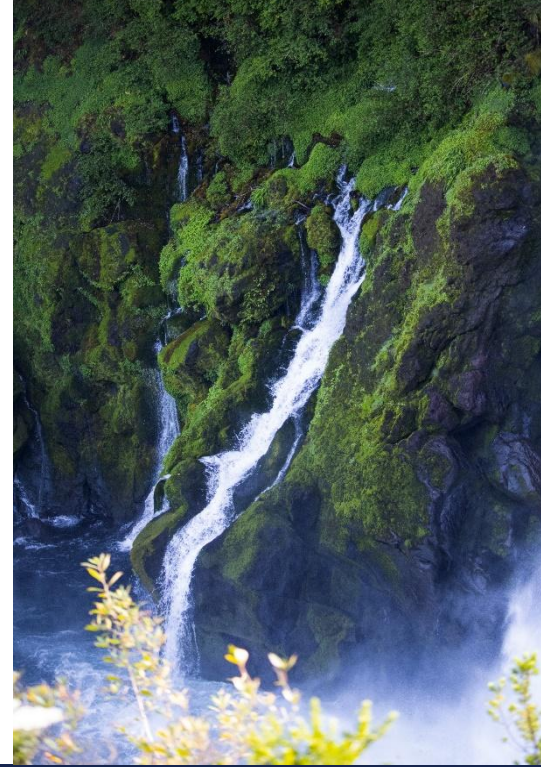




Flood Risk Assessment AEG11414_RG10_Wargrave_01

Site Address: The Moorings
Loddon Drive
Wargrave
Wokingham Borough Council
RG10 8HL

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



Document Issue Record

Project: Flood Risk Assessment

Prepared for: Alex Moller

Reference: AEG11414_RG10_Wargrave_01

Site Location: The Moorings, Loddon Drive, Wargrave, Wokingham Borough Council, RG10 8HL

Issue	Date	Author	Check	Auth.	Comments
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Summary

Development Description	Existing	Proposed
Development Type	Residential Dwelling with associated garden and access track	Parking Platform (Minor Development in terms of Flood Risk)
EA Vulnerability Classification	N/A ¹ - garden	Water Compatible
Ground Floor Level	Levels surrounding the parking platform range between 33.30 and 33.51 metres Above Ordnance Datum (m AOD) as per the levels plan provided in the Appendix.	The parking platform sits at 33.71m AOD.
Level of Sleeping Accommodation	N/A ¹ – no sleeping in garden area	N/A ¹ – no sleeping in parking platform
Surface Water Drainage	N/A ¹	Minor development with minimal impact on drainage. Platform made of permeable material with runoff to drain into surrounding ground as per existing situation.
Site Size	Platform area circa 209m ²	No change
Risk to Development	Summary	Comment
EA Flood Zone	Flood Zone 3	Flood Zone 3b and impacted in design 100 + 35% CC event by flood depths up to 1.45m. Given the minor / water compatible nature of the platform, this risk is acceptable.
Flood Source	Fluvial	
SFRA Available	Level 1 Strategic Flood Risk Assessment (Wokingham Borough Council, 2023)	
Management Measures	Summary	Comment
Ground floor level above extreme flood levels	No	Platform impacted by up to 1.45 flood depth in the design 100 + 35% CC fluvial event. Given the water

		compatible nature of the platform, this risk is acceptable.
Safe Access/Egress Route	No	Site is surrounded by floodplain. Since the proposal is a minor development, access and egress arrangements would remain the same.
Flood Resilient Design	Yes	Platform is inherently flood resilient.
Site Drainage Plan	No change	Minor development with minimal impact on drainage. Platform made of permeable material with runoff to drain into surrounding ground as per existing situation.
Flood Warning and Evacuation Plan	N/A ¹	Recommended to sign up to the River Thames for Shiplake, Lower Shiplake and Wargrave flood warning service.
Offsite Impacts	Summary	Comment
Displacement of floodwater	Negligible	Minor development in isolation causes negligible impacts on flood risk elsewhere.
Increase in surface run-off generation	Negligible	Minor development with minimal impact on drainage. Platform made of permeable material with runoff to drain into surrounding ground as per existing situation.
Impact on hydraulic performance of channels	None	The River Loddon is located circa 100m east of the platform.

¹ not required for this assessment

² data not available.

1. Introduction

- 1.1. Aegaea were commissioned by Alex Moller to undertake a Flood Risk Assessment (FRA) to facilitate a retrospective application at The Moorings, Loddon Drive, Wargrave, Borough of Wokingham, RG10 8HL.
- 1.2. 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.

Site Overview

- 1.3. The site of the retrospective development is The Moorings, Loddon Drive, Wargrave, RG10 8HL (Figure 1).

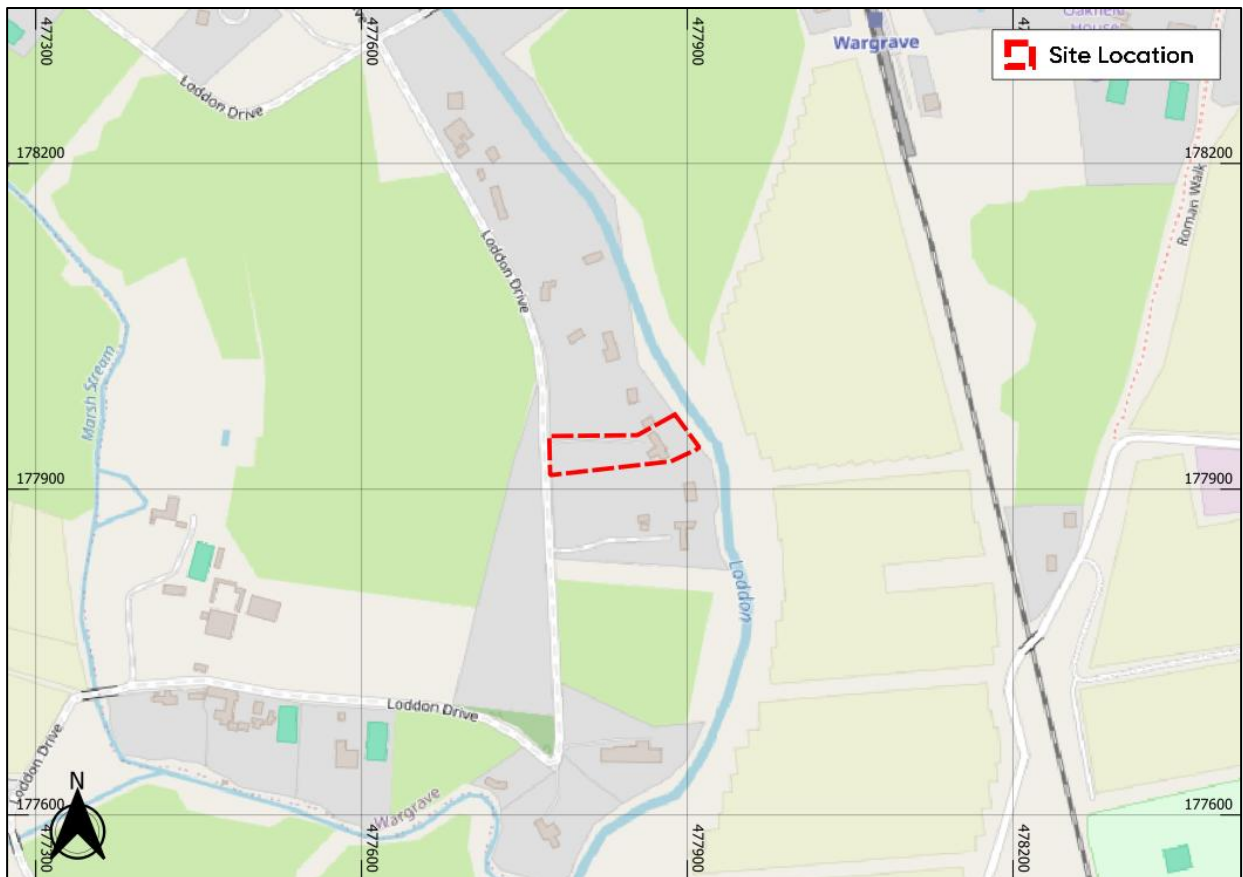


Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.4. The existing site comprises a house with associated garden and access track. The development is a parking platform associated with the existing dwelling, made up of permeable resin bound finish Scheme plans are included in Appendix A.
- 1.5. The levels relevant to the parking platform are shown on the levels plan in Appendix A. This shows levels surrounding the parking platform range between 33.33 metres Above Ordnance Datum (m AOD) and 33.51m AOD – where the platform meets the access road. LiDAR data has been used to visualise the wider topography of the area (Figure 2).
- 1.6. The raised parking platform sits at 33.71m AOD. The levels plan shows that the majority of the platform is raised by less than 300mm, with some parts exceeding the 300mm raising (maximum of 380mm raising).

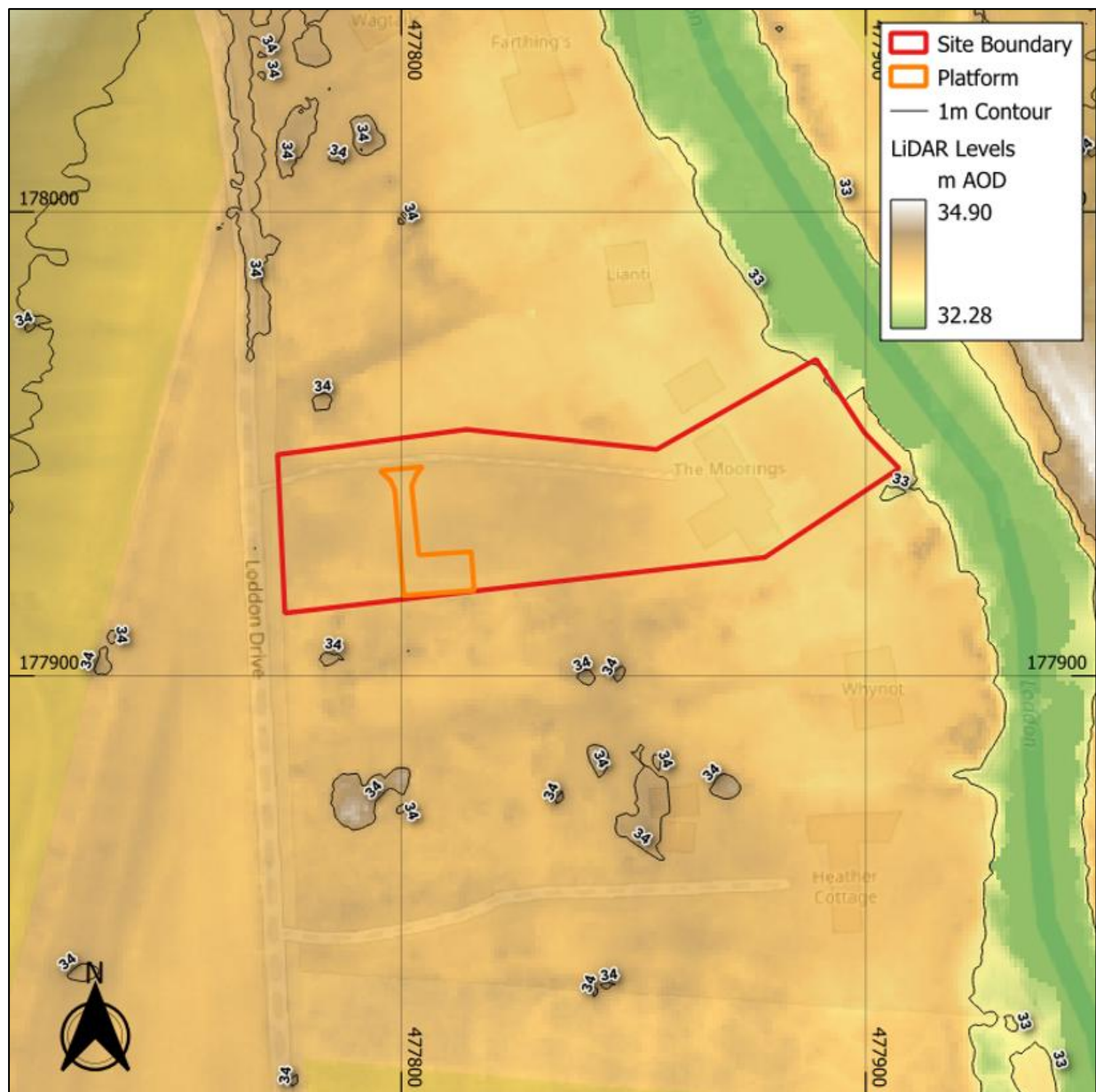


Figure 2: Site Topography (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.7. Wokingham 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 area and the Loddon and tributaries Management Catchment within the Thames River Basin District.

Planning Policy and Guidance

1.8. 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*

1.9. The site is located within Flood Zone 3. Therefore, under the NPPF, a flood risk assessment is required.

1.10. 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, 2024) which includes UK Government policy on development and flood risk states:

170. 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.

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

181. 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;*

² <https://www.gov.uk/guidance/national-planning-policy-framework>, last updated Dec 2024

- 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. 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.

2.4. 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.*

2.5. The proposed development is a **householder development** and therefore considered a Minor Development under the NPPF.

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, Wokingham Borough Council, sets out the policies for development in the local area.
- 2.10. Policy CP1 and CP3 from the Adopted Core Strategy and Policy CC09 from the Management Development Delivery Local Plan outlines the requirements for new development within the area. It states:

CP1 – Sustainable Development

Planning permission will be granted for development proposals that:

- *Ensure the provision of adequate drainage;*
- *Avoid increasing (and where possible reduce) risks of or from all forms of flooding (including from groundwater);*

CP3 – General Principles for Development

Planning permission will be granted for proposals that:

- *Have no detrimental impact upon important ecological, heritage, landscape (including river valleys) or geological features or watercourses.*

CC09 – Development and Flood Risk (from all sources)

All sources of flood risk, including historic flooding, must be taken into account at all stages and to the appropriate degree at all levels in the planning application process to avoid inappropriate development in areas at risk of flooding.

Proposals must be consistent with the guidance in paragraphs 99-104 of the National Planning Policy Framework (NPPF); the Technical Guidance to the NPPF and demonstrate how they have used the Strategic Flood Risk Assessment (SFRA) to determine the suitability of the proposal.

Development proposals in Flood Zones 2 or 3 must take into account the vulnerability of proposed development.

Development must be guided to areas of lowest flood risk by applying the sequential approach taking into account flooding from all sources and shall ensure flood risk is not worsened for the application site and elsewhere, and ideally that betterment of

existing conditions is achieved. The sequential test will not be required if at least one of the following applies:

- Replacement of an existing single residential property. However, the replacement property should, where possible, be located on the part of the site at lowest risk
- Conversions and change of use unless it involves a change to a more vulnerable class
- Minor development, as defined in footnote 10 of the Technical Guidance Note to the NPPF.

In exceptional circumstances, new development in areas of flood risk will be supported where it can be demonstrated that:

- The development provides wider sustainability benefits to the community that outweigh flood risk
- The development will:
 - Be safe for its lifetime, taking account of the vulnerability of its users
 - Not increase flood risk in any form elsewhere and, where possible, will reduce flood risk overall
 - Incorporate flood resilient and resistant measures into the design
 - Appropriate evacuation and flood response procedures are in place to manage the residual risk associated with an extreme flood event.

Where required, suitable and appropriately detailed flood risk information will need to accompany a planning application.

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. As per Paragraph 176 of the NPPF

Applications for some **minor development** and changes of use should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments set out in footnote 63.

- 2.13. As such, given the retrospective development is classified as a minor development, the development is not required to be subject to the sequential or exception tests.

Summary

- 2.14. This flood risk assessment has been prepared with due consideration to the above local and national policy.

3. Data and Document Review

Environment Agency Data

- 3.1. The relevant EA hydraulic model for the area is the Thames (Sonning to Hurley) 2019, and Aegaea hold the model outputs on file. This has been used in subsequent sections of this report to assess the fluvial flood risk.

Documents and Online Mapping

- 3.2. 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.
- 3.3. 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)
 - Wokingham Borough Local Development Framework Adopted Core Strategy (Wokingham Borough Council, 2010)³ and Wokingham Borough Development Plan

³ <https://www.wokingham.gov.uk/sites/wokingham/files/2023-06/Final%20adopted%20Core%20Strategy%20inc.%20cover.pdf>

Adopted Managing Development Delivery Local Plan (Wokingham Borough Council, 2014)⁴

- Wokingham Borough Council Level 1 Strategic Flood Risk Assessment (JBA Consulting, 2023)⁵
- Preliminary Flood Risk Assessment (Wokingham Borough Council, 2011)⁶
- Local Flood Risk Management Strategy (Wokingham Borough Council, 2015)⁷

Preliminary Flood Risk Assessment (PFRA)

- 3.4. The PFRA, published in 2011, is a high-level appraisal of flood risk across Lead Local Flood Authority Wokingham 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.
- 3.5. The PFRA summarises historical flood incidents in Wokingham Borough Council.

Strategic Flood Risk Assessment (SFRA)

- 3.6. The SFRA, published in 2023 provides the evidence base for the Local Planning Authority Wokingham 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.
- 3.7. The SFRA mapping provided by Wokingham Borough Council has been used throughout production of this report as a source of information, particularly pertaining to historical flood incidents.

⁴ <https://www.wokingham.gov.uk/sites/wokingham/files/2023-06/Adopted%20MDD.pdf>

⁵ <https://www.wokingham.gov.uk/sites/wokingham/files/2024-05/WBC%20Level%201%20SFRA%202023%20-%20Main%20report.pdf>

⁶ <https://www.wokingham.gov.uk/sites/wokingham/files/2023-07/Wokingham%20Borough%20Council%20Preliminary%20Flood%20Risk%20Assessment%202011.pdf>

⁷ <https://www.wokingham.gov.uk/sites/wokingham/files/2023-06/Local%20Flood%20Risk%20Management%20Strategy%20April%202015%20%28PDF%20document%29.pdf>

Local Flood Risk Management Strategy (LFRMS)

- 3.8. 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.
- 3.9. The Wokingham 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 and Ordinary Watercourses

- 4.2. The nearest watercourse is the River Loddon, an EA-designated Main River, which lies approximately 9m from the site, but approximately 100m from the location of the platform.
- 4.3. There are no other watercourses in the vicinity (500m) of the site according to OS mapping.

EA Flood Map for Planning

- 4.4. The site is located within Flood Zone 3 (Figure 3). Flood Zone 3 denotes a risk of fluvial flooding from sources greater than 1 in 100 (1%).

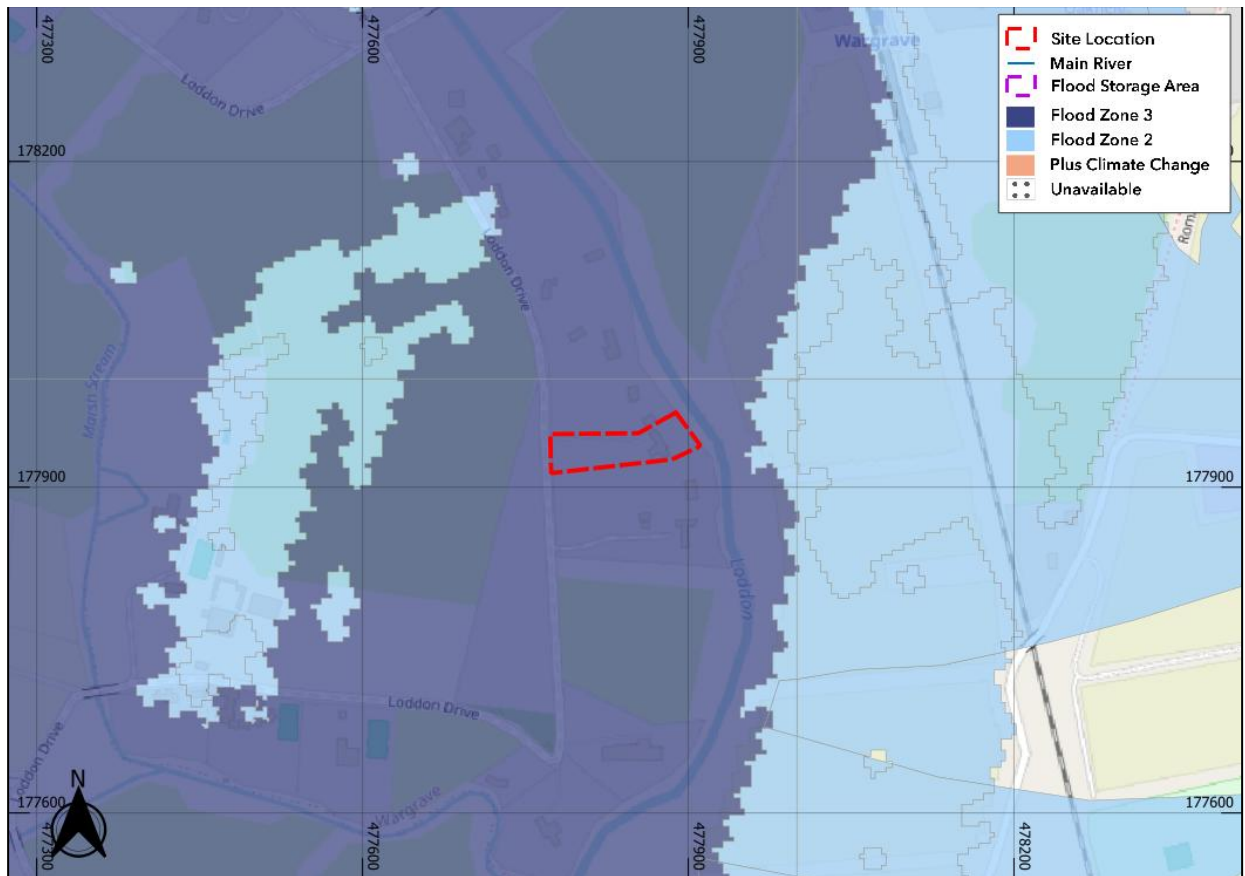


Figure 3: EA Flood Map for Planning (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Historical Fluvial Flooding

- 4.5. The EA Recorded and historical Flood Outlines dataset shows that there have been many instances of historic flooding in and around the site (Figure 4). The most recent events recorded were in 2013/14, 2007, 2002/03, and 2000, all caused due to the channel capacity being exceeded (no raised defences).

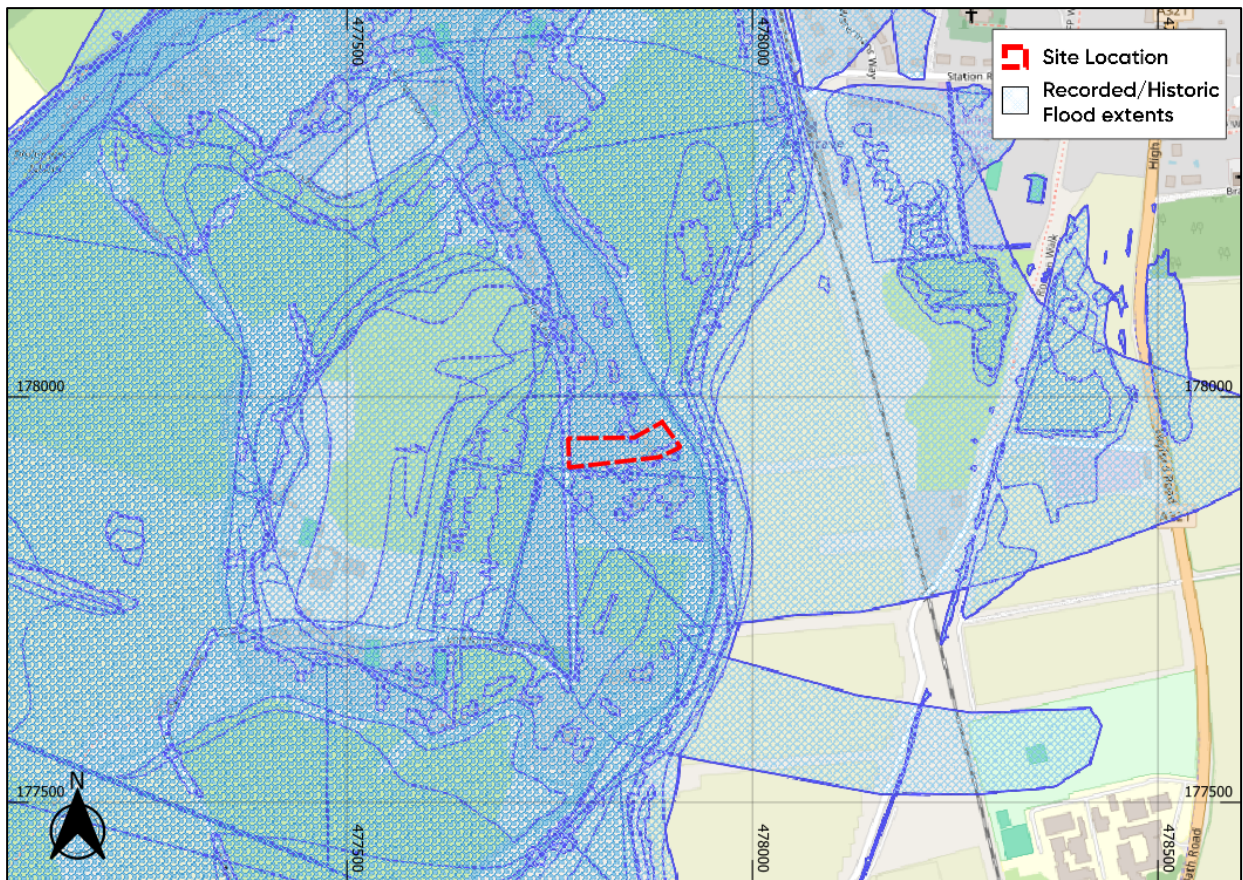


Figure 4: EA Historic Flood Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Defences

- 4.6. The EA's Spatial Flood Defences including Standardised Attributes dataset shows the presence of defences along the western bank of the Loddon adjacent to the eastern site boundary. The asset is shown as 'Natural High Ground' with a standard of protection up to the 1 in 5 year event.
- 4.7. As such, under the premise that the defence continues to function as intended, the site should be protected for lower order events up to the 1 in 5 year.

EA Model - Thames (Sonning to Hurley) 2019

- 4.8. The relevant EA hydraulic model for the area is the Thames (Sonning to Hurley) 2019.

Flood Zone 3b – Functional Floodplain

- 4.9. The entire site is impacted in the 30 Year Event (Figure 5), which is indicative of Flood Zone 3b – the functional floodplain

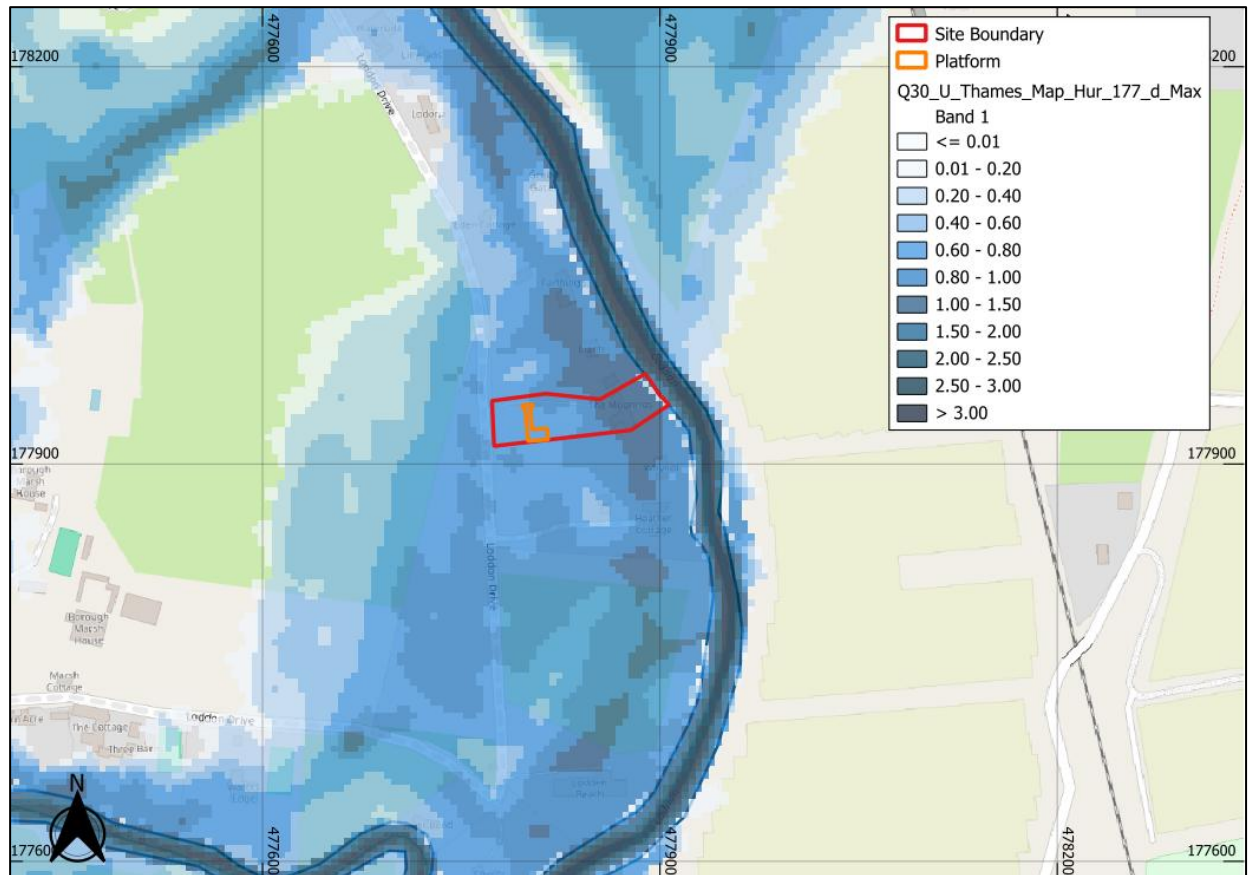


Figure 5: Flood Depths for 1 in 30 year event – EA Thames (Sonning to Hurley) 2019 (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.10. The maximum flood level at the location of the platform is 34.47m AOD. Given the platform is set at level of 33.71m AOD, the platform would be subject to flood depths of 0.76m.
- 4.11. Development is restricted within Flood Zone 3b to water compatible uses or essential infrastructure. The proposals are considered acceptable for the following reasons:
- The parking pad is shown to be raised by around 300mm, with some minimal areas exceeding this raising to a maximum of 380mm. As indicated by Wokingham Borough Council (Appendix B) any raising below 0.3m does not constitute operational development requiring a full planning application and is therefore not subject to the associated flood risk assessment and mitigation requirements.

- The platform is, by its nature, water-compatible and flood resilient, making it an appropriate form of development within Flood Zone 3b in accordance with the NPPF.

Design Event

- 4.12. The peak river flow climate change (CC) allowances for the Loddon and Tributaries Management Catchment is 14% for the Central, 23% for the Higher, and 46% for the Upper End allowance for the 2080s epoch. For water compatible development in Flood Zone 3b the Central allowance should be used as per the PPG. To provide a conservative estimate, the Higher allowance has been used for this assessment.
- 4.13. The design event for the site is therefore the 100 + 23% Climate Change. The EA model does not include the 23% uplift; therefore, the 35% CC scenario has been used as a conservative design proxy. The entire site is shown to be inundated in the design event (Figure 6).

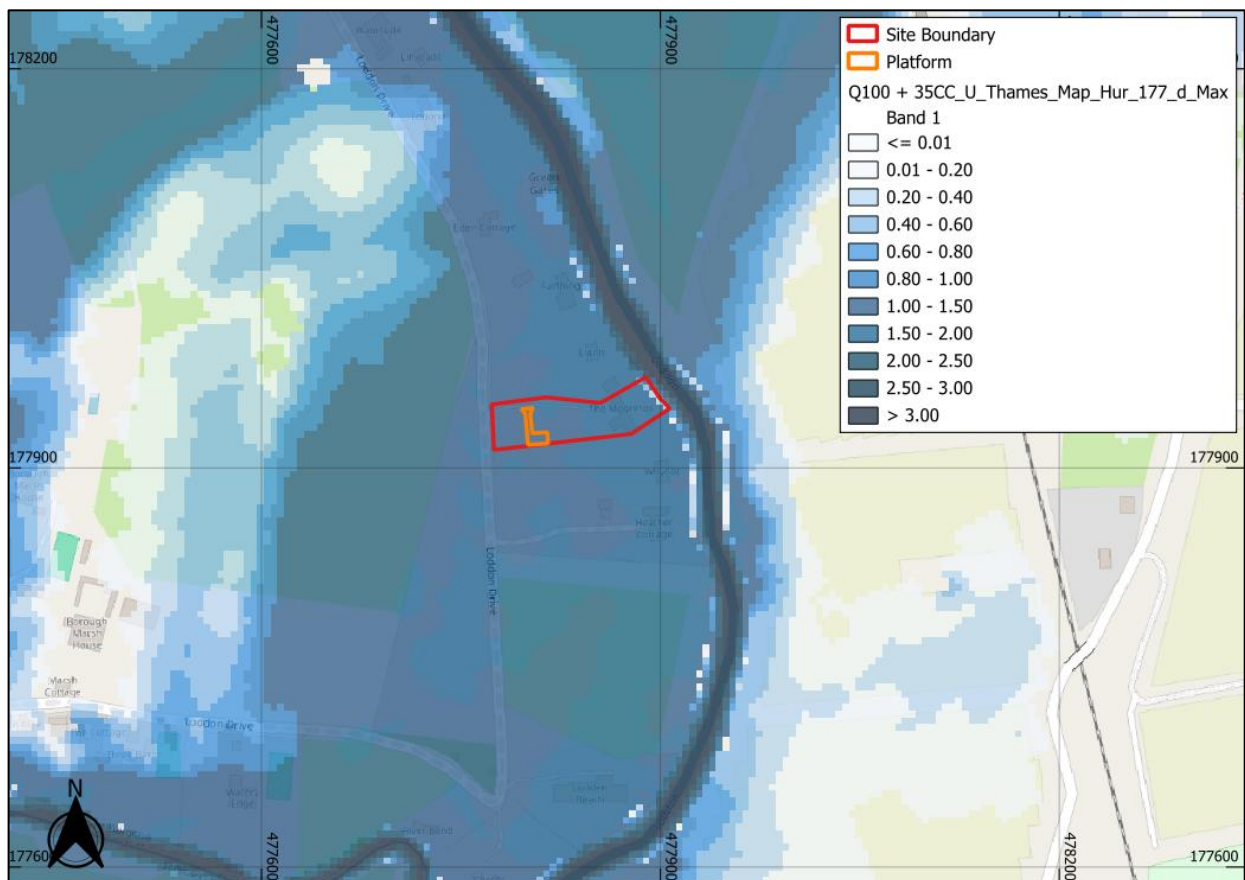


Figure 6: Flood Depths for 1 in 100 year + 35% CC event – EA Thames (Sonning to Hurley) 2019 (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.14. The maximum flood level at the location of the platform is 35.16m AOD. Given the platform is set at level of 33.71m AOD, the platform would be subject to flood depths of 1.45m.

Fluvial Flood Risk Summary

- 4.15. The site is at a high risk of flooding from fluvial sources.
- 4.16. Notwithstanding this, the flood risk is considered acceptable. The platform has been designed to be fully flood resilient and is capable of withstanding this level of inundation without damage or loss of function. Consequently, the flood risk to the platform itself is considered acceptable in line with the NPPF, and no additional mitigation is required.
- 4.17. In addition, the retrospective increase in ground levels of around 300mm and is considered minor in nature, such that it does not trigger the need for a full planning application or the associated flood risk policy requirements.
- 4.18. Nevertheless, to provide a robust and precautionary assessment, the platform's location within the design flood extent has been assessed in relation to its potential to displace floodwater and increase flood risk elsewhere. This assessment is presented in Section 5.

Tidal

- 4.19. Tidal flooding occurs when a high tide and high winds combine to elevate the 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 riverbank or river defences when tide levels are high.
- 4.20. The flood risk associated with the River Loddon in this location is fluvial in nature rather than tidal. The risk of flooding from tidal sources is therefore considered to be 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. There are no canals that have been identified within a 750m radius on review of the CRT UK mapping⁸.
- 4.23. The risk of flooding to this site from canals is considered to be low.

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.
- 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.
- 4.26. 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. These datasets include the following scenarios:
- 0.1% AEP (1 in 1000), 1% AEP (1 in 100), 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, 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. 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.

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

Flood Extents

- 4.29. The EA's Surface Water Spatial Planning Climate Change dataset (Figure 7), shows that the platform is only partially impacted in the extreme 1 in 1,000 year extent.

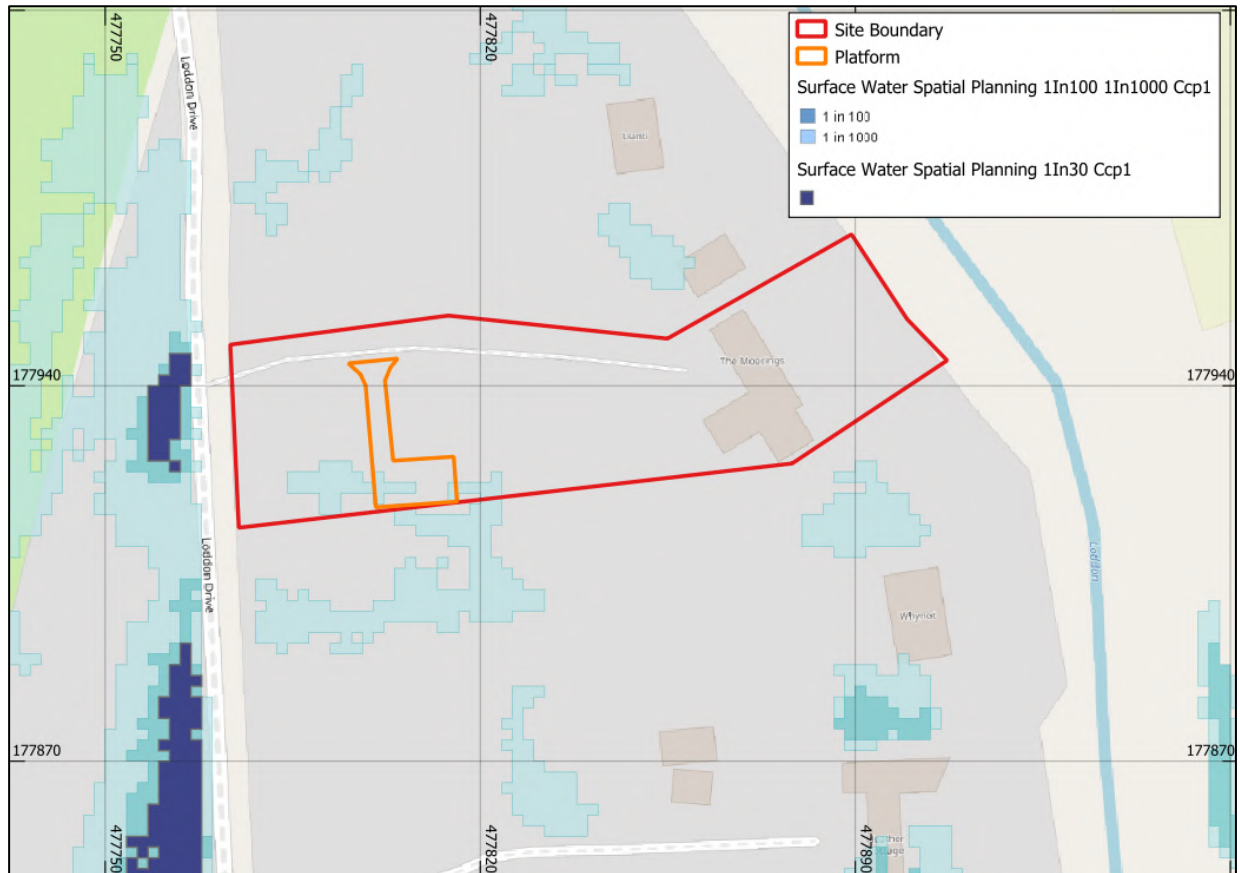


Figure 7: EA Surface Water Spatial Planning Extents – Climate Change (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.30. As such, given the platform is outside of the design 100 plus CC extents, the risk of surface water flooding is considered to be low.

Reservoirs

- 4.31. 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. Given the flood resilient nature of the platform, the risk of flooding from reservoirs is considered to be low.

Groundwater

- 4.35. Groundwater flooding occurs in areas where underlying geology is permeable and water can rise within the strata sufficiently to breach the surface.
- 4.36. The British Geological Survey's (BGS) mapping shows Alluvium (clay, silt, sand and gravel — floodplain deposits) as the superficial deposit underlying the site, over a bedrock of the Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated).
- 4.37. The Chalk is a Principal Aquifer and the Superficial Deposits are designated Secondary A aquifer. Groundwater levels within the floodplain alluvium are likely to be shallow and to respond to river levels.
- 4.38. The SFRA includes the EA's Areas Susceptible to Groundwater Flooding mapping (Figure 9) which assesses the risk of groundwater flooding. This mapping consists of 1km grid squares and shows the proportion of each which is at risk of groundwater flooding. The site is within a 1km cell with more than 75% susceptibility to groundwater flooding.
- 4.39. A historic BGS borehole (SU77NE130) located approximately 50m east of the site shows a water table at 2.44m below ground level (bgl); however, this is on the eastern side of the watercourse and may therefore not provide an accurate picture of local characteristics beneath the site.

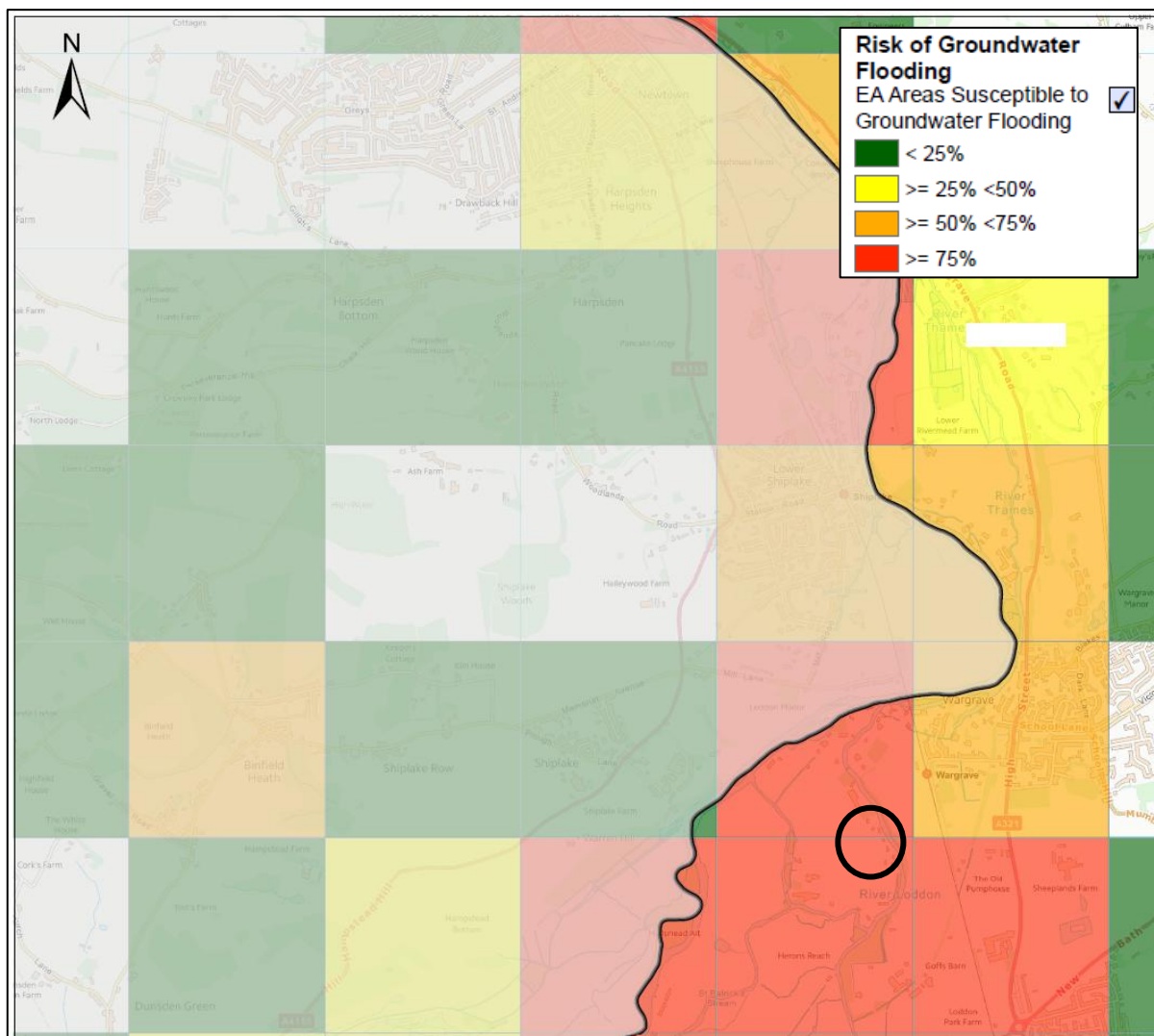


Figure 9: Susceptibility to Groundwater Flooding (SFRA, 2023). The Black Circle Represents the Approximate Location of the Site

- 4.40. It is therefore considered that the risk of groundwater flooding to the site is moderate to high. However, given the proposals comprise raising (marginally) above ground, and the flood resilient nature of the platform, the risk is acceptable.

Sewers

- 4.41. 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.
- 4.42. The SFRA does not provide mapping for sewer flood history. Sewer flooding is typically contained within the highway before following local topography. Given the site's low risk of

surface water (pluvial) flooding (which shows overland flow paths driven by topography), it is considered unlikely that any flooding resulting from a sewer beneath Loddon Drive would reach the site in the first instance.

- 4.43. Furthermore, as the platform is inherently flood resilient, the residual risk from sewer flooding is considered to be low.

5. Flood Risk Mitigation

Fluvial

- 5.1. The site is located within Flood Zone 3 according to the EA Flood Map for Planning and within Flood Zone 3b based on the 1 in 30 year modelled flood extent and the SFRA.
- 5.2. From a policy perspective, the proposed platform would be raised by around 300mm above existing ground levels. As indicated by Wokingham Borough Council, this does not constitute operational development requiring a full planning application and is therefore not subject to the associated flood risk assessment and mitigation requirements. Furthermore, the platform is, by its nature, water-compatible and flood resilient, making it an appropriate form of development within Flood Zone 3b in accordance with the NPPF.
- 5.3. During the design flood event (1 in 100 year plus 35% climate change), flood depths across the platform are predicted to reach up to 1.45m. The platform has been designed to be fully flood resilient and is capable of withstanding this level of inundation without damage or loss of function. Consequently, the flood risk to the platform itself is considered acceptable, and no additional mitigation is required.

Groundwater

- 5.4. There is a risk of shallow groundwater within the alluvium superficial deposits, likely in hydraulic connectivity with fluvial flows in the River Loddon. However, the platform itself is raised slightly above ground and entirely flood resilient. The risk to the platform itself is therefore acceptable, requiring no further mitigation.

Pluvial, Tidal, Canals, Reservoirs, and Sewers

- 5.5. Flood risk from all other analysed sources of flooding is considered to be low; therefore, no further mitigation is required for these sources.

Increase to Flood Risk Elsewhere

- 5.6. The platform is classified as a minor development as per the NPPF. 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.*

- 5.7. As such, the development in isolation is considered to have a negligible increase in flood risk elsewhere.
- 5.8. In addition, the platform is raised by circa 300mm above existing ground, reducing in height to meet existing ground level in the north. The floodplain in this area is vast (Figure 10). When interrogating just the immediate (30 year) floodplain surrounding the site, and using railway embankments and significant roads and indications of obstructions, the area covering the floodplain is approximately 1,889,376m² (or 188.94ha). Any impact would be imperceptible.
- 5.9. Furthermore, the platform is made up of permeable finish, such that rainwater would continue to discharge into ground as per existing situation.
- 5.10. As such, the potential for increase to flood risk elsewhere as a result of the development is considered to be negligible.

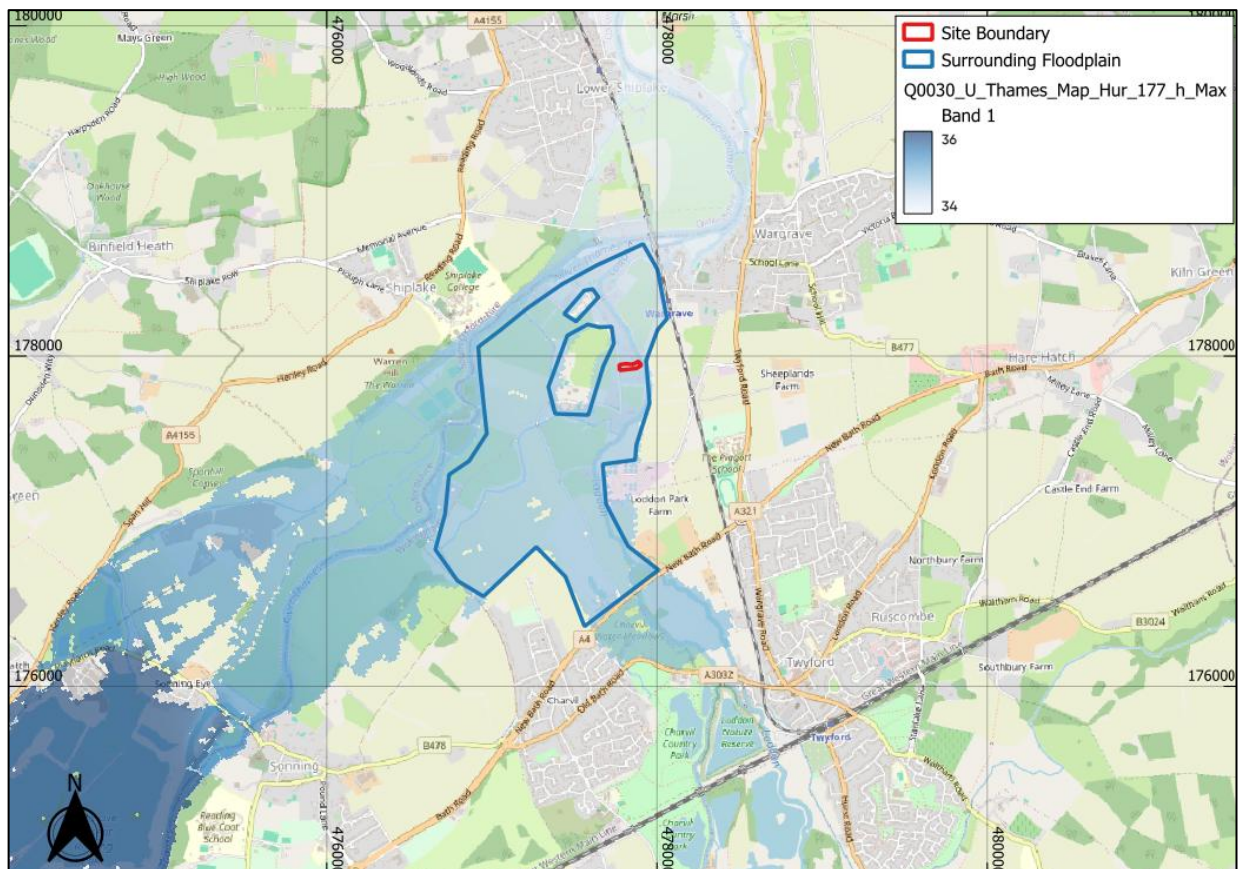


Figure 10: 1 in 30 year Floodplain – EA Thames (Sonning to Hurley) 2019 (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Flood Warnings

- 5.11. The site is in the Environment Agency 'River Thames for Shiplake, Lower Shiplake and Wargrave' 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.
- 5.12. 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 site 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 removal of valuable items out of reach of flooding.

- 5.13. Upon receipt of flood warning occupants should move any sensitive items (i.e. car) outside of the flood extents.

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 The Moorings, Loddon Drive, Wargrave, Wokingham Borough Council, RG10 8HL. 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	The site is located within Flood Zones 3 and 3b and would experience inundation up to 1.45m depth during the design flood event. However, the platform is considered acceptable in flood risk terms as it is a water-compatible, flood-resilient structure that can safely withstand the predicted flood depths without adverse impact. Given its limited scale, minimal increase in ground levels, and flood-resilient design, no additional flood risk mitigation is considered necessary. There would also be no / negligible impact to flood risk elsewhere as a result of the development.
Pluvial Tidal Reservoirs Groundwater Sewers Canals	The site is considered to be at low risk from other sources.

- 6.3. The FRA supports the planning application and demonstrates that there is an acceptable level of flood risk to the site. The development would 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



The Moorings



Site Location Plan
P-02 Scale: 1:1250



Legend:
Application Boundary Area = 4,191m²



Client Mr A Moller
Loddon Drive
Wargrave RG10 8HL

DATE OF ISSUE: 18/07/2026
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DRAWN BY:
MODEL FILE: 24-01-15 The Moorings Model 07.dwg
PROJECT NO: DAP-R26-24

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Site Location Plan

Scale:

DAP-R26-24-A-100

Scale: 1:1250 @ A2

DAMES ARCHITECTURE + PLANNING
THE STUDIOS, 40 VIMBORNE ROAD
40BEP ROAD, MIDSTERTON, HANTS RG10 9PD
A: 01464 103314 P: 07521 211386

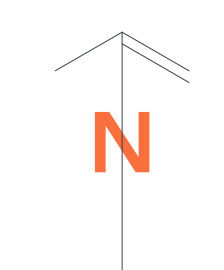
DAMES A+P
THINK + BUILD

Legend:
Application Boundary Area = 4,191m²



178000

177900



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PROJECT NO: DAP-R26-24

Client Mr A Moller
Loddon Drive
Wargrave RG10 8HL

Existing Site Block Plan
P-03
Scale: 1:500



The Moorings

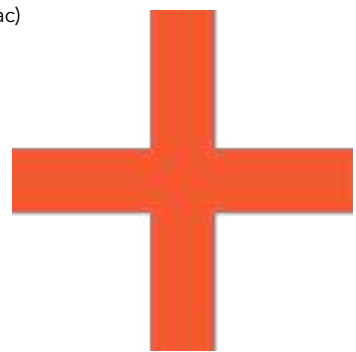
Existing Site Block Plan
DAP-R26-24-A-101

Scale:
Scale: 1:500 @ A1

DAMES ARCHITECTURE + PLANNING
THE STUDIO, KEYINGHAM HOUSE,
ABBAY ROAD, MEDSTEAD, HAMPSHIRE GU34 5PB
A: 07946105514 P: 07921211386

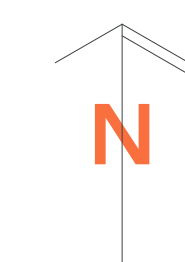
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CONCEPT TO PERMISSION

Legend:
Application Boundary Area = 4,191m² (1.03ac)



178000

177900



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Client Mr A Moller
Loddon Drive
Wargrave RG10 8HL

Proposed Site Block Plan
P-04
Scale: 1:500



The Moorings

Proposed Site Block Plan
DAP-R26-24-A-102

Scale:
Scale: 1:500 @ A1

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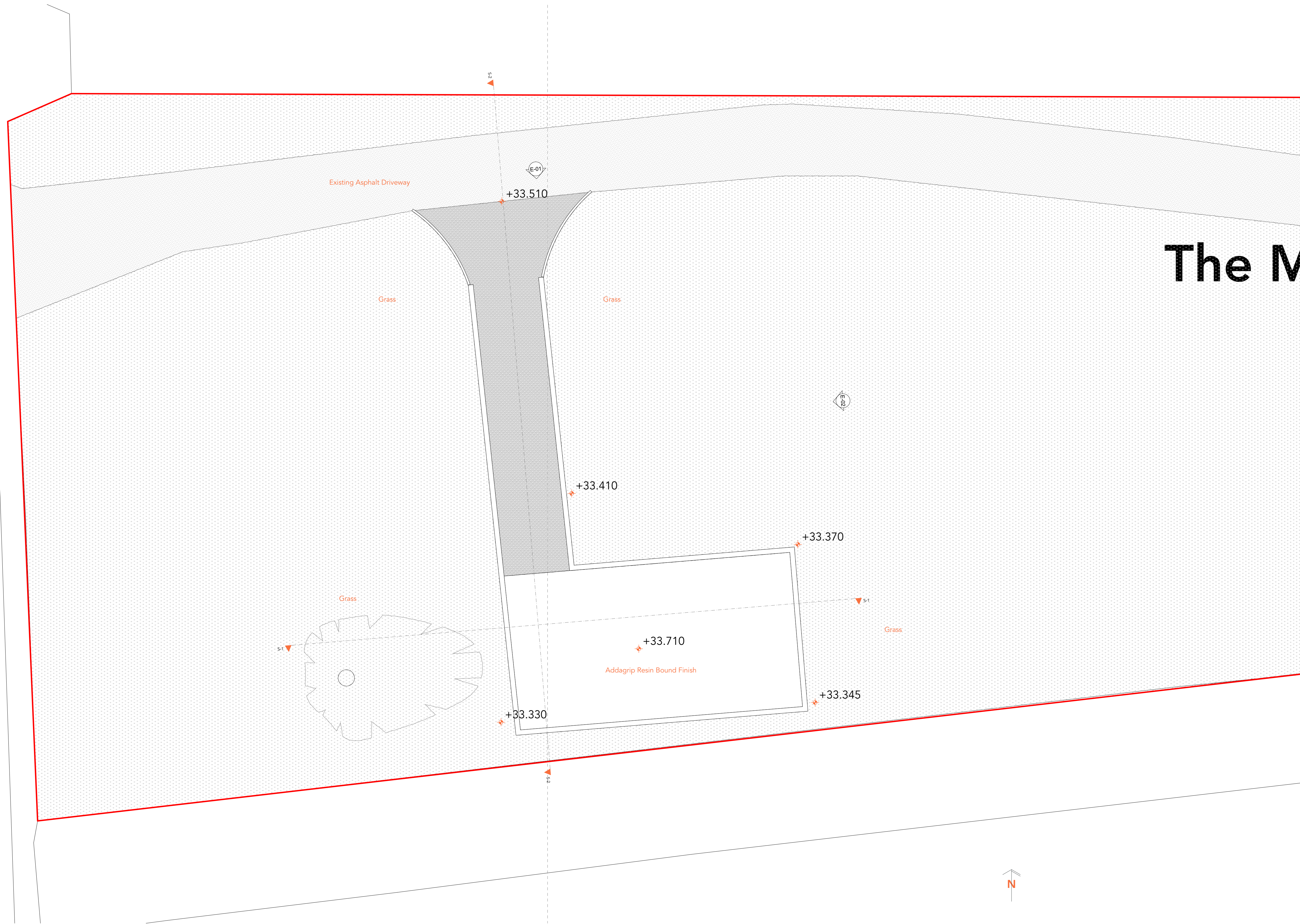
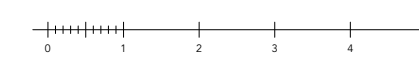
Proposed Levels Plan
0. Scale: 1:100



The Moorings

Proposed Levels Plan
DAP-R26-24-A-103

Scale:
1:100 @ A1



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Loddon Drive
Wargrave RG10 8HL

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Proposed Section 01
S-1
Scale: 1:50



Proposed Section 02
S-2
Scale: 1:50



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Loddon Drive
Wargrave RG10 8HL

0 1 2 3 4 5



The Moorings

Proposed Sections

Scale:

DAP-R26-24-A-104

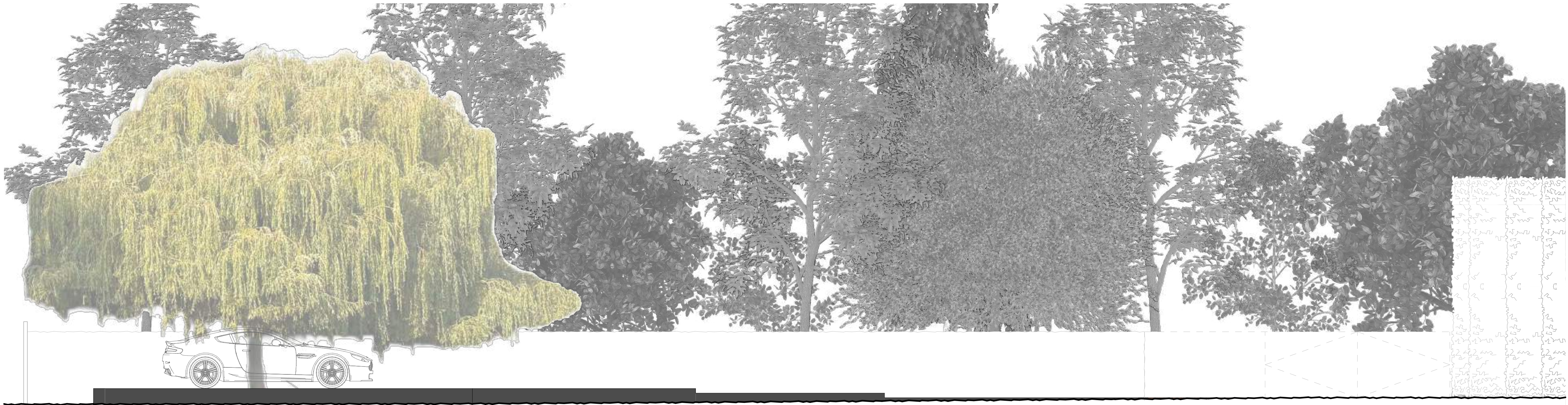
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CONCEPT ARCHITECTURE



Proposed North Elevation
E-01
Scale: 1:50



Proposed East Elevation
E-02
Scale: 1:50



The Moorings

Proposed Elevations

DAP-R26-24-A-105

Scale:

Scale: 1:50 @ A1



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DAP-R26-24

Client Mr A Moller
Loddon Drive
Wargrave RG10 8HL



View 01



View 02



View 03



View 04



View 05



View 06



View 07



The Moorings

Site Photos

DAP-R26-24-A-106

Scale:

Scale: Not to scale



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DAP-R26-24

Client Mr A Moller
Loddon Drive
Wargrave RG10 8HL

DAMES ARCHITECTURE + PLANNING
THE STUDIO, KEYINGHAM HOUSE
ABBAY ROAD, MEDSTEAD, HAMPSHIRE GU34 5PB
T: 07946105514 F: 07921211386

DAMES A+P
CONCEPT + PLANNING

Appendix B - Council Correspondence

----- Forwarded message -----

From: **Anna Valentine** <Anna.Valentine@wokingham.gov.uk>

Date: Tue, 7 Jul 2026, 11:57

Subject: RE: RFS/2026/091449 - The Moorings, Loddon Drive

To: Alex Moller <alex.moller@gmail.com>

Dear Alex,

Essentially yes, any increase above existing ground level would be 'raised'. In a normal case, you can go up to 30cm without planning permission, but the right for this for your property has been removed so you'd need a planning application in any case.

Yes, providing detail on level changes would be helpful for the application.

Kind Regards,

Anna Valentine

Planning Officer Development Management & Compliance (Specialist)

Telephone: 07584217341

E-mail: Anna.Valentine@Wokingham.gov.uk