G.

Foul Sewer

15.7 It is proposed that the foul drainage will discharge to the public sewer via existing connections on site.

SUDS

15.8 All new surface water should be designed in accordance with 'The SUDS Manual' which identifies 4 pillars of a sustainable drainage solution, these four elements are shown as:



15.9 **WATER QUANTITY:** The surface water from the site is being restricted to the equivalent greenfield runoff rates of 1.4 l/s which attenuation on site in the sub-base of the permeable paving, which is an 83% reduction on the existing runoff from site.

15.10 **WATER QUALITY:** All the new roof and hard paved areas are being discharged via permeable paving which offers 2 levels of treatment, also to the rear of the property is a proposed green roof.

15.11 **AMENITY AND BIODIVERSITY:** New Garden areas are being provided to the new dwelling with new trees and landscaping.

15.12 In producing the SUDS drainage strategy we have considered each of the following elements as outlined below:

COMPONENT	SUITABILITY	REASON
Green Roof	✓	Green Roof is proposed to the rear of the property
Infiltration Systems	X	Ground conditions make infiltration unsuitable
Proprietary Treatment Systems	✓	A flow control device is being used
Filter Strips	X	Ground conditions make infiltration unsuitable
Filter Drains	X	Ground conditions make infiltration unsuitable
Swales	X	Ground conditions make infiltration unsuitable
Bioretention Systems	X	Insufficient land available.
Trees	X	Insufficient land available.
Rain Garden	X	Permeable paving is preferred
Pervious Pavements	✓	Driveway is permeable paving withy sub-base sized for attenuation.
Attenuation Storage Tanks	X	Attenuation is provided in Permeable paving which is a preferred solution
Detention Basins	X	Insufficient land available.
Ponds and Wetlands	X	Insufficient land available.

16 SUDS Operations and Maintenance Plan

16.1 The proposed drainage strategy consists of several SUDS elements which can have different responsibilities on the operation and maintenance and each one will require routine checks and repairs, these different SUDS elements and their require maintenance are as outlined in the table below.

ELEMENT	RESPONSIBILITY		
	PUBLIC	PRIVATE	MAINTENANCE COMPANY
PERMEABLE PAVING		✓	
FLOW CONTROL		✓	
GREEN ROOF		✓	

16.2 PERMEABLE PAVING MAINTENANCE

Operation and maintenance requirements for pervious pavements		
Maintenance schedule	**Required action**	**Typical frequency**
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

16.3 FLOW CONTROL DEVICE MAINTENANCE

Maintenance schedule	Required action	Typical frequency
Routine maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation	Six monthly
	Change the filter media	As recommended by manufacturer
	Remove sediment, oil, grease and floatables	As necessary – indicated by system inspections or immediately following significant spill
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor operation	Six monthly
	Inspect filter media and establish appropriate replacement frequencies	Six monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first half year of operation, then every six months

16.4 GREEN ROOF MAINTENANCE

Operation and maintenance requirements for green roofs		
Maintenance schedule	**Required action**	**Typical frequency**
Regular inspections	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes and roof structure for proper operation, integrity of waterproofing and structural stability	Annually and after severe storms
	Inspect soil substrate for evidence of erosion channels and identify any sediment sources	Annually and after severe storms
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system	Annually and after severe storms
	Inspect underside of roof for evidence of leakage	Annually and after severe storms
Regular maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Six monthly and annually or as required
	During establishment (ie year one), replace dead plants as required	Monthly (but usually responsibility of manufacturer)
	Post establishment, replace dead plants as required (where > 5% of coverage)	Annually (in autumn)
	Remove fallen leaves and debris from deciduous plant foliage	Six monthly or as required
	Remove nuisance and invasive vegetation, including weeds	Six monthly or as required
	Mow grasses, prune shrubs and manage other planting (if appropriate) as required – clippings should be removed and not allowed to accumulate	Six monthly or as required
Remedial actions	If erosion channels are evident, these should be stabilised with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled	As required
	If drain inlet has settled, cracked or moved, investigate and repair as appropriate	As required

17 Flood Exceedance Event

17.1 Although the drainage has been designed to accommodate the 1 in 100 year + 40%cc rainfall event consideration has to be given to the exceedance event to the drainage, this is the event where the surface water system is pushed to such a point that it is forced to flood so that the resultant flow paths can be identified on a plan. (See Appendix H for plan).

18 Conclusion

18.1 John Davies Associates has been commissioned by J79 Studio Architects Limited, to undertake a Flood Risk Assessment (FRA) and Drainage Strategy in relation to the proposed scheme at 212 Swakeley Road, Uxbridge. The proposal consists of the demolition of the existing dwelling and associated outbuilding and then the erection of a single dwelling.

18.2 The proposed development site falls into Flood Zone 1 and has a low risk of flooding from rivers and watercourses.

18.3 The proposed development is at a very low risk of flooding from Surface water.

18.4 The proposed development is not at risk from groundwater or reservoirs.

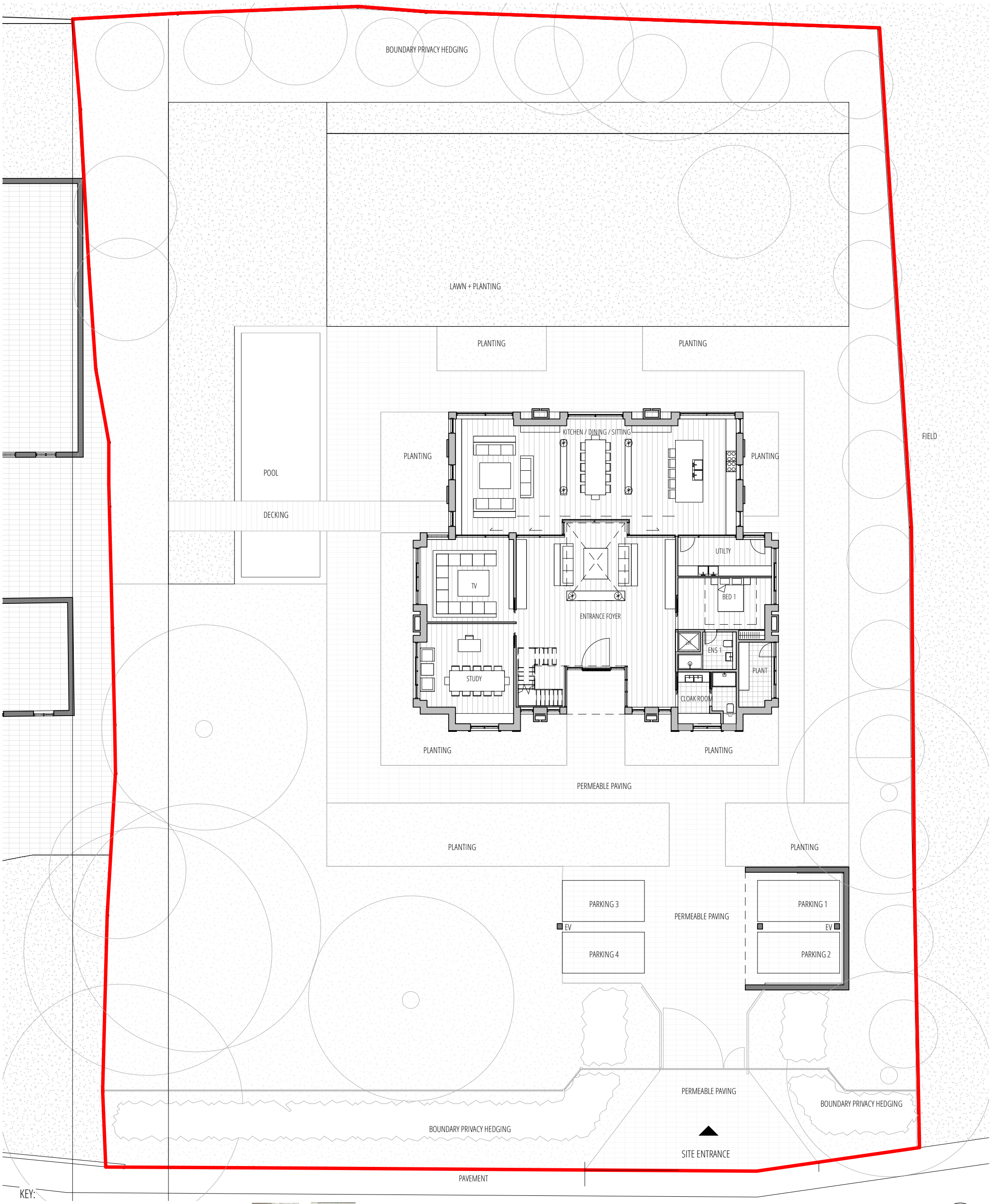
18.5 The sequential test was undertaken, and it was deemed that the exception test was not required for the site.

18.6 The surface water drainage is proposed to connect into the public sewers via existing connections on site at a controlled rate of 1.4 l/s, all the surface water will drain through the permeable paving to treat the water with attenuation provided in the subbase of the permeable paving.

18.7 The foul drainage is proposed to connect into the public sewer via existing connections located on site.

18.8 This Flood Risk Assessment has confirmed that subject to the findings in the report being employed then the proposal for the site is deemed acceptable in the terms as set out in NPPF.

Appendix A
Site Layout Plan



KEY:

	SITE BOUNDARY
	EXISTING STRUCTURE
	PROPOSED STRUCTURE
	ENTRANCE RL ROOFLIGHT PV SOLAR PANEL
M1	BUFF BRICKWORK WITH PATTERN
M2	SANDSTONE / SMOOTH
M3	SANDSTONE / ROUGH
M4	HARDWOOD WINDOW AND DOORS / OG OPAQUE
M5	METAL RAILING GUARDING
M6	SANDSTONE CLADDING WITH PATTERN
M7	METAL FLAT LOCK ROOFING / DORMER CLADDING
M8	TREATED POPLAR TIMBER CLADDING

01 PROPOSED GF PLAN

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CHECK BY CONTRACTOR SIGN / DATE	
CHECK BY APPROVED INSPECTOR SIGN / DATE	

ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR AND FABRICATOR
OBTAINED BUILDING CONTROL + PLANNING APPROVAL PRIOR SITE WORK COMMENCE

Rev	Date	Note
P1	16-06-24	PLANNING ISSUE

PROJECT
212 Swakeleys Road, Ickenham UB10 8AY

DRAWING TITLE
PROPOSED GF PLAN

PLANNING 01

[redacted] J79 STUDIO

SCALE	DATE	PROJECT NO.
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REVISION P1

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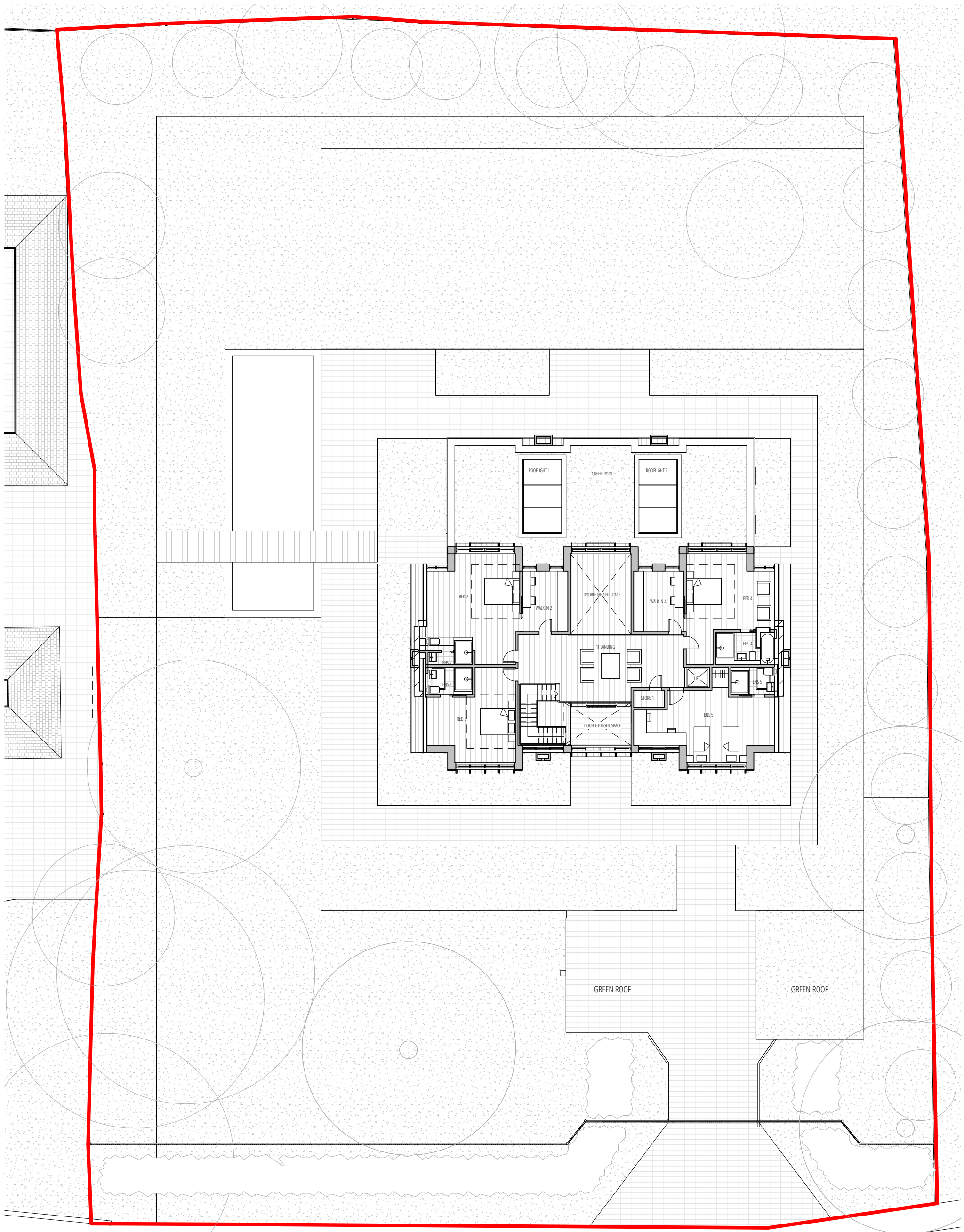

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PROJECT
212 Swakeleys Road, Ickenham UB10 8AY

DRAWING TITLE
PROPOSED 1F PLAN

PLANNING 01

[redacted] J79 STUDIO

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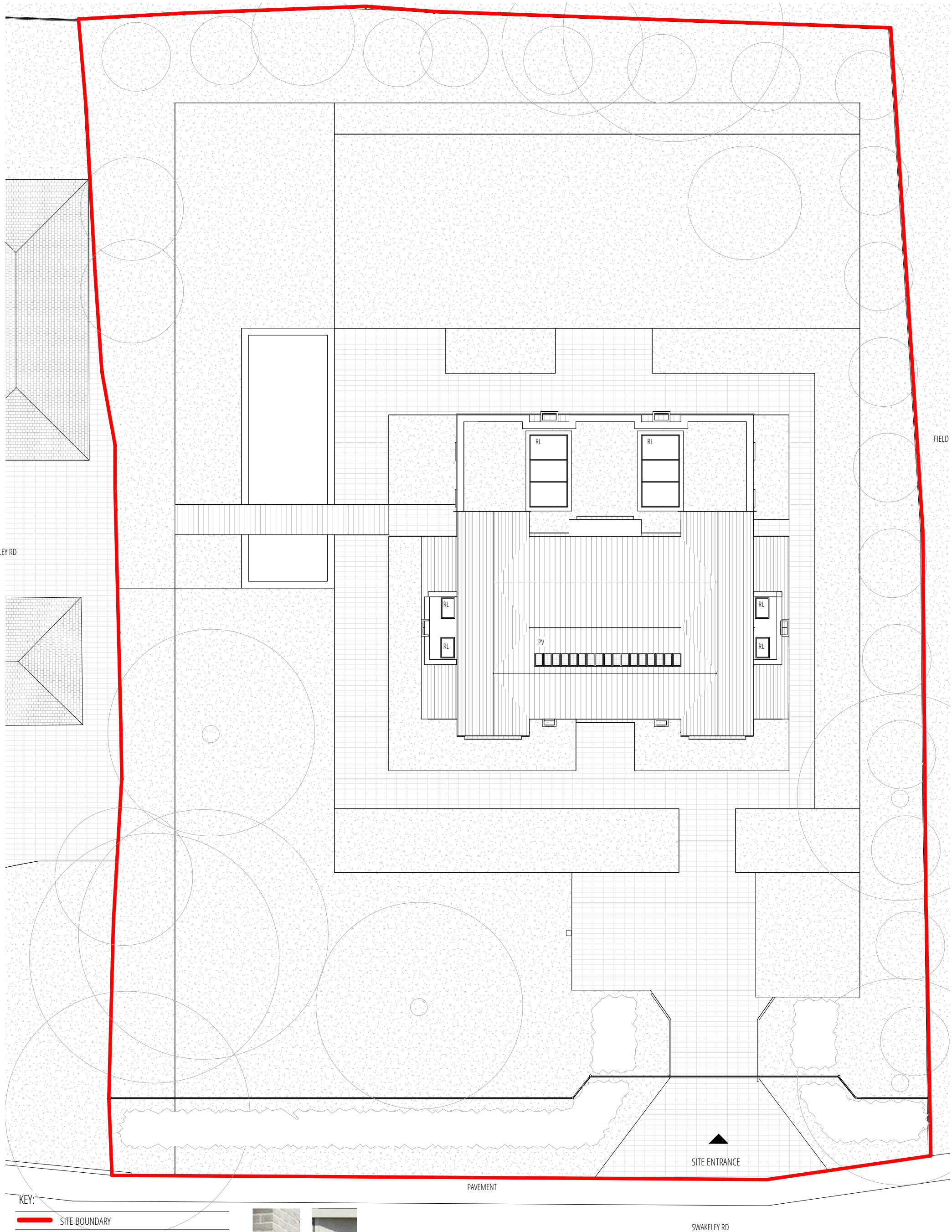

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01 PROPOSED ROOF PLAN

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DRAWING TITLE: PROPOSED ROOF PLAN

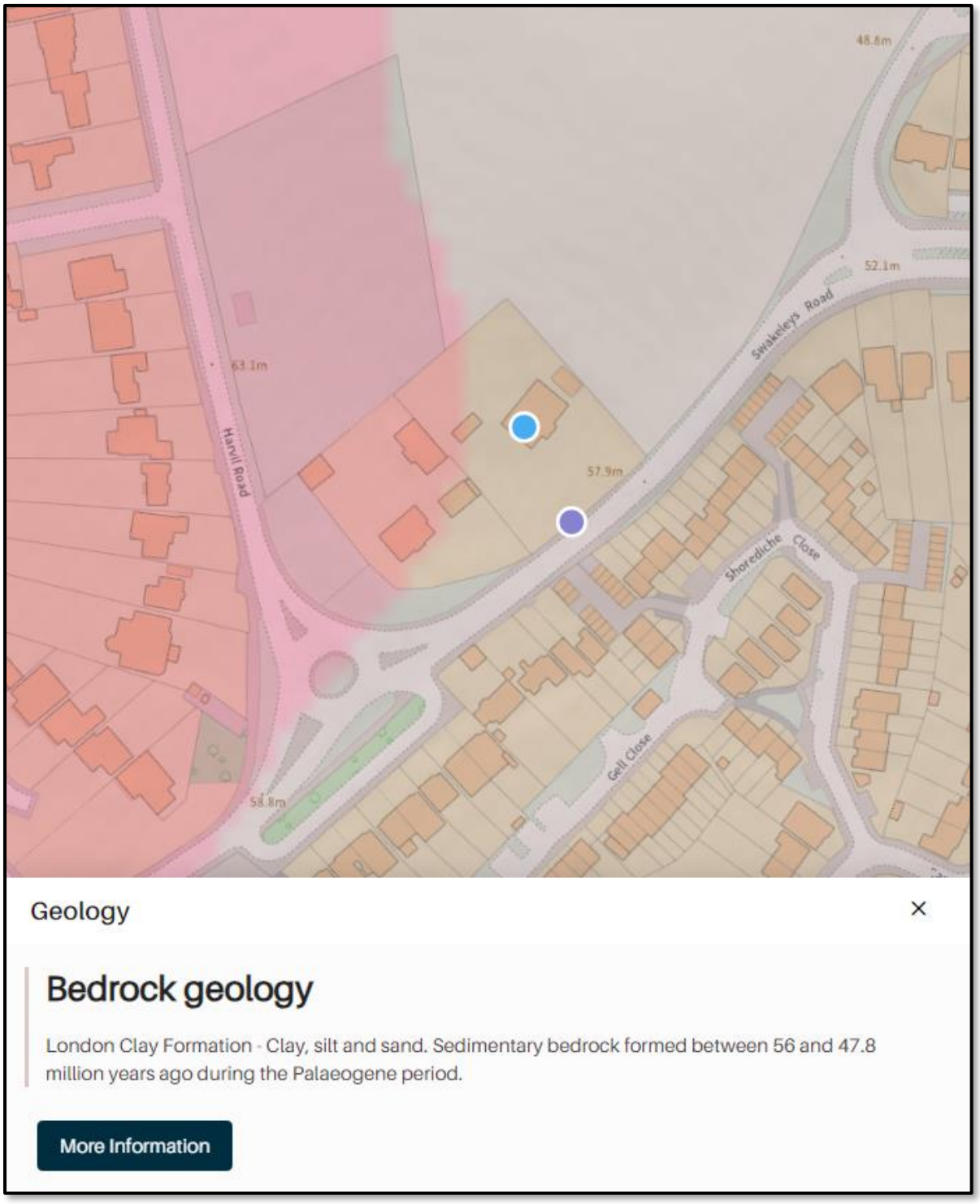
PLANNING 01

[redacted] J79 STUDIO

SCALE	DATE	PROJECT NO.
1:200@A3	JUNE 2024	1942

REVISION P1 DRAWING NO. A204

Appendix B
BGS Website Data


48.6m
52.1m
Swakeleys Road
63.1m
Harvil Road
57.9m
Shoredliche Close
Gell Close
58.8m
Geology
Bedrock geology
London Clay Formation - Clay, silt and sand. Sedimentary bedrock formed between 56 and 47.8 million years ago during the Palaeogene period.
More Information

Appendix C
EA Data

HNL 328999 BF - Product 4 Data - 212 Swakeley Road, Uxbridge

NET Enquiries <HNLenquiries@environment-agency.gov.uk>
Fri 06/10/2023 10:05
To:Michael Micklethwaite <michaelm@jda-ce.co.uk>

Dear Michael

Enquiry regarding: UB10 8AY

Thank you for your enquiry which was received on 25 September 2023.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

Please note that this information is already freely available online at the links below.

The information on Flood Zones in the area relating to UB10 8AY is as follows:

The property is in an area located within Flood Zone 1 shown on our Flood Map for Planning (Rivers and Sea).

Note - This information relates to the area that the above named site is in and is not specific to the property/proposed development itself.

Because this site does not fall within an area at risk of flooding from rivers or the sea, we do not hold any detailed flood modelling data that would impact your site. As such we are unable to provide a flood risk product.

We do not hold records of historic flood events from rivers and/or the sea affecting the area local to this site. However, please be aware that this does not necessarily mean that flooding has not occurred here in the past, as our records are not comprehensive.

This address is within 15m of an area at Medium of surface water flooding.

Following the Flood and Water Management Act 2010, Lead Local Flood Authorities are responsible for the management of groundwater and surface water flooding. They also maintain a register of property flooding incidents. You may want to seek further advice from the Lead Local Flood Aauthority London Borough of Hillingdon who may have further informaiton.

If you have requested this information to help inform a development proposal, then you should note the information on GOV.UK on the use of Environment Agency Information for Flood Risk Assessments.

https://www.gov.uk/planning-applications-assessing-flood-risk
https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion

You can view groundwater flooding issues here: https://www.gov.uk/government/collections/groundwater-current-status-and-flood-risk
https://www.gov.uk/planning-applications-assessing-flood-risk
https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion

You can also view and print surface water flood maps online at: http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=ufmfsw#x=357683&y=355134&scale=2

Data Available Online
Many of our flood datasets are available online:

- Flood Map For Planning (Flood Zone 2, Flood Zone 3 ,Flood Storage Areas, Flood Defences
- Risk of Flooding from Rivers and Sea
- Historic Flood Map
- Assets and Defences
- Current Flood Warnings
- Open data

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Kind regards

Becca Field
Customers and Engagement Officer
Environment Agency, Hertfordshire and North London
Alchemy, Bessemer Road, Welwyn Garden City, Hertfordshire, AL7 1HE
Direct dial 0203 025 9210
Direct email HNLenquiries@environment-agency.gov.uk

From: Michael Micklethwaite <michaelm@jda-ce.co.uk>
Sent: Monday, September 25, 2023 11:52 AM
To: NET Enquiries <HNLenquiries@environment-agency.gov.uk>
Subject: Product 4 Data - 212 Swakeley Road, Uxbridge

To whom it may concern,

My client has a development at an existing dwelling which is to be demolished and a new dwellign erected in its place, the site is located off Swakeley Road, the nearest postcode is UB10 8AY and the co-ordinates are 506618, 186185.

I have attached a site plan and would appreciate a copy of any data you may have for this area.

Regards,

Michael Micklethwaite
Director

BSc (hons) in Civil Engineering

Mob: 07725 686154
michaelm@jda-ce.co.uk

Appendix D
Greenfield Runoff Calc

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Michael Micklethwaite
Site name:	Swakeley Road
Site location:	Uxbridge

Site Details

Latitude:	51.56448° N
Longitude:	0.46326° W
Reference:	1542428898
Date:	Oct 12 2023 18:02

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 0.32

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	644	644
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

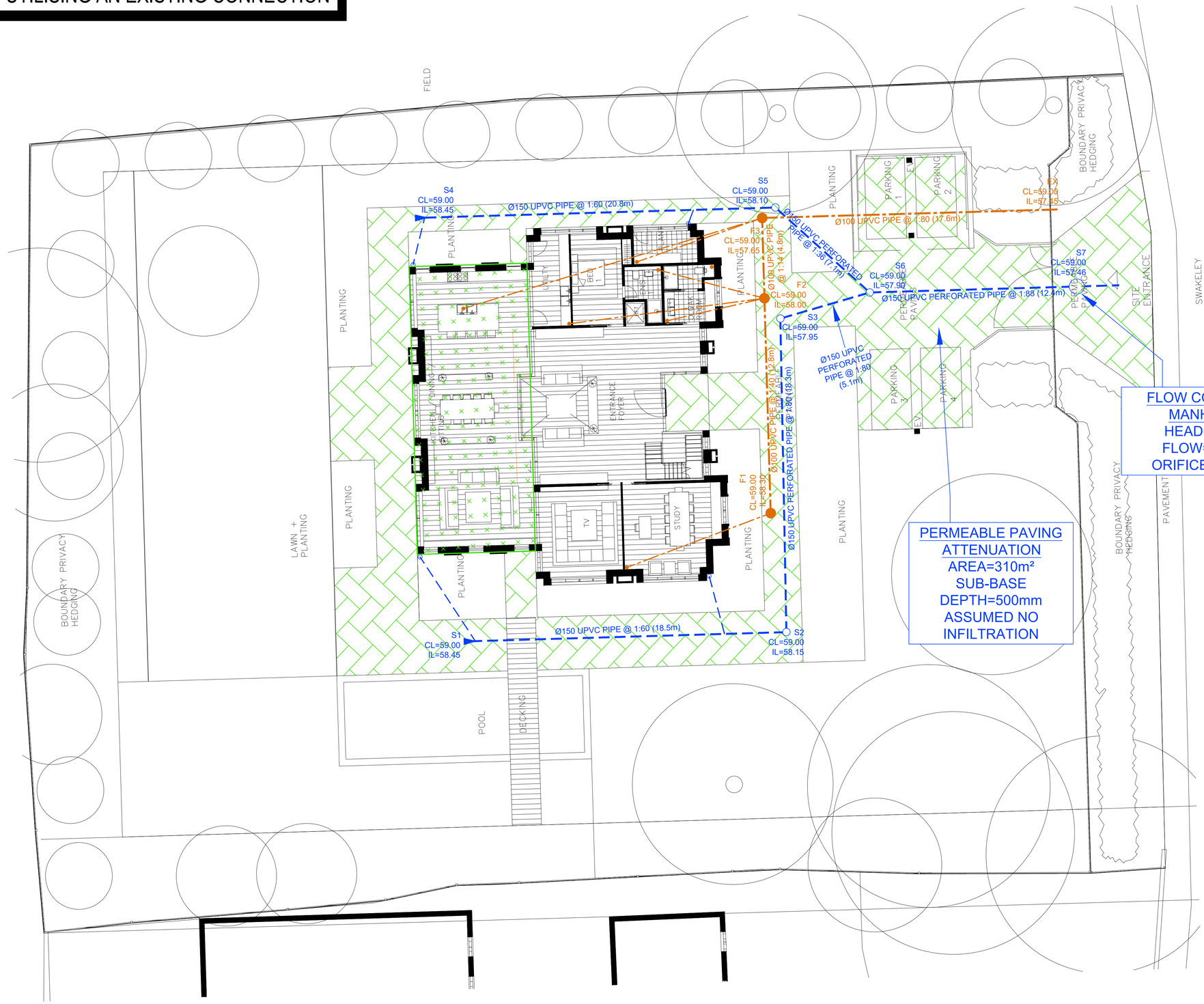
	Default	Edited
Q_{BAR} (l/s):	1.4	1.4
1 in 1 year (l/s):	1.19	1.19
1 in 30 years (l/s):	3.22	3.22
1 in 100 year (l/s):	4.47	4.47
1 in 200 years (l/s):	5.24	5.24

Appendix E
Drainage Layout Plan

EXISTING SEWERS TO BE INVESTIGATED ON SITE FOR BOTH SURFACE AND FOUL WITH THE INTENTION OF UTILISING AN EXISTING CONNECTION

COVER AND INVERTS OF EXISTING SEWERS SHOULD BE CHECKED ON SITE PRIOR TO CONSTRUCTION

ALL RWP AND SVP'S TO BE CHECKED AGAINST ARCHITECTS LAYOUT PLANS



Notes

1. This drawing is produced for use in this project only and may not be used for any other purpose. The consulting Engineers accept no liability for the use of this drawing other than the purpose for which it was intended in connection with this project as recorded on the title block fields 'Purpose for Issue' and 'File Status Code'.
2. This drawing may not be reproduced in any form without prior written agreement.
3. Do not scale from the drawing, use written dimensions only.
4. All dimensions are in millimetres unless otherwise specified.
5. Discrepancies must be reported back to the engineer prior to construction.

Key

- PROPOSED SW SEWER
- PROPOSED FW SEWER
- PERMEABLE PAVING
- GREEN ROOF

DRAINAGE STRATEGY

SURFACE WATER

In accordance with the SuDS Hierarchy then infiltration should be considered in the first instance, based on BGS records it is assumed that soakaway would not be viable.

If soakaways do not work then the surface water should discharge to a water course wherever possible, as there are no watercourses within the vicinity of the site then this has been discounted.

We are therefore proposing to discharge to the public sewer via existing connections on site, at a controlled rate of 1.4 l/s with attenuation on site to store the 1 in 100 Year + 40% climate change rainfall event. (Refer to JDA Drainage Strategy Report)

FOUL DRAINAGE

It is proposed to discharge the foul drainage to the existing public sewer via existing connections located on site.

REV.	DESCRIPTION	DWN	CHK	DATE
B	LAYOUT UPDATED	MJM	JD	04.07.24
A	INITIAL ISSUE	MJM	JD	19.09.23

CLIENT
B
ARCHITECTS

PROJECT
212 SWAKELEY ROAD
UXBRIDGE
UB10 2AY

TITLE
PROPOSED DRAINAGE
LAYOUT PLAN

DWN	DATE	CHK	DATE	APP.	DATE	SCALE
MM	OCT '23					1:125

John Davies Associates
1 St John's Rd.
Queen's Park
Chester. CH4 7AL
Tel/Fax: 01244 677991

Drawing Number
JDA/490/3/1

A1
REV. B

Appendix F
Drainage Calc

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Adoptable Manhole Type

Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)
374	1200	749	1500
499	1350	900	1800

>900 Link+900 mm

Max Depth (m)	Diameter (mm)	Max Depth (m)	Diameter (mm)
1.500	1050	99.999	1200

Circular Link Type

Shape	Circular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

100 | 150

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S1	0.010	5.00	59.000	600	506600.082	186179.608	0.550
S2	0.010	5.00	59.000	600	506612.521	186165.627	0.850
S3	0.010	5.00	59.000	600	506626.638	186177.945	1.050
S4	0.010	5.00	59.000	600	506617.211	186198.530	0.550
S5	0.010	5.00	59.000	600	506631.527	186182.439	0.900
S6	0.045	5.00	59.000	600	506631.262	186174.858	1.100
S7			59.000	600	506639.491	186165.609	1.540
EX			59.000	600	506641.167	186163.725	1.700

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S1	S2	18.714	0.600	58.450	58.150	0.300	62.4	150	5.24	50.0
1.001	S2	S3	18.736	0.600	58.150	57.950	0.200	93.7	150	5.55	50.0
2.000	S4	S5	21.538	0.600	58.450	58.100	0.350	61.5	150	5.28	50.0
2.001	S5	S3	6.641	0.600	58.100	57.950	0.150	44.3	150	5.35	50.0
1.002	S3	S6	5.560	0.600	57.950	57.900	0.050	111.2	150	5.64	50.0
1.003	S6	S7	12.380	0.600	57.900	57.460	0.440	28.1	150	5.75	50.0
1.004	S7	EX	2.522	0.600	57.460	57.300	0.160	15.8	150	5.77	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.275	22.5	1.4	0.400	0.700	0.010	0.0	25	0.702
1.001	1.038	18.3	2.7	0.700	0.900	0.020	0.0	39	0.746
2.000	1.284	22.7	1.4	0.400	0.750	0.010	0.0	25	0.707
2.001	1.516	26.8	2.7	0.750	0.900	0.020	0.0	32	0.971
1.002	0.952	16.8	6.8	0.900	0.950	0.050	0.0	66	0.899
1.003	1.905	33.7	12.9	0.950	1.390	0.095	0.0	64	1.778
1.004	2.550	45.1	12.9	1.390	1.550	0.095	0.0	55	2.204

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	18.714	62.4	150	Circular	59.000	58.450	0.400	59.000	58.150	0.700
1.001	18.736	93.7	150	Circular	59.000	58.150	0.700	59.000	57.950	0.900
2.000	21.538	61.5	150	Circular	59.000	58.450	0.400	59.000	58.100	0.750
2.001	6.641	44.3	150	Circular	59.000	58.100	0.750	59.000	57.950	0.900
1.002	5.560	111.2	150	Circular	59.000	57.950	0.900	59.000	57.900	0.950
1.003	12.380	28.1	150	Circular	59.000	57.900	0.950	59.000	57.460	1.390
1.004	2.522	15.8	150	Circular	59.000	57.460	1.390	59.000	57.300	1.550

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	600	Manhole	Adoptable	S2	600	Manhole	Adoptable
1.001	S2	600	Manhole	Adoptable	S3	600	Manhole	Adoptable
2.000	S4	600	Manhole	Adoptable	S5	600	Manhole	Adoptable
2.001	S5	600	Manhole	Adoptable	S3	600	Manhole	Adoptable
1.002	S3	600	Manhole	Adoptable	S6	600	Manhole	Adoptable
1.003	S6	600	Manhole	Adoptable	S7	600	Manhole	Adoptable
1.004	S7	600	Manhole	Adoptable	EX	600	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1	506600.082	186179.608	59.000	0.550	600	 0	1.000	58.450	150
S2	506612.521	186165.627	59.000	0.850	600	 1	1.000	58.150	150
						0	1.001	58.150	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S3	506626.638	186177.945	59.000	1.050	600	1	2.001	57.950	150
						2	1.001	57.950	150
						0	1.002	57.950	150
S4	506617.211	186198.530	59.000	0.550	600	0	2.000	58.450	150
S5	506631.527	186182.439	59.000	0.900	600	1	2.000	58.100	150
						0	2.001	58.100	150
S6	506631.262	186174.858	59.000	1.100	600	1	1.002	57.900	150
						0	1.003	57.900	150
S7	506639.491	186165.609	59.000	1.540	600	1	1.003	57.460	150
						0	1.004	57.460	150
EX	506641.167	186163.725	59.000	1.700	600	1	1.004	57.300	150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	0	0	0
100	40	0	0

Node S7 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.800	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	1.4		
Invert Level (m)	57.460	Diameter (m)	0.027		

Node S6 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	57.900
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.33	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	310.0	0.0	0.500	310.0	0.0	0.501	0.0	0.0

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	109.521	30.991	30 year 480 minute summer	24.324	6.428
1 year 15 minute winter	76.857	30.991	30 year 480 minute winter	16.160	6.428
1 year 30 minute summer	71.439	20.215	30 year 600 minute summer	19.756	5.404
1 year 30 minute winter	50.133	20.215	30 year 600 minute winter	13.498	5.404
1 year 60 minute summer	48.435	12.800	30 year 720 minute summer	17.490	4.687
1 year 60 minute winter	32.179	12.800	30 year 720 minute winter	11.754	4.687
1 year 120 minute summer	30.053	7.942	30 year 960 minute summer	14.215	3.743
1 year 120 minute winter	19.966	7.942	30 year 960 minute winter	9.416	3.743
1 year 180 minute summer	23.233	5.979	30 year 1440 minute summer	10.161	2.723
1 year 180 minute winter	15.102	5.979	30 year 1440 minute winter	6.829	2.723
1 year 240 minute summer	18.475	4.882	100 year 15 minute summer	348.738	98.681
1 year 240 minute winter	12.274	4.882	100 year 15 minute winter	244.728	98.681
1 year 360 minute summer	14.169	3.646	100 year 30 minute summer	228.965	64.789
1 year 360 minute winter	9.210	3.646	100 year 30 minute winter	160.677	64.789
1 year 480 minute summer	11.185	2.956	100 year 60 minute summer	153.288	40.510
1 year 480 minute winter	7.431	2.956	100 year 60 minute winter	101.841	40.510
1 year 600 minute summer	9.182	2.511	100 year 120 minute summer	92.562	24.461
1 year 600 minute winter	6.274	2.511	100 year 120 minute winter	61.496	24.461
1 year 720 minute summer	8.203	2.199	100 year 180 minute summer	69.806	17.964
1 year 720 minute winter	5.513	2.199	100 year 180 minute winter	45.376	17.964
1 year 960 minute summer	6.768	1.782	100 year 240 minute summer	54.269	14.342
1 year 960 minute winter	4.483	1.782	100 year 240 minute winter	36.055	14.342
1 year 1440 minute summer	4.949	1.326	100 year 360 minute summer	40.484	10.418
1 year 1440 minute winter	3.326	1.326	100 year 360 minute winter	26.315	10.418
30 year 15 minute summer	268.706	76.035	100 year 480 minute summer	31.414	8.302
30 year 15 minute winter	188.566	76.035	100 year 480 minute winter	20.871	8.302
30 year 30 minute summer	174.929	49.499	100 year 600 minute summer	25.431	6.956
30 year 30 minute winter	122.757	49.499	100 year 600 minute winter	17.376	6.956
30 year 60 minute summer	116.589	30.811	100 year 720 minute summer	22.452	6.017
30 year 60 minute winter	77.459	30.811	100 year 720 minute winter	15.089	6.017
30 year 120 minute summer	70.438	18.615	100 year 960 minute summer	18.166	4.784
30 year 120 minute winter	46.797	18.615	100 year 960 minute winter	12.033	4.784
30 year 180 minute summer	53.298	13.715	100 year 1440 minute summer	12.896	3.456
30 year 180 minute winter	34.645	13.715	100 year 1440 minute winter	8.667	3.456
30 year 240 minute summer	41.604	10.995	100 year +40% CC 15 minute summer	488.233	138.153
30 year 240 minute winter	27.641	10.995	100 year +40% CC 15 minute winter	342.620	138.153
30 year 360 minute summer	31.221	8.034	100 year +40% CC 30 minute summer	320.551	90.705
30 year 360 minute winter	20.295	8.034	100 year +40% CC 30 minute winter	224.948	90.705

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +40% CC 60 minute summer	214.603	56.713	100 year +40% CC 480 minute summer	43.979	11.622
100 year +40% CC 60 minute winter	142.577	56.713	100 year +40% CC 480 minute winter	29.219	11.622
100 year +40% CC 120 minute summer	129.587	34.246	100 year +40% CC 600 minute summer	35.604	9.738
100 year +40% CC 120 minute winter	86.094	34.246	100 year +40% CC 600 minute winter	24.327	9.738
100 year +40% CC 180 minute summer	97.729	25.149	100 year +40% CC 720 minute summer	31.433	8.424
100 year +40% CC 180 minute winter	63.526	25.149	100 year +40% CC 720 minute winter	21.125	8.424
100 year +40% CC 240 minute summer	75.977	20.078	100 year +40% CC 960 minute summer	25.432	6.697
100 year +40% CC 240 minute winter	50.477	20.078	100 year +40% CC 960 minute winter	16.847	6.697
100 year +40% CC 360 minute summer	56.677	14.585	100 year +40% CC 1440 minute summer	18.055	4.839
100 year +40% CC 360 minute winter	36.841	14.585	100 year +40% CC 1440 minute winter	12.134	4.839

Results for 1 year Critical Storm Duration. Lowest mass balance: 97.60%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	58.475	0.025	1.4	0.0162	0.0000	OK
15 minute winter	S2	11	58.189	0.039	2.8	0.0200	0.0000	OK
15 minute summer	S3	10	58.025	0.075	6.5	0.0355	0.0000	OK
15 minute winter	S4	10	58.475	0.025	1.4	0.0161	0.0000	OK
15 minute winter	S5	10	58.132	0.032	2.8	0.0163	0.0000	OK
120 minute winter	S6	92	57.971	0.071	4.6	7.3672	0.0000	OK
120 minute winter	S7	92	57.971	0.511	2.1	0.1446	0.0000	SURCHARGED
15 minute summer	EX	1	57.300	0.000	1.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S2	1.4	0.502	0.061	0.0516	
15 minute winter	S2	1.001	S3	2.7	0.449	0.146	0.1153	
15 minute summer	S3	1.002	S6	6.6	1.354	0.393	0.0294	
15 minute winter	S4	2.000	S5	1.4	0.584	0.060	0.0505	
15 minute winter	S5	2.001	S3	2.7	0.487	0.101	0.0382	
120 minute winter	S6	1.003	S7	2.1	0.321	0.062	0.1600	
120 minute winter	S7	Orifice	EX	1.1				12.6

Results for 30 year Critical Storm Duration. Lowest mass balance: 97.60%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	58.490	0.040	3.5	0.0256	0.0000	OK
15 minute winter	S2	10	58.213	0.063	7.0	0.0327	0.0000	OK
120 minute winter	S3	116	58.112	0.162	5.5	0.0765	0.0000	SURCHARGED
15 minute winter	S4	10	58.490	0.040	3.5	0.0255	0.0000	OK
15 minute winter	S5	10	58.152	0.052	6.9	0.0262	0.0000	OK
120 minute winter	S6	118	58.112	0.212	10.3	21.8943	0.0000	SURCHARGED
120 minute winter	S7	118	58.111	0.651	1.9	0.1842	0.0000	SURCHARGED
15 minute summer	EX	1	57.300	0.000	1.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S2	3.5	0.648	0.153	0.1006	
15 minute winter	S2	1.001	S3	6.8	0.580	0.371	0.2145	
120 minute winter	S3	1.002	S6	5.4	0.853	0.324	0.0979	
15 minute winter	S4	2.000	S5	3.5	0.762	0.152	0.0979	
15 minute winter	S5	2.001	S3	6.9	0.629	0.256	0.0706	
120 minute winter	S6	1.003	S7	1.9	0.394	0.057	0.2179	
120 minute winter	S7	Orifice	EX	1.2				22.7

Results for 100 year Critical Storm Duration. Lowest mass balance: 97.60%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	58.495	0.045	4.5	0.0291	0.0000	OK
15 minute winter	S2	10	58.223	0.073	8.9	0.0377	0.0000	OK
180 minute winter	S3	176	58.195	0.245	5.0	0.1161	0.0000	SURCHARGED
15 minute winter	S4	10	58.495	0.045	4.5	0.0290	0.0000	OK
180 minute winter	S5	176	58.195	0.095	2.0	0.0482	0.0000	OK
180 minute winter	S6	176	58.195	0.295	9.4	30.5448	0.0000	SURCHARGED
180 minute winter	S7	176	58.195	0.735	1.5	0.2079	0.0000	SURCHARGED
15 minute summer	EX	1	57.300	0.000	1.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S2	4.4	0.692	0.197	0.1209	
15 minute winter	S2	1.001	S3	8.7	0.589	0.477	0.2442	
180 minute winter	S3	1.002	S6	4.8	0.809	0.285	0.0979	
15 minute winter	S4	2.000	S5	4.4	0.817	0.195	0.1173	
180 minute winter	S5	2.001	S3	2.0	0.457	0.075	0.0977	
180 minute winter	S6	1.003	S7	1.5	0.373	0.045	0.2179	
180 minute winter	S7	Orifice	EX	1.3				28.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 97.60%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	58.504	0.054	6.3	0.0348	0.0000	OK
180 minute winter	S2	176	58.343	0.193	3.0	0.1000	0.0000	SURCHARGED
180 minute winter	S3	176	58.343	0.393	7.5	0.1859	0.0000	SURCHARGED
15 minute winter	S4	10	58.504	0.054	6.3	0.0346	0.0000	OK
180 minute winter	S5	176	58.343	0.243	3.0	0.1227	0.0000	SURCHARGED
180 minute winter	S6	180	58.343	0.443	13.8	45.7822	0.0000	SURCHARGED
180 minute winter	S7	180	58.342	0.882	2.0	0.2495	0.0000	SURCHARGED
15 minute summer	EX	1	57.300	0.000	1.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S2	6.2	0.728	0.276	0.2163	
180 minute winter	S2	1.001	S3	3.0	0.412	0.163	0.3298	
180 minute winter	S3	1.002	S6	7.2	0.844	0.428	0.0979	
15 minute winter	S4	2.000	S5	6.2	0.831	0.274	0.2486	
180 minute winter	S5	2.001	S3	3.0	0.453	0.111	0.1169	
180 minute winter	S6	1.003	S7	2.0	0.344	0.059	0.2179	
180 minute winter	S7	Orifice	EX	1.4				30.8

Appendix G
Hillingdon SUDS Proforma

HILLINGDON LONDON

GREATER LONDON AUTHORITY

LoDEG

1. Project & Site Details

Project / Site Name (including sub-catchment / stage / phase where appropriate)	212 Swakeley Road
Address & post code	212 Swakeley Road, Uxbridge, UB10 8AY
OS Grid ref. (Easting, Northing)	E 506618
	N 186185
LPA reference (if applicable)	
Brief description of proposed work	Demolition of existing dwelling and outbuilding and erection of new single dwelling
Total site Area	3188 m^2
Total existing impervious area	1454 m^2
Total proposed impervious area	1026 m^2
Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	No
Existing drainage connection type and location	Existing drainage connections to public sewer
Designer Name	Michael Micklethwaite
Designer Position	Director
Designer Company	John Davies Associates

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	Expected to be clays
Bedrock geology classification	London Clays
Site infiltration rate	0 m/s
Depth to groundwater level	0 m below ground level
Is infiltration feasible?	Not expected

2b. Drainage Hierarchy

	Feasible (Y/N)	*Proposed (Y/N)*
1 store rainwater for later use	Y	Y
2 use infiltration techniques, such as porous surfaces in non-clay areas	N	Y
3 attenuate rainwater in ponds or open water features for gradual release	N	N
4 attenuate rainwater by storing in tanks or sealed water features for gradual release	N	N
5 discharge rainwater direct to a watercourse	N	N
6 discharge rainwater to a surface water sewer/drain	Y	Y
7 discharge rainwater to the combined sewer.	N	N

2c. Proposed Discharge Details

Proposed discharge location	Existing drainage connections on site
Has the owner/regulator of the discharge location been consulted?	Not Yet

3. Drainage Strategy

3a. Discharge Rates & Required Storage

	Greenfield (GF) runoff rate (l/s)	*Existing discharge rate (l/s)*	*Required storage for GF rate (m^3)*	*Proposed discharge rate (l/s)*
Qbar	1.4			
1 in 1	1.19	20	10	1.4
1 in 30	3.22	47	28	1.4
1 in 100	4.47	60	38	1.4
1 in 100 + CC			52	1.4
Climate change allowance used		40%		
3b. Principal Method of Flow Control		Orifice Plate in flow control manhole		

3c. Proposed SuDS Measures

	Catchment area (m^2)	*Plan area (m^3)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	173	173	0
Blue roofs	0	0	0
Filter strips	0	0	0
Filter drains	0	0	0
Bioretention / tree pits	0	0	0
Pervious pavements	310	400	52
Swales	0	0	0
Basins/ponds	0	0	0
Attenuation tanks	0		0
Total	**483**	**573**	**52**

4. Supporting Information

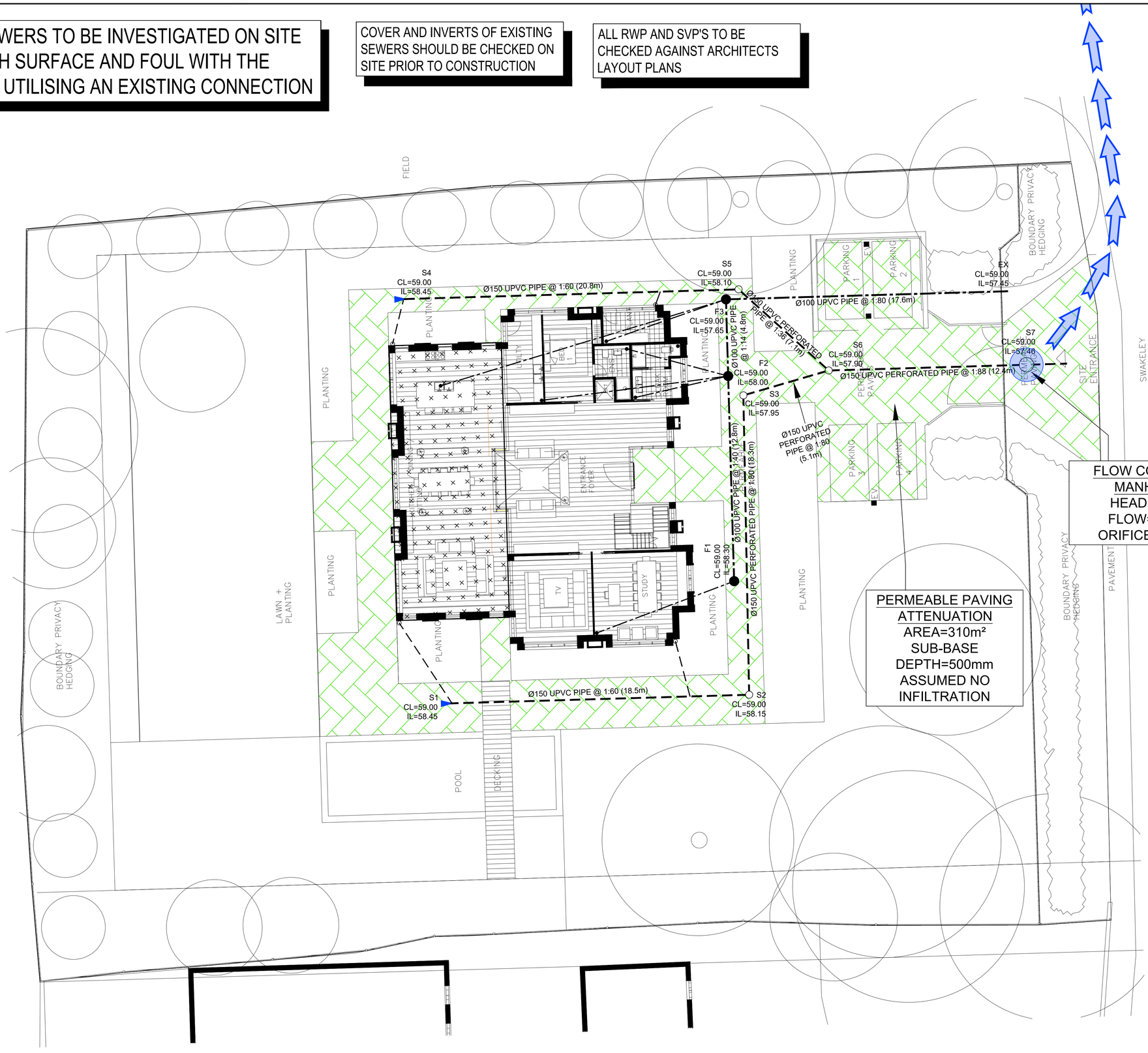
4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	-
Drainage hierarchy (2b)	Public Sewer
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	-
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	1.4 l/s [23028 - SW Model (A)]
Proposed SuDS measures & specifications (3b)	Green Roof and Permeable Paving
4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	A201 (P1) _ Proposed GF Plan
Detailed drainage design drawings, including exceedance flow routes	sed Drainage Layout / JDA-490-4-1 (A)
Detailed landscaping plans	
Maintenance strategy	JDA Drainage Strategy Report
Demonstration of how the proposed SuDS measures improve:	
a) water quality of the runoff?	Drainage Strategy Report
b) biodiversity?	Drainage Strategy Report
c) amenity?	Drainage Strategy Report

Appendix H
Flood Exceedance Plan

EXISTING SEWERS TO BE INVESTIGATED ON SITE FOR BOTH SURFACE AND FOUL WITH THE INTENTION OF UTILISING AN EXISTING CONNECTION

COVER AND INVERTS OF EXISTING SEWERS SHOULD BE CHECKED ON SITE PRIOR TO CONSTRUCTION

ALL RWP AND SVP'S TO BE CHECKED AGAINST ARCHITECTS LAYOUT PLANS



FLOW CONTROL MANHOLE
HEAD=1.1m
FLOW=1.4l/s
ORIFICE=25mm

PERMEABLE PAVING ATTENUATION
AREA=310m²
SUB-BASE
DEPTH=500mm
ASSUMED NO INFILTRATION

Notes

1. This drawing is produced for use in this project only and may not be used for any other purpose. The consulting Engineers accept no liability for the use of this drawing other than the purpose for which it was intended in connection with this project as recorded on the title block fields 'Purpose for Issue' and 'File Status Code'.
2. This drawing may not be reproduced in any form without prior written agreement.
3. Do not scale from the drawing, use written dimensions only.
4. All dimensions are in millimetres unless otherwise specified.
5. Discrepancies must be reported back to the engineer prior to construction.

Key

FLOOD EXCEEDANCE EVENT

FLOOD FLOW PATH

REV.	DESCRIPTION	DWN	CHK	DATE
B	LAYOUT UPDATED	MJM	JD	04.07.24
A	INITIAL ISSUE	MJM	JD	19.09.23

CLIENT
J79 STUDIO ARCHITECTS

PROJECT
212 SWAKELEY ROAD
UXBRIDGE
UB10 2AY

TITLE
FLOOD EXCEEDANCE LAYOUT PLAN

DWN	DATE	CHK	DATE	APP.	DATE	SCALE
MM	OCT '23					1:125

John Davies Associates
1 St John's Rd.
Queen's Park
Chester. CH4 7AL
Tel/Fax: 01244 677991

Drawing Number
JDA/490/4/1

A1
REV. B