Flood Risk Assessment

June 2025

EAS

Abbey Gardens
Abbey Street
Reading
RG1 3BA

EAS

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The content of this report is based on information available as of June 2025, the validity of the statements made may therefore vary over time as planning guidance / policies and the evidence base change.

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1 Introduction

1.1 This Flood Risk Assessment (FRA) has been prepared to accompany a planning application for the change of use of part of the ground to seventh floors from office to residential under Class MA of the General Permitted Development Order at Abbey Gardens, Abbey Street, Reading, RG1 3BA (hereafter referred to as 'the site'). A site location plan is enclosed in **Appendix A.**

1.2 The proposed site layout is enclosed in **Appendix B.**

1.3 The site is primarily located within Flood Zone 1, with a small encroachment of Flood Zone 3 to the northeastern and southeastern edges of the site. Areas in Flood Zone 3 are defined as having a 1% (1 in 100) or greater annual probability of river flooding. The site is located within a reservoir flood extent when there is also flooding from rivers, and is shown to be at risk of surface water flooding along the northern, and a small area of the western, building perimeters.

1.4 This FRA will review all sources of flooding and detail necessary mitigation measures.

1.5 The contents of this FRA are based on the advice set out in the National Planning Policy Framework (NPPF) published in December 2024, Annex 3: Flood risk vulnerability classification, also from the NPPF and PPG 'Guidance for Flood Risk and Coastal Change', updated in August 2022.

1.6 This report is based on the Environment Agency flood maps, geology mapping, OS mapping, topographic survey, Strategic Flood Risk Assessment, and national & local policy.

1.7 This document includes the following sections:

Section 2 - describes the relevant policy;

Section 3 - site description, including site levels, proximity to watercourses etc.;

Section 4 - outlines potential sources of flooding;

Section 5 – details mitigation measures;

Section 6 – summarises and concludes the report

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2 Policy Context

Introduction

2.1 This section sets out the policy context. This report is based on the advice set out in the National Planning Policy Framework (NPPF) last updated December 2024 and the Planning Practical Guidance (PPG) updated in August 2022.

2.2 Paragraph 181 of the NPPF discusses the use for site-specific flood-risk assessments and what the assessment should demonstrate:

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

a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;

b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;

c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;

d) any residual risk can be safely managed; and

e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan."

2.3 Paragraph 181 footnote 63 of the NPPF states:

"A site-specific flood risk assessment should be provided for all developments in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use."

2.4 The flood zones are defined as:

- Flood Zone 1 - less than a 0.1% (1 in 1000) annual probability of river or tidal flooding.
- Flood Zone 2 - between a 0.1% and 1% (1 in 1000 and 1 in 100) annual probability of river flooding; or between a 0.1% and 0.5% (1 in 1000 and 1 in 200) annual probability of flooding from tidal sources.
- Flood Zone 3a- This zone comprises land assessed as having a 1% (1 in 100) or greater annual probability of river flooding; and for tidal flooding at least a 0.5% (1 in 200) annual probability of flooding from tidal sources.

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- Flood Zone 3b - This zone comprises land where water has to flow or be stored in times of flood. This classification is usually classified as land which had a 3.33% (1 in 30) annual probability of flooding.

2.5 Paragraph 170 discusses the suitability of development location, particularly with regards to future risks induced by climate change:

"Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere."

2.6 Paragraph 175 states:

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

2.7 Paragraph 182 of the NPPF discusses the application of sustainable drainage systems:

"Applications which could affect drainage on or around the site should incorporate sustainable drainage systems to control flow rates and reduce volumes of runoff, and which are proportionate to the nature and scale of the proposal. These should provide multifunctional benefits wherever possible, through facilitating improvements in water quality and biodiversity, as well as benefits for amenity. Sustainable drainage systems provided as part of proposals for major development should:

a) take account of advice from the Lead Local Flood Authority;

b) have appropriate proposed minimum operational standards; and

c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development."

2.8 The site is primarily located within Flood Zone 1, with a small encroachment of Flood Zone 3 to the northeastern and southeastern edges of the site. Areas in Flood Zone 3 are defined as having a 1% (1 in 100) or greater annual probability of river flooding.

2.9 The EA Flood Map has been enclosed in **Appendix C**.

Local Policy

Reading Borough Local Plan (Adopted November 2019)

2.10 This document sets out our planning policies for development in Reading up to 2036.

2.11 Policy EN18 Flooding and Sustainable Drainage Systems states:

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"Development will be directed to areas at lowest risk of flooding in the first instance, following the Sequential and Exceptions Test set out in the NPPF, and taking into account the effects of climate change. It will consider flooding from all sources, including fluvial, surface water, groundwater and sewer flooding. Where development in areas at risk of flooding is necessary, it will not reduce the capacity of the flood plain to store floodwater, impede the flow of floodwater or in any way increase the risks to life and property arising from flooding. Wherever possible, development should be designed to reduce flood risk, both on- and off-site.

All major developments must incorporate sustainable drainage systems (SuDS) as appropriate and in line with the Government's Technical Standards. Smaller schemes are encouraged to incorporate SuDS, where possible. Runoff rates should aim to reflect greenfield conditions and, in any case, must be no greater than the existing conditions of the site. Schemes should ensure that the movement of water through vertical infiltration as well as horizontal run-off does not worsen contamination effects. Wherever possible, SuDS provision should maximise ecological benefits, link into the existing Green Network, incorporate tree planting and landscaping and avoid damage to existing significant trees, including through changes to the site hydrology. All new developments in areas of flood risk should give priority to SuDS."

Reading Borough Council Strategic Flood Risk Assessment (SFRA) June 2017

2.12 The SFRA assess all sources of flood risk across the borough and this information should be used for strategic planning and flood risk management.

2.13 Map A4 of the SFRA identifies the site to be located within the catchment of the River Kennet. Map A5 of the SFRA notes the location of 'Key Hydraulic Features' across the borough. The nearest feature is Blake's Lock and Weir which is located approximately 500m downstream of the site.

2.14 Map G2 of the SFRA shows the site is located above a 'Major Aquifer with High Permeability'.

2.15 Map F1 of the SFRA confirms the site is not located within a Historic Floodplain.

2.16 Figure 53 of the SFRA does not identify any recorded incidents of flooding at the site.

2.17 The only reservoir (as defined by the Reservoirs Act) of relevance to Reading Borough is Whiteknights Lake, located within the grounds of the University of Reading. It is an ornamental lake which was built in the 19th century and has a capacity of 70,000m^3.

2.18 Map F7 of the SFRA provides a detailed reservoir flood map for Whitenights Lake. The map shows the extent and depth of flooding within the local area in the unlikely event of a breach. The site is shown to remain outside the modelled breach extent. A copy of Map F7 is enclosed in **Appendix D** of this report. Paragraph 6.4.1 of the SFRA states:

"Under Schedule 4 of the Flood and Water Management Act 2010, the EA has designated Whiteknights Reservoir as a "high risk" (Category A) large raised reservoir, because in the event of an uncontrolled release of water from the reservoir, the Environment Agency believes that human life could be endangered. As such Whiteknights Reservoir is subject to the full requirements of the amended Reservoirs Act 1975."

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2.19 Map F8 of the SFRA identifies the areas sustainable to groundwater flooding across the borough. The site is located in an area with a greater than 75% susceptibility to groundwater flooding.

2.20 Map F9 of the SFRA details the recorded incidents of sewer flooding informed by the Thames Water DG5 Register (dated February 2016). The site is located in the postal code area of RG1 1 which has 51-100 recorded incidents of sewer flooding. The site has not been specifically identity to have been affected.

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3 Existing Site Assessment

Site Description

3.1 This Flood Risk Assessment (FRA) has been prepared to accompany a planning application for the change of use of part of the ground to seventh floors from office to residential under Class MA of the General Permitted Development Order at Abbey Gardens, Abbey Street, Reading, RG1 3BA.

3.2 A site location plan is enclosed in **Appendix A** and the proposed site plans are enclosed in **Appendix B.**

3.3 The site is located in the centre of Reading and is surrounded by commercial premises, hotels and leisure facilities on all sides.

Local Watercourses

3.4 The River Kennet, an EA Main River, flows through the centre of the site in within a concrete lined channel. The channel is located below street level and therefore flows under a podium level to the north of the site. The River Thames, also an EA Main River is located approximately 600m north of the site.

3.5 Whiteknights Lake is located approximately 2.0km southeast of the site.

Site Levels

3.6 The topographic survey is enclosed in **Appendix E.** The north eastern entrance of the site has a finished floor level of 38.05mAOD. The lower basement car park in this location is noted to have a floor level of 35.10mAOD. The southern entrance to the building along Kings Road has a finished floor level of 39.63mAOD, rising to 41.02mAOD within the main ground floor area. A step free entrance in this location has a finished floor level of 38.58mAOD.

3.7 There are no entrances to the building along Abbey Street and levels along the perimeter of the building here range from 38.1mAOD to 38.6mAOD.

Geology

3.8 British Geological Survey (BGS) online mapping shows the site to be located on a bedrock of Seaford Chalk Formation and Newhaven Chalk Formation – chalk with superficial deposits of Alluvium - clay, silt, sand and gravel.

3.9 There are borehole records at the site however these are classified as confidential, and results cannot be viewed.

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4 Potential Sources of Flooding

Fluvial

4.1 The site is shown to be partially located within the Flood Zone 3 on the Flood Map for Planning. Areas in Flood Zone 3 are defined as having a 1% (1 in 100) or greater annual probability of river flooding. The source of flooding at the site is the River Kennet, an EA Main River.

4.2 The EA Flood Map has been enclosed in **Appendix C.**

Flood Risk Assessment Data Request

4.3 A Flood Risk Assessment data request was submitted to the Environment Agency to further assess the fluvial flood risk at the site. The received data is enclosed in **Appendix C.** Following the update to the Flood Map for Planning in March 2025, an additional data request was submitted to the Environment Agency. A response was received in June 2025, providing the same model are previously received. Therefore, the original data provided in January 2025 has been used to inform this Flood Risk Assessment, as it is confirmed to be the most up-to-date data.

4.4 The Flood Map for Planning shows a small area of Flood Zone 3 encroaching the northeastern and southeastern perimeters of the site.

4.5 It has been confirmed that the site is not currently protected by any formal defences.

4.6 The site is located in the 'Kennet and tributaries Management Catchment'. The site is partially located in Flood Zone 3a and the proposals introduce a 'more vulnerable' use. The central climate change allowance is the applicable allowance in this instance. The applicable 2080 central climate change allowance is 21%. This climate change allowance has not been modelled however a 25% allowance has been modelled and therefore these modelled results will be used to assess the flood levels at the site.

1D In-channel Flood Levels

4.7 1D in channel modelled nodes have been provided for a range of modelled events and is sourced from the Kennet (Tyle Mill to Thames Confluence) 2018 model.

4.8 The 1D node at the site which has the greatest 1%AEP+25% climate change flood level of 37.14mAOD is '061_22_2018_001KENN3_1322.2'. The 0.1%AEP flood level for this 1D node is 37.22mAOD.

2D Modelled Floodplain Levels

4.9 2D modelled floodplain levels have also been provided and these levels provide a more accurate representation of the likely flood levels at the site.

4.10 The closest 2D node to the site is 'Flood Point 3'. The 1%AEP +25% climate change 2D flood level is 37.12mAOD. The 0.1%AEP 2D flood level is 37.19mAOD.

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4.11 Assessing the 2D flood levels against the topographical survey levels at the site, it can be confirmed that the finished floor levels at the ground floor level remain above even the 0.1%AEP 2D flood level of 37.19mAOD.

4.12 The lowest recorded ground finished floor level of 38.05mAOD is 0.86m above the 0.1%AEP 2D flood level. This finished floor level is also the closest to the River Kennet in the central eastern area of the building.

4.13 The lower basement car park could experience a flood depth of 2.02m based on the 1%AEP +25% climate change 2D flood level and a flood depth of 2.09m based on the 0.1%AEP 2D flood level.

4.14 The top of bank levels recorded along the River Kennet to the north of the site is 37.50mAOD, 310mm above the 0.1%AEP 2D flood level. Along the eastern boundary of the site, the lowest recorded top of bank level is 37.49mAOD, 300mm above the 0.1%AEP 2D flood level. It can be concluded that even in the extreme 0.1%AE event, flood flows are likely to remain within the channel.

4.15 Mitigation measures to manage the risk posed to the basement level are detailed in Section 6 of this report.

Modelled Flood Outlines

4.16 A negligible area within the immediate vicinity of the channel at the site's location is shown to be within the 20%AEP modelled flood outline.

4.17 The site appears to be located outside all 1%AEP +climate change modelled flood outlines and the 0.1%AEP modelled flood outlines.

Historic Flood Data

4.18 The site has been identified to have been affected by fluvial flooding the winter of 2013/2014 however the corresponding flood outlines map does not show any flood outline within the red line boundary. Flooding is however shown downstream of the site, particularly at the location of the confluence of the branches of the River Kennet.

Hazard Mapping

4.19 Hazard mapping has been provided for the 1%AEP+25% and 35% climate change events. A hazard rating of 'danger for all' is present along the eastern perimeter of the site however, this extent of this hazard rating does not extend across the site and is limited to the channel itself or limited to the immediate top of bank areas.

Surface Water

4.20 The Long-Term Flood Map and the risk of flooding from surface water (RoFSW) data was updated in January 2025.

4.21 The RoFSW products are an assessment of where surface water flooding may occur when rainwater does not drain away through the normal drainage systems or soak into the ground

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but lies on or flows over the ground instead. It includes information about flooding extents and depths. Risk is displayed as one of three likelihood categories:

- High - greater than or equal to 1 in 30 (3.3%) chance of flooding in any year
- Medium – Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of flooding in any given year
- Low – Less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) chance of flooding in any given year

4.22 As well as present day risk of flooding from surface water, climate change scenarios have been produced to indicate the predicted impacts of climate change on future flood risk. The climate change allowances are based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative Concentration Pathway (RCP) 8.5. A near-term epoch (2040 – 2060 "2050s" epoch) and central allowances are being used initially.

4.23 For the purpose of this flood risk assessment, the RoFSW the Climate Change 1 2040-2060 data set has been used.

4.24 Figure 1 in **Appendix F** shows the risk of surface water flooding at any depth. In this scenario, the site includes a small area at high risk of flooding located at the northeastern perimeter. Additionally, a small section in the northwest is identified as being at medium risk, along with another medium-risk area along the western boundary adjacent to Abbey Road.

4.25 Figure 2 in **Appendix F** shows the risk of surface water flooding exceeding 0.2m. In this scenario, the previously mentioned medium-risk area along the western boundary shows no flood risk. The northwestern corner displays only a single pixel of medium risk, suggesting flood depths in both of these areas are unlikely to exceed 0.2m. The area identified in the northeastern corner remains at high risk of flooding in this scenario.

4.26 Figure 3 in **Appendix F** shows the risk of surface water flooding exceeding 0.3m. Within this scenario, the previously mentioned area to the northeast of the site is shown to be at medium risk of flooding.

4.27 Figure 4 in **Appendix F** shows the risk of surface water flooding exceeding 0.6m. In this scenario, the site is shown to be free from flood risk. Therefore, it can be assumed that the localised flooding in the northeastern corner will not exceed a depth of 0.6m.

Basement Car Park Surface Water Flood Risk

4.28 Whilst surface water is unlikely to enter the ground floor level, the basement car park is however more vulnerable to surface water flooding. It is noted that there are gullies located at the entrance of the car park, which would prevent some surface water from flowing into the basement car park. However, in the extreme 0.1%AEP event, it is assumed these would be at full capacity and thus offer no protection against surface water from Abbey Street flowing into the basement car park.

4.29 Surface water sourced from Abbey Street would flow down the set of steps and enter the watercourse and pool around the top of bank. As site levels fall from the top of bank towards the basement car park entrance, flows have a direct pathway to enter the basement level.

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4.30 The fall of the road down into the basement also provides a direct pathway for surface water to enter the basement car park direct from Abbey Street (see Figure 4.1 below).

4.31 The topographical survey records a lower basement car park floor level of 35.10mAOD. Figure 1 in **Appendix F** indicates a medium risk of flooding in this area of the site, while Figure 2 shows that flood depths are not expected to exceed 0.2 metres. Therefore, it can be assumed that the maximum flood depth in this area would be up to 0.2m.

4.32 Taking this surface water flood depth, a surface water flood level of 35.3mAOD could be experienced at basement level. When compared with the lowest ground floor level of 38.05mAOD, a freeboard of 2.75m is present.

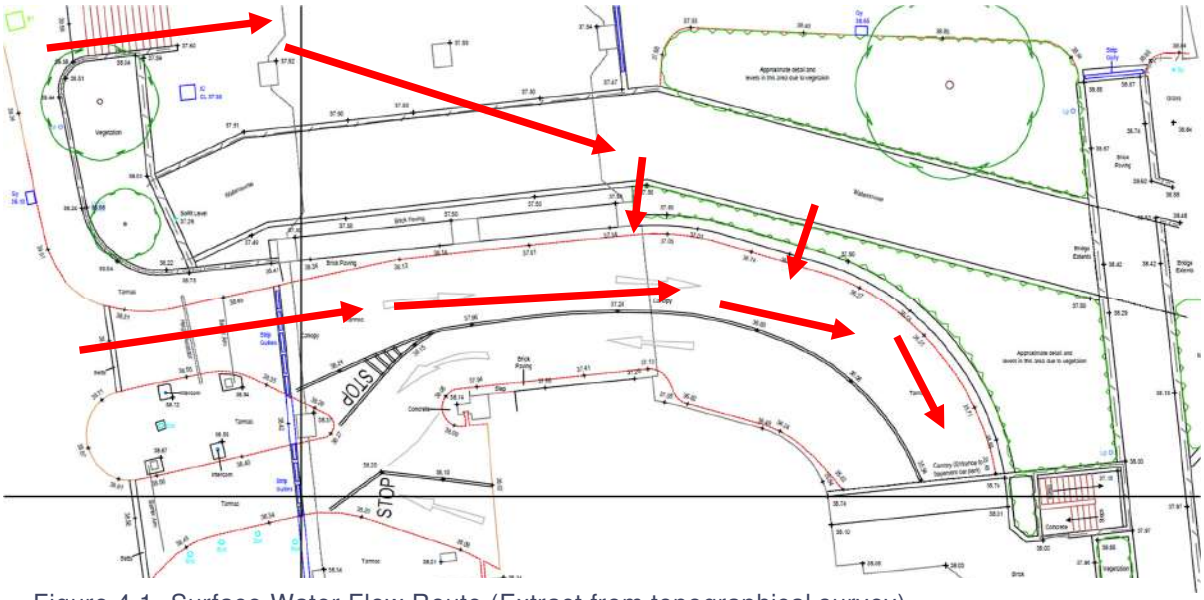

Figure 4.1- Surface Water Flow Route (Extract from topographical survey)

Reservoir

4.33 The site is located within a reservoir flood extent when there is also flooding from rivers on the Long-Term Flood Map.

4.34 Given the sensitivity of data surrounding reservoirs and the varying factors contributing to reservoir failure (i.e. location of a breach and severity of a breach) it is not possible to comment on flood depths, rate of inundation or velocity of flood flows as such modelled information is not publicly available.

4.35 Noteworthy, the site is located on the edge of the reservoir extent and therefore the rate of inundation is unlikely to be rapid. Moreover, depths are also likely to be negligible on the edge of the flood extent.

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4.36 Comparing the finished floor levels and surrounding ground levels, it can be demonstrated that there is freeboard available on all entrances, providing a level of protection to the ground floor level.

4.37 At the location of the southern entrance along Kings Road, the pavement level in this location is 38.52mAOD and the ground floor finished floor level is 41.02mAOD, 2.5m above the surrounding ground level. At the location of the northeastern entrance, the ground floor finished floor level is 38.05mAOD, surrounding ground levels are around 37.9mAOD, 150mm lower than the finished floor level.

4.38 Map F7 of the SFRA provides a detailed reservoir flood map for Whitenights Lake. The map shows the extent and depth of flooding within the local area in the unlikely event of a breach. The site is located outside the flood extent.

4.39 In the unlikely event of a reservoir flood, flood waters would flow into and pool in the basement car park.

4.40 Mitigation measures to manage the reservoir flood risk are detailed in Section 6 of this report.

Groundwater

4.41 Given the extensive presence of hardstanding at the site, the emergence of groundwater is considered to be low. There is no habitable accommodation located in the lower ground floor level.

Sewer

4.42 Sewer flooding generally results from localised short-term intense rainfall events overloading the capacity of the private and public drainage or due to failures within the public sewer.

4.43 The likelihood of this occurring and the impact of the flooding is such that the risk of flooding from sewer sources is considered low.

4.44 As there is no additional impermeable area and no changes to the building footprint, the existing surface water drainage system will continue to serve the proposed use. Therefore, no additional runoff will be directed to the onsite drainage as a result of the development and thus there is no increased risk of localised onsite sewer flooding.

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5 Mitigation Measures

5.1 With reference to Annex 3: Flood risk vulnerability classification of the NPPF, the proposed residential use at the site is 'more vulnerable' therefore appropriate mitigation measures have been detailed below.

Flood Warnings

5.2 The site is in the 'Properties closest to the River Kennet at the Burghfield, Southcote, Coley and Holybrook' Flood Warning Area and it is recommended all residents subscribe to the EA Flood Warning Service. Signing up to EA Flood Warnings would therefore improve the overall flood awareness and preparedness for residents.

5.3 The EA operate a flood forecasting and warning service in areas at risk of flooding from rivers or the sea, which relies on direct measurements of rainfall, river levels, tide levels, in-house predictive models, rainfall radar data and information from the Met Office. This service operates 24 hours a day, 365 days a year.

5.4 It is recommended that the residents subscribe to the EA flood warning service by using the link: https://www.fws.environment-agency.gov.uk/app/olr/home. Alternatively, registration can be completed by telephone via the EA Floodline on 0345 988 1188 or Typetalk 0345 602 6340.

5.5 For information on EA Flood Information in the local area, the GOV.UK website can be used: https://flood-warning-information.service.gov.uk/

MET Office Weather Warnings

5.6 Although warnings cannot be given for surface water flooding, such an event is likely to correspond with prolonged and/or heavy rainfall. It is therefore recommended that all residents sign up to receive MET office weather warnings: https://www.metoffice.gov.uk/about-us/news-and-media/media-centre/subscribe-to-email-alerts.

Access and Egress

5.7 The site is surrounded by areas in Flood Zone 1 to the north, south and west providing safe access and egress above and outside the modelled flood extent. Moreover, it has been concluded that the finished floor levels of the ground floor across the building remains above the 0.1%AEP flood level therefore evacuation is not strictly required. The building entrances are to the northwest from Abbey Road, as shown in the ground floor plan included in **Appendix B**, and in the south onto Kings Road, shown on the ground floor plan in **Appendix B**. Both entrances are outside the 0.1%AEP surface water flood extent.

5.8 An access and egress route is demonstrated in Figure 5.1 below.

5.9 Residents should not attempt to walk or drive through flood water and would remain safe and dry within the site.

5.10 With regards to the reservoir flood risk, as the site is located on the edge of the flood extent, it is anticipated that a warning would reach the local area providing time for evacuation prior to

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the onset of flooding. Residents should follow the evacuation route as shown in Figure 5.1 into areas shown to be outside the reservoir flood extent.

5.11 Noteworthy, internal staircases also provide ground floor residents with access to a first-floor refuge area.

Flood Warning Notice

5.12 To improve flood awareness at the site, it is recommended that Flood Warning Notice is displaced in all communal lobby entrances. An example Flood Warning Notice can be viewed in Figure 5.2.

5.13 A full Flood Plan could be provided post planning via a suitably worded condition.

Basement Car Park Closure

5.14 All entrances to the basement car park should be fitted with a flood defence barrier such as the Flood Control Internation Drop Down Flood Barrier or similar approved which is deployed when sensors detect waters. An example provide can be viewed here: https://floodcontrolinternational.com/drop-down-flood-barriers/. The flood defence barrier could also be combined with a flood telemetry system to send flood warnings to management and residents.

5.15 Upon receipt of a Flood Warning residents or upon the presence of flood waters, residents should be prepared for the basement car park to be closed and no attempt to drive through flood waters should be made.

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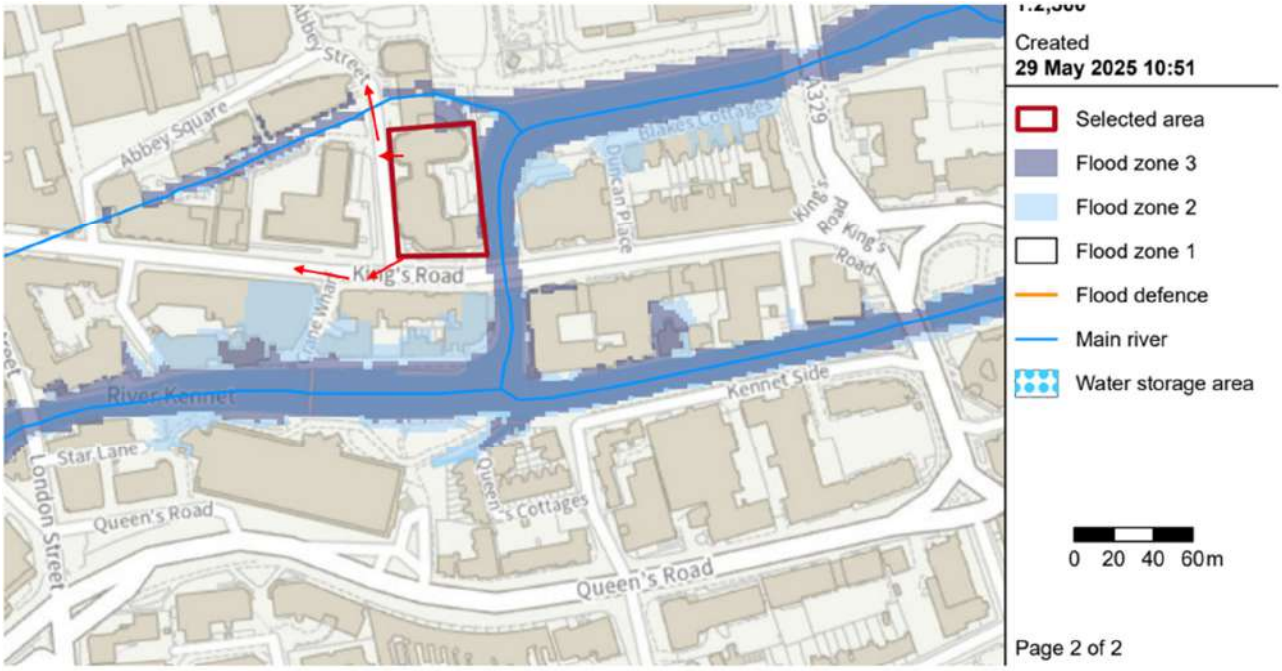

Figure 5.1- Access and Egress Route

Source: Extract from Flood Map for Planning

Access and Egress Route

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Flood Warning Notice

You are advised to subscribe to the Environment Agency Floodline Service and check the current flood warning status issued by the Environment Agency

FLOOD ALERT – BE PREPARED!

FLOOD WARNING – ACT NOW! BASEMENT CAR PARK SUBJECT TO CLOSE

SEVERE FLOOD WARNING – EXTREME DANGER TO PEOPLE AND PROPERTY!

DO NOT DRIVE OR WALK THROUGH FLOOD WATERS

For more information call the Floodline or visit the Environment Agency website here: https://flood-warning-information.service.gov.uk/

Floodline: 0345 988 1188 (24 hours a day, calls charged at local rate)

Figure 5.2- Example Flood Warning Notice

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6 Conclusion

6.1 This Flood Risk Assessment (FRA) has been prepared to accompany a planning application for the change of use of part of the ground to seventh floors from office to residential under Class MA of the General Permitted Development Order at Abbey Gardens, Abbey Street, Reading, RG1 3BA.

Flood Risk Summary

6.2 The site is shown to be partially located within the Flood Zone 3 on the Flood Map for Planning. Areas in Flood Zone 3 are defined as having a 1% (1 in 100) or greater annual probability of river flooding. The source of flooding at the site is the River Kennet, an EA Main River.

6.3 A Flood Risk Assessment data request was submitted to the Environment Agency to further assess the fluvial flood risk at the site. The received data is enclosed in **Appendix C.** Following the update to the Flood Map for Planning in March 2025, an additional data request was submitted to the Environment Agency. A response was received in June 2025, providing the same model are previously received. Therefore, the original data provided in January 2025 has been used to inform this Flood Risk Assessment, as it is confirmed to be the most up-to-date data.

6.4 2D flood levels were provided and as these provide an accurate representation of flood levels across the floodplain, these have been used to assess the fluvial flood depths at the site.

6.5 The closest 2D node to the site is 'Flood Point 3'. The 1%AEP +25% climate change 2D flood level is 37.12mAOD. The 0.1%AEP 2D flood level is 37.19mAOD.

6.6 Assessing the 2D flood levels against the topographical survey levels at the site, it can be confirmed that the finished floor levels at the ground floor level remain above even the 0.1%AEP 2D flood level of 37.19mAOD. The top of bank levels recorded along the River Kennet where it flows through the centre of the site is 37.50mAOD, 310mm above the 0.1%AEP 2D flood level. Along the eastern boundary of the site, the lowest recorded top of bank level is 37.49mAOD, 300mm above the 0.1%AEP 2D flood level. it can be concluded that even in the extreme 0.1%AE event, flood flows are likely to remain within the channel.

6.7 It is concluded that surface water flooding as modelled is heavily influenced by the fluvial mechanisms at the sites location and assessing depths, location of building thresholds and finished floor levels, surface water flooding is unlikely to enter the ground floor level of the building. The basement level car park is however more vulnerable to surface water flooding with pathways sourced direct from Abbey Street as well as out of channel flow.

6.8 The only reservoir (as defined by the Reservoirs Act) of relevance to Reading Borough is Whiteknights Lake. The site is located on the edge of the reservoir extent and therefore the rate of inundation is unlikely to be rapid. Moreover, depths are also likely to be negligible on the edge of the flood extent. The SFRA provides a detailed reservoir flood map for Whitenights Lake. The map shows the extent and depth of flooding within the local area in the unlikely event of a breach. The site is located outside the flood extent.

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6.9 With reference to Annex 3: Flood risk vulnerability classification of the NPPF, the proposed residential use at the site is considered to be 'more vulnerable'. In acknowledgement of the addition of residential ground floor sleeping accommodation a range of mitigation measures have been detailed in this report which protect residents from flooding as well as improve flood awareness and preparedness at the site.

6.10 Mitigation measures include:

- Comparing the finished floor levels and surrounding ground levels, it can be demonstrated that there is freeboard available on all entrances, providing a level of protection to the ground floor level.
- Recommendation all residents sign up to receive MET Office weather warnings and EA Flood Warnings.
- All entrances into the building are located in Flood Zone 1 and the southern and northern entrances remains outside the modelled surface water flood extent therefore a suitable access and egress route has been demonstrated.
- Display of Flood Warning notice.
- Flood barriers to be installed the entrance to the basement car park with additional telemetry system providing building management and residents with a site specific flood warning.

6.11 In conclusion, this report has evaluated all sources of flooding and proposed a range of suitable mitigation measures to improve flood awareness and preparedness at the site.

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Appendix: A – Location Plan

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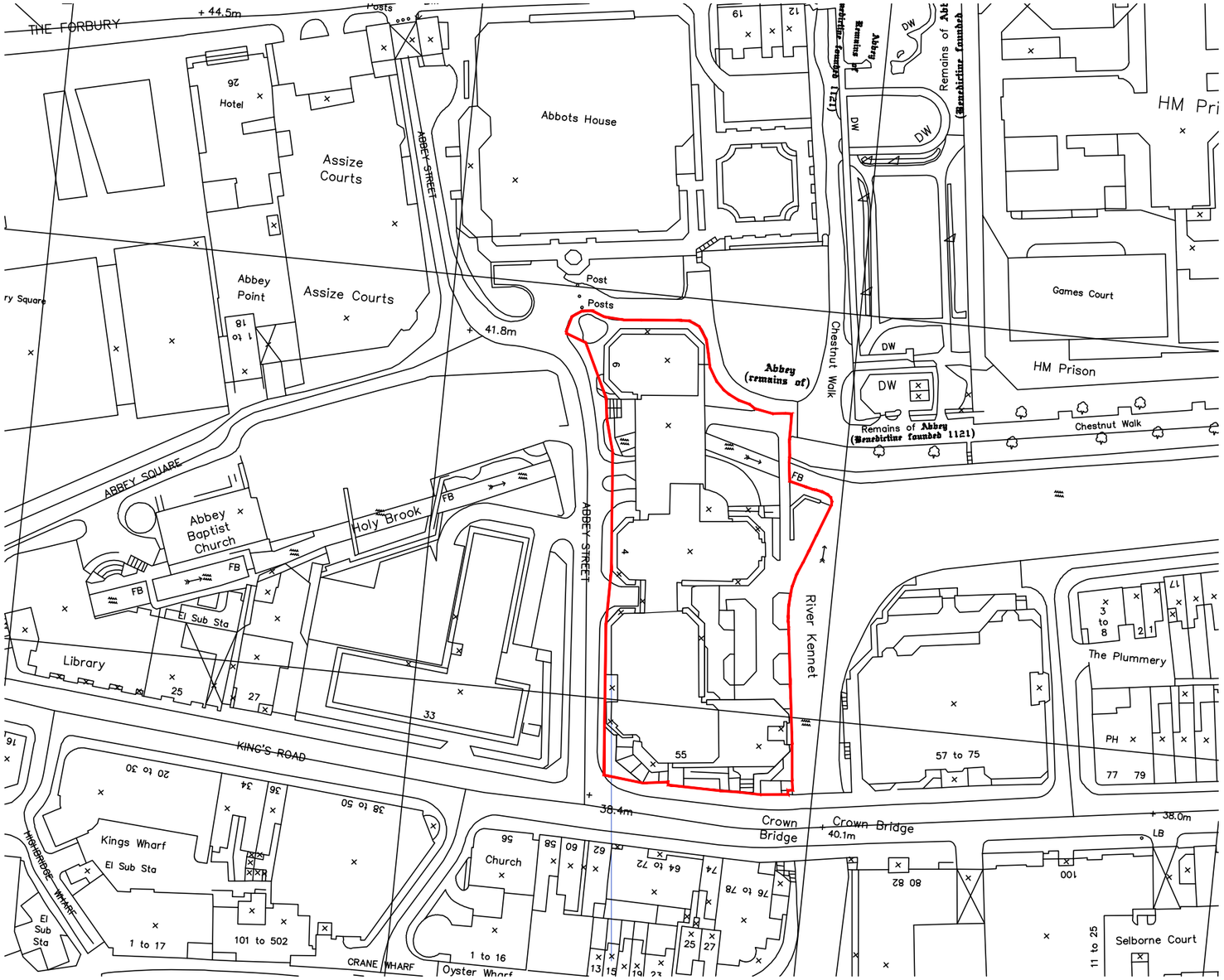

N
W E
S

Site Layout Plan

SCALE 1:1250

0 10 20 30 50 100 125 m

SITE OWNERSHIP -

NOTES

DO NOT SCALE - USE FIGURED DIMENSIONS ONLY.

ALL DIMENSIONS TO BE CHECKED ON SITE PRIOR TO CONSTRUCTION AND ANY DISCREPANCIES TO BE HIGHLIGHTED BY CONTRACTOR.

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS AND DRAWINGS.

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Revision:	Description:	Date:
P.01	Issued for Information	28.01.25

Drawing Status: P L A N N I N G

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Project: 24-013 Abbey Gardens
Drawing: Site Layout Plan
Date: 24.10.2024 | drawn by: YY | check: CC
Scale: 1:1250@A3 | drwg no.: 200 | rev. no.: P.01

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P L A N N I N G

Appendix: B – Proposed Plans

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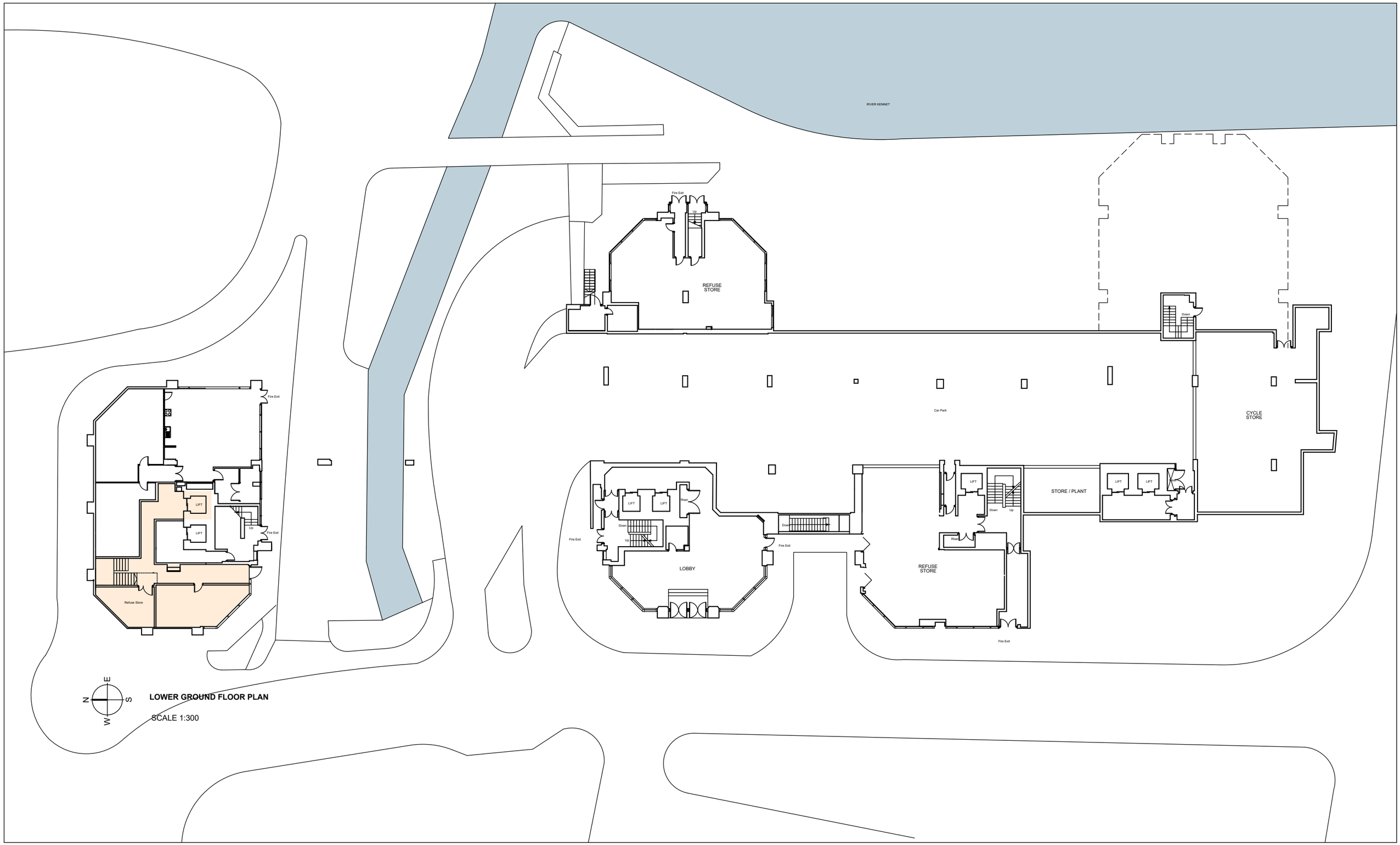

LOWER GROUND FLOOR PLAN

SCALE 1:300

NOTES

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ALL LEVELS ARE TO FINISHED LEVELS UNLESS OTHERWISE INDICATED.

	Block North & Centre					Block South					Overall Development				
	1B1P	1B2P	2B3P	2B4P	TOTAL	1B1P	1B2P	2B3P	2B4P	TOTAL	1B1P	1B2P	2B3P	2B4P	TOTAL
LG															
G	3	0	1	1	5	0	4	4	1	9	3	4	5	2	14
1	5	4	0	0	9	2	5	1	6	14	7	9	1	6	23
2	12	9	2	0	23	2	5	1	6	14	14	14	3	6	37
3	12	9	2	0	23	2	5	1	6	14	14	14	3	6	37
5	12	9	2	0	23	2	5	1	6	14	14	14	3	6	37
6	5	4	0	0	9	2	5	1	6	14	7	9	1	6	23
7	0	0	0	0	0	2	5	1	6	14	2	5	1	6	14
	0	0	0	0	0	2	5	1	6	14	2	5	1	6	14
Total	49	35	7	1	92	14	39	11	43	107	63	74	18	44	199

Drawing Status: S K E T C H

Revision:	Description:	Date:
S.01	Issued for Information	22.11.24
S.02	Minor revisions	19.12.24
S.03	Issued for Information	07.04.25
S.04	Issued for Information	25.04.25

S K E T C H

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Project: 24-013 Abbey Gardens
Drawing: Lower Ground Floor Plan
Date: 24.10.2024 | drawn by: YY | check: CC
Scale: 1:300@A3 | drwg no.: 309 | rev. no.: S.04

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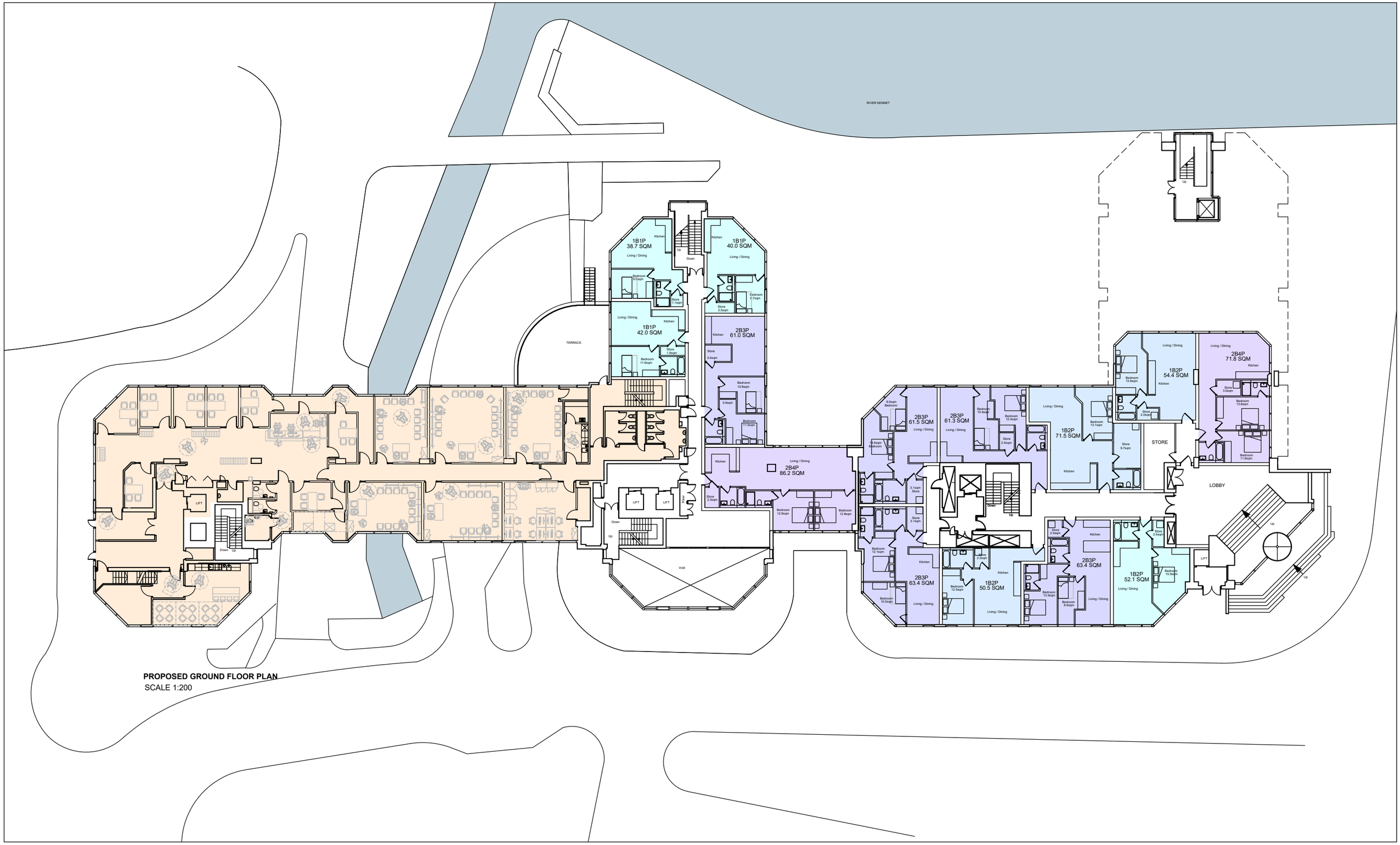

PROPOSED GROUND FLOOR PLAN
SCALE 1:200

NOTES

DO NOT SCALE - USE FIGURED DIMENSIONS ONLY.

ALL DIMENSIONS TO BE CHECKED ON SITE PRIOR TO CONSTRUCTION AND ANY DISCREPANCIES TO BE HIGHLIGHTED BY CONTRACTOR.

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ALL LEVELS ARE TO FINISHED LEVELS UNLESS OTHERWISE INDICATED.

	Block North & Centre					Block South					Overall Development				
	1B1P	1B2P	2B3P	2B4P	TOTAL	1B1P	1B2P	2B3P	2B4P	TOTAL	1B1P	1B2P	2B3P	2B4P	TOTAL
LG															
G	3	0	1	1	5	0	4	4	1	9	3	4	5	2	14
1	5	4	0	0	9	2	5	1	6	14	7	9	1	6	23
2	12	9	2	0	23	2	5	1	6	14	14	14	3	6	37
3	12	9	2	0	23	2	5	1	6	14	14	14	3	6	37
5	12	9	2	0	23	2	5	1	6	14	14	14	3	6	37
6	5	4	0	0	9	2	5	1	6	14	7	9	1	6	23
7	0	0	0	0	0	2	5	1	6	14	2	5	1	6	14
	0	0	0	0	0	2	5	1	6	14	2	5	1	6	14
Total	49	35	7	1	92	14	39	11	43	107	63	74	18	44	199

Drawing Status: S K E T C H

Revision:	Description:	Date:
S.01	Issued for Information	22.11.24
S.02	Minor revisions	19.12.24
S.03	Issued for Information	07.04.25
S.04	Issued for Information	17.04.25
S.05	Issued for Information	25.04.25

S K E T C H

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P : 26 George Street, St Albans, Hertfordshire, AL3 4ES, UK
E : letterbox@sada-architecture.com
W : www.sada-architecture.com
T : 01 727 860810

Project: 24-013 Abbey Gardens
Drawing: Ground Floor Plan
Date: 24.10.2024 | drawn by: YY | check: CC
Scale: 1:300@A3 | drwg no.: 310 | rev. no.: S.05

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Appendix: C – Flood Map for Planning & EA Data

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Flood map for planning

Your reference	Location (easting/northing)	Created
Unspecified	**471967/173415**	**29 May 2025 10:51**

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

This means:

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

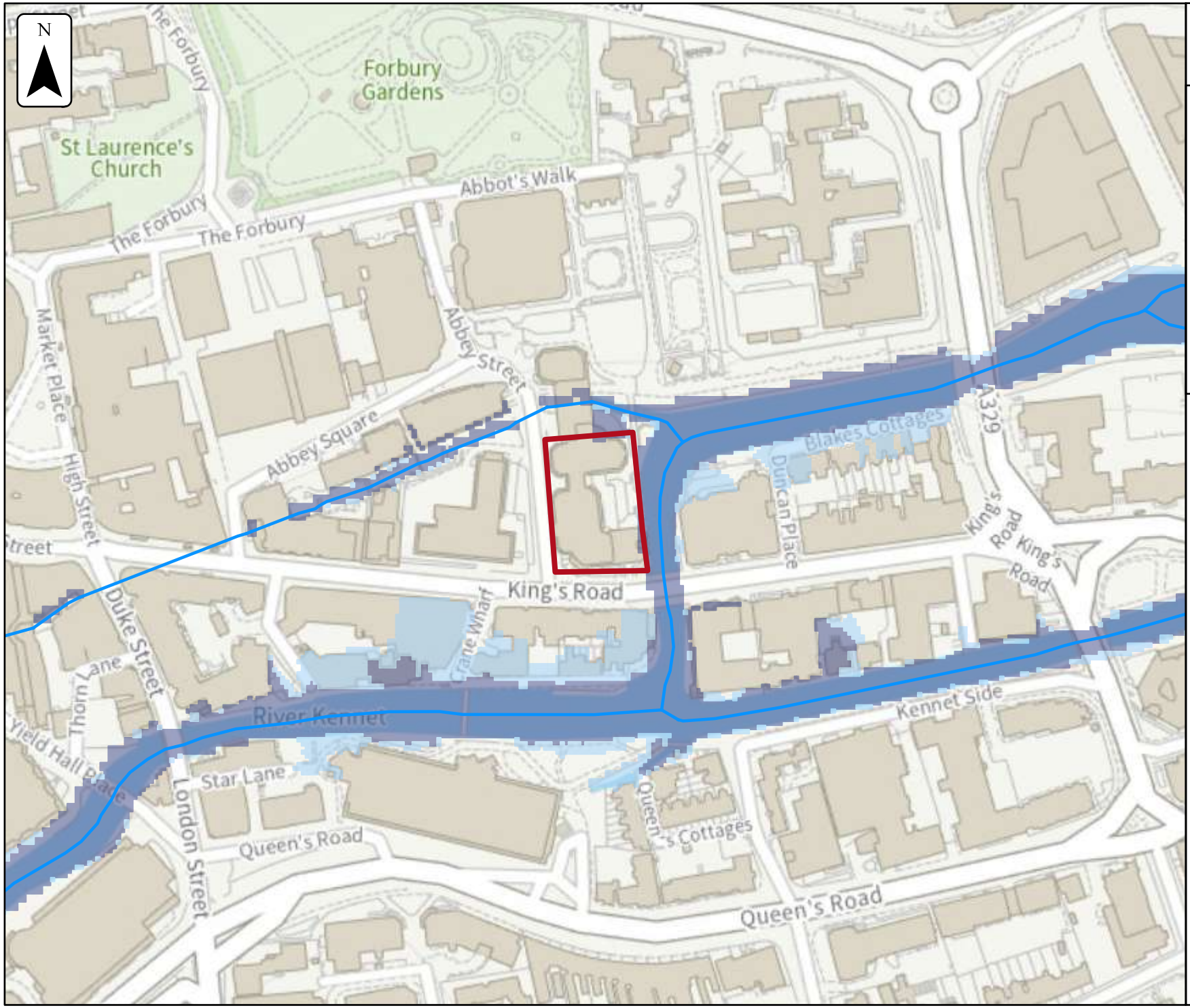
Notes

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

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

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 2025 AC0000807064. https://flood-map-for-planning.service.gov.uk/os-terms



Environment Agency

Flood map for planning

Your reference
Unspecified

Location (easting/northing)
471967/173415

Scale
1:2,500

Created
29 May 2025 10:51

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

0 20 40 60m

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Product 4 (Detailed Flood Risk) for RG1 3BA
Our Ref: THM385842

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 seperately)
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:

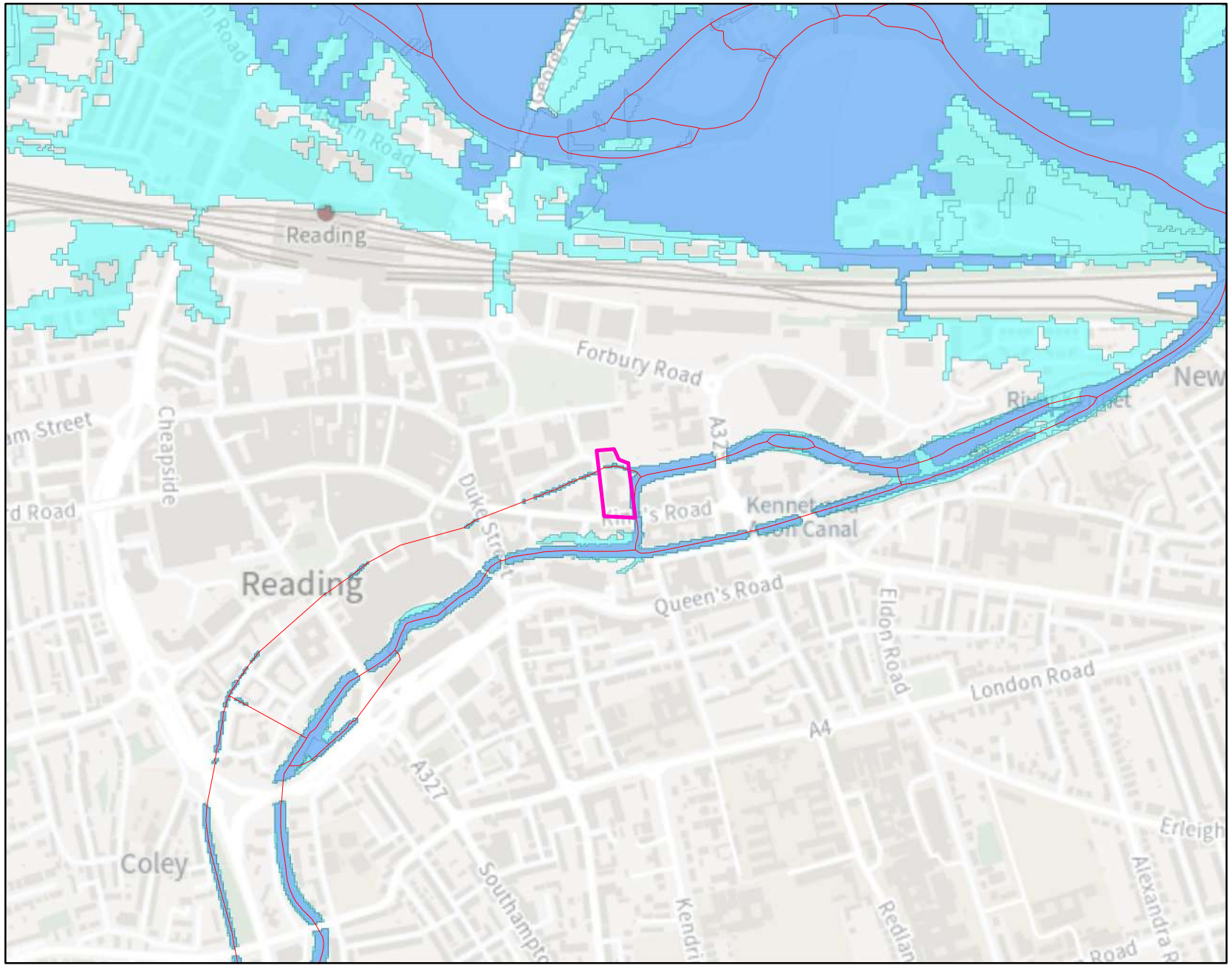
https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities

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

Red Kite House, Howbery Park, Wallingford, Oxon OX10 8BD
Customer services line: 08708 506 506
Email: enquiries_THM@environment-agency.gov.uk

Flood Map for Planning centred on RG1 3BA
Created on 02/12/24 REF: THM385842



Environment Agency

Kilometres

0 0.25 0.5

Legend

- Site
- Statutory Main Rivers
- Flood Map - Flood defences
- Flood Map - Flood Storage Areas
- Flooding from rivers or sea (FZ3)
- Extent of extreme flood (FZ2)

Flooding from rivers or sea without defences (Flood Zone 3) shows the area that could be affected by flooding:
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

The Extent of an extreme flood (Flood Zone 2) shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Defence information

THM385842

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.

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Model information

THM385842

Model: Kennet (Tyle Mill to Thames Confuence) 2018

Description: The information provided is taken from the Kennet (Tyle Mill to Thames confluence) 2018. The study was carried out using 1D-2D modelling software (Flood modeller-Tuflow).

Model design runs:
1 in 2/ 50% AEP; 1 in 5 / 20% AEP; 1 in 20 / 5% AEP;1 in 30/ 3.3% AEP; 1 in 75 / 1.3% AEP; 1 in 100 / 1% AEP; 1 in 100+15% / 1% + 15% AEP with climate change; 1 in 100+25% / 1% + 25% AEP with climate change; 1 in 100+35% / 1% + 35% AEP with climate change; 1 in 100+70% / 1% + 70% AEP with climate change; and 1 in 1000 / 0.1% AEP.

Mapped Outputs:
1 in 2/ 50% AEP; 1 in 5 / 20% AEP; 1 in 20 / 5% AEP;1 in 30/ 3.3% AEP; 1 in 75 / 1.3% AEP; 1 in 100 / 1% AEP; 1 in 100+15% / 1% + 15% AEP with climate change; 1 in 100+25% / 1% + 25% AEP with climate change; 1 in 100+35% / 1% + 35% AEP with climate change; 1 in 100+70% / 1% + 70% AEP with climate change; and 1 in 1000 / 0.1% AEP.

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Modelled in-channel flood flows and levels

THM385842

The modelled flood levels and flows for the closest most appropriate model node points for your site that are within the river channel are provided below:

				Flood Levels (mAOD)										
Node label	Model	Easting	Northing	20% AEP	5% AEP	3.3% AEP	1% AEP	1% AEP (+10% increase in flows)	1% AEP (+15% increase in flows)	1% AEP (+20% increase in flows)	1% AEP (+25% increase in flows)	1% AEP (+35% increase in flows)	1% AEP (+70% increase in flows)	0.1% AEP
061_22_2018_001HOLY2_0038.1	Kennet (Tyle Mill to Thames Confluence) 2018	471984	173461	36.67	36.79	36.82	36.91		37.02		37.08	37.13	37.31	37.16
061_22_2018_001HOLY2_0078.1	Kennet (Tyle Mill to Thames Confluence) 2018	471944	173463	36.68	36.80	36.83	36.92		37.02		37.09	37.14	37.32	37.16
061_22_2018_001HOLY2_0147.1	Kennet (Tyle Mill to Thames Confluence) 2018	471881	173435	36.73	36.84	36.87	36.95		37.05		37.12	37.17	37.36	37.20
061_22_2018_001HOLY2_0351.1	Kennet (Tyle Mill to Thames Confluence) 2018	471694	173356	37.26	37.27	37.27	37.28		37.30		37.36	37.43	37.61	37.46
061_22_2018_001KENC10_059.1	Kennet (Tyle Mill to Thames Confluence) 2018	472319	173382	36.62	36.73	36.76	36.84		36.93		37.00	37.03	37.21	37.06
061_22_2018_001KENC10_087.1	Kennet (Tyle Mill to Thames Confluence) 2018	472026	173310	36.70	36.84	36.88	36.98		37.10		37.17	37.22	37.42	37.25
061_22_2018_001KENC10_087.2	Kennet (Tyle Mill to Thames Confluence) 2018	472201	173347	36.64	36.77	36.80	36.88		36.99		37.06	37.09	37.28	37.12
061_22_2018_001KENN3_1103.1	Kennet (Tyle Mill to Thames Confluence) 2018	472142	173476	36.63	36.75	36.78	36.86		36.96		37.02	37.07	37.24	37.09
061_22_2018_001KENN3_1322.2	Kennet (Tyle Mill to Thames Confluence) 2018	472000	173382	36.69	36.83	36.86	36.95		37.07		37.14	37.18	37.38	37.22
061_22_2018_001KENN3_1465.1	Kennet (Tyle Mill to Thames Confluence) 2018	471903	173315	36.75	36.91	36.95	37.06		37.19		37.27	37.33	37.55	37.36

				Flood Flows (m3/s)										
Node label	Model	Easting	Northing	20% AEP	5% AEP	3.3% AEP	1% AEP	1% AEP (+10% increase in flows)	1% AEP (+15% increase in flows)	1% AEP (+20% increase in flows)	1% AEP (+25% increase in flows)	1% AEP (+35% increase in flows)	1% AEP (+70% increase in flows)	0.1% AEP
061_22_2018_001HOLY2_0038.1	Kennet (Tyle Mill to Thames Confluence) 2018	471984	173461	2.50	2.57	2.68	2.62		2.77		3.14	3.62	4.58	3.87
061_22_2018_001HOLY2_0078.1	Kennet (Tyle Mill to Thames Confluence) 2018	471944	173463	2.50	2.56	2.65	2.61		2.77		3.14	3.61	4.58	3.86
061_22_2018_001HOLY2_0147.1	Kennet (Tyle Mill to Thames Confluence) 2018	471881	173435	2.50	2.57	2.65	2.62		2.77		3.14	3.61	4.58	3.87
061_22_2018_001HOLY2_0351.1	Kennet (Tyle Mill to Thames Confluence) 2018	471694	173356	2.50	2.56	2.57	2.60		2.77		3.14	3.61	4.57	3.85
061_22_2018_001KENC10_059.1	Kennet (Tyle Mill to Thames Confluence) 2018	472319	173382	26.98	34.11	36.02	41.33		47.86		52.27	54.62	67.24	56.48
061_22_2018_001KENC10_087.1	Kennet (Tyle Mill to Thames Confluence) 2018	472026	173310	26.98	34.11	36.02	41.33		47.86		52.11	54.62	67.01	56.48
061_22_2018_001KENC10_087.2	Kennet (Tyle Mill to Thames Confluence) 2018	472201	173347	26.98	34.12	36.03	41.33		47.86		52.44	54.62	67.69	56.48
061_22_2018_001KENN3_1103.1	Kennet (Tyle Mill to Thames Confluence) 2018	472142	173476	27.22	34.80	36.86	42.44		49.41		53.98	57.14	70.79	59.27
061_22_2018_001KENN3_1322.2	Kennet (Tyle Mill to Thames Confluence) 2018	472000	173382	24.74	32.24	34.28	39.84		46.67		50.88	53.55	66.24	55.43
061_22_2018_001KENN3_1465.1	Kennet (Tyle Mill to Thames Confluence) 2018	471903	173315	51.72	66.35	70.31	81.17		94.44		102.54	107.87	131.93	111.53

Note:

Due to changes in guidance on the allowances for climate change, the percentage increase in river flows above should no longer to be used for development design purposes. The data included in this Product can be used for interpolation of levels as part of an intermediate level assessment.

For further advice on the new allowances please visit
https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

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Modelled floodplain flood levels

THM385842

The modelled flood levels for the closest most appropriate model grid cells for your site are provided below:

				flood levels (mAOD)										
2D grid cell reference	Model	Easting	Northing	20% AEP	5% AEP	3.3 AEP	1% AEP	1% AEP (+10% increase in flows)	1% AEP (+15% increase in flows)	1% AEP (+20% increase in flows)	1% AEP (+25% increase in flows)	1% AEP (+35% increase in flows)	1% AEP (+70% increase in flows)	0.1% AEP
Flood Point 1	Kennet (Tyle Mill to Thames Confuence) 2018	472068	173462	36.65	36.77	36.81	36.89		37.00		37.06	37.10	37.29	37.13
Flood Point 2	Kennet (Tyle Mill to Thames Confuence) 2018	472019	173443	36.67	36.79	36.83	36.91		37.02		37.09	37.13	37.32	37.16
Flood Point 3	Kennet (Tyle Mill to Thames Confuence) 2018	472003	173411	36.68	36.81	36.85	36.94		37.05		37.12	37.16	37.35	37.19
Flood Point 4	Kennet (Tyle Mill to Thames Confuence) 2018	471981	173332	NoData	NoData	NoData	NoData		37.13		37.20	37.25	37.47	37.29
Flood Point 5	Kennet (Tyle Mill to Thames Confuence) 2018	471914	173338	NoData	NoData	NoData	NoData		37.18		37.26	37.32	37.54	37.35

This flood model has represented the floodplain as a grid.
The flood water levels have been calculated for each grid cell.

Note:
Due to changes in guidance on the allowances for climate change, the percentage increase in river flows above should no longer to be used for development design purposes. The data included in this Product can be used for interpolation of levels as part of an intermediate level assessment.

For further advice on the new allowances please visit
https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

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Detailed FRA Map centred on RG1 3BA
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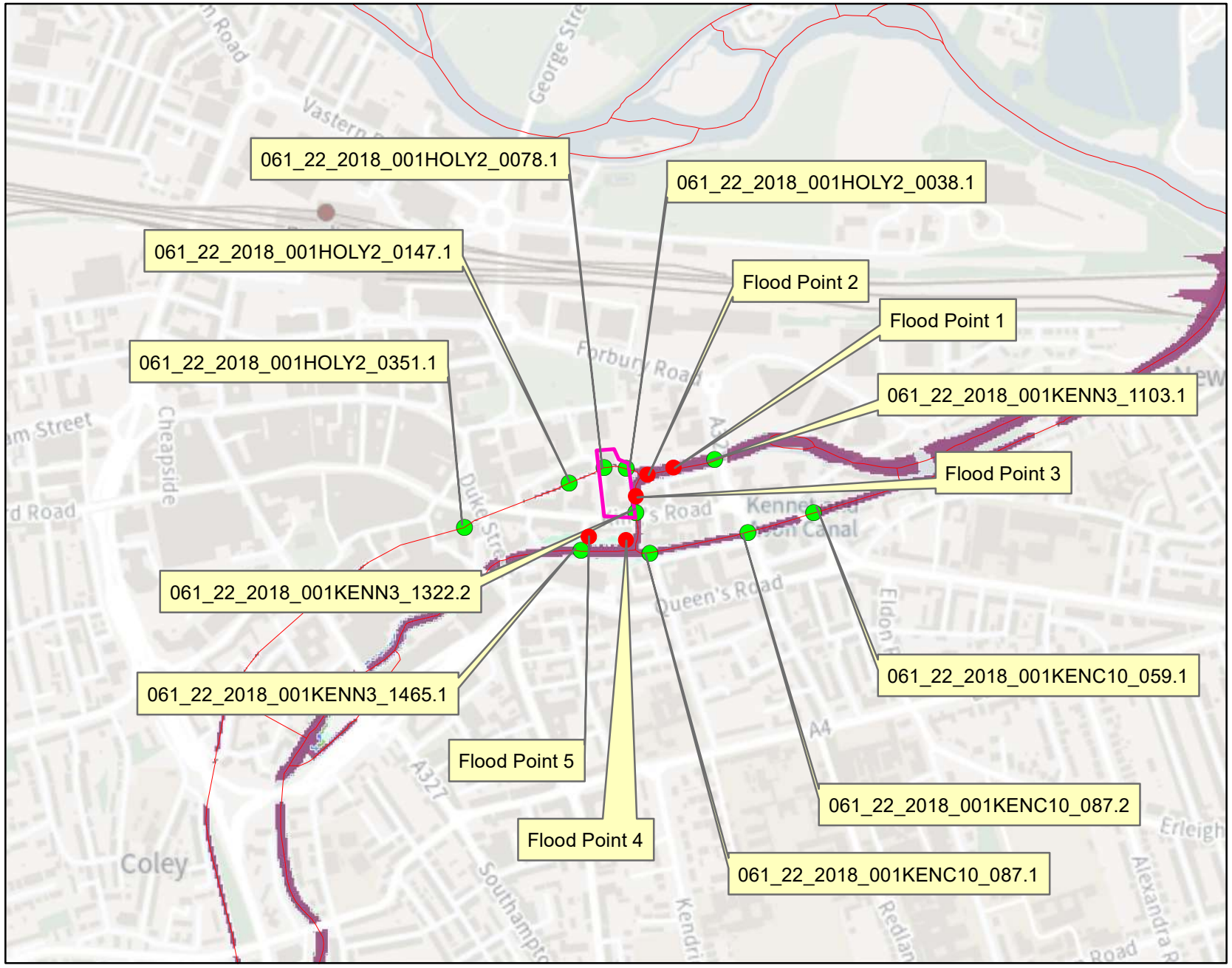

Environment Agency

Kilometres

0 0.25 0.5

Legend

- Site
- Statutory Main Rivers
- Model Nodes
- 20% AEP Flood Outline
- 5% AEP Flood Outline
- 3.3% AEP Flood Outline
- 1% AEP Flood Outline
- 0.1% AEP Flood Outline

AEP = Annual Exceedance Probability
The probability of a flood of a particular magnitude, or greater, occuring in any given year

Where available climate change extents have been calculated with an additional flow added to an AEP event. An example of how this is written is 1%+20% AEP.

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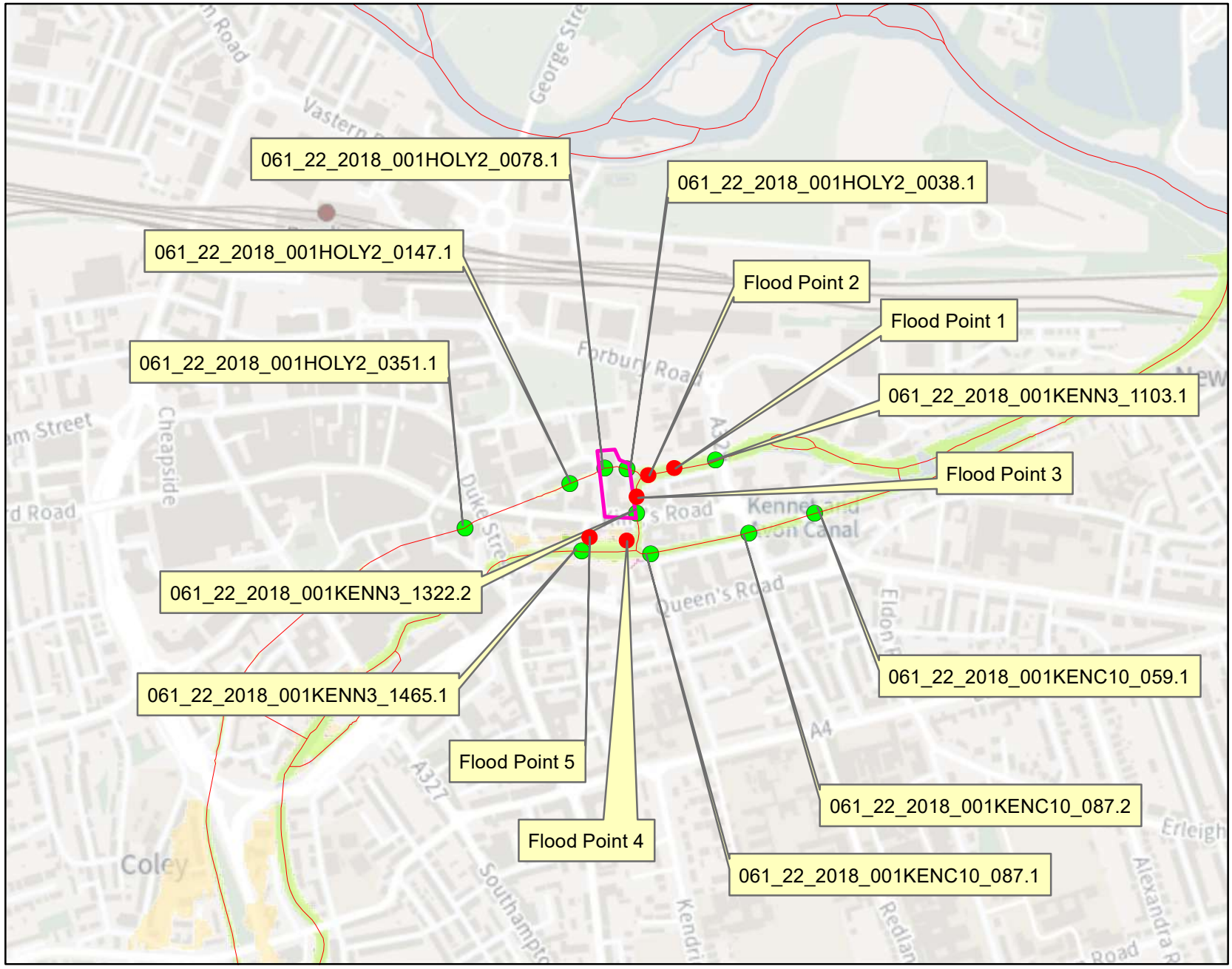
Detailed FRA Map centred on RG1 3BA
Created on 02/12/24 REF: THM385842



Environment Agency

Kilometres

0 0.25 0.5

Legend

- Site
- Statutory Main Rivers
- Model Nodes
- 1%+15% CC AEP Flood Outline
- 1%+25% CC AEP Flood Outline
- 1%+35% CC AEP Flood Outline
- 1%+70% CC AEP Flood Outline

AEP = Annual Exceedance Probability
The probability of a flood of a particular magnitude, or greater, occuring in any given year

Where available climate change extents have been calculated with an additional flow added to an AEP event. An example of how this is written is 1%+20% AEP.

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Historic flood data

THM385842

Our records show that the area of your site has been affected by flooding.
Information on the floods that have affected your site is provided in the table below:

Flood Event Code	Flood Event Name	Start Date	End Date	Source of Flooding	Cause of Flooding
EA0120144097369	Winter 2013/2014	23/11/2013	28/02/2014	main river	channel capacity exceeded (no raised defences)

Please note the Environment Agency maps flooding to land not individual properties. Floodplain extents are an indication of the geographical extent of a historic flood. They do not provide information regarding levels of individual properties, nor do they imply that a property has flooded internally.

Start and End Dates shown above may represent a wider range where the exact dates are not available.

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Historic Flood Map centred on RG1 3BA
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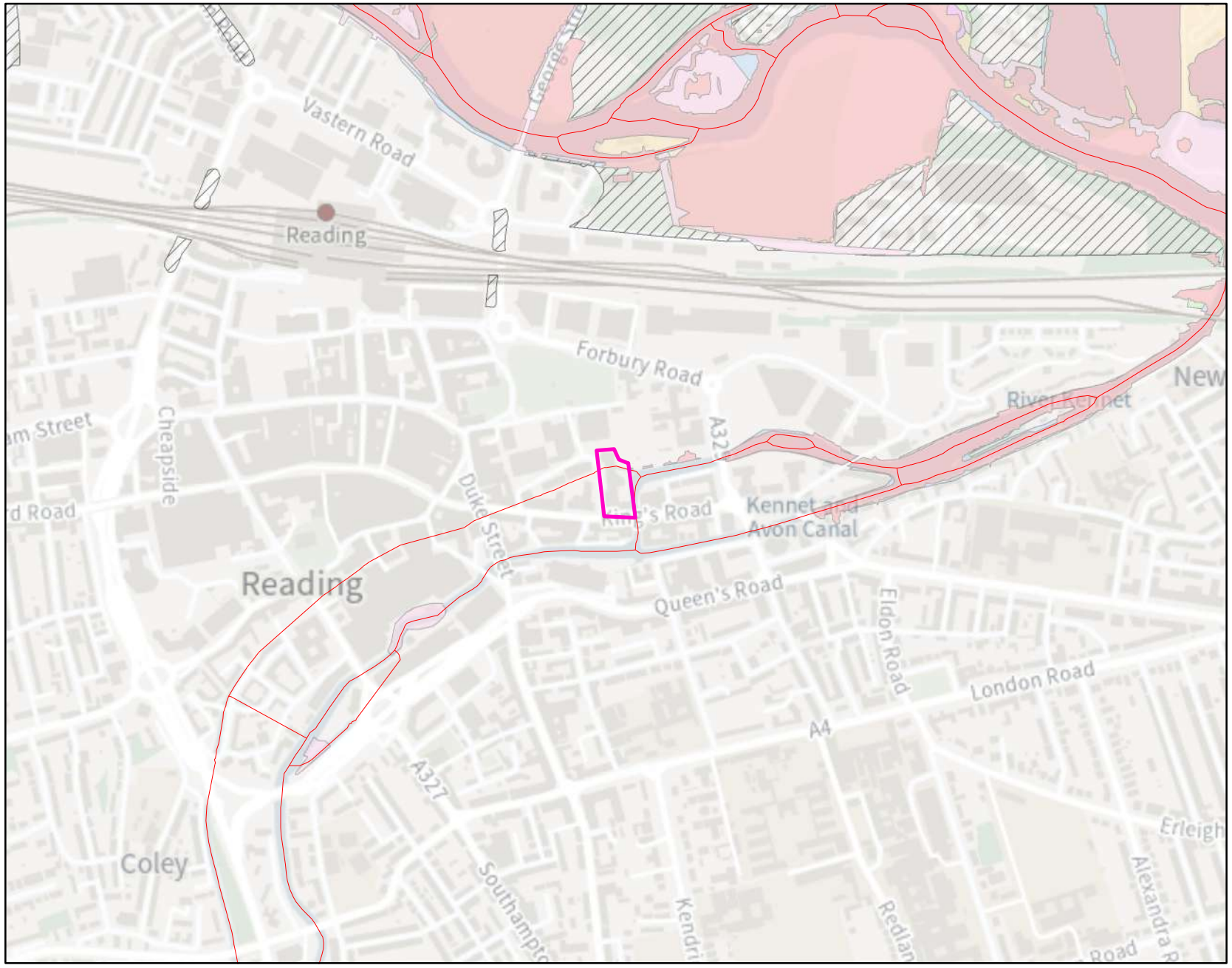

Environment Agency

Kilometres

0 0.25 0.5

Legend

Site

Statutory Main Rivers

year

- 1947
- 1974
- 1977
- 2000
- 2002/3
- 2007
- 2014

Flooding from rivers or sea without defences (Flood Zone 3) shows the area that could be affected by flooding:
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

The Extent of an extreme flood (Flood Zone 2) shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

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Hazard Mapping

THM385842

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 x (v+0.5) + DF

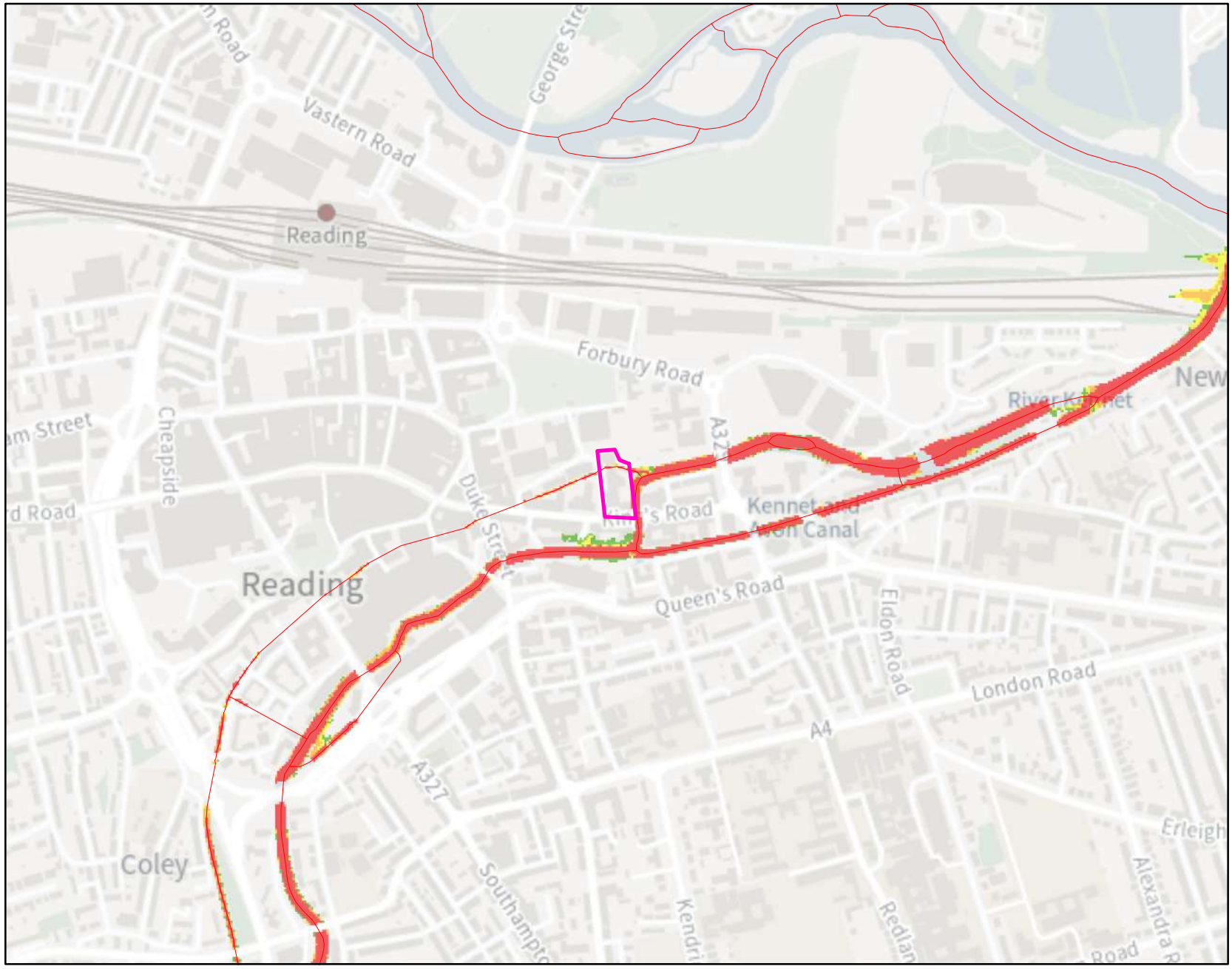
Where HR = flood hazard rating
d = depth of flooding (m)
v = velocity of floodwaters (m/sec)
DF = debris factor calculated (0, 0.5, 1 depending on probability that debris will lead to a hazard)

The resultant hazard rating is then classified according to:

Flood Hazard	Colour	Hazard to People Classification	
Less than 0.75		Very low hazard	- Caution
0.75 to 1.25		Danger for some	- includes children, the elderly and the infirm
1.25 to 2.0		Danger for most	- includes the general public
More than 2.0		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 1%+25%CC centred on RG1 3BA
Created on 02/12/24 REF: THM385842



Environment Agency

Kilometres

0 0.25 0.5

Legend

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

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

HR = d x (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)

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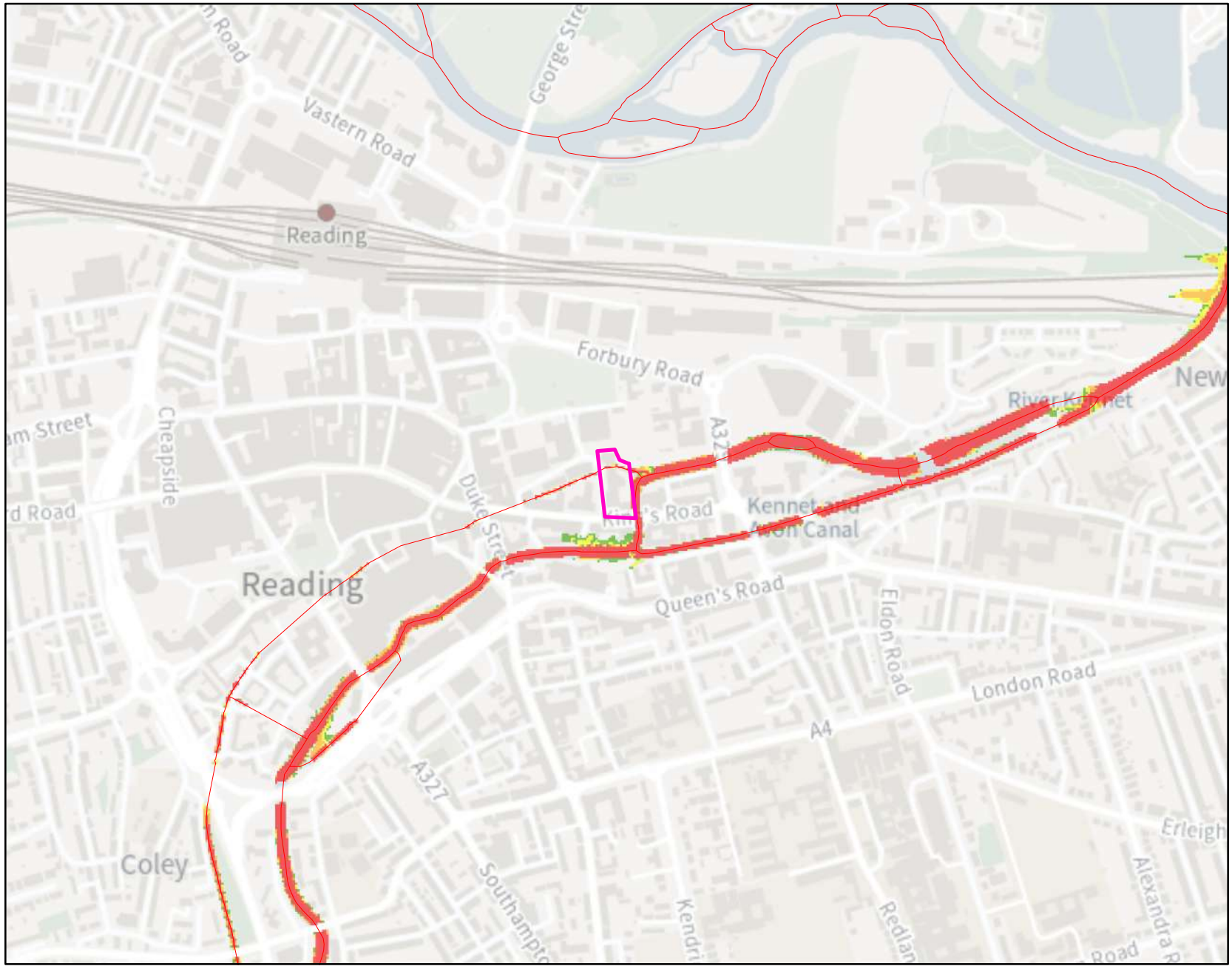
Hazard Map 1%+35%CC centred on RG1 3BA
Created on 02/12/24 REF: THM385842



Environment Agency

Kilometres

0 0.25 0.5

Legend

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

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Appendix: D – SFRA Mapping

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK
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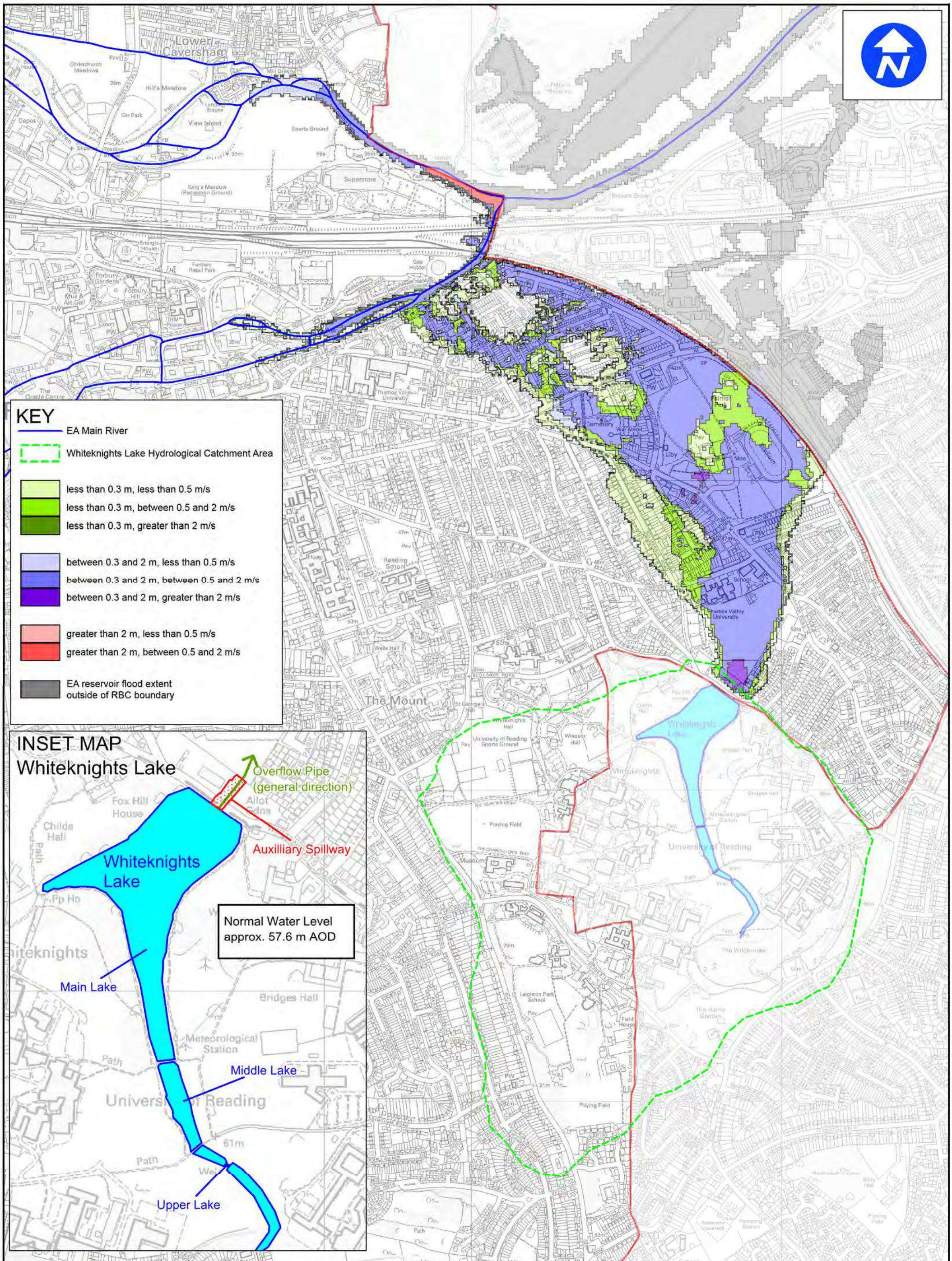

pba peterbrett

www.peterbrett.com

Peter Brett Associates LLP
READING
Tel: 0118 950 0761 Fax: 0118 959 7498

Client
Reading Borough Council
Working better with you

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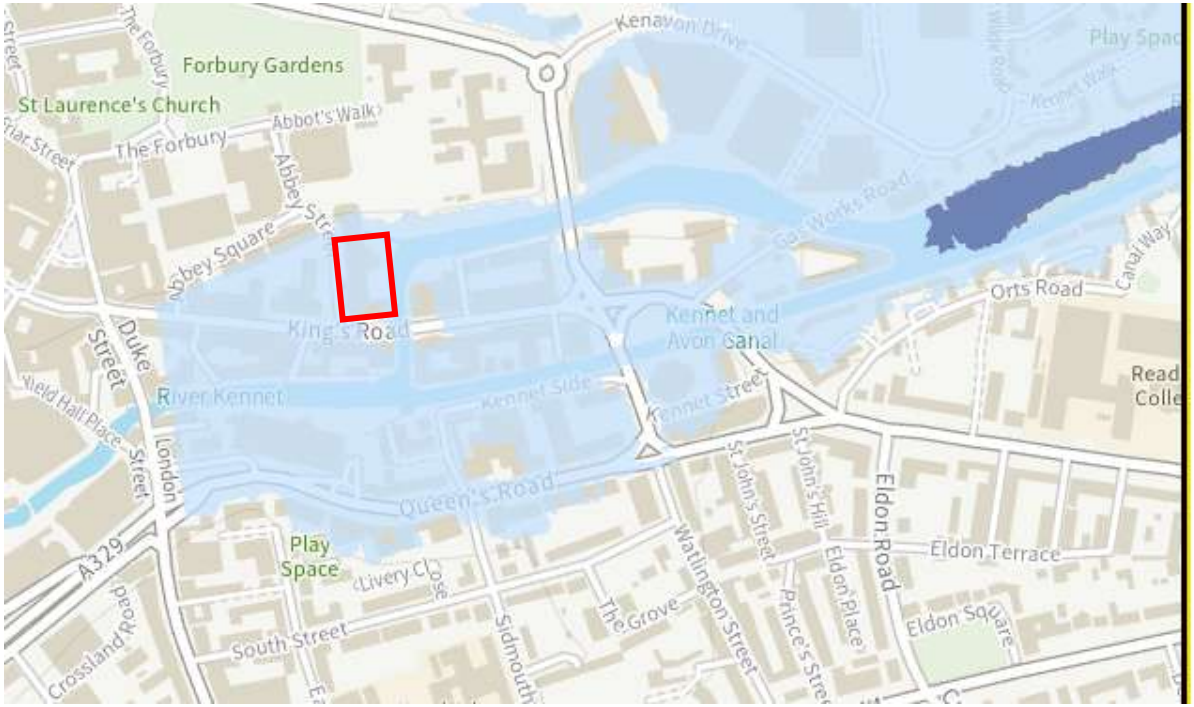
RBC SFRA

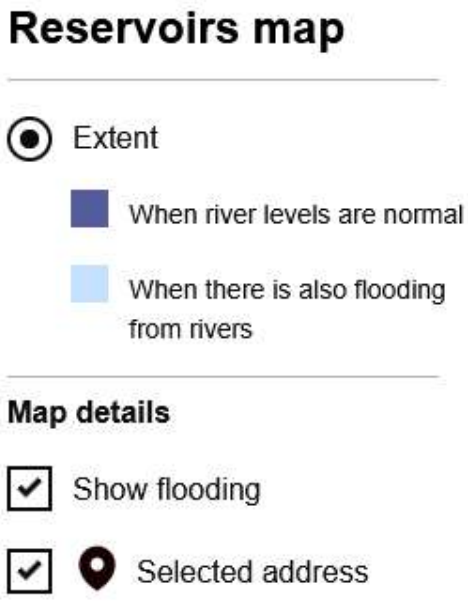
Detailed Reservoir Flood Map
Whiteknights Lake

Date: 04/04/16	
Scale: NTS	
Drawn By: SB	Checked By: RF
Rev: -	
Figure Number	**Map F7**

J:\27560 RBC LLFA support\4002 - Reading SFRA\MapInfo\Maps\

Risk of Reservoir Flooding





Site

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Appendix E – Topographical Survey

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK
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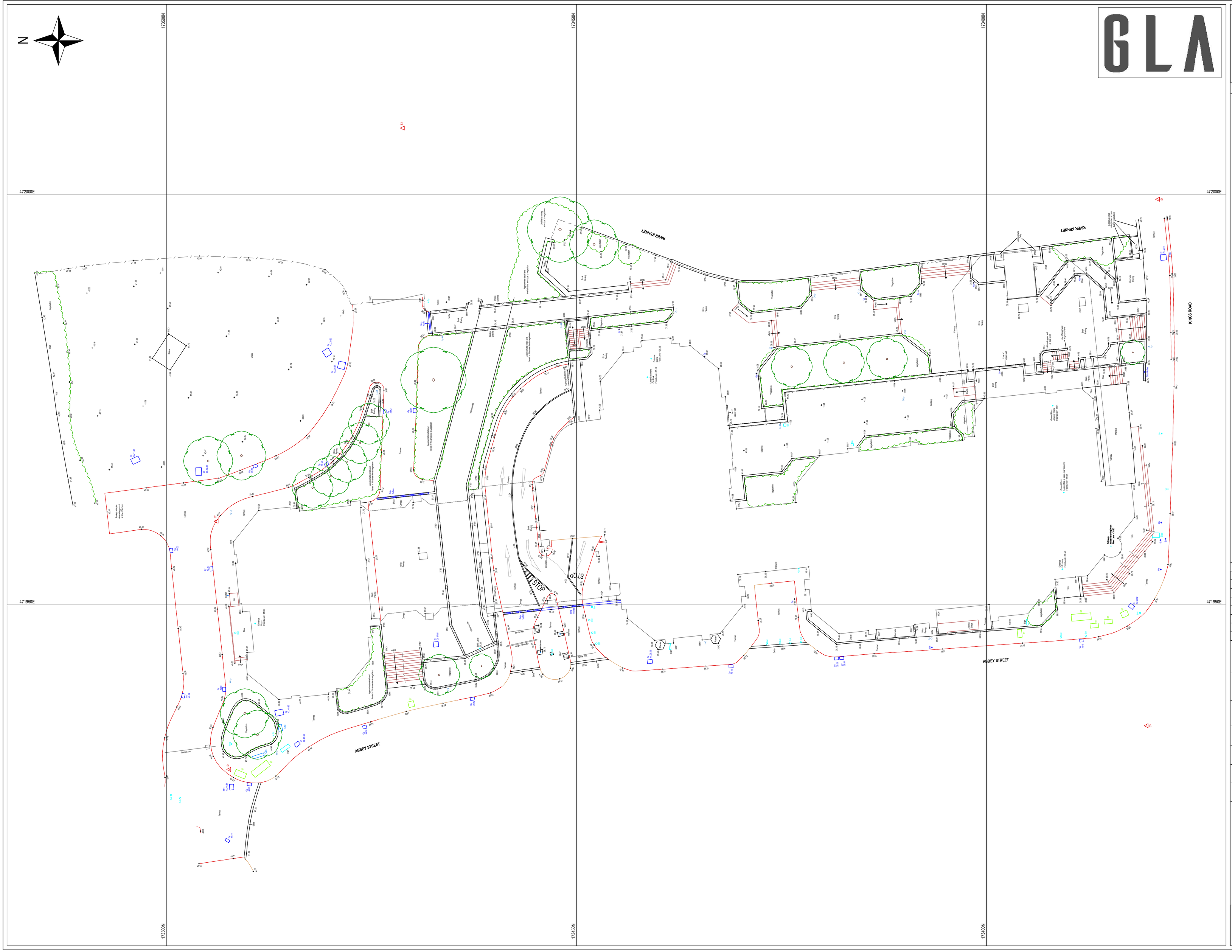

GLA

3D SCAN SOLUTIONS
1st Floor, 35 Iron Gate, Derby, DE1 3GA
info@3dscansolutions.co.uk 01332 346404

LEGEND

POINT FEATURES:

Av	AIR VALVE	Lp	LAMP POST
BB	BELISHA BEACON	MH	MANHOLE
BH	BOREHOLE	MH	MANHOLE
Bldgt	BUILDING HEIGHT	MH	MANHOLE
BM	BENCH MARK	Mkr	MARKER POST
Bol	BOLLARD	Pinv	PIPE INVERT
Bdy	BOUNDARY POST	PM	PARKING METER
Bs	BUS STOP	Post	UNDEFINED POST
BT	BRITISH TELECOM	Piez	PIEZOMETER PIPE
Cam	CAMERA	Bin	RUBBISH BIN
Cbox	CONTROL BOX	Re	RODDING EYE
Cctv	CCTV	Rdge	RIDGE HEIGHT
Pipe	PIPE	SC	SPEED CAMERA
Ctv	CABLE TV	Sof	SOFFIT LEVEL
Dp	DOWN PIPE	Sp	SIGN POST
Eave	EAVES HEIGHT	St	STOP TAP
Ebox	ELECTRIC BOX	Stl	STILE
Ep	ELECTRIC POST	Stn	SURVEY STATION
Er	EARTH ROD	Stmp	TREE STUMP
Fh	FIRE HYDRANT	Sv	STOP VALVE
Fl	FLOODLIGHT	Sy	STAY
Flat	FLAT ROOF	TCB	TELEPHONE BOX
Flag	FLAG STAFF	THL	THRESHOLD LEVEL
GMP	MARKER POST	Pit	TRIAL PIT
Gy	CIRCULAR GULLY	TL	TRAFFIC LIGHT
Gp	GATE POST	Tp	TELEGRAPH POST
Gv	GAS VALVE	THt	TREE HEIGHT
Gy	GULLY	TS	TRAFFIC SIGNAL
IB	ILLUMINATED BOLLARD	Tw	TOP OF WALL
IC	INSPECTION COVER	Va	VALVE
IC	INSPECTION COVER	VC	VIDEO CAMERA
ICU	UNDEFINED COVER	Vp	VENT PIPE
IFL	INTERNAL FLOOR LEVEL	WL	WATER LEVEL
Inv	INVERT LEVEL	Wm	WATER METER
KO	KERB OUTLET	Wo	WASH OUT
LBox	LETTERBOX	Peg	PEG

LINE FEATURES & UTILITIES:

	TELECOM & CABLE		OVERHEAD UTILITIES
	DRAINAGE UTILITIES		IRON RAILINGS
	GENERAL UTILITIES		WIRE / MESH FENCE
	TRAFFIC & LIGHTING		PANEL FENCE
	ELECTRIC UTILITIES		SECURITY FENCE

Station	Easting	Northing	Level (m)
S1	471929.935	173492.313	40.895
S2	471960.205	173493.849	40.309
S3	472008.153	173471.144	38.658
S4	471999.464	173379.058	40.182
S5	471935.269	173380.461	38.348

Client
SADA ARCHITECTURE

Location
ABBEY GARDENS, READING, RG1 3BA

Title
TOPOGRAPHICAL SURVEY

Level Datum
Ordnance Survey

Grid Datum
Ordnance Survey

Project Number	Drawing Reference
1735	1735_ABBEYGARDENS_TOPO

Surveyor	Checked	Date	Scale
AJB	AR	12.12.2024	1:200 @ A1

Comments:

The plan and digital data should only be used for its original intended purpose at the defined survey scale.

It is for the use only of the party to whom it has been addressed and no responsibility is accepted to any third party for the whole or part of its contents.

This survey has been prepared on the basis that all information and facts, which affect the survey, have been disclosed to us by the parties concerned and no liability nor responsibility can be accepted, unless full disclosure has been made.

All ground features that were visible at the time of the survey have been located, however there may have been items obscured.

Pipe sizes and flow direction have been visually assessed from the surface and should be considered as approximate only.

THE SURVEY ASSOCIATION FULL MEMBER

chartered ICES

Appendix F – Surface Water Flood Maps

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK
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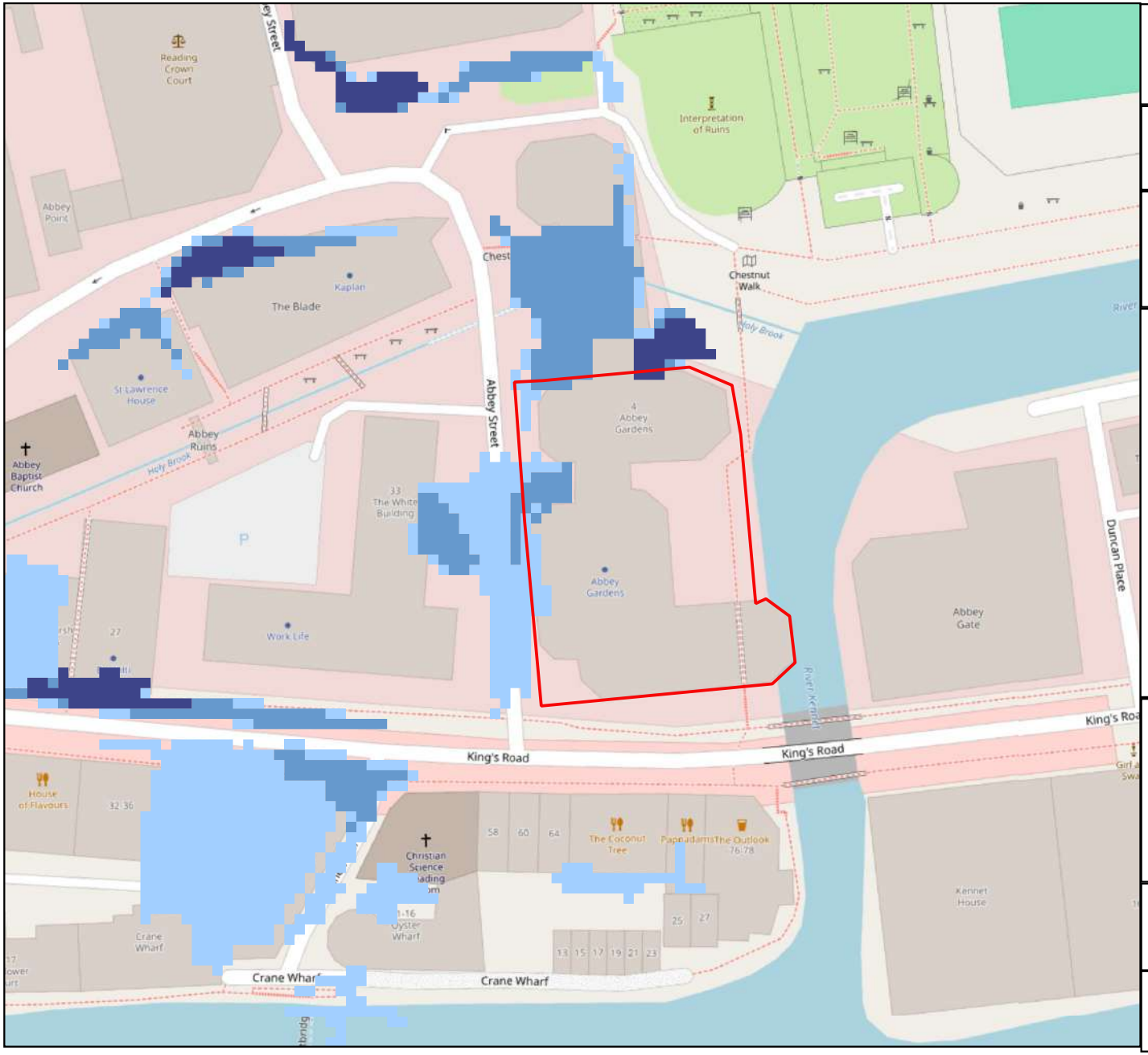

Surface Water Flood Risk

Abbey Gardens, Reading

Risk of surface water flooding, inclusive of climate change (2050s), at any depth

Site

Flood Likelihood Category:

- Low (less than 1% AEP, greater or equal to 0.1% AEP)
- Medium (less than 3.3% AEP, greater or equal to 1% AEP)
- High (greater or equal to 3.3% AEP)

EAS Transport Planning
1st Floor Millers House
Roydon Road
Stanstead Abbotts
SG12 8HN

Map Source: OpenStreetMap

0 10 20 30 40 50 60 70 m

Surface Water Flood Risk

Abbey Gardens, Reading

Risk of surface water flooding, inclusive of climate change (2050s), at depths exceeding 0.2m

Site

Flood Likelihood Category:

- Low (less than 1% AEP, greater or equal to 0.1% AEP)
- Medium (less than 3.3% AEP, greater or equal to 1% AEP)
- High (greater or equal to 3.3% AEP)

EAS Transport Planning
1st Floor Millers House
Roydon Road
Stanstead Abbotts
SG12 8HN

Map Source: OpenStreetMap

0 10 20 30 40 50 60 70 m

Surface Water Flood Risk

Abbey Gardens, Reading

Risk of surface water flooding, inclusive of climate change (2050s), at depths exceeding 0.3m

Site

Flood Likelihood Category:

- Low (less than 1% AEP, greater or equal to 0.1% AEP)
- Medium (less than 3.3% AEP, greater or equal to 1% AEP)
- High (greater or equal to 3.3% AEP)

EAS Transport Planning
1st Floor Millers House
Roydon Road
Stanstead Abbotts
SG12 8HN

Map Source: OpenStreetMap

0 10 20 30 40 50 60 70 m

Surface Water Flood Risk

Abbey Gardens, Reading

Risk of surface water flooding, inclusive of climate change (2050s), at depths exceeding 0.6m

Site

Flood Likelihood Category:

- Low (less than 1% AEP, greater or equal to 0.1% AEP)
- Medium (less than 3.3% AEP, greater or equal to 1% AEP)
- High (greater or equal to 3.3% AEP)

EAS Transport Planning
1st Floor Millers House
Roydon Road
Stanstead Abbotts
SG12 8HN

Map Source: OpenStreetMap

0 10 20 30 40 50 60 70 m