

David Lloyd Clubs
David Lloyd, Club Extension and Spa Garden
Reading
Flood Risk Assessment & Suds Strategy

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Project Details

Project	David Lloyd Reading, club extension and spa garden
Location	David Lloyd, Thames Valley Business Park, 1 Thames Valley Park Dr, Early, Reading RG6 1PT

Project Team

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EXECUTIVE SUMMARY

This report has been prepared for David Lloyd Leisure Limited and assesses the level of Flood Risk to and resulting from the proposed development to the existing David Lloyd Reading building. It is proposed to build a two-storey extension to house the refurbished poolhall, an extended gym and indoor spa with a connecting spa garden.

The report has demonstrated that the site is located within Flood Zone 2. Flood zone 2 has a medium probability of flooding and has an annual probability of river flooding between 1% and 0.1% and annual probability of sea flooding between 0.5 and 0.1%.

The Flood Risk to the site from other potential sources is Low and no specific mitigation measures are required.

The proposed development involves redevelopment of one part of the existing David Lloyd building, so the development could not be provided elsewhere. Therefore, the development proposals meet the sequential test.

It has also been demonstrated that the development will not cause any increase in flood risk either within the site itself or to adjacent properties.

The existing surface water regime on the site has not been fully identified, but surveyed utility maps suggest that the proposed area is drained via gullies and possible channel drains with a positive discharge to the site's drainage system. The proposed works will not involve any notable amendments to such an arrangement; therefore, this existing arrangement will remain in place where possible to manage surface water runoff from the development.

The proposed development will not make any changes to the site levels or drained area on the site, and as such it is not proposed to make any major changes to the existing site drainage system(s), as it would be impractical for such a minor development.

1 INTRODUCTION

1.1 Appointment

Willis Hazell Engineers Limited (Willis Hazell) has been appointed by David Lloyd Leisure Limited to provide a Flood Risk Assessment in support of a planning application for refurbishment of the existing David Lloyd Reading.

1.2 Description of the Project

The project proposes to build a two-storey extension to house the refurbished poolhall, an extended gym and indoor spa with a connecting spa garden, external plant and minor car park alterations.

This report has been prepared for David Lloyd Clubs and reviews the level of Flood Risk to the proposed development in line with guidance set out in national and local planning policy.

The aim of this report is to define the following to a suitable level of detail to obtain planning approval for the development:

- Site's characteristics (topography, soil geology, existing drainage features).
- Details of the proposed development.
- A summary of the existing level of flood risk to the site, based on the Environment Agency online Flood Maps, the Wokingham Borough Council Local Flood Risk Management Strategy, and Thames Water sewer records.
- Details of existing / proposed site levels in relation to the flood extents and overland flow paths indicated by the information described above.
- Appropriateness of the development given the identified level of Flood Risk.
- An assessment of whether the development will increase flood risk elsewhere, including details of existing surface water drainage provision and proposed amendments to the existing surface water drainage regime.

1.3 Limitations

This report has been produced exclusively for the use of David Lloyd Clubs. Any other party seeking to rely on this report should seek written permission from Willis Hazell. This report has been produced for the proposed two-storey extension to house the refurbished poolhall, an extended gym and indoor spa with a connecting spa garden, external plant and minor car park alterations as currently shown on the architect's drawings submitted in support of the Planning Application. If the proposals change, then findings of this report should be reviewed accordingly.

In preparing this report, we have relied on information provided by third parties, and as such, Willis Hazell cannot accept responsibility for the accuracy of the information received.

2 SITE DESCRIPTION

2.1 Site Location and Existing Site Usage

The existing David Lloyd Club site is located to the east of Reading, off Valley Drive, close to the A3290. The club is accessed off Valley Park Drive and is bounded to the north by the Thames Valley Nature Reserve. The wider area consists of various commercial buildings with surrounding greenery and trees. The site location is indicated on Figure 1 below, and a more detailed Site Location Plan can be found in **Appendix A**.



Figure 1: Aerial view of site location

The club uses a dedicated car park. The proposed application site for the additional facilities includes the existing pool hall and the areas directly east and south of the pool hall, which currently form part of the club car park (Figure 2).



Figure 2: Proposed site for spa extension and spa garden

2.2 Site Topography

A Topographical survey was completed in November 2025 by Malcom Hughes Land Surveyors. The topographical information shows that the site is generally flat at a consistent level of approximately 37.0 AoD.

The topographical survey information can be seen in **Appendix B**.

2.3 Ground Conditions

In January 2026, JPP conducted a Phase 1 & 2 Ground investigation report for the adjacent site.

British Geological Society (BGS) online mapping indicates that the site is underlain by made ground (artificial deposit). Superficial deposits mapped include alluvium in the north, the Langley Silty member across the central area with Kempton Park Gravel member to the south. The underlying geology is mapped as Seafood chalk formation and the Newhaven chalk formation.

The superficial alluvium, Langley Silt member and Kempton Gravel member are all classified as a Secondary A aquifer. The bedrock of the chalk is classified as a principal aquifer.

Soil investigation in the form of boreholes confirmed the site is underlain by made ground proven to depths of 7.30m and 9.40m bgl in the deep boreholes. The shallow made ground comprised of variable granular and clay layers, with the deeper made ground consisting of PFA with some variation in gravel, sand, silt and clay.

Kempton Park gravel member was encountered within deep boreholes from 7.20m to 9.20m bgl in BH01 and from 9.40m to 10.10m bgl in BH02.

The chalk bedrock was encountered in both deep boreholes, proven to the base at 20.0m bgl.

The borehole logs can be found in **Appendix C**.

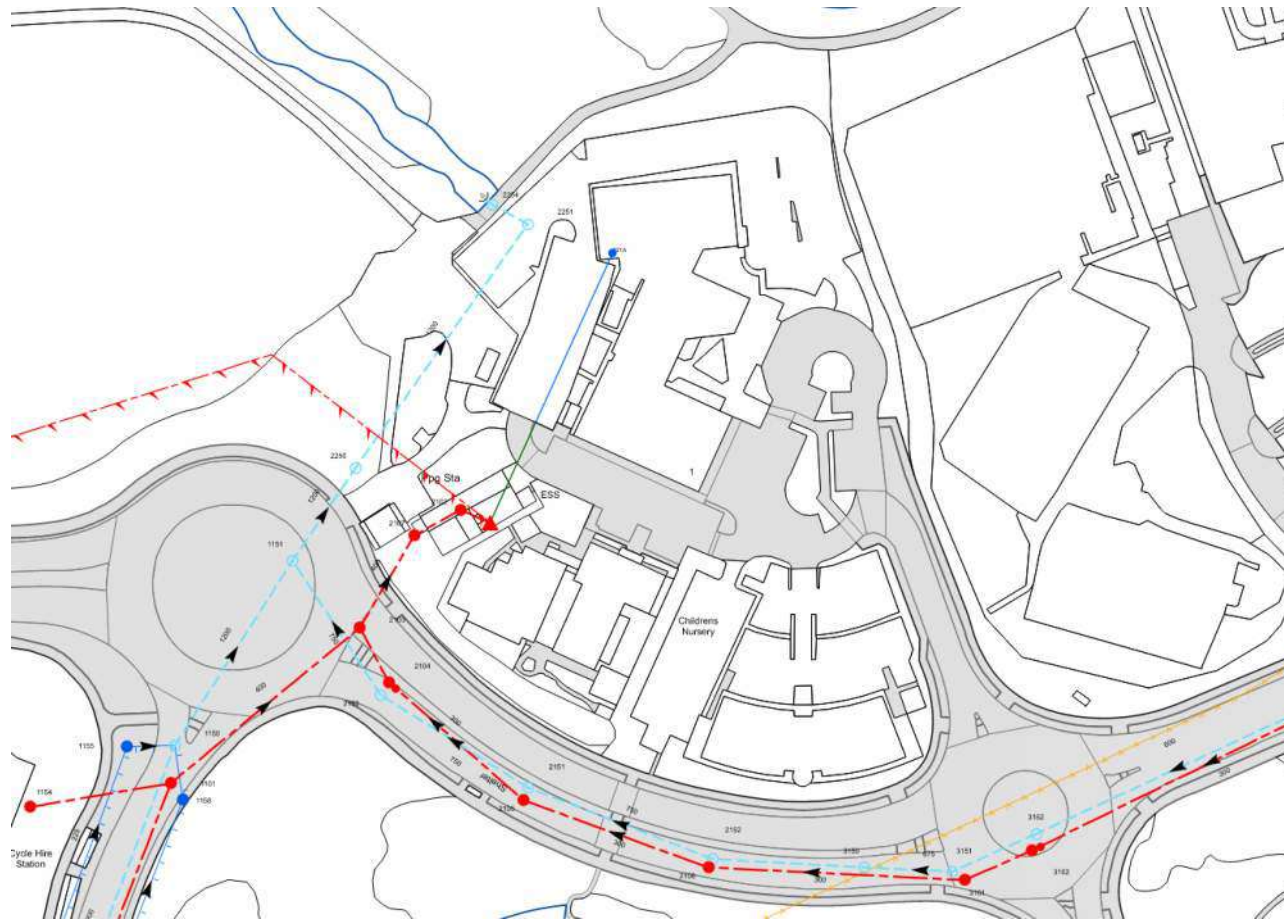
2.4 Existing Watercourses

The closest watercourse to the site approximately 275m to the north, as shown on Ordnance Survey mapping, is the River Thames, a non-tidal EA main river which flows to the east. The Thames flows from west to east through Reading heading towards London and eventually the North Sea.

A drainage ditch flows to the northwest to join the River Thames. A pond is located to the northeast of the site in the Thames Valley Park nature reserve, with further likely attenuation ponds located to the south.

2.5 Existing Site Drainage and Public Sewers

Thames Water sewer record plans for the area surrounding the site have been obtained for the site, a copy of these plans can be found in **Appendix D**. A Utility mapping survey was also completed in November 2025 by Malcom Hughes Land Surveyors, a copy of these plans can be found in **Appendix E**. The record plans show that there are foul and surface water sewer networks present within the public highway network to the south of the site.



A 300mm foul sewer is shown to run east to west along Thames Valley Park Drive and south to north along Oracle Parkway, with both sections terminating at a pumping station located on land to the south of the existing David Lloyd building. The foul flows are indicated to be pumped eastwards along the alignment of Thames Valley Park Drive.

Thames Water sewer records indicate that all surface water within the site discharges to the River Thames via a ditch running through a tree and shrub corridor approximately 30 m wide, which extends to the River Thames.

The utility map survey completed in November 2025 by Malcom Hughes Land Surveyor highlights the private network of surface water and foul water around the existing building.

At the entrance to David Lloyd Gym, the utility map indicates gullies connected to a 150 mm surface water sewer flowing south and ultimately towards the northwest corner of the building.

A 375 mm surface water sewer is shown on the western side of the building, collecting runoff from car park gullies and RWPs serving the building. All surface water sewers are shown to terminate at the point where the Thames Valley asset connects into the ditch. It is assumed that the two manholes shown on the northwest corner of the carpark are Thames water manholes 2251 and 2254.

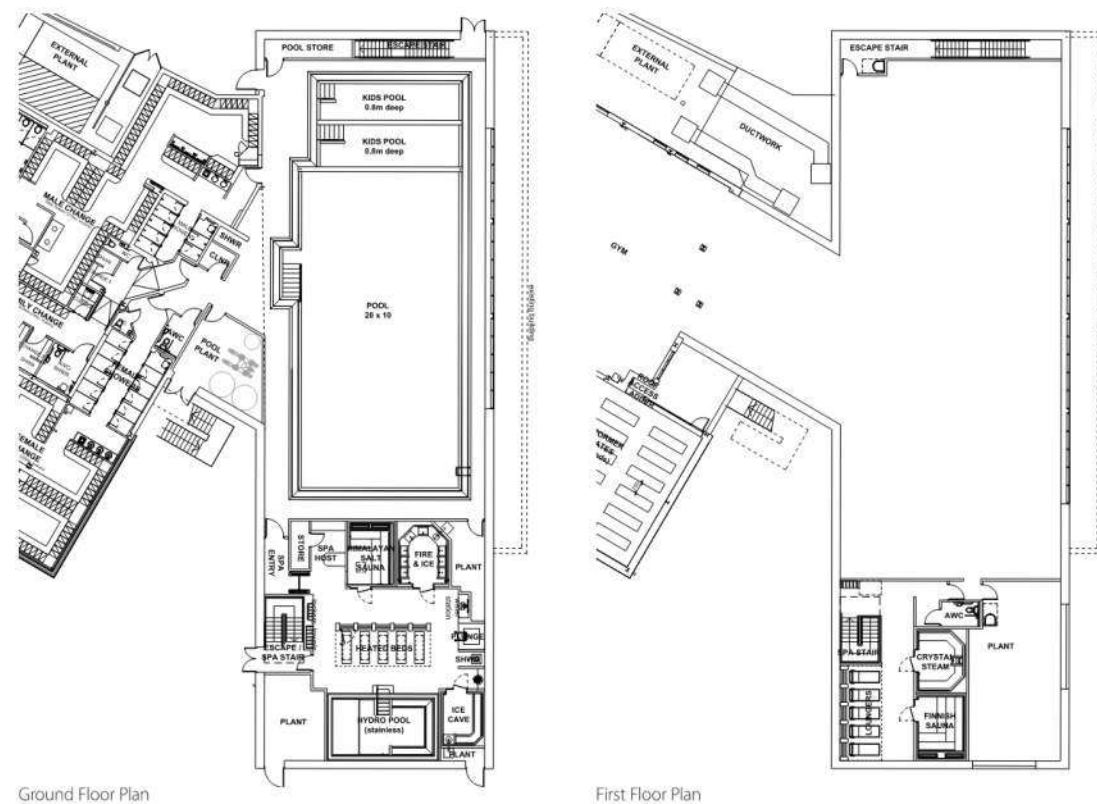
A 150mm foul sewer is shown on the west side of the building, its direction of flow is towards the pumping station.

3 PROPOSED DEVELOPMENT

The project proposes to build a two-storey extension to house the refurbished pool hall, an extended gym and indoor spa with a connecting outdoor spa garden. The majority of the proposed additional floorspace (838m² GIA) is located at first floor to the east of the existing pool hall.

The new spa facility will be provided at ground floor, and the existing gym and fitness suite will be extended into the first-floor extension. Figure 6 below shows the proposed ground and first floor plans.

Figure 4: Proposed ground and first floor plan.

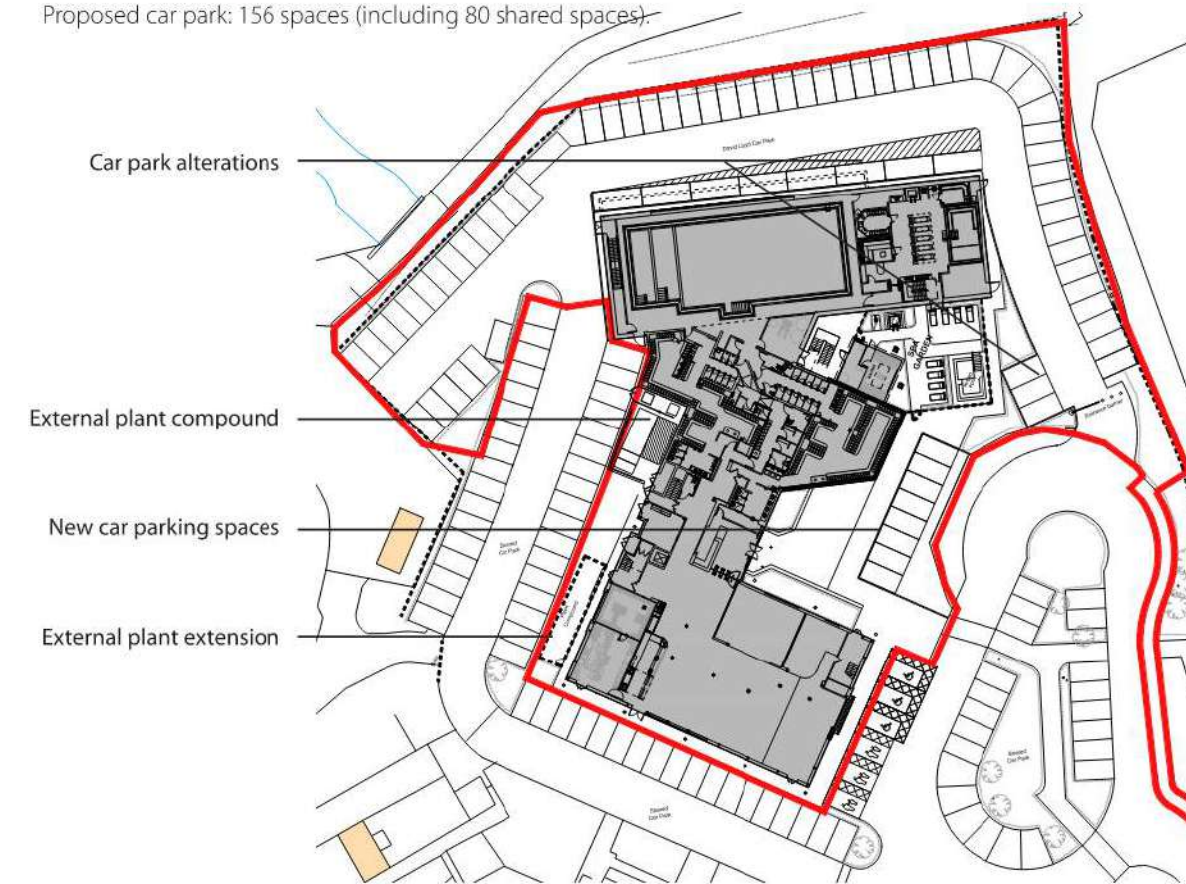


To the southwest of the existing club there is an external plant compound. It is proposed that this compound is extended to house the additional condensers required to serve the proposed extension.

Minor carpark alterations are proposed as the carpark is impacted by the proposed extension. Figure 5 below highlights the minor alterations.

A proposed Site Plan drawing can be found in **Appendix F**.

Existing car park: 155 spaces (including 80 shared spaces).
Proposed car park: 156 spaces (including 80 shared spaces).



A new external spa garden facility is proposed in the unused space to the southeast of the pool hall.

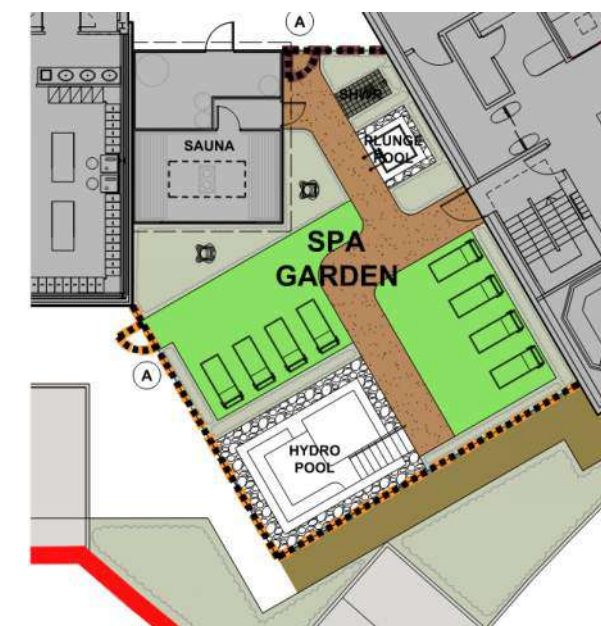


Figure 6: Proposed Spa Garden

4 PLANNING POLICY REQUIREMENTS

4.1 NPPF and Planning Practice Guidance

The National Planning Policy Framework (NPPF) was first published in March 2012 and has subsequently been revised, most recently on 17 August 2026. The current NPPF sets out the Government's planning policies for England and how these should be applied in the preparation of plans and determination of planning applications.

Chapter 18 of the NPPF, entitled “**Managing flood risk and coastal change**”, seeks to minimise risks to development arising from all sources of flooding and coastal change, taking account of the impacts of climate change. The approach is based on steering development away from areas at risk, ensuring that development is safe for its lifetime without increasing flood risk elsewhere, and incorporating sustainable drainage systems where appropriate.

Policy F5: The Sequential Test sets out ‘*The aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Where the test applies, development proposal should not be located in areas at risk of flooding where alternative sites, appropriate for the development, are reasonably available in areas with a lower risk of flooding. The area to which the test is applied should not be greater than the anticipated cash movement of the development in terms of its likely occupiers or users.*

Policy F8 – Sustainable drainage systems and watercourses requires development proposals that could affect drainage on or around the site to incorporate Sustainable Drainage Systems (SuDS) to control flow rates and reduce runoff volumes, proportionate to the nature and scale of the development. SuDS should provide multifunctional benefits where possible, including improvements to water quality, biodiversity and amenity, and should be designed in accordance with the National Standards for Sustainable Drainage Systems.

Sustainable Drainage Systems should:

- a. *Be designed in accordance with National Standards for Sustainable Drainage Systems*
- b. *Have maintenance arrangements in place to ensure an acceptable standard of operation for the anticipated lifetime of the development; and*
- c. *In the case of proposals for major development, take account of advice from the Lead Local Flood Authority.*

4.2 Wokingham Borough Council

The Wokingham Borough Adopted Core Strategy Development Plan (2010) includes policies CP1 (Sustainable Development), which sets out the Council's approach to flood risk. Point 9 states ‘avoid *increasing (and where possible reduce) risks of or from all forms of flooding (including from groundwater).*

The Council has a Strategic Flood Risk Assessment Level 1 (2023), a Local Flood Risk Management Strategy (2015) as well as a Strategic Environmental Assessment (2014).

5 FLOOD RISK ASSESSMENT

5.1 Flood Risk and sequential test

The site is shown by the EA Flood risk Data to be located within Flood Zone 2. Flood zone 2 has a medium probability of flooding, an annual probability of river flooding between 1% and 0.1% (between 1 in 100 and 1 in 1000) chance of flooding from rivers and 0.5 and 0.1% (between 1 in 200 and 1 in 1000) chance of flooding from the sea. An extract of this mapping is shown below in Figure 9, and a larger scale version of this mapping can be found in **Appendix G**.

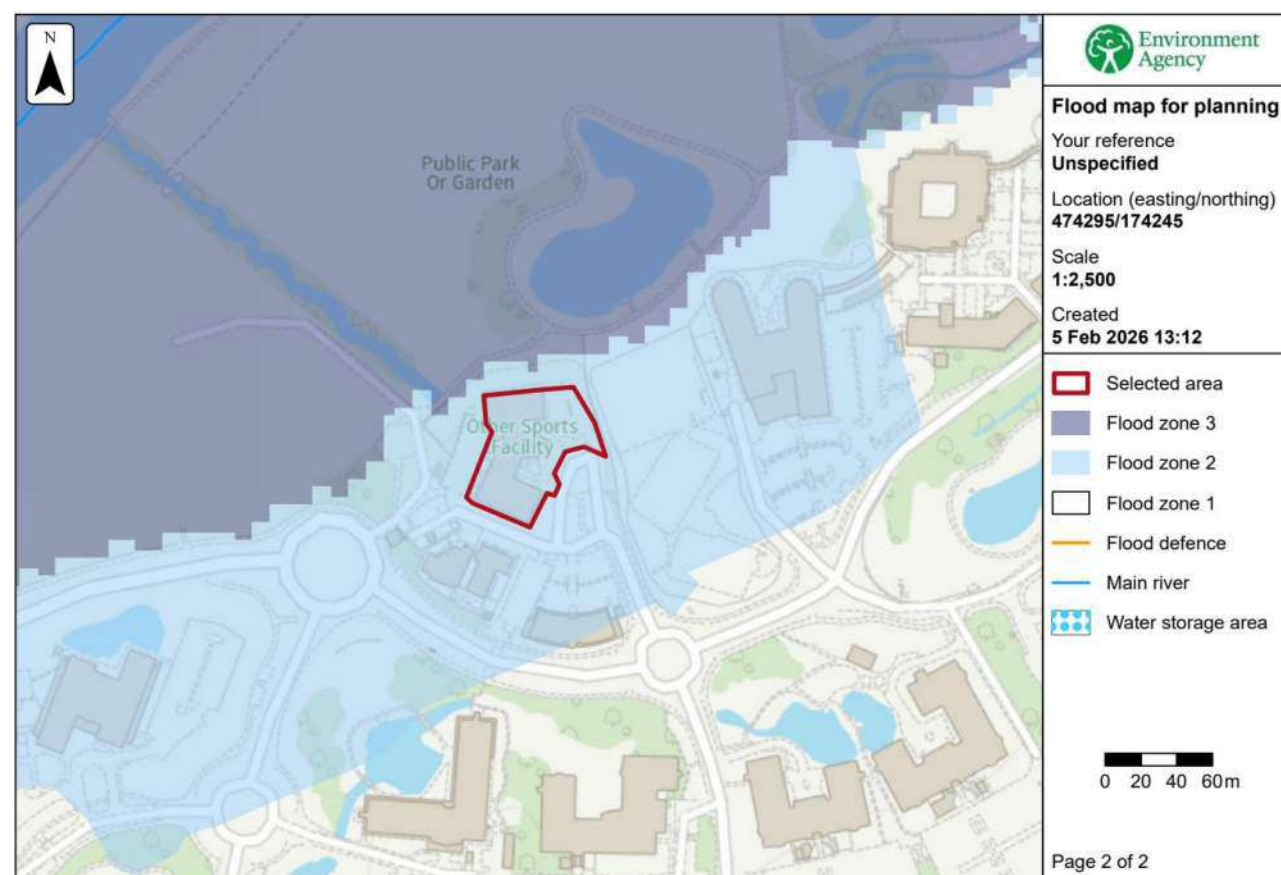


Figure 7: Extract from EA flood map for planning

The NPPF states that the suitability of all new development in relation to flood risk should be assessed by applying the Sequential Test to demonstrate that there are no reasonably available sites in areas with a lower probability of flooding that would be appropriate to the type of development proposed.

Paragraph 176 of NPPF states ‘Applications for some minor development and changes of use should also not be subject to the sequential test, nor the exception test set out below, but should still meet the requirements for site-specific flood risk assessments set out in footnote 63’.

Footnote 62 confirms ‘changes of use, inter alia, are not subject to the sequential test.

The NPPF states that the suitability of all new development in relation to flood risk should be assessed by applying the sequential test to demonstrate that there are no reasonable available

sites in areas with a lower probability of flooding that would be appropriate to the type of development proposed.

In this instance, the proposed development involves redevelopment of one part of the existing David Lloyd building, so the development could not be provided elsewhere. Therefore, the development proposals meet the sequential test.

The exception test is designed to require evidence of how flood risk will be managed on the proposed development site, ensuring that it is safe for its lifetime and will not increase flood risk elsewhere. There will be no change in site levels, the amount of drained area, or the current discharge rate from the site.

The remainder of this section of the report provides an assessment of flood risk from other potential sources of flooding, in line with the requirements of the NPPF and the Wokingham Borough Council Local Flood Risk Management Strategy.

5.2 Fluvial Flood Risk

The River Thames is an EA Main River and the primary source of flood risk to the site. At its closest point the river is approximately 275m to the north of the David Lloyd building.

The EA risk of flooding from rivers and the sea shown below indicates that the proposed development has a very low ‘less than 0.1% chance each year’ of flooding.

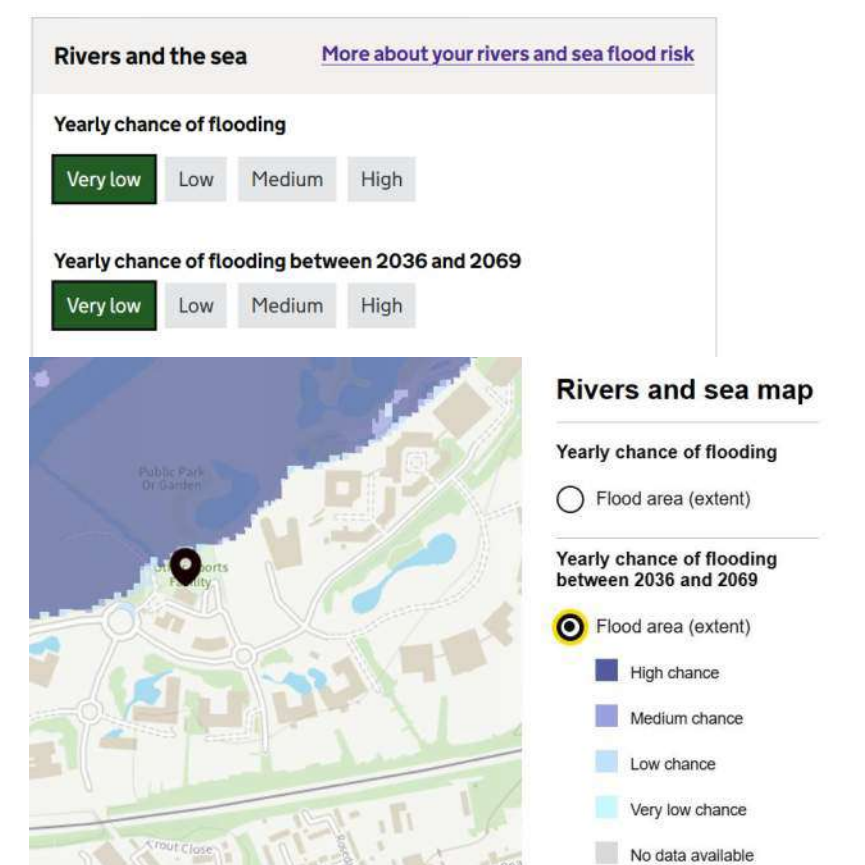


Figure 8: Extract from EA flood map rivers and the sea

The above map shows the indicative extent of the natural floodplain if there were no flood defences. The site location is not currently protected by any formal defences, and the EA do not currently have any flood alleviation works planned for the area. A larger scale version of this mapping can be found in **Appendix H**.

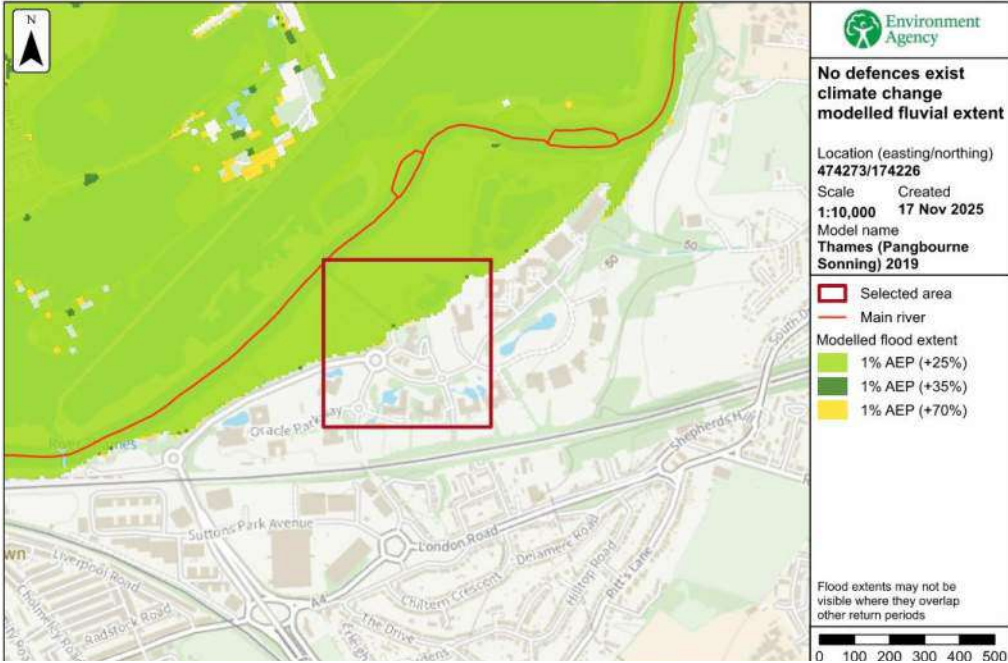


Figure 9: EA data modelled fluvial extent + Climate change

The 'No defences exist climate change modelled fluvial extent' map shown above confirms that no flooding will occur on site in a 1 in 100-year (1% AEP) event with a 35% allowance for climate change. A larger version of this drawing can be found in **Appendix L**.

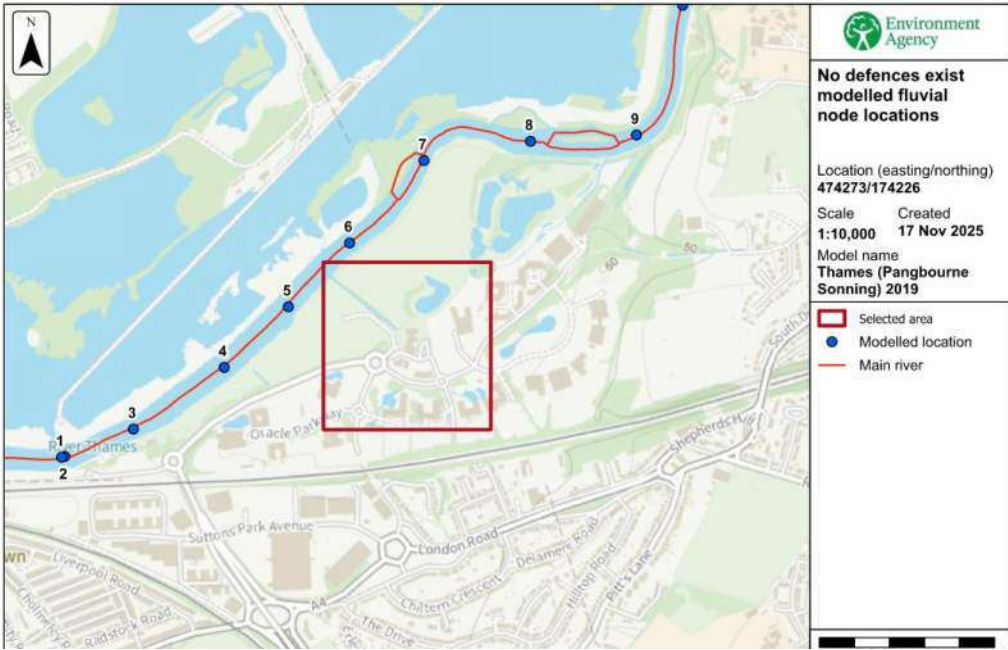


Figure 10: EA data modelled fluvial node locations

The EA product data includes modelled fluvial flood levels for the River Thames for the 1 in 100 year (1% AEP) annual probability event with varying allowances for climate change including 25%, 35% and 70%.

Considering climate change the modelled data for point 5 have the following flood heights.

- 1% AEP (+25%) = 36.58 AOD
- 1% AEP (+35%) = 36.63 AOD
- 1% AEP (+70%) = 36.81 AOD

Levels shown on the topographical survey show the ground adjacent to the building to be at a minimum of 37.0 AOD so the above levels demonstrates that finished floor levels are set above the 1% AEP plus climate change flood level to reduce the risk of flooding to people and property.

The extent of the flooding shown on the map does not reach the proposed development, and no point data is available for point no. 13. The nearest point data to the development is point no. 18.

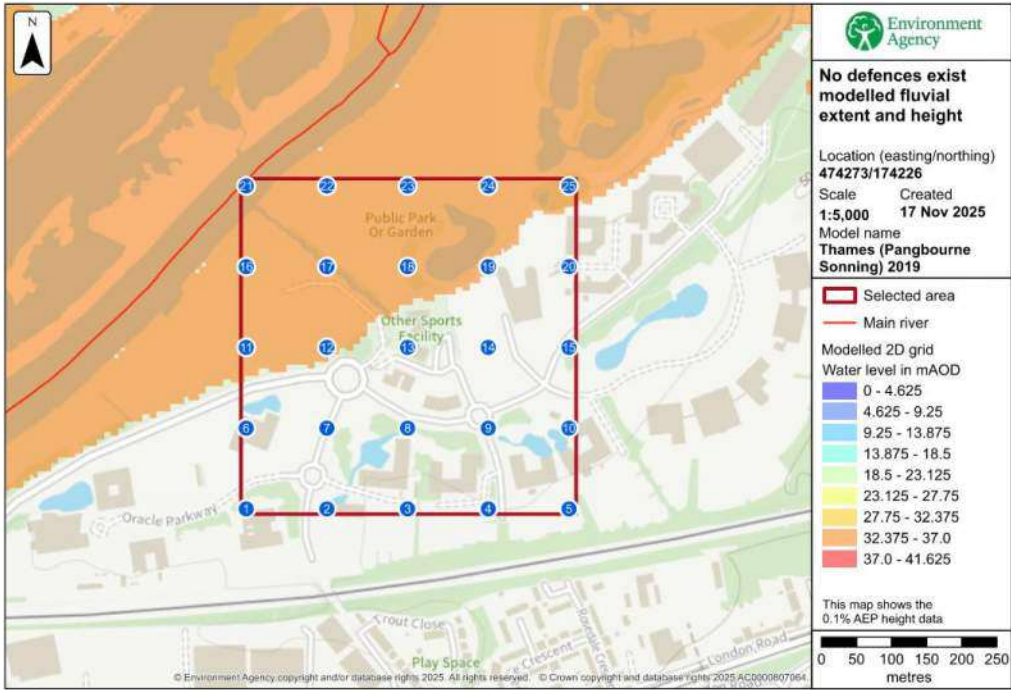


Figure 11: EA data modelled fluvial extent and height

Without considering climate change the modelled data for point 18 have the following flood heights.

- 1% AEP = 36.40 AOD
- 0.5% AEP = 36.47 AOD
- 0.1% AEP = 36.65 AOD

The above levels also demonstrates that the finished floor levels are set a minimum of 300mm the nearest flood level to reduce the risk of flooding to people and property.

5.3 Tidal Flood Risk

The River Thames is non-tidal as it flows through Reading, therefore, the site is not at risk of flooding from tidal sources.

5.4 Climate change

Climate change: projected chance of flooding

This location is at risk from flooding from rivers or the sea when climate change is taken into account:

- from rivers for the period 2070 to 2125
- from the sea (tidal flooding) by the year 2125

For a proposed development located within Flood Zone 2, with a Flood Risk Classification of Less Vulnerable, the Central Allowance should be used. In the Thames and South Chilterns Catchment – 2080's (2025 + 100yrs) the Central Allowance is 31%. The Design Flood level would therefore be 1% AEP + 31%CC.

Finished floor levels should be set at a minimum of 300mm above the 1% AEP plus climate change peak flood level.

5.5 Surface Water Flood Risk

The site is in a generally flat area with gentle falls. Generally flat areas do not tend to generate significant amount of sheet runoff and any surface flooding from pluvial sources tends to pond in localised depressions.

The surface water mapping indicates that most of the site is at very low risk of surface water flooding. The southeast side of the existing building show some areas of increased surface water flood risk, but none of these will impact the site.

The EA Flood Map for Surface Water delineates risk into the 3 following categories:

- Very Low – each year, this area has a chance of flooding less than 1 in 1,000 (0.1%).
- Low - each year, this area has a chance of flooding of between 1 in 1,000 (0.1%) and 1 in 100 (1%).
- Medium - each year, this area has a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%).
- High - each year, this area has a chance of flooding of greater than 1 in 30 (3.3%).

The EA flood maps highlight these areas in different shades of blue, with the darkest blue shading representing the area at risk at 1:30-year return period event, and the lightest shade of blue representing the area at risk at a 1:1000-year return period event.

The mapping shows that the proposed refurbishment is not at risk of surface water flooding during any flood event.

An extract of this mapping is shown below in Figure 9, and a larger scale version of this mapping can be found in **Appendix J**.

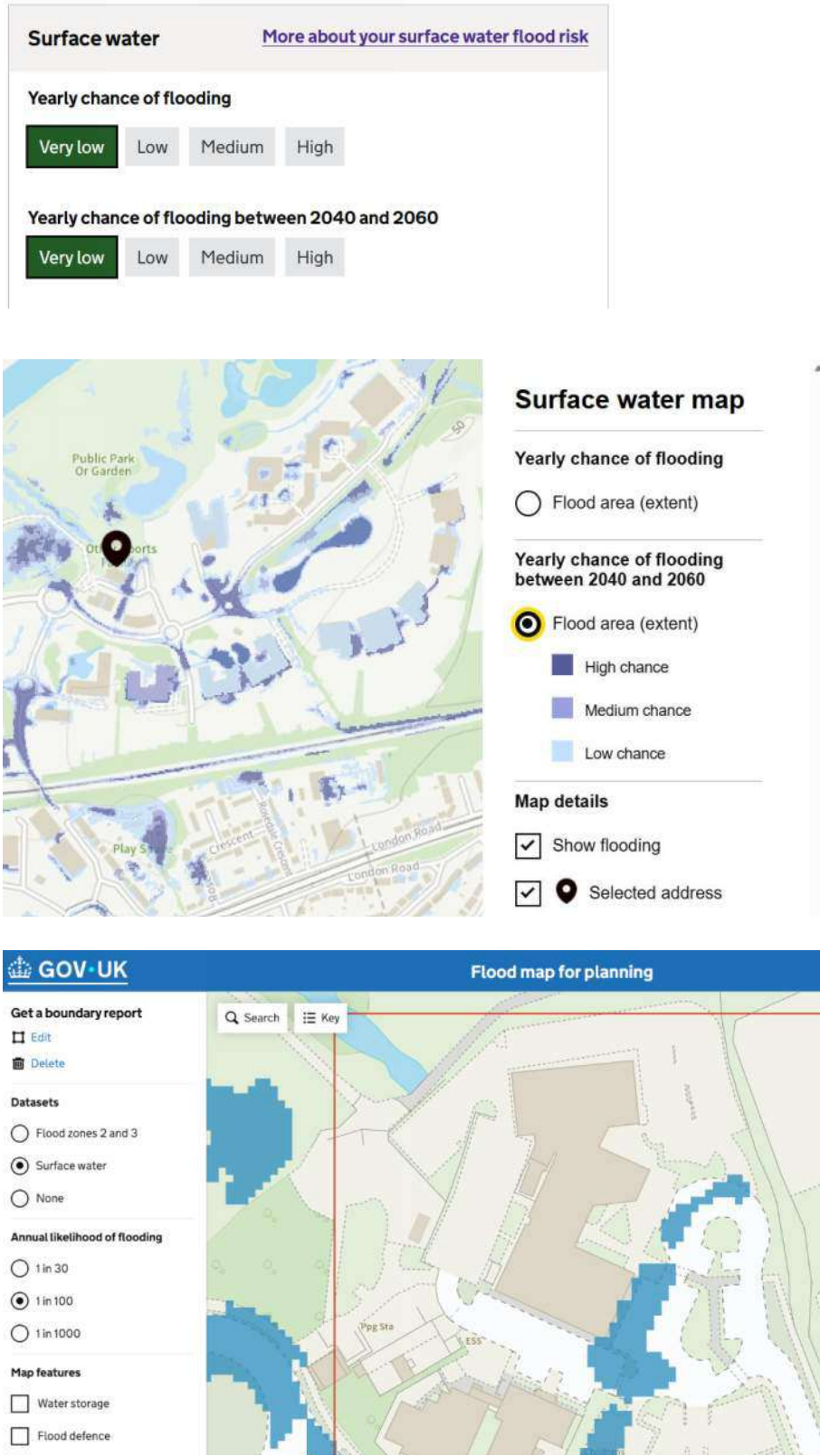
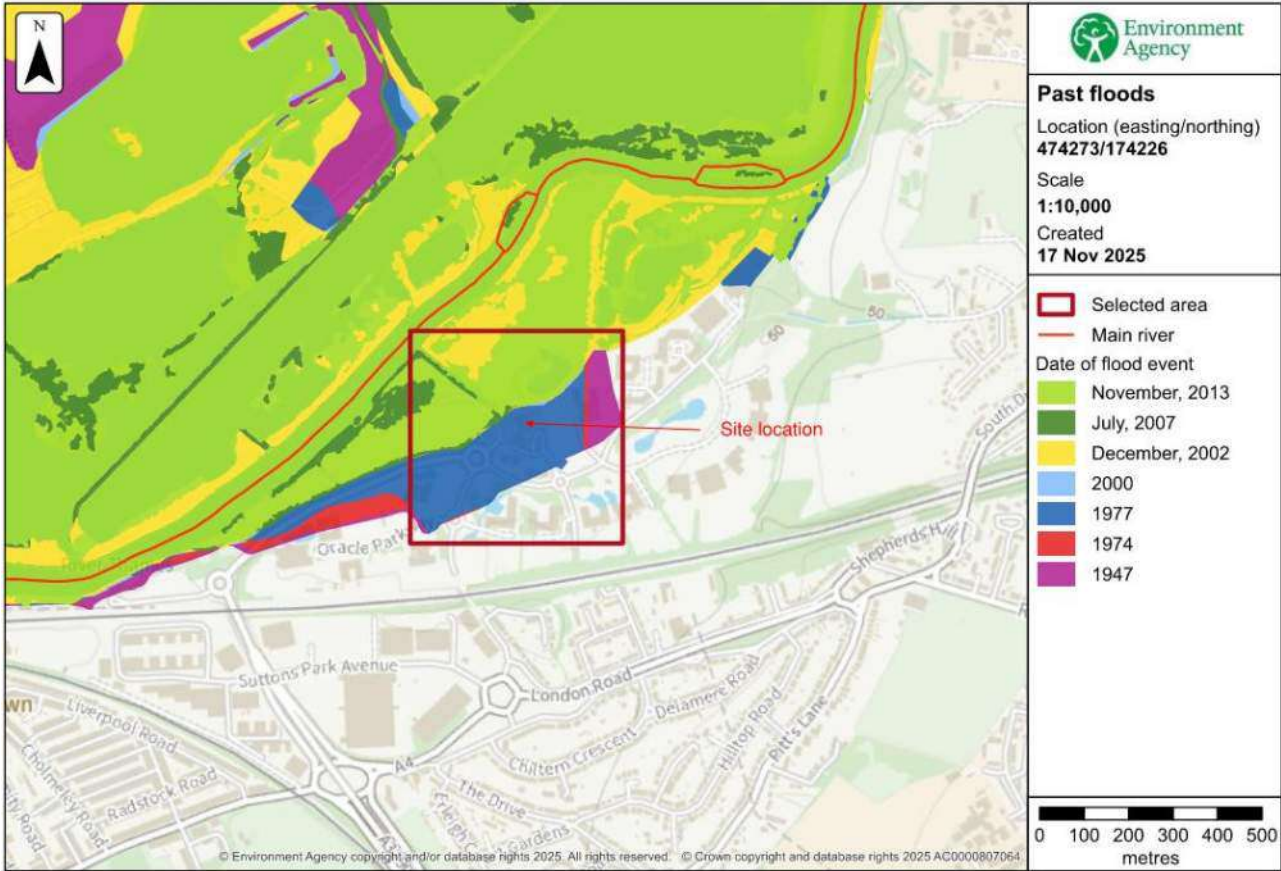


Figure 12: Extract from EA surface water flood extent map

5.6 Historic Flooding

There has been one past flooding event on site that happened in 1977 where the main river channel capacity was exceeded. A larger scale version of this mapping can be found in **Appendix M**.



Data on past flood events

Start date	End date	Source of flood	Cause of flood	Affects location
23 November 2013	28 February 2014	main river	channel capacity exceeded (no raised defences)	Yes
19 July 2007	29 July 2007	main river	channel capacity exceeded (no raised defences)	Yes
23 December 2002	12 January 2003	main river	channel capacity exceeded (no raised defences)	Yes
2000	2000	main river	channel capacity exceeded (no raised defences)	Yes
1977	1977	main river	channel capacity exceeded (no raised defences)	Yes
1974	1974	main river	channel capacity exceeded (no raised defences)	Yes
1947	1947	main river	channel capacity exceeded (no raised defences)	Yes

Figure 13: EA Past floods

5.7 Groundwater Flood Risk

As described in Section 2.3 of this report, the general Ground Conditions around the site is underlain made ground (artificial deposit). Superficial deposits mapped include alluvium in the north, the Langley Silty member across the central area with Kempton Park Gravel member to the south. The underlying geology is mapped as Seaford chalk formation and the Newhaven chalk formation.

Based on the information provided in section 2.3 the site is considered to be at low risk of flooding from groundwater sources. However, due to the nature of groundwater flooding, any risk associated with the source is likely to be heavily influenced by the local watercourses and primarily the River Thames. Where groundwater flooding is likely to occur, this will likely be due to rising flood levels from the River Thames, and any resulting groundwater would occur in conjunction with fluvial flooding.

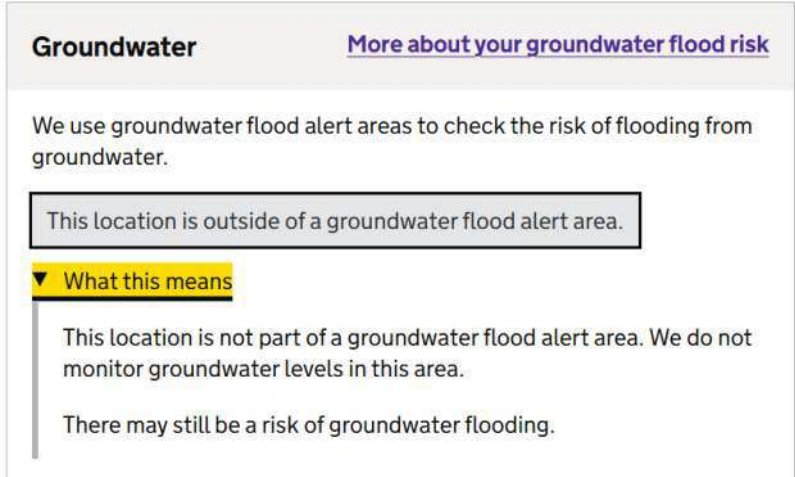


Figure 14: Extract from EA flood map for planning on groundwater

Unfortunately, the EA do not monitor ground water levels in the site area. However, BH01 and BH02 included in **Appendix C** state that water strikes occurred at 7.30m bgl at BH01 and 9.40m bgl at BH02. Therefore, it is concluded that the level of flood risk to the site from groundwater flooding is low.

5.8 Flood Risk from Sewers

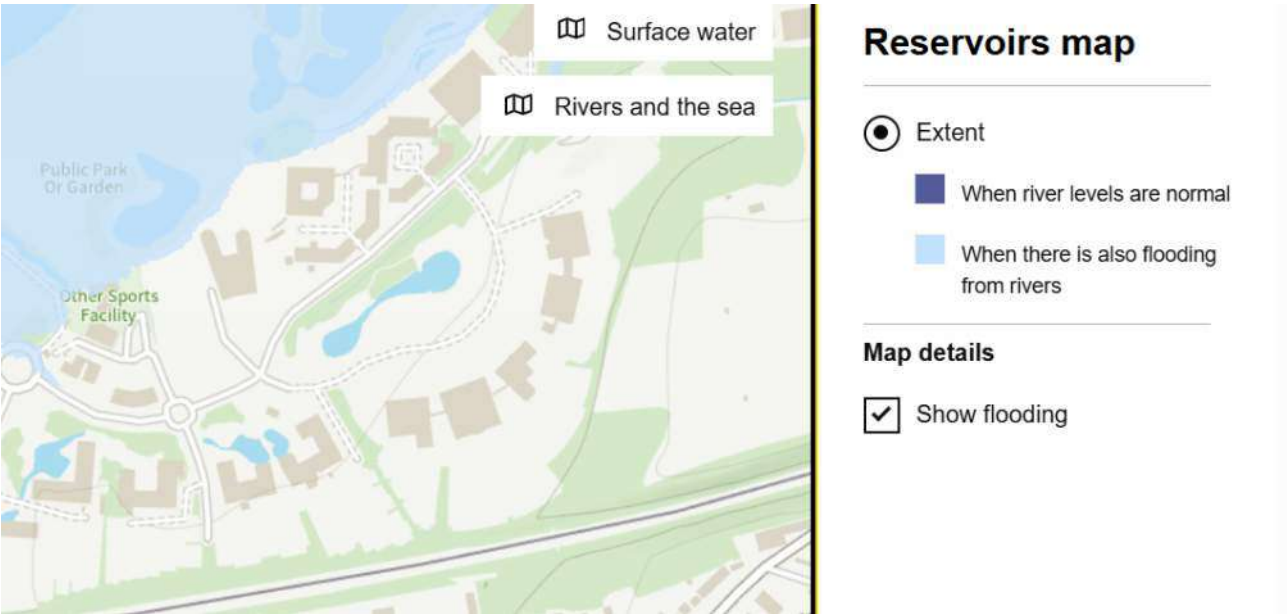
The local sewers are operated and maintained by Thames Water (STW). The existing sewers within proximity to the site are described in section 2.5, and a copy of the sewer record plan included in **Appendix D**.

A sewer flooding enquiry was submitted to Thames Water, which showed that their flooding records indicated that there have been no incidents of flooding at the David Lloyd Reading site because of surcharging of public sewers. A copy of this correspondence can be found in **Appendix D**. Therefore, it is concluded that the level of flood risk to the site from sewer flooding is low.

5.9 Flood Risk from Reservoirs, Canals and other Artificial Sources

A search on the Environment Agency website shows that there is no risk of flooding from reservoirs. The map represents the maximum possible extent of flooding from the unlikely event that reservoirs upstream of the site were to breach simultaneously while river levels remain normal. However, flooding from reservoirs is extremely unlikely.

An extract of this mapping is shown below in Figure 16, and a larger scale version of this mapping can be found in **Appendix K**.



Reservoirs: understand your flood risk

Your selected location: David Lloyd Sports Centre, Thames Valley Park Drive, Reading, RG6 1PT

This information tells you the flood risk of the land around a building, not the building itself.

Flooding from reservoirs is unlikely in this area.

Figure 15: Extract from EA flood map for planning on reservoirs

There are no canals in the immediate vicinity of the site so this flood risk source can therefore be discounted as a significant source of flood risk to the site.

Surrounding the site there are multiple ponds, all have a very low chance of flooding therefore be discounted as a significant source of flood risk to the site.

5.10 Access and Egress

As there is no risk of flooding to the site and the proposed extension, there is safe access and egress during a flood event.

The below image shows the hazard map for the 1% AEP + 35% climate change event for the site highlighting very low to no hazard.

A larger scale version of this mapping can be found in **Appendix N**.

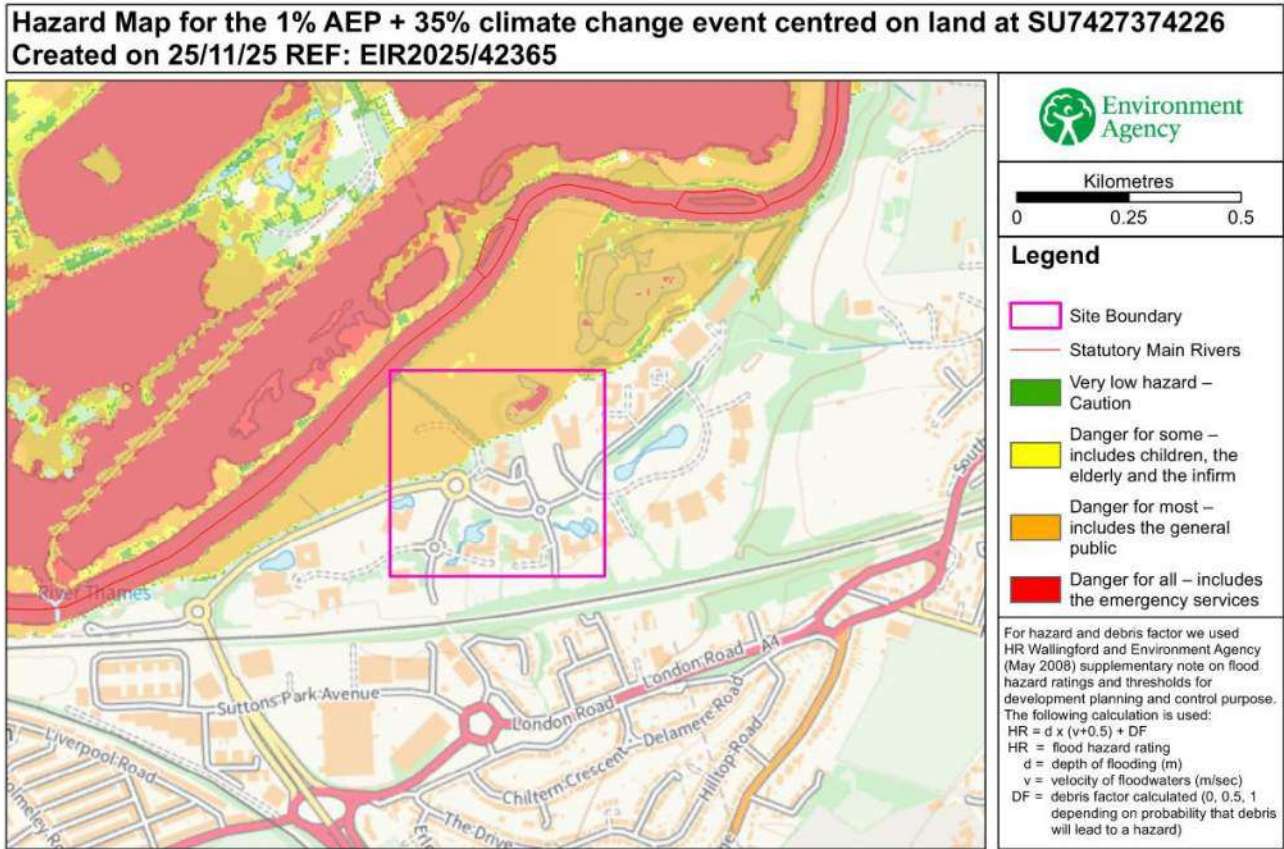


Figure 16: EA Hazard map

5.11 Summary of Flood Risk to the Development

The NPPF identifies several categories of land use vulnerability characteristics in terms of their vulnerability to flooding and therefore the compatibility of these different land uses within areas of elevated flood risk.

Buildings used for shops; professional and other services; restaurants, cafes and hot food takeaways; offices; general industry. Storage and distribution; non-residential institutions not included in the ‘more vulnerable’ class; and assembly and leisure are classed as ‘less vulnerable.’

Based on the above and the assessments in this chapter, the level of flood risk to the development from various potential sources of flooding is summarised in Table 1 below.

Table 1: Summary of Flood Risk to the Development

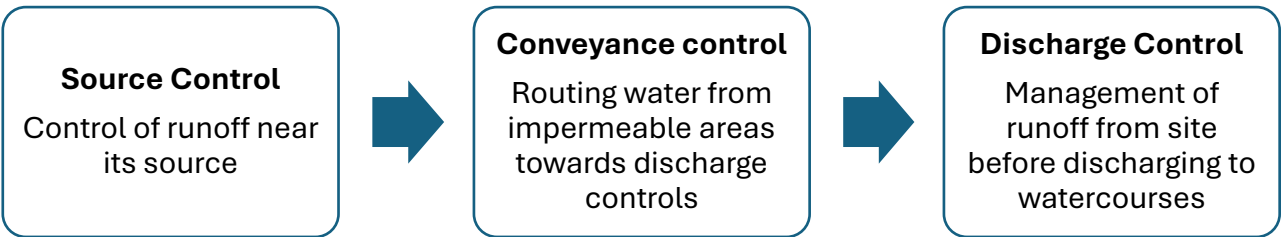
Potential Source of Flooding	Likelihood (L)	Vulnerability (V)	Risk (L x V)	Consequence
Fluvial / Tidal	Low	Low	Low	The site is in Flood Zone 2 (medium Risk) No specific mitigation required.
Surface Water	Low	Low	Low	No specific mitigation required.
Groundwater	Low	Low	Low	No specific mitigation required.
Sewers	Low	Low	Low	No specific mitigation required.
Artificial Sources	Very Low	Very Low	Very Low	No specific mitigation required.

6 SUSTAINABLE DRAINAGE STRATEGY

6.1 General Drainage Design Principles

In accordance with the NPPF and SCC Sustainable Drainage System Design Guidance, a SuDS approach has been used to develop a strategy for controlling the surface water runoff from the development. SuDS are water sensitive drainage systems which mimic natural catchment processes to manage runoff from developments. A "treatment train" approach, utilising various SuDS techniques, is fundamental to designing a successful SuDS strategy.

The "treatment train" philosophy uses drainage techniques to systematically control the three elements of runoff: pollution, flow rates, and volumes. This is typically achieved in three main steps: Source Control, Conveyance Control, and Discharge Control. Source Control techniques are preferred to those further down the treatment train, as they lead to the retention of pollutants and control of water before it enters the receiving drainage network(s) and/or watercourse(s).



6.2 Proposed Discharge Strategy

As discussed in Section 4.1 of this report, the aim of any sustainable drainage strategy should be to discharge surface runoff from a development as high up the following hierarchy of drainage options as reasonably practicable:

1. **Rainwater re-use** (rainwater harvesting / greywater recycling)
2. **Adequate soakaway** or other infiltration system
3. **Hybrid solution** of infiltration and discharging to a surface water body
4. To a **surface water body** (e.g. an ordinary watercourse)
5. To a **surface water sewer**, highway drain, or another drainage system
6. To a **combined sewer**

As described in Section 2.3 of this report, the site is made up of made ground so the use of infiltration to discharge any surface water runoff to ground has been discounted. Therefore, following the hierarchy above, the next most sustainable option is to discharge surface water runoff to a watercourse, which is the current surface water strategy on site.

Table 2 below shows a list of potential SuDS features that have been considered for inclusion within the surface water drainage design for the development, along with brief commentary as to their suitability for this development.

Table 2: Summary of Potential SuDS Options

Potential SuDS Component	Description	Assessment of Suitability for inclusion in this development
Green / Blue Roofs	In green roofs, a planted soil layer is constructed on the roof of a building to create a living surface. Water is stored in the soil layer and absorbed by vegetation. Blue roofs provide attenuation typically constructed in thin geo-cellular "crates" at roof level.	Discounted due to structural implications and is unlikely to provide a sizeable improvement to discharge rates across the site.
Rainwater harvesting	Rainwater is collected from the roof of a building or from other paved surfaces and stored in an overground or underground tank for treatment and reuse. Water could be used for toilet flushing and/or irrigation.	May be feasible, subject to further consideration of potential for water re-use during detailed design stage. Water butts to be provided as a minimum for use on planting.
Permeable Paving	Paving which allows water to pass through it. Can be in the form of paving blocks with gaps between solid blocks or porous paving where water filters through the paving blocks themselves. Porous asphaltic materials are also available. Water can be stored in the sub-base beneath prior to discharge and/or be allowed to infiltrate into the ground below.	Artificial grass is a permeable surface and allows for natural infiltration into the ground.
Filter Strips / Filter Drain	Filter strips are grassed or planted areas that runoff is allowed to run across to promote infiltration and cleaning. Filter Drains are shallow excavations filled with stone that create temporary subsurface storage for filtration of runoff.	Filter drains included in vegetated areas of spa garden
Bioretention Areas / Raingardens / Trees	Vegetated areas with gravel & sand layers below designed to channel, filter, and cleanse water vertically. Water can infiltrate into the ground below or drain to a perforated pipe and be conveyed elsewhere.	Not feasible due to spatial constraints
Swales	Vegetated depressions designed to convey and filter water. These can be "wet" where water gathers above the surface or "dry" where water gathers in a gravel layer beneath. Can be lined or unlined to allow infiltration.	Not feasible due to spatial constraints
Soakaways	A soakaway is designed to allow water to quickly soak into permeable layers of soil. Constructed like a dry well, an underground pit is dug and backfilled	Not feasible.

	with gravel, where water is stored and allowed to seep into the ground. Alternatively larger soakaways are more commonly constructed using geo-cellular "crates".	
Ponds / Basins	Ponds can be used to store and treat water. "Wet" ponds have a constant body of water and run-off is additional, where "dry" basins are empty during periods without rainfall. Ponds & basins can be designed to allow infiltration into the ground or to store water prior to discharge.	Discounted as not appropriate for this minor development.
Wetlands	Wetlands are shallow vegetated water bodies with a varying water level. Specially selected plant species are used to filter water. Water flows horizontally and is gradually treated before being discharged.	Discounted as not appropriate for this minor development.
Underground Storage	Water can be stored in tanks, gravel or plastic crates beneath the ground to provide attenuation.	Discounted as proposed development will not make any changes to drained area on the site

As discussed in Section 2.5 of this report, the existing surface water regime on the site has not been fully identified, but surveyed utility maps suggest that the proposed area is drained via gullies and possible channel drains with a positive discharge to the site's drainage system. The proposed works will not involve any notable amendments to such an arrangement; therefore, this existing arrangement will remain in place where possible to manage surface water runoff from the development.

A surface water drainage strategy drawing can be found in **Appendix P**. This shows the general approach to surface water discharge across the site, which is summarised below:

- Surface water from the extension and external spa area is conveyed via conventional gravity piped networks towards an existing surface water manhole located on the east of the building which flows towards a watercourse.
- Overland flow within the spa garden will be collected in filter drains and conveyed to the gravity network. The artificial grass allows for natural infiltration into the ground.
- Additional parking bays on the west of the existing building will drain via gullies and connect into the existing private network.

6.3 Proposed Discharge Rates

The proposed development will not make any changes to the site levels or drained area on the site, and as such it is not proposed to make any major changes to the existing site drainage system(s), as it would be impractical for such a minor development.

6.4 Water Quality

The CIRIA SuDS Manual (C753) recommends a simple index approach towards surface water treatment where there is a pollution hazard associated with the land use. The building roofs and non-vehicular external areas of the development would generate low pollution hazard level indices as outlined in Table 26.2 of Chapter 26 of the SuDS Manual, which is replicated in **Table 3** below. The car park and access road would be considered as having medium pollution hazard level indices, as they would have regular trafficking by visitor vehicles.

Table 3: Pollution Hazard Indices for Different Land Use Classifications

Land Use (<i>Applicable development land uses shaded yellow</i>)	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbon
Residential Roofs	Very Low	0.2	0.2	0.05
Other Roofs (typically commercial / industrial roofs)	Low	0.3	0.2	0.05
Individual Property driveways, residential car park, low traffic zones (cul-de-sacs, home zones and general access roads) and non-residential car parks with infrequent change (e.g. schools, offices) i.e. < 300 traffic movements / day.	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g. hospitals, retail), all roads except low traffic roads and motorways	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g. haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels are to be delivered, handled, stored, used or manufactured, industrial sites, trunk roads and motorways.	High	0.8	0.8	0.9

Table 4: Indicative SuDS Component Mitigation Indices

Type of SuDS component	Mitigation Indices		
	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Filter Strip	0.4	0.4	0.5
Filter Drain	0.4	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable Paving	0.7	0.6	0.7
Detention Basins	0.5	0.5	0.6
Ponds	0.7	0.7	0.5
Proprietary treatment systems	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1-year return period event, for inflow concentrations relevant to the contributing drainage area.		

The table above indicates that the filter drains provides sufficient treatment of runoff from the low pollution hazard index areas (roofs and external non-vehicular paved areas).

7 MAINTENANCE AND MANAGEMENT PLAN

The drainage systems within the site, including the various SuDS systems incorporated into the surface water strategy described in Section 6 of this report, will remain private, and therefore the responsibility for their management and maintenance will ultimately sit with David Lloyd.

To ensure that the system is regularly maintained, it is anticipated that the drainage systems will be maintained by David Lloyd personnel and/or by suitable maintenance sub-contractors who will carry out periodic inspections and any necessary maintenance and/or remedial works.

The tables below present a suitable management and maintenance regime for the various sustainable drainage system components, in line with best practice guidance set out in relevant sections of CIRIA C753, The SuDS Manual.

Table 5: Maintenance Regime for General Drainage System Components (Pipes, Manholes & Inspection Chambers)

Maintenance Schedule	Required Action	Frequency
Inspection	CCTV Survey below ground pipe networks to inspect for any defects.	Every 5-10 years.
	Inspect all inlets, outlets and overflow pipes.	Annually, or as required.
Regular Maintenance	Jet clean below ground pipe networks to remove sediment build-up.	Every 5-10 years, or as required.
Remedial Works	Carry out remedial works to rectify any defects identified from CCTV Survey, or routine inspections of inlets, outlets and overflow pipes.	As required.

Table 6: Maintenance Regime for Filter Drains from Ciria SuDs Manual

TABLE 16.1 Operation and maintenance requirements for filter drains			
	Maintenance schedule	Required action	Typical frequency
Regular maintenance		Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)
		Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly
		Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Six monthly
		Remove sediment from pre-treatment devices	Six monthly, or as required
Occasional maintenance		Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (eg NJUG, 2007 or BS 3998:2010)	As required
		At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required
		Clear perforated pipework of blockages	As required

8 FOUL DRAINAGE STRATEGY

8.1 Existing Foul Drainage

As noted in Section 2.5 of this report, it is understood that there are no public sewers within the site boundary. The record plans show that there is foul sewer networks present within the public highway network to the south of the site.

The utility map survey completed in November 2025 by Malcom Hughes Land Surveyor highlights the private network of foul water around the existing building.

A 150mm foul sewer is shown on the west side of the building, its direction of flow is towards the pumping station.

A copy of the Utility map survey can be found in **Appendix E**.

8.2 Proposed Foul Drainage Strategy

A foul water drainage strategy drawing can be found in **Appendix Q**.

It is proposed that foul water from the spa garden and extension will discharge to a new gravity drainage system serving the proposed development. Foul water will be collected via a dedicated below-ground piped network, designed to convey flows under gravity along its entire length.

The foul water will connect into an existing manhole located to the south of the building.

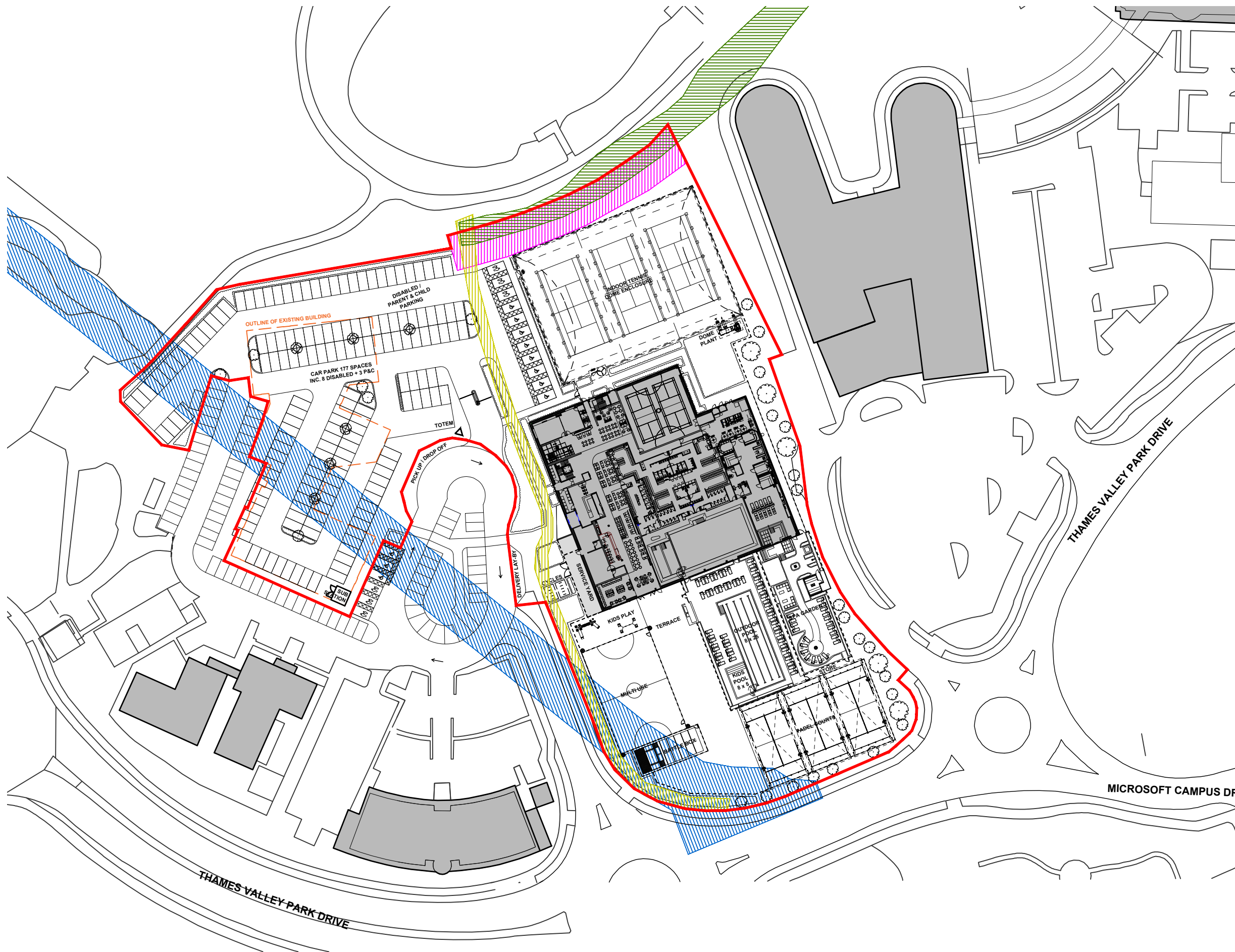
Alterations to the changing facilities or kitchen that requires additional or SVP or gully location alterations within the existing building will utilise existing internal foul water pipes.

The proposed foul water drainage network will be laid in accordance with the Building Regulation Approved Document Part H.

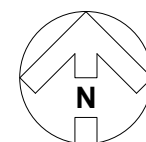
APPENDIX A – SITE LOCATION PLAN

APPENDIX B – TOPOGRAPHICAL INFORMATION

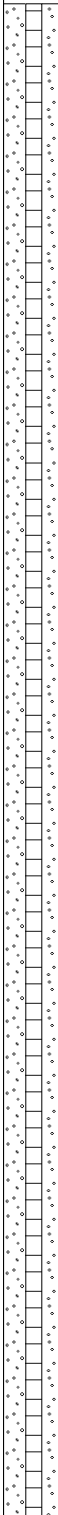
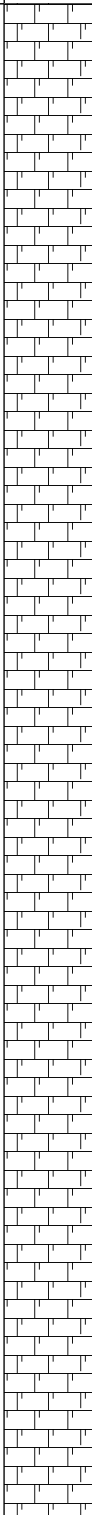
APPENDIX C – BOREHOLE INFORMATION



- NO DEVELOPMENT ZONE
- NO DEVELOPMENT ZONE
- ELEC. EASEMENT
- CULVERT





Project Name: Thames Valley Business Park				Client: David Lloyd Leisure Ltd				Date: 12/11/2025 - 13/11/2025			
Location: Reading				Contractor:				Co-ords: E474407.66 N174221.19			
Project No. : 30799				Crew Name:				Drilling Equipment: Dando 4000			
Borehole Number BH01		Hole Type BH		Level 38.42m AoD		Logged By FH		Scale 1:50		Page Number Sheet 2 of 3	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		10.50	D	N=12 (10,6/4,3,2,3)				Recovered as off white moderately strong slightly silty sandy fine to coarse angular to subangular flint and chalk GRAVEL with pockets of moderately weak to weak putty chalk. Sand is fine to coarse. (SEAFORD CHALK FORMATION/NEWHAVEN CHALK FORMATION)			11
		11.00	D								SPT
		11.00									
		12.00	D	N=17 (2,4/3,4,4,6)							12
		12.50	D								SPT
		12.50									
		13.50	D	N=22 (4,8/8,4,5,5)							13
		14.00	D								SPT
		14.00									
		15.00	D	N=43 (12,8/18,7,8,10)							15
		15.50	D								SPT
		15.50									
		16.50	D	N=21 (3,4/4,4,6,7)							16
		17.00	D								SPT
		17.00									
18.00	D	25 (25,25/25 for 145mm)	17								
18.50	D		SPT								
18.50											
19.50	D		18								
20.00	D		19								
Remarks											
Wet from 6.50m bgl -7.30m bgl. Water strike 7.30m bgl rising to 4.30m bgl after 20 minutes. Casing at 6.0m bgl. Monitoring well installed to 20.00m bgl. Response zone from 10.00m to 20.00m bgl.											



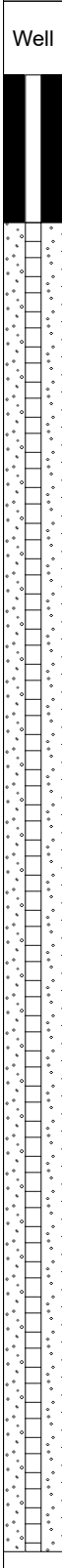
Dynamic Sampling Log

Project Name: Thames Valley Business Park			Client: David Lloyd Leisure Ltd			Date: 12/11/2025 - 13/11/2025					
Location: Reading			Contractor:			Co-ords: E474407.66 N174221.19					
Project No. : 30799			Crew Name:			Drilling Equipment: Dando 4000					
Borehole Number BH01		Hole Type BH		Level 38.42m AoD		Logged By FH		Scale 1:50		Page Number Sheet 3 of 3	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		20.00	SPT	N=30 (4,4/4,8,8,10)	20.45	17.97		Recovered as off white moderately strong slightly silty sandy fine to coarse angular to subangular flint and chalk GRAVEL with pockets of moderately weak to weak putty chalk. Sand is fine to coarse. (SEAFORD CHALK FORMATION/NEWHAVEN CHALK FORMATION)			
										21	
										22	
										23	
										24	
										25	
										26	
										27	
										28	
										29	
										30	
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
		7.50 19.50	200 150								
Remarks											
Wet from 6.50m bgl -7.30m bgl. Water strike 7.30m bgl rising to 4.30m bgl after 20 minutes. Casing at 6.0m bgl. Monitoring well installed to 20.00m bgl. Response zone from 10.00m to 20.00m bgl.											



Remarks	
Wet from 8.0m bgl to 8.9m bgl. Water strike 9.40m bgl rising to 8.55m bgl after 20 minutes. Monitoring well installed to 20.00m bgl. Response zone 11.00m to 20.00m bgl.	



Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
					10.10	28.47		Medium dense orangish brown slightly sandy fine to coarse rounded to angular flint GRAVEL. Sand is fine to coarse. (KEMPTON PARK GRAVEL MEMBER) Recovered as off white and brown very silty slightly sandy medium to coarse subangular chalk GRAVEL with occasional flint. (SEAFORD CHALK FORMATION/NEWHAVEN CHALK FORMATION)			
		10.50	D								
		11.00 - 11.50	B							11	
		12.00	D							12	
		12.50	SPT	N=9 (2,2/2,2,2,3)						13	
		13.50	D								
		14.00	SPT	N=12 (1,2/3,2,3,4)						14	
		15.00	D							15	
		15.50	SPT	N=22 (4,3/4,4,6,8)						16	
16.50	D										
17.00	SPT	N=27 (3,6/5,5,8,9)					17				
18.00	D							18			
18.50	SPT	N=40 (6,10/9,10,9,12)						19			
19.50	D							20			

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
		9.00 19.50	200 150								

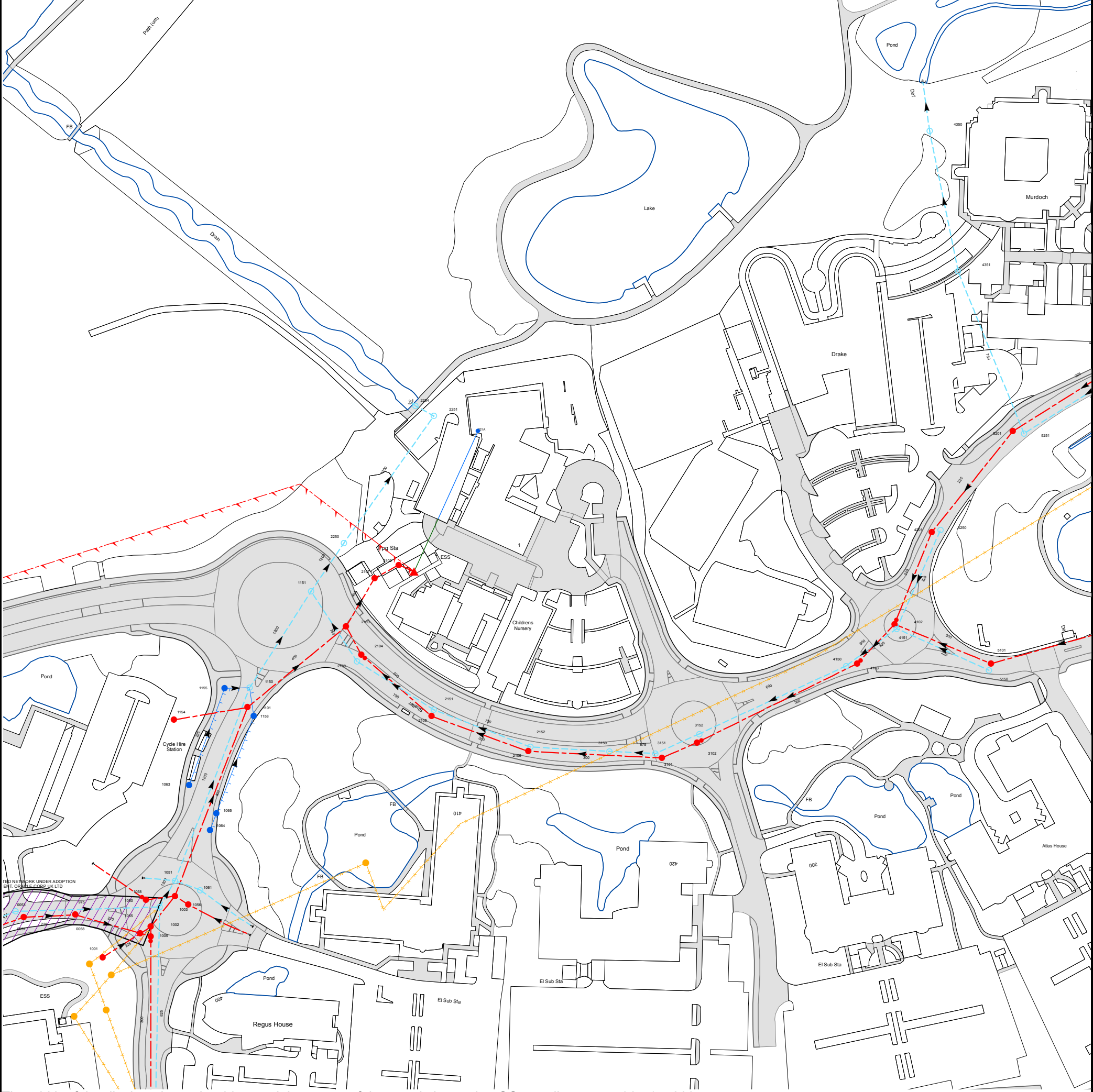
Wet from 8.0m bgl to 8.9m bgl. Water strike 9.40m bgl rising to 8.55m bgl after 20 minutes. Monitoring well installed to 20.00m bgl. Response zone 11.00m to 20.00m bgl.



Dynamic Sampling Log

Project Name: Thames Valley Business Park			Client: David Lloyd Leisure Ltd				Date: 12/11/2025 - 13/11/2025				
Location: Reading			Contractor:				Co-ords: E474351.76 N174247.63				
Project No. : 30799			Crew Name:				Drilling Equipment: Dando 3000				
Borehole Number BH02		Hole Type BH		Level 38.57m AoD		Logged By AH		Scale 1:50		Page Number Sheet 3 of 3	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		20.00	SPT	N=44 (10,10/10,9,11,14)	20.45	18.12		Recovered as off white and brown very silty slightly sandy medium to coarse subangular chalk GRAVEL with occasional flint. (SEAFORD CHALK FORMATION/NEWHAVEN CHALK FORMATION) End of Borehole at 20.450m			
										21	
										22	
										23	
										24	
										25	
										26	
										27	
										28	
										29	
										30	
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
		9.00 19.50	200 150								
Remarks											
Wet from 8.0m bgl to 8.9m bgl. Water strike 9.40m bgl rising to 8.55m bgl after 20 minutes. Monitoring well installed to 20.00m bgl. Response zone 11.00m to 20.00m bgl.											

APPENDIX D – THAMES WATER ASSET MAP



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 474307,174209
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 (2024) with the Sanction of the controller of H.M. Stationery Office, License no. AC0000849556 Crown Copyright Reserved.

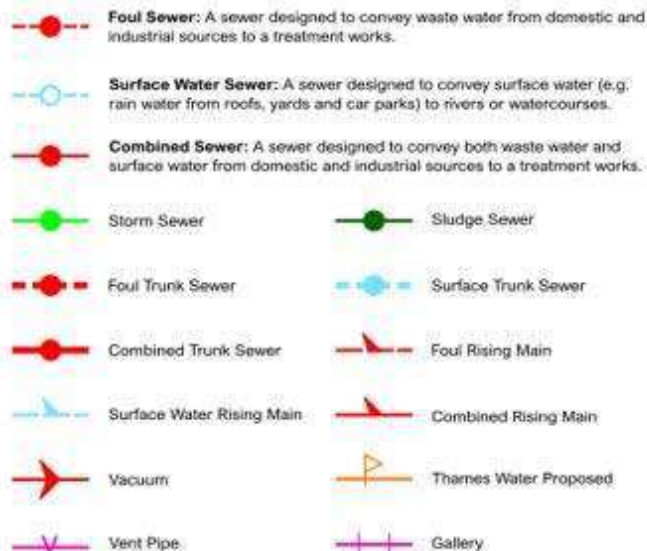
NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
0053	n/a	n/a
0057	n/a	n/a
0058	n/a	n/a
1001	37.29	31.49
1055	n/a	n/a
1058	n/a	n/a
1005	n/a	n/a
1002	37.35	36.02
1050	37.64	34.93
1154	n/a	n/a
1051	37.78	34.89
1003	37.82	31
1056	n/a	n/a
1063	n/a	n/a
1061	n/a	n/a
1151	37.17	34.47
2250	n/a	n/a
2103	37.08	30.29
2150	37.19	34.92
2104	37.28	30.5
2107	38.32	30.09
2102	n/a	n/a
2254	36.54	34.14
2251	37.22	34.05
221A	n/a	n/a
4103	37.96	32.15
4102	38.02	32.54
4151	38.08	36.29
4350	n/a	n/a
4201	37.96	34.9
4250	37.91	36.67
4351	n/a	n/a
5101	37.96	32.85
5201	38.43	35.41
5251	38.4	35.88
1064	n/a	n/a
1065	n/a	n/a
1155	n/a	n/a
1101	37.28	30.6
1150	37.25	34.59
1158	n/a	n/a
2105	37.5	30.78
2151	37.42	35.12
2106	37.8	31.1
2152	37.76	35.22
3150	37.92	35.42
3151	38.18	35.5
3101	38.16	31.42
3102	38.31	31.54
3152	38.41	35.59
4150	38.02	35.92
5150	37.93	36.63
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.		

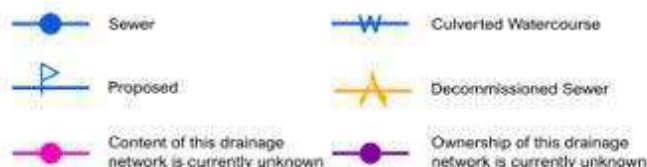


Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)



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



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.



Operational Controls

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



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.



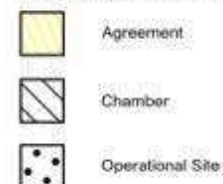
Other Symbols

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



Areas

Lines denoting areas of underground surveys, etc.



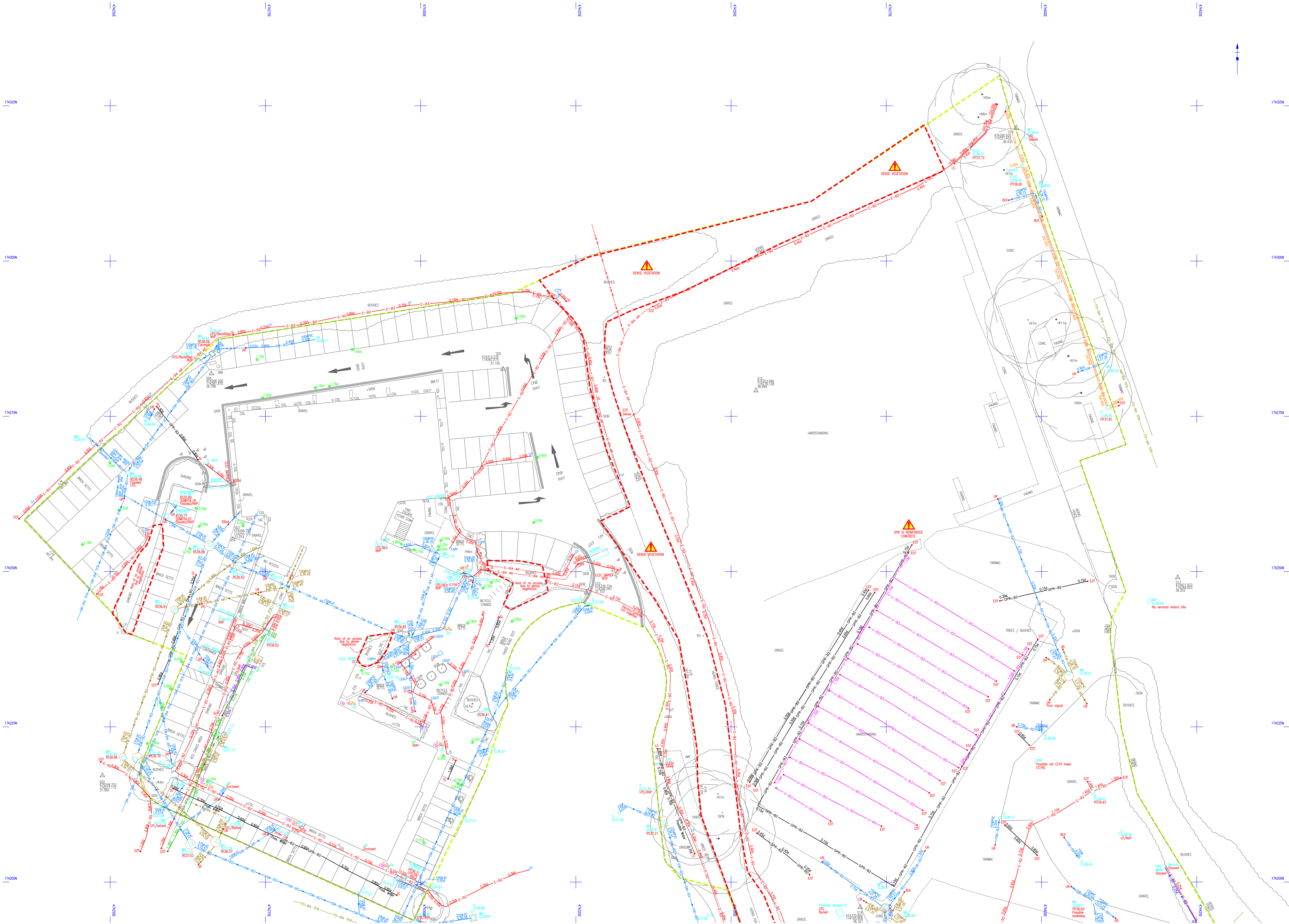
Ducts or Crossings

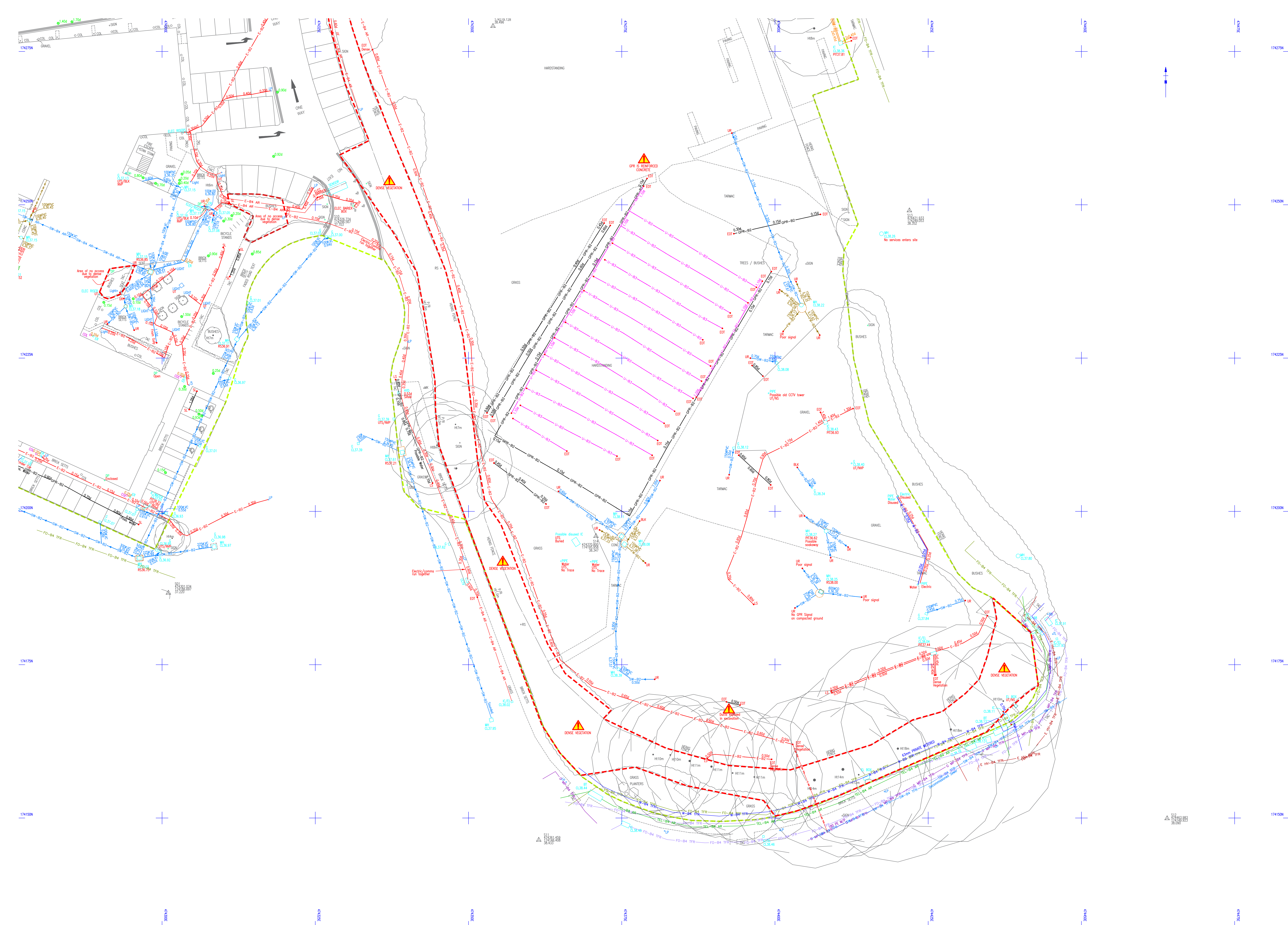


5) 'na' or '0' on a manhole indicates that data is unavailable.

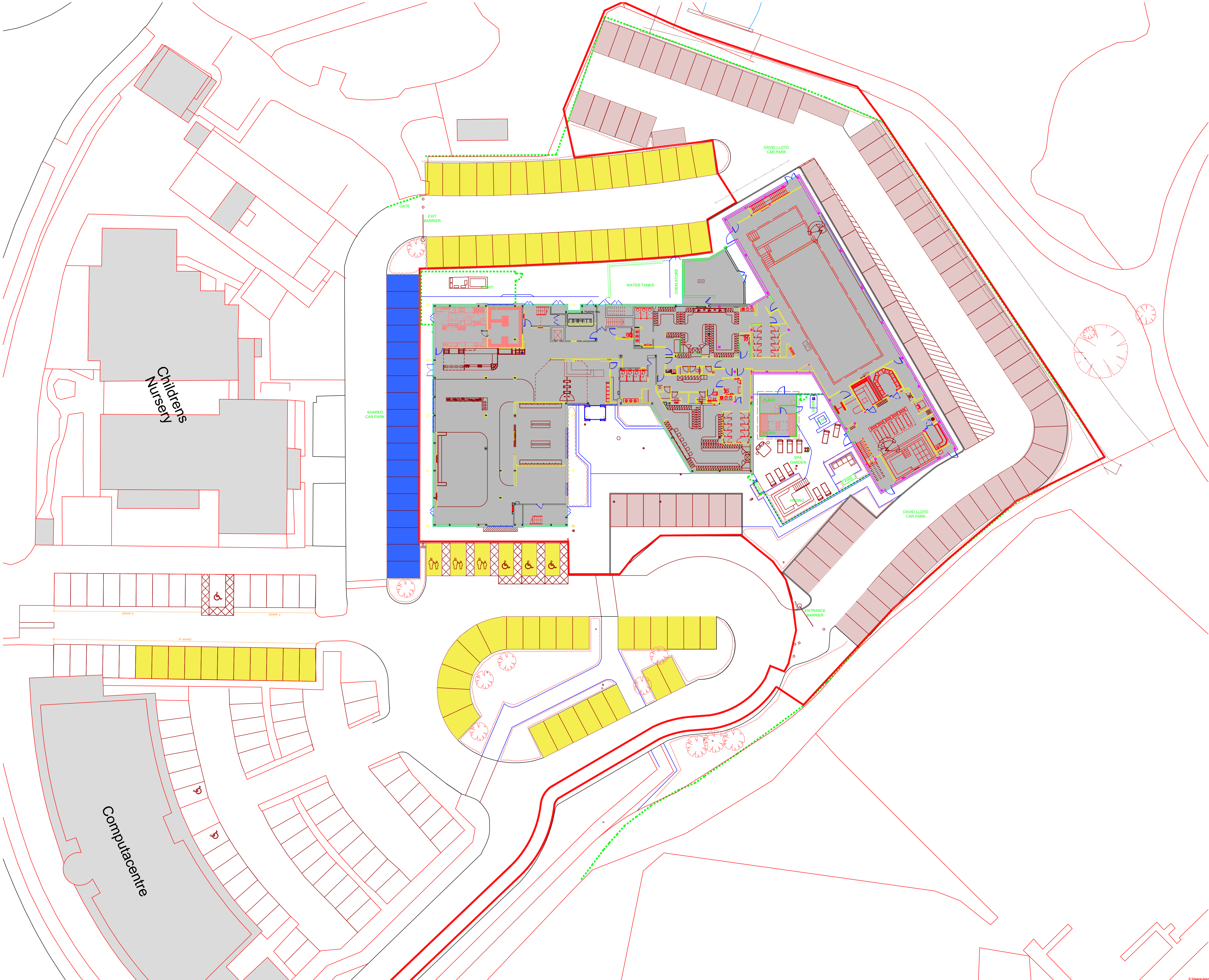
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

APPENDIX E – SURVEYED UTILITY MAP





APPENDIX F – PROPOSED SITE PLAN



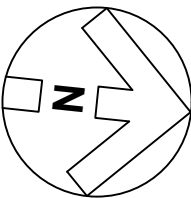
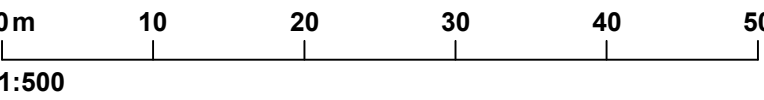
Responsibility is not accepted for errors made by others in scaling from this drawing. All construction information should be taken from figured dimensions only.
Verify all dimensions and setting out on site. Notify any discrepancies to the architect.
For structural information, refer to structural engineer's drawings & specifications. For M&E information, refer to M&E engineer's and sub-contractors' drawings & specifications. For health & safety information, refer to health & safety risk assessments.

This drawing and any related specifications are issued as architectural design intent and / or detailed design in accordance with the project specific design responsibility matrix. Whilst Hadfield Cawkwell Davidson have exercised all reasonable care and due diligence when developing the design, reference should still be made to the manufacturers' literature and any specialist sub-contractor design information, and all details should be constructed strictly in accordance with the manufacturers' instructions and / or specialist sub-contractor design where applicable. If in doubt, please consult Hadfield Cawkwell Davidson prior to installation. Where our information is superseded by specialist sub-contractor design information, all responsibility for the design is transferred to the specialist.

All new works, products and processes are to be in accordance with the relevant british standards and manufacturers' guidance.

This drawing is indicative of design intent only. all construction details, finishes and interfaces to be confirmed & agreed with David Lloyd prior to construction.

To be designed, detailed, fabricated & installed by specialist. specialist to provide working drawings and sample of all finishes for approval prior to commencing fabrication.



PROPOSED CAR PARK SPACES			
Key	Type	Existing	Proposed
	David Lloyd	74	80
	Landlord Agreement		70
	LA Disabled	3	3
	LA Parent & Child	3	3
	Shared parking	71	18
	TOTAL SPACES	151	174

REVISION T02 BY: MRP CHECKED: CM DATE: 02/10/2026
Updated to match new GA

REVISION P07 BY: JIM CHECKED: CM DATE: 18/09/2026
New spaces in front of club to be DL

STATUS

S2 | FOR INFORMATION

CLIENT

DAVID LLOYD
—CLUBS—

PROJECT

DAVID LLOYD READING
THAMES VALLEY
BUSINESS PARK

TITLE

PROPOSED SITE PLAN

Hadfield Cawkwell Davidson

Broomgrove Lodge, 13 Broomgrove Rd, Sheffield, S10 2LZ T 0114 266 8181 www.hcd.co.uk

HCD PROJECT NO. 2025-219	SCALE 1:250 @ A1	REV. T02
PROJECT NO. 25219	ORIGINATOR HCD	VOLUME A0
LEVEL 00	TYPE DR	ROLE - NUMBER A-09-003

APPENDIX G – FLOOD MAP FOR PLANNING

Flood map for planning

Your reference
Unspecified

Location (easting/northing)
474295/174245

Created
5 February 2026 13:12

Your selected location is in flood zone 2, an area with a medium 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>)

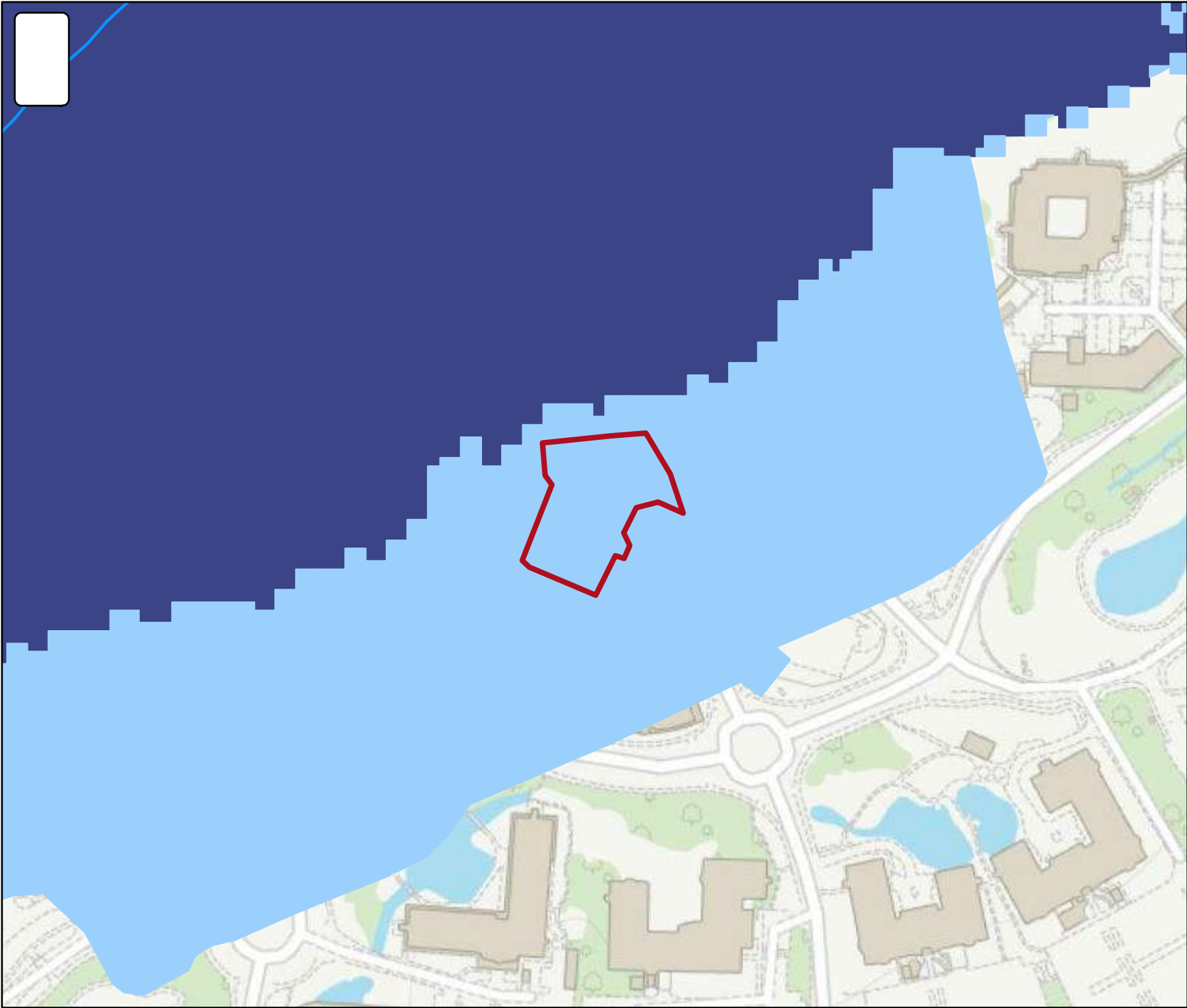
Notes

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.

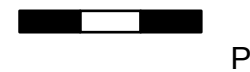
Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2026 AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



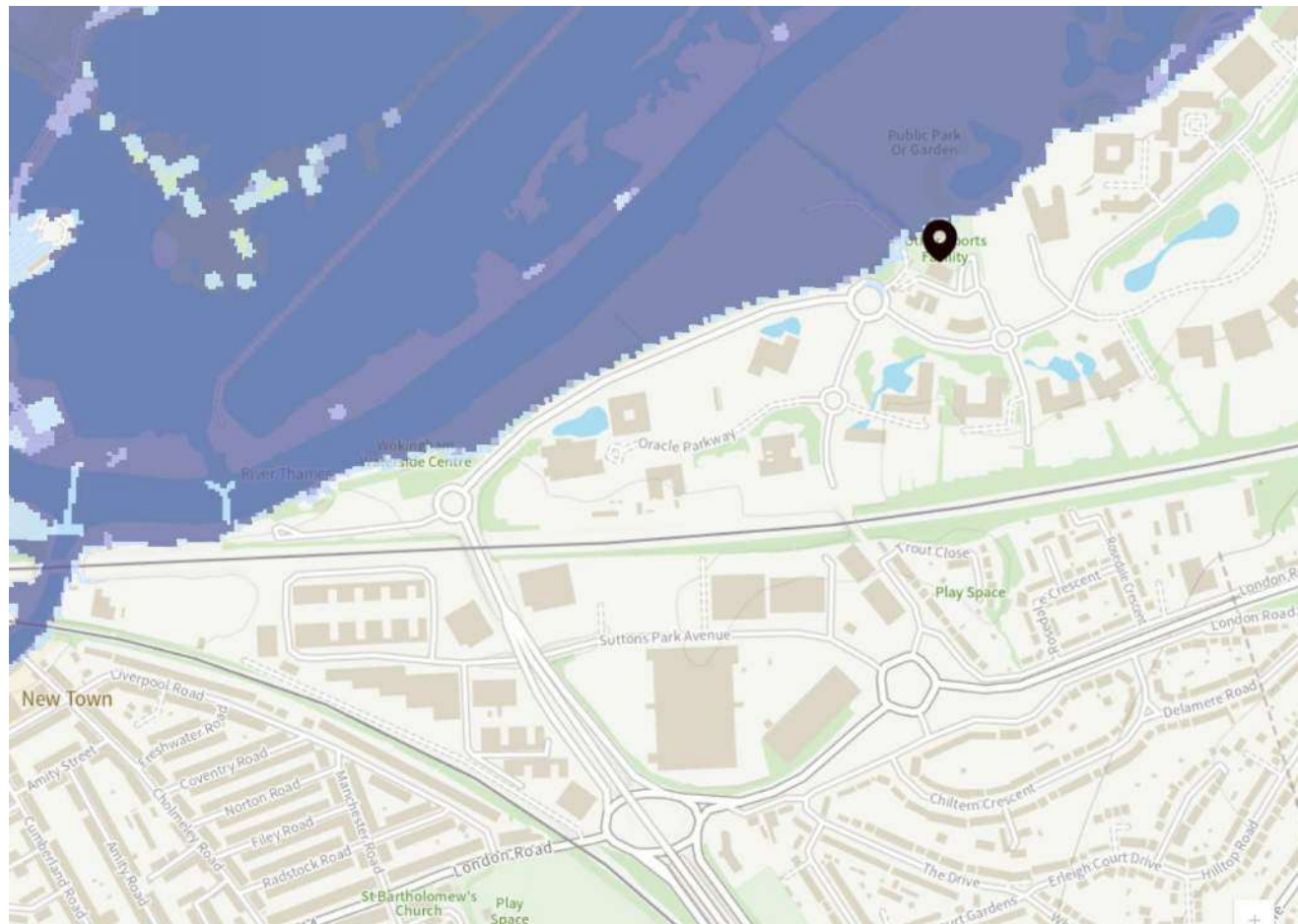
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APPENDIX H – FLOODING FROM RIVERS AND SEA



Rivers and sea map

Yearly chance of flooding

☐ Flood area (extent)

Yearly chance of flooding between 2036 and 2069

☒ Flood area (extent)

■ High chance

■ Medium chance

■ Low chance

■ Very low chance

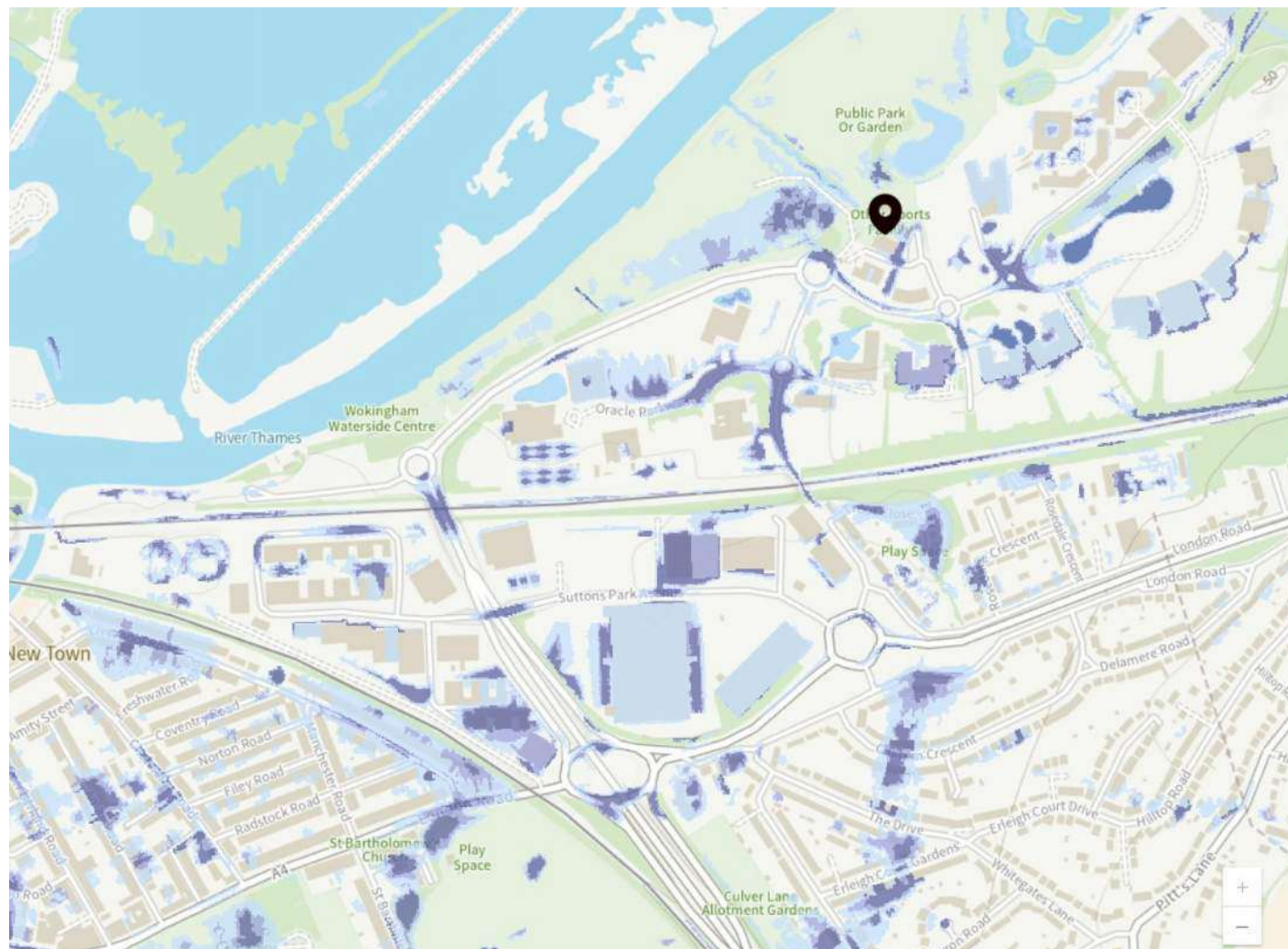
■ No data available

Map details

☒ Show flooding

☒ Selected address

APPENDIX J- FLOODING FROM SURFACE WATER



Surface water map

Yearly chance of flooding

☐ Flood area (extent)

Yearly chance of flooding between 2040 and 2060

☒ Flood area (extent)

■ High chance

■ Medium chance

■ Low chance

Map details

☒ Show flooding

☒  Selected address

APPENDIX K – FLOODING FROM RESERVOIRS



Reservoirs map

Extent

- ☐ When river levels are normal
- ☐ When there is also flooding from rivers

Map details

- ☒ Show flooding

APPENDIX L – PRODUCT 4 DATA

Flood risk assessment data



Location of site: 474273 / 174226 (shown as easting and northing coordinates)

Document created on: 17 November 2025

This information was previously known as a product 4.

Customer reference number: FVXUGNCBK7X1

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
- modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Information that's unavailable

This document **does not** contain:

- flood defences and attributes

We aren't able to display flood defence locations and attributes as there are no formal flood defences in the area of interest.

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 Wokingham.

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

About the models used

Model name: Thames (Pangbourne to Sonning) 2019

Scenario(s): No defences exist fluvial, no defences exist climate change fluvial

Date: 1 January 2020

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.

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:

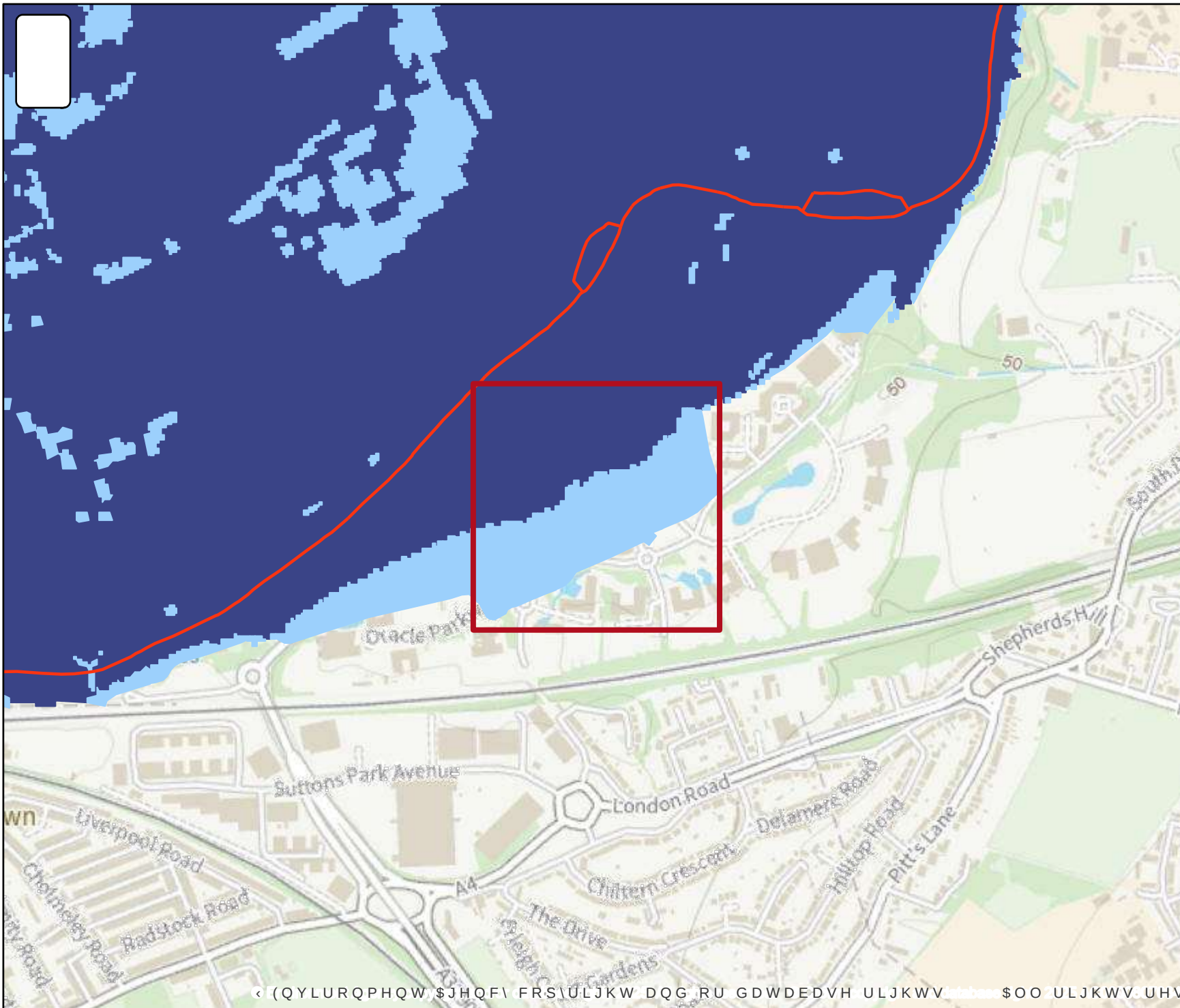
- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

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



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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

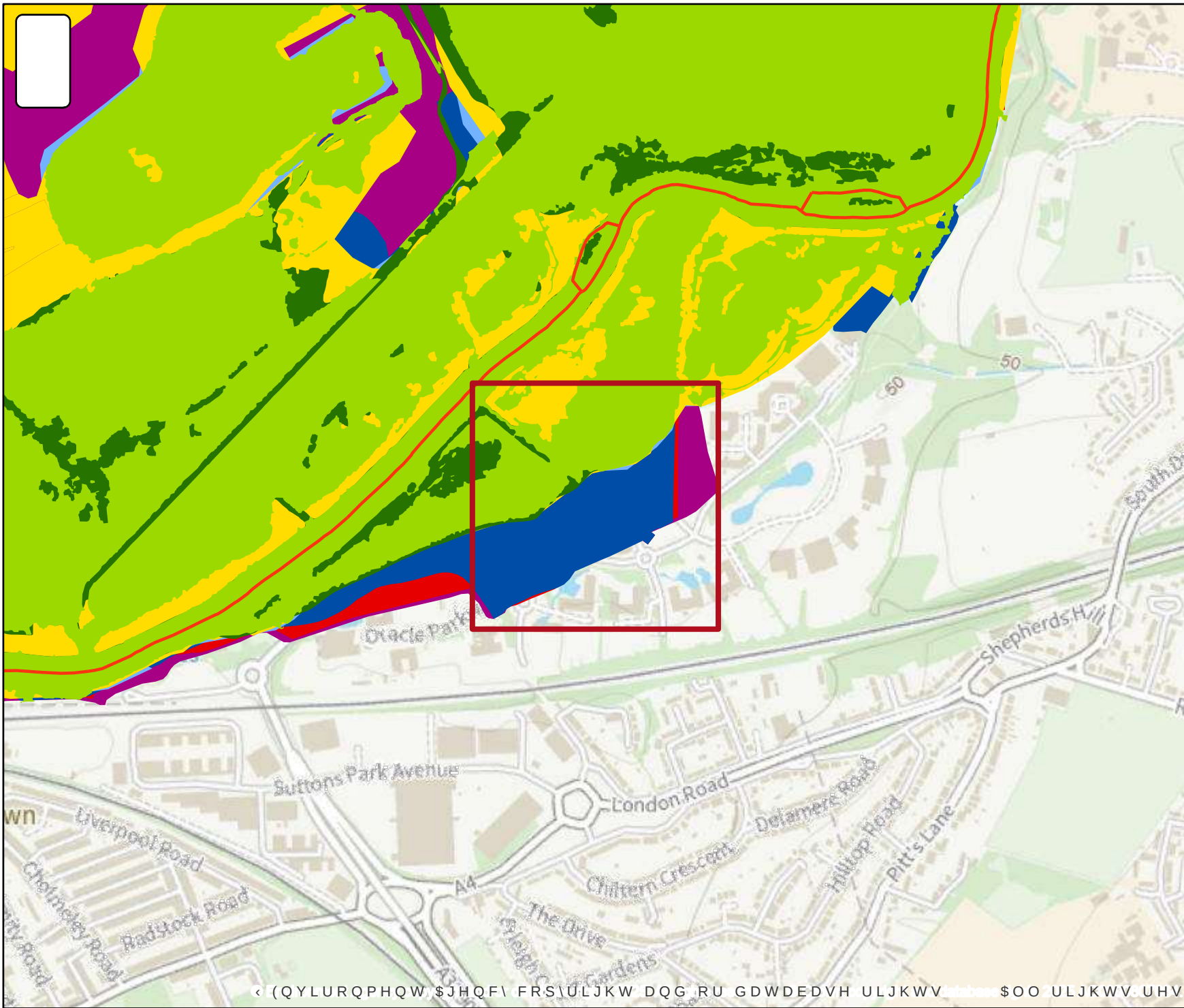
The recorded flood outlines are a geographical information system (GIS) data layer that show our verified records of areas that have flooded in the past from:

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



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Data on past flood events

Start date	End date	Source of flood	Cause of flood	Affects location
23 November 2013	28 February 2014	main river	channel capacity exceeded (no raised defences)	Yes
19 July 2007	29 July 2007	main river	channel capacity exceeded (no raised defences)	Yes
23 December 2002	12 January 2003	main river	channel capacity exceeded (no raised defences)	Yes
2000	2000	main river	channel capacity exceeded (no raised defences)	Yes
1977	1977	main river	channel capacity exceeded (no raised defences)	Yes
1974	1974	main river	channel capacity exceeded (no raised defences)	Yes
1947	1947	main river	channel capacity exceeded (no raised defences)	Yes

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

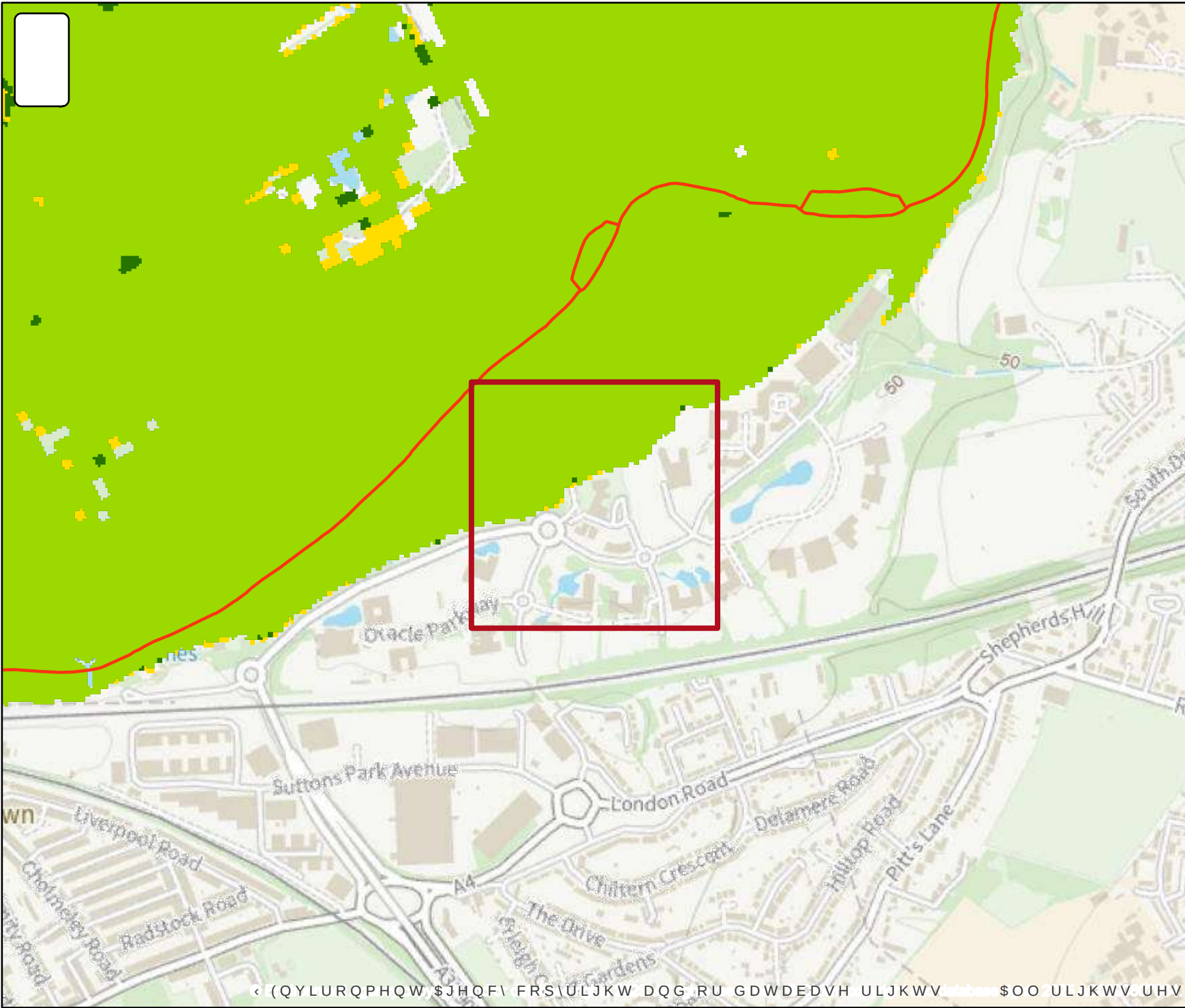
The climate change data included in the models may not include the latest [flood risk assessment climate change allowances](#). Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

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:

- No defences exist modelled fluvial: risk of flooding from rivers where there are no flood defences
- No defences exist climate change modelled fluvial: risk of flooding from rivers where there are no flood defences, including estimated impact of climate change



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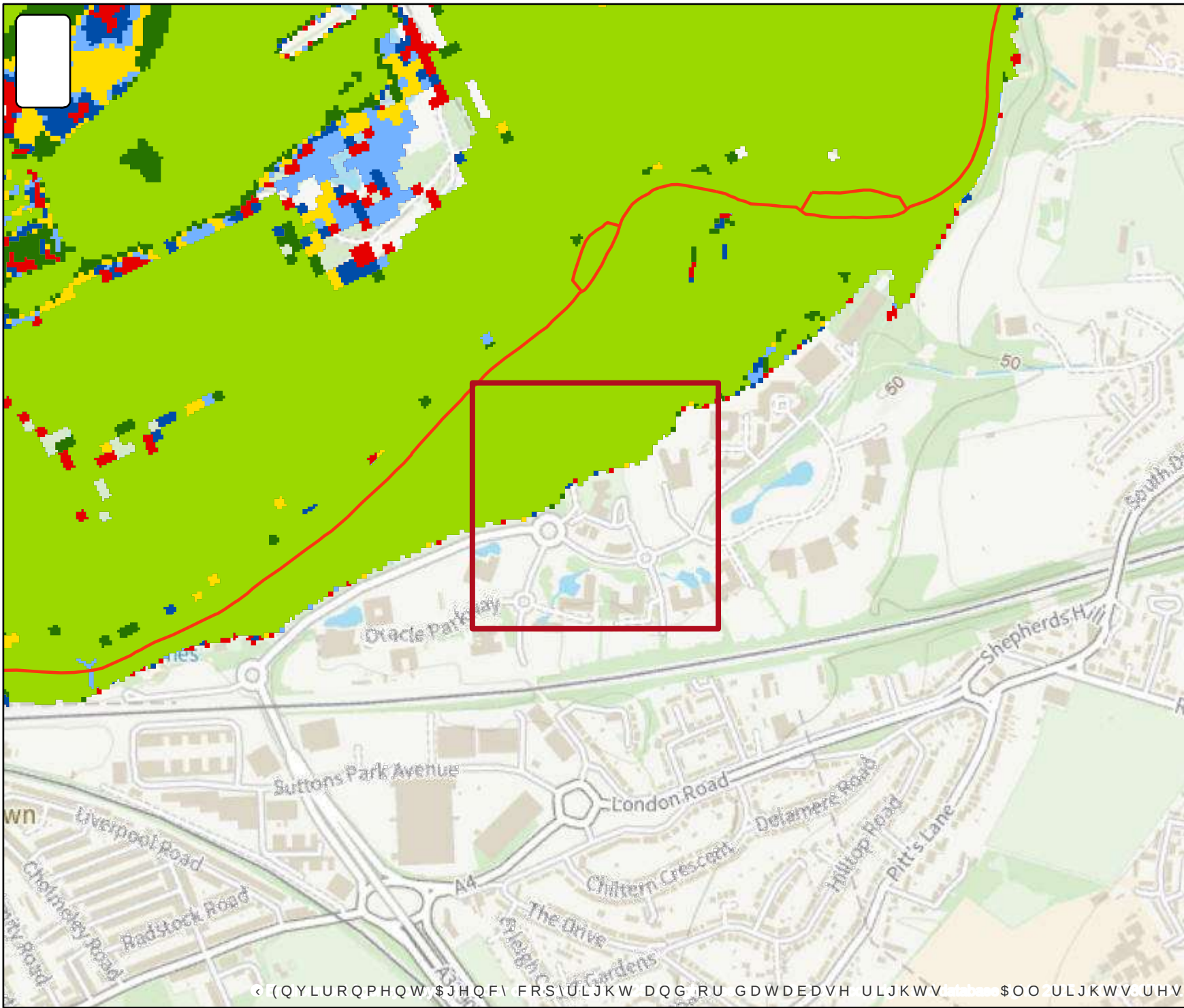
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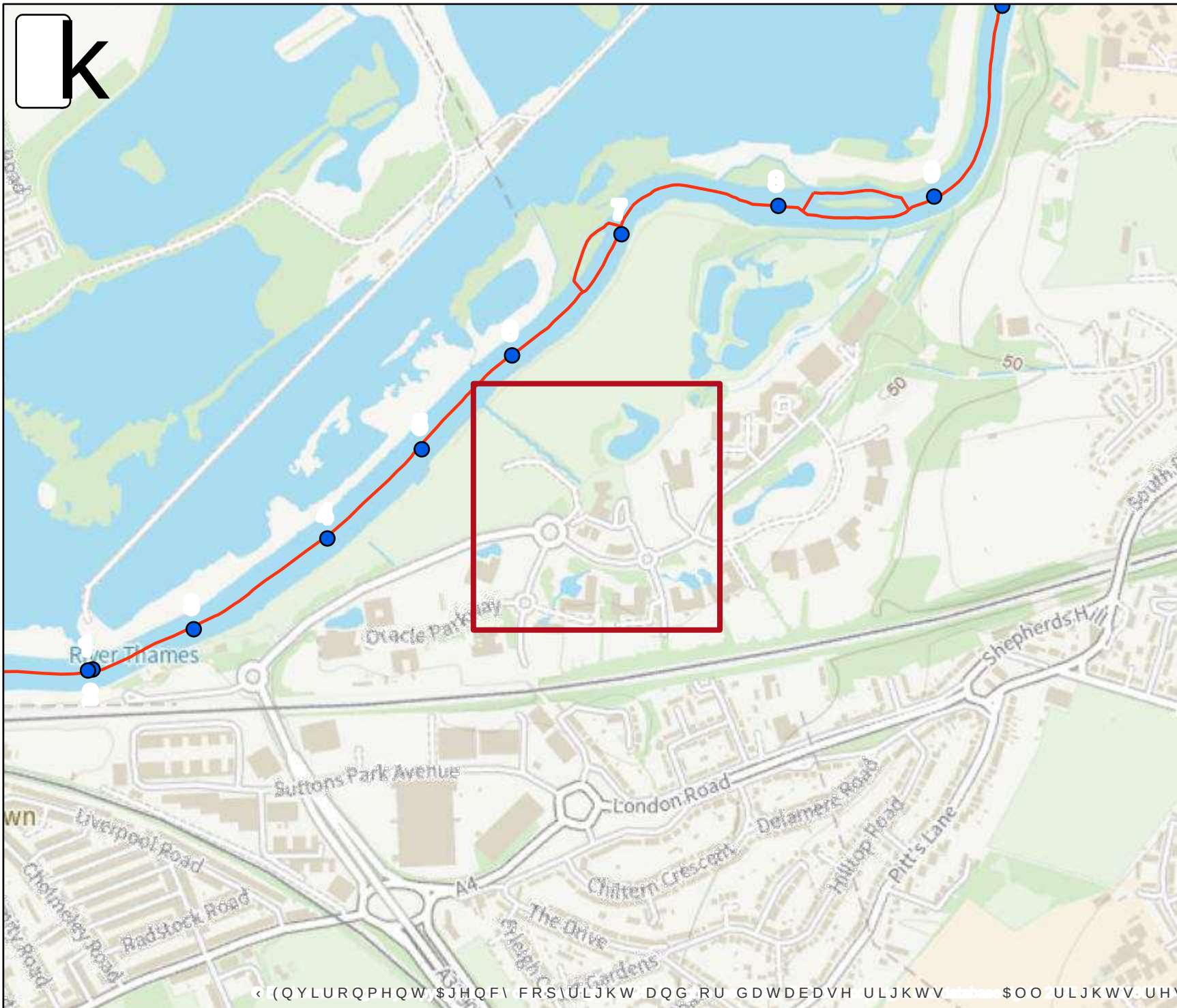
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Modelled node locations data

No defences exist climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)
				Level	Level	Level	Flow	Flow	Flow
1	1400403	473288	173909	36.69	36.74	36.91	401.87	433.81	529.65
2	1400315	473297	173911	36.69	36.74	36.91	401.87	433.81	529.65
3	1400303	473493	173989	36.64	36.69	36.85	355.66	379.01	456.22
4	1400304	473752	174165	36.62	36.67	36.85	310.71	326.62	388.12
5	1400353	473935	174338	36.58	36.63	36.81	265.78	275.15	313.24
6	1400394	474110	174520	36.53	36.59	36.78	229.93	234.82	262.71
7	1400357	474322	174755	36.49	36.55	36.72	192.16	199.93	233.47
8	1400459	474626	174810	36.48	36.53	36.71	170.90	171.69	191.96
9	1400305	474928	174828	36.46	36.51	36.70	166.05	166.63	171.31
10	1400445	475060	175198	36.45	36.51	36.69	153.91	156.03	162.07

Data in this table comes from the Thames (Pangbourne to Sonning) 2019 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.

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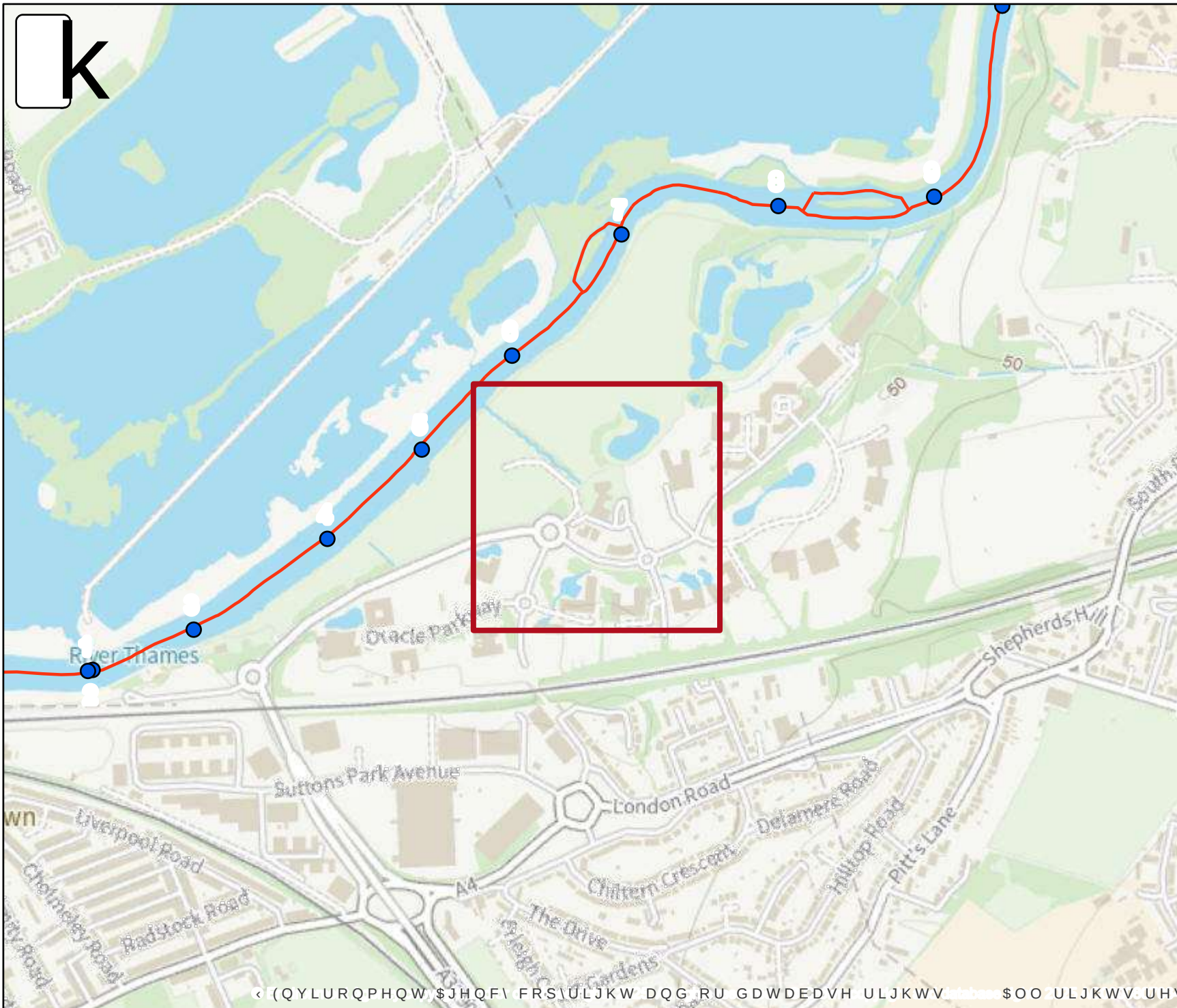
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Modelled node locations data

No defences exist

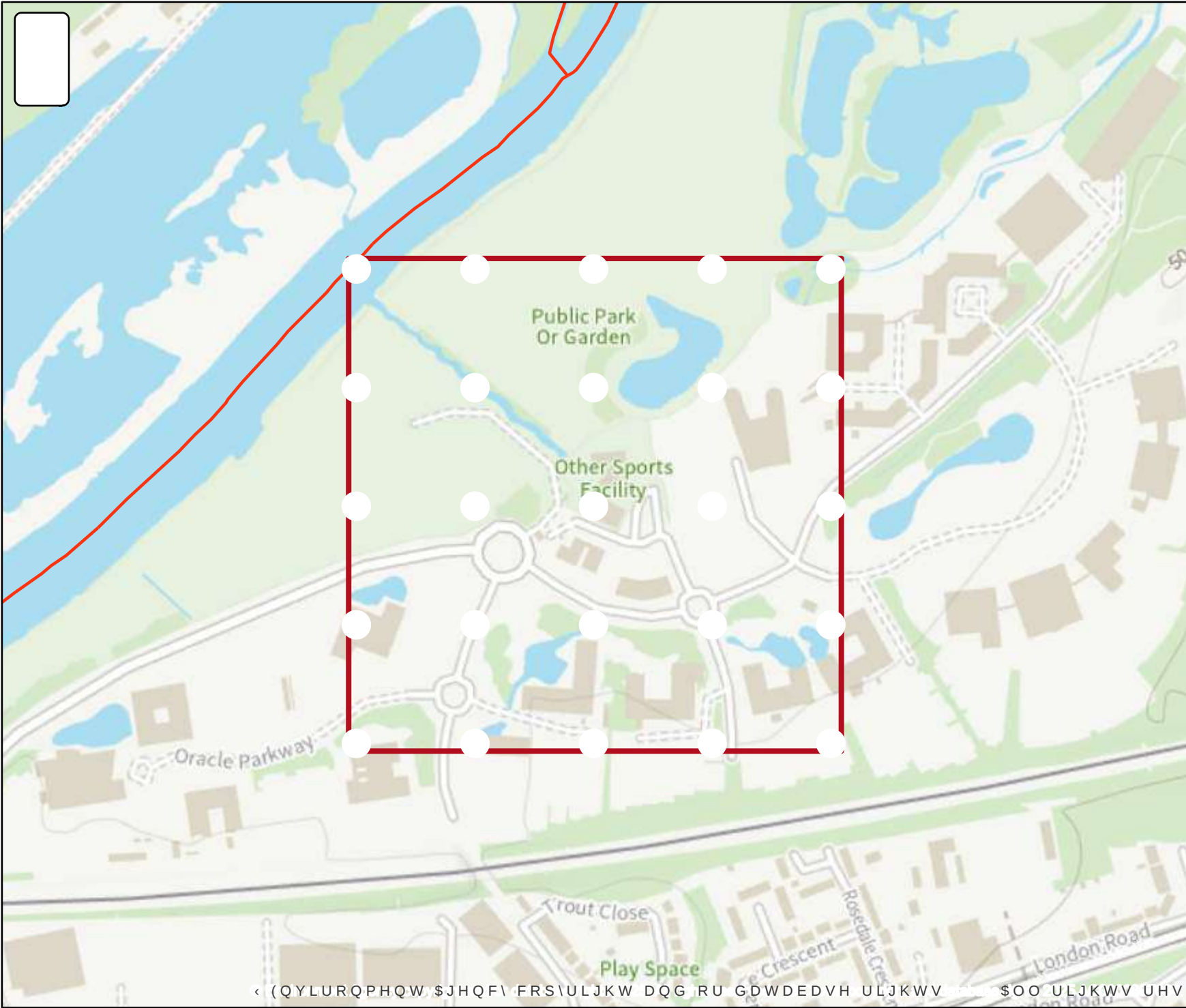
Label	Modelled location ID	Easting	Northing	20% AEP	10% AEP	5% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level	Level	Level	Level	Level	Level
1	1400403	473288	173909	36.25	36.33	36.40	36.44	36.49	36.53	36.56	36.63	36.77
2	1400315	473297	173911	36.25	36.33	36.40	36.44	36.49	36.53	36.56	36.63	36.77
3	1400303	473493	173989	36.23	36.31	36.37	36.41	36.45	36.49	36.52	36.59	36.73
4	1400304	473752	174165	36.20	36.28	36.34	36.38	36.42	36.47	36.49	36.56	36.71
5	1400353	473935	174338	36.16	36.24	36.30	36.34	36.38	36.42	36.45	36.51	36.67
6	1400394	474110	174520	36.11	36.19	36.25	36.28	36.33	36.37	36.40	36.46	36.63
7	1400357	474322	174755	36.03	36.12	36.19	36.23	36.28	36.33	36.36	36.42	36.59
8	1400459	474626	174810	35.98	36.07	36.15	36.19	36.25	36.30	36.33	36.41	36.57
9	1400305	474928	174828	35.94	36.03	36.12	36.16	36.22	36.27	36.31	36.38	36.56
10	1400445	475060	175198	35.90	36.0	36.10	36.15	36.21	36.26	36.30	36.38	36.55

Data in this table comes from the Thames (Pangbourne to Sonning) 2019 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.

No defences exist

Label	Modelled location ID	Easting	Northing	20% AEP	10% AEP	5% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow
1	1400403	473288	173909	183.55	203.49	229.23	246.15	274.83	301.40	313.66	357.14	457.22
2	1400315	473297	173911	183.55	203.49	229.23	246.15	274.83	301.40	313.66	357.14	457.22
3	1400303	473493	173989	173.82	190.84	213.23	230.05	254.56	274.98	283.03	321.57	397.70
4	1400304	473752	174165	171.49	186.51	203.70	216.15	234.01	248.94	258.87	286.72	339.93
5	1400353	473935	174338	168.64	179.89	192.78	201.87	213.63	225.22	233.06	252.41	283.16
6	1400394	474110	174520	166.53	175.16	183.86	189.12	197.06	206.77	211.53	223.16	239.45
7	1400357	474322	174755	163.60	168.74	169.13	169.38	172.22	175.49	177.53	184.17	206.90
8	1400459	474626	174810	165.34	170.09	170.13	170.04	169.93	169.98	170.01	170.88	171.74
9	1400305	474928	174828	161.30	165.34	165.33	165.13	165.09	165.13	165.23	166.04	166.68
10	1400445	475060	175198	150.10	150.26	150.23	150.24	150.30	150.50	150.45	150.74	157.82

Data in this table comes from the Thames (Pangbourne to Sonning) 2019 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.



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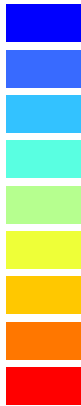
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Sample point data

No defences exist

Label	Easting	Northing	20% AEP	10% AEP	5% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height	Height	Height
1	474042	173995	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
2	474157	173995	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
3	474272	173995	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
4	474387	173995	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
5	474502	173995	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
6	474042	174110	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	474157	174110	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
8	474272	174110	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
9	474387	174110	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
10	474502	174110	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
11	474042	174225	36.11	36.22	36.29	36.33	36.38	36.42	36.45	36.51	36.69
12	474157	174225	36.10	36.21	36.28	36.32	36.36	36.40	36.43	36.49	36.67

Label	Easting	Northing	20% AEP	10% AEP	5% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height	Height	Height
13	474272	174225	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	474387	174225	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
15	474502	174225	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	474042	174340	36.11	36.22	36.29	36.33	36.37	36.41	36.44	36.50	36.68
17	474157	174340	36.09	36.20	36.27	36.31	36.35	36.40	36.42	36.49	36.67
18	474272	174340	36.06	36.16	36.24	36.28	36.33	36.37	36.40	36.47	36.65
19	474387	174340	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
20	474502	174340	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	474042	174455	36.12	36.21	36.28	36.32	36.36	36.40	36.43	36.49	36.67
22	474157	174455	36.10	36.20	36.26	36.30	36.34	36.38	36.41	36.48	36.66
23	474272	174455	36.06	36.16	36.23	36.27	36.32	36.37	36.39	36.46	36.64
24	474387	174455	36.06	36.15	36.22	36.26	36.31	36.36	36.39	36.46	36.63

Label	Easting	Northing	20% AEP	10% AEP	5% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height	Height	Height
25	474502	174455	36.04	36.13	36.19	36.24	36.29	36.33	36.37	36.44	36.61
Max value in selected area:			36.13	36.23	36.30	36.33	36.38	36.42	36.45	36.51	36.69

Data in this table comes from the Thames (Pangbourne to Sonning) 2019 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.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.

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

No defences exist

Label	Easting	Northing	20% AEP	10% AEP	5% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
1	474042	173995	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
2	474157	173995	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
3	474272	173995	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
4	474387	173995	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
5	474502	173995	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
6	474042	174110	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	474157	174110	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
8	474272	174110	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
9	474387	174110	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
10	474502	174110	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
11	474042	174225	0.57	0.69	0.76	0.80	0.84	0.88	0.91	0.97	1.15
12	474157	174225	0.35	0.46	0.53	0.57	0.62	0.66	0.68	0.75	0.93

Label	Easting	Northing	20% AEP	10% AEP	5% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
13	474272	174225	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	474387	174225	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
15	474502	174225	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	474042	174340	0.08	0.19	0.26	0.30	0.34	0.38	0.41	0.47	0.65
17	474157	174340	0.64	0.75	0.82	0.86	0.90	0.95	0.97	1.04	1.22
18	474272	174340	0.79	0.89	0.96	1.00	1.05	1.10	1.12	1.19	1.37
19	474387	174340	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
20	474502	174340	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	474042	174455	3.86	3.95	4.01	4.05	4.09	4.13	4.16	4.22	4.39
22	474157	174455	0.04	0.14	0.20	0.24	0.29	0.33	0.35	0.42	0.60
23	474272	174455	0.45	0.55	0.62	0.66	0.71	0.75	0.78	0.85	1.03
24	474387	174455	0.58	0.68	0.75	0.79	0.84	0.88	0.91	0.98	1.16

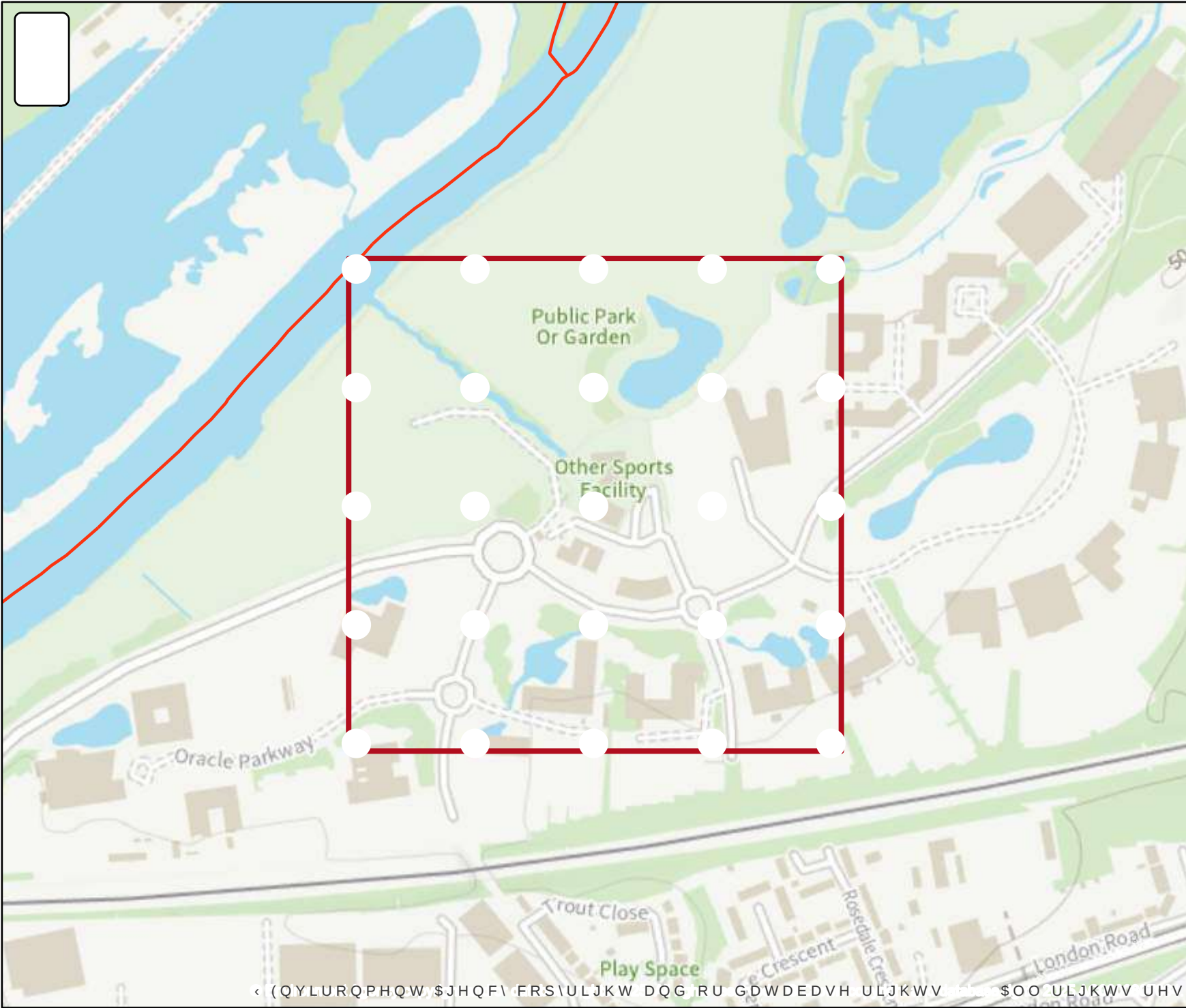
Label	Easting	Northing	20% AEP	10% AEP	5% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
25	474502	174455	0.34	0.43	0.50	0.54	0.60	0.64	0.67	0.74	0.92
Max value in selected area:			3.90	3.99	4.06	4.09	4.14	4.18	4.20	4.27	4.45

Data in this table comes from the Thames (Pangbourne to Sonning) 2019 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.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.

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



1R GHIHQFHV H[
FOLPDWH FKDOJ
PRGHOOHG IOXY
H[WHQW DQG KH
/RFDWLRQ HDVWLC

6FDOH &UHDWHG
1RY
0RGHO QDPH
7KDPHV 3DQJERXU
6RQQLQJ

6HOHFWHG DUH
0DLQ ULYHU
0RGHOOHG ' JULG
:DWHU OHYHO LQ F



7KLV PDS VKRZV WKH
\$(3 KHLJKW GDW



< (QYLURQPHQW \$JHQF\ FRS\ULJKW DQG RU GDWDEDVH ULJKWV H[SOO ULJKWV UHVHUYHG < RHWUHV ULJKW

Sample point data

No defences exist climate change

Label	Easting	Northing	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)
			Height	Height	Height	Depth	Depth	Depth
1	474042	173995	NoData	NoData	NoData	NoData	NoData	NoData
2	474157	173995	NoData	NoData	NoData	NoData	NoData	NoData
3	474272	173995	NoData	NoData	NoData	NoData	NoData	NoData
4	474387	173995	NoData	NoData	NoData	NoData	NoData	NoData
5	474502	173995	NoData	NoData	NoData	NoData	NoData	NoData
6	474042	174110	NoData	NoData	NoData	NoData	NoData	NoData
7	474157	174110	NoData	NoData	NoData	NoData	NoData	NoData
8	474272	174110	NoData	NoData	NoData	NoData	NoData	NoData
9	474387	174110	NoData	NoData	NoData	NoData	NoData	NoData
10	474502	174110	NoData	NoData	NoData	NoData	NoData	NoData
11	474042	174225	36.58	36.64	36.83	1.05	1.10	1.29
12	474157	174225	36.57	36.63	36.81	0.82	0.88	1.07

Label	Easting	Northing	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)
			Height	Height	Height	Depth	Depth	Depth
13	474272	174225	NoData	NoData	NoData	NoData	NoData	NoData
14	474387	174225	NoData	NoData	NoData	NoData	NoData	NoData
15	474502	174225	NoData	NoData	NoData	NoData	NoData	NoData
16	474042	174340	36.58	36.63	36.82	0.55	0.61	0.80
17	474157	174340	36.56	36.62	36.81	1.11	1.17	1.36
18	474272	174340	36.54	36.60	36.78	1.27	1.33	1.51
19	474387	174340	NoData	NoData	NoData	NoData	NoData	NoData
20	474502	174340	NoData	NoData	NoData	NoData	NoData	NoData
21	474042	174455	36.57	36.62	36.81	4.30	4.35	4.53
22	474157	174455	36.55	36.61	36.80	0.50	0.56	0.74
23	474272	174455	36.54	36.60	36.78	0.93	0.98	1.17
24	474387	174455	36.53	36.59	36.77	1.06	1.11	1.29

Label	Easting	Northing	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+25%)	1% AEP (+35%)	1% AEP (+70%)
			Height	Height	Height	Depth	Depth	Depth
25	474502	174455	36.52	36.57	36.75	0.82	0.88	1.05
Max value in selected area:			36.59	36.64	36.83	4.34	4.40	4.59

Data in this table comes from the Thames (Pangbourne to Sonning) 2019 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.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.

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

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 Wokingham.

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.

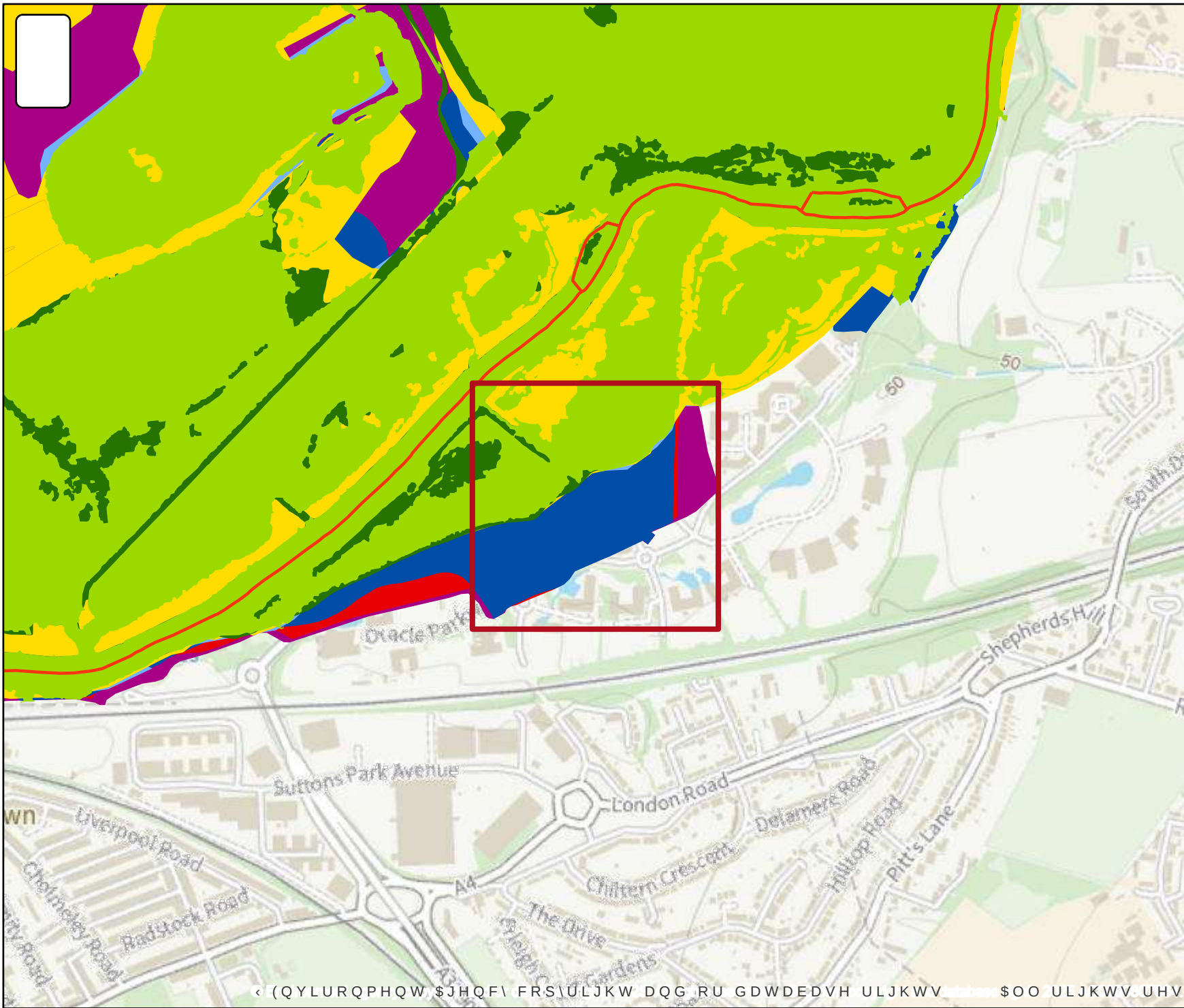
[Find out more about flood risk activity permits](#)

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 M – HISTORIC FLOODING



3DVW IORRGV
/RFDWLRQ HDVWLQ

6FDOH

&UHDWHG
1RY

- 6HOHFWHG DUH
- 0DLQ ULYHU
- 'DWH RI IORRG HYH
- 1RYHPEHU
- XO\
- 'HFHPEHU
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APPENDIX N – EA HAZARD MAP

Product 4 (Detailed Flood Risk) for land at SU7427374226

Our Ref: EIR2025/42365

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>

Defence information

Defence Location: No defences on Main River

Description: This location is not currently protected by any formal defences and we do not currently have any flood alleviation works planned for the area. However we continue to maintain certain watercourses and the schedule of these can be found on our internet pages.

Model information

EIR2025/42365

Model: **Thames (Pangbourne to Sonning) 2019**

Description: The information provided is taken from the Reading and Caversham Flood Alleviation Scheme: Baseline Modelling Report - Final undertaken by Jacobs, dated 07 May 2021. The study was carried out using 1D-2D modelling software (Flood Modeller Pro-TUFLOW). This model study was undertaken as part of the technical studies stage for developing scheme options for the Reading and Caversham Flood Alleviation Scheme: in February 2022 it was announced that this scheme will not go ahead, however the modelling is still viable and can be used internally and externally to inform flood risk. The whole model covers 28 km of the River Thames from Whitchurch Lock to Henley-on-Thames, however the Environment Agency are only using this model up to Sonning: downstream of this location, please refer to the Thames (Sonning to Hurley) 2019 model.

Model design runs:

1 in 2 / 50% AEP; 1 in 5 / 20% AEP; 1 in 10 / 10% AEP; 1 in 20 / 5% AEP; 1 in 30 / 3.3% AEP; 1 in 50 / 2% AEP; 1 in 75 / 1.33% AEP; 1 in 100 / 1% AEP; 1 in 100+25% / 1% AEP with 25% climate change; 1 in 100+35% / 1% AEP with 35% climate change; 1 in 100+70% / 1% AEP with 70% climate change; 1 in 200 / 0.5% AEP; and 1 in 1000 / 0.1% AEP.

Mapped outputs:

1 in 2 / 50% AEP; 1 in 5 / 20% AEP; 1 in 10 / 10% AEP; 1 in 20 / 5% AEP; 1 in 30 / 3.3% AEP; 1 in 50 / 2% AEP; 1 in 75 / 1.33% AEP; 1 in 100 / 1% AEP; 1 in 100+25% / 1% AEP with 25% climate change; 1 in 100+35% / 1% AEP with 35% climate change; 1 in 100+70% / 1% AEP with 70% climate change; 1 in 200 / 0.5% AEP; and 1 in 1000 / 0.1% AEP.

Hazard Mapping

EIR2025/42365

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)

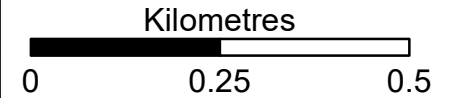
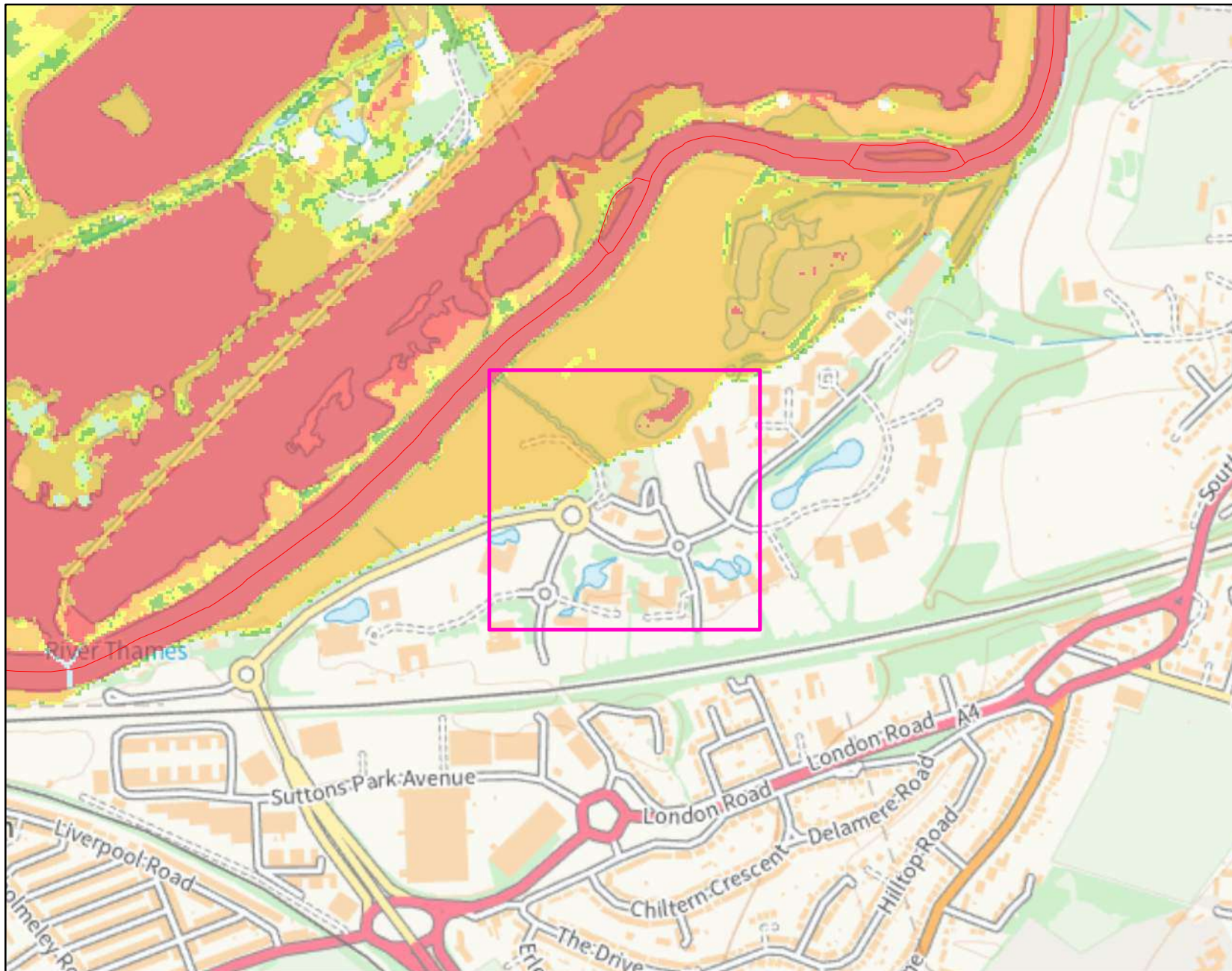
The resultant hazard rating is then classified according to:

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

Hazard Map for the 1% AEP + 35% climate change event centred on land at SU7427374226

Created on 25/11/25 REF: EIR2025/42365



Legend

- Site Boundary
- 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

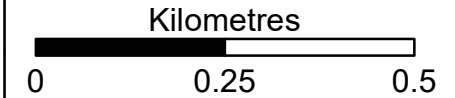
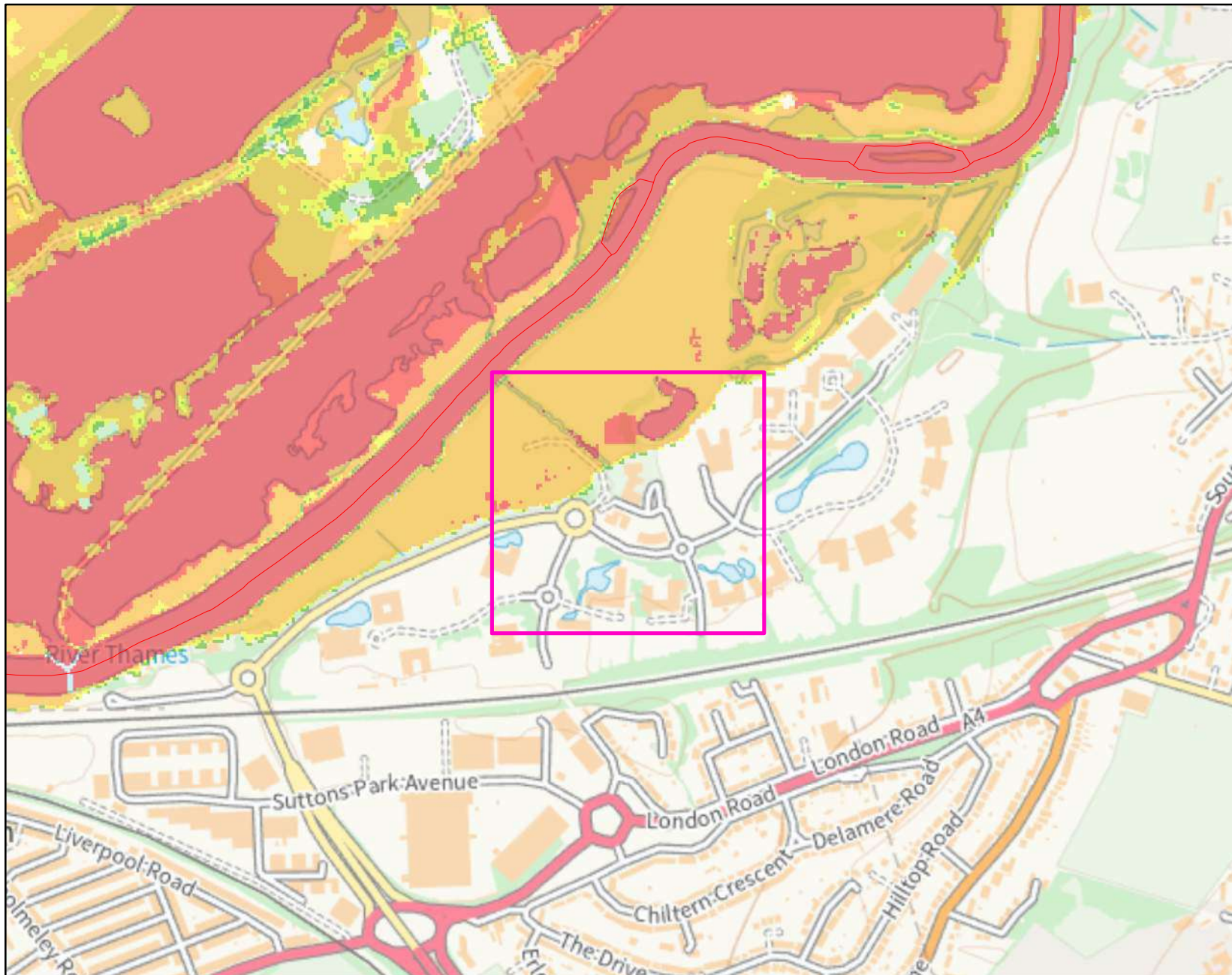
For hazard and debris factor we used HR Wallingford and Environment Agency (May 2008) supplementary note on flood hazard ratings and thresholds for development planning and control purpose. The following calculation is used:

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

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)

Hazard Map for the 1% AEP + 70% climate change event centred on land at SU7427374226

Created on 25/11/25 REF: EIR2025/42365



Legend

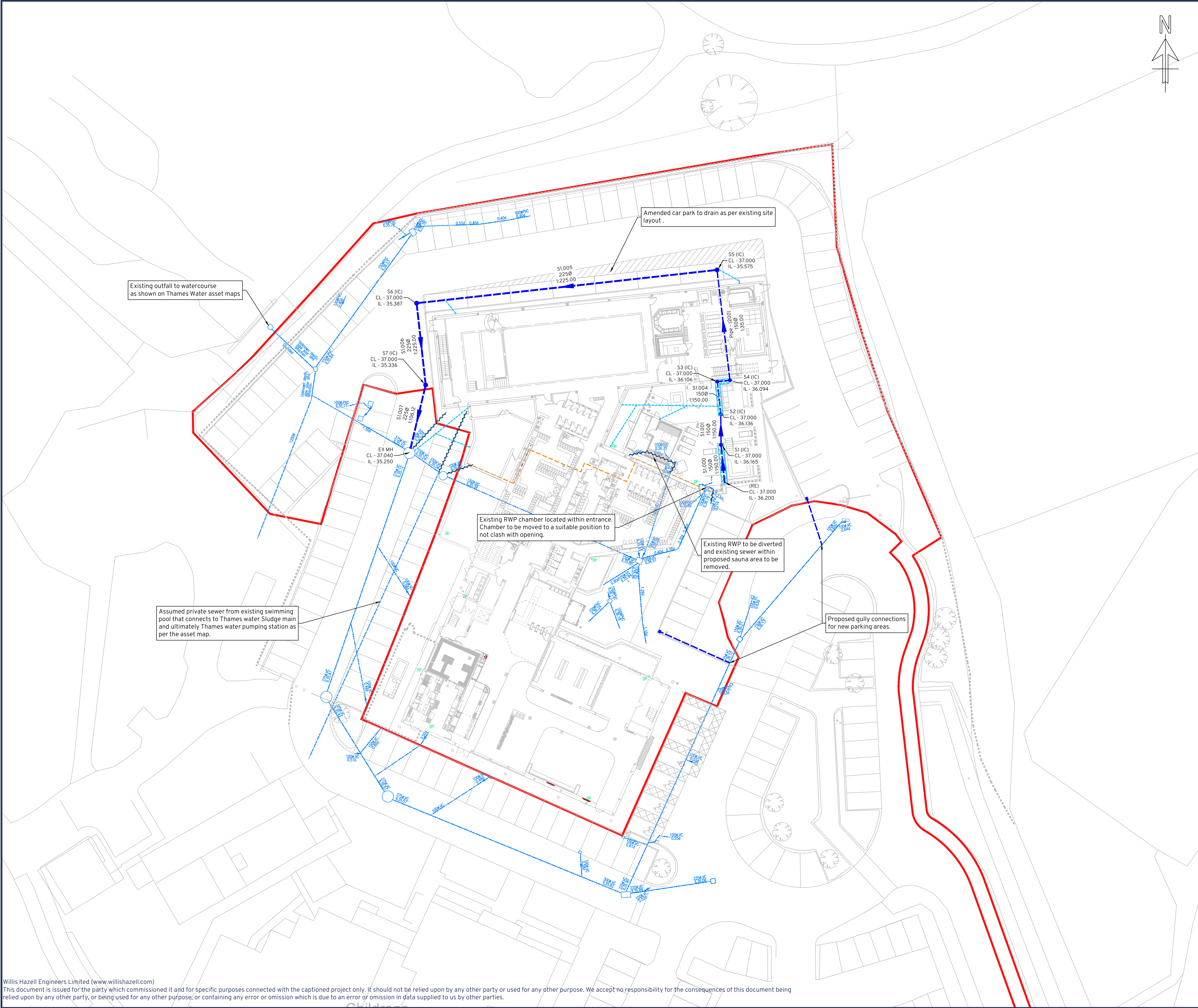
- Site Boundary
- Statutory Main Rivers
- Very low hazard – Caution
- Danger for some – includes children, the elderly and the infirm
- Danger for most – includes the general public
- Danger for all – includes the emergency services

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)

APPENDIX P – PROPOSED SURFACE WATER STRATEGY



- Notes
1. Do not scale from this drawing
 2. All levels stated are in meters above ordinance datum u.n.o
 3. The contractor is to ensure that all buried services are located prior to carrying out any excavation.
 4. This drawing is to be read in conjunction with all relevant architectural, structural and m&e drawings.
 5. This is not an installation drawing nor a co-ordination drawing.
 6. This drawing is to be read in conjunction with DLCRD-WHE-XX-XX-DR-C-0510

LEGEND:

- SITE REDLINE BOUNDARY
- SW PIPE
- FILTER DRAIN WITH PERFORATED PIPE + GEOTEXTILE WRAP LAID AT 1:500 UNLESS OTHERWISE SPECIFIED
- SX SW MANHOLE
- SX (IC) SW INSPECTION CHAMBER
- RAINWATER PIPE
- EXISTING SW PIPE
- EXISTING SW PIPE REMOVED
- DEMO LINE

P05	08.10.2026	JW	Site Layout Updates	TF	RH
P04	22.06.2026	JW	Drainage Connection Updates	TF	RH
P03	22.05.2026	JW	Tender Issue	TF	RH
P02	13.05.2026	JW	Second Issue	TF	RH
P01	11.05.2026	JW	First Issue	TF	RH
Rev	Date	Drawn	Description	Chk'd	App'd

Status PRELIMINARY

Client



Contractor

Structural Engineer



Project Title David Lloyd, Reading

Drawing Title Surface Water Drainage Layout

Suitability Status S2 - Suitable for Information		
WHE Project Number 1096	Scale @ A1 1:250	Rev P05
Drawing Number DLCRD-WHE-XX-XX-DR-C-00520		

APPENDIX Q – PROPOSED FOUL WATER STRATEGY



Notes

1. Do not scale from this drawing

2. All levels stated are in meters above ordinance datum u.n.o

3. The contractor is to ensure that all buried services are located prior to carrying out any excavation.

4. This drawing is to be read in conjunction with all relevant architectural, structural and m&e drawings.

5. This is not an installation drawing nor a co-ordination drawing.

6. This drawing is to be read in conjunction with DLCRD-WHE-XX-XX-DR-C-0520

LEGEND:

SITE REDLINE BOUNDARY

PROPOSED FOUL WATER SEWER

PROPOSED FOUL WATER PPIC

PROPOSED FOUL WATER SEWER WITHIN EXISTING BUILDING

SLOT DRAIN

EXISTING FOUL WATER SEWER

DEMO LINE

P06	08.10.2026	JW	Site Layout Updates	TF	RH
P05	08.07.2026	JW	Drainage Connection Updates	TF	RH
P04	22.06.2026	JW	Drainage Connection Updates	TF	RH
P03	22.05.2026	JW	Tender Issue	TF	RH
P02	13.05.2026	JW	Second Issue	TF	RH
P01	11.05.2026	JW	First Issue	TF	RH
Rev	Date	Drawn	Description	Chk'd	App'd

Status

PRELIMINARY

Client

David Lloyd

— CLUBS —

Contractor

Structural Engineer

Willis Hazell

ENGINEERS

Project Title

David Lloyd, Reading

Drawing Title

Foul Water Drainage Layout

Suitability Status

S2 - Suitable for Information

WHE Project Number	Scale @ A1	Rev
1096	1:250	P06

Drawing Number

DLCRD-WHE-XX-XX-DR-C-00510