

LAND ADJOINING WINDRUSH, HIGH ROAD, ASHTON KEYNES

Partridge Homes

Flood Risk Assessment and Drainage Strategy

242211-KTN-FRA-02-B

10th May 2026



The Site
24 Chosen View Road
Cheltenham
GL51 9LT

DOCUMENT CONTROL

Document Status

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1.0 INTRODUCTION

- 1.1 K-Ten Consulting Ltd (K-Ten) provide professional Flood Risk, Infrastructure and Drainage services throughout the UK.
- 1.2 K-Ten have been commissioned by Partridge Homes (applicant) to prepare a Flood Risk Assessment to support a planning application at Land adjoining Windrush, High Road, Ashton Keynes.
- 1.3 The development comprises of the erection of two residential dwellings on land off High Road, Ashton Keynes.
- 1.4 Refer to **Appendix A** for site proposals.
- 1.5 An objection was received from the Environment Agency on 23rd January requesting additional information.
- 1.6 The purpose of this Flood Risk Assessment is to investigate and assess the various risks of flooding on site to the proposed development and to provide mitigation where appropriate in order to ensure future users of the development remain safe throughout the lifetime.
- 1.7 A drainage strategy will be included within the assessment to demonstrate development foul and surface water drainage can be delivered to national standards and council water management guidelines.

2.0 POLICY & GUIDANCE

National Planning Policy Framework (NPPF) December 2024

- 2.1 The National Planning Policy Framework (NPPF) defines the Governments national policies on different aspects of land use planning in England in relation to flood risk.
- 2.2 The revised NPPF issued on 12th December 2024 replaces the previous version revised in December 2023.

- 2.3 Paragraph 181 of the NPPF states:

When determining any planning applications, local planning authorities should ensure that the flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific Flood Risk Assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*
- b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;*
- c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*
- d) any residual risk can be safely managed; and*
- e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.*

- 2.4 Paragraphs 172 to 180 set out the requirements for the Sequential Test and Exception Test to direct any development to areas of lowest flood risk, ensuring that development will be safe and does not increase flood risk elsewhere whilst considering climate change allowances.

- 2.5 Paragraph 175 of the NPPF states:

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).

2.6 The NPPF states that a Flood Risk Assessment will be required for proposals:

- a) that are greater than 1 hectare in area;
- b) for all proposals for new development (including change of use) in Flood Zones 2 and 3;
- c) in an area within Flood Zone 1 which has critical drainage problems;
- d) within land identified in a Strategic Flood Risk Assessment as being at increased flood risk in the future;
- e) in an area in Flood Zone 1 that may be subject to other sources of flooding, where development would introduce a more vulnerable use.

[Planning Practice Guidance \(PPG\) September 2025](#)

- 2.7 The National planning practice guidance adds context to the NPPF and should be read and considered together.
- 2.8 The Flood Risk and coastal change sections were updated on 17th September 2025.
- 2.9 The sequential test should be applied to 'Major' and 'Non-major' development proposed in areas at risk of flooding, as set out in paragraphs 173 to 174 of the National Planning Policy Framework.
- 2.10 Paragraphs 175, 176 and 180 set out exemptions from the sequential test.
- 2.11 In applying paragraph 175 a proportionate approach should 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.
- 2.12 The absence of a 5-year housing land supply is not a relevant consideration in applying the sequential test for individual applications. However, housing considerations, including housing land supply, may be relevant in the planning balance, alongside the outcome of the sequential test.

[Wiltshire Council Level 1 Strategic Flood Risk Assessment \(2019\)](#)

- 2.13 JBA prepared a Strategic Flood Risk Assessment (SFRA) in May 2019 for Wiltshire Council to support a new Local Plan.
- 2.14 The SFRA forms part of a comprehensive and robust evidence base for the Local Plan which will set out a vision and framework for development in Wiltshire up to 2036 and used to guide the sequential test and decisions on the location of future development.
- 2.15 The SFRA will also be used to assess planning applications, and flood risk mapping information will be made available for developers for carrying out flood risk assessments.

- 2.16 The SFRA has been developed using the best available information at the time of preparation, relating to the current risk of flooding from rivers, and the potential impacts of future climate change.

[Flood and Water Management Act 2010](#)

- 2.17 The Flood and Water Management Act (FMWA) provides legislation for the management of risk with flooding and coastal erosion. It aims to reduce the flood risk generally associated with extreme weather conditions and heavy rainfall events with consideration to increased climate change. The Lead Local Flood Authority (LLFA) was created to manage flood risk through the planning process with powers given to local authorities, The Environment Agency and Water Companies.

[The SuDS Manual Ciria C753 2015](#)

- 2.18 The Ciria SuDS manual provides guidance on planning, design, construction, management and maintenance of Sustainable Drainage Systems (SuDS) within the built environment and should be referenced for surface water drainage design.

3.0 EXISTING SITE DETAILS

Site Location

- 3.1 The site is located off High Road, south of Ashton Keynes. The approximate site co-ordinates are E404885, N193530 and National Grid SU048935, with the nearest post code SN6 6FS and *mooring.magically.compiled*
- 3.2 The current site consists of derelict buildings and shed, classified as Brownfield.

Existing Hydrology

- 3.3 The closest main watercourse, in accordance with EA River maps, is The River Thames located 10m from the western boundary and 5m from southern boundary of the site.
- 3.4 The River Thames flows through Ashton Keynes before being joined by The River Key and River Ray in Cricklade.
- 3.5 A small inlet is located on the southern boundary of the site.
- 3.6 An existing pond is located to the east.



- 3.7 Online soil maps indicate the site to be underlain by *freely draining lime rich loamy soils*.
- 3.8 Based on soil map data the site is deemed not suitable for infiltration.

Existing Drainage

- 3.9 Thames Water are the provider for this area and have foul and surface drainage assets within the surrounding public highways.
- 3.10 Refer to **Appendix B** for sewer records.

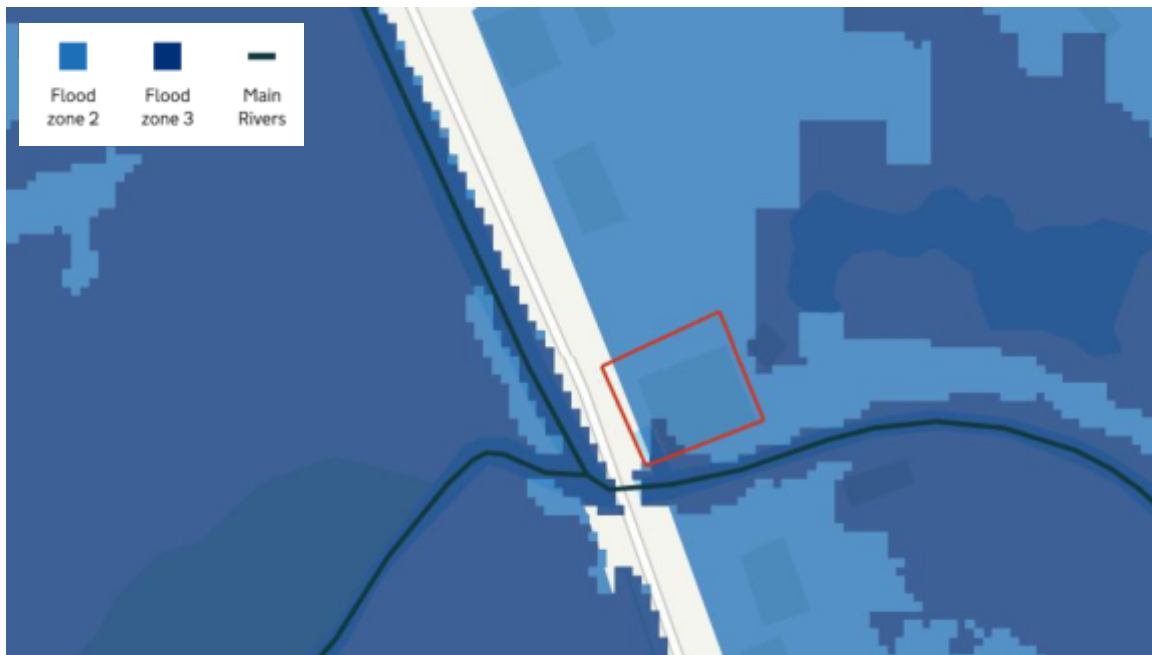
Topography

- 3.11 A topographical survey was completed in July 2023, updated in November 2024 (Ref Geomap PH-WR-20-11-24)
- 3.12 The site generally falls from 83.30m AOD on the northwestern boundary to 82.90m AOD to the southwest.
- 3.13 The High Road along the western boundary is elevated above the general site levels.
- 3.14 Refer to **Appendix C** for site topographical survey

4.0 FLOOD ZONE CLASSIFICATION AND VULNERABILITY

Environment Agency Flood Maps for Planning

- 4.1 The Environment Agency's Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences, and show the extent of the natural floodplain and the additional extent of an extreme flood.
- 4.2 The Flood Map for Planning (Rivers and Sea) shows that a small portion on the southern boundary falls within Flood Zone 3, with the rest of the site lying within Flood Zone 2.
- a) Flood Zone 3 - in any year, land having a greater than 1% (1 in 100) chance of flooding from rivers or the sea
 - b) Flood Zone 2 - Land having between 0.1% - 1% (1 in 100 to 1 in 1000) annual probability of flooding from rivers or between 0.1% - 0.5% (1 in 200 to 1 in 1000) annual probability of flooding from the sea, and accepted recorded flood outlines.
- 4.3 The Flood Zones refer to the land at risk of flooding and do not refer to individual properties.



- 4.4 Refer to EA Flood map for planning in **Appendix D**.

Environment Agency Detailed Flood Risk Data

- 4.5 Product 4 (Detailed Flood Risk Data) was requested in October 2025 (Ref 66PEMAK93ECG).
- 4.6 The EA supplied data is from the Thames (MRL to ST Johns) 2014 model with new climate change allowances re-run in 2017.
- 4.7 The model does not include the Fairford defences which were installed after the 2017 re-modelling works.

- 4.8 Flood **node 8** is considered the most relevant point for an assessment of the site as it is located on the site boundary at the location of the Flood Zone 3 extent.



- 4.9 Sample point node data from within the site shows modelled no flood levels, recorded as 'noData'.
- 4.10 Refer to **Appendix E** for EA Product 4 Flood Level Data and node location.

Flood Risk Vulnerability

- 4.11 The proposed development consists of a new residential building. In accordance with the NPPF Table 2, the most applicable description will be - *Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels ...* classified as **More Vulnerable**.

5.0 FLOOD RISK SOURCE

National Planning Policy Framework (NPPF) December 2024

- 5.1 In accordance with the NPPF, this Flood Risk Assessment will need to consider the following sources of flood risk:

Flood Source	Description
Tidal	from the sea
Fluvial	from Rivers and streams
Pluvial	overland flows from surface water and exceedance
Groundwater	from groundwater levels or springs
Sewers	exceedance and surcharge flows from existing sewer systems
Artificial Sources	Canals, Reservoirs etc
Historic	recorded historic flood events

Tidal

- 5.2 Low lying coastal areas can be impacted by tidal levels, wave overtop and storm surges. Some lower catchment Rivers are also influenced by tidal levels.
- 5.3 The Severn Estuary is located approximately 35km to the west of the site and elevated below site levels.
- 5.4 Therefore, the Tidal risk to the site is Low

Fluvial

- 5.5 Fluvial flooding occurs when the capacity of an existing watercourse is breached leading to water levels overtopping the banks into surrounding floodplain areas.
- 5.6 The site is located predominantly within EA Flood Zone 2, classified as land having between a 1 in 100 year (1%) and 1 in 1,000 year (0.1%) annual probability of fluvial flooding.
- 5.7 A small portion of the southern boundary sits within EA Flood Zone 3, classified as land having a greater than 1 in 100 yr annual probability of flooding. This extent is associated with the existing main watercourse
- 5.8 In accordance with the EA Flood data the site is not protected by flood defences.
- 5.9 The closest source of flood risk is from the River Thames network.
- 5.10 The closest recorded 100yr (1%) level at node 8 is **82.91m AOD**
- 5.11 Therefore, the Fluvial risk to the site is High

Pluvial

- 5.12 Pluvial flooding can occur when the existing infiltration capacity of the ground is exceeded, and overland flows are encountered.
- 5.13 In accordance with the EA Flood map for Planning the site is shown to not be at risk of surface water flooding.
- 5.14 The risk of Pluvial flooding is therefore considered Low.

Groundwater

- 5.15 Online soil maps indicate the site to be underlain by *freely draining lime rich loamy soils*, associated with the local gravel strata.
- 5.16 The EA long term flood risk maps indicate groundwater flooding in this area is unlikely

Sewers

- 5.17 Flooding from existing sewers can occur if the capacity of the system is exceeded as a result of surcharging or blockages. Combined sewers can be influenced by extreme rainfall events and cause foul water flooding if surcharged.
- 5.18 There are no known recorded sewer flooding reports in the area.
- 5.19 Therefore, the risk from Sewer flooding is considered low.

Artificial Sources

- 5.20 In accordance with EA Flood Map for Planning the site is at risk of flooding from Reservoirs.
- 5.21 The closest reservoir (Weston Reservoir) is located 5km to the west of the site.

Historic Flooding

- 5.22 In accordance with the Wiltshire Council Level 1 SFRA (2019) the following recorded flood events were noted for the site area:
 - March 1947 – Fluvial flooding by exceedance of River Thames at Ashton Keynes
 - September 1992 Fluvial flooding by exceedance of River Thames at Ashton Keynes
- 5.23 No records of flooding exist for the more recent 2007 events.

6.0 FLOOD RISK MITIGATION

Introduction

- 6.1 In accordance with the NPPF this Flood Risk assessment will need to demonstrate that future users will not be at risk from flood hazards during the lifetime of the development, and in line with the vulnerability classification. The risk of flooding will also not be increased elsewhere as a result of the development.

Design Flood Levels

- 6.2 In accordance with Environment Agency Flood Risk and Coastal Change allowances for planning a nominal allowance will be applied to the 100 year level.
- 6.3 In accordance with EA Thames area climate change allowances guidelines the **Central** climate change allowance shall be used for More Vulnerable sites in Flood Zone 2.
- 6.4 Gloucestershire and the Vale Management Catchment peak river climate change allowances for the 2080 Higher catchment states a **41%** climate change allowance shall be applied to the 1% event for design purposes.
- 6.5 In lieu of modelled climate change allowances for the 100yr plus 41% we will use the more conservative recorded **100 yr plus 70% climate change** event will be used to determine design flood levels.
- 6.6 *Node 8*, which is located on the site boundary has recorded flood level for the 100 yr (1%) plus 70% of **83.10m AOD**.

Flood Compensation

- 6.7 EA guidelines and consultee comments have stated the FRA shall demonstrate that any loss of floodplain storage within the 1% AEP plus an appropriate allowance for climate change can be directly compensated for to prevent an increase in flood risk elsewhere.
- 6.8 Refer to **Appendix F** for site levels plan and comparison on flood extents, including the 1% plus 70% climate change allowance.
- 6.9 The indicative site plan has been included to demonstrate the extent of development within the 1% plus a 70% climate change extent is minimal.
- 6.10 Level for level and volume for volume floodplain compensation will be provided on site for the areas within the 1% plus 70% climate change areas.
- 6.11 The design and calculation of flood compensation will be undertaken at detailed design. The plan in **Appendix F** demonstrates areas outside of the 1% plus 70% extent suitable for compensation.

Finished Floor Levels

- 6.12 Finished floor levels shall be set 600mm above the maximum flood design level of 83.10m i.e. **83.70m AOD** or 300mm above existing ground level, whichever is greater.

Flood Resistant Construction

6.13 To protect against flooding during extreme events the following construction measures shall be considered:

- Waterproof construction at ground floor level
- Exterior ventilation outlets and air bricks fitted with removable waterproof covers
- Electrical sockets at ground floor level to be set min 300mm above ground floor level
- Non-return valves fitted to drainage outlets

Functional Floodplain

6.14 Flood Zone 3b (Functional floodplain) comprises land where water from rivers or the sea has to flow or be stored in times of flood.

6.15 The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters.

6.16 The Wiltshire Council SFRA states following discussion between the Council and Environment Agency, the following definition of the functional floodplain was agreed:

Use the 1 in 20-year modelled flood extent wherever suitable hydraulic models are available.

6.17 Node 8, which is located on the site boundary has a recorded 5% flood level of **82.82m AOD**.

6.18 Refer to **Appendix F** for site levels plan and comparison on flood extents, including the 5% flood level which reflects Zone 3b.

6.19 The indicative site plan has been included to demonstrate no proposed development or changes to ground level within the Flood Zone 3b area.

Permits

6.20 A Flood Risk Activity Permit (FRAP) to undertake the proposed works as the main river (River Thames) runs adjacent to the site.

6.21 The existing inlet will not be altered and will be incorporated within the masterplan.

Access and Egress

6.22 Advanced flood warning will be in place and safe access and egress will be to/from High Road to the north.

7.0 FLOOD EVACUATION PROCEDURES

- 7.1 NPPF requires safe means of ingress and access for all residents during extreme flooding, defined as a route away from the site in slow moving flood water no deeper than 250mm during the 1% event plus climate change.
- 7.2 The design flood level (1% plus 70%) is 83.10m AOD and the High Road levels are elevated at 83.50m AOD along the site frontage. Therefore, the High Road and route to the north is entirely outside of Flood Zone 3.
- 7.3 The site is located in an area served by the Environment Agency advanced flood warning. The applicant will sign up for the service and be made aware in advance of any flood risk to the site and surrounding areas.

Sign up page – www.gov.uk/sign-up-for-flood-warnings.gov.uk

Flood warnings alerts from the EA will be sent to everyone of the Emergency Contact list.

Flood Warning Status - www.gov.uk/check-for-flooding.service.gov.uk

24 hour Floodline – 0345 988 1188

- 7.4 In the event of a flood warning from the Environment Agency system the following actions will be taken:

Warning	Message	Timing	Action
	Flood Risk is possible Prepare	Up to 2 days prior to risk	Be Prepared Check Flood Warnings Prepare a Flood kit
	Flooding is expected Act	Up to 1 day in advance of flooding	Turn off gas, water and electric Move things above ground level Move people to safety
	Severe Flood Warning Survive	When flooding poses a significant threat to life and different action required	Call 999 if in danger Follow advice from Emergency services Keep yourself safe
Warning Removed	No further flooding expected in the area	Issued when a flood warning is no longer in force	If flooded, ring your buildings and contents insurance company as soon as possible Flood water may still be present

8.0 PROPOSED SURFACE WATER DRAINAGE STRATEGY

- 8.1 A surface water strategy is proposed to manage and reduce the flood risk and surface water run-off from the development, with consideration to SuDS.
- 8.2 The SuDS hierarchy dictates that surface water run off should be managed as high up the following list as practically possible:
 - a) into the ground (via infiltration) and re-use, or then;
 - b) to a surface water body, or then;
 - c) to a surface water sewer, highway drain or another drainage system, or then;
 - d) to a combined sewer.
- 8.3 Online soil maps indicate the site to be underlain by *freely draining lime rich loamy soils*, associated with the local gravel strata.
- 8.4 Infiltration testing has not been completed on site although the adjacent watercourse offers a suitable alternative receptor in accordance with the SuDS hierarchy.
- 8.5 Infiltration testing shall be completed as a condition and soakaways used if soil conditions are suitable and groundwater levels are not within 1m of proposed base of soakway.
- 8.6 Soakaways shall be designed to cater for all storm events up to and including a 1 in 100 year event with an allowance for climate change.
- 8.7 The existing site catchment falls towards the south east and the existing watercourse.
- 8.8 Impermeable development catchment will discharge to below ground drainage via traditional rainwater down pipes and discharged to watercourse via restricted outlet and on site attenuation.
- 8.9 Attenuation will be provided within the tanked sub base of permeable construction (30%) and cellular storage (95%).
- 8.10 Using *Causeway Flow* hydraulic design software for a roof and paving catchment of 580m² the Greenfield run off rate (QBar) has been calculated as **0.3 l/s**.
- 8.11 The development run off shall be restricted to existing greenfield run off (QBar) for all storm events up to and including the 1 in 100 year event plus a 40% allowance for climate change.
- 8.12 Refer to **Appendix G** for Drainage Calculations including Greenfield run off rates.
- 8.13 All other external areas shall be constructed with permeable materials where possible to mimic existing natural run off to ground.

8.14 A simulation of all storm durations and events has been run using *Causeway Flow* design software with the following design values in order to confirm volume allowance within sub base:

- Rainfall Catchment descriptor – FEH-22
- Impermeable catchment – 580m²
- CV (Summer and Winter) – 1.0
- Void ratio – 30% Type 3 sub base and 95% cellular
- Storm Durations (mins) – 15 to 10080
- Storm events – up to and including 100 year plus 40% climate change

8.15 The maximum sub base will be 400mm with 30% void ratio.

8.16 Cellular attenuation will be 36m² and 600mm deep.

8.17 Flows will be restricted via flow control manhole within upstream chamber prior to discharge from site.

8.18 Therefore, a total maximum discharge from development will be 0.3 l/s for the 100 year event with 40% allowance for climate change

8.19 The maximum depth and volume of attenuation required within sub base and cellular will be as follows:

Permeable sub base

Return Event (Yrs)	2	10	30	100	100+40%
Max water depth (m)	0.105	0.199	0.278	0.378	0.567
Volume of water (m ³)	6.37	12.11	16.92	23.03	34.50

Cellular Attenuation

Return Event (Yrs)	2	10	30	100	100+40%
Discharge rate (l/s)	0.2	0.2	0.2	0.3	0.3
Max water depth (m)	0.128	0.222	0.301	0.401	0.590
Volume of water (m ³)	4.42	7.68	10.42	13.90	20.44

- 8.20 All private drainage will be designed in accordance with Building Regulations Part H.
- 8.21 Exceedance routes for flows above the 1 in 100 year event plus 40% climate change will be to the south west and the existing ditch network, to follow existing topography.
- 8.22 Refer to **Appendix H** for Drainage Layout.

9.0 SURFACE WATER QUALITY

- 9.1 Water quality has been assessed in accordance with The SuDS Manual (CIRIA C753) which states the design of surface water should consider minimising contaminants within surface water runoff discharged from the site.
- 9.2 The level of treatment required is dependent on the proposed land use according to the pollution hazard indices (refer to SuDS Manual table 26.2).
- 9.3 To ensure that adequate treatment is provided the SuDS mitigation indices for the development must be equal or exceed, the pollution hazard indices shown within SuDS Manual table 26.2. Permeable construction has been proposed within external areas and sub base attenuation with restricted discharge to existing watercourse.
- 9.4 Refer to below Water Quality Indices Table, as per C753 SuDS Manual, confirming compliance with mitigation indices against Pollution Hazard indices.

	Pollution Hazard Level	Total susp solids	Metals	Hydro-Carbons
Land Use: Individual property driveways, residential car parks, low traffic roads (Table 26.2)	Low	0.5	0.4	0.4
Total:		0.5	0.4	0.4
SuDS Component 1: Permeable Construction (Table 26.3)		0.5	0.6	0.6
Total:		0.5	0.6	0.6
TOTAL SUDS MITIGATION > POLLUTION HAZARD INDICES		Yes	Yes	Yes

Water Quality Indices (C753 The SuDS Manual)

- 9.5 It is also good practice that gullies and chambers have suitable silt traps/catchpits to reduce sediments within the drainage system.

10.0 MAINTENANCE AND MANAGEMENT

- 10.1 Maintenance of SuDS features is required in order to ensure that the surface water drainage system operates effectively, and the risk of flooding of the site is reduced.
- 10.2 A maintenance schedule should be undertaken to ensure that the drainage system remains fully operational for the design lifetime. The below table summarises a maintenance plan for the drainage systems and components within the development.
- 10.3 The SuDS Manual (CIRIA C753) and specific product suppliers guidelines should also be referred to for further information on maintenance and frequency.
- 10.4 All on site drainage will be maintained and managed through by the property owner and will be implemented immediately upon completion of the drainage works on site.

Drainage Component	Required Action	Typical Frequency
General pipework, manholes, chambers, silt traps and headwalls	Stabilise adjacent areas	As required
	Remove weeds and vegetation	As required
	Clear/Jet any poor performing structures	As required
	Inspect all drainage features for poor operation	3 monthly, 48 hours after large storms in first six months
	Monitor inspection chambers and silt traps. Inspect silt accumulation and determine silt clearance frequencies	Annually
Permeable Paving	Surface visual inspection for ponding, damaged blocks and build up of silt/detritus	Annually or after major storm events
	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
	Remove litter, weeds and debris	Monthly
	Vacuum sweeping and brush replacement of approved jointing material	Annually
	Replace geotextile and bedding layer	Every 30 year

APPENDIX A

SITE PROPOSALS

NOTES:



LEGEND

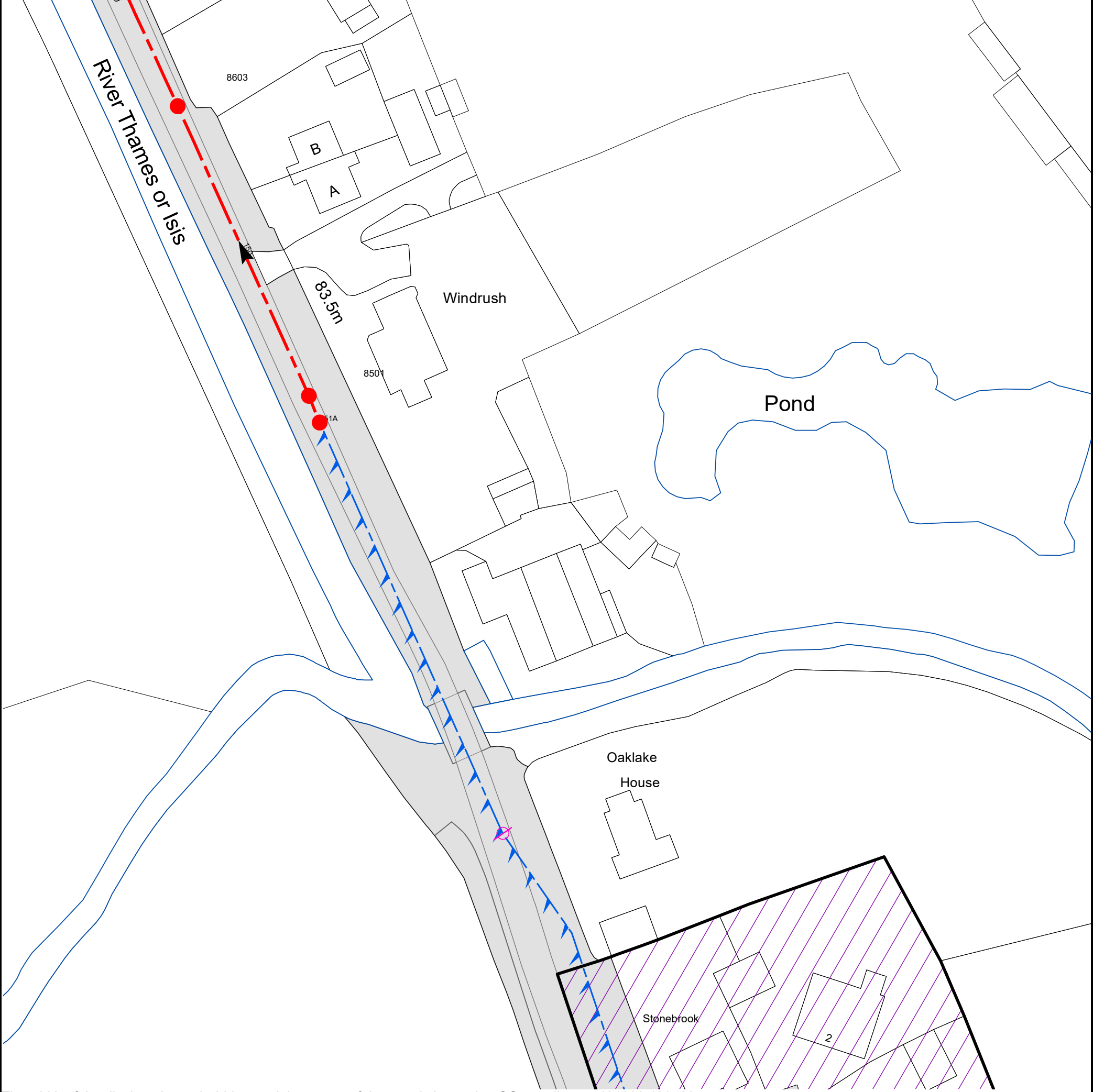
- Concrete slab footpath
- EXISTING TREES
- NEW HEDGE PLANTING
- 1.8m TALL CLOSE BOARD FENCE
- 1.2m TALL FIELD FENCE

Land at Ashton Keynes - Proposed Site Plan - 1:200@A2

REV	DATE	DESCRIPTION			INT
PROJECT Land at Ashton Keynes Proposed New Dwellings					
TITLE PROPOSED SITE PLAN					
DRAWING STATUS IN PROGRESS					
CLIENT PARTRIDGE HOMES LTD					
ANDREW P. JONES ASSOCIATES Development Consultants Hollybank House - Stockwell Lane Cleeve Hill - Cheltenham Gloucestershire GL52 3PU T: 01242 676025 E: apjassociates@bt.com					
SCALE/S 1:200@A2	DRAWN RS	CHECKED BY AC	DATE 09/09/25		
PROJECT CODE 99	GROUP 00	ARCH REF -	DRAWING NO. 100	REV B	

APPENDIX B

THAMES WATER SEWER RECORDS



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 404890,193538
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.

Based on the Ordnance Survey Map (2020) with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

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
851A 8501 8603	n/a 83.49 83.46	82.44 82.34 81.64
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.		



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

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.

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

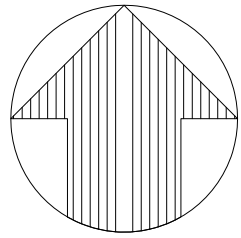
	Casement	Ducts may contain high voltage cables. Please check with Thames Water.
	Conduit Bridge	
	Subway	
	Tunnel	

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.

APPENDIX C

TOPOGRAPHICAL SURVEY



DO NOT SCALE

NOTES:

1. Levels are related to Ordnance Datum Newlyn
2. Grid is related to Ordnance Datum North
3. Drainage pipe sizes are estimated from the surface
4. Tree sizes are measured 1m from the ground

KEY

AV	AIR VALVE	OL	OUTSIDE LIGHT
BB	BELISHA BEACON	LV	LOW VOLTAGE
BH	BOREHOLE	MH	MANHOLE COVER
BOL	BOLLARD	MK	MARKER
BM	BENCH MARK	MKE	MARKER ELECTRIC
BS	BUS STOP	MKTH	MARKER FIRE HYDRANT
BT	BRITISH TELECOM COVER	MKSV	MARKER SLUICE VALVE
B-W	BARBED WIRE	MKT	MARKER TELEPHONE
CB	CONTROL BOX	MKW	MARKER WATER
C-B	CLOSE BOARDED	NB	NOTICE BOARD
CL	COVER LEVEL	NP	NAME PLATE
C-L	CHAIN LINK	PO	POST
CP	CATCH PIT	PP	PETROL PUMP
CPS	CONCRETE PAVING SLABS	P&R	POST & RAIL
CTV	CABLE TV COVER	P&W	POST & WIRE
DP	DISTRIBUTION POST	RE	RODDING EYE
EOT	END OF TRACE	RP	REFLECTOR POST
EP	ELECTRIC POLE	RS	ROAD SIGN
ER	EARTH ROD	SP	SIGN POST
FH	FIRE HYDRANT	STP	STAND PIPE
FHT	FENCE HEIGHT	SV	SLUICE VALVE
FL	FLOOR LEVEL	SW	SURFACE WATER
FW	FOUL WATER	SY	STAY
G	GULLY	TBM	TEMPORARY BENCH MARK
GP	GATE POST	TCB	TELEPHONE CALL BOX
GAS	GAS VALVE	TL	TRAFFIC LIGHT
HH	HEDGE HEIGHT	TM	TICKET MACHINE
HV	HIGH VOLTAGE	TP	TELEPHONE POLE
I	INSPECTION COVER	UTT	UNABLE TO TRACE
IL	INVERT LEVEL	UTL	UNABLE TO LIFT
I-R	IRON RAILING	WH	WALL HEIGHT
KO	KERB OUTLET	WM	WATER METER
LP	LAMP POST	WO	WASH OUT
		VT	VENT

LINETYPE MENU

Top Bank	-----	Telephone	-----
Bottom Bank	-----	Low Voltage	-----
Building	-----	Water line	-----
Foliage	-----	Gas line	-----
Hedge	-----	Ducting	-----
Pipe	-----	Tree	-----
Verge	-----	Spread/Dia/Height	-----
Wall	-----	Manhole/	-----
Kerb	-----	Inspection	-----
Fence	-----	cover	-----
Overhead Cable	-----	Unknown	-----
Drop Kerb	-----	General Coms	-----
Depth Burial	-----	Foul Water	-----
High Voltage	-----	Surface Water	-----
Fibre Optics	-----	Grid Cross	-----
Cable TV	-----		-----

Rev	Date	Details Of Issue	Initials
-----	------	------------------	----------

Status

Topographic Survey

Geomap
44B Nailsworth Mills Estate
Avening Road
Nailsworth
Glos
GL6 9BS
Tel: 01453 833116
email: info@geomaptld.co.uk
www.geomaptld.co.uk

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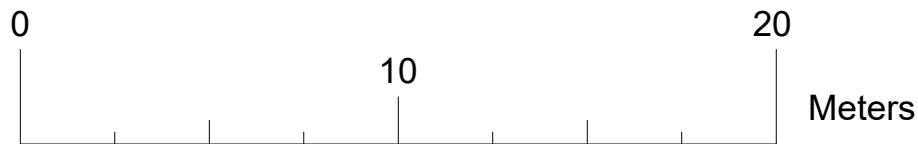
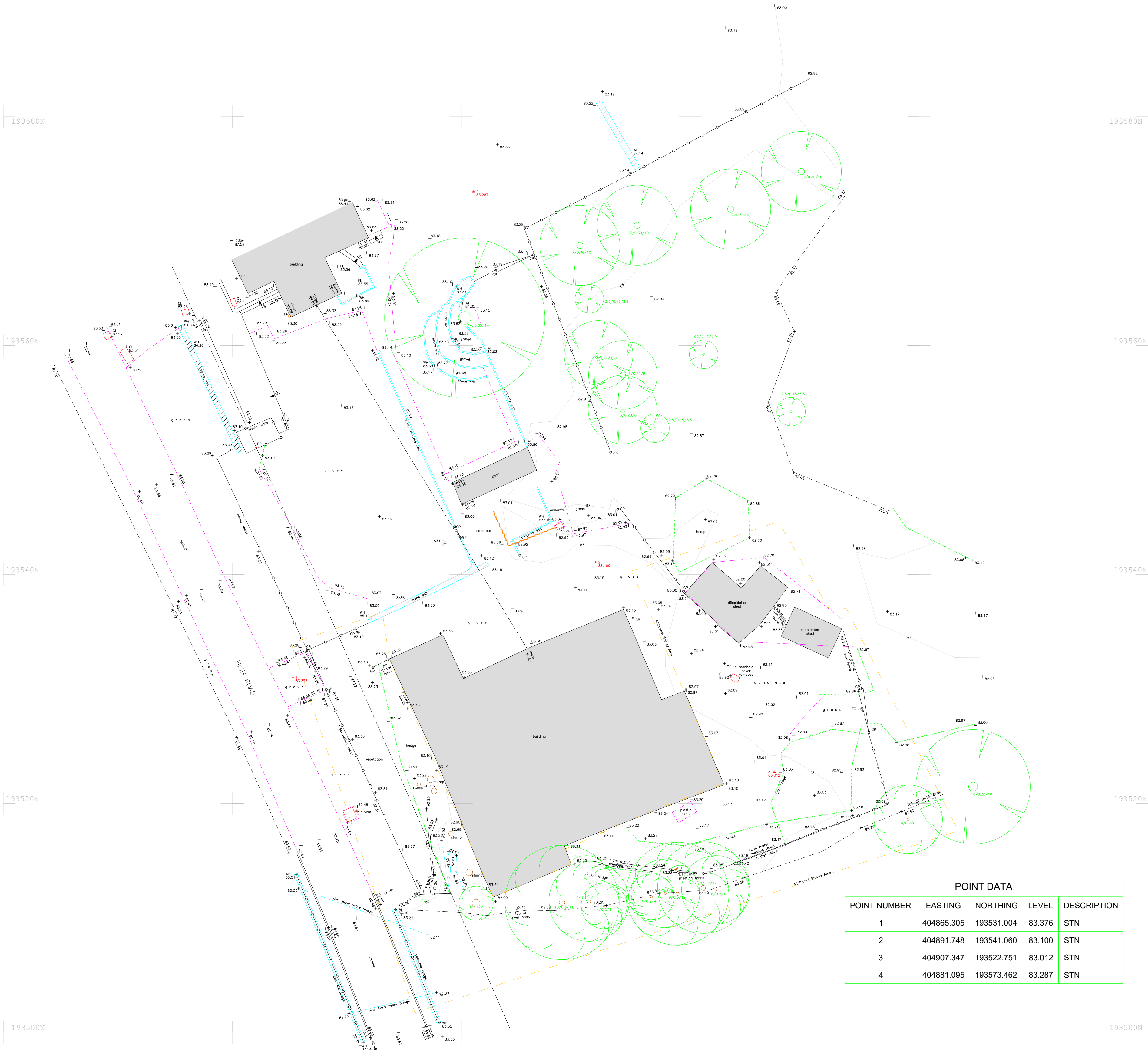
Client **Partridge Homes Cotswolds Ltd**

Project **Windrush - Additional Survey Area**

Title **Topographical Survey
2D**

Drawn **PM** Date: **20/11/2024** Scale (at A1) **1:200**

Dwg no. **PH-WR-20-11-24** Sheet No. **1 of 1**



APPENDIX D

EA FLOOD MAP FOR PLANNING



Flood map for planning

Your reference
24-2211

Location (easting/northing)
404885/193528

Scale
1:2,500

Created
19 Nov 2025 16:07

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



0 20 40 60m

APPENDIX E

EA PRODUCT 4 FLOOD LEVEL DATA

Product 4 (Detailed Flood Risk) for **SN6 6NX**

Our Ref: **EIR2025/37037**

Product 4 is designed for developers where Flood Risk Standing Advice FRA (Flood Risk Assessment) Guidance Note 3 Applies. This is:

- i) "all applications in Flood Zone 3, other than non-domestic extensions less than 250 sq metres; and all domestic extensions", and
- ii) "all applications with a site area greater than 1 ha" in Flood Zone 2.

Product 4 includes the following information:

Ordnance Survey 1:25k colour raster base mapping;
Flood Zone 2 and Flood Zone 3;
Relevant model node locations and unique identifiers (for cross referencing to the water levels, depths and flows table);
Model extents showing *defended* scenarios;
FRA site boundary (where a suitable GIS layer is supplied);
Flood defence locations (where available/relevant) and unique identifiers; (supplied separately)
Flood Map flood storage areas (where available/relevant);
Historic flood events outlines (where available/relevant, not the Historic Flood Map) and unique identifiers;

Statutory (Sealed) Main River (where available within map extents);

A table showing:

- i) Model node X/Y coordinate locations, unique identifiers, and levels and flows for *defended* scenarios.
- ii) Flood defence locations unique identifiers and attributes; (supplied separately)
- iii) Historic flood events outlines unique identifiers and attributes; and
- iv) Local flood history data (where available/relevant).

Please note:

If you will be carrying out computer modelling as part of your Flood Risk Assessment, please request our guidance which sets out the requirements and best practice for computer river modelling.

This information is based on that currently available as of the date of this letter. You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

This information is provided subject to the enclosed notice which you should read.

This letter is not a Flood Risk Assessment. The information supplied can be used to form part of your Flood Risk Assessment. Further advice and guidance regarding Flood Risk Assessments can be found on our website at:

<https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities>

If you would like advice from us regarding your development proposals you can complete our pre application enquiry form which can be found at:

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

Flood risk assessment data



Location of site: 404885 / 193528 (shown as easting and northing coordinates)

Document created on: 18 October 2025

This information was previously known as a product 4.

Customer reference number: 66PEMAK93ECG

Map showing the location that flood risk assessment data has been requested for.



How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to get your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- past floods
- flood defences and attributes
- information to help you assess if there is a reduced flood risk from rivers and the sea because of defences
- modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Surface water and other sources of flooding

When using the surface water map on the [check your long term flood risk service](#) the following considerations apply:

- surface water extents are suitable for use in planning
- surface water climate change scenarios may help to inform risk assessments, but the available data fall short of what is required to assess planned development
- surface water depth information should not be used for planning purposes

To find out about other factors that might affect the flood risk of this location, you should also check:

- [reservoir flood risk](#)
- groundwater flood risk - you could use the [British Geological Survey groundwater flooding data](#), [groundwater: current status and flood risk](#) and the guide on [mining and groundwater constraints for development](#) - further information may be available from the lead local flood authority (LLFA)
- your local planning authority's SFRA, which includes future flood risk

Your Lead Local Flood Authority is Wiltshire.

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Thames (MRL to St Johns) 2014

Scenario(s): Defended fluvial, defended climate change fluvial

Date: 1 June 2017

This model contains the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occurring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Model information

EIR2025/37037

Model: Thames (MRL to St Johns) 2014

Description: The information provided is taken from the Thames (MRL to St Johns Lock) Flood Mapping Study completed in January 2014. The study was carried out using 1D-2D modelling software (ISIS-Tuflow). Model re-run to include new climate change allowances in July 2017. Please note, this model has not modelled the Fairford defences as these were installed after the completion of this modelling.

Model design runs and Mapped Outputs:

- 1 in 5 / 20%
- 1 in 20 / 5% AEP
- 1 in 50 / 2% AEP
- 1 in 100 / 1% AEP
- 1 in 100+15% / 1% AEP with 15% AEP climate change allowance
- 1 in 100+25% / 1% AEP with 20% AEP climate change allowance
- 1 in 100+35% / 1% AEP with 25% AEP climate change allowance
- 1 in 100+35% / 1% AEP with 35% AEP climate change allowance
- 1 in 100+70% / 1% AEP with 70% AEP climate change allowance
- 1 in 1000 / 0.1% AEP

Model accuracy:

Levels $\pm$ 250mm

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 3.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

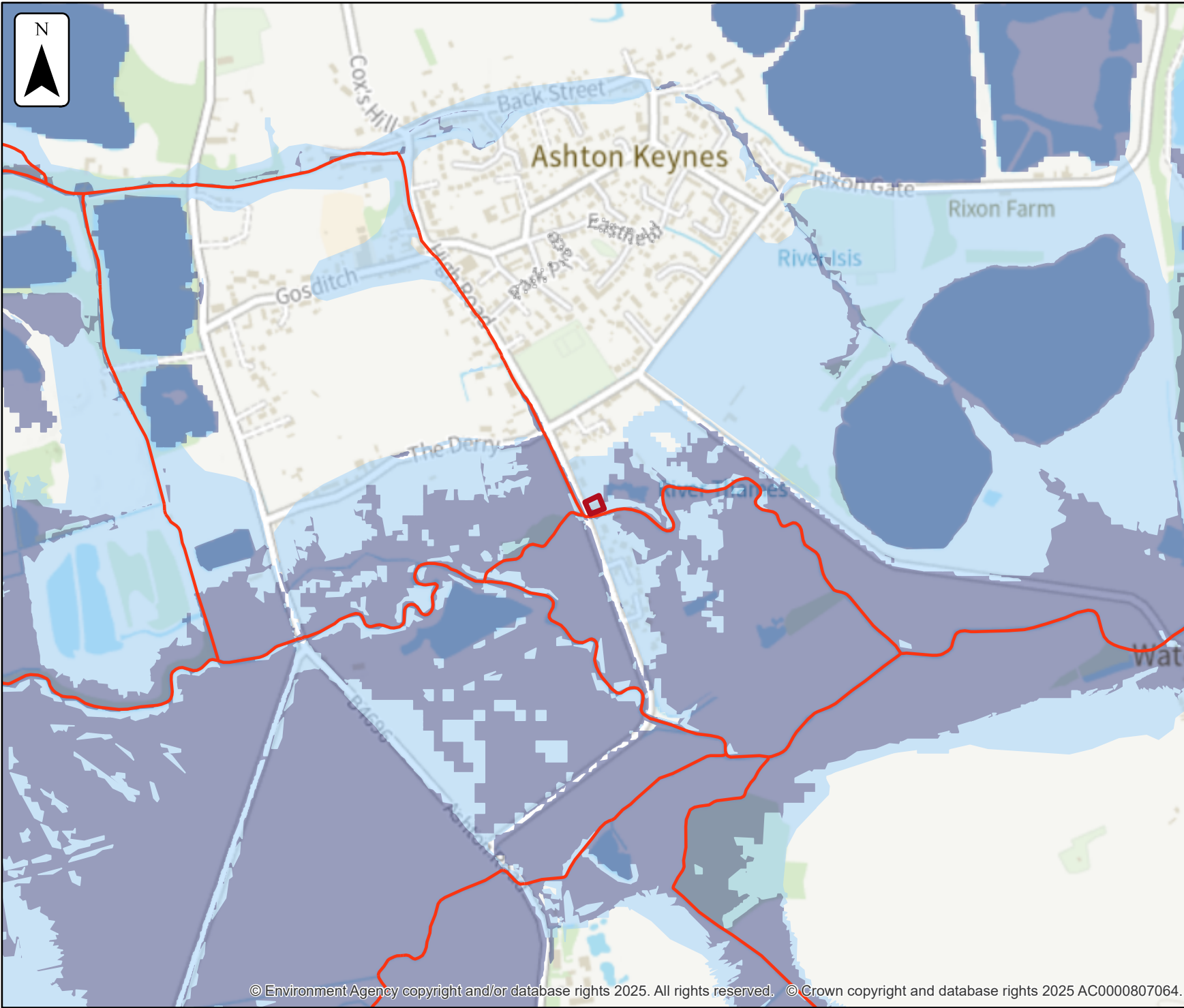
- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change



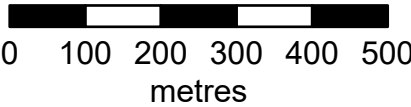
Flood map for planning

Location (easting/northing)
404885/193528

Scale
1:10,000

Created
18 Oct 2025

-  Selected area
-  Main river
-  Flood Zone 3
-  Flood Zone 2



Past floods

Past flood events included in this document

The recorded flood outlines included in this document are for areas of land local to your site location that have been flooded by any of these sources:

- ephemeral water
- main rivers
- ordinary watercourses
- the sea
- unknown

Data limitations

The outlines do not include flooding from:

- drainage where rainfall has led to surface water ponding or overland runoff
- artificial, water-bearing sewer, water supply and wastewater treatment pipelines

Changes to flood defences

The defences (also known as assets) that were in place may also have changed. For example, assets may have been built more recently than the last recorded flood outline.

What the recorded flood outlines dataset is

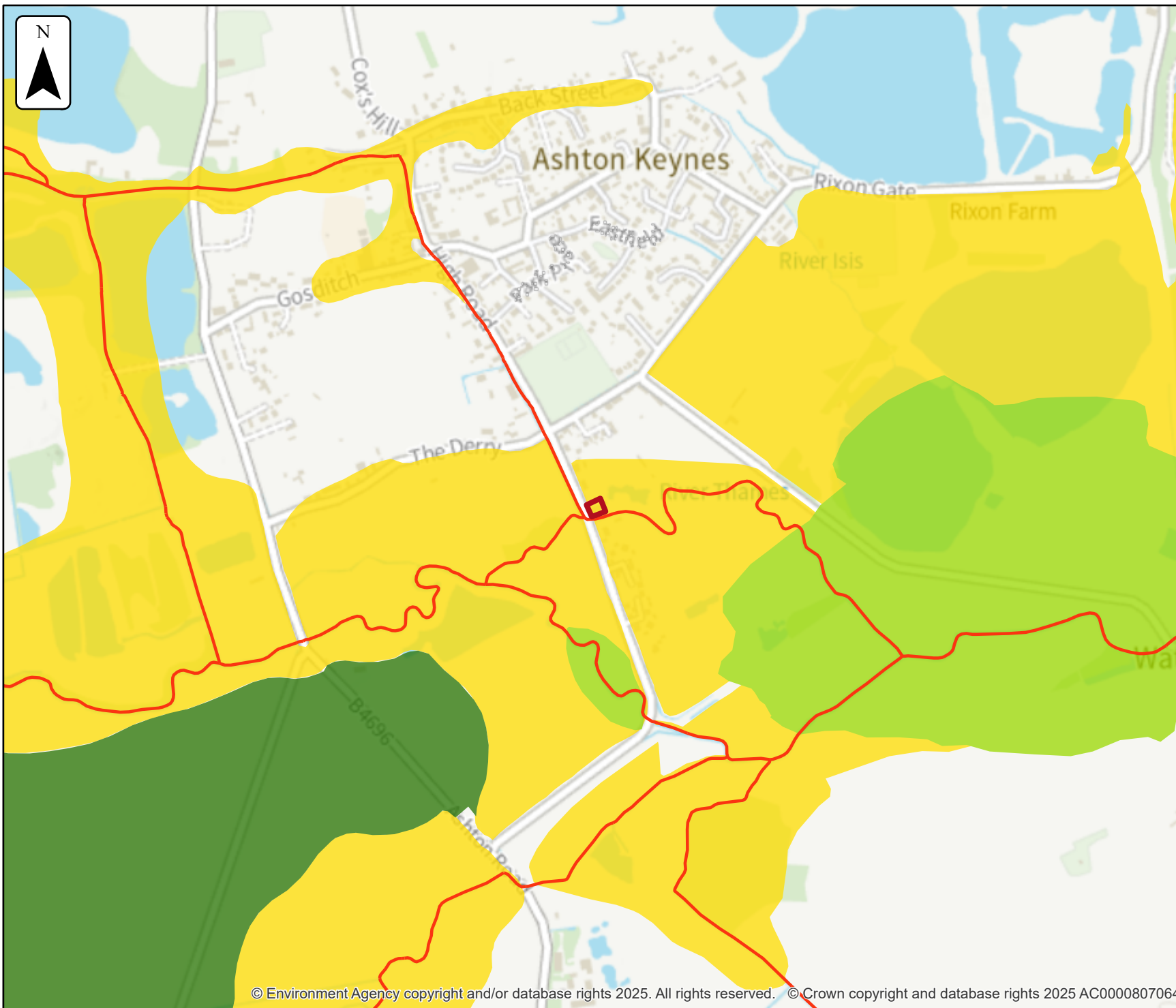
The recorded flood outlines are a geographical information system (GIS) data layer that show our verified records of areas that have flooded in the past from:

- rivers
- the sea
- groundwater
- surface water

[Download the complete recorded flood outlines dataset](#), which includes data quality flags for outlines recorded after April 2020. This indicates the confidence we have in an outline.

Get flood information from other organisations

Contact Wiltshire Lead Local Flood Authority (LLFA) and your drainage board to get information about past flooding caused by surface water or drainage systems.



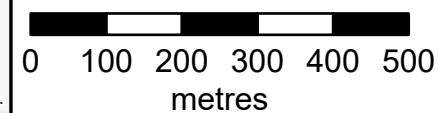
Past floods

Location (easting/northing)
404885/193528

Scale
1:10,000

Created
18 Oct 2025

-  Selected area
-  Main river
- Date of flood event
 -  1992
 -  1968
 -  1947



Data on past flood events

Start date	End date	Source of flood	Cause of flood	Affects location
1992	1992	main river	channel capacity exceeded (no raised defences)	No
1968	1968	main river	channel capacity exceeded (no raised defences)	No
1947	1947	main river	channel capacity exceeded (no raised defences)	Yes

Flood defences and attributes

The flood defences map shows the location of the flood defences present.

The flood defences data table shows the type of defences, their condition and the standard of protection. It shows the height above sea level of the top of the flood defence (crest level). The height is in mAOD which is the metres above the mean sea level at Newlyn, Cornwall.

It's important to remember that flood defence data may not be updated on a regular basis. The information here is based on the best available data.

Use this information:

- to help you assess if there is a reduced flood risk for this location because of defences
- with any information in the modelled data section to find out the impact of defences on flood risk



Flood defences

Location (easting/northing)
404885/193528

Scale

1:2,500

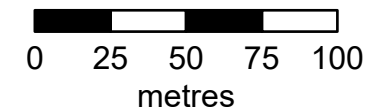
Created

18 Oct 2025

-  Selected area
-  Main river
-  Flood defence



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Flood defences data

Label	Asset ID	Asset Type	Standard of protection (years)	Current condition	Downstream actual crest level (mAOD)	Upstream actual crest level (mAOD)	Effective crest level (mAOD)
1	15560	Wall	5				

Any blank cells show where a particular value has not been recorded for an asset.

Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- modelled node point map(s) showing the points used to get the data to model the scenarios and table(s) providing details of the flood risk for different return periods
- map(s) showing the approximate water levels for the return period with the largest flood extent for a scenario and table(s) of sample points providing details of the flood risk for different return periods

Climate change

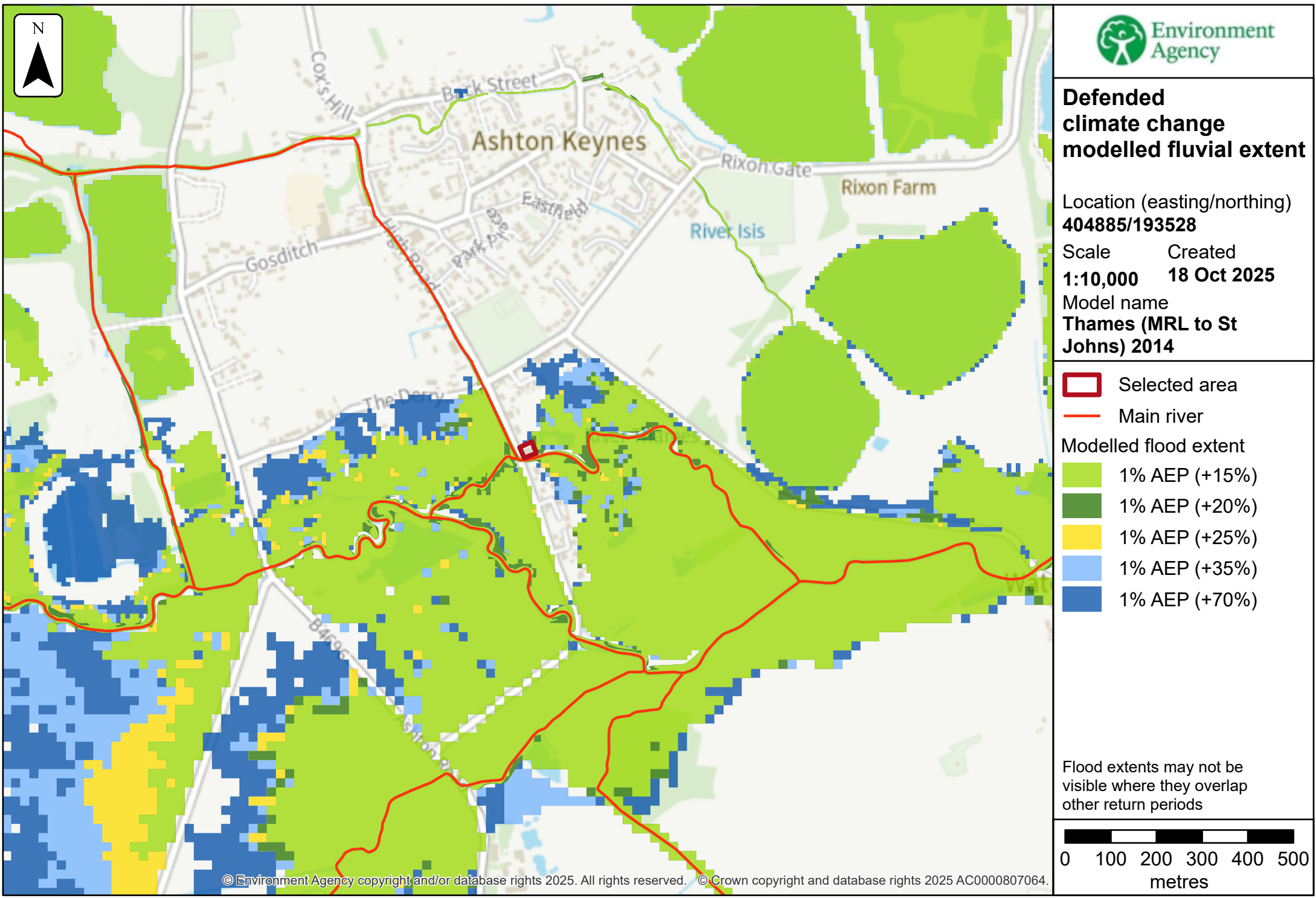
The climate change data included in the models may not include the latest [flood risk assessment climate change allowances](#). Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

The following scenarios are included:

- Defended modelled fluvial: risk of flooding from rivers where there are flood defences
- Defended climate change modelled fluvial: risk of flooding from rivers where there are flood defences, including estimated impact of climate change



**Defended
climate change
modelled fluvial extent**

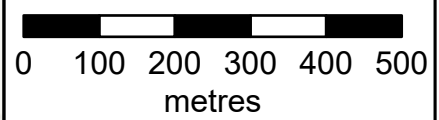
Location (easting/northing)
404885/193528

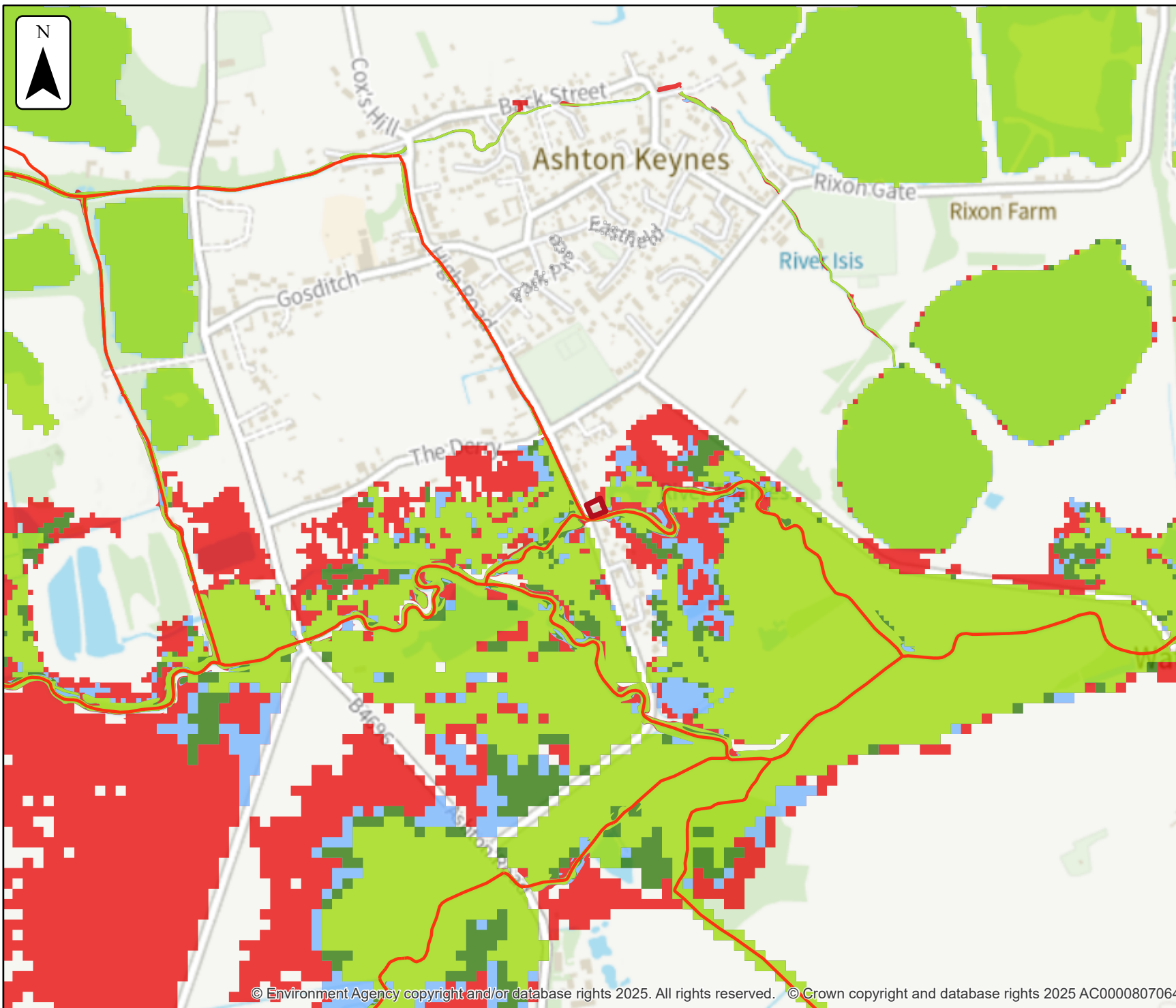
Scale Created
1:10,000 18 Oct 2025

Model name
**Thames (MRL to St
Johns) 2014**

-  Selected area
-  Main river
- Modelled flood extent
 -  1% AEP (+15%)
 -  1% AEP (+20%)
 -  1% AEP (+25%)
 -  1% AEP (+35%)
 -  1% AEP (+70%)

Flood extents may not be
visible where they overlap
other return periods





Defended modelled fluvial extent

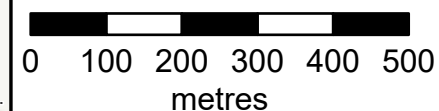
Location (easting/northing)
404885/193528

Scale Created
1:10,000 18 Oct 2025

Model name
Thames (MRL to St Johns) 2014

-  Selected area
-  Main river
- Modelled flood extent**
-  5% AEP
-  2% AEP
-  1% AEP
-  0.1% AEP

Flood extents may not be visible where they overlap other return periods





Defended climate change modelled fluvial node locations

Location (easting/northing)
404885/193528

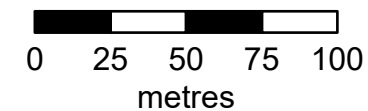
Scale Created
1:2,500 18 Oct 2025

Model name
**Thames (MRL to St
Johns) 2014**

-  Selected area
-  Modelled location
-  Main river



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Modelled node locations data

Defended climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+15%)	1% AEP (+20%)	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)
				Level	Level	Level	Level	Level
1	1643003	404805	193470	83.06		83.10	83.17	83.34
2	1643132	404823	193592	83.04		83.09	83.17	83.34
3	1642749	404823	193495	83.04	83.06	83.09	83.16	83.33
4	1644185	404837	193562	83.04		83.08	83.16	83.34
5	1645540	404851	193531	83.04	83.06	83.08	83.16	83.33
6	1643657	404854	193515	83.03	83.05	83.08	83.16	83.33
7	1644230	404862	193505	83.03	83.05	83.08	83.16	83.33
8	1643522	404879	193508	82.95	82.97	82.98	83.02	83.10
9	1644560	404913	193516	82.94		82.97	83.0	83.08
10	1644485	404949	193521	82.93		82.96	82.99	83.07

Data in this table comes from the Thames (MRL to St Johns) 2014 model.
 Level values are shown in mAOD, and flow values are shown in cubic metres per second.
 Any blank cells show where a particular scenario has not been modelled for this location.

Defended climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+15%)	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)
				Flow	Flow	Flow	Flow
1	1643003	404805	193470	1.64	1.64	1.64	1.84
2	1643132	404823	193592	0.96	1.02	1.18	1.65
3	1642749	404823	193495	1.84	1.95	2.15	2.63
4	1644185	404837	193562	1.14	1.25	1.51	2.11
5	1645540	404851	193531	1.41	1.57	1.93	2.64
6	1643657	404854	193515	1.41	1.57	1.93	2.62
7	1644230	404862	193505	1.95	2.13	2.48	3.33
8	1643522	404879	193508	3.37	3.70	4.43	5.91
9	1644560	404913	193516	3.30	3.56	4.21	5.64
10	1644485	404949	193521	3.27	3.52	3.97	4.74

Data in this table comes from the Thames (MRL to St Johns) 2014 model.
 Level values are shown in mAOD, and flow values are shown in cubic metres per second.
 Any blank cells show where a particular scenario has not been modelled for this location.



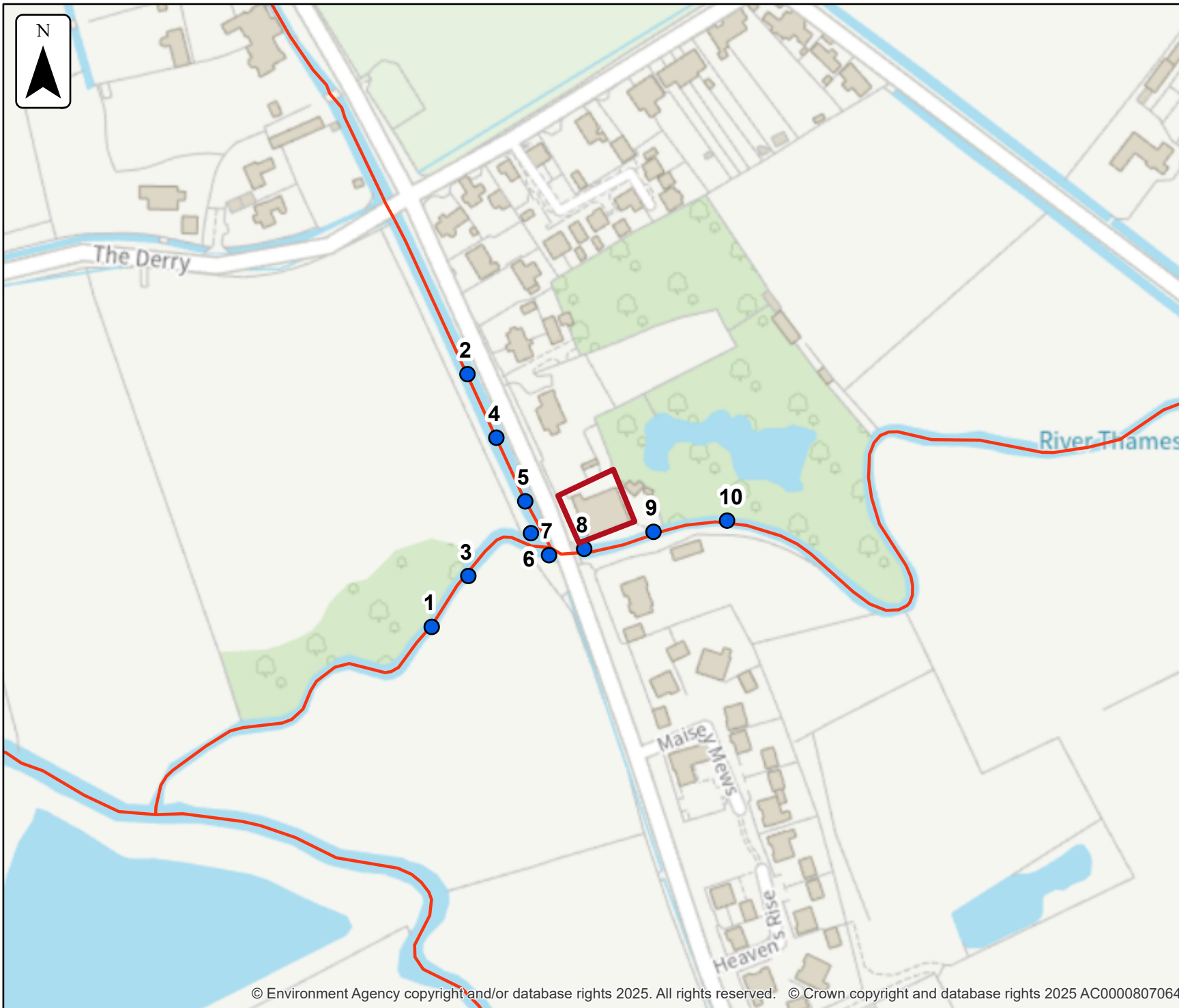
Defended modelled fluvial node locations

Location (easting/northing)
404885/193528

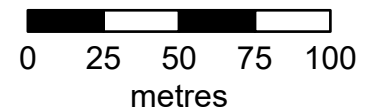
Scale Created
1:2,500 18 Oct 2025

Model name
**Thames (MRL to St
Johns) 2014**

-  Selected area
-  Modelled location
-  Main river



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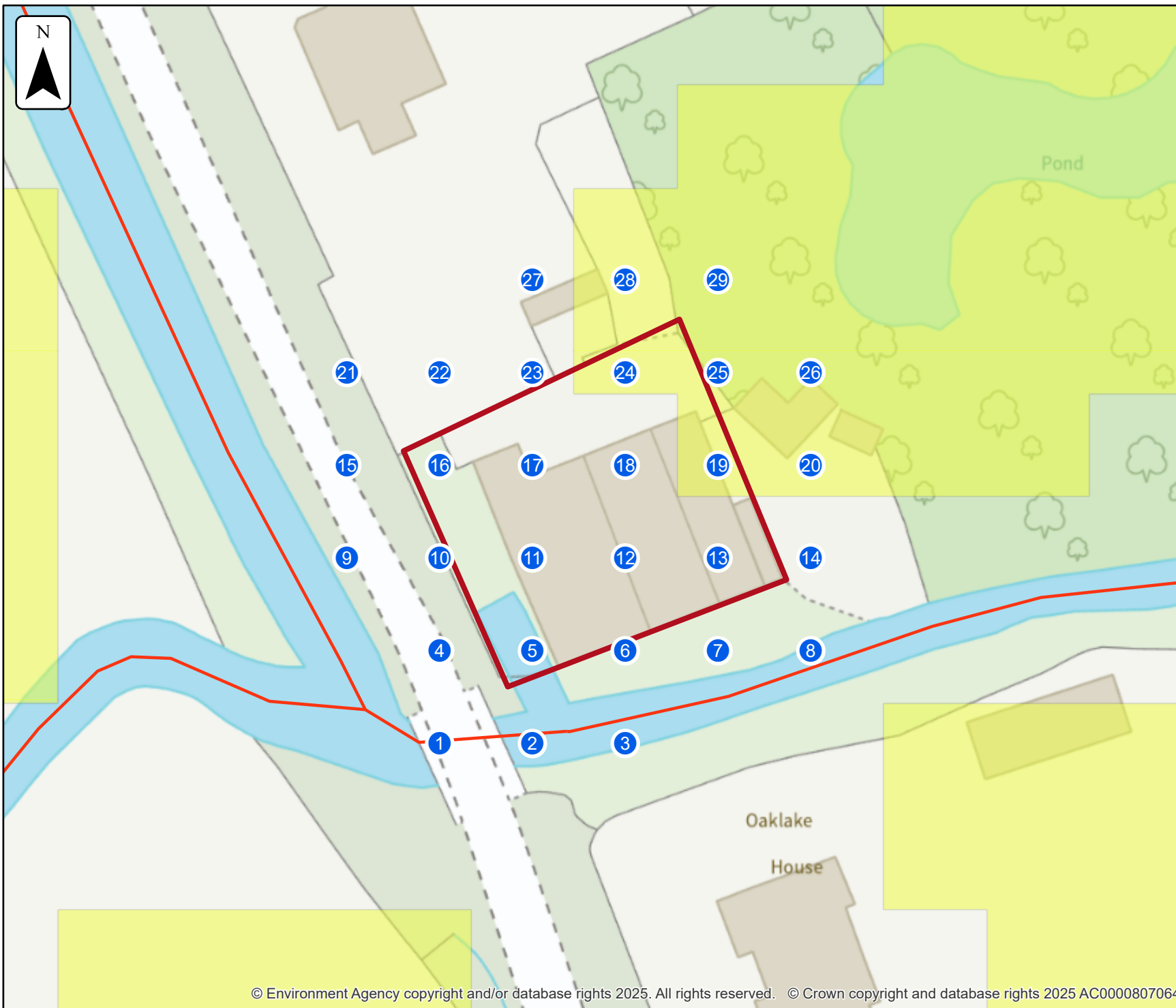


Modelled node locations data

Defended

Label	Modelled location ID	Easting	Northing	20% AEP	5% AEP	2% AEP	1% AEP	0.1% AEP
				Level	Level	Level	Level	Level
1	1643003	404805	193470					
2	1643132	404823	193592					
3	1642749	404823	193495	82.81	82.88	82.92	82.98	83.21
4	1644185	404837	193562					
5	1645540	404851	193531	82.79	82.86	82.90	82.97	83.20
6	1643657	404854	193515	82.78	82.86	82.90	82.97	83.20
7	1644230	404862	193505	82.78	82.86	82.90	82.97	83.20
8	1643522	404879	193508	82.76	82.82	82.86	82.91	83.04
9	1644560	404913	193516					
10	1644485	404949	193521					

Data in this table comes from the Thames (MRL to St Johns) 2014 model.
 Level values are shown in mAOD, and flow values are shown in cubic metres per second.
 Any blank cells show where a particular scenario has not been modelled for this location.



Defended modelled fluvial extent and height

Location (easting/northing)
404885/193528

Scale Created
1:500 18 Oct 2025

Model name
Thames (MRL to St Johns) 2014

Selected area
 Main river

Modelled 2D grid
Water level in mAOD

81 - 81.375
 81.375 - 81.75
 81.75 - 82.125
 82.125 - 82.5
 82.5 - 82.875
 82.875 - 83.25
 83.25 - 83.625
 83.625 - 84.0
 84.0 - 84.375

This map shows the
0.1% AEP height data

0 5 10 15 20
metres

Sample point data

Defended

Label	Easting	Northing	20% AEP	5% AEP	2% AEP	1% AEP	0.1% AEP
			Height	Height	Height	Height	Height
1	404870	193505	NoData	NoData	NoData	NoData	NoData
2	404879	193505	NoData	NoData	NoData	NoData	NoData
3	404888	193505	NoData	NoData	NoData	NoData	NoData
4	404870	193514	NoData	NoData	NoData	NoData	NoData
5	404879	193514	NoData	NoData	NoData	NoData	NoData
6	404888	193514	NoData	NoData	NoData	NoData	NoData
7	404897	193514	NoData	NoData	NoData	NoData	NoData
8	404906	193514	NoData	NoData	NoData	NoData	NoData
9	404861	193523	NoData	NoData	NoData	NoData	NoData
10	404870	193523	NoData	NoData	NoData	NoData	NoData
11	404879	193523	NoData	NoData	NoData	NoData	NoData
12	404888	193523	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	20% AEP	5% AEP	2% AEP	1% AEP	0.1% AEP
			Height	Height	Height	Height	Height
13	404897	193523	NoData	NoData	NoData	NoData	NoData
14	404906	193523	NoData	NoData	NoData	NoData	NoData
15	404861	193532	NoData	NoData	NoData	NoData	NoData
16	404870	193532	NoData	NoData	NoData	NoData	NoData
17	404879	193532	NoData	NoData	NoData	NoData	NoData
18	404888	193532	NoData	NoData	NoData	NoData	NoData
19	404897	193532	NoData	NoData	NoData	NoData	83.02
20	404906	193532	NoData	82.81	82.85	82.88	83.02
21	404861	193541	NoData	NoData	NoData	NoData	NoData
22	404870	193541	NoData	NoData	NoData	NoData	NoData
23	404879	193541	NoData	NoData	NoData	NoData	NoData
24	404888	193541	NoData	NoData	NoData	NoData	82.99

Label	Easting	Northing	20% AEP	5% AEP	2% AEP	1% AEP	0.1% AEP
			Height	Height	Height	Height	Height
25	404897	193541	NoData	NoData	NoData	NoData	83.00
26	404906	193541	NoData	82.79	82.82	82.85	83.00
27	404879	193550	NoData	NoData	NoData	NoData	NoData
28	404888	193550	NoData	NoData	NoData	NoData	82.98
29	404897	193550	NoData	NoData	NoData	NoData	82.98
Max value in selected area:			NoData	NoData	NoData	NoData	83.02

Data in this table comes from the Thames (MRL to St Johns) 2014 model. Height values are shown in mAOD, and depth values are shown in metres. Any blank cells show where a particular scenario has not been modelled for this location.

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'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.

Defended

Label	Easting	Northing	20% AEP	5% AEP	2% AEP	1% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth
1	404870	193505	NoData	NoData	NoData	NoData	NoData
2	404879	193505	NoData	NoData	NoData	NoData	NoData
3	404888	193505	NoData	NoData	NoData	NoData	NoData
4	404870	193514	NoData	NoData	NoData	NoData	NoData
5	404879	193514	NoData	NoData	NoData	NoData	NoData
6	404888	193514	NoData	NoData	NoData	NoData	NoData
7	404897	193514	NoData	NoData	NoData	NoData	NoData
8	404906	193514	NoData	NoData	NoData	NoData	NoData
9	404861	193523	NoData	NoData	NoData	NoData	NoData
10	404870	193523	NoData	NoData	NoData	NoData	NoData
11	404879	193523	NoData	NoData	NoData	NoData	NoData
12	404888	193523	NoData	NoData	NoData	NoData	NoData

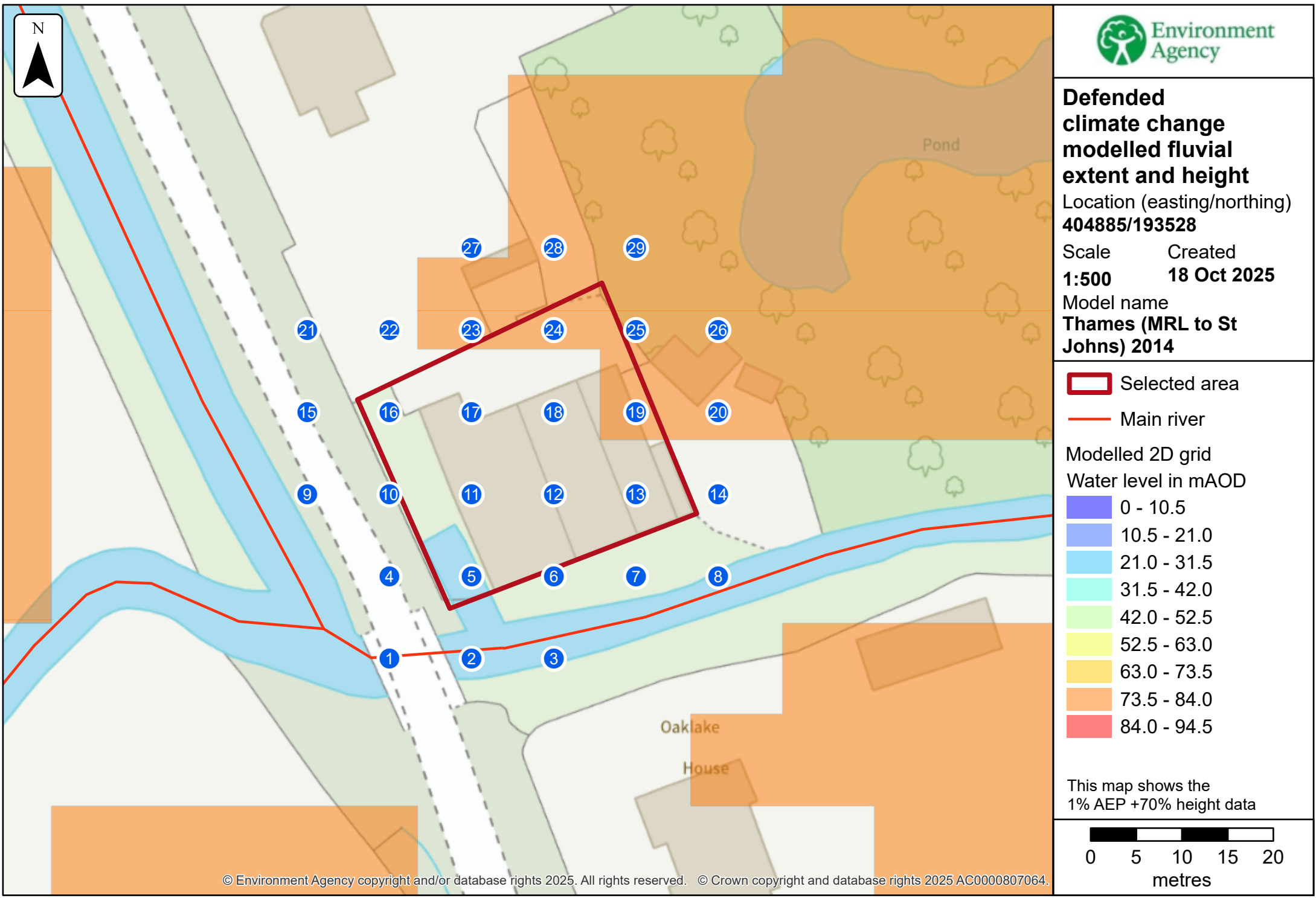
Label	Easting	Northing	20% AEP	5% AEP	2% AEP	1% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth
13	404897	193523	NoData	NoData	NoData	NoData	NoData
14	404906	193523	NoData	NoData	NoData	NoData	NoData
15	404861	193532	NoData	NoData	NoData	NoData	NoData
16	404870	193532	NoData	NoData	NoData	NoData	NoData
17	404879	193532	NoData	NoData	NoData	NoData	NoData
18	404888	193532	NoData	NoData	NoData	NoData	NoData
19	404897	193532	NoData	NoData	NoData	NoData	0.04
20	404906	193532	NoData	0	0.00	0.03	0.14
21	404861	193541	NoData	NoData	NoData	NoData	NoData
22	404870	193541	NoData	NoData	NoData	NoData	NoData
23	404879	193541	NoData	NoData	NoData	NoData	NoData
24	404888	193541	NoData	NoData	NoData	NoData	0.01

Label	Easting	Northing	20% AEP	5% AEP	2% AEP	1% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth
25	404897	193541	NoData	NoData	NoData	NoData	0.05
26	404906	193541	NoData	0.04	0.04	0.09	0.19
27	404879	193550	NoData	NoData	NoData	NoData	NoData
28	404888	193550	NoData	NoData	NoData	NoData	0.01
29	404897	193550	NoData	NoData	NoData	NoData	0.07
Max value in selected area:			NoData	NoData	NoData	NoData	0.04

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'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.



Sample point data

Defended climate change

Label	Easting	Northing	1% AEP (+15%)	1% AEP (+20%)	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)
			Height	Height	Height	Height	Height
1	404870	193505	NoData	NoData	NoData	NoData	NoData
2	404879	193505	NoData	NoData	NoData	NoData	NoData
3	404888	193505	NoData	NoData	NoData	NoData	NoData
4	404870	193514	NoData	NoData	NoData	NoData	NoData
5	404879	193514	NoData	NoData	NoData	NoData	NoData
6	404888	193514	NoData	NoData	NoData	NoData	NoData
7	404897	193514	NoData	NoData	NoData	NoData	NoData
8	404906	193514	NoData	NoData	NoData	NoData	NoData
9	404861	193523	NoData	NoData	NoData	NoData	NoData
10	404870	193523	NoData	NoData	NoData	NoData	NoData
11	404879	193523	NoData	NoData	NoData	NoData	NoData
12	404888	193523	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	1% AEP (+15%)	1% AEP (+20%)	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)
			Height	Height	Height	Height	Height
13	404897	193523	NoData	NoData	NoData	NoData	NoData
14	404906	193523	NoData	NoData	NoData	NoData	NoData
15	404861	193532	NoData	NoData	NoData	NoData	NoData
16	404870	193532	NoData	NoData	NoData	NoData	NoData
17	404879	193532	NoData	NoData	NoData	NoData	NoData
18	404888	193532	NoData	NoData	NoData	NoData	NoData
19	404897	193532	82.94	82.96	82.97	83.00	83.08
20	404906	193532	82.94	82.96	82.96	83.00	83.08
21	404861	193541	NoData	NoData	NoData	NoData	NoData
22	404870	193541	NoData	NoData	NoData	NoData	NoData
23	404879	193541	NoData	NoData	NoData	NoData	83.05
24	404888	193541	NoData	NoData	NoData	82.97	83.05

Label	Easting	Northing	1% AEP (+15%)	1% AEP (+20%)	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)
			Height	Height	Height	Height	Height
25	404897	193541	NoData	82.94	82.94	82.98	83.06
26	404906	193541	82.91	82.93	82.93	82.97	83.06
27	404879	193550	NoData	NoData	NoData	NoData	NoData
28	404888	193550	NoData	NoData	NoData	NoData	83.05
29	404897	193550	NoData	82.92	82.93	82.96	83.05
Max value in selected area:			82.95	82.96	82.97	83.01	83.08

Data in this table comes from the Thames (MRL to St Johns) 2014 model. Height values are shown in mAOD, and depth values are shown in metres. Any blank cells show where a particular scenario has not been modelled for this location.

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'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.

Defended climate change

Label	Easting	Northing	1% AEP (+15%)	1% AEP (+20%)	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)
			Depth	Depth	Depth	Depth	Depth
1	404870	193505	NoData	NoData	NoData	NoData	NoData
2	404879	193505	NoData	NoData	NoData	NoData	NoData
3	404888	193505	NoData	NoData	NoData	NoData	NoData
4	404870	193514	NoData	NoData	NoData	NoData	NoData
5	404879	193514	NoData	NoData	NoData	NoData	NoData
6	404888	193514	NoData	NoData	NoData	NoData	NoData
7	404897	193514	NoData	NoData	NoData	NoData	NoData
8	404906	193514	NoData	NoData	NoData	NoData	NoData
9	404861	193523	NoData	NoData	NoData	NoData	NoData
10	404870	193523	NoData	NoData	NoData	NoData	NoData
11	404879	193523	NoData	NoData	NoData	NoData	NoData
12	404888	193523	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	1% AEP (+15%)	1% AEP (+20%)	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)
			Depth	Depth	Depth	Depth	Depth
13	404897	193523	NoData	NoData	NoData	NoData	NoData
14	404906	193523	NoData	NoData	NoData	NoData	NoData
15	404861	193532	NoData	NoData	NoData	NoData	NoData
16	404870	193532	NoData	NoData	NoData	NoData	NoData
17	404879	193532	NoData	NoData	NoData	NoData	NoData
18	404888	193532	NoData	NoData	NoData	NoData	NoData
19	404897	193532	0.02	0.02	0.03	0.04	0.07
20	404906	193532	0.06	0.08	0.09	0.11	0.19
21	404861	193541	NoData	NoData	NoData	NoData	NoData
22	404870	193541	NoData	NoData	NoData	NoData	NoData
23	404879	193541	NoData	NoData	NoData	NoData	0.01
24	404888	193541	NoData	NoData	NoData	0.01	0.04

Label	Easting	Northing	1% AEP (+15%)	1% AEP (+20%)	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)
			Depth	Depth	Depth	Depth	Depth
25	404897	193541	NoData	0.02	0.03	0.04	0.12
26	404906	193541	0.11	0.12	0.13	0.16	0.25
27	404879	193550	NoData	NoData	NoData	NoData	NoData
28	404888	193550	NoData	NoData	NoData	NoData	0.06
29	404897	193550	NoData	0.02	0.03	0.06	0.15
Max value in selected area:			0.04	0.02	0.05	0.07	0.12

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'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.

Hazard Mapping

Hazard Mapping methodology:

To calculate flood hazard with the debris factor we have used the supplementary note to Flood Risk to People Methodology (see below).

The following calculation is used:

$$HR = d \times (v+0.5) + DF$$

Where HR = flood hazard rating

d = depth of flooding (m)

v = velocity of floodwaters (m/sec)

DF = debris factor calculated (0, 0.5, 1 depending on probability that debris will lead to a hazard)

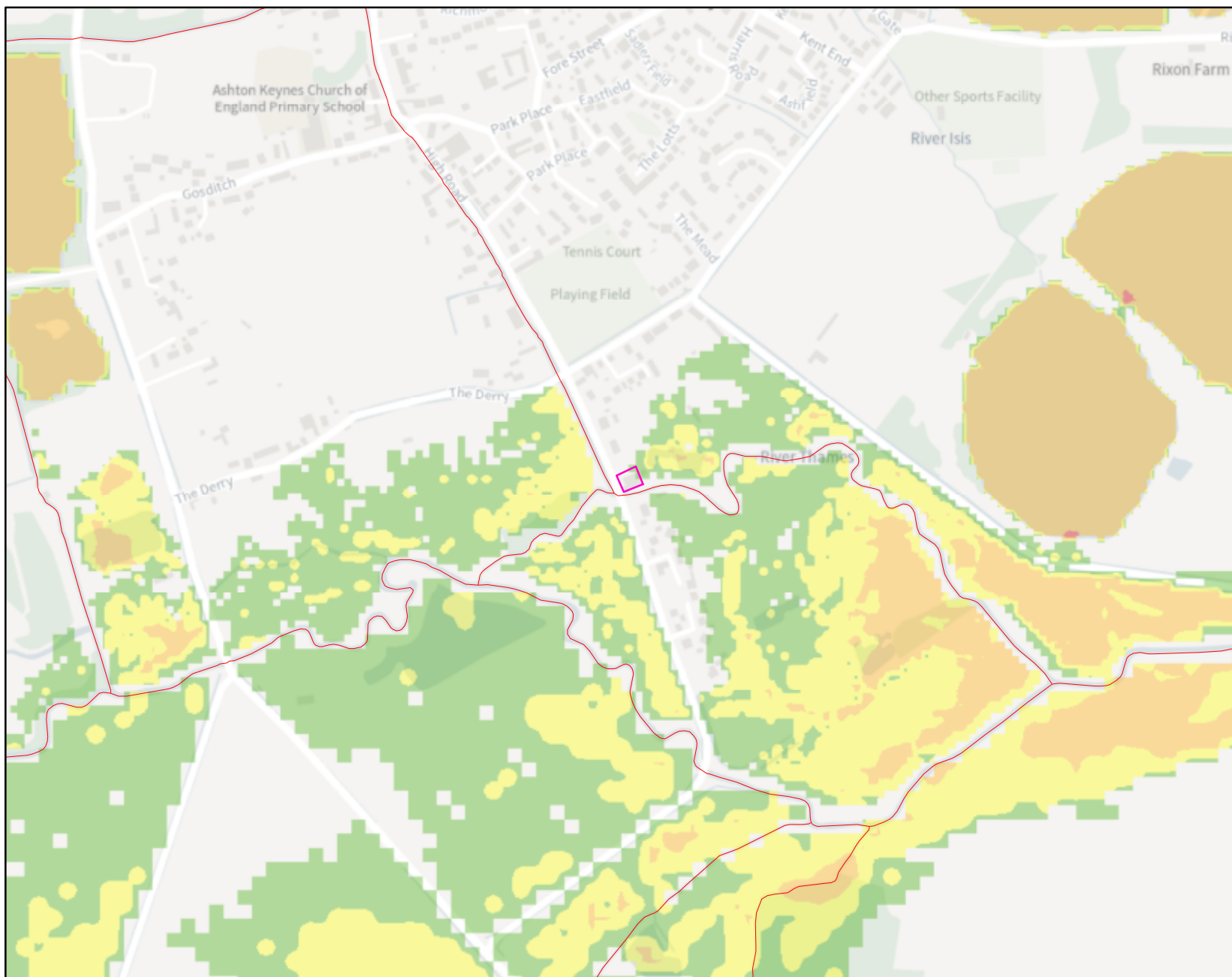
The resultant hazard rating is then classified according to:

Flood Hazard	Colour	Hazard to People Classification
Less than 0.75	Green	Very low hazard - Caution
0.75 to 1.25	Yellow	Danger for some - includes children, the elderly and the infirm
1.25 to 2.0	Orange	Danger for most - includes the general public
More than 2.0	Red	Danger for all - includes the emergency services

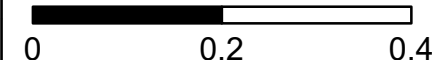
REF: HR Wallingford and Environment Agency (May 2008) Supplementary note of flood hazard ratings and thresholds for development planning and control purpose – Clarification of the Table 113.1 of FD2320/TR2 and Figure 3.2 of FD2321/TR1

1% + 35% CC AEP Hazard Map centred on SN6 6NX

Created on 04/11/2025 REF: EIR2025/37037



Kilometres



Legend

- Site
- Statutory Main Rivers
- Very low hazard – Caution
- Danger for some – includes children, the elderly and the infirm
- Danger for most – includes the general public
- Danger for all – includes the emergency services

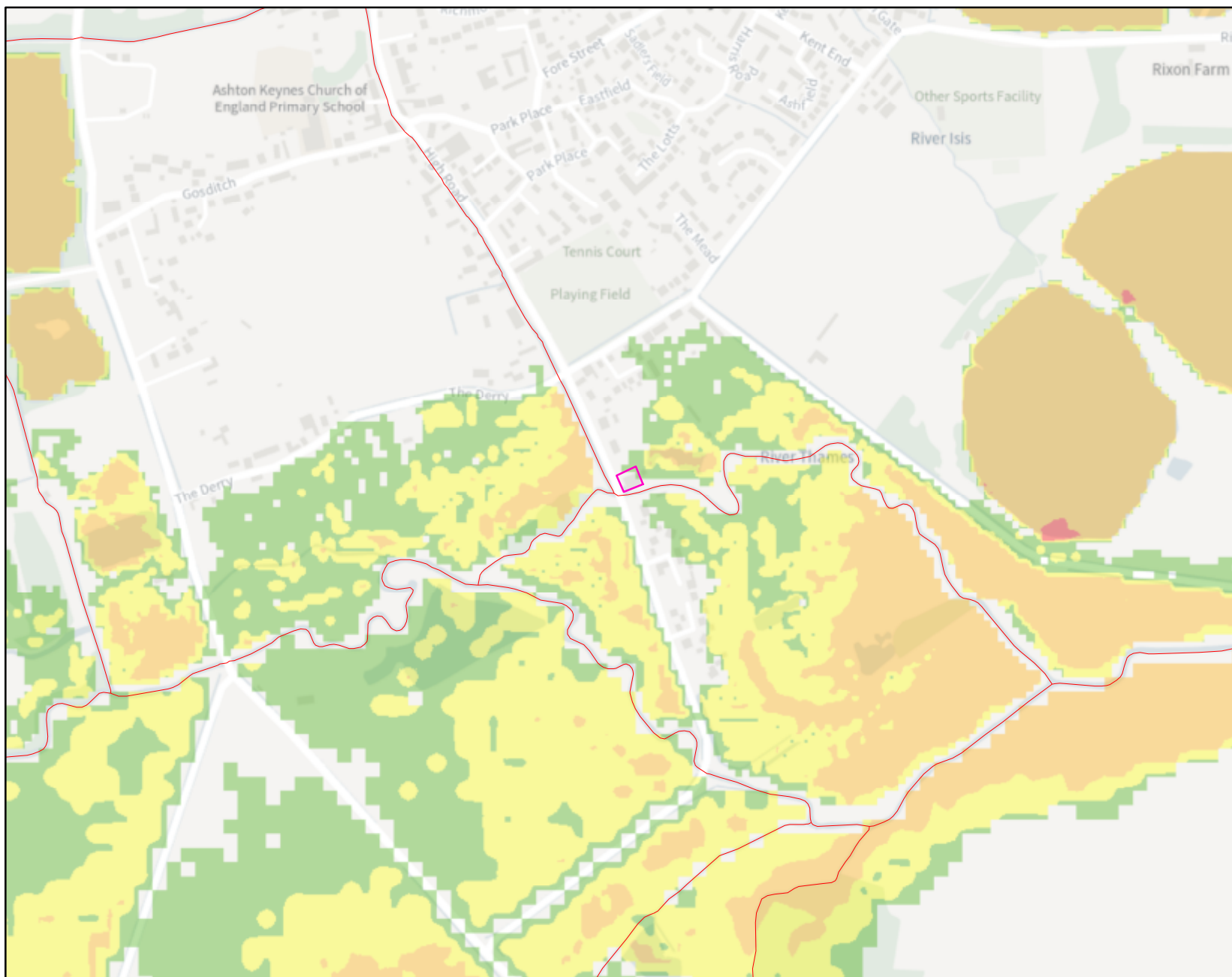
For hazard and debris factor we used HR Wallingford and Environment Agency (May 2008) supplementary note on flood hazard ratings and thresholds for development planning and control purpose. The following calculation is used:

$$HR = d \times (v + 0.5) + DF$$

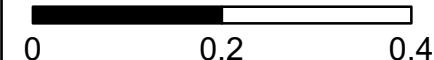
HR = flood hazard rating
d = depth of flooding (m)
v = velocity of floodwaters (m/sec)
DF = debris factor calculated (0, 0.5, 1 depending on probability that debris will lead to a hazard)

1% + 70% CC AEP Hazard Map centred on SN6 6NX

Created on 04/11/2025 REF: EIR2025/37037



Kilometres



Legend

- Site
- Statutory Main Rivers
- Very low hazard – Caution
- Danger for some – includes children, the elderly and the infirm
- Danger for most – includes the general public
- Danger for all – includes the emergency services

For hazard and debris factor we used HR Wallingford and Environment Agency (May 2008) supplementary note on flood hazard ratings and thresholds for development planning and control purpose. The following calculation is used:

$$HR = d \times (v+0.5) + DF$$

HR = flood hazard rating
d = depth of flooding (m)
v = velocity of floodwaters (m/sec)
DF = debris factor calculated (0, 0.5, 1 depending on probability that debris will lead to a hazard)

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

Your Lead Local Flood Authority is Wiltshire.

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

[Find out more about flood risk activity permits](#)

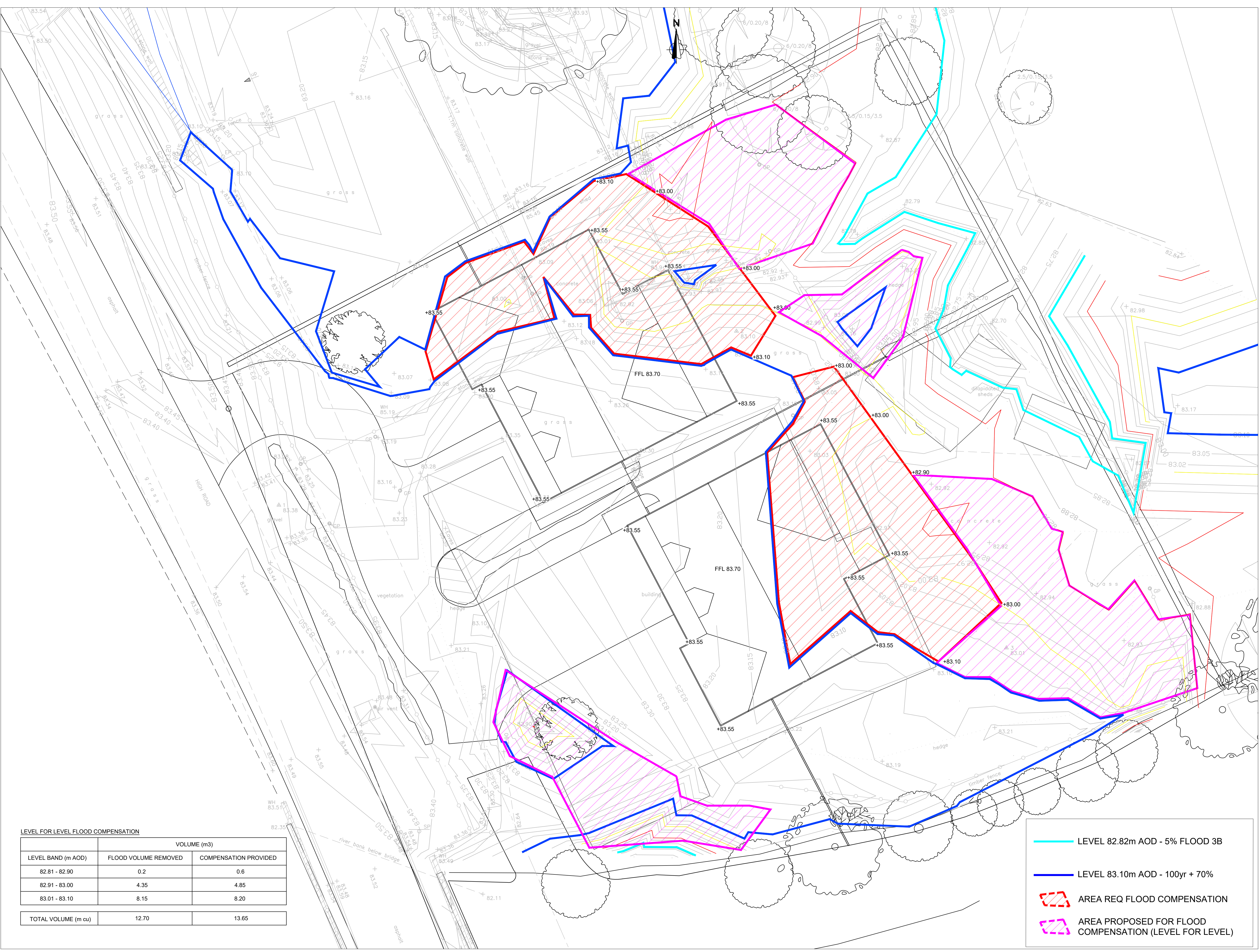
Help and advice

Contact the Thames Environment Agency team at enquiries_thm@environment-agency.gov.uk for:

- [more information about getting a product 5, 6, 7 or 8](#)
- general help and advice about the site you're requesting data for

APPENDIX F

SITE LEVELS AND FLOOD ZONE COMPARISON



LEVEL FOR LEVEL FLOOD COMPENSATION

VOLUME (m3)		
LEVEL BAND (m AOD)	FLOOD VOLUME REMOVED	COMPENSATION PROVIDED
82.81 - 82.90	0.2	0.6
82.91 - 83.00	4.35	4.85
83.01 - 83.10	8.15	8.20
TOTAL VOLUME (m cu)	12.70	13.65

- LEVEL 82.82m AOD - 5% FLOOD 3B
- LEVEL 83.10m AOD - 100yr + 70%
- AREA REQ FLOOD COMPENSATION
- AREA PROPOSED FOR FLOOD COMPENSATION (LEVEL FOR LEVEL)

Rev	Date	Details	Drawn
B	13.05.26	LEVEL FOR LEVEL CALCULATIONS UPDATED	KT
A	09.11.25	GROUND LEVELS ADDED FOR CLARITY	KT
ISSUED FOR PLANNING			



CLIENT: PARTRIDGE HOMES		
PROJECT: WINDRUSH HIGH ROAD ASHTON KEYNES		
TITLE: SITE CONTOURS AND FLOOD LEVELS - 100 YR (1%) + 70% - 5% FLOOD ZONE 3B		
SCALE @ A1: 1:200	DATE: 08.11.24	DRAWN: KT STATUS: PRELIMINARY
JOB NO: 24-2211	DRAWING NO: C010	REVISION: B

APPENDIX G

DRAINAGE CALCULATIONS

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Depth (m)
Sub Base attenuation	0.038	4.00	83.200	0.800
Cellular attenuation	0.020		83.200	0.823

Links (Input)

Name	US Node	DS Node	Length (m)	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
1.000	Sub Base attenuation	Cellular attenuation	3.392	82.400	82.377	0.023	150.0	225

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	DS CL (m)	DS IL (m)
1.000	3.392	150.0	225	Circular	83.200	82.400	83.200	82.377

Link	US Node	Node Type	DS Node	Node Type
1.000	Sub Base attenuation	Junction	Cellular attenuation	Junction

Manhole Schedule

Node	CL (m)	Depth (m)	Connections	Link	IL (m)	Dia (mm)	Link Type
Sub Base attenuation	83.200	0.800					
				0	1.000	82.400	225 Circular
Cellular attenuation	83.200	0.823					
				1	1.000	82.377	225 Circular

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	1 year (l/s)	0.2
Rainfall Events	Singular	Drain Down Time (mins)	240	2 year (l/s)	0.3
Summer CV	1.000	Additional Storage (m³/ha)	20.0	Check Discharge Volume	x
Winter CV	1.000	Starting Level (m)			
Analysis Speed	Normal	Check Discharge Rate(s)	✓		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
10	0	0	0
30	0	0	0
100	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)	0.058	Betterment (%)	0
SAAR (mm)	722	QBar	0.3
Soil Index	4	Q 1 year (l/s)	
SPR	0.47	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Node Cellular attenuation Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	82.377	Product Number	CTL-SHE-0028-3000-0600-3000
Design Depth (m)	0.600	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.3	Min Node Diameter (mm)	1200

Node Sub Base attenuation Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	82.400
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	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	200.0	0.0	0.600	200.0	0.0	0.601	0.0	0.0

Node Cellular attenuation Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	82.377
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	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	36.0	0.0	0.600	36.0	0.0	0.601	0.0	0.0

Approval Settings

Node Size	✓	Coordinates	✓
Node Losses	✓	Accuracy (m)	1.000
Link Size	✓	Crossings	✓
Minimum Diameter (mm)	150	Cover Depth	✓
Link Length	✓	Minimum Cover Depth (m)	
Maximum Length (m)	100.000	Maximum Cover Depth (m)	3.000

Approval Settings

Backdrops	✓	Surcharged Depth	✓
Minimum Backdrop Height (m)		Return Period (years)	
Maximum Backdrop Height (m)	1.500	Maximum Surcharged Depth (m)	0.100
Full Bore Velocity	✓	Flooding	✓
Minimum Full Bore Velocity (m/s)		Return Period (years)	30
Maximum Full Bore Velocity (m/s)	3.000	Time to Half Empty	x
Proportional Velocity	✓	Discharge Rates	✓
Return Period (years)		Discharge Volume	✓
Minimum Proportional Velocity (m/s)	0.750	100 year 360 minute (m³)	
Maximum Proportional Velocity (m/s)	3.000		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	107.924	30.539
2 year 15 minute winter	75.736	30.539
2 year 30 minute summer	68.805	19.469
2 year 30 minute winter	48.284	19.469
2 year 60 minute summer	45.161	11.935
2 year 60 minute winter	30.004	11.935
2 year 120 minute summer	30.776	8.133
2 year 120 minute winter	20.447	8.133
2 year 180 minute summer	24.676	6.350
2 year 180 minute winter	16.040	6.350
2 year 240 minute summer	19.994	5.284
2 year 240 minute winter	13.283	5.284
2 year 360 minute summer	15.685	4.036
2 year 360 minute winter	10.196	4.036
2 year 480 minute summer	12.497	3.303
2 year 480 minute winter	8.303	3.303
2 year 600 minute summer	10.290	2.815
2 year 600 minute winter	7.031	2.815
2 year 720 minute summer	9.194	2.464
2 year 720 minute winter	6.179	2.464
2 year 960 minute summer	7.557	1.990
2 year 960 minute winter	5.006	1.990
2 year 1440 minute summer	5.470	1.466
2 year 1440 minute winter	3.676	1.466
2 year 2160 minute summer	3.914	1.082
2 year 2160 minute winter	2.697	1.082
2 year 2880 minute summer	3.273	0.877
2 year 2880 minute winter	2.199	0.877
2 year 4320 minute summer	2.541	0.664
2 year 4320 minute winter	1.674	0.664
2 year 5760 minute summer	2.164	0.554
2 year 5760 minute winter	1.400	0.554
2 year 7200 minute summer	1.910	0.487
2 year 7200 minute winter	1.233	0.487
2 year 8640 minute summer	1.736	0.443
2 year 8640 minute winter	1.120	0.443
2 year 10080 minute summer	1.613	0.412
2 year 10080 minute winter	1.041	0.412
10 year 15 minute summer	213.219	60.334

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year 15 minute winter	149.627	60.334
10 year 30 minute summer	136.295	38.567
10 year 30 minute winter	95.646	38.567
10 year 60 minute summer	89.491	23.650
10 year 60 minute winter	59.456	23.650
10 year 120 minute summer	55.406	14.642
10 year 120 minute winter	36.811	14.642
10 year 180 minute summer	42.719	10.993
10 year 180 minute winter	27.769	10.993
10 year 240 minute summer	33.852	8.946
10 year 240 minute winter	22.491	8.946
10 year 360 minute summer	25.897	6.664
10 year 360 minute winter	16.833	6.664
10 year 480 minute summer	20.419	5.396
10 year 480 minute winter	13.566	5.396
10 year 600 minute summer	16.718	4.573
10 year 600 minute winter	11.423	4.573
10 year 720 minute summer	14.884	3.989
10 year 720 minute winter	10.003	3.989
10 year 960 minute summer	12.172	3.205
10 year 960 minute winter	8.063	3.205
10 year 1440 minute summer	8.740	2.342
10 year 1440 minute winter	5.874	2.342
10 year 2160 minute summer	6.170	1.705
10 year 2160 minute winter	4.251	1.705
10 year 2880 minute summer	5.093	1.365
10 year 2880 minute winter	3.423	1.365
10 year 4320 minute summer	3.850	1.007
10 year 4320 minute winter	2.536	1.007
10 year 5760 minute summer	3.206	0.821
10 year 5760 minute winter	2.075	0.821
10 year 7200 minute summer	2.784	0.710
10 year 7200 minute winter	1.797	0.710
10 year 8640 minute summer	2.499	0.637
10 year 8640 minute winter	1.613	0.637
10 year 10080 minute summer	2.299	0.586
10 year 10080 minute winter	1.484	0.586
30 year 15 minute summer	282.461	79.927
30 year 15 minute winter	198.218	79.927
30 year 30 minute summer	182.347	51.598
30 year 30 minute winter	127.963	51.598
30 year 60 minute summer	120.144	31.750
30 year 60 minute winter	79.821	31.750
30 year 120 minute summer	72.286	19.103
30 year 120 minute winter	48.025	19.103
30 year 180 minute summer	55.196	14.204
30 year 180 minute winter	35.879	14.204
30 year 240 minute summer	43.568	11.514
30 year 240 minute winter	28.946	11.514
30 year 360 minute summer	33.283	8.565
30 year 360 minute winter	21.635	8.565
30 year 480 minute summer	26.266	6.941

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year 480 minute winter	17.450	6.941
30 year 600 minute summer	21.531	5.889
30 year 600 minute winter	14.711	5.889
30 year 720 minute summer	19.190	5.143
30 year 720 minute winter	12.897	5.143
30 year 960 minute summer	15.723	4.140
30 year 960 minute winter	10.415	4.140
30 year 1440 minute summer	11.275	3.022
30 year 1440 minute winter	7.577	3.022
30 year 2160 minute summer	7.885	2.179
30 year 2160 minute winter	5.433	2.179
30 year 2880 minute summer	6.442	1.726
30 year 2880 minute winter	4.329	1.726
30 year 4320 minute summer	4.767	1.246
30 year 4320 minute winter	3.140	1.246
30 year 5760 minute summer	3.900	0.998
30 year 5760 minute winter	2.524	0.998
30 year 7200 minute summer	3.345	0.853
30 year 7200 minute winter	2.159	0.853
30 year 8640 minute summer	2.974	0.759
30 year 8640 minute winter	1.919	0.759
30 year 10080 minute summer	2.717	0.693
30 year 10080 minute winter	1.754	0.693
100 year 15 minute summer	362.796	102.659
100 year 15 minute winter	254.593	102.659
100 year 30 minute summer	236.291	66.862
100 year 30 minute winter	165.818	66.862
100 year 60 minute summer	156.270	41.298
100 year 60 minute winter	103.822	41.298
100 year 120 minute summer	92.801	24.525
100 year 120 minute winter	61.655	24.525
100 year 180 minute summer	70.664	18.184
100 year 180 minute winter	45.933	18.184
100 year 240 minute summer	55.799	14.746
100 year 240 minute winter	37.071	14.746
100 year 360 minute summer	42.800	11.014
100 year 360 minute winter	27.821	11.014
100 year 480 minute summer	33.891	8.956
100 year 480 minute winter	22.516	8.956
100 year 600 minute summer	27.830	7.612
100 year 600 minute winter	19.015	7.612
100 year 720 minute summer	24.818	6.652
100 year 720 minute winter	16.679	6.652
100 year 960 minute summer	20.297	5.345
100 year 960 minute winter	13.445	5.345
100 year 1440 minute summer	14.477	3.880
100 year 1440 minute winter	9.729	3.880
100 year 2160 minute summer	10.022	2.770
100 year 2160 minute winter	6.905	2.770
100 year 2880 minute summer	8.101	2.171
100 year 2880 minute winter	5.445	2.171
100 year 4320 minute summer	5.865	1.534

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year 4320 minute winter	3.863	1.534
100 year 5760 minute summer	4.710	1.206
100 year 5760 minute winter	3.048	1.206
100 year 7200 minute summer	3.985	1.016
100 year 7200 minute winter	2.572	1.016
100 year 8640 minute summer	3.504	0.894
100 year 8640 minute winter	2.261	0.894
100 year 10080 minute summer	3.175	0.810
100 year 10080 minute winter	2.049	0.810
100 year +40% CC 15 minute summer	507.914	143.722
100 year +40% CC 15 minute winter	356.431	143.722
100 year +40% CC 30 minute summer	330.807	93.607
100 year +40% CC 30 minute winter	232.146	93.607
100 year +40% CC 60 minute summer	218.778	57.817
100 year +40% CC 60 minute winter	145.351	57.817
100 year +40% CC 120 minute summer	129.921	34.334
100 year +40% CC 120 minute winter	86.317	34.334
100 year +40% CC 180 minute summer	98.929	25.458
100 year +40% CC 180 minute winter	64.306	25.458
100 year +40% CC 240 minute summer	78.118	20.644
100 year +40% CC 240 minute winter	51.900	20.644
100 year +40% CC 360 minute summer	59.920	15.420
100 year +40% CC 360 minute winter	38.950	15.420
100 year +40% CC 480 minute summer	47.447	12.539
100 year +40% CC 480 minute winter	31.523	12.539
100 year +40% CC 600 minute summer	38.961	10.657
100 year +40% CC 600 minute winter	26.621	10.657
100 year +40% CC 720 minute summer	34.745	9.312
100 year +40% CC 720 minute winter	23.351	9.312
100 year +40% CC 960 minute summer	28.416	7.483
100 year +40% CC 960 minute winter	18.823	7.483
100 year +40% CC 1440 minute summer	20.267	5.432
100 year +40% CC 1440 minute winter	13.621	5.432
100 year +40% CC 2160 minute summer	14.030	3.877
100 year +40% CC 2160 minute winter	9.667	3.877
100 year +40% CC 2880 minute summer	11.342	3.040
100 year +40% CC 2880 minute winter	7.622	3.040
100 year +40% CC 4320 minute summer	8.212	2.147
100 year +40% CC 4320 minute winter	5.408	2.147
100 year +40% CC 5760 minute summer	6.593	1.688
100 year +40% CC 5760 minute winter	4.268	1.688
100 year +40% CC 7200 minute summer	5.578	1.423
100 year +40% CC 7200 minute winter	3.600	1.423
100 year +40% CC 8640 minute summer	4.905	1.251
100 year +40% CC 8640 minute winter	3.166	1.251
100 year +40% CC 10080 minute summer	4.445	1.134
100 year +40% CC 10080 minute winter	2.869	1.134



Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
600 minute summer	Sub Base attenuation	450	82.505	0.105	1.1	6.3752	0.0000	OK
600 minute summer	Cellular attenuation	465	82.505	0.128	1.3	4.4286	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
600 minute summer	Sub Base attenuation	1.000	Cellular attenuation	0.7	0.153	0.017	0.0700	
600 minute summer	Cellular attenuation	Hydro-Brake®		0.2				9.6



K-Ten Consulting Ltd
The Site
24 Chosen View Road
Cheltenham

File: Calcs.pfd
Network: Storm Network
Kris Tovey
20.11.25

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Windrush
Storm Calcs

Results for 10 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
720 minute summer	Sub Base attenuation	675	82.599	0.199	1.6	12.1115	0.0000	OK
720 minute summer	Cellular attenuation	675	82.599	0.222	1.6	7.6890	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
720 minute summer	Sub Base attenuation	1.000	Cellular attenuation	0.8	0.147	0.020	0.1302	
720 minute summer	Cellular attenuation	Hydro-Brake®		0.2				11.2



Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	Sub Base attenuation	930	82.678	0.278	1.4	16.9267	0.0000	SURCHARGED
960 minute winter	Cellular attenuation	930	82.678	0.301	1.2	10.4292	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)
960 minute winter	Sub Base attenuation	1.000	Cellular attenuation	0.7	0.178	0.017	0.1349	
960 minute winter	Cellular attenuation	Hydro-Brake®		0.2				14.1



Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	Sub Base attenuation	705	82.778	0.378	2.0	23.0365	0.0000	SURCHARGED
720 minute winter	Cellular attenuation	705	82.778	0.401	1.6	13.9057	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)
720 minute winter	Sub Base attenuation	1.000	Cellular attenuation	0.7	0.218	0.016	0.1349	
720 minute winter	Cellular attenuation	Hydro-Brake®		0.3				12.4



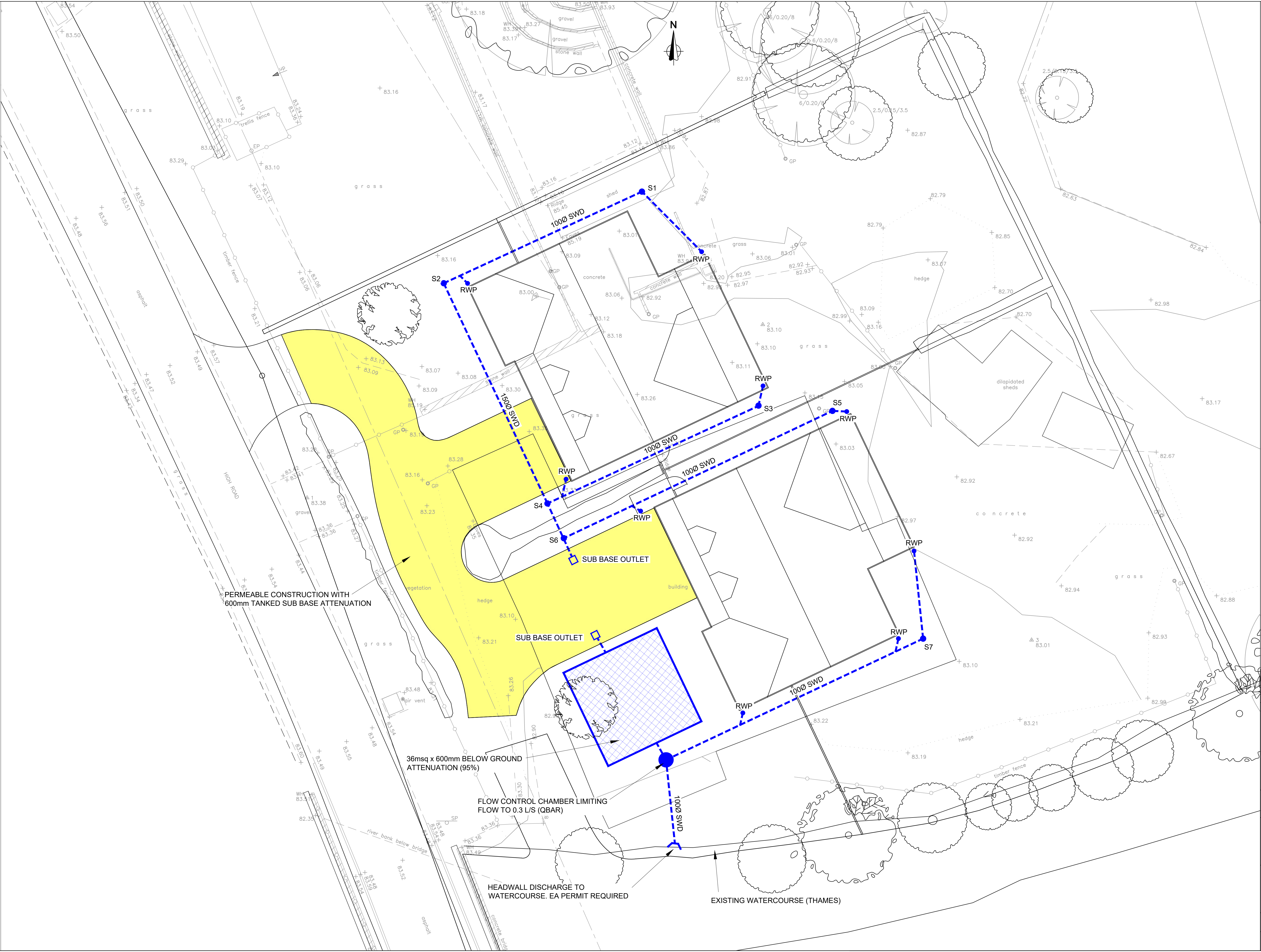
Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	Sub Base attenuation	960	82.967	0.567	3.0	34.5283	0.0000	FLOOD RISK
960 minute summer	Cellular attenuation	960	82.967	0.590	1.8	20.4448	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)
960 minute summer	Sub Base attenuation	1.000	Cellular attenuation	0.8	0.249	0.018	0.1349	
960 minute summer	Cellular attenuation	Hydro-Brake®		0.3				17.7

APPENDIX H

DRAINAGE LAYOUT



KEY

- PROPOSED FOUL DRAINAGE
- PROPOSED STORM DRAINAGE
- SOIL VENT PIPE
- RWP RAINWATER PIPE
- PERMEABLE CONSTRUCTION

A	09.11.25	ISSUED FOR PLANNING	KT
Rev	Date	Details	Drawn



CLIENT:
PARTRIDGE HOMES

PROJECT:
**WINDRUSH
HIGH ROAD
ASHTON KEYNES**

TITLE:
DRAINAGE LAYOUT

SCALE @ A1: 1:100	DATE: 08.11.25	DRAWN: KT	STATUS: PRELIMINARY
JOB NO: 24-2211	DRAWING NO: C011	REVISION: A	