AVAL CONSULTING GROUP.
CIVIL, ENVIRONMENT & STRUCTURAL ENGINEERS

Level 1 Flood Risk Assessment

400 Richmond Road TW1 2DY

GTI Ventures Ltd

January 2025

Project Information

Title	Level 1 Flood Risk Assessment
Job Code	93559B
Sector	Flood Risk
Report Type	FRA
Client Name	GTI Ventures Ltd
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Status	Final
Date of Issue	07 January 2025

Revision History

Revision	Date	Author	Reviewer	Approver	Status
A	07 January 2025	PR	WR	WR	Draft
A	07 January 2025	PR	WR	WR	Final

Disclaimer

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1. Executive Summary

1.1 Aval Consulting Group Limited has been commissioned by GTI Ventures Ltd ('the client') to provide a Flood Risk Assessment in relation to a planning application at 400 Richmond Road TW1 2DY.

1.2 The proposal is for the following:

"Alterations to shopfront including new glazing to remove the existing 1m set back from Richmond Road, new access door to the corner and new fascia".

1.3 A Level 1 Flood Risk Assessment has been carried out as per the requirements of the local authority and the National Planning Policy Framework. The proposed development meets the requirements as it is located within an area of low risk of flooding and includes mitigation.

1.4 No topographical survey, ground investigation or CCTV survey was provided to help inform the report.

1.5 The site is at moderate risk of fluvial flooding from nearby watercourses, situated within an area classified as Flood Zone 3, with a greater than 1% annual chance of fluvial flooding. However, due to the presence of flood defences in the area, the actual risk of fluvial flooding is considered low. According to the NPPF 2024, the proposed development, categorised as "less vulnerable," is fully compliant with flood risk requirements and is deemed suitable for the site.

1.6 The Local Authority is the London Borough of Richmond upon Thames.

2. Introduction

Overview

2.1 AVAL Consulting Group Limited (ACGL) has been commissioned by GTI Ventures Ltd ('the client') to provide a Flood Risk Assessment in relation to a planning application at 400 Richmond Road TW1 2DY. This is to accompany the planning application to the Local Authority for consent to undertake the proposed work.

2.2 This report will state the Flood Zone the development is located in and will analyse the risks of flooding at the site. Mitigation measures will also be discussed.

2.3 The existing and proposed development drawings are presented in Appendix A.

Site Location and Details

2.4 Figure 2.1 shows the proposed site location. The surroundings of the proposed development are largely residential in nature. The site is bounded by residential properties to the north and south, Cresswell Road to the east and Richmond Road to the west.

Figure 2.1: Proposed Site Location (Source: Google Maps)

Proposed Development and Vulnerability Classification

2.5 The proposal is for the following:

"Alterations to shopfront including new glazing to remove the existing 1m set back from Richmond Road, new access door to the corner and new fascia".

2.6 The site is located at an average height of 5.80m AOD as per the site location plan.

2.7 As per the National Planning Policy Framework, the proposed development will be under the '**Less Vulnerable**' classification.

3. Relevant Standards and Policies

3.1 This section summarises all legislation, policy, statutory and non-statutory guidelines relevant to the proposed development. That also includes all the latest regional and local planning policy guidance specifically applicable to the proposed development.

The National Planning Policy Framework (NPPF)

3.2 The latest National Planning Policy Framework (NPPF) was published on 12th December 2024. The NPPF is supported by technical guidance set out within the Planning Practice Guidance for Flood Risk and Drainage, including the classification of the site vulnerability and the requirement do an Exception Test in relation to the Flood Zone and Vulnerability Classification.

3.3 One of the key aims of the NPPF is to ensure that flood risk is taken into account at all stages of the planning process to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest risk.

3.4 It advises that where new development is necessary in areas of higher risk, flood mitigation resilience and resistance measures should be incorporated which can include but not limited to a higher finished floor level, installing flood boards and moving electrical points above. The developments upstream of the proposed development should also be taken into the consideration of flood risk.

3.5 The NPPF's flood risk advice is all set out in Chapter 14 of the Framework document, meeting the challenge of climate change, flooding and coastal change.

Flood and Water Management Act 2010

3.6 The Flood and Water Management Act 2010 received Royal Assent on 8th April 2010. This Act provides duties on the Environment Agency, Local Authorities, Developers and other bodies to manage flood risks. The Act has significant planning and design implications for Developers.

3.7 It should be noted that these standards and procedures are being reviewed by the respective regulatory bodies and third parties against the requirements imposed by the Flood and Water Management Act 2010. The advice and recommendations provided may change when associated regulations have been issued in order to implement the full scope of the Act.

London Borough of Richmond Upon Thames Local Plan

3.8 London Borough of Richmond Upon Thames Local Plan 2018 (adopted in July 2018) highlights the main policies in regard to Flood Risk and Drainage.

3.9 Policy LP21: Flood Risk and Sustainable Drainage states the following:

Flood Risk and Sustainable Drainage

A. *All developments should avoid, or minimise, contributing to all sources of flooding, including fluvial, tidal, surface water, groundwater and flooding from sewers, taking account of climate change and without increasing flood risk elsewhere. Development will be guided to areas of lower risk by applying the 'Sequential Test' as set out in national policy guidance, and where necessary, the 'Exception Test' will be applied. Unacceptable developments and land uses will be refused in line with national policy and guidance, the Council's Strategic Flood Risk Assessment (SFRA) and as outlined in the table below. In Flood Zones 2 and 3, all proposals on sites of 10 dwellings or more or 1000sqm of non-residential development or more, or on any other proposal where safe access/egress cannot be achieved, a Flood Emergency Plan must be submitted. Where a Flood Risk Assessment is required, on-site attenuation to alleviate fluvial and/or surface water flooding over and above the Environment Agency's floodplain compensation is required where feasible.*

Basements and subterranean developments

B. *Basements within flood affected areas of the borough represent a particularly high risk to life, as they may be subject to very rapid inundation. Applicants will have to demonstrate that their proposal complies with the following: Refer to table in Local Plan*

Sustainable drainage

C. *The Council will require the use of Sustainable Drainage Systems (SuDS) in all development proposals. Applicants will have to demonstrate that their proposal complies with the following:*

1. A reduction in surface water discharge to greenfield run-off rates wherever feasible.

2. Where greenfield run-off rates are not feasible, this will need to be demonstrated by the applicant, and in such instances, the minimum requirement is to achieve at least a 50% attenuation of the site's surface water runoff at peak times based on the levels existing prior to the development.

Flood defences

D. *Applicants will have to demonstrate that their proposal complies with the following:*

1. Retain the effectiveness, stability and integrity of flood defences, river banks and other formal and informal flood defence infrastructure.

2. Ensure the proposal does not prevent essential maintenance and upgrading to be carried out in the future.

3. Set back developments from river banks and existing flood defence infrastructure where possible (16 metres for the tidal Thames and 8 metres for other rivers).

4. Take into account the requirements of the Thames Estuary 2100 Plan and the River Thames Scheme, and demonstrate how the current and future requirements for flood defences have been incorporated into the development.

5.The removal of formal or informal flood defences is not acceptable unless this is part of an agreed flood risk management strategy by the Environment Agency.

London Borough of Richmond Upon Thames Strategic Flood Risk Assessment

3.10 The London Borough of Richmond Upon Thames Flood Risk Management Strategy highlights objectives of managing local flood risk as well as states any historic flooding and any sequential and exception test requirements which can help in the analysis of a proposed development. This will be used in order to progress through this report.

4. Assessment of Flood Risk

Flood Zone Areas

4.1 The proposed development is located within a Flood Zone 3 area as per the Environment Agency's Flood Zone Map and the local authority's SFRA. Figure 4.1 shows the proposed development in Flood Zone 2 and 3 using ArcGIS layers from the Environment Agency.

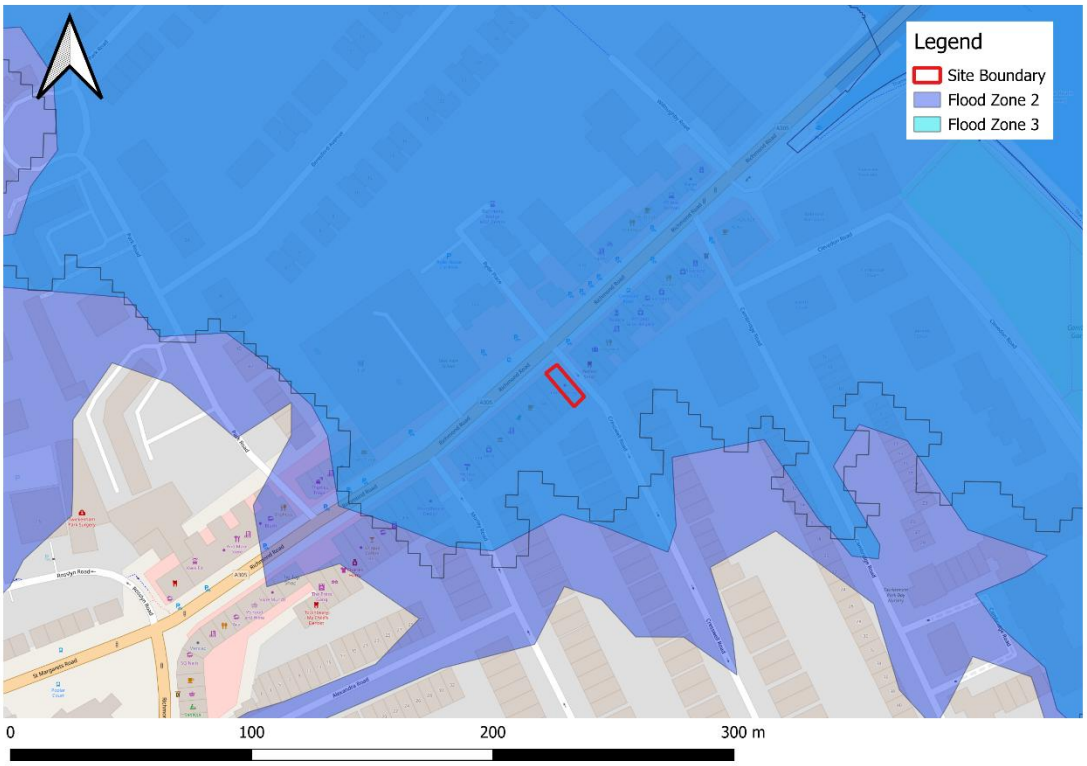


Figure 4.1: Flood Zone Area (Source: ArcGIS Layer from the EA)

River/Sea Flooding and Surface Water Flooding Risks

4.2 In terms of the risk of flooding from Surface Water and the River/Seas, the proposed development is at a very low risk of river/sea and at a very low risk of surface water flooding as shown in Figures 4.2 and 4.3. Depths of surface water flooding under the low, medium and high risk can be seen in Figures 4.4 to 4.6.

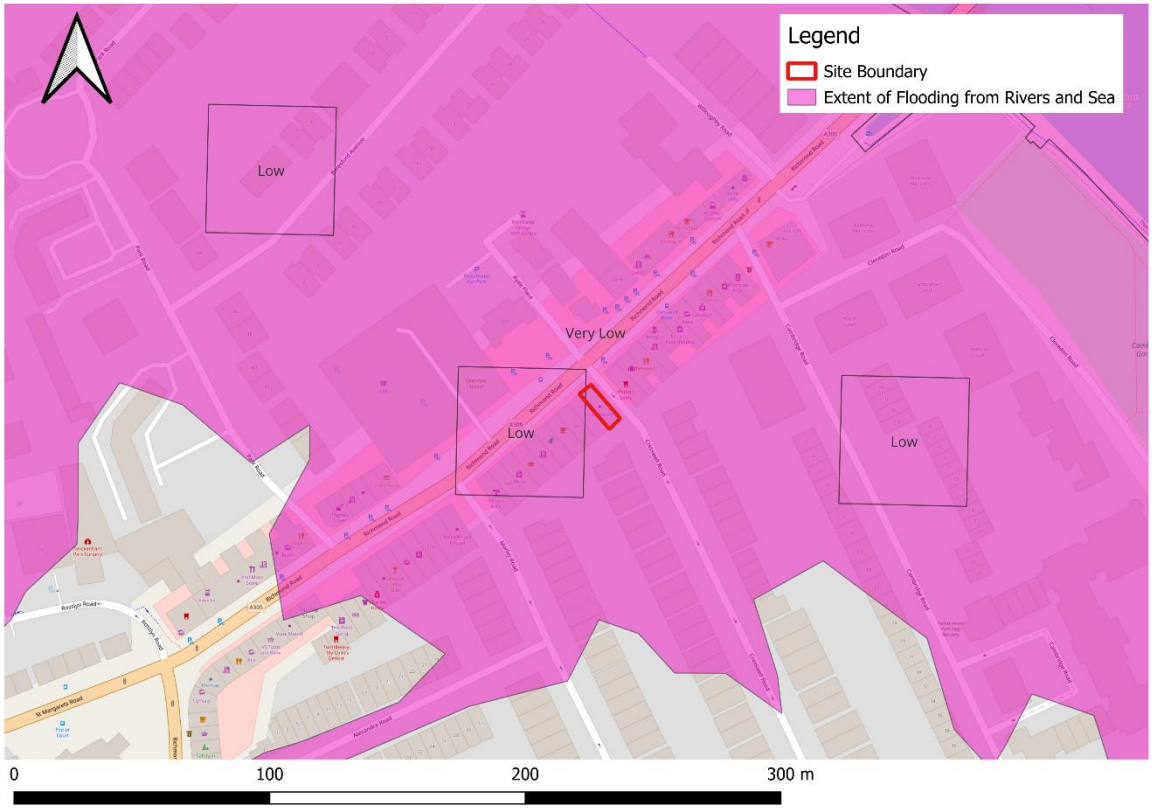


Figure 4.2: Extent of Flooding from River or the Seas (Source: ArcGIS Layer from the EA)

Figure 4.3: Extent of Flooding from Surface Water (Source: ArcGIS Layer from the EA)

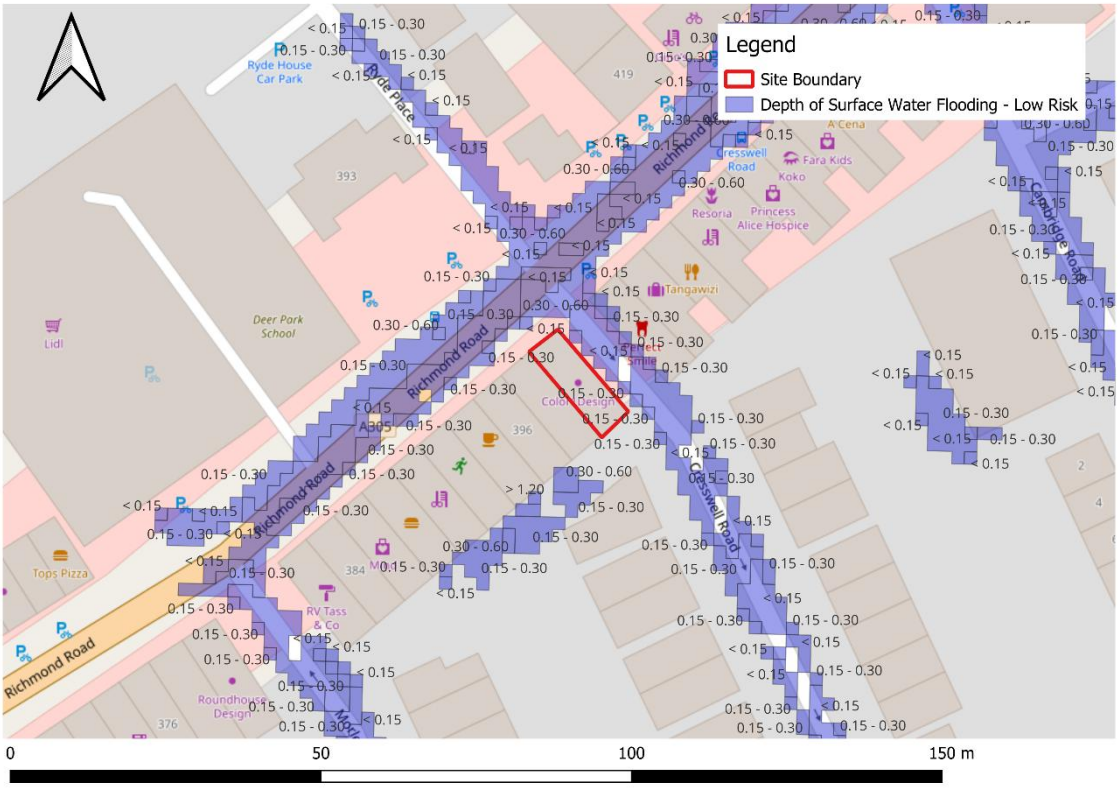


Figure 4.4: Depth of Surface Water – Low Flooding Risk (Source: ArcGIS Layer from the EA)

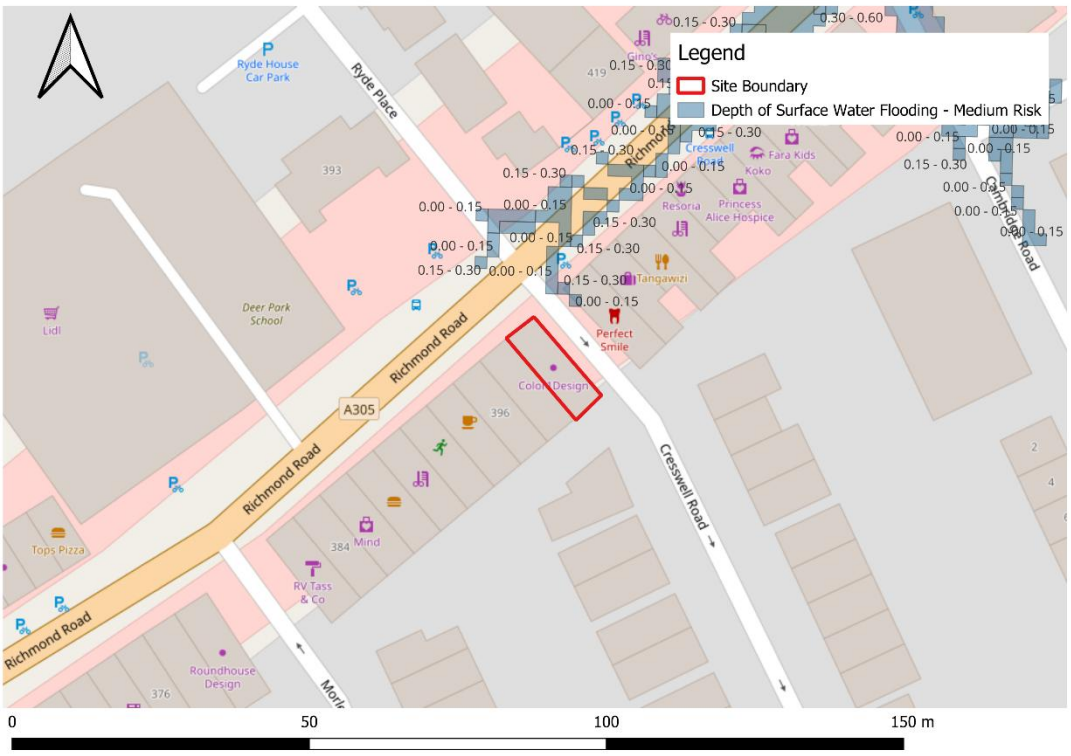


Figure 4.5: Depth of Surface Water – Medium Flooding Risk (Source: ArcGIS Layer from the EA)

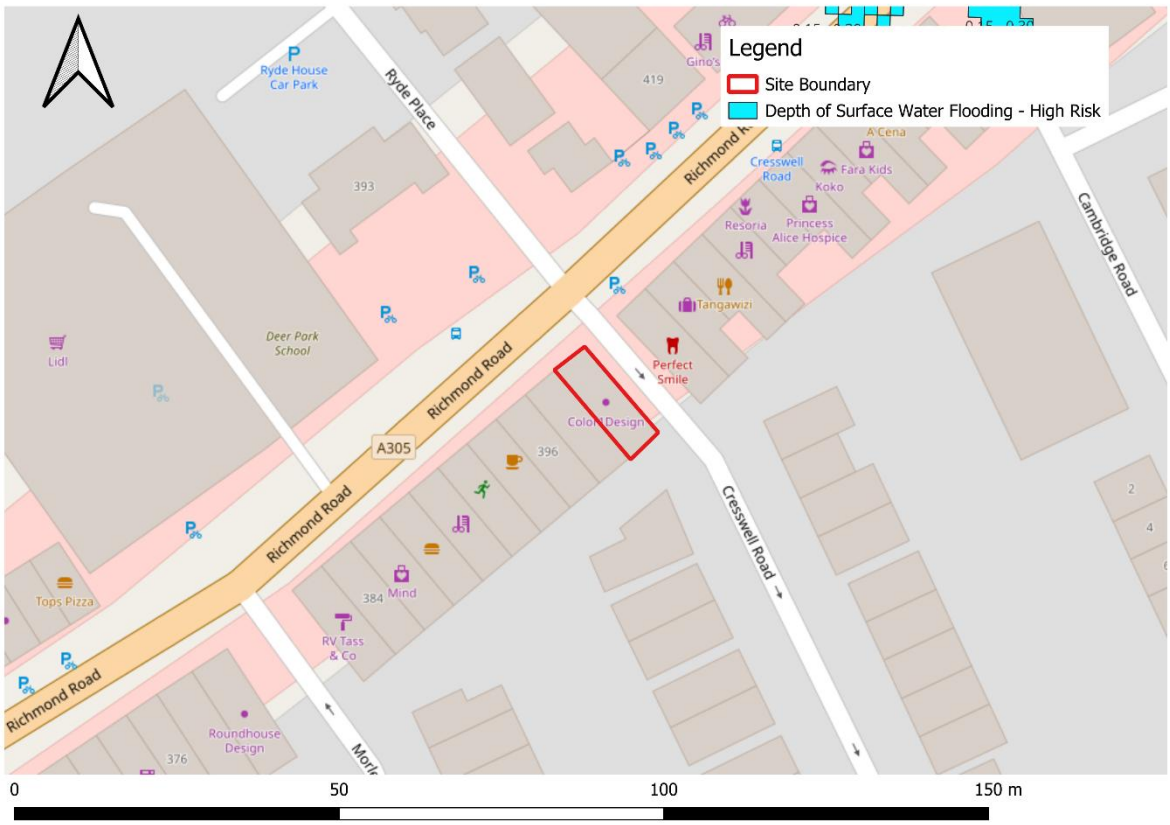


Figure 4.6: Depth of Surface Water – High Flooding Risk (Source: ArcGIS Layer from the EA)

Nearest Watercourse

4.3 The nearest watercourse is the River Thames, which is located approximately 210m northeast of the site.

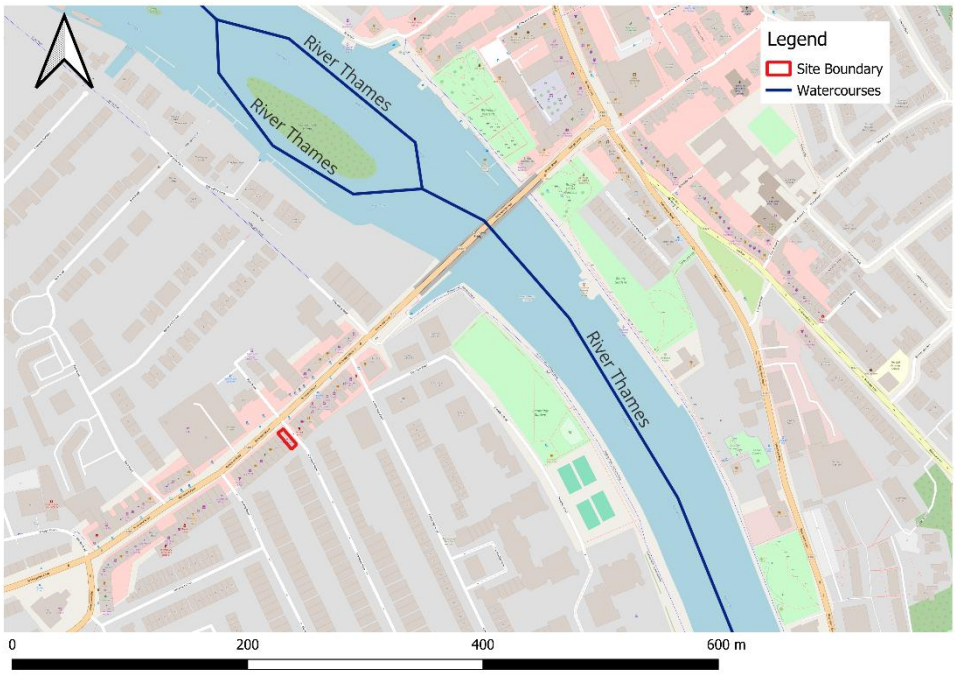


Figure 4.7: Nearest Watercourses (Source: Google Maps)

Geology, Hydrology and Hydro-Geology

4.4 The BGS Bedrock Geology provides details of the bedrock geology within the site. Figure 4.8 shows the bedrock geology within the site, which is identified to be London Clay Formation – Clay, Silt and sand and superficial deposits which is identified to be Kempton Park Gravel Member - Sand and gravel.

4.5 The Cranfield Soil and AgriFood Institute (CSAI), incorporating the National Soil Resources Institute (NSRI,) at Cranfield University maintains soil reports and maps for England and Wales. The Soilscapes dataset map, shown in Figure 4.9 indicates that soils in the area are ‘Freely draining slightly acid loamy soils’. These soils are identified as being ‘Freely Draining’.

4.6 No ground investigations were provided as part of the report.

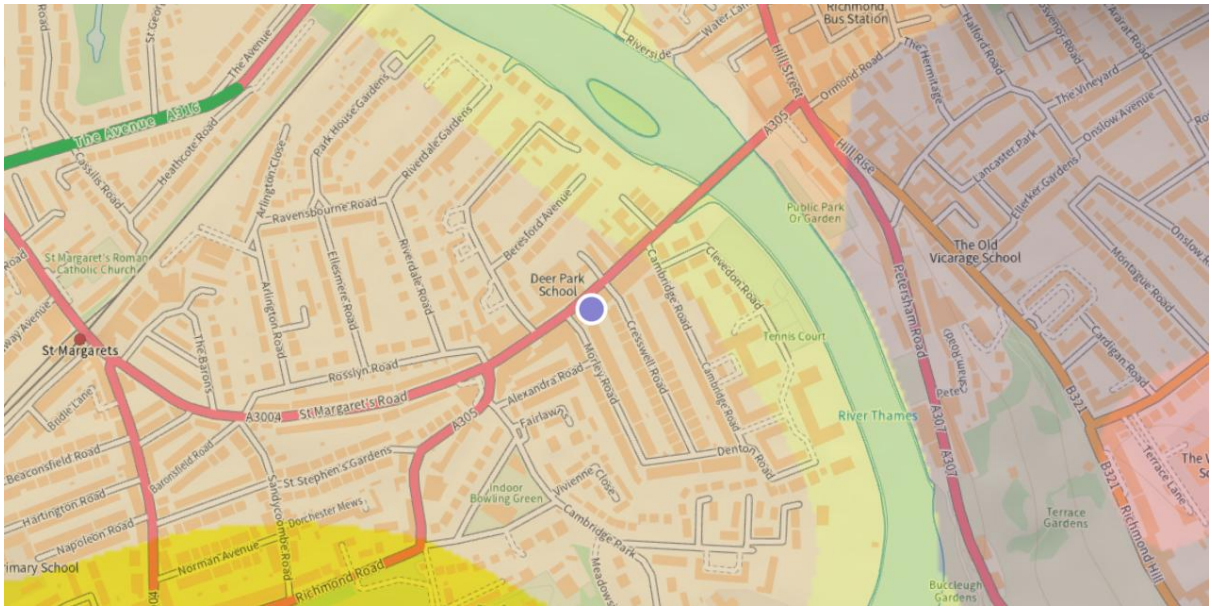


Figure 4.8: BGS Bedrock Geology Map (Source: BGS Geology Map Viewer)

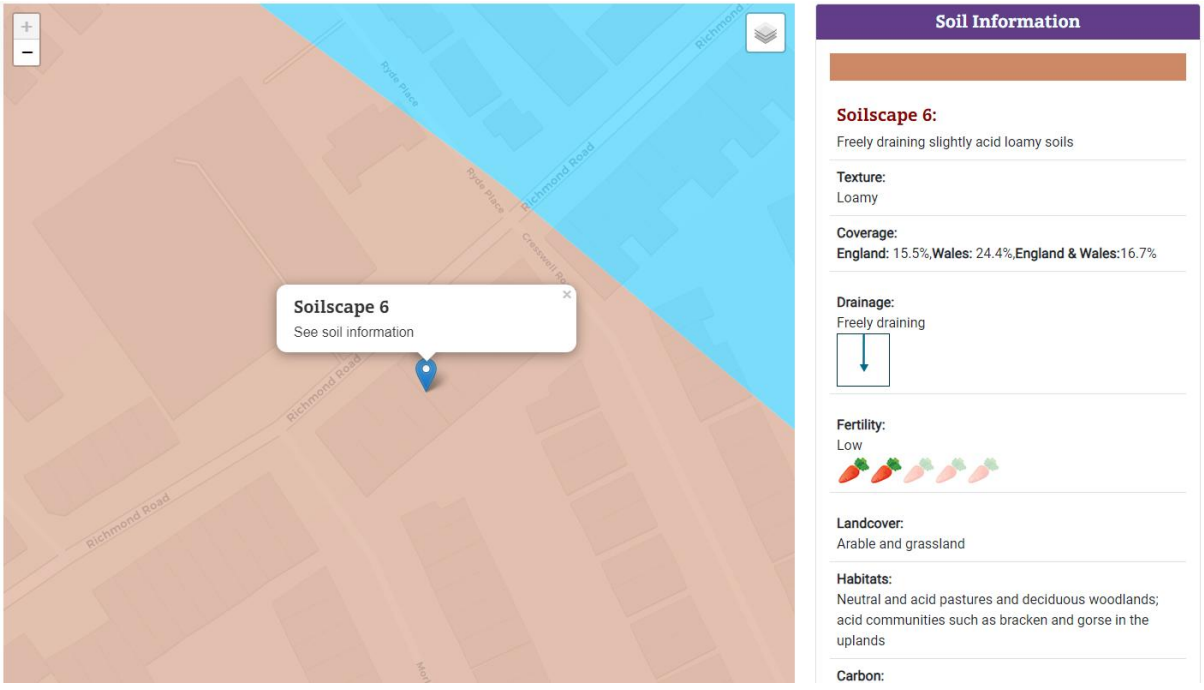


Figure 4.9: Soilscapes Map (Source: Soilscapes)

Other Sources of Flooding Risks and Historical Flooding

4.7 The Environment Agency's Aquifer Designation Map dataset held on Natural England's MAGIC website provides authoritative geographic information about the natural environments across Great Britain. An inspection of the map shows that the site does not lie within an area of aquifer designation, however the site lies within an area of low groundwater vulnerability. This can be seen in Figure 4.10.

4.8 The Environment Agency recorded flood outline map indicates the site has not recorded previous flooding. Which can be seen in figure 4.11.

Figure 4.10: Groundwater Vulnerability Map (Source: Magic Maps)

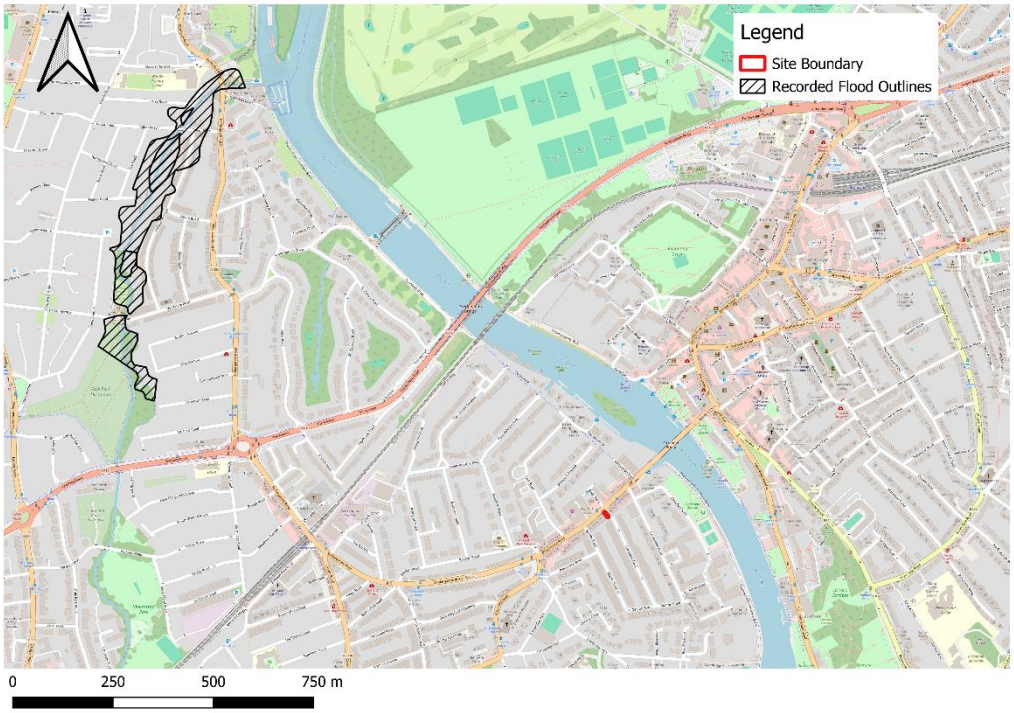


Figure 4.11: Recorded Flood Outline (ArcGIS Layer from EA)

4.9 It should be noted the site is within an area benefitting from river/sea flood defences, as can be seen in Figures 4.12 and 4.13.

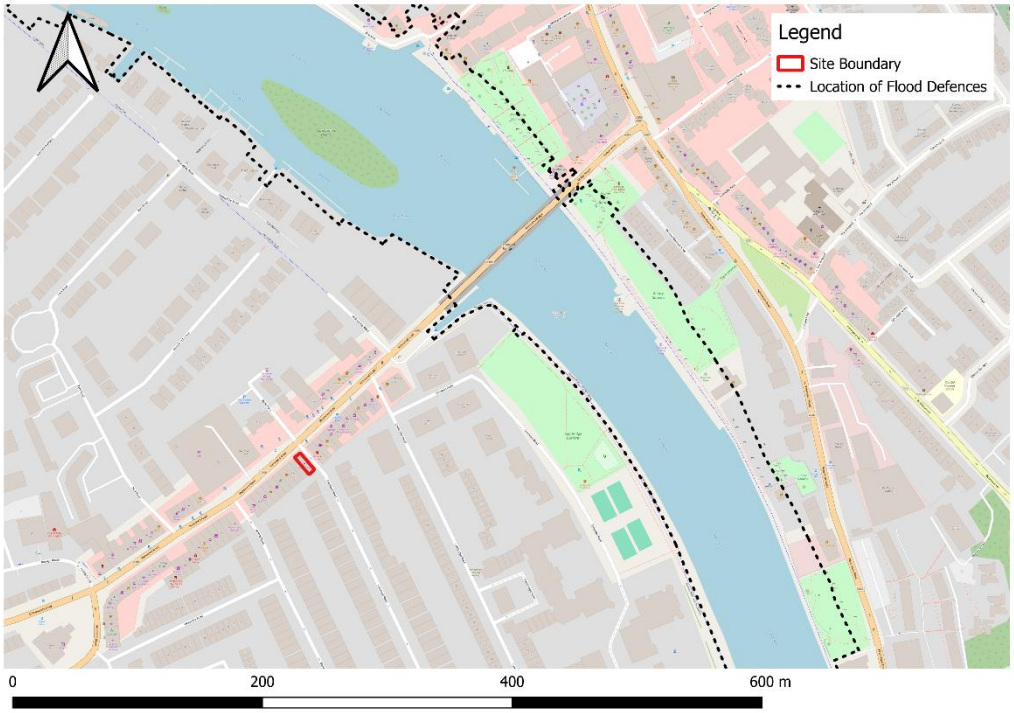


Figure 4.12: River/Sea Flood Defence Locations (ArcGIS Layer from EA)

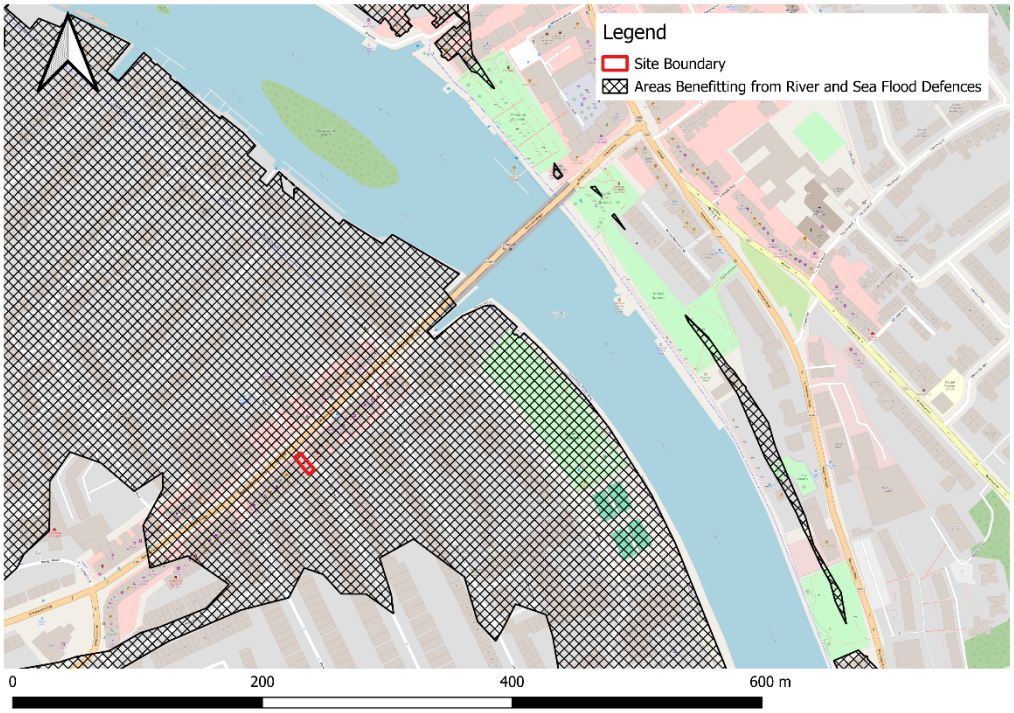


Figure 4.13: Areas Benefitting from River/Sea Flood Defences (ArcGIS Layer from EA)

Product 4 Data

4.10 As part of the development falls within a Flood Zone 3, Product 4 was provided by the Environment Agency to determine if the site would be at risk of flooding and if so, the depth of flooding that would occur.

4.11 In West London, there is a heavy influence from upstream (fluvial) flows. The flood defences are built to manage tidal flood risk only. With very high fluvial flows, the river levels in west London could be above the tidal defence level.

4.12 The Product 4 node location which is nearest to the site and used to assess the predicted flood levels can be seen in Figure 4.14. The flood levels are taken from the Thames Reach 4, 2010 fluvial flood model.

4.13 When analysing the 1 in 100-year flood event with climate change allowances within the year 2100, the height of the flooding at the modelled nodes is predicted to be 6.35mAOD (Figure 4.15). This is well below the 6.90mAOD crest level of the flood defences (Figure 4.16) and therefore, the site is protected by the flood defences.

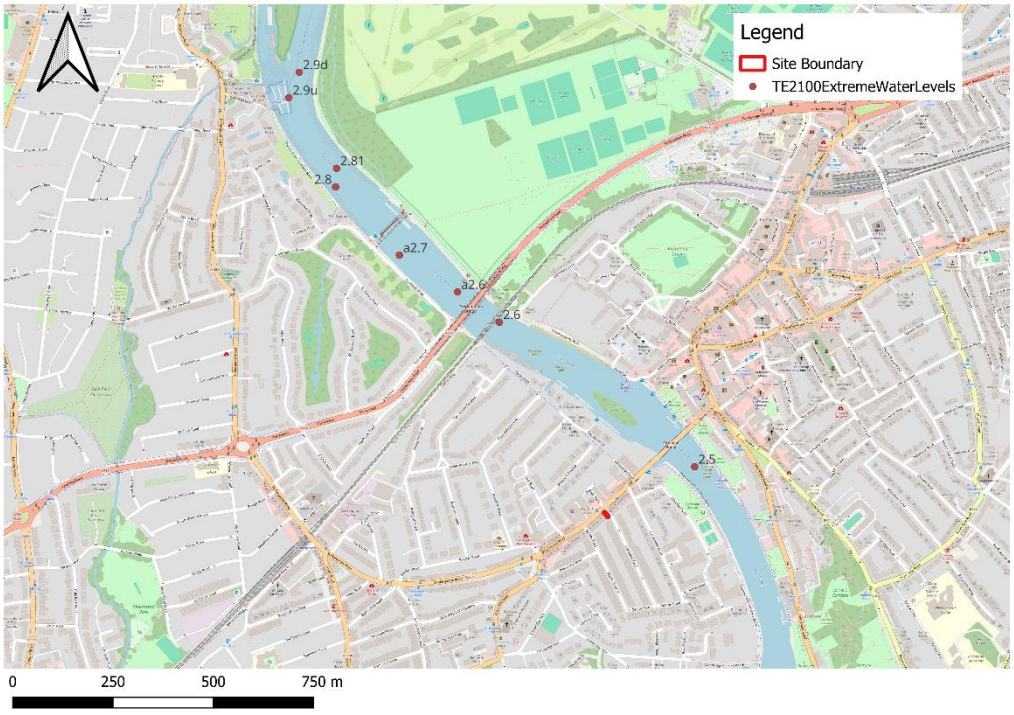


Figure 4.14: Product 4 Node Location (ArcGIS Layer from EA)

Location	Node	Easting	Northing	Present Day Water Level	Future 2065-2100 Water Level	Future 2100 Water Level
Teddington	2.01	516860	171426	6.38	none	6.97
	2.1	516578	171571	6.13	none	6.63
	2.2	516154	172438	5.95	6.00	6.45
	2.3	517010	173227	5.8	5.97	6.42
	2.3a	517525	173383	5.77	5.95	6.40
	2.4	517837	173600	5.67	5.93	6.38
	2.5	517773	174459	5.66	5.9	6.35
	2.6	517278	174807	5.64	5.87	6.32
	a2.6	517173	174880	5.63	5.86	6.31
Richmond	a2.7	517026	174968	5.61	5.85	6.3

Figure 4.15: Product 4 - TE2100 flood levels Location (Environment Agency)

Location	Node	Easting	Northing	Current Defence Levels		Allow for future defence raising (both banks) to a level of...	
				Left	Right	2065-2100	2100
Teddington	2.01	516860	171426	6.10	6.10	6.45	6.90
	2.1	516578	171571	6.10	6.10	6.45	6.90
	2.2	516154	172438	6.10	6.10	6.45	6.90
	2.3	517010	173227	6.02	6.02	6.45	6.90
	2.3a	517525	173383	6.02	6.02	6.45	6.90
	2.4	517837	173600	6.02	6.02	6.45	6.90
	2.5	517773	174459	6.02	6.02	6.45	6.90
	2.6	517278	174807	5.94	5.94	6.45	6.90
	a2.6	517173	174880	5.94	5.94	6.45	6.90
Richmond	a2.7	517026	174968	5.94	5.94	6.45	6.90

Figure 4.15: Product 4 - TE2100 defence levels Location (Environment Agency)

5. Residual Risk and Exception Test

5.1 This section will explain how the proposed development will reduce the flood risk within the site and within the surrounding areas of the site.

Residual Risk

5.2 The primary residual risk that would remain at the site would be the drainage of surface water. Flood Mitigation and Management details will be given in Section 6. However, other residual risks remain such as a breach of a raised flood defence, blockage of a surface water conveyance system, overtopping of an upstream storage area, or failure of a pumped drainage system; failure of a reservoir; or a severe flood event that exceeds a flood management design standard, such as a flood that overtops a raised flood defence, or an intense rainfall event which the drainage system cannot cope with.

5.3 In order to further reduce the risk of surface water flooding within the proposed development, Sustainable Urban Drainage Systems would need to be installed to either safely discharge the surface water or to temporarily store the surface water for future use or discharge. This can be in the form but are not limited to, permeable paving, green roofs, attenuation storage or rainwater harvesting.

Exception Test

5.4 The National Planning Policy Framework sets out the different conditions in terms of the vulnerability of the development and the flood zone and accordingly sets out the requirements to do an Exception Test. The table below describes the conditions required for an Exception Test.

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	×	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	×	×	×

Key: ✓ Development is appropriate.
× Development should not be permitted.

As the development is located within a Flood Zone 3 and is classified as a '**Less Vulnerable**', an Exception Test is not required to be undertaken and therefore, the proposed development is appropriate.

6. Flood Mitigation/Management Measures

6.1 As stated in Section 4.2, the proposed development is at a very low risk of river/sea and of surface water flooding.

6.2 It is impossible to completely guard against flooding since an extreme event is always possible; however, the risk can be minimised by employing flood resilient construction techniques to the proposed building as listed below:

Flood Resilience and Mitigation Measures

6.3 For flood depths more than 0.3m, is likely that structural damage could occur in traditional masonry construction due to excessive water pressures (differential head between outside and inside of the property); this can be worsened by impact from water-borne debris. In these circumstances, the strategy should be to allow water into the building.

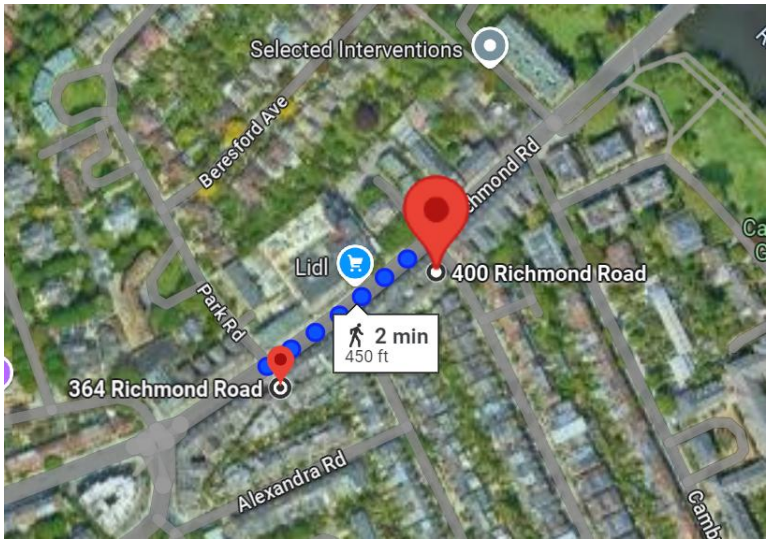
6.4 The following measures are proposed to provide flood resilience, preserve building integrity and limit the impact of flooding;

- Waterproof walls up to a height providing 300mm freeboard to the assumed flood level
- Sealed service ducts
- Location of electrical and other plant above the floor
- High electrical sockets and Use of low permeability materials such as impermeable concrete
- Ensuring security of supplies

Dry access and egress

6.5 The building has internal access to higher floors in the case of flooding.

6.6 A last resort for occupants wanting to evacuate by foot is to go directly west to the higher ground in the adjacent site as shown below.



6.7 A dedicated Flood Warning and Evacuation Plan is provided within Appendix C. It is recommended for the residents of the proposed development to fill in the appropriate information and act appropriately in an event of an unforeseen flooding.

7. Climate Change and Surface Water Management

7.1 The National Planning Policy Framework 2023 (NPPF) and accompanying Planning Practice Guidance indicate surface water run-off should be controlled as near to its source as possible through a sustainable drainage approach to surface water management.

7.2 Consideration should therefore firstly be given to using sustainable urban drainage (SuDS) techniques including soakaways, infiltration trenches, permeable pavements, grassed swales, ponds and wetlands to reduce flood risk by attenuating the rate and quantity of surface water run-off from a site. This approach can also offer other benefits in terms of promoting groundwater recharge, water quality improvement and amenity enhancements. The NPPF sets out a hierarchy for the disposal of surface water which encourages a SuDS approach, which will be mentioned in Section 8.

Climate Change

7.3 There are indications that the climate in the UK is changing significantly, and it is widely believed that the nature of climate change will vary greatly by region. Current expert opinion indicates the likelihood that future climate change would produce more frequent short-duration and high-intensity rainfall events with the addition of more frequent periods of long-duration rainfall.

7.4 The Environment Agency has highlighted the climate change allowance for all proposed developments as described in Section 7.21.

Small and Urban Catchment Climate Change Growth

The table below highlights the potential climate change expected in the future.

Applies across all of England	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
Upper end	10%	20%	40%
Central	5%	10%	20%

As this development is for residential use, **a climate change growth factor of 40% is proposed** to be used for the surface water runoff/storage calculations.

Existing Public and Private Sewers

7.5 The existing site is currently brownfield with existing private infrastructure located within the site. The private sewer network will be retained and maintain the connection to the public sewer.

7.6 According to the Thames Water Asset records there is evidence of a 225mm diameter surface water sewer located along Cresswell Road and 300mm diameter surface water sewer located along Richmond Road.

7.7 According to the Thames Water Asset records there is evidence of a 225mm diameter foul water sewer located along Cresswell Road and 375mm diameter foul water sewer located along Richmond Road.

7.8 A CCTV survey was not provided for this report, but a survey will be required to confirm the location, depth and use of both the drainage systems within the site as well as the discharge points.

7.9 Appendix B includes the Thames Water Asset records.

8. Conclusion

8.1 The Environment Agency mapping indicates that the site is within Flood Zone 3 and has a moderate risk of fluvial flooding if there is a failure of River Thames flood defences.

8.2 Flood resistant and resilience measures have been considered to mitigate flood risk as part of the proposal.

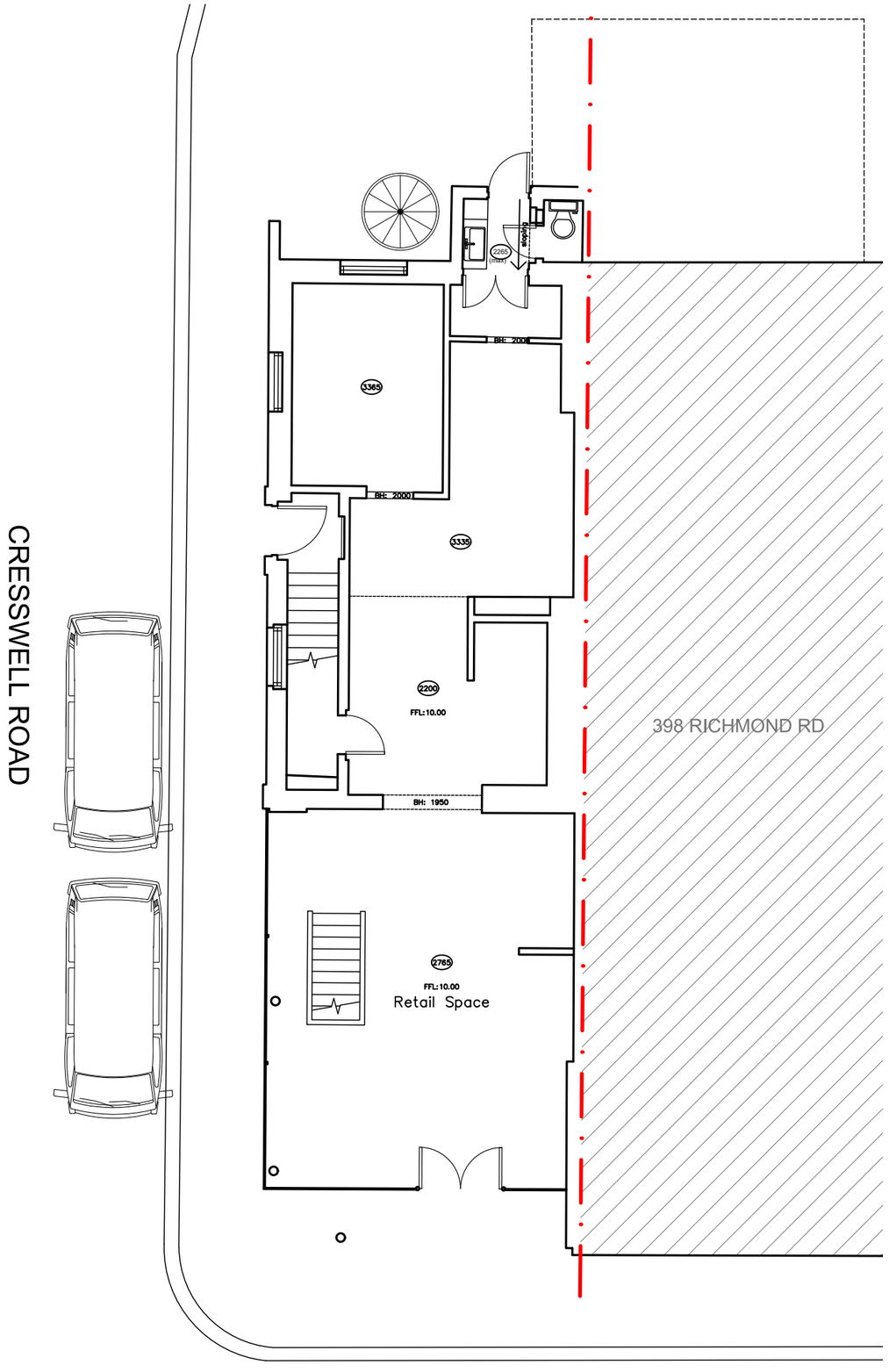
8.3 All other sources of flooding for the site have been investigated and shown to be of minimal or no risk.

8.4 The development is accessible for emergency access and egress during times of extreme flooding as no potential flooding is evident on any of the access routes.

8.5 The Flood Risk Assessment is commensurate with the development proposals and in summary, the development can be considered appropriate for the Flood Zone in accordance with the NPPF.

Appendices

Appendix A: Existing and Proposed Site Plans



01 EXISTING GROUND FLOOR

1:100 @ A3

Revision Date Description

project

400 Richmond Road

drawing title

EXISTING GROUND FLOOR PLAN

drawing number: 0864-WPA-0010

revision: P0

scale @ A3: 1 : 100

revision date:

drawing purpose: PLANNING

13/12/24

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01

Front Elevation - Existing

1:100 @ A3

Revision Date Description

project
400 Richmond Road

drawing title
Existing Front Elevation

drawing number: 0864-WPA-0020
revision: P0
scale @ A3: 1 : 100
revision date:
drawing purpose: PLANNING
13/12/24

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01 Side Elevation - Existing

1:100 @ A3

Revision Date Description

project
400 Richmond Road

drawing title
Side Elevation

drawing number: 0864-WPA-0021
revision: P0
scale @ A3: 1 : 100
revision date:
drawing purpose: PLANNING
13/12/24

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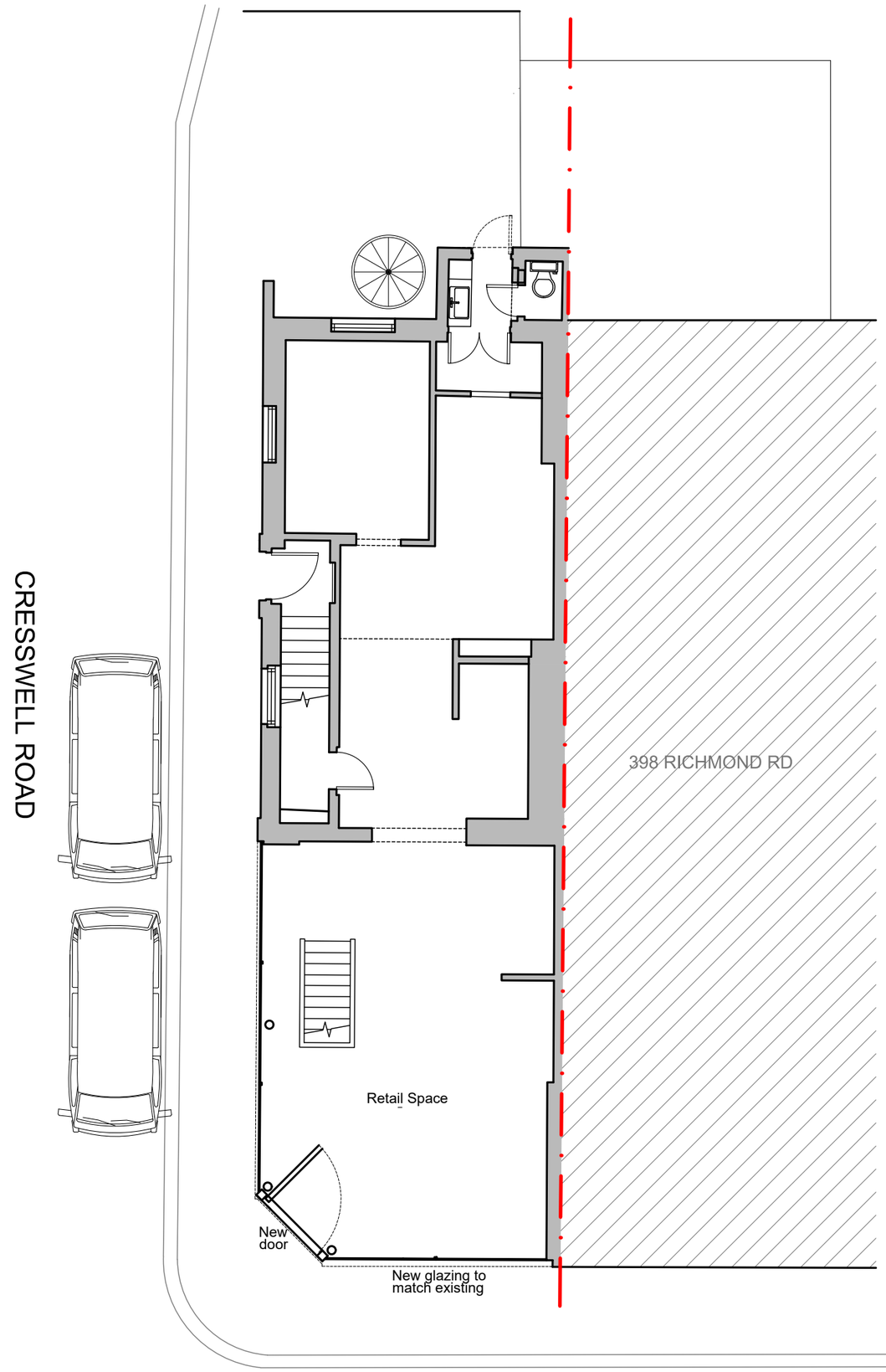

02 PROPOSED GROUND FLOOR
1:100 @ A3

Revision Date Description

project
400 Richmond Road

drawing title
PROPOSED GROUND FLOOR PLAN

drawing number: 0864-WPA-0100
revision: P0
scale @ A3: 1 : 100
revision date:
drawing purpose: PLANNING
13/12/24

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01 Front Elevation - Proposed

1:100 @ A3

Revision Date Description

project
400 Richmond Road

drawing title
Proposed Front Elevation

drawing number: 0864-WPA-0200
revision: P0

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revision date:

drawing purpose: PLANNING
13/12/24

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01 Side Elevation - Proposed

1:100 @ A3

Revision Date Description

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drawing title
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revision: P0
scale @ A3: 1 : 100
revision date:
drawing purpose: PLANNING
13/12/24

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0208 780 2206
info@wp.uk.com
wimshurst-pelleriti.com

Appendix B: Thames Water Asset Records

Asset Location Search

Property Searches

Search address supplied: Roberts Fleming Designs, 400, Richmond Road, Twickenham, TW1 2DY

Dear Sir / Madam

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

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

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

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

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

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

Contact Us

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

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

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

Clean Water Services

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

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and

pressure test to be carried out for a fee.

For your guidance:

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

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

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

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

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

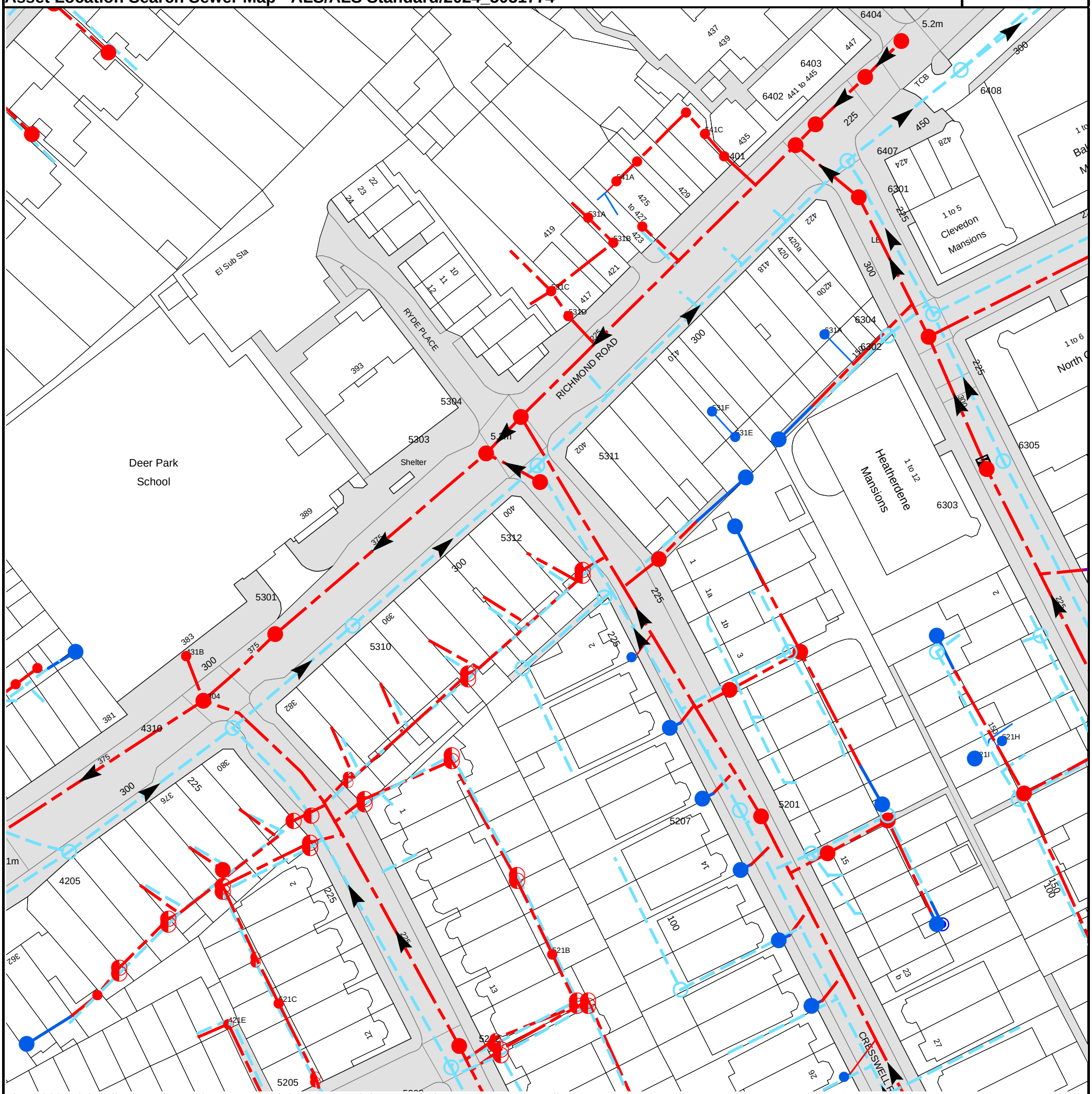
Clean Water queries

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

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

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

Asset Location Search Sewer Map - ALS/ALS Standard/2024_5051774



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 517557,174334

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

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
44MJ	n/a	n/a
44LL	n/a	n/a
44LM	n/a	n/a
5304	5.23	3.13
531F	n/a	n/a
6302	5.18	3.3
63NL	n/a	n/a
631A	n/a	n/a
531D	n/a	n/a
6304	5.17	2.31
531C	n/a	n/a
531B	n/a	n/a
53HH	n/a	n/a
531A	n/a	n/a
6301	4.97	3.26
541A	n/a	n/a
54NM	n/a	n/a
6407	4.99	2.1
54NJ	n/a	n/a
6401	4.91	3.16
541C	n/a	n/a
6402	4.93	3.21
54NK	n/a	n/a
6403	4.98	3.27
6408	4.73	2.07
6404	5.04	3.35
6303	5.27	3.41
6305	5.26	2.47
4310	5.67	2.72
4304	5.65	3.03
43MF	n/a	n/a
43MH	n/a	n/a
431B	5.7	3.59
43NF	n/a	n/a
5301	5.62	3.05
62JM	n/a	n/a
62KE	n/a	n/a
621I	n/a	n/a
621H	n/a	n/a
63ME	n/a	n/a
62FD	n/a	n/a
52EL	n/a	n/a
52FF	n/a	n/a
52MC	n/a	n/a
52KL	n/a	n/a
62ND	n/a	n/a
52EM	n/a	n/a
52KM	n/a	n/a
52FH	n/a	n/a
52LN	n/a	n/a
52KF	n/a	n/a
521B	n/a	n/a
52CF	n/a	n/a
62HH	n/a	n/a
52LH	n/a	n/a
52MJ	n/a	n/a
52CH	n/a	n/a
62FK	n/a	n/a
62HD	n/a	n/a
62HE	n/a	n/a
5201	5.86	3.84
62FL	n/a	n/a
5207	5.87	3.15
62MC	n/a	n/a
52CJ	n/a	n/a
52LD	n/a	n/a
52HE	n/a	n/a
52NM	n/a	n/a
52LE	n/a	n/a
52MF	n/a	n/a
53JJ	n/a	n/a
53FC	n/a	n/a
53MK	n/a	n/a
53NM	n/a	n/a
53LH	n/a	n/a
53JL	n/a	n/a
63MN	n/a	n/a
63NC	n/a	n/a
63MJ	n/a	n/a
63MM	n/a	n/a
5310	5.57	2.52
53LF	n/a	n/a
53KF	n/a	n/a
53NL	n/a	n/a
53JN	n/a	n/a
53FE	n/a	n/a
5312	5.44	3.71
53KD	n/a	n/a
5311	5.34	2.41
5303	5.33	3.09
53KE	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
531E	n/a	n/a
52HK	n/a	n/a
52JD	n/a	n/a
5208	6.34	3.39
5202	6.32	3.79
421E	n/a	n/a
521C	n/a	n/a
52HL	n/a	n/a
52JE	n/a	n/a
52HJ	n/a	n/a
52JC	n/a	n/a
52LF	n/a	n/a
52FN	n/a	n/a
52MH	n/a	n/a
42LE	n/a	n/a
4205	6.12	2.87
42KH	n/a	n/a
42ME	n/a	n/a
42LL	n/a	n/a
42JN	n/a	n/a
42KC	n/a	n/a
42NC	n/a	n/a
42MN	n/a	n/a
42JD	n/a	n/a

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

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

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

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

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

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

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

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

Sewer Fittings

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

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

Operational Controls

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

- Ancillary
- Drop Pipe
- Control Valve
- Weir

End Items

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

- Inlet
- Outfall
- Undefined End

Other Symbols

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

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

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

Ducts or Crossings

- Casement

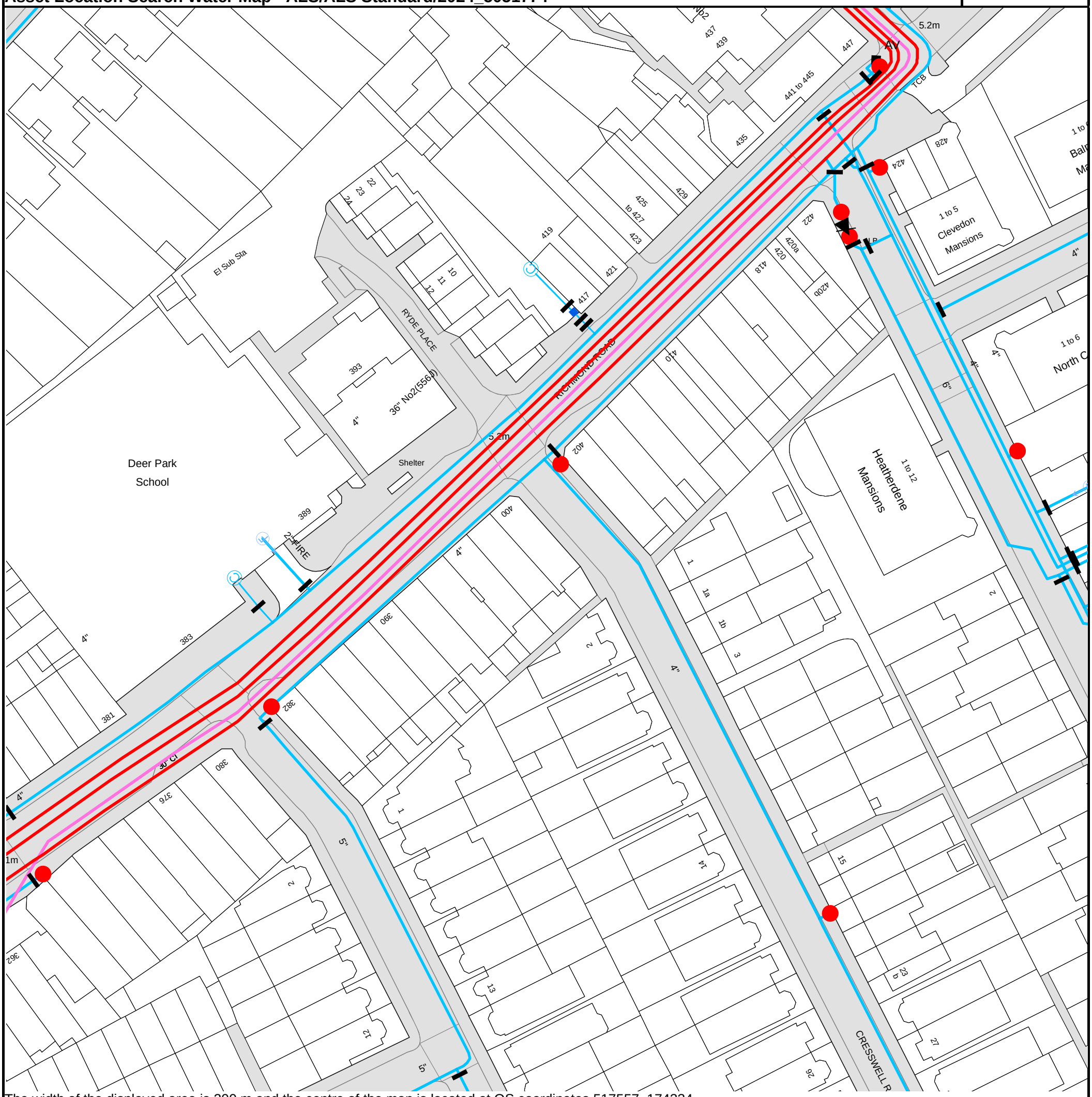
Ducts may contain high voltage cables. Please check with Thames Water.

- Conduit Bridge
- Subway
- Tunnel

Notes:

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

Asset Location Search Water Map - ALS/ALS Standard/2024_5051774



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 517557, 174334.

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Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

4"

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

16"

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

3" SUPPLY

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

3" FIRE

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

3" METERED

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

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

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

Valves

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

Hydrants

- Single Hydrant

Meters

- Meter

End Items

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

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

Operational Sites

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

Other Symbols

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

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

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

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

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

Payment Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment within 14 days of the date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service or will be held to be invalid.
4. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
5. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
6. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 980 8800.

If you are unhappy with our service, you can speak to your original goods or customer service provider. If you are still not satisfied with the outcome provided, we will refer the matter to a Senior Manager for resolution who will provide you with a response.

If you are still dissatisfied with our final response, and in certain circumstances such as you are buying a residential property or commercial property within certain parameters, The Property Ombudsman will investigate your case and give an independent view. The Ombudsman can award compensation of up to £25,000 to you if he finds that you have suffered actual financial loss and/or aggravation, distress, or inconvenience because of your search not keeping to the Code. Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0300 034 2222 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**
Please Call **0800 009 4540** quoting your invoice number starting CBA or ADS	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number

Appendix C: Flood Warning and Evacuation Plan

AVAL CONSULTING GROUP.
CIVIL, ENVIRONMENT & STRUCTURAL ENGINEERS

Flood Warning and Evacuation Plan

400 Richmond Road, London, TW1 2DY

GTI Ventures Ltd

January 2025

Project Information

Title	Flood Warning and Evacuation Plan
Job Code	93559B
Sector	Flood Risk
Report Type	FRA
Client	GTI Ventures Ltd
Revision	A
Status	Final
Date of Issue	07 January 2025

Revision History

Revision	Date	Author	Reviewer	Approver	Status
A	07 January 2025	PR	WR	AC	Final

Disclaimer

Table of Contents

1. Executive Summary

1.1 Aval Consulting Group Limited has been commissioned by GTI Ventures Ltd ('the client') to provide a Flood Warning and Evacuation Plan in relation to a planning application at 400 Richmond Road TW1 2DY.

1.2 The proposal is for the following:

"Alterations to shopfront including new glazing to remove the existing 1m set back from Richmond Road, new access door to the corner and new fascia".

1.3 This report covers the contingency measures to provide maximum safety for the users of the proposed development during a flood event.

2. Introduction

Overview

2.1 AVAL Consulting Group Limited (ACGL) has been commissioned by GTI Ventures Ltd ('the client') to provide a Flood Risk Assessment in relation to a planning application at 400 Richmond Road TW1 2DY. This is to accompany the planning application to the Local Authority for consent to undertake the proposed work.

2.2 This report covers the contingency measures to provide maximum safety for the users of the proposed development during a flood event.

Site Location and Details

2.3 Figure 2.1 shows the proposed site location. The surroundings of the proposed development are largely residential in nature. The site is bounded by residential properties to the north and south, Cresswell Road to the east and Richmond Road to the west.

Figure 2.1: Proposed Site Location (Source: Google Maps)

3. Aims and Objectives of the Flood Warning and Evacuation Plan

3.1 The aim of the FWEP is to provide a well organised and safe evacuation of the users of the proposed development in the event of a flooding.

3.2 The FWEP is aimed at providing information in regards to the risk of flooding at the site, to provide details about the Flood Warning and to explain the use of the plan and the actions required to safely vacate the site.

4. Responsibilities

4.1 The users of the proposed development are required to first understand the risk of flooding upon occupation of the site via the Flood Risk Assessment undertaken by Aval Consulting Group Ltd.

4.2 It is also recommended for the users of the proposed development to fill out the Personal Flood Plan upon occupation of the proposed development, which includes details such as contact numbers for utility and emergency providers and locations of gas, electricity and water cut-offs.

4.3 Finally, the users of the proposed development are required to sign up to the Environment Agency's Flood Warning and Flood Alert notifications upon occupation of the proposed development. It is also recommended for the users of the proposed development to discuss with the emergency services to ensure the plans are up-to-date and is pre-planned and agreed ahead of time.

4.4 The Environment Agency will aim to provide any alerts or warning at least 2 hours prior to any potential flooding at the site. Upon receiving the alert or warning, the users of the proposed development should evacuate to a high point or as advised by the emergency services and/or the Environment Agency.

5. Flood Risks at the Site

5.1 As identified within the Flood Risk Assessment, the site is within a high risk of river/sea flooding and a very low risk of surface water flooding.

6. Trigger Points

6.1 The Plan will have 4 points as mentioned below and can be seen within the Personal Flood Plan.

Flood Alert Status

6.2 The Environment Agency will issue the Flood Alert status anywhere from 2 hours to 2 days prior to a flooding event. The users of the proposed development will automatically be notified if they have registered for the services.

6.3 It is recommended for the users of the proposed development to keep an eye on the flood levels and forecasts and to prepare an essential items kit and to prepare for potential evacuation if necessary.

Flood Warning Status

6.4 The Environment Agency will issue the Flood Warning status anywhere from 30 minutes to a day prior to a flooding event. The users of the proposed development will automatically be notified if they have registered for the services.

6.5 If a Flood Warning status is received, the users of the proposed development are required to protect their property by closing doors using flood doors or sandbags and to close any ventilation holes which may be a point of entry.

6.6 The users should also move all valuable items to a higher place within the house and if possible, to also close off gas, electricity and water supplies.

6.7 Finally, the users of the proposed development should keep a flood kit in case of an emergency and should be prepared to evacuate immediately if the potential flooding worsens.

6.8 If an evacuation needs to take place, the emergency services will notify the users and will install road signs to notify the evacuation route or as advised by the Environment Agency:

Severe Flood Warning

6.9 The Environment Agency will issue the Severe Flood Warning status if there is an immediate danger to life. The users of the proposed development will automatically be notified if they have registered for the services.

6.10 The users of the proposed development will need to evacuate immediately if safe to do so. Alternatively, the users of the proposed development are required to stay within the highest point of the development until emergency services arrive.

6.11 The users should also call the emergency services if their lives are in immediate danger.

Warnings No Longer in Force

6.12 The Environment Agency will issue the Warnings No Longer in Force status if there is an immediate danger to life. The users of the proposed development will automatically be notified if they have registered for the services.

6.13 The users of the proposed development would need to contact their insurance company if the development has been flooded. The users of the proposed development can enter the property only if it is safe to do so under the instructions of the emergency services.

7. Annual Review

7.1 The Flood Warning and Evacuation Plan must be updated at least once a year in accordance with the Environment Agency.

7.2 The Personal Flood Plan is also to be updated at least once a year to include update contact details, to ensure the users are still registered to the alert services and the locations of any gas, electricity or water cut-offs.

8. Flood Kit Items

8.1 It is recommended to keep and maintain a flood kit in the event of any flooding. The kit should include the following items as a minimum requirement:

- Drinking Water
- First-Aid Kit and Supply of Essential Medication
- Long-life food items
- Copy of important contact details
- Waterproof clothing and/or shoes
- Instructions to turn off gas, electricity and water supplies
- Copy of insurance (which should include coverage of flooding)