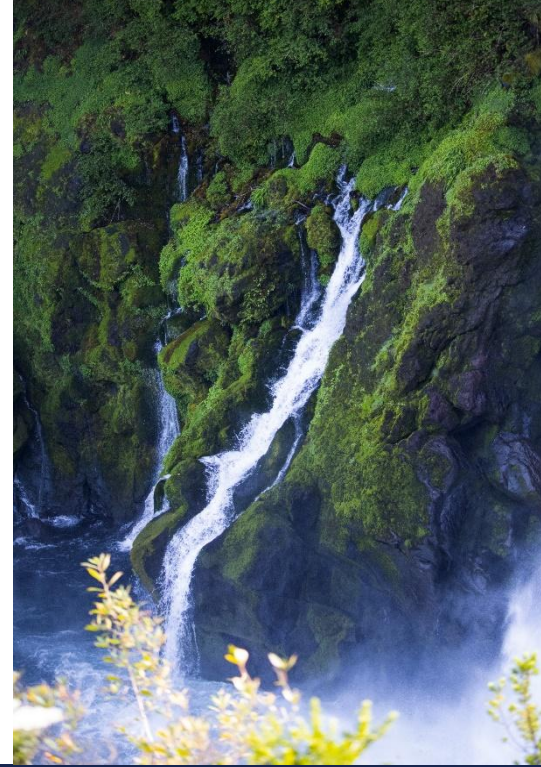




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Flood Risk Assessment AEG11386_RG4_Reading_01

Site Address: 5 Eccles Close
Cavershaw
Reading
RG4 5BJ

UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage Strategies

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Document Issue Record

Project: Flood Risk Assessment

Prepared for: Samantha Burt

Reference: AEG11386_RG4_Reading_01

Site Location: 5 Eccles Close, Cavershaw, Reading, RG4 5BJ

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Summary

Development Description	Existing	Proposed
Development Type	Existing residential dwelling.	The proposals include the addition of a single storey front porch at the northwestern corner of the existing dwelling for an extended entrance and bathroom – Minor Development in terms of flood risk.
EA Vulnerability Classification	More Vulnerable	More Vulnerable
Ground Floor Level	The EA LiDAR data suggests that the ground levels of the site vary between approximately 37.23m metres Above Ordnance Datum (m AOD) and 37.67m AOD.	No change.
Level of Sleeping Accommodation	First Floor	First Floor
Surface Water Drainage	N/A ¹	Proposals to utilise existing drainage arrangement on-site. Small scale SuDS are recommended, such as rainwater planters and water butts, to be incorporated in external areas to provide a betterment over the existing scenario, post-development.
Site Size	Approximately 200m ²	No change
Risk to Development	Summary	Comment
EA Flood Zone	Flood Zone 3	River Thames and Berry Brook
Flood Source	Fluvial	
SFRA Available	Reading Level 1 Strategic Flood Risk Assessment (Reading Borough Council, 2024)	
Management Measures	Summary	Comment

Ground floor level above extreme flood levels	No	Proposed extension is affected during the 'design' 1 in 100 year + 35%CC scenario by calculated maximum flood depths of 0.08m.
Safe Access/Egress Route	N/A ¹	Given the proposals consist of a minor development, access/egress arrangements will remain as per existing situation.
Flood Resilient Design	Flood resilience and resistance measures are recommended.	See details in Section 5.
Site Drainage Plan	N/A ¹	Proposals to utilise existing drainage arrangement on-site. Small scale SuDS are recommended, such as rainwater planters and water butts, to be incorporated in external areas to provide a betterment over the existing scenario, post-development
Flood Warning and Evacuation Plan	N/A ¹	Recommended to sign up to the River Thames at Reading and Caversham flood warning service.
Offsite Impacts	Summary	Comment
Displacement of floodwater	Negligible	Development is classified as minor development in terms of flood risk and therefore in isolation should not result in increase in flood risk elsewhere (Paragraph 051 of the PPG).
Increase in surface run-off generation	Negligible	Proposals to utilise existing drainage arrangement on-site. Small scale SuDS are recommended, such as rainwater planters and water butts, to be incorporated in external areas to provide a betterment over the existing scenario, post-development
Impact on hydraulic performance of channels	Negligible	The nearest watercourse is situated approximately 180m northeast of the site.

¹ not required for this assessment

² data not available.

1. Introduction

- 1.1. Aegaea were commissioned by Samantha Burt to undertake a Flood Risk Assessment (FRA) to facilitate a planning application for the proposed development. This FRA has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance.
- 1.2. This FRA is intended to support a full planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.

Site Overview

- 1.3. The site of the proposed development is 5 Eccles Close, Cavershaw, Reading, RG4 5BJ (Figure 1).



Figure 1: Site Location (Base map and data from Google Satellite Imagery ©)

- 1.4. The existing site consists of a residential dwelling along with a front and rear garden. The proposals include the addition of a single storey front porch at the northwestern corner of the

existing dwelling for an extended entrance and bathroom. Refer to Appendix A for the latest plans.

- 1.5. In the absence of a topographical survey, Environment Agency (EA) Light Detection and Ranging (LiDAR) data Digital Terrain Model has been used to review the topography of the site (Figure 2). The EA LiDAR data suggests that the ground levels of the site vary between approximately 37.23m metres Above Ordnance Datum (m AOD) and 37.67m AOD with ground levels sloping downwards towards Star Road to the west of the site.

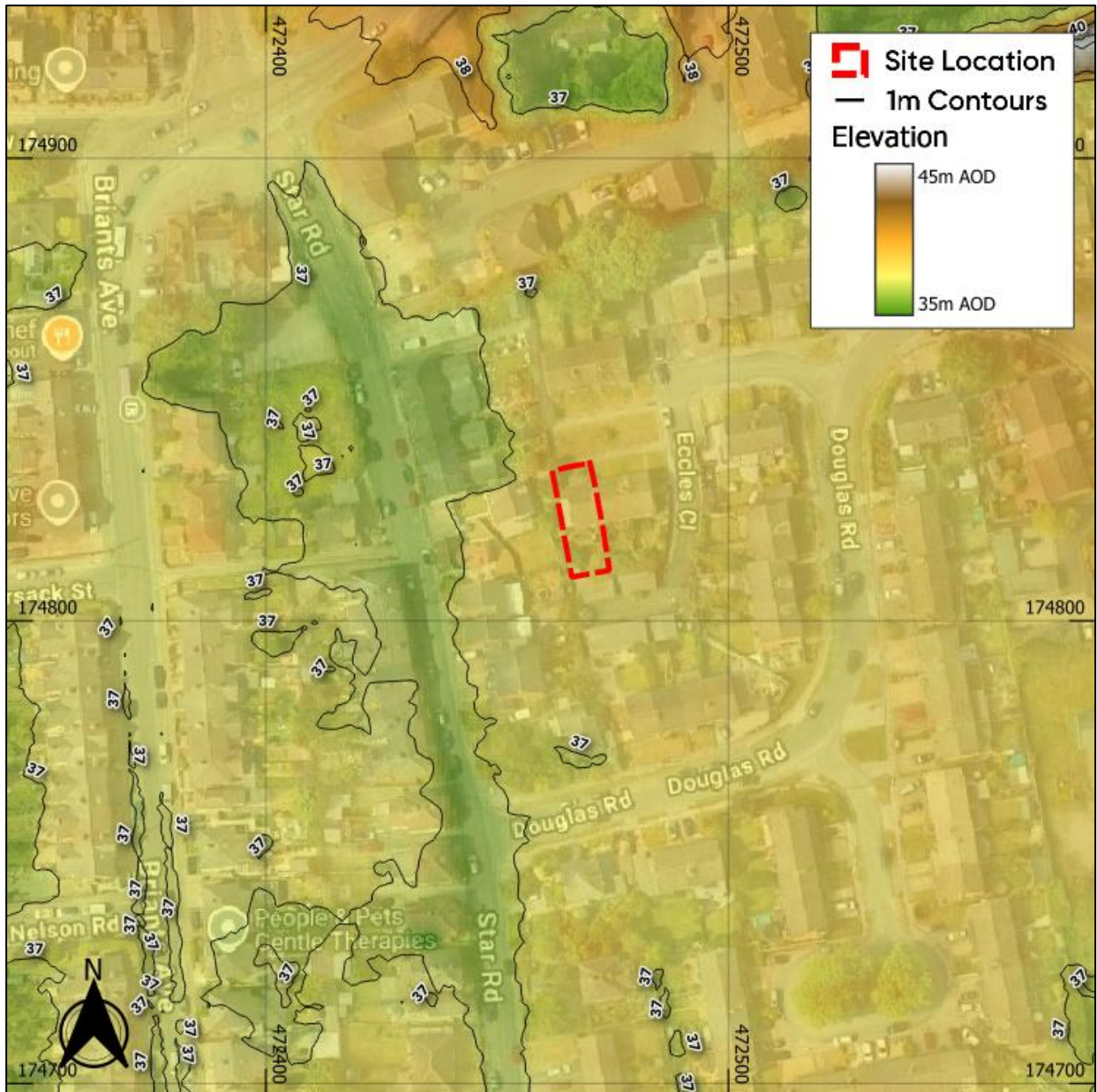


Figure 2: Site Topography (Base map and data from Google Satellite imagery ©. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.6. Reading Borough Council is the Local Planning Authority (LPA) for the site and also the designated Lead Local Flood Authority (LLFA). The site sits within the Environment Agency's Thames region.

Planning Policy and Guidance

- 1.7. UK government planning guidance states¹ that an FRA is required for developments which are:

- *in flood zones 2 or 3 including minor development and change of use*
- *more than 1 hectare (ha) in flood zone 1*
- *less than 1 ha in flood zone 1, including a change of use in development type to a more vulnerable class (for example from commercial to residential), where they could be affected by sources of flooding other than rivers and the sea (for example surface water drains, reservoirs)*
- *in an area within flood zone 1 which has critical drainage problems as notified by the Environment Agency*

- 1.8. The entirety of the site is situated within Flood Zone 3 according to the EA Flood Map for Planning. Therefore, an FRA is required to support the planning application in line with the NPPF.

- 1.9. The objective of this FRA is to demonstrate that the proposals are acceptable in terms of flood risk. This report summarises the findings of the study and specifically addresses the following issues in the context of the current legislative regime:

- Fluvial/tidal flood risk
- Surface water flood risk
- Risk of flooding from other sources

¹ <https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications#when-you-need-an-assessment>

2. Planning Policy

- 2.1. Inappropriate development in a flood risk area could pose significant risk in terms of personal safety and damage to property for the occupiers of the development or for people elsewhere. The approach taken in the assessment of flood risk at the planning stage is set out in national, regional, and local planning policy and associated guidance. This section summarises the key policies and guidance relevant to the proposed development.

National Planning Policy Framework (NPPF)

- 2.2. The National Planning Policy Framework² (NPPF) (MHCLG, 2026) which includes UK Government policy on development and flood risk states:

F1: Assessing flood risk for plan-making

1. *In order to manage development in ways which minimise the risk of flooding to people and property, development plans should:*
 - a. *Be informed by an up-to-date strategic flood risk assessment which considers current and future flood risk from all sources, including cumulative impacts in, or affecting, areas susceptible to flooding; and*
 - b. *Take account of advice from the Environment Agency and other relevant flood risk management authorities, such as Lead Local Flood Authorities and internal drainage boards, about levels of risk, options for mitigation, and the implications for development in the plan area.*

F2: Planning for effective flood risk management

1. *Development plans should take a risk-based approach when identifying suitable locations for development, taking into account all sources of flood risk and the current and future impacts of climate change. They should do this, and manage any residual risk, by:*

² <https://www.gov.uk/guidance/national-planning-policy-framework>, last updated August 2026

- a. Applying the sequential test in policy F5 and, where relevant, policy F6;
- b. Safeguarding land that is, or is likely to be, required for current or future flood management;
- c. Using opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and
- d. Where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.

F4: Assessing flood risk for decision-making

1. To inform the assessment of flood risk and, where relevant, appropriate mitigation, a site specific flood risk assessment should accompany all development proposals in Flood Zones 2, 3a, and 3b as defined in Annex F, table 1.
2. In Flood Zone 1, a site-specific flood risk assessment should inform and accompany all development proposals involving:
 - a. Sites of one hectare or more;
 - b. Land which has been identified by the Environment Agency as having critical drainage problems; and
 - c. Land identified in a strategic flood risk assessment or the Flood Map for Planning as being at risk of flooding from any source, whether now or in the future.
3. Site-specific flood risk assessments should be appropriate to the scale, nature, and location of development and should, where relevant, support an assessment of whether a development proposal satisfies the sequential and exception tests set out in policies F5 and F6.

F7: Ensuring development is safe from flooding

1. *Development proposals should not present a risk from flooding to potential occupiers, users, or visitors, and should not increase flood risk elsewhere.*
2. *Where development is proposed in a location known to be at risk from any form of flooding, now or in the future, it should be refused unless:*
 - a. *Within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons which justify a different arrangement;*
 - b. *The development will be safe throughout its lifetime taking account of the vulnerability of its users;*
 - c. *Any residual risk can be safely managed, and safe access and escape routes are included where appropriate, as part of an agreed emergency plan;*
 - d. *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; and e. It can be demonstrated that flood risk will not be increased elsewhere.*

2.3. Paragraph 051 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) states:

Minor development means:

- *minor non-residential extensions (industrial/commercial/leisure etc): extensions with a floorspace not in excess of 250 square metres.*
- *alterations: development that does not increase the size of buildings, e.g. alterations to external appearance.*
- *householder development: for example, sheds, garages, games rooms etc within the curtilage of the existing dwelling, in addition to physical extensions to the existing dwelling itself. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling (e.g. subdivision of houses into flats) or any other development with a purpose not incidental to the enjoyment of the dwelling.*

2.4. As such, the proposal would be considered a Minor Development under the PPG.

2.5. Footnote 63 of the NPPF states:

A site-specific flood risk assessment should be provided for all development 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.

2.6. Flood Zones in England are defined as follows:

Table 1: Flood Zone Definitions

Flood Zone	Definition
Zone 1 Low Probability	Land having less than 1 in 1,000 annual probability of river or sea flooding (all land outside Zones 2 and 3).
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.
Zone 3b The Functional Floodplain	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

- 2.7. An FRA should be appropriate to the scale, nature, and location of the development. It should identify and assess the risk from all sources of flooding to and from the development and demonstrate how any flood risks will be managed over the lifetime of the development.
- 2.8. An assessment of hydrological impacts should be undertaken, including to surface water runoff and impacts to drainage networks in order to demonstrate how flood risk to others will be managed following development and taking climate change into account.

Local Plan

- 2.9. The Local Plan prepared by the Local Planning Authority, Reading Borough Council, sets out the policies for development in the local area.
- 2.10. Policy EN18.1 Flooding and Sustainable Drainage Systems: Flooding outlines the requirements for new development within the area. It states:

Planning permission will only be granted where proposals have fully considered the effects of flooding from all sources (fluvial, surface water, reservoir, groundwater, and sewer flooding) over the lifetime of the development and accounting for climate change.

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.

Where development in areas at risk of flooding is necessary, it will not be permitted unless a strategic or site-specific Flood Risk Assessment in line with the Government's technical standards demonstrates that for the lifetime of the development:

- a. It will not increase flood risk;*
- b. Provide safety for future occupants in times of flooding;*
- c. Provide safe access and egress in the event of a flood; and*
- d. Clearly illustrate that all necessary mitigation measures have been implemented.*

Sequential and Exception Tests

- 2.11. The Sequential and Exception Tests are applied in specific cases defined by UK Government policy. Their purpose is to drive development to areas of low flood risk and to support developments which improve flood risk for developments in areas at risk of flooding.
- 2.12. Under the NPPF all new planning applications should undergo a Sequential Test in accordance with Policy F2. This test should be implemented by local planning authorities with a view to take a risk-based approach when identifying suitable locations for development, taking into account all sources of flood risk and the current and future impacts of climate change.
- 2.13. Policy F5 (2) of the NPPF states:

2. The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, other than for:

a. Sites allocated in the development plan which were subject to the sequential test during plan preparation;

b. Sites where a site-specific flood risk assessment demonstrates clearly that:

i. 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); or

ii. Where the site would be at risk of surface water flooding only, the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development without increasing flood risk elsewhere in accordance with policy F7.

c. For the following types of development:

i. Householder development;

ii. Small non-residential extensions (with a footprint of less than 250m²); and

iii. Changes of use, other than changes of use to a caravan, camping or chalet site, or to a mobile home or park home site.

2.14. Furthermore, Policy F6 (2) of the NPPF states:

2. The application of the exception test should be informed by a site-specific flood risk assessment. The exception test does not need to be applied:

a. To those forms of development, or in those circumstances, where the sequential test is not required, as set out in policy F5; or

b. Where development is proposed on a site allocated in the development plan to which the exception test was applied at the plan-making stage, unless there has been a significant increase in the risk of flooding to the site subsequently, or the nature of the development itself has changed

significantly from that which was allocated so as to introduce a more vulnerable use (having regard to Annex F, table 2).

- 2.15. Given the proposed development constitutes a 'minor development' (Householder development) in terms of flood risk, neither the Sequential nor Exception Tests are applicable in this instance in accordance with Policy F5 (2) and F6 (2) of the NPPF.

3. EA Data and Document Review

EA Data

- 3.1. The EA have provided data in the form of Product 6 data (model file outputs) to inform this FRA from their Thames (Pangbourne to Sonning) 2019 model. This data is considered to be the most relevant data for the area (including site) specific to this FRA to fully assess the fluvial flood risk to the site and proposed development.
- 3.2. The EA correspondence can be found in Appendix B of this report.

Documents and Online Mapping

- 3.3. Local Governments and Lead Local Flood Authorities provide documents which contain data and policies on flood risk and new development in their areas. These documents are introduced and briefly summarised below. For the purposes of this FRA, these documents have been reviewed for relevant information and any relevant data is discussed within the appropriate sub heading of this report.
- 3.4. The following sources of information have been reviewed for this assessment:
 - Flood Map for Planning on the Environment Agency website <https://flood-map-for-planning.service.gov.uk/>
 - Long Term Flood Risk Information on the Environment Agency website <https://www.gov.uk/check-long-term-flood-risk>
 - National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2024)
 - Planning Practice Guidance - Flood Risk and Coastal Change (Ministry of Housing, Communities and Local Government, 2022)
 - Geoindex Onshore (British Geological Survey, 2024)
 - Reading Borough Local Plan (Reading Borough Council, 2019)³

³ https://images.reading.gov.uk/2019/12/Local_Plan_Adopted_November_2019.pdf

- Preliminary Flood Risk Assessment (PFRA) (Reading Borough Council, 2011)⁴ and PFRA Addendum (Reading Borough Council, 2017)⁵
- Reading Level 1 Strategic Flood Risk Assessment (Reading Borough Council, 2024)⁶
- Local Flood Risk Management Strategy (LFRMS) (Reading Borough Council, 2015)⁷

Preliminary Flood Risk Assessment (PFRA)

- 3.5. The PFRA, published in 2011 and 2017 (addendum) is a high-level appraisal of flood risk across Lead Local Flood Authority Reading Borough Council. The flood risk from all sources, including fluvial, surface water, groundwater, and surcharged sewers is evaluated. It is the basis upon which the Local Flood Risk Management Strategy is produced.
- 3.6. The PFRA summarises historical flood incidents in Reading Borough Council. The site is recorded as having been affected by a flood event.

Strategic Flood Risk Assessment (SFRA)

- 3.7. The SFRA, published in 2024, provides the evidence base for the Local Planning Authority Reading Borough Council Local Plan and guidance for consideration when determining planning applications. The SFRA seeks to place new development into areas of lower flood risk taking into account current flood risk, future flood risk, and the effect a proposed development would have on the risk of flooding.
- 3.8. The SFRA mapping provided by Reading Borough Council has been used throughout production of this report as a source of information, particularly pertaining to historical flood incidents.

⁴ <http://www.reading.gov.uk/council/strategies-plans-and-policies/EmergencyPlanning/flooding/>

⁵ https://assets.publishing.service.gov.uk/media/5acca890e5274a76c13df718/PFRA_Reading_Borough_Council_2017.pdf

⁶ <https://images.reading.gov.uk/2024/12/Reading-Strategic-Flood-Risk-Assessment-November-2024.pdf>

⁷ https://images.reading.gov.uk/2024/07/27560_007_RBCLFRMS_REV05.pdf

Local Flood Risk Management Strategy (LFRMS)

- 3.9. The Local Flood Risk Management Strategy sets out roles and responsibilities for flood risk management, assesses the risk of flooding in the area, where funding can be found to manage flood risk, and the policies, objectives, and actions of the Lead Local Flood Authority.
- 3.10. The Reading Borough Council LFRMS is used within this report to identify any flood management infrastructure and historical incidences of flooding.

4. Sources of Flood Risk

Fluvial

- 4.1. Flooding from watercourses arises when flows exceed the capacity of the channel, or where a restrictive structure is encountered, resulting in water overtopping the banks into the floodplain.

Main Rivers

- 4.2. There are two EA Main Rivers within the vicinity (<500m) of the site. The nearest EA Main River is situated approximately 180m northeast of the site and is referred to as the 'Berry Brook'. This watercourse is considered to follow the direction of the River Thames in an eastern direction. The Berry Brook ultimately discharges into the River Thames approximately 5.2km downstream.
- 4.3. The River Thames is the second EA Main River which is situated approximately 500m south of the site. As aforementioned, the River Thames generally flows in an eastern direction past the site.
- 4.4. There are no other mapped watercourses within the vicinity (<500m) of the site according to OS and Google mapping.

EA Flood Map for Planning

- 4.5. The entirety of the site, including the proposed footprint (porch), is located within Flood Zone 3 (Figure 3). Flood Zone 3 denotes a risk of flooding from fluvial sources greater than 1 in 100 (1%) annual probability.

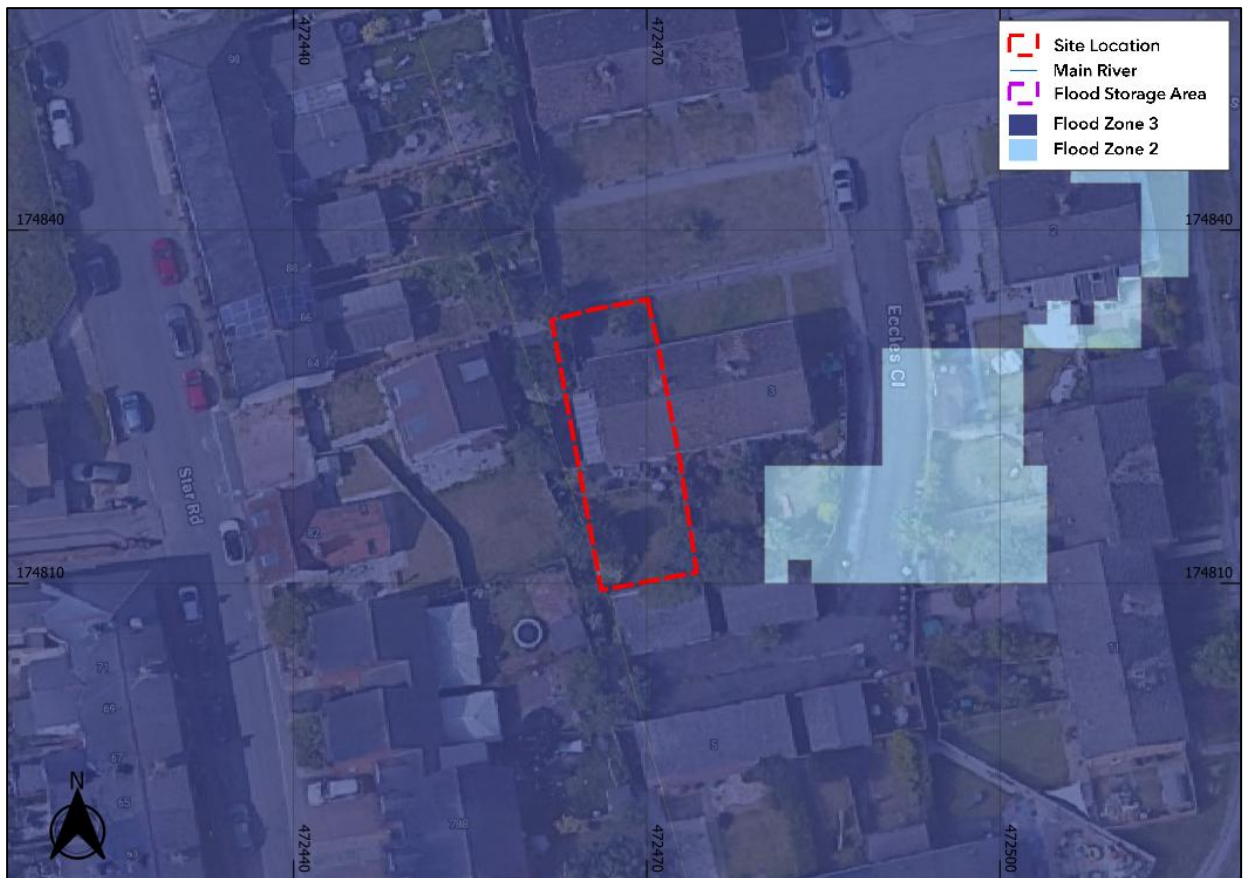


Figure 3: EA Flood Map for Planning (Base map and data from Google Satellite imagery ©. Contains public sector information licensed under the Open Government Licence v3.0)

Historical Fluvial Flooding

- 4.6. According to the EA Recorded and Historical Flood Outlines shows Main River fluvial flooding on-site in 1947 caused by '*channel capacity exceeded (no raised defences)*' (Figure 4).
- 4.7. However, it is important to note that the site itself was not affected by this event.

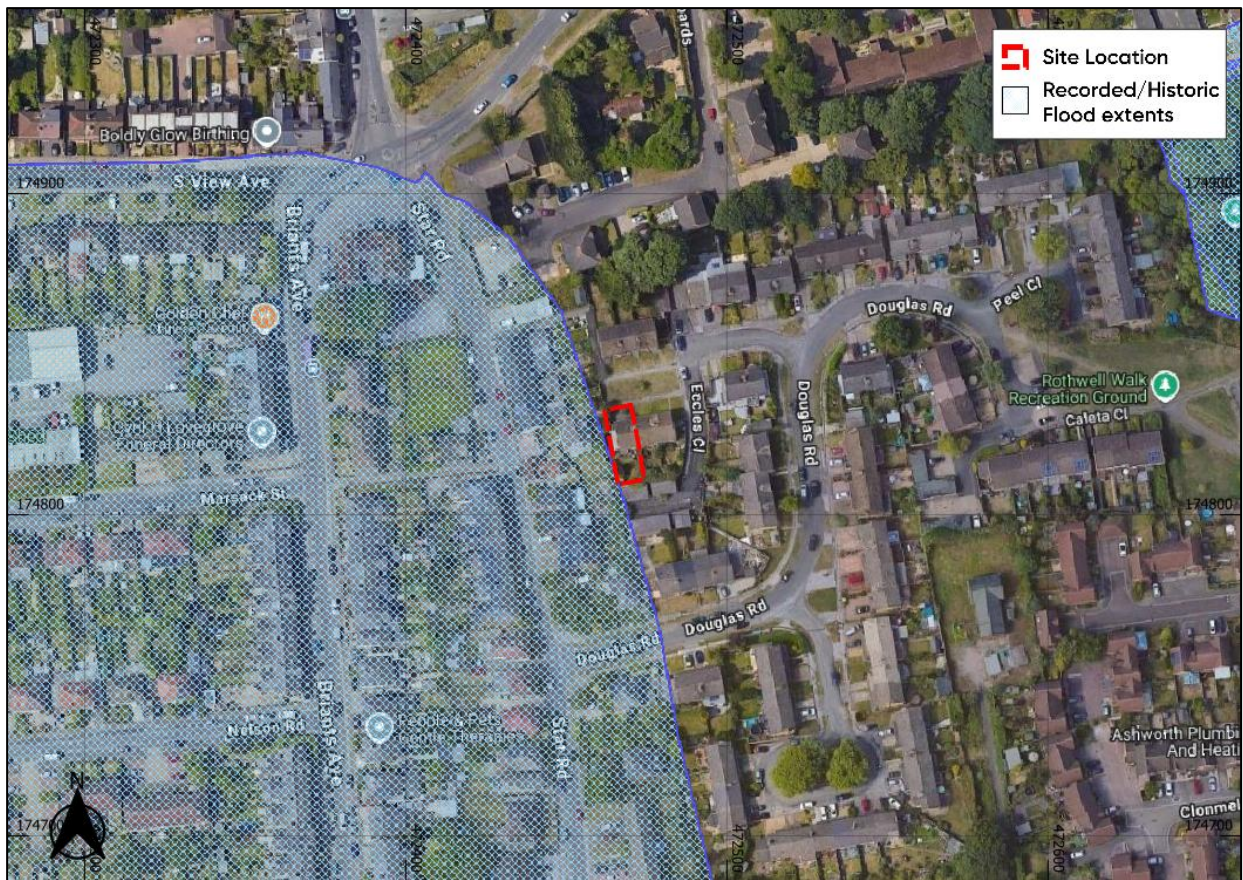


Figure 4: EA Historic Flood Mapping (Base map and data from Google Satellite imagery ©. Contains public sector information licensed under the Open Government Licence v3.0)

Thames (Pangbourne to Sonning) 2019 Model

- 4.8. As mentioned previously, the EA have provided model file outputs (Product 6) from their Thames (Pangbourne to Sonning) 2019 model to inform this FRA and to fully assess the fluvial flood risk to the proposed footprint.
- 4.9. A variety of return period events were included within the model including the 1 in 30 year, 1 in 100 year and 1 in 1000 year ('modelled worst-case scenario') present day scenarios along with multiple climate change allowances in addition to the 1 in 100 year scenario to assess the future fluvial risk when considering the effects of climate change.

Present Day Scenarios

- 4.10. Analysis of the present day scenarios shows that the site (and proposed footprint) is not situated within the 1 in 30 year maximum flood extent. Therefore, the site is not considered to be located within Flood Zone 3b.

4.11. The site and proposed footprint are affected by the 1 in 100 year and 1 in 1000 year ('modelled worst-case') scenarios (Figure 5).

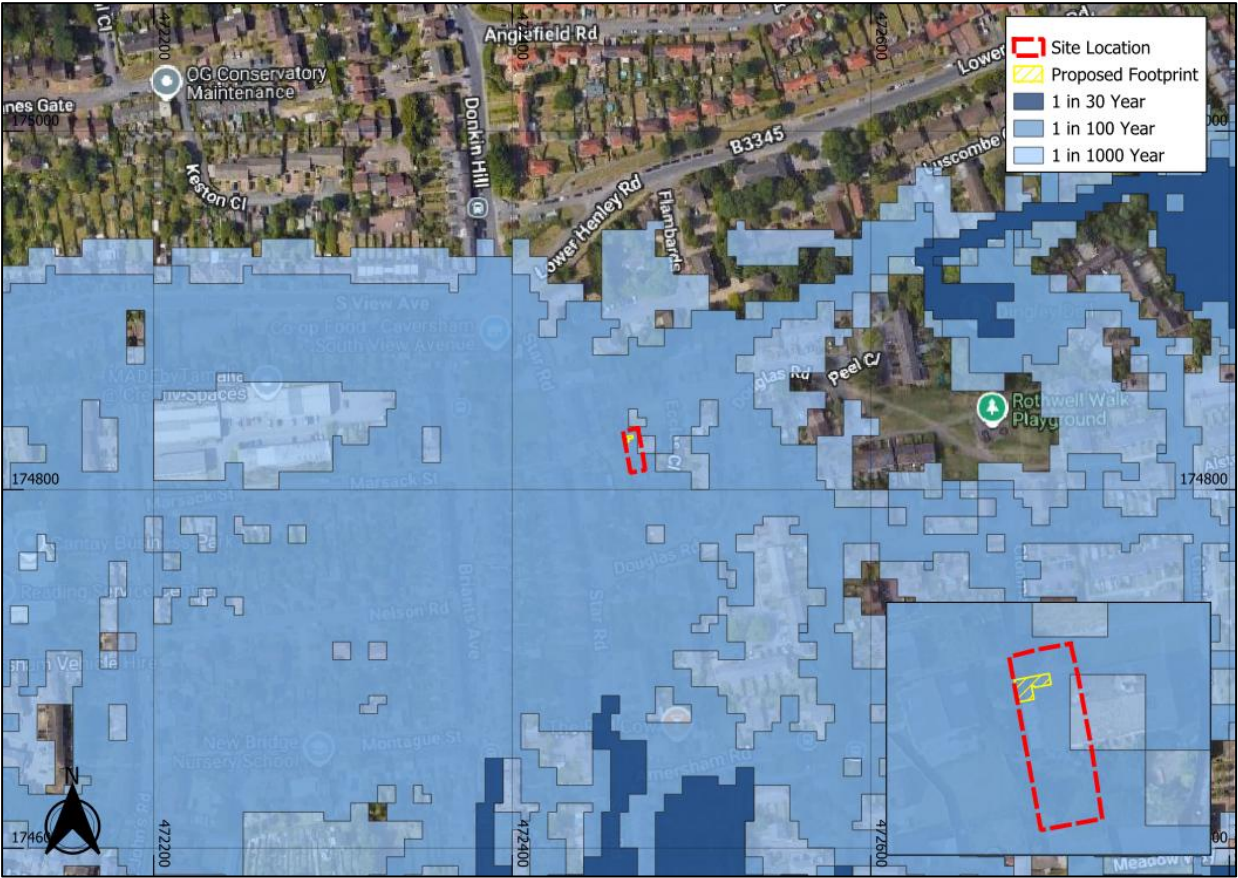


Figure 5: EA Thames (Pangbourne to Sonning) 2019 Model Present Day Scenario Extents (Base map and data from Google Satellite imagery©. Contains public sector information licensed under the Open Government Licence v3.0)

4.12. Maximum flood level data has also been assessed and has been compared to the assumed FFL of 37.65m AOD below in Table 2.

Table 2: Present Day Maximum Flood Levels and Calculated Maximum Flood Depths Based on Assumed FFL

	Max. Flood Level (m AOD)	Maximum Flood Depths (m)
1 in 100 Year	37.45	No Flooding
1 in 1000 Year	37.77	0.12

Climate Change Scenario

- 4.13. Under the EA's July 2021 climate change guidance, residential developments in the Thames and South Chilterns Management Catchment area and should consider a +31% allowance on the 1 in 100 year event as a 'design' event. The EA data provided does not include a 1 in 100 year + 31%CC event but does include a modelled 1 in 100 year + 35%CC event, which has been utilised as a conservative proxy for the 'design' event.
- 4.14. The site and proposed footprint are shown to be affected during the 1 in 100 year + 35%CC flood event (Figure 6).

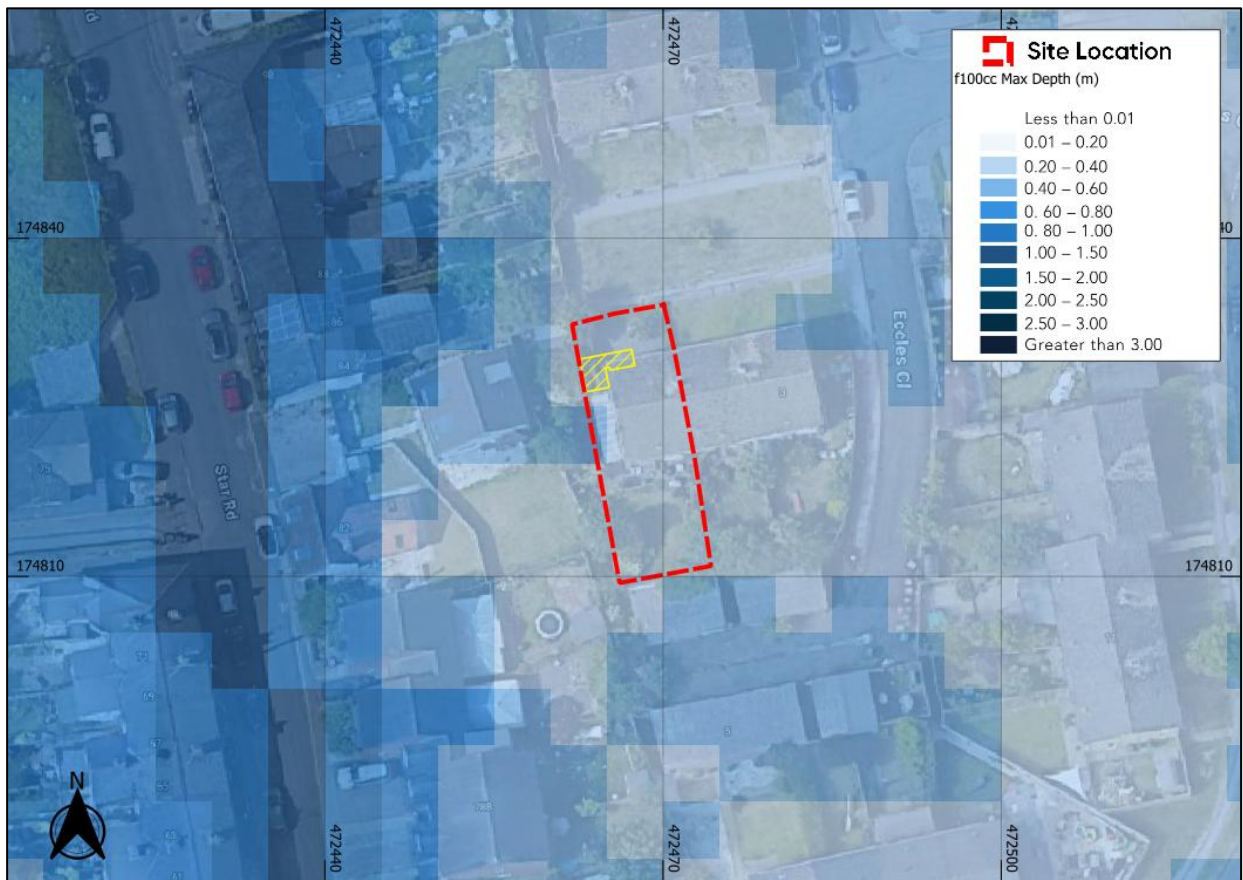


Figure 6: EA Thames (Pangbourne to Sonning) 2019 Model Climate Change Scenario Extents (Base map and data from Google Satellite imagery ©. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.15. Review of the maximum flood levels show that the site could be affected by maximum flood levels of 37.73m AOD. Given the assumed FFLs have been calculated to be 37.65m AOD, maximum internal flood depths can be calculated at 0.08m.

Fluvial Flood Risk Summary

- 4.16. Based on the EA data assessed above, maximum flood depths during the 1 in 100 year + 35%CC scenario could reach 0.08m. Therefore, the fluvial flood risk is considered to be low; however, as a precautionary approach, mitigation measures should be included within the design.
- 4.17. Section 5 outlines mitigation measures in the form of flood resilience and resistance measures that should be incorporated within the front porch extension.

Tidal

- 4.18. Tidal flooding occurs when a high tide and high winds combine to elevate sea levels. An area behind coastal flood defences can still flood if waves overtop the defences or break through them. Tidal flooding can also occur a long way from the coast by raising river levels. Water may overtop the river bank or river defences when tide levels are high.
- 4.19. The site is a significant distance from any tidal source and above the anticipated extreme tidal levels, even when considering the impacts of climate change.
- 4.20. The risk of flooding from tidal sources is considered low.

Canals

- 4.21. The Canal and River Trust (CRT) generally maintains canal levels using reservoirs, feeders, and boreholes and manages water levels by transferring it within the canal system.
- 4.22. According to the UK CRT Network mapping⁸, there are no identified CRT maintained canals within 750m of the site.
- 4.23. The risk of flooding to this site from canals is considered to be low.

⁸ <https://canalrivertrust.org.uk/canals-and-rivers>

Pluvial

- 4.24. Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.

EA Flood Map for Planning – Surface Water Spatial Planning

- 4.25. The EA Flood Map for Planning Service in relation to Surface Water was published in May 2026. The Surface Water Spatial Planning Extents and Depths have been used within this FRA to assess the surface water flood risk to the site and proposed development. These datasets show the extent of land at risk of flooding from surface water to a defined annual exceedance probability (AEP) or chance of flooding each year, taking into account the possible effects of climate change.
- 4.26. These datasets include the following scenarios:
- 0.1% AEP (1 in 1000); 1% AEP (1 in 100) and 3.3% AEP (1 in 30)
- 4.27. Alongside the following depth bands:
- Up to 150mm; 150 – 300mm; 300 – 600mm; 600 – 900mm; 900 – 1200mm; 1200 – 2300mm and over 2300mm.
- 4.28. Alongside the present day scenarios, 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.
- 4.29. The 'Upper End' for the 2070s epoch (2061-2125) has been used for the climate change scenarios. The EA have chosen long-term epochs appropriate to support long-term planning and development decisions.
- 4.30. To provide a 'worst case' assessment and in line with planning requirements, the climate change scenarios have been assessed below. It is noted that the 1 in 100 year + CC scenario is required for design requirements and is therefore referred to as the 'design' scenario.

Climate Change Scenario

- 4.31. The EA's 'Surface Water Spatial Planning' climate change extent mapping indicates that the entirety of the site is situated outside all modelled climate change scenarios including the 1 in 100 year + CC flood extent (Figure 7).



Figure 7: EA 'Surface Water Spatial Planning' Climate Change Scenarios (Base map and data from Google Satellite imagery ©. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.32. Therefore, the pluvial flood risk to the site and proposed footprint is considered to be low.

Reservoirs

- 4.33. Large waterbodies or reservoirs that have walls built above the surrounding ground level pose a risk of flooding. Walls could fail due to old age, accident, or because excess flood water has been added to the reservoir. Although a breach is unlikely the consequences would be significant, leading to rapid inundation of the downstream floodplain.

- 4.34. According to the EA's Flood Risk from Reservoirs mapping the site is at risk of flooding in the event of a breach at the Farmoor No.1, Farmoor No.2, or Whiteknights Lake reservoirs (Figure 8). A 'Wet Day' scenario predicts how much worse the flooding might be if a river is already experiencing an extreme natural flood.

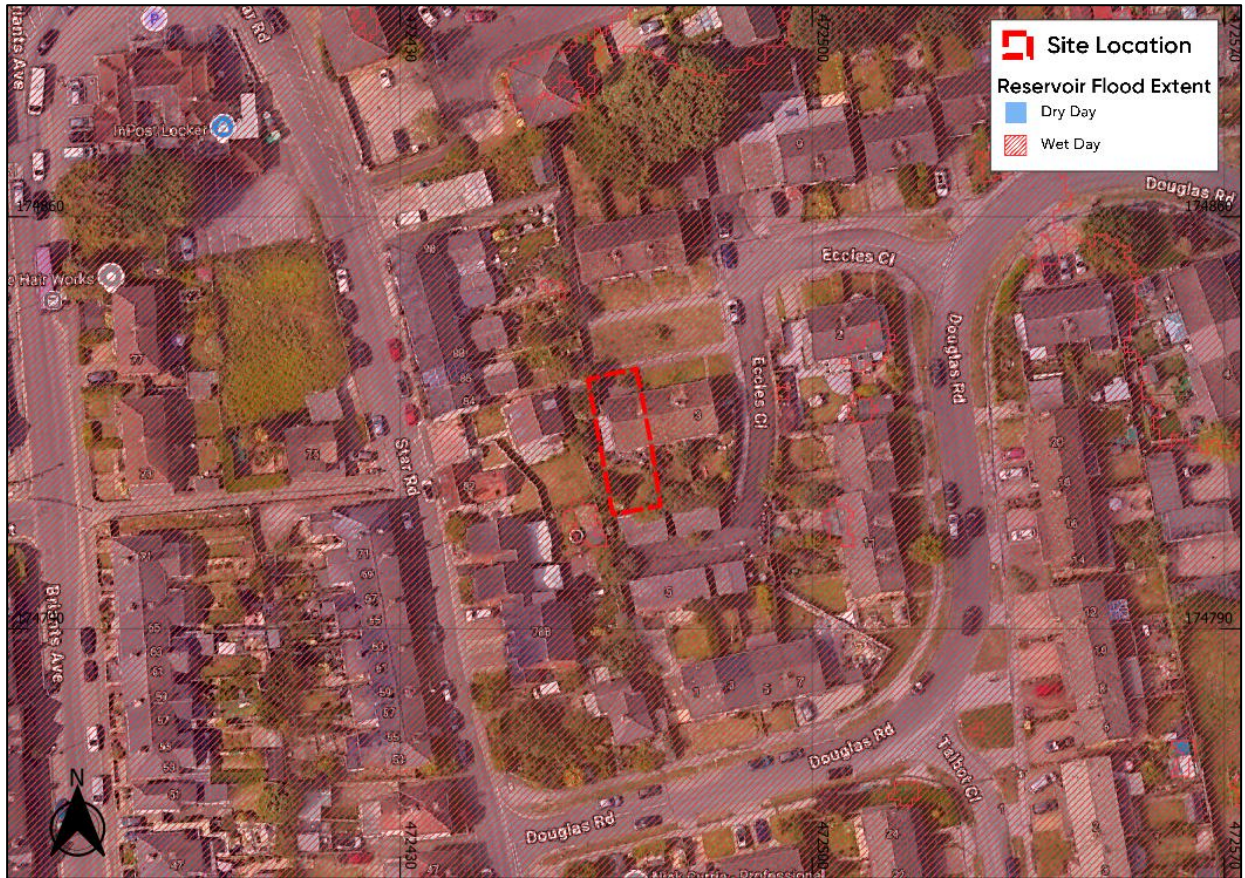


Figure 8: EA Reservoir Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). ©<https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.35. All large reservoirs must be inspected and supervised by reservoir panel engineers as detailed by the Reservoirs Act 1975 in England and Wales. The EA are responsible to ensure that reservoirs are regularly inspected and essential safety work carried out. As reservoirs are highly managed the maximum flood extent provided in the EA Risk of Flooding from Reservoirs mapping is considered a worst-case scenario.
- 4.36. As reservoir flooding is unlikely and the modelled flood depths are based on the worst-case scenario, flooding from this source may be considered a low risk.

Groundwater

- 4.37. Groundwater flooding occurs in areas where underlying geology is permeable and water can rise within the strata sufficiently to breach the surface.
- 4.38. The British Geological Survey's (BGS) mapping shows superficial deposits of Langley Silt Member comprised of clay and silt along with Alluvium Clay comprised of clay, silt, sand and gravel underlying the site. The bedrock underlying the site is Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated) comprised of chalk.
- 4.39. The SFRA (2024) states:

BGS mapping shows that the geology of Reading is characterised by distinct formations across different regions. In the north, the Seaford Chalk Formation and Newhaven Chalk Formation dominate, comprising primarily of chalk. This encompasses the following areas; New Town, Lower Caversham, Hemdean Bottom, Emmer Green and Caversham Heights. These chalky formations, due to their high groundwater recharge, can potentially lead to high groundwater levels and an increased risk of groundwater flooding during wet periods.

- 4.40. BGS mapping confirms that the nearest historical borehole in relation to the site is situated approximately 180m in which two borehole records were located referenced SU77SW664 and SU77SW665. It is considered that the same borehole was used given the mapping shows both boreholes to be in the exact same location and the depth (12.19m below ground level) to be the same – however, the samples were taken 20 years apart with '664' being in 1913 and '665' in 1933. Given the same borehole was used, record '665' has been assessed given this borehole is the most recent.
- 4.41. Review of the record suggests that the 'resting water level' was struck at 2.44m below ground level. Based on EA LiDAR data, ground levels at the borehole location are approximately 37.68m AOD – thus, suggesting that the groundwater level is situated at approximately 35.24m AOD.
- 4.42. FFLs of the existing property and proposed footprint are assumed to be 37.65m AOD and are therefore considered to be approximately 2.41m above the groundwater level.
- 4.43. Based on the borehole analysis and as the development proposals do not include any proposed basements, the risk from groundwater to the development is considered to be low.

Sewers

- 4.44. Foul or surface water sewers can be a cause of flooding if the drainage network becomes overwhelmed, either by blockage or due to local development beyond the designed capabilities of the drainage system.
- 4.45. The SFRA (2024) provides data of previous sewer flood incidents within the borough per three-digit postcode area. The site, within the 'RG4' postcode area, has experienced a total of 22 sewer incidents since 1989.
- 4.46. However, it is important to note that there is no specific evidence that the property and / or site has experienced sewer flooding previously.
- 4.47. The development is therefore considered to be at low risk of flooding from sewers. However, as a precautionary approach and as the proposed footprint includes the addition of a bathroom, all new connections are to be fitted with non-return valves to limit the potential for backflow.

5. Flood Risk Mitigation

Fluvial

- 5.1. According to the EA Flood Map for Planning, the entirety of the site including the proposed footprint is situated in Flood Zone 3 (High Risk).
- 5.2. However, review of the EA's Thames (Pangbourne to Sonning) 2019 model in Section 4, shows that maximum flood depths during the 1 in 100 year + 35%CC scenario could reach 0.08m. Therefore, the fluvial flood risk is considered to be low; however, as a precautionary approach, mitigation measures should be included within the design.

Flood Resilience and Resistance

- 5.3. It is recommended that appropriate flood resilience and resistance measures should be incorporated as a part of the development proposals (where applicable), in accordance with the CLG Report, Improving the Flood Performance of New Buildings - Flood Resilient Construction (2007)⁹ including measures such as the below:

- *Raised wiring and power outlets at ground floor level should be raised at least 300mm above the FFLs of the proposed development.*
- *Non-return valves should be installed on all new drainage. Maintenance of these valves is important to ensure their continued effectiveness so should be maintained in line with manufactures recommendations.*
- *All new plumbing insulation to be of closed cell design.*
- *Windows and patio doors are vulnerable to flood water and similar measures to those used for doors should be taken. Particular care should be taken to ensure adequate sealing of any PVC window/door sills to the fabric of the house. Of concern would be excessive water pressure on the glazing of patio*

⁹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7730/flood_performance.pdf

doors. Double glazing conforming to the relevant standards would, in principle, adequately resist the pressures generated by flood waters.

- *Finish shall be water resistant render with lime-based plaster finish, hydraulic lime coating or ceramic tiles. Plasterboard placed horizontally as a sacrificial material, not vertically.*
- *Insulation to be low adsorption board or semi rigid self-draining wool bats.*

Flood Warnings

- 5.4. The site is in the Environment Agency 'River Thames at Reading and Caversham' flood warning service area. This service allows site owners to register an address along with contact details so that, in the event of a flood being forecast, they are sent an alert. As a further precaution and risk reduction, the owner of the site should sign up.
- 5.5. Flood warnings/alerts can be enforced at any time of the day or night. Signing up for this service provides site owners some notice before a flood event. The amount of time afforded before a flood occurs depends on the site-specific location (e.g. proximity to the source of flooding, topography of the surrounding area) and the flood mechanism (e.g. bank over topping versus a breach event). Flood alerts and warnings provide occupants with time to take necessary action, e.g. communication of the risk of flooding to occupants etc, evacuation of occupants offsite or to a safe level and the removal of valuable items out of reach of flooding.

Other Assessed Sources of Flooding

- 5.6. The flood risk from other sources of flooding such as tidal, canal, pluvial, reservoir, groundwater and sewers are considered to be low. Therefore, no further mitigation is required beyond those outlined above.

Increase to Flood Risk Elsewhere

- 5.7. The proposal constitutes a Minor Development under the NPPF and Paragraph 051 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) states:

Minor developments are unlikely to raise significant flood issues unless:

- *they would have an adverse effect on a watercourse, floodplain or its flood defences;*

- *they would impede access to flood defence and management facilities, or;*
- *where the cumulative impact of such developments would have a significant effect on local flood storage capacity or flood flows.*

- 5.8. As such, the proposed development in isolation should have a negligible impact on flood risk elsewhere.
- 5.9. In addition, it is recommended that small scale SuDS, such as rainwater planters and water butts, are incorporated in external areas to provide a betterment over the existing scenario, post-development.

6. Conclusions

- 6.1. This FRA has been undertaken with reference to the requirements of NPPF and Planning Practice Guidance with respect to the development at 5 Eccles Close, Cavershaw, Reading, RG4 5BJ. It has been written to support a planning application and prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.
- 6.2. An assessment of the risk of flooding from all sources has been undertaken and is summarised in the table below:

Source of Flooding	Flood Risk Summary
Fluvial	According to the EA Flood Map for Planning, the entirety of the site including the proposed footprint is situated in Flood Zone 3 (High Risk). However, review of the EA's Thames (Pangbourne to Sonning) 2019 model in Section 4, shows that maximum flood depths during the 1 in 100 year + 35%CC scenario could reach 0.08m. Therefore, the fluvial flood risk is considered to be low; however, as a precautionary approach, mitigation measures should be included within the design.
Tidal, Canals, Pluvial, Reservoirs, Groundwater, Sewers	The site is considered to be at low risk from other assessed sources of flooding.

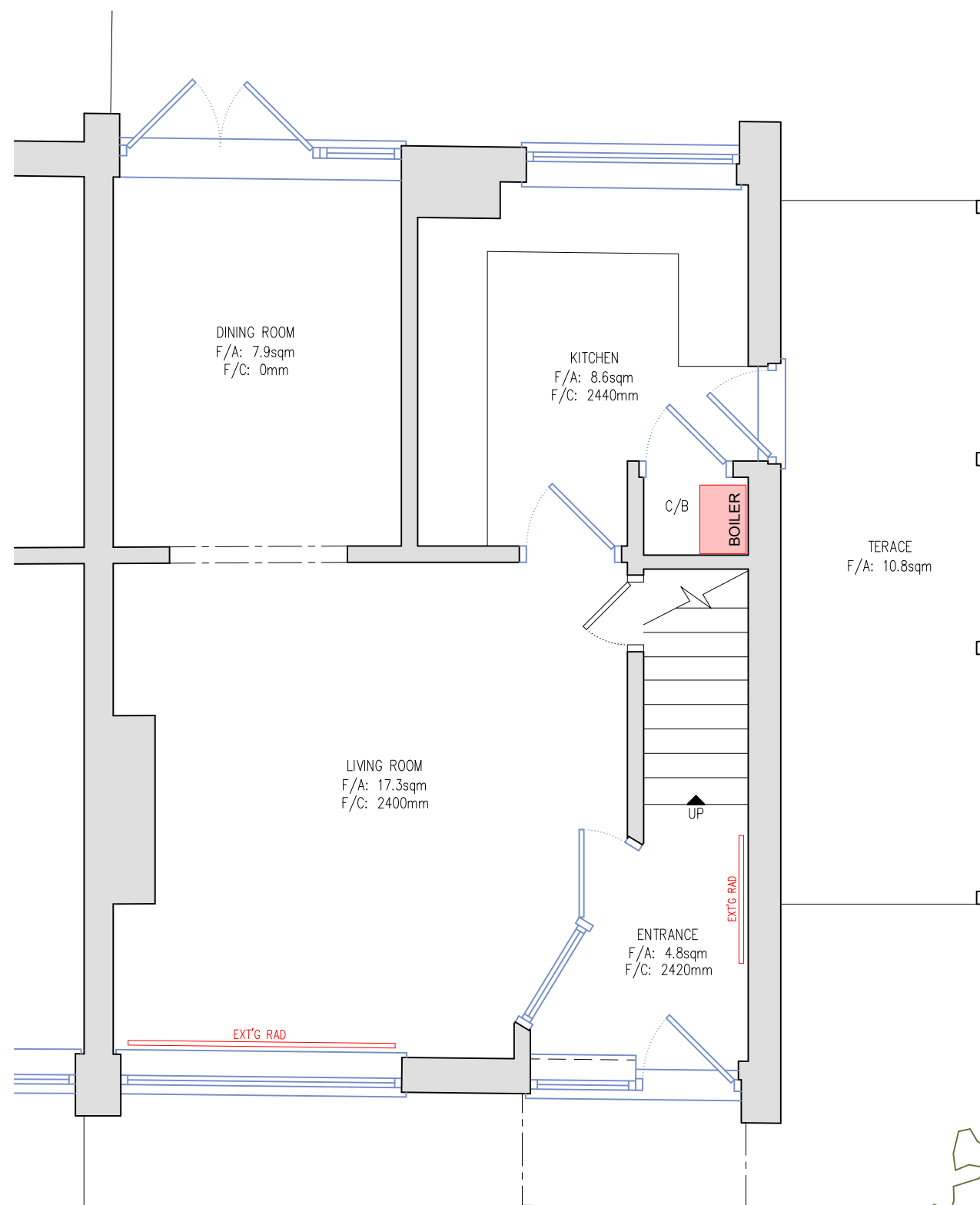
- 6.3. The FRA supports the planning application and demonstrates that there is an acceptable level of flood risk to the site if the mitigation strategies recommended are implemented in the scheme. The development does not increase flood risk off site or to the wider area.
- 6.4. This Flood Risk Assessment should be submitted as part of the planning application to satisfy the requirements under NPPF.

Appendix A - Development Proposals



MR. SAM BURT

DESIGN PROPOSAL @
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EXISTING GROUND FLOOR PLAN

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7. NON-SPECIFIED MATERIALS MUST BE CONSULTED AND APPROVED BY ALL RELEVANT PARTIES PRIOR TO INSTALLATION.



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EXISTING FIRST FLOOR PLAN

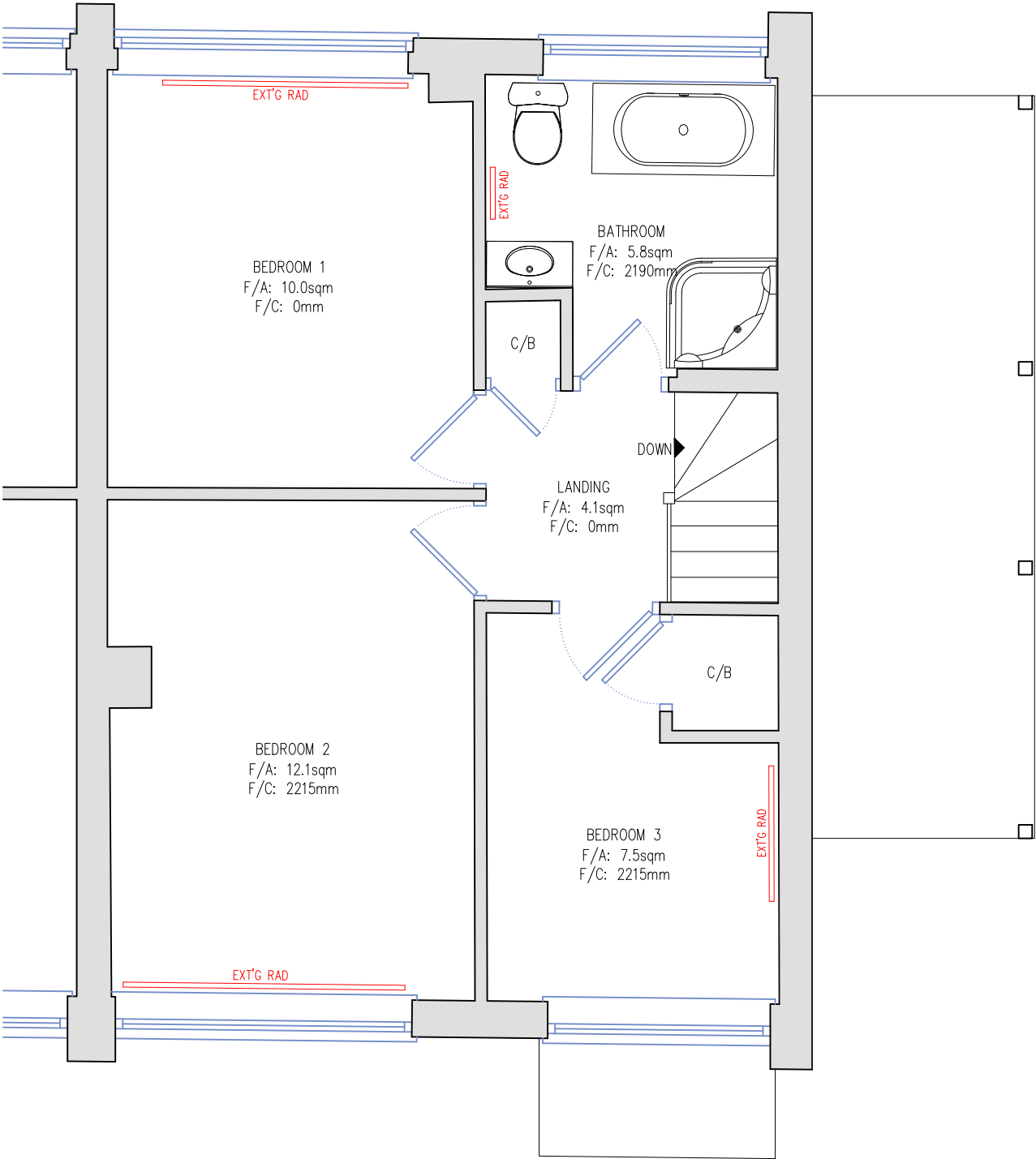
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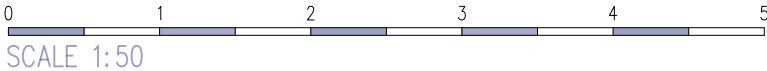


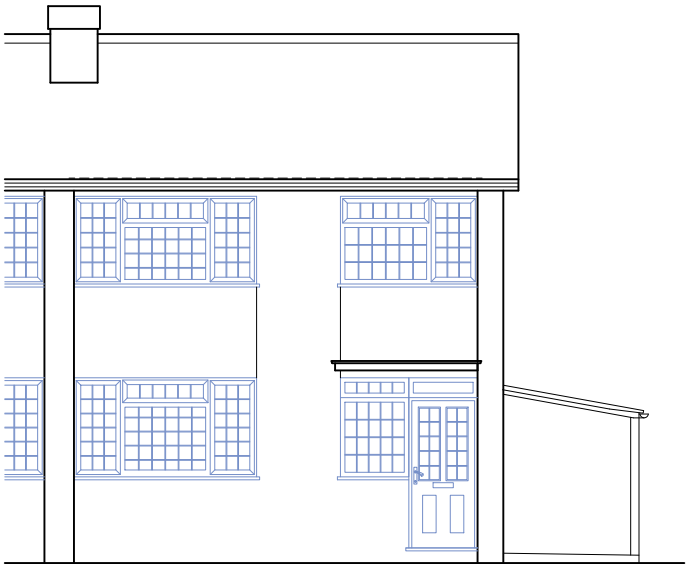
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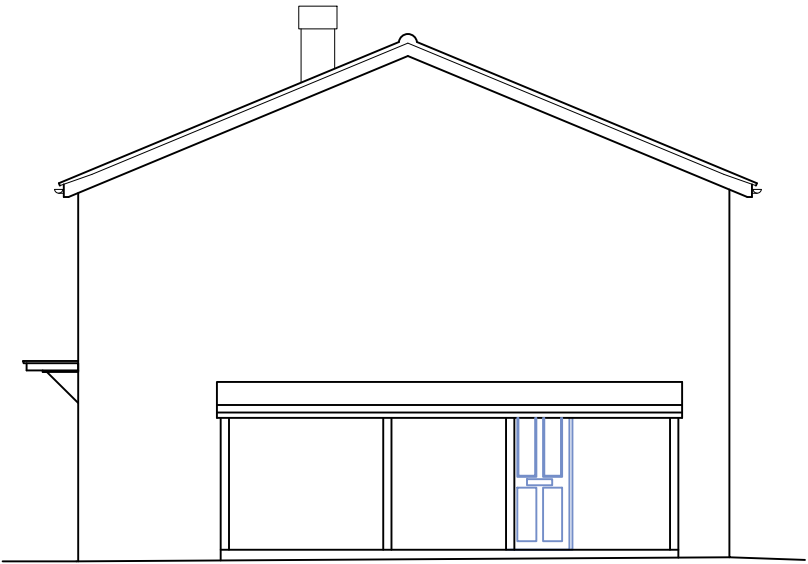
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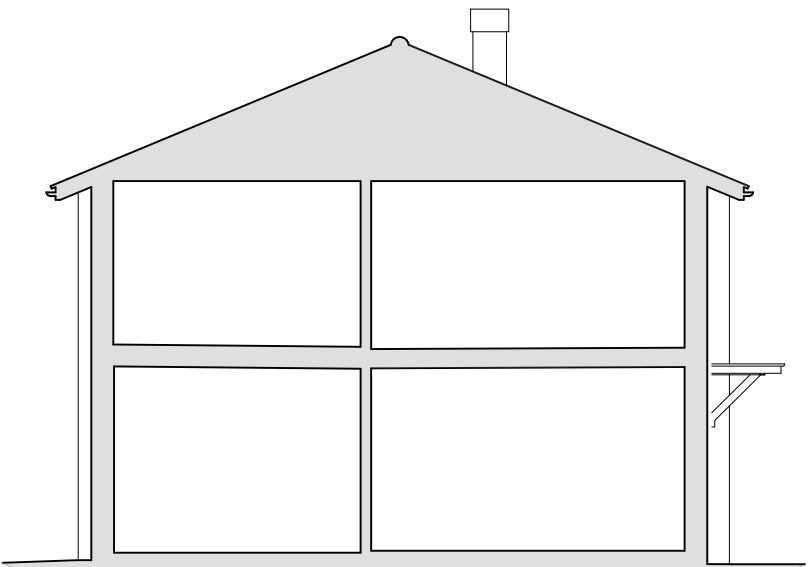
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EXISTING SIDE ELEVATION



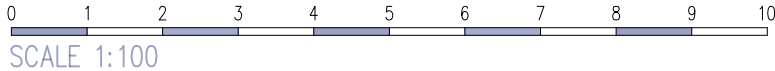
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EXISTING SIDE ELEVATION

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PROPOSED GROUND FLOOR PLAN

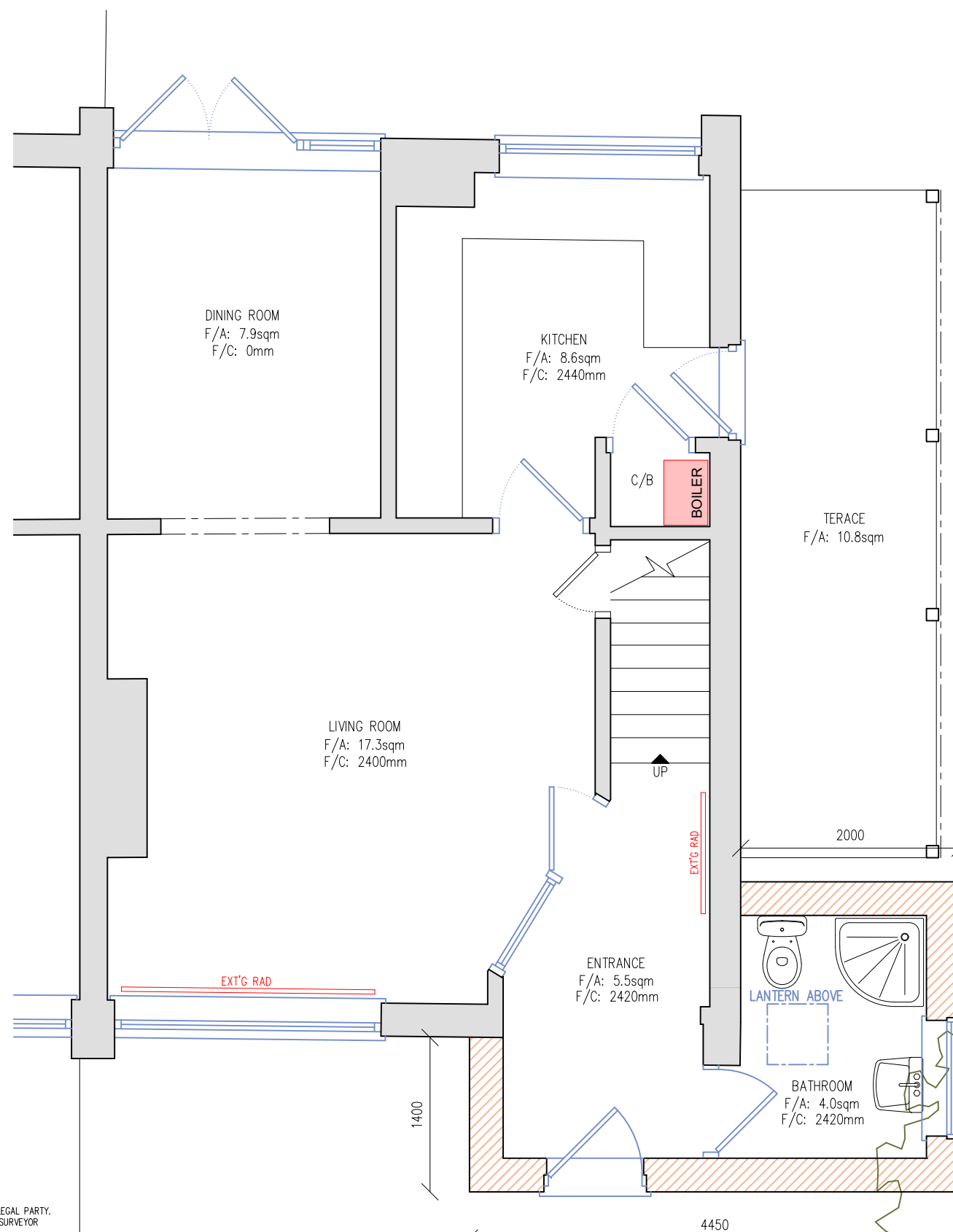
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PROPOSED GROUND FLOOR PLAN

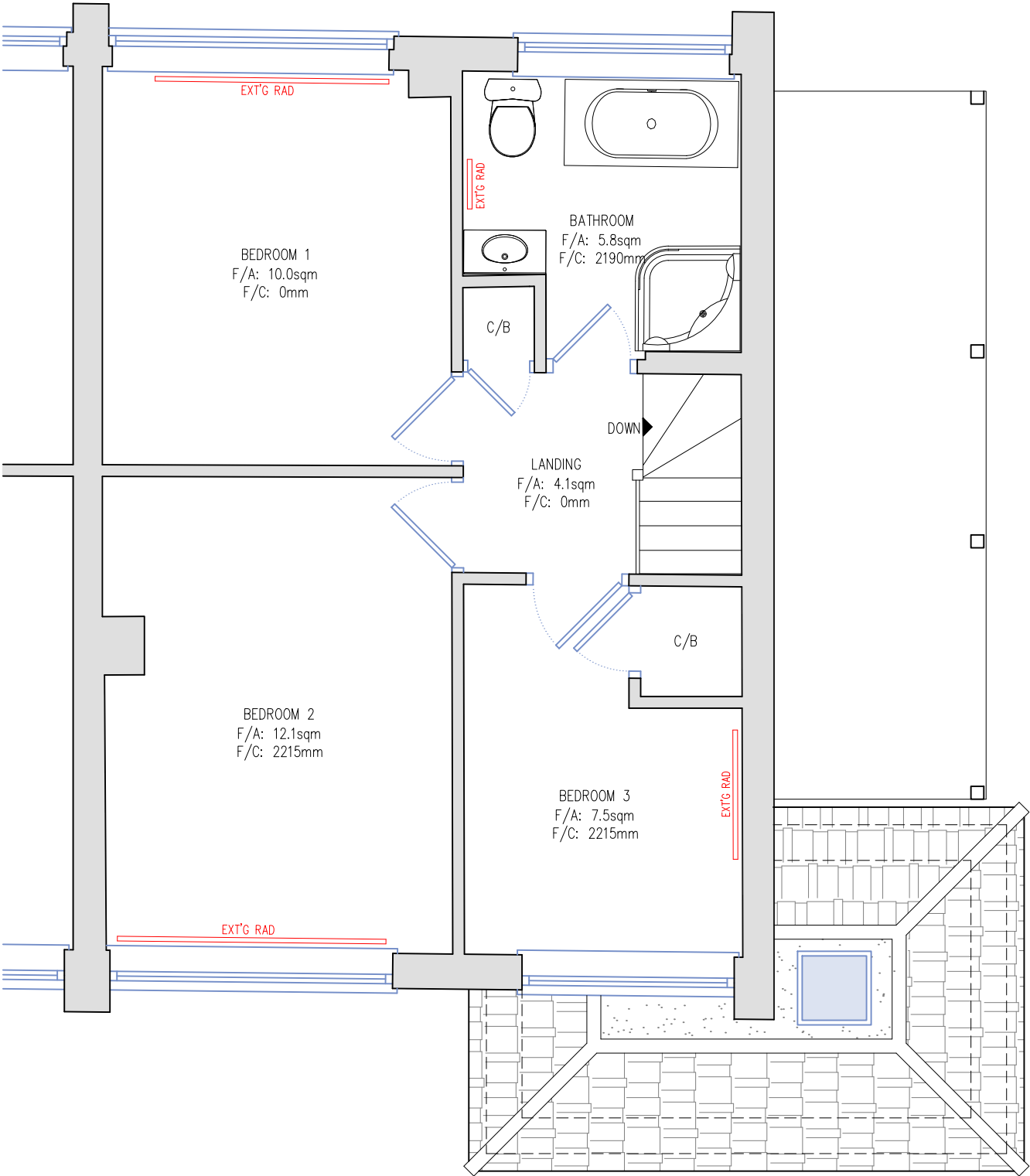
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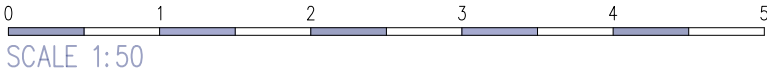


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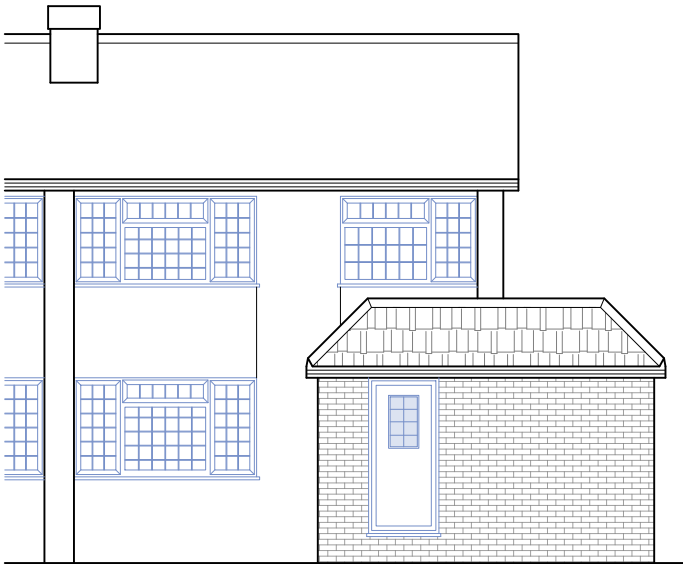
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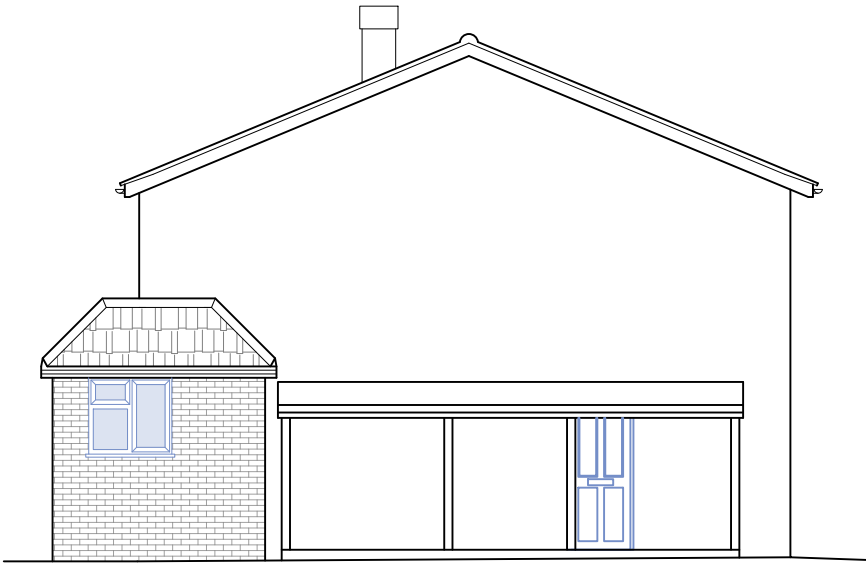


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PROPOSED FRONT ELEVATION

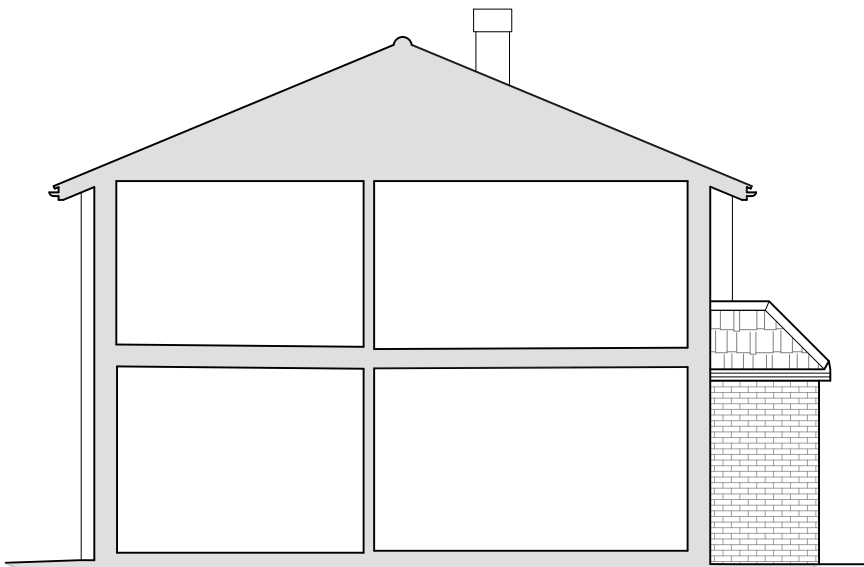


PROPOSED SIDE ELEVATION

PROPOSED
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PROPOSED REAR ELEVATION



PROPOSED SIDE ELEVATION

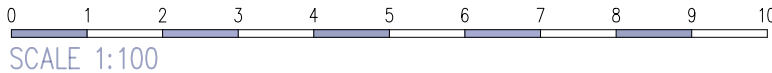
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Appendix B - EA Consultation

Karen Terry
karen@aegaea.com

Our ref: EIR2026/32397
Your ref: RGR3C42BWW1D
Date: 07 August 2026

Dear Karen,

RE: Environmental Information Regulations: EIR2026/32397

Thank you for your request for information regarding Request for Flood risk assessment data (product 4) and your follow up today regarding Customer request reference RGR3C42BWW1D, which we received on 6 July 2026.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

Our apologies for the slight delay responding.

Please note that we have changed our process for responding to modelled data requests, please read the information within this email for further details.

You have requested a Product 4. Please see below table detailing each product:

Product 4	Detailed Flood Risk Assessment Map, including flood zones, defences and storage areas, areas benefiting from defences, statutory main river designations, historic flood event outlines and more detailed information from hydraulic models (including model extents and 2D flood level data for specific points)
Product 5	Reports, including flood modelling reports, model user logs and guides, hydrology reports, etc
Product 6	Model Output Data, including product 5. • flood outlines usually provided in shapefile format • 2D grids (level (h), depth (d) velocity (v) and hazard ZKU0) usually provided in ASCII format • 1D flow and level data Requires GIS software such as ArcGIS, MapInfo, QGIS or similar.
Product 7	Calibrated and Verified Model Input Data (CaVMID), including product 5.

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	Enables customer to re-run and/or make changes to a hydraulic model. Requires specific hydraulic modelling software such as Flood Modeller, TUFLOW, or ICM InfoWorks.
Product 8	Breach Hazard Map Provides a hazard map of breaches in PDF format including maximum flood depth, maximum flood velocity and maximum flood hazard. Please note product 8 is not available for fluvial models.

Your request for a Product 4 falls under the exemption in provision 6(1)(a) and (b) of the Environmental Information Regulations 2004 (EIR) which states that

*‘.....6.—(1) Where an applicant requests that the information be made available in a particular form or format, a public authority shall make it so available, unless—
(a) it is reasonable for it to make the information available in another form or format; or
(b) the information is already publicly available and easily accessible to the applicant in another form or format.....’*

On this occasion we are not providing the information in the Product 4 format for the following reasons:

- Complying with the preference would incur a significant cost, which the public authority [The Environment Agency] cannot pass on to the requester;
- Using a Product 5/6/7 allows us to make the information available at a lower cost; and
- The impact on the available resources of the public authority [The Environment Agency], of supplying a Product 5/6/7, is therefore much less.

Please find the Quatrix link below that will enable you to download the Products 5, 6, and 7 for Thames (Pangbourne to Sonning) 2019. Please note, the Quatrix link provided will expire, please download the data promptly.

Thames (Pangbourne to Sonning) 2019	567	https://fcrm.quatrix.it/download/f3921552-c4e9-4108-a775-afcea2749992	The full extent of this model is from Pangbourne to Henley-on-Thames, however the Environment Agency
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			have made the decision to only use this model from Pangbourne to Sonning. If you need data downstream of Sonning, please use the Thames (Sonning to Hurley) 2019 model. Please see the folder within the P6 marked as 'Extent of the model as used by the EA' to access all model outputs that have been clipped to the model extent used by the Environment Agency.
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Please refer to the tables below for the permitted use of the supplied information. The following information is not available under the Open Government Licence but we may be able to license it to you under the Environment Agency Conditional Licence.

However, you MUST first check the supporting information and the link to determine if the conditions on use are suitable for your purposes. If they aren't, this information is not provided with a licence for use, and the data is provided for read right only.

Name	Product 5
Description	Report for Thames (Pangbourne to Sonning) 2019
Licence	Environment Agency Conditional Licence
Information Warnings	<i>Any mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply.</i>

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Name	Product 6
Description	Model Output Data for Thames (Pangbourne to Sonning) 2019
Name	Product 7
Description	Calibrated and Verified Model Input Data for Thames (Pangbourne to Sonning) 2019
Licence	Environment Agency Conditional Licence
Conditions	1. You may use the Information for your internal or personal purposes and may only sublicense others to use it if you do so under a written licence which includes the terms of these conditions and the agreement and in particular may not allow any period of use longer than the period licensed to you. 2. Notwithstanding the fact that the standard wording of the Environment Agency Conditional Licence indicates that it is perpetual, this Licence has a limited duration of 5 years at the end of which it will terminate automatically without notice. 3. We have restricted use of the Information as a result of legal restrictions placed upon us to protect the rights or confidentiality of others. In this instance it is because of third party data. If you contact us in writing (this includes email) we will, as far as confidentiality rules allow, provide you with details including, if available, how you might seek permission from a third party to extend your use rights. 4.1 The Information may contain some data that we believe is within the definition of “personal data” under the Data Protection Act 1998 but we consider that we will not be in breach of the Act if we disclose it to you with conditions set out in this condition and the conditions above. This personal data comprises names of individuals or commentary relating to property that may be owned by an individual or commentary relating to the activities of an individual.

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	2. Under the Act a person who holds and uses or passes to others personal data is responsible for any compliance with the Act and so we have no option but to warn you that this means you have responsibility to check that you are compliant with the Act in respect of this personal data. 5. The location of public water supply abstraction sources must not be published to a resolution more detailed than 1km². Information about the operation of flood assets should not be published. 6.1 Where we have supplied model data which may include model inputs or outputs you agree to supply to the Environment Agency copies of any assessments/studies and related outputs, modifications or derivatives created pursuant to the supply to you of the Information, all of which are hereinafter referred to as “the Data”. 6.2 You agree, in the public interest to grant to the Environment Agency a perpetual royalty free non-exclusive licence to use the Data or any part thereof for its internal purposes or to use it in any way as part of Environment Agency derivative products which it supplies free of charge to others such as incorporation into the Environment Agency's Open Data mapping products.
Information Warnings	Please be aware that model data is not raw, factual or measured but comprises of estimations or modelled results based on the data available to us.
Attribution	Contains Environment Agency information © Environment Agency and/or database rights.

Product 4 data is derived from the Product 6 supplied above and the following open data sources; Please note, that the new Flood Map for Planning service, published 25 March 2025, is available to view and export maps for your site at: [Flood map for planning - GOV.UK](#)

Historic Flood Map <https://data.gov.uk/dataset/historic-flood-map1>

Recorded Flood Outlines <https://data.gov.uk/dataset/recorded-flood-outlines1>

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Using modelling for flood risk assessments provides information regarding the use of modelling in flood risk assessments when applying for planning permission. You can view more information at: <https://www.gov.uk/guidance/using-modelling-for-flood-risk-assessments>

Please note that our historic flood event maps may not be comprehensive. We would therefore advise that you make further enquiries locally with specific reference to flooding at your location. You should consider contacting the relevant Local Planning Authority and/or water/sewerage undertaker for the area.

Please be aware that flooding can come from different sources. Examples of these are:

- from rivers or the sea
- surface water (i.e. rainwater flowing over or accumulating on the ground before it is able to enter rivers or the drainage system)
- overflowing or backing up of sewer or drainage systems which have been overwhelmed
- groundwater rising up from underground aquifers
- It should be noted that the extents of our modelling may not reach your site and may have been provided for access and egress purposes.

Flood defence information / any other useful information

This site is not impacted by any formal defences

It should be noted that the extents of our modelling may not reach your site and may have been provided for access and egress purposes.

Flood Risk Assessment Checklist

If you are planning on using this data within a Flood Risk Assessment, we recommend that you take the time to fill in the attached FRA checklist, and to read the attachments which contain information relevant to the area that interests you.

We would like to stress the importance of filling in the Flood Risk Assessment check list and providing up-to-date and correct data. The data will be checked against our records when we review the Flood Risk Assessment in our role as statutory consultee.

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It is important that you provide a map in section 2 of the FRA checklist (See Appendix A), including the highest and most representative flood levels for your site. We recommend using a number of nodes that provide a fair representation of the modelled data across your site. For example, if it is a small extension (< 250 square metres) then approximately 5-10 nodes would be sufficient. For larger sites, approximately 10 to 20 nodes would be appropriate.

Please be aware that from 20th July 2021 the climate change allowances required in flood risk assessments have been updated. Please see <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#contents> for more information.

If you have a new enquiry or would like us to review the information, we have provided under the Freedom of Information Act 2000 and Environmental Information Regulations 2004 please contact us within two months by email at enquiries_THM@environment-agency.gov.uk

Kind regards,

Phil Winfield (He/Him)

Customers & Engagement Officer – Thames

enquiries_THM@environment-agency.gov.uk

Environment Agency | Red Kite House, Howbery Park, Wallingford, OX10 8BD

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