Flood Risk Assessment

Land at Lodge Road, Hurst

On behalf of: Forays Homes

Bellamy Roberts

BellamyRoberts

Document Control Sheet

Forays Homes
6 Cedar Business Park
Cedar Lane
Frimley
Camberley
Surrey, GU16 7AZ

Bellamy Roberts
Suite 5, Brightwater House
Market Place
Ringwood
Hants BH24 1AP
Tel: 01256 703355

Report Issue No.	Status	Date	Author	Authorised
FRA.1/6244/MT	1st Draft	14th October 2025	MT	MT
FRA.2/6244/MT	Final	17th October 2025	MT	MT

BellamyRoberts

Contents

Sections

Appendices

1 Introduction

1.1 Bellamy Roberts has been instructed by Forays Homes to prepare a Flood Risk Assessment incorporating a surface and foul water drainage strategy to accompany a planning application for a residential development of three dwellings on land at Lodge Road, Hurst.

1.2 This assessment has considered whether the site is at risk of flooding from any source, either now or in the future.

1.3 A means of draining both surface and foul water generated by the site has been investigated.

1.4 It is recognised that developments that are designed without regard to flood risk may endanger lives, damage property, cause disruption to the wider community, damage the environment, be difficult to insure and require additional expense on remedial works. In accordance with current planning practice guidance on flood risk and coastal change (reference ID: 7-020-20220825), the objectives of this site specific Flood Risk Assessment are as follows:

- whether a proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate;
- the evidence for the local planning authority to apply (if necessary) the Sequential Test, and;
- whether the development will be safe and pass the Exception Test, if applicable.

1.5 In accordance with paragraph 181 of the NPPF (December 2024), it will be ensured that:

- the most vulnerable development is located in areas of lowest flood risk;
- the development is appropriately flood resistant and resilient;

- it incorporates sustainable drainage systems;
- any residual risk can be safely arranged; and
- safe access and escape routes are included.

Site Location & Topography

1.6 The site is located within the village of Hurst, approximately 8km east of Reading. The site area is approximately 0.8ha and is currently in agricultural use. For reference, an extract of the site location plan is provided in Figure 1, and the full plan is presented at **Appendix 1**.

Figure 1: Site Location Plan

1.7 A topographical survey has been undertaken which shows the land within the site falls towards the ditch which runs along the eastern site boundary. The topographical survey is provided at **Appendix 2**.

Historic Flooding

1.8 There have been no recorded instances of historic flooding at the site, see Figure 2.

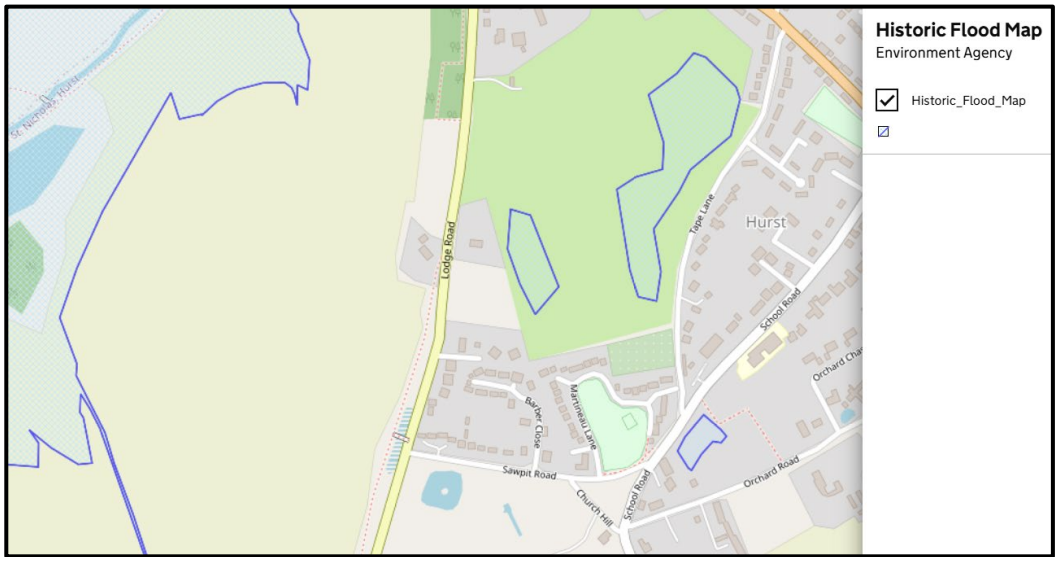


Figure 2: Historic Flooding (Source: Environment Agency)

Thames Water Sewerage Network

1.9 A plan of the existing sewerage network in the vicinity of the site has been obtained from Thames Water. This is provided at **Appendix 3**.

Ground Conditions

1.10 British Geological Survey (BGS) mapping identifies an underlying geology of clay (Lambeth Group).

Greenfield Runoff Rates

1.11 The pre-development greenfield runoff rates have been calculated using the HR Wallingford greenfield runoff rate estimation calculator. The use of this online tool accords with the Environment Agency's Flood Estimation Guidelines (FEG) published in September 2025.

1.12 The full results are presented at **Appendix 4** and a summary is provided in Table 1.

Table 1: Pre-development Runoff Rates

Rainfall Event	Discharge Rate (l/s)
Qbar	0.2 l/s
1 in 1-year	0.2 l/s
1 in 30-years	0.4 l/s
1 in 100-years	0.6 l/s

2 Sources of Flooding

River/Sea Flooding

2.1 Environment Agency mapping shows that the southern half of the site is flood zone 2, with the remainder of the site in flood zone 1. The Environment Agency's flood map for planning is presented at **Appendix 5** and an extract of this is provided at Figure 2 for reference.

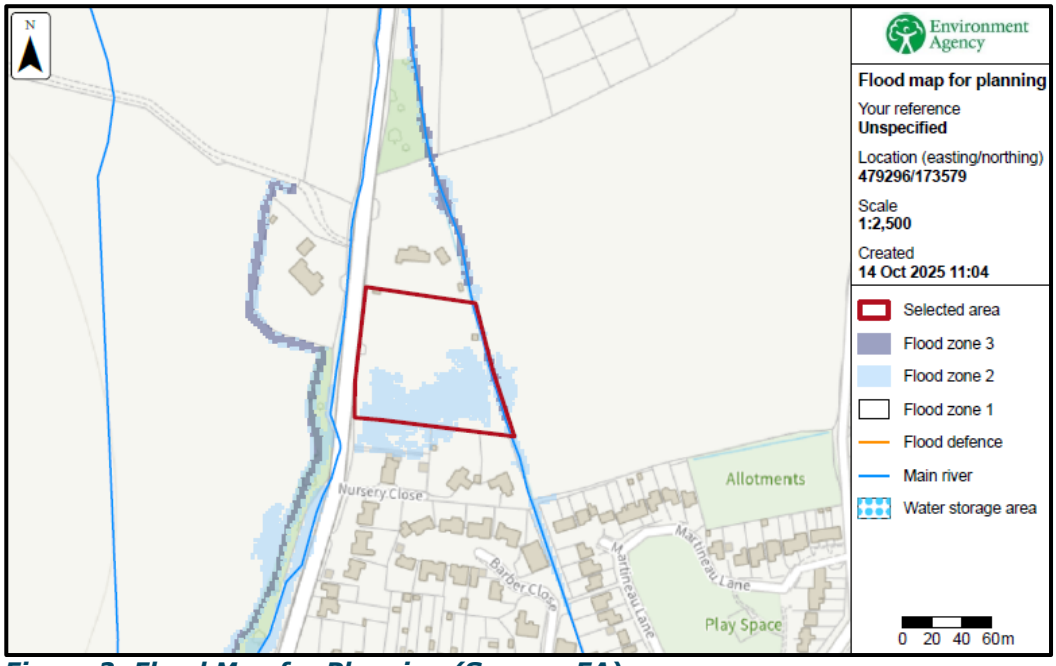


Figure 2: Flood Map for Planning (Source: EA)

2.2 The proposed dwellings have been sequentially located within the site to avoid the area identified as being within flood zone 3. A plan showing the extent of flood zone 2 in relation to the proposed dwellings is presented at **Appendix 6**. It is evident that the proposed dwellings are located in flood zone 1, along with the proposed site access.

Surface Water Flooding

2.3 In addition to fluvial flooding, surface water flooding must also be considered. This often occurs when intense, often short duration rainfall is unable to soak into the ground or enter the local drainage system. It is made worse when soils are saturated so that they cannot accept any more water. This type of flooding is usually short lived, localised and associated with heavy downpours of rain,

and often has very little warning before it occurs. The amount of runoff is also a function of geology, slope, climate, rainfall, saturation, soil type, urbanisation and vegetation.

2.4 With regard to current national guidance, paragraph 175 of the NPPF states that:

> *"The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk)."*

2.5 In applying paragraph 175, the recently updated flood risk and coastal change planning practice guidance advises that a proportionate approach be taken:

> "*Where a site-specific flood risk assessment demonstrates clearly that the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development (therefore addressing the risks identified e.g. by Environment Agency flood risk mapping), without increasing flood risk elsewhere, then the sequential test need not be applied.*"

2.6 The southern part of the site is at risk from surface water flooding and plans showing the extent of this risk (low, medium and high) overlaid onto the proposed site plan are presented at **Appendix 7**. It can be seen that no dwellings will be located within those areas identified as being at risk of surface water flooding. Occupiers and users will remain safe from current and future surface water flood risk for the lifetime of the development. Therefore it is not necessary for the sequential test to be applied.

Groundwater Flooding

2.7 With reference to Appendix A of the Wokingham Strategic FRA, the site is not identified as being within an area that is susceptible to groundwater flooding.

3 Surface & Foul Water Drainage Strategy

Surface Water

3.1 In order to properly mitigate flood risk post-development, it is important that adequate measures are considered to ensure surface water run-off is dealt with, ensuring flood risk is not increased either on or off-site.

3.2 The proposed surface water drainage strategy has been prepared with due regard to the national standards for sustainable drainage systems. The principles for surface water drainage design explain the objectives and approach for applying the standards. There are 2 types of standards:

- the hierarchy standard (standard 1) gives criteria for prioritising the choice of final runoff destination.
- fixed standards (standards 2 to 7) state the minimum design criteria that all surface water drainage systems should satisfy and how they should be built, maintained and operated.

Standard 1: runoff destinations

3.3 In this regard and in accordance with standard 1, surface water runoff from the development will be discharged in accordance with the following hierarchy:

- Infiltration into the ground;
- To a surface water body, such as a river, ditch, pond or stream;
- To a surface water sewer; and
- To a combined sewer.

3.4 Based on the likely underlying geology at the site, infiltration does not represent a viable means of disposing of surface water.

3.5 As such, and in accordance with the SuDS hierarchy, all surface water runoff from the proposal will be attenuated on site and discharged at a restricted rate into the network of ditches within the site. The proposed attenuation basins have been sized using the Infodrainage software for a range of rainfall events (discussed later).

Standard 2: management of everyday rainfall (interception)

3.6 Surface water runoff will drain to an attenuation basin located in the southern part of the site. The scheme will incorporate permeable paving and rainwater harvesting to ensure, as per standard 2, that the first 5mm of rainfall will not result in runoff from the site to surface waters.

3.7 The proposed surface water drainage strategy is presented **Appendix 8**.

3.8 The proposed attenuation basin will be located in the southern part of the site which is within the area shown to be at risk from fluvial and pluvial flooding. The plans at Appendices 6 and 7 suggest that the depth of flooding in this area will be in the region of 100-200mm.

3.9 The rim of the basin will be raised 250mm above the existing ground levels to ensure it does not fill with fluvial or pluvial flood waters. An area of compensatory flood storage will be provided ensure flood risk is not increased off-site. This is identified on the plan at Appendix 8.

Standard 3: management of extreme rainfall and flooding

3.10 The proposal has been modelled using the Infodrainage software for the following return periods:

- 1 in 1-year;
- 1 in 30-year + 35% climate change; and
- 1 in 100-year + 45% climate change.

3.11 The analysis is presented at **Appendix 9** and shows no risk of flooding. An allowance of 10% for urban creep has been included.

3.12 In accordance with standard 3, the surface water runoff (rate and volume) for the 1% annual exceedance probability (AEP) event shall be controlled to ensure the runoff from the development does not increase flood risk elsewhere.

3.13 The proposed discharge rates will be restricted via a hydro-brakes to the combined rates set out in Table 2. Given the low greenfield runoff rates, a maximum discharge rate if 1.1 l/s has bene considered.

Table 2: Post-Development Discharge Rates

Rainfall Event	Post-Development Runoff Rate	Greenfield Runoff Rate
Qbar	-	0.2 l/s
1 in 1 year	1.0 l/s	0.2 l/s
1 in 30 years	1.0 l/s	0.4 l/s
1 in 100 years	1.1 l/s	0.6 l/s

Standard 4: water quality

3.14 Water quality has been assessed through the simple index approach as set out in Chapter 26 of the CIRIA SuDS Manual. Based on the guidance in Table 26.2 of the SuDS Manual, the land use classification for the site will be *residential roofs* and *low traffic roads*. The pollution hazard indices for these land uses are as summarised in Table 3.

Table 3: Pollution Hazard Indices

Land Use	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Residential Roofs	Very Low	0.2	0.2	0.05
Low Traffic Roads	Low	0.5	0.4	0.4

3.15 With reference to Table 26.3 of the SuDS Manual, the mitigation indices for the SuDS elements proposed are set out in Table 3. The scheme can incorporate a number of elements to ensure adequate treatment is provided. These are summarised in Table 4.

Table 4: Mitigation Indices

Type of SuDS Component	Total Suspended Solids	Metals	Hydrocarbons
Permeable pavement	0.7	0.6	0.7
Attenuation basin	0.5	0.5	0.5

3.16 Sufficient treatment will therefore be provided to the surface water runoff.

Standard 5: amenity

3.17 The proposal will positively contribute to placemaking and environmental enhancement by keeping surface water runoff at or close to the ground surface.

Standard 6: biodiversity

3.18 The 'SuDS approach' which has been adopted will ensure the surface water drainage system maximises biodiversity benefits throughout the development life cycle.

Standard 7: maintenance and management

3.19 Maintenance of the proposed drainage system will be the responsibility of the site management company. A maintenance and management plan can be secured via a suitably worded planning condition.

Foul Water

3.20 In accordance with Building Regulations Approved Document H, foul water should be carried to one of the following, listed in order of priority:

1. A public sewer.
2. A private sewer.
3. A septic tank with an appropriate form of secondary treatment.
4. A cesspool.

3.21 Government guidance advises that you should discharge your waste water to a public foul sewer whenever it is reasonable to do so. The Environment Agency will not provide a permit for a private sewage treatment system if it is reasonable to connect to the public sewer. The assessment of what is reasonable takes into account:

- The comparative costs of connecting to public sewer and installing a private sewage treatment system.
- Any physical barriers that would prevent you connecting to the public sewer.
- Any environmental benefits that would arise from installing a private sewage treatment system such as the reuse of treated effluent.

3.22 The distance from the site to a public sewer is also a consideration, with the advice being that if the distance from the boundary (of the premises that the system serves) to the nearest public foul sewer is less than the number of houses multiplied by 30 metres (i.e. 90m in this case), there is no obligation to connect to the foul sewerage network.

3.23 The nearest foul sewer is approximately 120m to the south and it is therefore not considered reasonable to connect to the foul sewer.

3.24 A package treatment plant will therefore be provided which will discharge treated effluent to the existing ditch.

4 Summary & Conclusions

Summary

4.1 Bellamy Roberts has been instructed by Forays Homes to prepare a Flood Risk Assessment incorporating a surface and foul water drainage strategy to accompany a planning application for a residential development of three dwellings on land at Lodge Road, Hurst.

4.2 A comprehensive assessment of all sources of flood risk has been undertaken, and all built development will be located in flood zone 1. There are areas of surface water flooding across the site and the site plan has been prepared to avoid flood risk (from all sources) and provide mitigation where necessary. Future occupiers and users of the development will remain safe from current and future surface water flood risk for the lifetime of the development.

4.3 Geology mapping for the site reveals an underlying geology of clay, ruling out infiltration as a viable means of disposing of surface water. Surface water will instead be attenuated and discharged at a restricted rate into the on-site ditch network.

4.4 The scheme will incorporate a range of SuDS features and accords with the national standards for sustainable drainage systems.

4.5 Surface water runoff will be controlled, ensuring the runoff from the development does not increase flood risk elsewhere.

4.6 Foul water will be treated on-site and discharged into the on-site ditch network.

Conclusions

4.7 The proposed development accords with the guidance set out at paragraph 173 of the NPPF, in that:

- the most vulnerable development is located in areas of lowest flood risk;
- the development is appropriately flood resistant and resilient;
- it incorporates sustainable drainage systems; and

- safe access and escape routes are included.

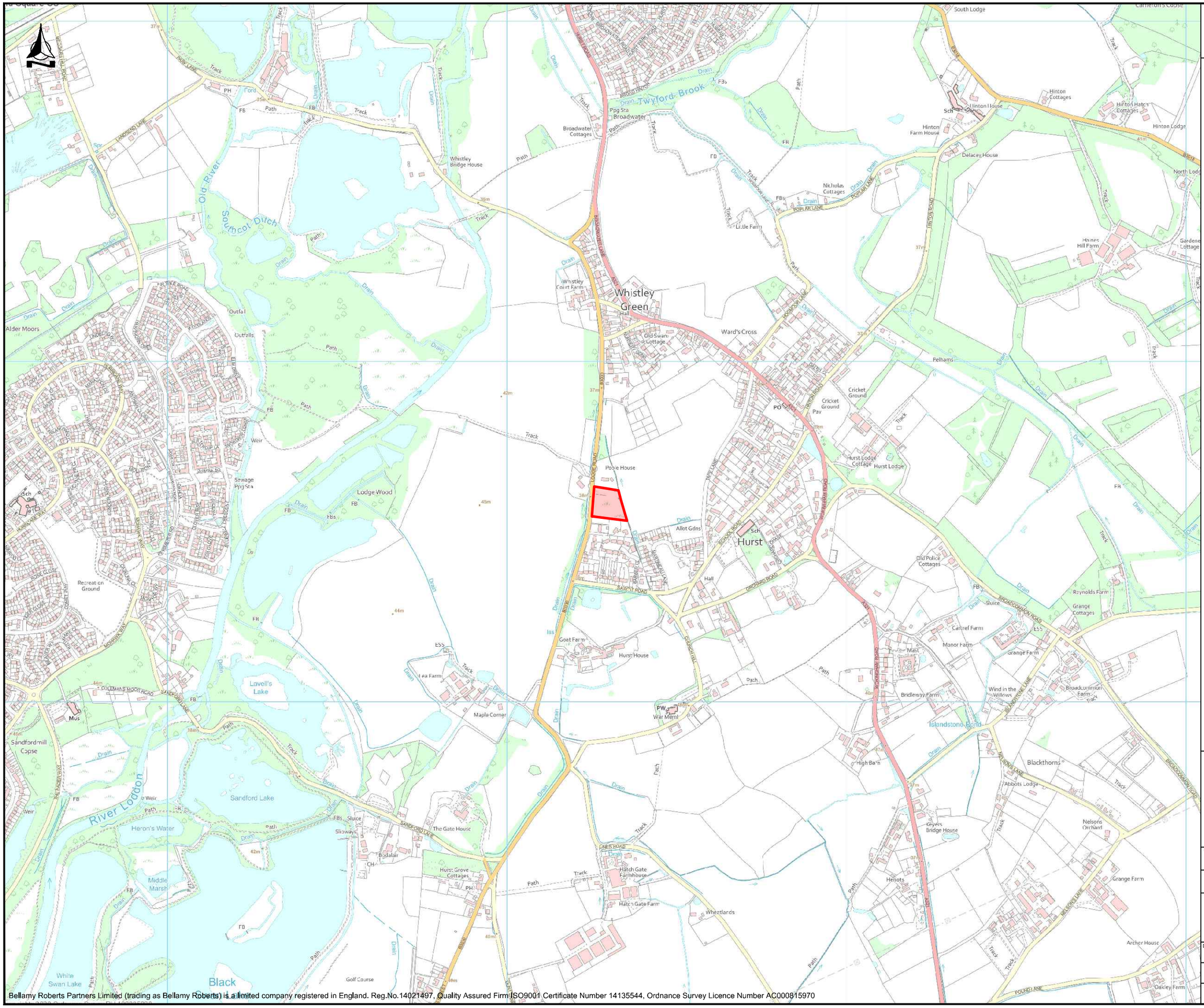
4.8 The proposed development accords with the guidance set out in the NPPF, in that the scheme incorporates sustainable drainage systems, has maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development and the scheme provides multifunctional benefits.

4.9 The scheme therefore accords with all relevant policies within the NPPF and planning practice guidance, and is acceptable in flooding and drainage terms.

APPENDICES

APPENDIX 1

Site Location Plan



Notes

Site

Bellamy Roberts
Clover House
Western Lane
Odiham
Hampshire, RG29 1TU
Tel: 01256 703355
Email: info@bellamyroberts.co.uk

CLIENT	Forays Homes
PROJECT	Lodge Road, Hurst
TITLE	Site Location Plan

DRAWN BY	DESIGN BY	CHK BY
MB	-	MT

DATE	DRAWING No.	REV No.
12/02/25	6244 / 301	

SCALE: NTS @ A3

APPENDIX 2

Topographical Survey

NOTES

Surveyed boundaries are not necessarily the title legal boundaries.
Client should refer to the relevant Land Registry document for confirmation of title.

Drainage and service covers that were buried, obscurred or not visible at the time of the survey cannot be shown. Sewer connections between manholes are assumed to be straight and only pipes visible from the cover are shown.

Tree canopy measured values are written as maximum spreads.

Tree species and condition to be confirmed by an arboriculturist.

SURVEYED BY
groundsurveys ltd
land & engineering surveyors

units 9&10
woodlands farm
spring lane
cookham dean
berkshire
SL6 9PN

t: 01628 485200
f: 01628 485300
e:office@groundsurveys.com
www.groundsurveys.com

CLIENT

REGIS HOMES LTD

SITE

LODGE ROAD
WHISTLEY GREEN
READING
RG10 0SG

TITLE

SITE SURVEY

AS EXISTING

SCALE	1/200 (A0)	DATE	SEP12015
DRAWING No.	01	JOB No.	6131

TREE SCHEDULE				
TREE	GIRTH	HEIGHT	SPREAD	SPECIES
1	0.6	10.0	4.0	COPPER BEECH
2	2x1.3	16.0	7.0	EUCALYPTUS
3	0.7	15.0	6.0	HORSE CHESTNUT
4	0.6	10.0	5.0	WHITEBEAM
5	0.5	9.0	4.0	MAPLE
6	0.5	8.0	3.0	HORNBEAM
7	0.5	8.0	3.0	HORNBEAM
8	0.4	7.0	2.5	PRUNUS
9	0.5	8.0	3.0	SILVER BIRCH
10	2.5	18.0	13.0	ASH
11	0.6	10.0	4.0	ASH
12	2.0	13.0	7.0	DEAD
13	4x0.4	11.0	4.0	OAK
14	3x0.6	17.0	5.0	ASH
15	0.6	10.0	5.0	ELM
16	0.4/0.6	8.0	4.0	OAK
17	4x0.9	12.0	5.0	ASH
18	2x1.2	16.0	7.0	ASH
19	0.6	8.0	3.0	ASH
20	0.7	13.0	5.0	ASH
21	0.6	12.0	5.0	ASH
22	MultI	10.0	4.0	MAPLE
23	0.5	10.0	3.0	HAWTHORN
24	0.6	12.0	5.0	ASH
25	4x0.9	12.0	7.0	ASH
26	0.6	12.0	5.0	ASH
27	0.6	13.0	5.0	ASH
28	3x0.6	13.0	5.0	ASH
29	1.9	14.0	7.0	OAK
30	2x0.7	15.0	5.0	ASH
31	0.6	15.0	5.0	ASH
32	2x1.0	15.0	6.0	ASH
33	1.0	12.0	5.0	OAK
34	0.6	12.0	5.0	OAK
35	3x0.8	15.0	8.0	ASH
36	0.6/1.7	15.0	8.0	ASH
37	0.6	5.0	4.0	PRUNUS
38	1.2/1.6	16.0	8.0	OAK
39	0.6	12.0	5.0	OAK
40	0.6	12.0	5.0	OAK

SURVEY CONTROL			
STN	-E-	-N-	-Z-
1	479259.393	173636.052	37.631
2	479243.995	173627.083	37.830
3	479274.198	173620.777	37.647
4	479293.073	173614.515	37.500
5	479306.207	173612.682	37.470
6	479330.671	173605.370	37.448
7	479314.167	173555.883	37.304
8	479322.982	173565.809	37.233
9	479343.406	173562.150	37.447
10	479329.332	173554.332	37.268
11	479318.668	173536.988	37.359
12	479295.939	173539.946	37.282
13	479340.485	173563.771	37.430
14	479246.067	173552.256	37.711
15	479257.851	173550.572	37.335
16	479276.399	173554.413	37.263

LEGEND

FEATURE STYLES

- FENCE
- SURVEY CONTROL
- HEDGE
- SWS
- FWS
- POWER LINE (OVERHEAD)
- WATER
- TELECOM LINE (OVERHEAD)
- ELECTRIC MAIN
- GAS MAIN
- EMBANKMENT

FEATURE ABREVIATIONS

AV AV Valve
BS Bus Stop
BW Brick wall
BT British Telecom
CB Cone Bollard
CTV cable TV outlet
CL Cover Level
EB Electric Box
EC Electric Cover
EP Electricity Pole
FH Fire Hydrant
FL Floor level
G Gully
GM Gas Meter
GV Gas Valve
IC Inspection Chamber
IL Invert Level
KLS Keep Left Sign
KO Kerb Offset
LB Letter Box
LP Lamp Post
MKR Marker
MH Manhole
MP Metal Post
MB Metal Bollard
PI Petrol Interceptor
P Post
RG Road Gully
RS Road Sign
RNB Road Name Board
RW Retaining Wall
SA Soakaway
SC Stopcock
SV Sluice Valve
TP Telegraph Pole
TJB Tel.Jun.Box
TL Traffic Light
VP Vent Pipe
V Valve
WM Water Meter
WL Water Level
WO Water Outlet
WV Water Valve

FENCE TYPES

BWR Barbed Wire
CB Close Board
CI Corrugated Iron
CL Chain Link
CPL Cone Panel
CP Chestnut Paling
IW Interwoven
CW Chicken Wire
IR Iron Railing
PR Post and rail
PW Post and Wire

DATUM

GRID – ORDNANCE SURVEY NATIONAL GRID (OSTN02)
LEVELS – ORDNANCE SURVEY (OSGM02)

479360 E
479340 E
479320 E
479300 E
479280 E
479260 E
479240 E
173480 N
173500 N
173520 N
173540 N
173560 N
173580 N
173600 N
173620 N
173640 N
173660 N
173680 N

APPENDIX 3

Thames Water Asset Plan

Asset Location Search

Property Searches

Bellamy Roberts
CLOVER HOUSE, WESTERN LANE, OD
HOOK
RG29 1TU

Search address supplied

1
Barber Close
Hurst
Reading
RG10 0RZ

Your reference Lodge Road Hurst

Our reference ALS/ALS Standard/2025_5220306

Search date 8 September 2025

Keeping you up-to-date

Notification of price changes

We're changing our report prices from 4th June 2025. The price will increase by 3.5% based on Retail Price Index (RPI).

Find our new prices on our website thameswater.co.uk/property-searches

Any Questions? We're happy to talk through the changes with you – give our Property Searches team a call on 0800 009 4540 .

Thames Water Utilities Ltd
Property Searches,
Clearwater Court, Vastern Road, Reading RG1 8DB

property.searches@thameswater.co.uk
thameswater.co.uk/propertysearches

0800 009 4540

Asset Location Search

Property Searches

Search address supplied: 1, Barber Close, Hurst, Reading, RG10 0RZ

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This search provides maps showing the position and size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the contact details below:

Thames Water Utilities Ltd
Property Searches
Clearwater Court
Vastern Road
Reading
RG1 8DB

Email: property.searches@thameswater.co.uk
Web: thameswater.co.uk/propertysearches

Asset Location Search

Thames Water Property Searches

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority. Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners. The public sewer map relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus. The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies. For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. You can do this by emailing customer.feedback@thameswater.co.uk with the email subject header 'Enquiry – TWOSA', along with details of the request.

If you have any questions regarding sewer connections, budget estimates, diversions or building over issues please direct them to our service desk which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

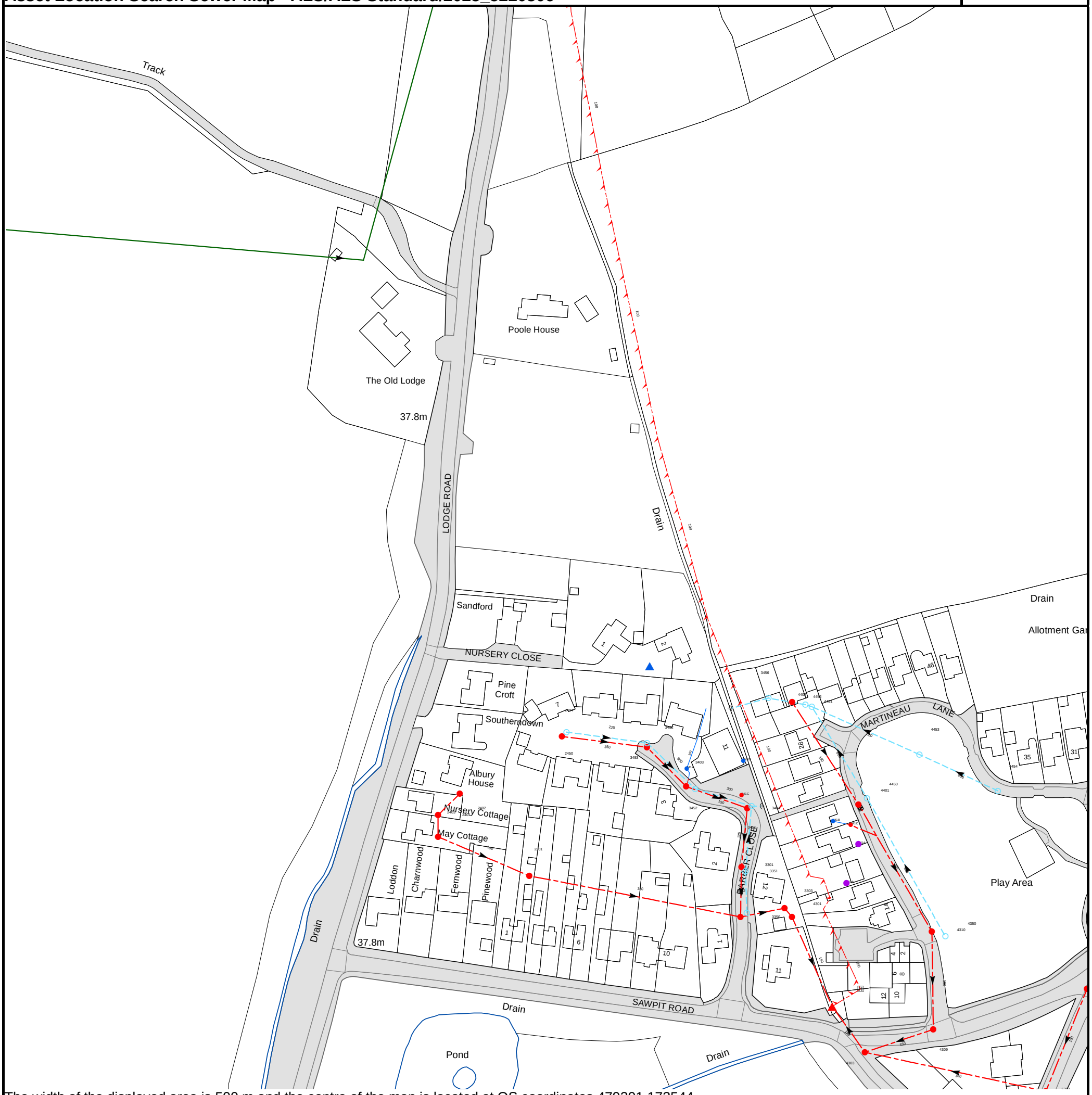
Clean Water queries

Should you require any advice concerning clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2025_5220306



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 479291,173544

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
4452	38.23	36.85
4402	38.1	36.78
3456	38.14	36.75
2403	n/a	n/a
2401	37.93	n/a
2402	37.9	37.05
4451	38.22	36.88
441B	n/a	n/a
431A	n/a	n/a
441C	n/a	n/a
441A	n/a	n/a
4401	38.47	36.34
4450	38.57	36.99
4453	39.17	37.02
4454	38.54	37.2
2301	n/a	n/a
2404	38.43	37.16
2450	38.44	37.4
3402	38.27	36.8
3453	38.29	37.25
3403	38.14	36.52
341A	n/a	n/a
3452	38.15	37.11
3301	38.25	35.97
341C	n/a	n/a
341B	n/a	n/a
3351	38.21	37.14
3350	38.1	37.21
3404	38.24	36.24
3451	38.22	37.03
3303	38.13	35.56
3302	38.13	35.71
4301	38.1	35.53
4303	38.31	34.4
4310	38.2	35.17
4309	38.58	34.77
4350	38.52	37.14
5301	38.44	35.24

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

- Storm Sewer
- Sludge Sewer
- Foul Trunk Sewer
- Surface Trunk Sewer
- Combined Trunk Sewer
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Vacuum
- Thames Water Proposed
- Vent Pipe
- Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

- Sewer
- Culverted Watercourse
- Proposed
- Decommissioned Sewer
- Content of this drainage network is currently unknown
- Ownership of this drainage network is currently unknown

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

- Air Valve
- Meter
- Dam Chase
- Vent
- Fitting

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

- Ancillary
- Drop Pipe
- Control Valve
- Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

- Inlet
- Outfall
- Undefined End

Other Symbols

Symbols used on maps which do not fall under other general categories.

- Change of Characteristic Indicator
- Public / Private Pumping Station
- Invert Level
- Summit

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

Ducts or Crossings

- Casement

Ducts may contain high voltage cables. Please check with Thames Water.

- Conduit Bridge
- Subway
- Tunnel

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plan are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Asset Location Search Water Map - ALS/ALS Standard/2025_5220306

The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 479291, 173544.

Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

4"

Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

16"

Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

3" SUPPLY

Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.

3" FIRE

Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

3" METERED

Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger
- **Casement:** Ducts may contain high voltage cables. Please check with Thames Water.

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

APPENDIX 4

Greenfield Runoff Rates

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

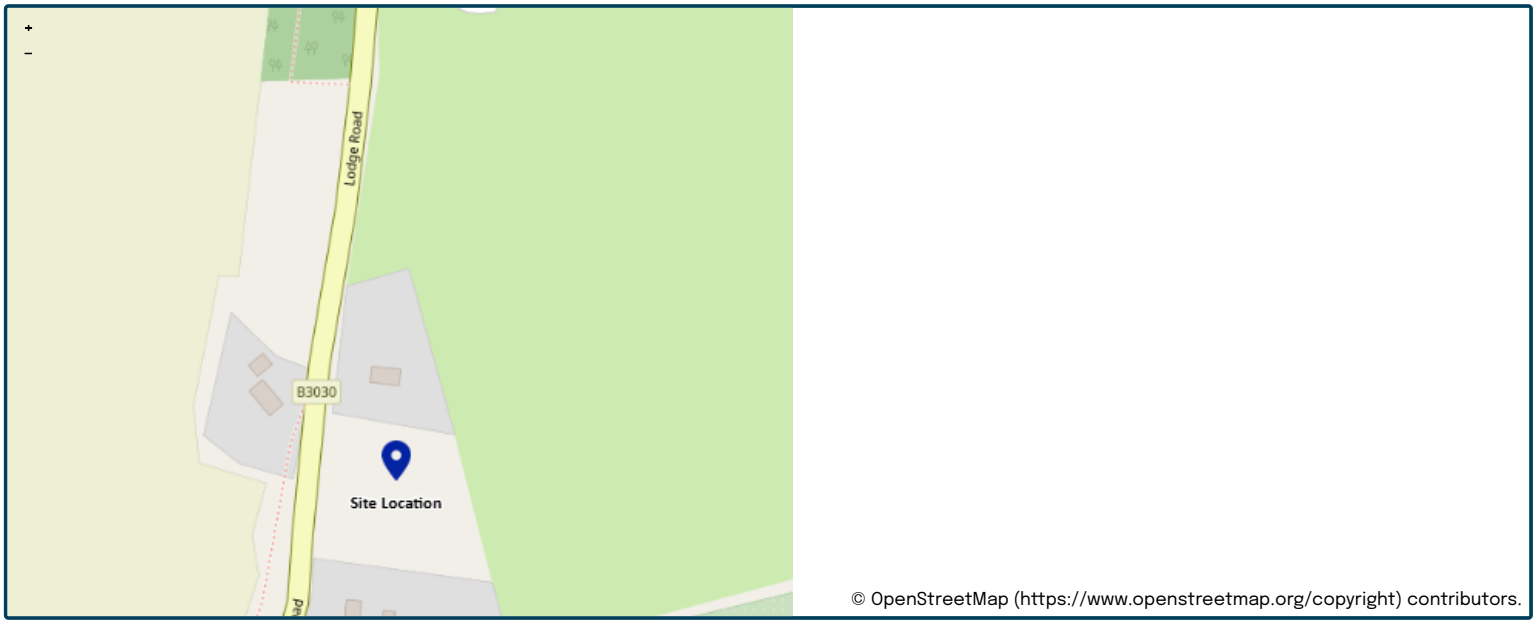
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015).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

Project details

Date	17/10/2025
Calculated by	Matt Twinberrow
Reference	6244
Model version	2.2.1

Location

Site name	Lodge Road
Site location	Hurst



Site easting (British National Grid)	479298
Site northing (British National Grid)	173581

Site details

Total site area (ha)	0.112 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value		Map value
SAAR (mm)	650 mm		650
How should SPR be derived?	WRAP soil type		
WRAP soil type	2		2
SPR	0.3		
QBar (IH124) (l/s)	0.2 l/s		

Growth curve factors

	My value		Map value
Hydrological region	6		6
1 year growth factor	0.85		
2 year growth factor	0.88		
10 year growth factor	1.62		
30 year growth factor	2.3		
100 year growth factor	3.19		
200 year growth factor	3.74		

Results

Method	IH124
Flow rate 1 year (l/s)	0.2 l/s
Flow rate 2 year (l/s)	0.2 l/s
Flow rate 10 years (l/s)	0.3 l/s
Flow rate 30 years (l/s)	0.4 l/s
Flow rate 100 years (l/s)	0.6 l/s
Flow rate 200 years (l/s)	0.7 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

APPENDIX 5

EA Flood Map for Planning

Flood map for planning

Your reference	Location (easting/northing)	Created
Unspecified	**479296/173579**	**14 October 2025 11:03**

Your selected location is in flood zone 3, an area with a high probability of flooding.

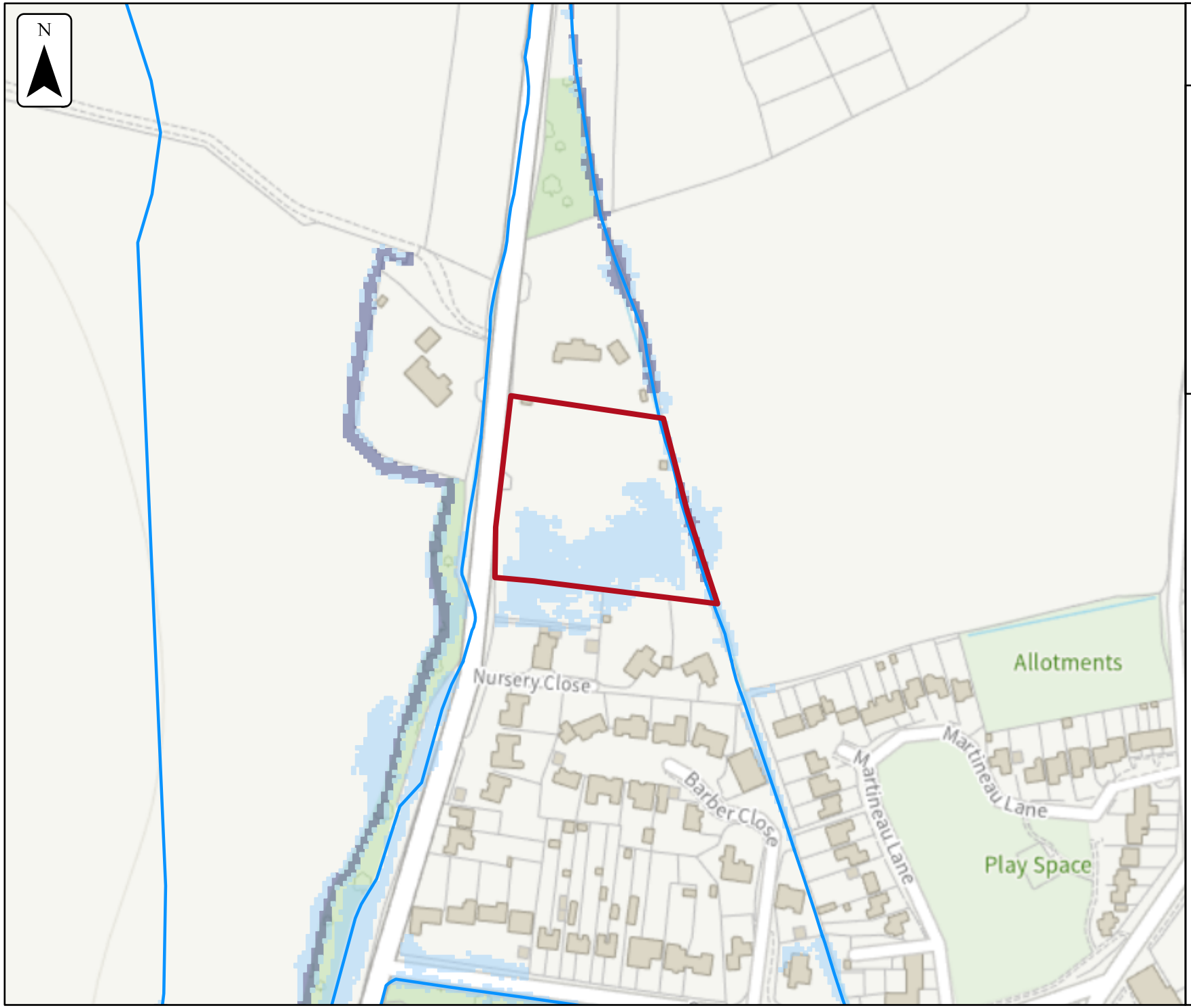
This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see https://www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.



Environment Agency

Flood map for planning

Your reference
Unspecified

Location (easting/northing)
479296/173579

Scale
1:2,500

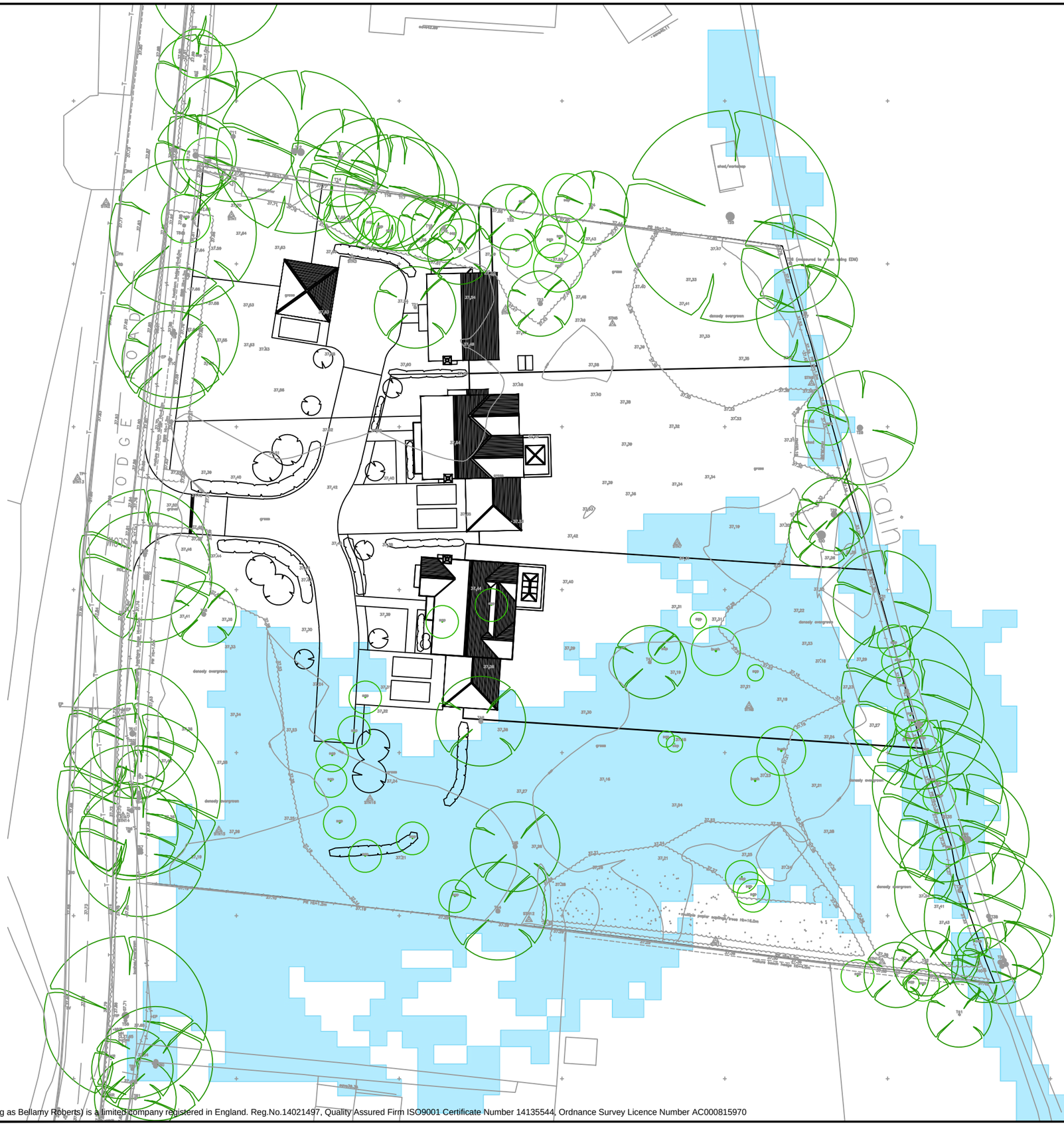
Created
14 Oct 2025 11:04

- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 20 40 60 m

APPENDIX 6

Fluvial Water Flood Risk



Notes

Flood Zones

Flood Zone 2

REVISION		AMENDMENT	DRN	DATE	CHK
A		Site updated	JCB	14/10/25	MT

Bellamy Roberts
Clover House
Western Lane
Odiham
Hampshire, RG29 1TU
Tel: 01256 703355
Email: info@bellamyroberts.co.uk

CLIENT: Forays Homes

PROJECT: Lodge Road, Hurst

TITLE: Flood Zones

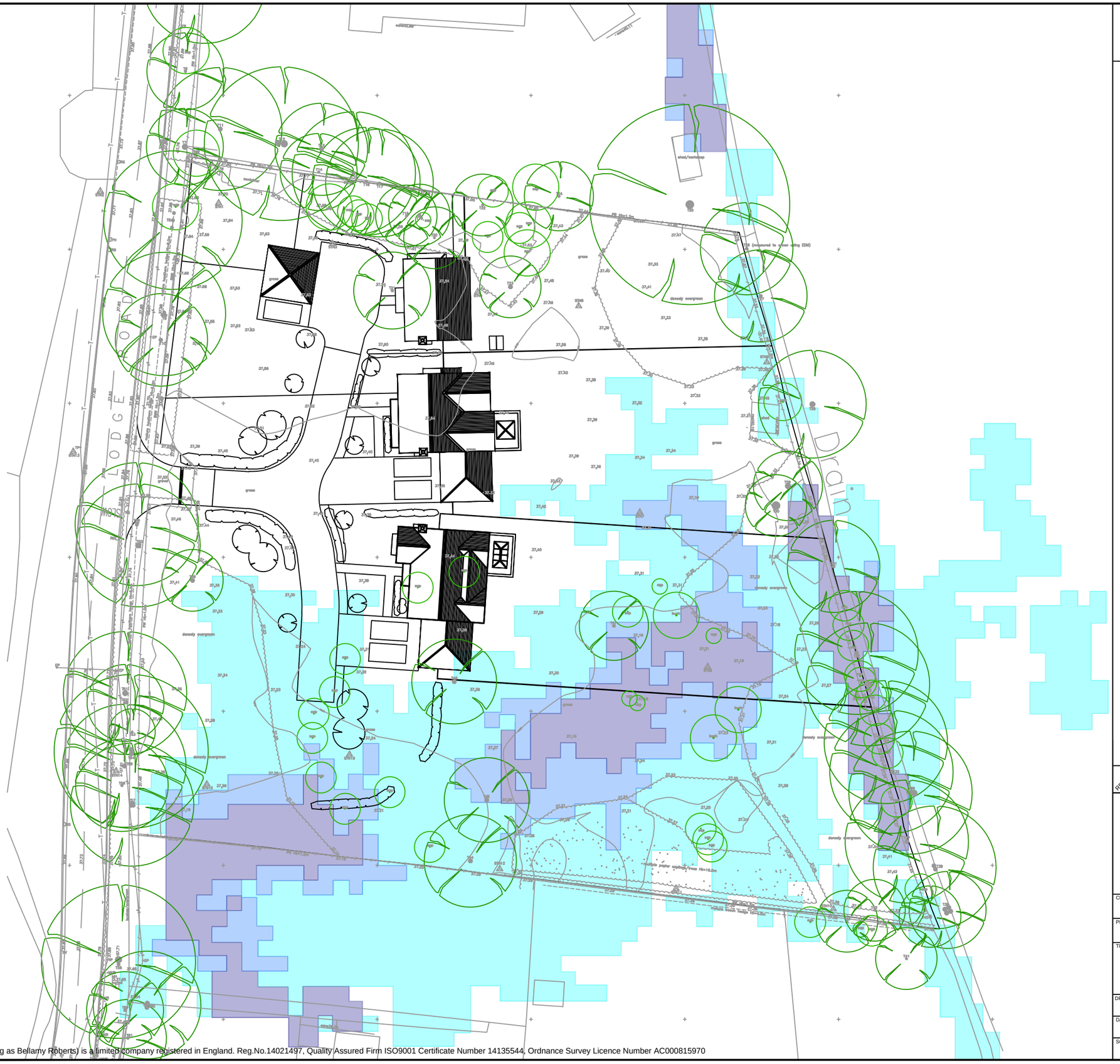
DRAWN BY	DESIGN BY	CHK BY
MB	-	MT

DATE	DRAWING No.	REV No.
01/05/25	6244 / 003	A

SCALE: 1:500 @ A3

APPENDIX 7

Surface Water Flood Risk



Notes

Surface Water Flooding

- 1 in 10
- 1 in 100
- 1 in 1000

REVISION	AMENDMENT	DRN	DATE	CHK
A	Site updated	JCB	14/10/25	MT

Bellamy Roberts
Clover House
Western Lane
Odiham
Hampshire, RG29 1TU
Tel: 01256 703355
Email: info@bellamyroberts.co.uk

CLIENT: Forays Homes

PROJECT: Lodge Road, Hurst

TITLE: Surface Water Flooding

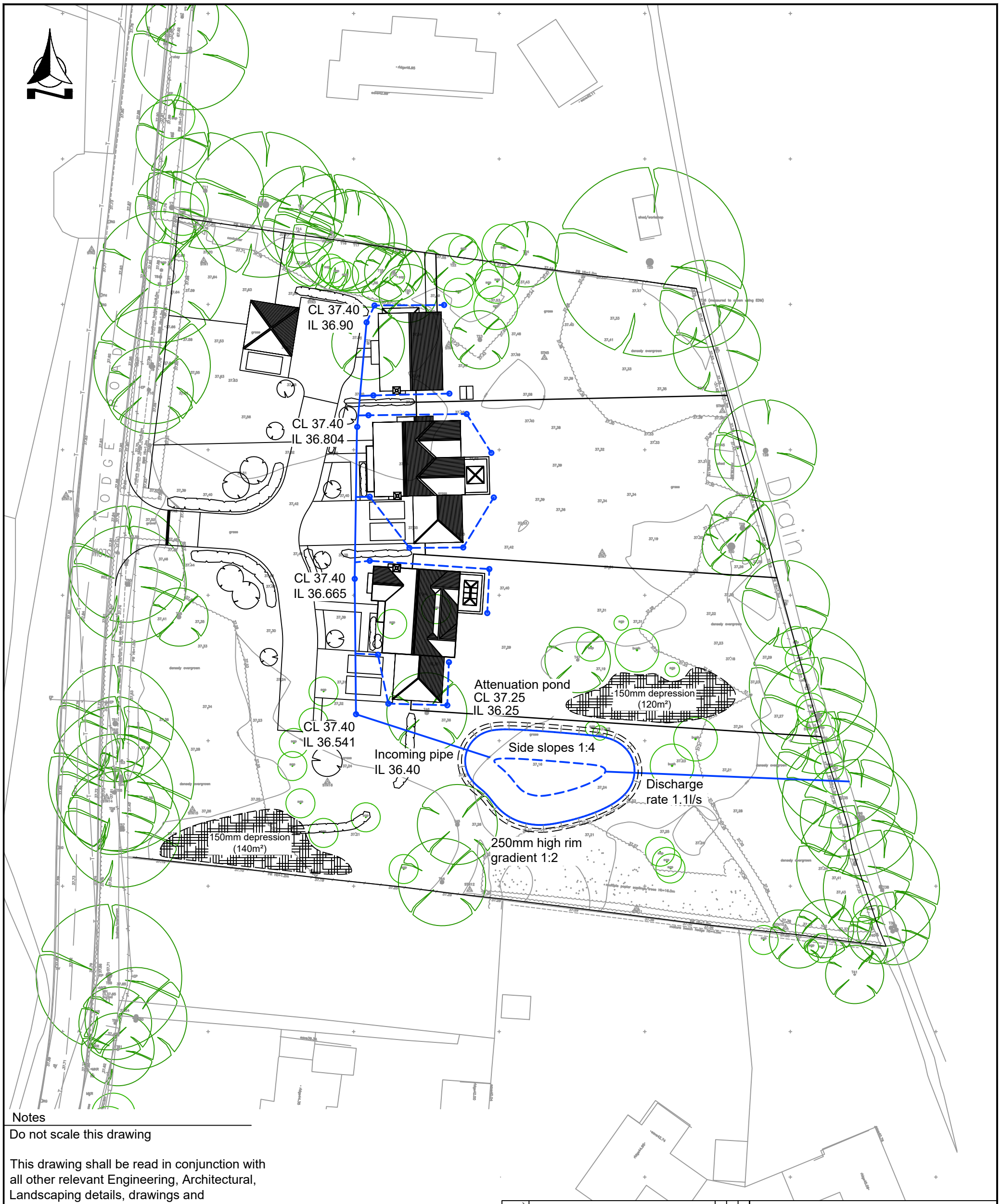
DRAWN BY	DESIGN BY	CHK BY
MB	-	MT

DATE	DRAWING No.	REV No.
01/05/25	6244 / 002	A

SCALE: 1:500 @ A3

APPENDIX 8

Surface Water Drainage Strategy



Notes

Do not scale this drawing

This drawing shall be read in conjunction with all other relevant Engineering, Architectural, Landscaping details, drawings and specifications and all relevant Highway Authority Plans.

Any works constructed prior to technical design or approval are at the contractors own risk. This drawing should not be used for construction.

All parking spaces are to be permeable

Infiltration is not expected on site, an attenuation basin is being proposed with the capacity to store the surface water runoff from an impermeable area of 1120m² discharged at a controlled rate of max 1.1l/s

Proposed foul sewer

Surface water sewer

REVISION	AMENDMENT	DRN	DATE	CHK
A	Site layout and design updated	JCB	14/10/25	MT

Bellamy Roberts
Clover House
Western Lane
Odiham
Hampshire, RG29 1TU
Tel: 01256 703355
Email: info@bellamyroberts.co.uk

CLIENT: Forays Homes

PROJECT: Lodge Road, Hurst

TITLE: **Drainage Strategy**
Surface and Foul Water Proposals

DRAWN BY	DESIGN BY	CHK BY
JCB	-	MT

DATE	DRAWING No.	REV No.
20/03/25	6244 / 001	A

SCALE: 1:500 @ A3

APPENDIX 9

Infodrainage Analyses

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

Pond

Type : Pond

Dimensions

Exceedance Level (m)	37.250
Depth (m)	1.000
Base Level (m)	36.250
Freeboard (mm)	50
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	4.751
Total Volume (m³)	121.505

Depth (m)	Area (m²)	Volume (m³)
0.000	50.00	0.000
1.000	240.00	133.182

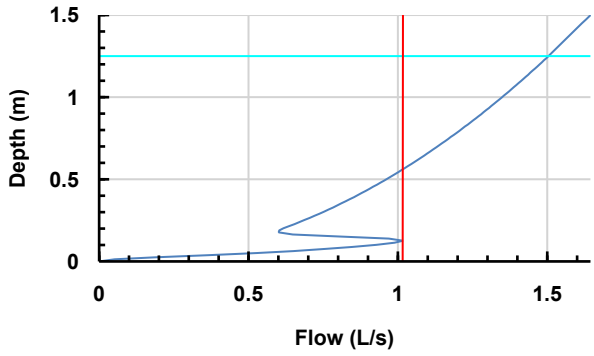
Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Hydro-Brake®

Invert Level (m)	36.250
Design Depth (m)	1.250
Design Flow (L/s)	1.5
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☐

Unit Reference	CHE-0053-1500-1250-1500



Advanced

Perimeter	Circular
Length (m)	25.663
Friction Scheme	Manning's n
n	0.02

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	Pond		Time of Concentration	0.112	100	10	110	0.123
TOTAL		**0.0**		**0.112**				**0.123**

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by:	Checked by:	Approved By:
	JCB	MT	MT
Report Title:	Company Address:		
Rainfall Analysis Criteria	Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	10
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.7
Ratio R	0.400
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
1.0	0.000
10.0	0.000
30.0	35.000
100.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Title: UK and Ireland Rural Runoff Calculator	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

ICP SUDS / IH 124

Details

Method	ICP SUDS
Area (ha)	0.112
SAAR (mm)	700.0
Soil	0.3
Region	Region 1
Urban	0
Return Period (years)	0

Results

Region	QBAR Rural (L/s)	QBAR Urban (L/s)	Q 1 (years) (L/s)	Q 30 (years) (L/s)	Q 100 (years) (L/s)
Region 1	0.2	0.2	0.2	0.4	0.5

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area	FSR: 1 years: +0 %: 15 mins: Summer	0.11	15.1	6.648

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 10 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area	FSR: 10 years: +0 %: 15 mins: Summer	0.11	29.4	12.877

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area	FSR: 30 years: +35 %: 15 mins: Summer	0.11	50.3	22.012

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area	FSR: 100 years: +45 %: 15 mins: Summer	0.11	70.0	30.619

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Status
Pond	FSR: 1 years: +0 %: 240 mins: Summer	36.417	36.417	0.167	0.167	4.3	10.120	0.000	0.000	1.0	15.679	97	OK

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 10 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Status
Pond	FSR: 10 years: +0 %: 240 mins: Winter	36.556	36.556	0.306	0.306	5.2	21.539	0.000	0.000	1.0	18.229	231	OK

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Status
Pond	FSR: 30 years: +35 %: 240 mins: Winter	36.737	36.737	0.487	0.487	9.0	41.201	0.000	0.000	1.0	23.282	392	OK

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Status
Pond	FSR: 100 years: +45 %: 360 mins: Winter	36.882	36.882	0.632	0.632	9.2	61.365	0.000	0.000	1.1	39.656	563	OK

Phase
FSR: 1 years: Increase Rainfall (%): +0: 60 mins: Summer

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Pond			1.0	5.384
TOTAL	8.8	10.951	1.0	5.384

Phase
FSR: 10 years: Increase Rainfall (%): +0: 240 mins: Winter

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Pond			1.0	18.229
TOTAL	5.2	29.884	1.0	18.229

Phase
FSR: 30 years: Increase Rainfall (%): +35: 960 mins: Winter

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Pond			1.0	70.010
TOTAL	3.1	70.314	1.0	70.010

Project:	Date:		
Lodge Road, Hurst Surface Water Attenuation Ref 6244	14/10/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Phase Management Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

Phase
FSR: 100 years: Increase Rainfall (%): +45: 360 mins: Winter

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Pond			1.1	39.656
TOTAL	9.2	79.003	1.1	39.656

HIGHWAY, TRANSPORTATION AND
INFRASTRUCTURE CONSULTANTS

Experience and expertise working together