Flood Risk Assessment (and Surface Water Drainage Strategy)

Ladds Garden Centre

July 2025

Prepared for:
Westbourne Homes

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Project Number:
332611948

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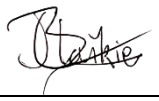
Prepared by: 

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Executive Summary

This Flood Risk Assessment (FRA) has been prepared by Stantec UK Ltd to accompany a full planning application for a proposed residential development at Ladds Garden Centre, Hare Hatch, Reading, RG10 9SB. In accordance with the fundamental objectives of the National Planning Policy Framework (NPPF), the FRA demonstrates that:

(i) The development is safe;

(ii) The development does not increase flood risk; and,

(iii) The development does not detrimentally affect third parties.

The Environment Agency (EA) data confirms that the site is located entirely within Flood Zone 1, defined as:

Flood Zone 1 'Low Probability' less than a 1 in 1000 (0.1%) Annual Probability of flooding from rivers or the sea.

The EA's Risk of Flooding from Surface Water (RoFSW) shows that for both present day and climate change scenarios, the north of the site is at 'High' risk of surface water flooding and a localised area of 'Medium' risk is present to the south west of the site.

The proposals for this residential development constitute a 'More Vulnerable' land use; therefore the sequential approach has been adhered to, with all proposed residential development being located in areas of lowest risk of surface water flooding.

The potential climate change impacts over the lifetime of the development have been fully assessed, with the site criteria requiring consideration of the 1% annual exceedance rainfall event, with the upper end peak rainfall allowance of +40% being considered in the proposed surface water drainage strategy.

The flood risk mitigation strategy for the development consists of the following elements:

- The development layout adheres to the sequential approach, with the proposed built development located wholly within Flood Zone 1, and outside of the surface water flow route identified on site. The proposed plots 16 and 19 overlap with localised areas of 'Low' risk, which are reflective of localised low points and will be mitigated as part of the surface water drainage strategy. All remaining proposed build development is located in an area of 'Very Low' risk of surface water flooding.

- An access route will be constructed to the south of the site, connecting to Scarletts Lane. The proposed access route and Scarletts Lane are located in Flood Zone 1, and at 'Low' risk to surface water flooding. Thus, safe access and egress is available at all times;

- For the construction phase, a Construction Environmental Management Plan (CEMP) will be produced so that the potential impacts of construction are managed efficiently, including measures to mitigate the adverse impacts of construction and ensure that there is no detrimental impact on flood risk and surface water. The CEMP will be a live document that will be reviewed and updated at regular intervals throughout the construction phase;

- Based on an estimated flood level using the EA's RoFSW mapping and the site topographic survey (seen in **Appendix C**), the flood level of the surface water flow route on site is 54.3mAOD - 54.7mAOD. Thus, the proposed development is set at a minimum level of 55mAOD (providing minimum 300mm freeboard); and,

- A separate surface water drainage strategy has been produced for the site (see **Section 7**), demonstrating the site can be drained in a sustainable manner, commensurate with local and national policy.

In summary, the FRA demonstrates that the proposed development is safe and in accordance with the requirements of national and local planning policy.

1 Introduction

1.1 Scope of Report

1.1.1 This Flood Risk Assessment (FRA) has been prepared by Stantec UK Ltd ('Stantec') on behalf of our client, Westbourne Homes, to support a full planning application for a proposed residential use development at Ladds Garden Centre, Hare Hatch, Reading, RG10 9SB.

1.1.2 The report is based on the available flood risk information for the site as detailed in **Section 1.3** and prepared in accordance with the planning policy requirements set out in **Section 2**.

1.2 Existing Site and Proposed Development

1.2.1 The existing site is brownfield, with its use being a garden centre.

1.2.2 The site lies within the administrative boundary of Wokingham Borough Council (WBC).

1.2.3 The proposal is for the redevelopment of the site to provide 19 residential dwellings and associated infrastructure.

1.3 Sources of Information

1.3.1 The FRA has been prepared based on the following sources of information:

- Environment Agency (EA) published 'Open Data' datasets (see **Appendix A**);
- Development proposals (see **Appendix B**);
- Topographic Survey carried out by Chiltern Suveys Ltd. (dated 30/04/2025, see **Appendix C**)
- Stantec Surface Water Drainage Strategy (332611948-001-P01 dated 03/07/2025) (see **Appendix E**);
- Wokingham SuDS Strategy, dated January 2017;
- National standards for sustainable drainage systems (SuDS), dated June 2025;
- The WBC Level 1 Strategic Flood Risk Assessment (SFRA), dated May 2023; and
- WBC Managing Development Delivery Local Plan 2014.

1.4 Stakeholder Consultation

1.4.1 An EA 'Product 4' data request was carried out on the 9th September 2024, however the EA confirmed that '*The site lies within Flood Zone 1 and as a result we do not have any detailed flood risk modelling in this location. We are sorry that we are therefore unable to provide modelled flood levels and extents for your site'*.

1.5 Caveats and Exclusions

1.5.1 This FRA has been prepared in accordance with the NPPF, the associated PPG and local planning policy. The approach for flood mitigation and proposals for the surface water management strategy are based on the requirements of the EA and WBC in its role as Lead Local Flood Authority (LLFA). The conclusions are based on data available at the time of the study and on the subsequent assessment that has been undertaken in relation to the development proposals as outlined in **Section 1.2**.

1.5.2 Activities during the construction phase may have an impact on the existing and future flood risk. Thus, an assessment of the risks and appropriate mitigation measures should be identified and managed by the contractor.

1.5.3 The Construction (Design and Management) Regulations (CDM Regulations) will apply to any future development of this site which involves “construction” work, as defined by the CDM Regulations. As such it is the responsibility of the proposed developer (ultimate client) to fulfil its duties under the CDM Regulations.

1.5.4 It should be noted that the insurance market applies its own tests to properties in terms of determining premiums and the insurability of properties for flood risk. Those undertaking development in areas which may be at risk of flooding are advised to contact their insurers or the Association of British Insurers (ABI) to seek further guidance prior to commencing development. Stantec do not warrant that the advice in this report will guarantee the availability of flood insurance either now or in the future.

2 Planning Policy Context

2.1 National Policy and Guidance

National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG)

2.1.1 National policy in relation to flood risk is contained within the **National Planning Policy Framework (NPPF),** updated February 2024, issued by the Department for Levelling Up, Housing and Communities, with reference to Section 14 'Meeting the challenge of climate change, flooding and coastal change'.

2.1.2 The latest version of the associated **Planning Practice Guidance (PPG)** 'Flood Risk and Coastal Change' section was updated September 2025.

2.1.3 The NPPF and PPG demonstrate a flood risk management approach for the lifespan of the proposed development considering the effects of climate change. The document sets the framework to minimise vulnerability, provide resilience to the impacts of climate change, and to fully consider the potential impacts of climate change for the lifetime of the development within the mitigation measures.

2.1.4 The guidance on the application of climate change allowances in FRAs is linked via the PPG and was most recently updated in May 2022. The guidance provides contingency allowances for the potential increases in peak river flow, peak rainfall intensity and sea level rise which are considered accordingly subject to the site conditions – discussed further in **Section 4.2**.

2.1.5 The NPPF sets out the requirement for the Sequential Test and Exception Test in paragraphs 175, 176, and 177 respectively – see below.

> *'**175.** The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk).*
>
> ***176.** Applications for some minor development and changes of use62 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.*
>
> ***177.** Having applied the sequential test, if it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3.'*

2.1.6 These Tests are to be applied where appropriate, depending on the proposed development flood risk 'vulnerability', the Flood Zone in which it is located and the risk of flooding from other sources.

2.1.7 The NPPF and PPG place emphasis on the need to fully consider – and design for – the impacts of climate change as set out in the 'Flood risk assessments: climate change allowances' planning guidance accessible at the following link:

https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

2.1.8 This guidance provides contingency allowances for potential increases due to climate change in peak river flow, sea level rise and rainfall intensity. These allowances are key for designing appropriate mitigation into the development to consider the flood risks over the lifetime of the development (peak river flow and/or sea level rise), and for the management of surface water over the site (peak rainfall intensity).

National Standards for Sustainable Drainage Systems (SuDS)

2.1.9 Published 19th June 2025, the National Standards for SuDS provide guidance for designers on how surface water runoff should be managed to reduce flood risk whilst benefiting the environment.

2.2 Local Policy and Guidance

Wokingham Borough Core Strategy 2010

2.2.1 As per the WBC website: '*Work is underway on a new local plan – the Local Plan Update – which will put in place a new planning strategy for the period to 2040. Once adopted, it will replace the current Core Strategy and Managing Development Delivery local plans.'*

2.2.2 Local planning policy is contained within the WBC Core Strategy, adopted January 2010, with particular reference to Policy CP1.

CP1 – Sustainable Development

'Planning permission will be granted for development proposals that:

1) *Maintain or enhance the high quality of the environment;*
2) *Minimise the emission of pollutants into the wider environment;*
3) *Limit any adverse effects on water quality (including ground water);*
4) *Ensure the provision of adequate drainage;*
5) *Minimise the consumption and use of resources and provide for recycling;*
6) *Incorporate facilities for recycling of water and waste to help reduce per capita water consumption;*
7) *Avoid areas of best and most versatile agricultural land;*
8) *Avoid areas where pollution (including noise) may impact upon the amenity of future occupiers;*
9) *Avoid increasing (and where possible reduce) risks of or from all forms of flooding (including from groundwater);*
10) *Provide attractive, functional, accessible, safe, secure and adaptable schemes;*
11) *Demonstrate how they support opportunities for reducing the need to travel, particularly by private car in line with CP6; and*
12) *Contribute towards the goal of reaching zero-carbon developments41 as soon as possible by:*

    a) Including appropriate on-site renewable energy features; and

    b) Minimising energy and water consumption by measures including the use of appropriate layout and orientation, building form, design and construction, and design to take account of microclimate so as to minimise carbon dioxide emissions through giving careful consideration to how all aspects of development form.'

Managing Development Delivery Local Plan 2014

2.2.3 Cross cutting policies (CCP) are contained within the WBC Managing Development Delivery and apply to most if not all types of development, whilst carrying forward the principles set out in the Core Strategy. Specifically, CCP09, and CCP10 are relevant to this FRA:

Policy CCP10: Sustainable Drainage

1) *'1. All development proposals must ensure surface water arising from the proposed development including taking into account climate change is managed in a sustainable manner. This must be demonstrated through*
    a) *A Flood Risk Assessment, or*
    b) *Through a Surface Water Drainage Strategy.*
2) *2. All development proposals must*
    a) *Reproduce greenfield runoff characteristics and return run-off rates and volumes back to the original greenfield levels, for greenfield sites and for brownfield sites both run-off rates and volumes be reduced to as near greenfield as practicably possible.*
    b) *Incorporate Sustainable Drainage Systems (SuDS), where practicable, which must be of an appropriate design to meet the long term needs of the development and which achieve wider social and environmental benefits*
    c) *Provide clear details of proposed SuDS including the adoption arrangements and how they will be maintained to the satisfaction of the Council [as the Lead Local Flood Authority (LLFA)]*
    d) *Not cause adverse impacts to the public sewerage network serving the development where discharging surface water to a public sewer.*

Wokingham Borough Council (WBC) Level 1 Strategic Flood Risk Assessment 2023

2.2.4 The **Wokingham Borough Council Level 1 Strategic Flood Risk Assessment (SFRA)** was released in 2023 and forms part of the Local Plan evidence base, to inform future spatial planning and to assist in developing planning policies to address flood risk. Moreover, the document provides an overall understanding of the flood risk within the study area considering all potential sources.

2.2.5 It is essential therefore that the Council are in a position to take informed decisions, providing a careful balance between the risk of flooding and other unrelated planning constraints that may place pressure upon *'at risk'* areas.

Wokingham SuDS Stategy (January 2017)

2.2.6 The SuDS strategy sets out national and local standards for developing drainage strategies for new developments in the technical guide within Appendix A of the strategy.

3 Site Setting

3.1 Site Description

3.1.1 The site is located off of Bath Rd, Hare Hatch, Reading (postcode RG10 9SB, site centre National Grid Reference 480,670E 177,940N). See **Figure 3-1**. The existing site is brownfield, 'Ladds Garden Centre, and consists predominantly of hardstanding land, and the existing buildings making up the garden centre.

Figure 3-1 Site Location

3.2 Topography

3.2.1 The detailed site topographic survey carried out by Chiltern Surveys Ltd. (dated 30/04/2025) shows the elevation gradually falls from the southern site boundary (59mAOD at the south eastern site corner) towards the A4 Bath Road (54mAOD at the north western corner of the site) – see **Appendix C** for the full survey.

3.2.2 EA LiDAR data provides an indication of the general pattern of local topography (see **Figure 3-2**) however the topographic survey is considered the most accurate representation of levels on the site.

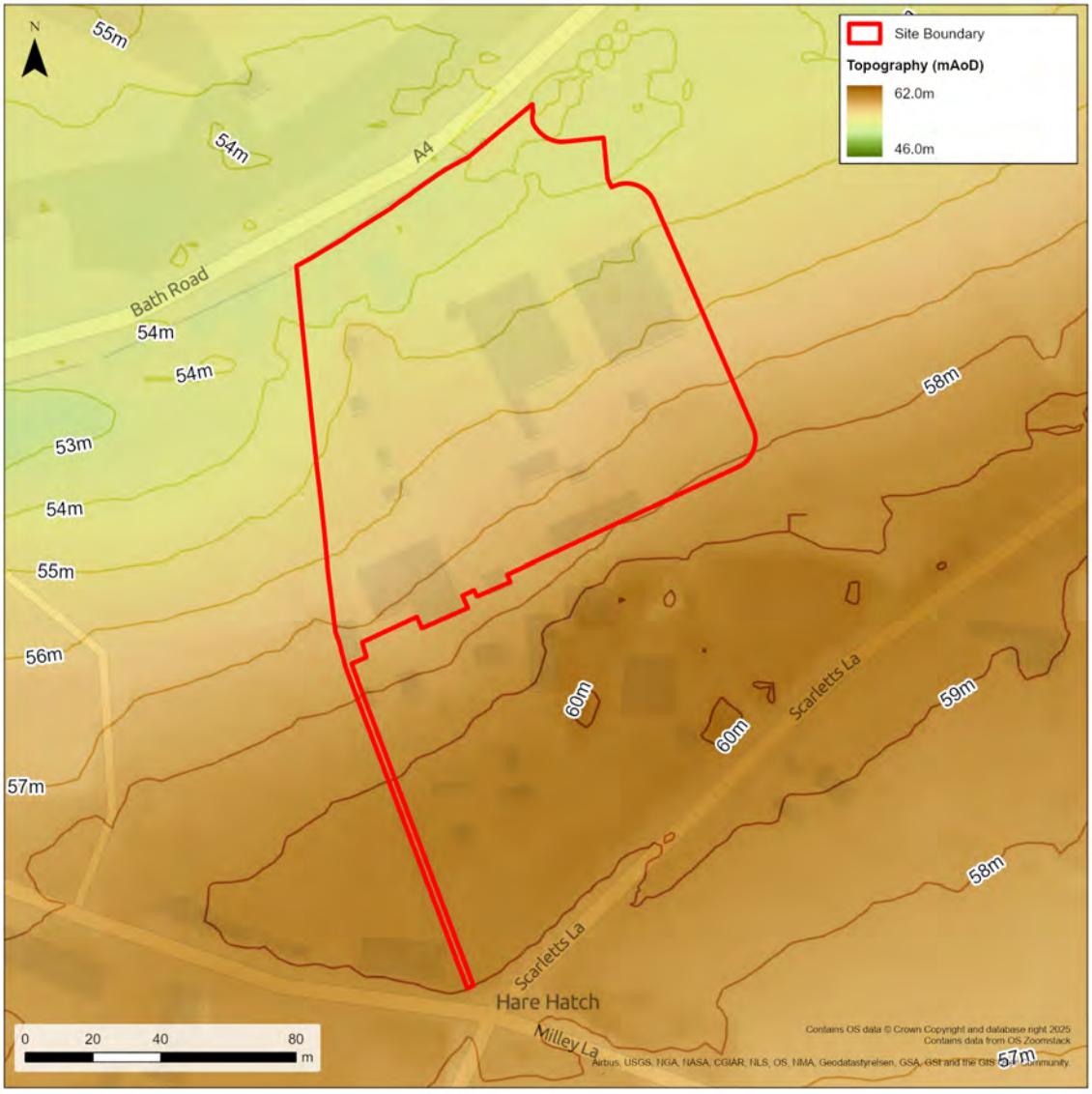


Figure 3-2 EA LiDAR

3.3 Hydrological Setting

3.3.1 There are no main rivers in close proximity to the red line boundary, reflected in the absence of any fluvial flood risk on site.

3.3.2 There is a section of drainage ditch running along the northern boundary of the site, shown in **Figure 3-3** (shown as an ordinary watercourse), which enters a culvert prior to a residential property approximately 100m downstream of the site confirmed by a site visit.

Figure 3-3 Nearby Watercourses

3.4 Existing Drainage Arrangements

3.4.1 The majority of the existing site is impermeable and is assumed to be served by an existing below-ground surface water drainage network put in place to serve the previous garden centre developments. It is understood that the existing drainage network discharges to the ditch present along the northern boundary primarily via an existing SuDS attenuation feature. The outfall is seen in **Figure 3-4** confirmed during a site visit undertaken on 01/04/2025.

Figure 3-4 Existing Drainage Network Outfall

3.4.2 The site visit also identified additional pipes leading from the site and discharging into the ditch seen in **Figure 3-5**, however the source of these was unknown.

Figure 3-5 Outfalls Observed on Site Visit

3.4.3 The ditch originates upstream of the site and continues west before it is diverted around a residential property via a culvert approximately 100m downstream of the site.

3.5 Geology and Hydrogeology

3.5.1 The British Geological Survey (BGS) Geology of Britain Viewer suggests that the site predominantly lies on bedrock geology of 'Lambeth Group – Clay, Silt, and Sand'. To the north of the site, adjacent to Bath Road, the bedrock is recorded as 'Seaford Chalk Formation' and 'Newhaven Chalk Formation – Chalk'.

3.5.2 As seen in **Appendix A - Figure 10**, the site falls within Groundwater Protection Zone 3 – Total Catchment, defined as: *'The area around a supply source within which all the groundwater ends up at the abstraction point. This is the point from where the water is taken. This could extend some distance from the source point'.*

3.5.3 The Soilscapes for England and Wales dataset indicates the site area has two types of soil present. To the south, are slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils. To the north, are freely draining slightly acid but base-rich soils.

3.5.4 The EA's online Aquifer Designation mapping designates bedrock on the site as Secondary A Aquifer, which comprises permeable layers that can support local water supplies, and may form an important source of base flow to rivers.

3.6 Flood Defences

3.6.1 According to the EA's '*Reduction in Risk of Flooding from Rivers and Sea due to Defences*' mapping, the site does not fall into an area which has reduced flood risk from rivers and sea due to the presence of flood defences.

4 Assessment of Flood Risk

4.1.1 The assessment of flood risk has been undertaken based on the sources of information listed in **Section 1.3.**

4.1.2 The baseline flood maps have been taken from the Stantec GIS flood maps report in **Appendix A**, utilising the EA Open Data datasets available online and reproduced with OS mapping under licence to Stantec.

4.2 Fluvial (River) Flood Risk

4.2.1 Fluvial flooding occurs when rivers are unable to cope with the volume of water draining from the surrounding land as a result of sustained or intense rainfall. The increase in water causes the river to rise above its banks and/or retaining structures and flow across land.

4.2.2 The first phase in identifying whether a site is potentially at risk of fluvial or tidal flooding is to consult the EA's Flood Map for Planning (Flood Zones), available on the EA's website.

4.2.3 For reference the EA Flood Zones, as defined in Table 1 of the PPG (Paragraph: 077), are as follows:

- "Flood Zone 1 – Low Probability: Land having a less than 1 in 1,000 (0.1%) annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
- Flood Zone 2 – Medium Probability: Land having between a 1 in 100 (1%) and 1 in 1,000 (0.1%) annual probability of river flooding; or land having between a 1 in 200 (0.5%) and 1 in 1,000 (0.1%) annual probability of sea flooding. (Land shown in light blue on the Flood Map)
- Flood Zone 3a - High Probability: Land having a 1 in 100 (1%) or greater annual probability of river flooding; or Land having a 1 in 200 (0.5%) or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
- Flood 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)."

4.2.4 The EA Flood Map for Planning indicates the entirety of the site lies within Flood Zone 1 - see **Figure 4-1** and given the lack of watercourses in the immediate vicinity is therefore considered to be at low risk of fluvial flooding.

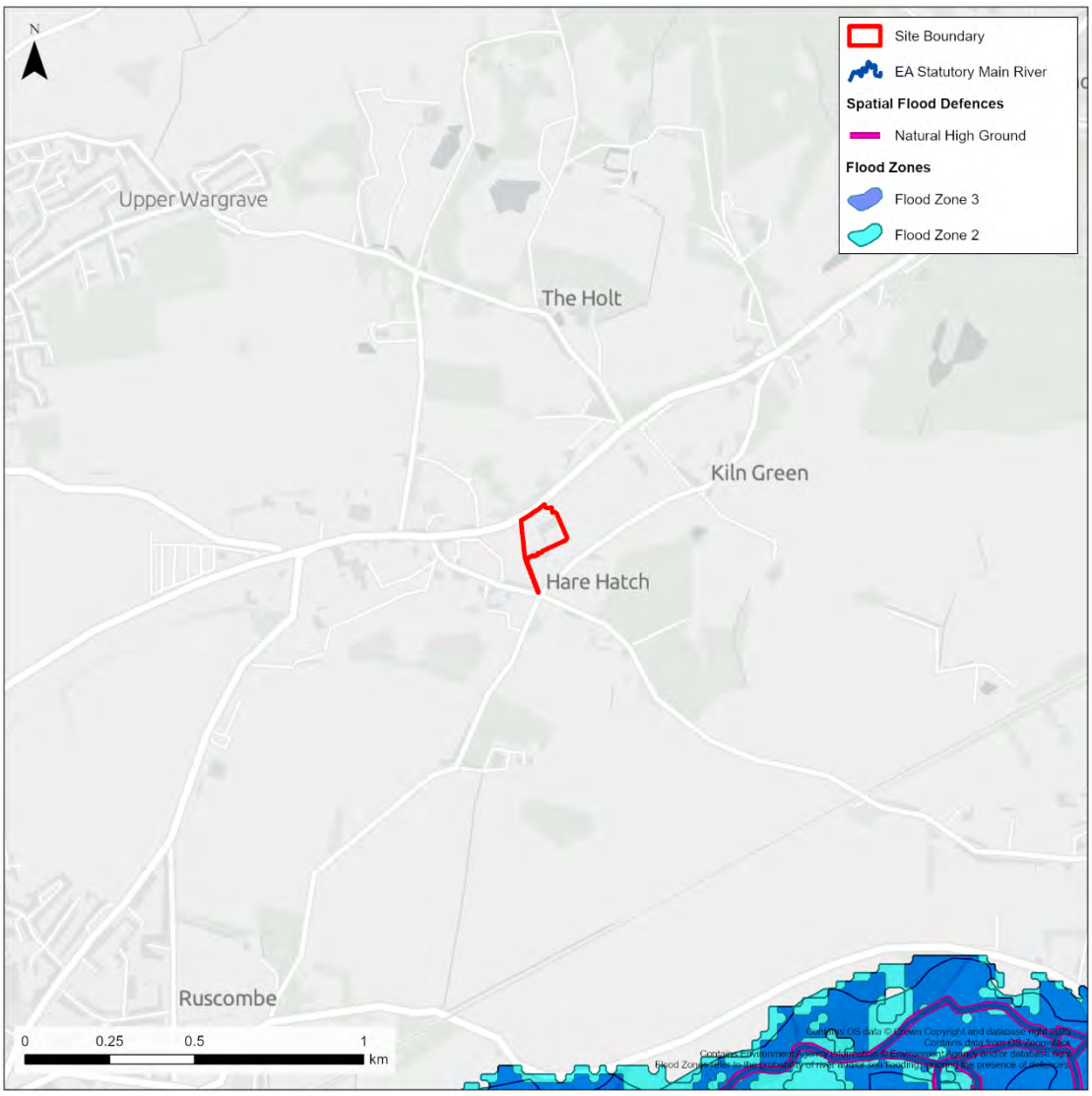


Figure 4-1 EA Flood Zones

Climate Change – Peak River Flow

4.2.5 The assessment of flood risk at the site needs to consider the impacts of climate change on all sources of flooding. The EA's peak river flow allowances provide a range of allowances based on percentile (i.e. the degree of certainty of an event occurring, based on the range of climate change scenarios assessed through scientific investigations). The applicable values for a site are dependent on the 'River Management Catchment' in which the site is located, which can be confirmed via the online mapping tool embedded within the guidance.

4.2.6 The Central allowance is identified as the design standard for most forms of proposed development in all appropriate Flood Zones (the exception being 'Essential Infrastructure' which requires the 'Higher Central' value). The range of climate change allowances in the catchment are detailed in **Table 4-1**.

Table 4-1 Climate Change - Peak River Flow

River Management Catchment	Flood Zone	Flood Risk Vulnerability Classification	Applicable Climate Change Allowance (2080s)		
			Central	Higher	Upper
Loddon and Tributaries	Flood Zone 1	More Vulnerable	**+14%**	+23%	+46%

4.2.7 The distance of the site from any EA designated main rivers is such that the site is not at risk when climate change allowances are considered.

4.3 Tidal Flood Risk

4.3.1 Tidal flooding results in the inundation of low-lying areas due to high tides that breach or overtop the flood defence structures. Tidal flooding is generally caused by seasonal high tides and where stormy weather conditions results in strong wave action that increase water levels above the norm.

4.3.2 The inland geographical location, raised elevation of the site (>52m AOD), and distance from any tidally influenced waterbodies means there is no risk of tidal flooding in the present day or with the influence of climate change.

4.4 Surface Water (Pluvial) Flood Risk

4.4.1 The EA 'Risk of Flooding from Surface Water' ('RoFSW') mapping identifies areas that could be susceptible to surface water flooding in various rainfall events, for both present day and climate change scenarios. The RoFSW map shows flooding that is likely to occur as a result of rainfall with a 3.3% (1 in 30), 1% (1 in 100) and 0.1% (1 in 1000) chance of happening in any given year, classed as:

- 'High' Risk: 1 in 30 (3.3%) or greater AEP rainfall event;
- 'Medium' Risk: Between a 1 in 100 (1%) and 1 in 30 (3.3%) AEP rainfall event;
- 'Low' Risk: Between 1 in 1000 (0.1%) and 1 in 100 (1%) AEP rainfall event;
- 'Very Low' Risk: Lower than 1 in 1000 (0.1%) AEP rainfall event.

4.4.2 The EA mapping shows that for both present day and intermediate future climate change scenarios (2040-2060), the majority of the site is indicated to be at 'very low' risk of surface water flooding.

4.4.3 A significant surface water flow route is identified in the north of the site, with up to 'High' risk of surface water flooding. This flow route is follows the route of the A4, which is at the base of a nominal valley based on local topography, and flows from adjacent agricultural use fields to the east (see **Figure 4-2**). Due to the topography of the site, the extent of this predicted flow route remains limited to the north and lower lying areas i.e. areas of existing car parking. **Figures 12 – 15** in **Appendix A**, show the probability of the depth of the surface water flooding in this area which is indicated to reach up to a maximum of 300mm.

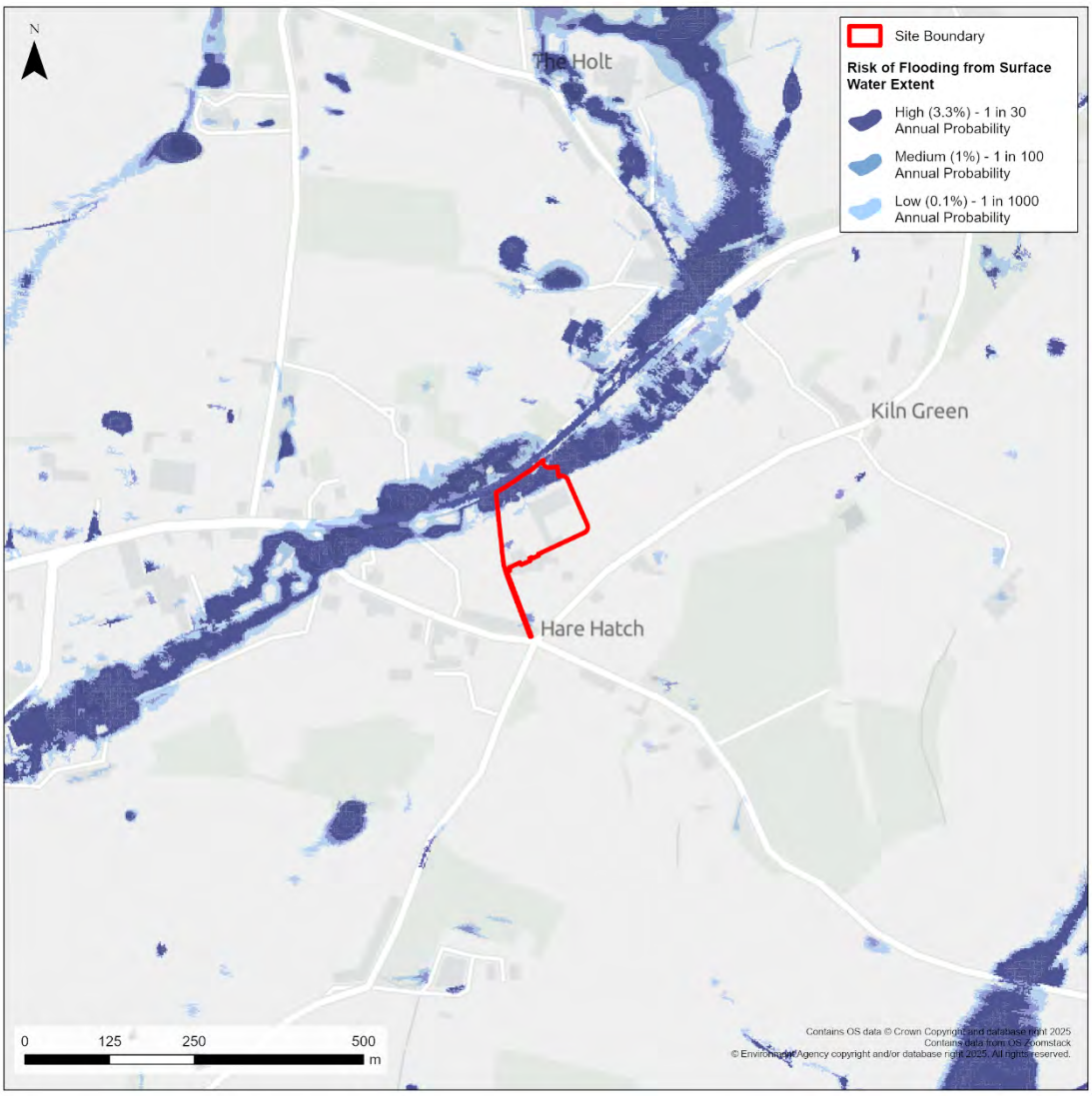


Figure 4-2 EA Risk of Flooding from Surface Water Flooding: Identified Flow Path

4.4.4 The mapping shows a small and localised area of 'Low' and 'Medium' risk present in the south west of the site; see **Figure 4-3** and **Figure 4-4**. These areas are not connected to the main flow path identified along the northern boundary of the site and are likely to be an indication of localised depressions.

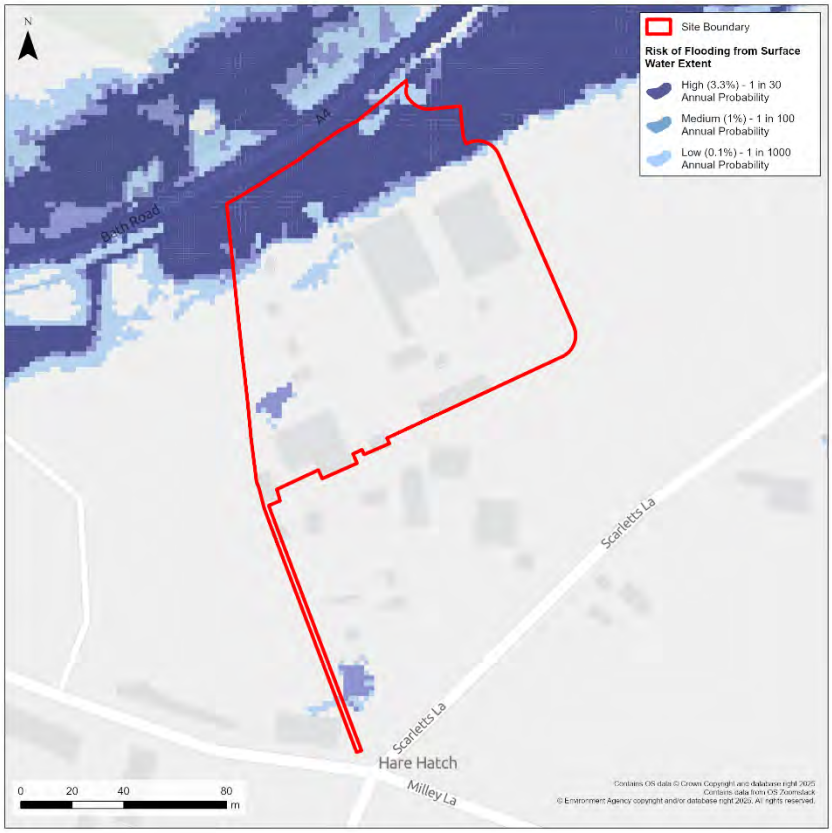


Figure 4-3 EA Risk of Flooding from Surface Water Map

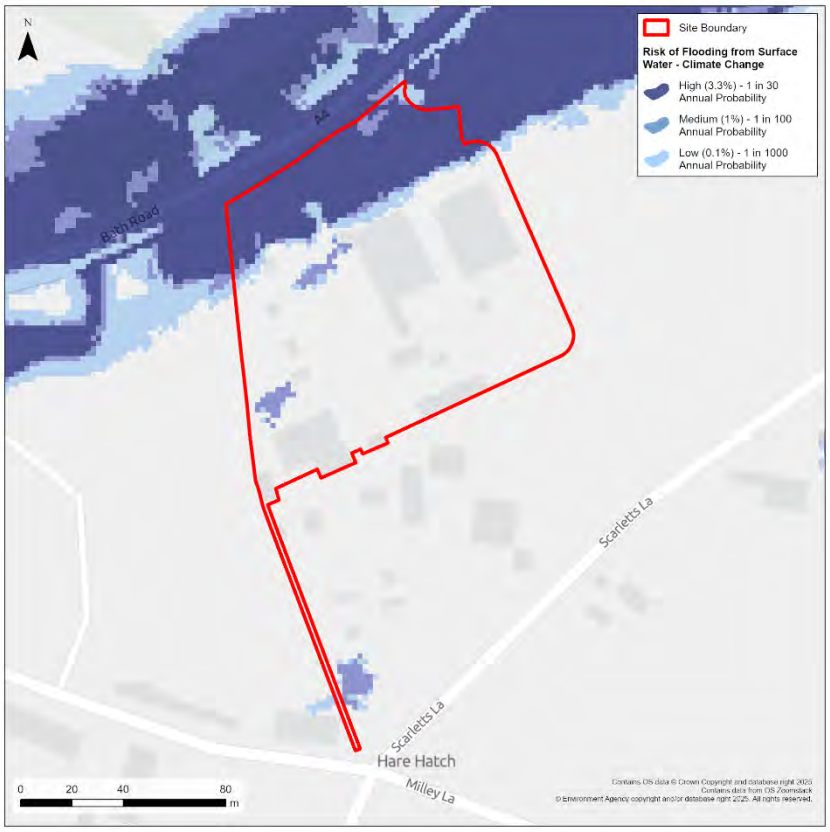


Figure 4-4 EA Risk of Flooding from Surface Water Map (incl. climate change)

4.4.5 As there is no detailed modelling of surface water flood levels available for this site, an estimate has been made using the topographic site survey, and the modelled 0.1% AEP event from the EA RoFSW mapping as a worst case. This conservative estimate indicates a predicted flood level range of 54.3-54.7mAOD.

4.4.6 The generalised EA mapping typically does not account for culverted channels which may reduce predicted surface water flood extents. There is a known drainage ditch running along the northern boundary and continuing adjacent to the A4 prior to entering a culvert before a residential property 100m downstream of the site (see **Figure 4-5**), which would assist in conveying a portion of this flow west and away from the site. It is also likely that the EA modelling does not accurately reflect the true capacity of the ditch compared to site specific topographic survey and likely underestimates available storage and conveyance. These factors suggest that the flow route along the northern boundary is a conservative estimate of predicted flooding.

Figure 4-5 Existing Drainage Ditch (view east)

Climate Change – Peak Rainfall Intensity

4.4.7 Climate change has the potential to increase the frequency and intensity of rainfall events which can lead to more frequent surface water flooding. In line with the PPG ‘Flood risk and coastal

change' all new development should make an allowance for climate change to minimise vulnerability and provide resilience to flooding.

4.4.8 The EA climate change allowances guidance was updated in May 2022 to include a GIS based 'peak rainfall allowances' map showing the anticipated changes in rainfall intensity based on river management catchment. The anticipated changes in peak rainfall intensity in small catchments (less than 5km^2), or urbanised drainage catchments are summarised in **Table 4-2**. For large rural drainage catchments, the peak river flow allowances are applied.

Table 4-2 Climate Change - Peak Rainfall Intensity Allowances

Loddon and tributaries Management Catchment	Total potential change anticipated (2070s epoch – i.e. 2061-2025)	
	Central Allowance	Upper End Allowance
3.3% (1 in 30 year) rainfall	+25%	+35%
1% (1 in 100 year) rainfall	+25%	**+40%**

4.4.9 As the EA's climate change mapping for surface water does not show the relevant allowance for the design life of the proposed development, the 0.1% AEP extent has been used as a proxy for climate change when estimating a worst-case predicted flood level. The recommended mitigation is provided in **Section 6**.

4.4.10 Based on the above, the design of the drainage strategy (included in **Section 7**) includes an allowance of +40% for climate change.

4.5 Groundwater Flood Risk

4.5.1 Within Section 5.10 of the SFRA, Figure 5-5 splits the Wokingham Borough into Character Areas (CA). The CA containing the site is CA 1, covering the wider area including Wargrave and Remenham Hill. Within Appendix E of the SFRA, the groundwater flood risk to CA 1 is described as:

> *'The Areas Susceptible to Groundwater Flooding (AStGWF) dataset shows areas greater than 50% susceptibility along the western and northern borders of the character area following the route of the River Thames. The JBA groundwater emergence map mirrors this, with groundwater levels less than 0.5m below the surface along the western and northern borders. Based on the ROFSW dataset, it is likely any groundwater that emerges in Character Area 1 will flow south to north along the western border, then east along the northern border, following the route of the River Thames. This is a risk to urban centres such as Wargrave.'*

4.5.2 The site is located on the east side of CA 1, and away from the identified 'at risk' area within the CS, it is therefore concluded that based on the evidence available in the SFRA, the site is considered to be at low risk of groundwater flooding. This is reflective of the geology on site discussed in **Section 3.5**, as the majority of the site lies on clay.

4.5.3 Areas of chalk to the north may present a potential source of groundwater emergence, however given the presence of the ditch along the northern boundary, this will likely act as a natural draw-down point for any groundwater flows. As such, the site is concluded to remain at low risk.

4.6 Reservoir Flood Risk

4.6.1 The EA provides maps showing the risk of flooding in the event of a reservoir failure. The reservoir breach extents shown in **Figure 9** in **Appendix A**.

4.6.2 The EA reservoir maps show two flooding scenarios: '*when the river levels are normal*' - the flooding that would occur if the dam or reservoir failed when rivers are at normal levels - and

'*when there is also flooding from rivers'*, which predicts how much worse the flooding might be if a river is already experiencing an extreme natural flood.

4.6.3 The mapping confirms the site is not at risk of reservoir breach in either scenario.

4.7 Sewer Flood Risk

4.7.1 Sewer flooding occurs due to blockages, in which case overland flows will follow the fall of the local topography. This is however, considered a residual risk, as it is expected that sewer utility infrastructure will be maintained in perpetuity.

4.7.2 Table 5-3 within the SFRA outlines all sewer flooding incidents recorded by Thames Water (January 2000-May 2022).

4.7.3 For the postcode 'RG10 9', over this time period there have been 108 recorded total sewer flooding incidents.

4.7.4 This development will be served by a purpose-built drainage network, outlined in the drainage strategy. It will be designed in line with the hierarchy of drainage outlined in the NPPF, to avoid causing additional pressures on existing sewers where possible.

4.8 Other Sources of Flood Risk

4.8.1 Current guidance and policy outlines that all sources of flood risk should be considered, including flooding from water supplies and other water retaining infrastructures, canals, water (potable) supply etc.

4.8.2 It has been assessed that there are no other known sources that would pose a flood risk to the site.

4.9 Historical Flooding

4.9.1 The EA 'Historic Flood Map' is a dataset showing the maximum extent of all individual recorded flood outlines from river, the sea and groundwater and shows areas of land that have previously been subject to flooding. This mapping is provided as **Figure 8** in **Appendix A** and shows no recorded historical flooding at the site.

4.9.2 Within the SFRA, WBC provides a record of historic flooding incidents. None of these indicate historical flooding has been recorded at the site.

5 Proposed Development and Sequential Approach

5.1 Description of Proposed Development

5.1.1 This FRA accompanies a full planning application for demolition of the existing garden centre, and construction of circa 19 no. dwellings and associated infrastructure.

5.1.2 Details of the proposals are included in **Appendix B**.

5.1.3 The proposed mitigation is based on a design life for the development of 100 years, and the climate change allowances discussed in **Section 4** are also based on this assumption.

5.2 Flood Risk Vulnerability

5.2.1 The NPPF Annex 3 confirms the *'Flood risk vulnerability classification'* of a site, depending upon the proposed usage.

- The proposals are classed as '**more vulnerable'** development.

5.2.2 This classification is subsequently applied to PPG 'Flood Risk and Coastal Change' Table 2 'Flood risk vulnerability and Flood Zone incompatibility' to determine whether:

- The proposed development is permitted or not for the Flood Zone in which it is located, and;
- Whether an exception test is required for the proposed development.

5.2.3 The location of the proposed 'more vulnerable' development is in Flood Zone 1. Table 2 confirms that:

- Residential development is appropriate within Flood Zone 1
- The Exception Test is not required.

5.3 NPPF Sequential Test

5.3.1 The NPPF follows a sequential risk-based approach in determining the suitability of land for development in flood risk areas, with the intention of steering all new development to the lowest flood risk areas.

5.3.2 Paragraph 027 of the PPG states:

"… Where a site-specific flood risk assessment demonstrates clearly that 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 (therefore addressing the risks identified e.g. by Environment Agency flood risk mapping), without increasing flood risk elsewhere, then the sequential test need not be applied."

5.3.3 The proposed development adheres to the sequential approach, with all proposed buildings and vulnerable elements located outside the areas of surface water flood risk on site. A secondary pedestrian access has been provided to the south via Scarletts Lane to an area assessed as very low risk of flooding from all sources to allow for continuous safe and dry access and egress to occupiers. The risk of flooding from all sources to the development scheme is considered to be low or very low. As such, it is deemed that the Sequential Test does not need to be applied in this instance.

6 Flood Mitigation Strategy

6.1 Sequential Approach

6.1.1 The NPPF encourages the application of the 'sequential approach' in the master-planning process for new development, i.e. locating the more sensitive/vulnerable elements of new development in the areas which lie at lowest probability of flooding and, conversely, reserve the areas of the site at greatest risk of flooding for the least vulnerable elements of the development (or, preferably, leave such areas undeveloped or as soft landscaping).

6.1.2 The development layout follows this approach, with the proposed built development located wholly within Flood Zone 1, and in an area of lowest risk of surface water flooding.

6.2 Construction Phase Mitigation

6.2.1 For the construction phase, a Construction Environmental Management Plan (CEMP) will be produced so that the potential impacts of construction are managed efficiently, including measures to mitigate the adverse impacts of construction and ensure that there is no detrimental impact on flood risk and surface water. The CEMP will be a live document that will be reviewed and updated at regular intervals throughout the construction phase.

6.3 Floodplain Storage

6.3.1 Any new development located in the vicinity of a watercourse should be constructed such that it does not detrimentally impact flow routes or reduce the available floodplain storage over a site; either of which could potentially cause an increase in flood levels on-site or to third party land. This is considered up to the benchmark of the 1% AEP plus allowance for climate change flood event.

6.3.2 The proposed development will not result in the raising of levels in an area of surface water flood risk, therefore there will be no impact on floodplain storage or conveyance.

6.4 Building Design - Ground Floor Levels

6.4.1 Standard requirements for ground floor levels of new development are set out in BS8533:2017 'Assessing and Managing Flood Risk in New Development – Code of Practice'. This recommends floor levels are set a minimum of 300mm above the modelled 1% AEP plus allowance for climate change flood level.

6.4.2 This is also consistent with the guidance from the EA and the recommendations in the WBC SFRA.

6.4.3 As there is no detailed modelling of surface water flood levels available for this site, an estimate has been made using the topographic site survey, and the modelled 0.1% AEP event from the EA RoFSW mapping. This conservative estimate indicates a flood level range of 54.3-54.7mAOD. Therefore, the minimum proposed finished flood level for the site is 55mAOD.

6.4.4 As is seen in **Figure 6-1**, proposed residential development is located outside of the main identified surface water flow route to the north of the site. Proposed plots 19 and 16 overlap with minor areas of isolated surface water flood risk which are likely localised low spots in the topography and will be allowed for in the proposed surface water drainage strategy (see **Section 7**).

Figure 6-1 RoSWF Overlaid on the Proposed Site Layout

6.5 Safe Access and Flood Warnings

6.5.1 It is necessary to consider and incorporate safe access arrangements as part of the mitigation, to ensure the users/occupants of the development are safe in times of flooding. Main access to the site is available off the A4 Bath Road, which is shown to be at 'High' risk of surface water flooding and lies within the predicted surface water flow route.

6.5.2 As such, an access route will be constructed to the south of the site, connecting to Scarletts Lane. The proposed access route and Scarletts Lane are located in Flood Zone 1, and at 'Low' risk to surface water flooding. Thus, safe access and egress is available at all times.

7 Surface Water Drainage Strategy

7.1 Overview

7.1.1 The LLFA is the statutory consultee on planning applications for surface water management. As the LLFA, Wokingham Borough Council (WBC) is therefore responsible for the approval of surface water drainage systems within new major development.

7.1.2 The following section provides an overview of the existing surface water drainage arrangements and demonstrates how the development can be drained in a sustainable manner, commensurate with local and national policy.

7.2 Discharge Destination

7.2.1 The NPPF recognises that flood risk and other environmental damage can be managed by minimising changes in the volume and rate of surface runoff from development sites and recommends that priority is given to the use of SuDS in new development, this being complementary to the control of development within the floodplain.

7.2.2 As the intention of SuDS is to mimic the natural drainage regime of the undeveloped site, the NPPF PPG states the following (consistent with the Building Regulations H3 hierarchy):

> *"Where possible, preference should be given to multi-functional sustainable drainage systems and to solutions that allow surface water to be discharged according to the following hierarchy of drainage options:*
>
> *- into the ground (infiltration),*
>
> *- to a surface water body,*
>
> *- to a surface water sewer, highway drain or another drainage system,*
>
> *- to a combined sewer."*

7.2.3 The SuDS hierarchy above is outlined in the section below in relation to the site.

Discharge into the Ground (Infiltration)

7.2.4 Based on the hierarchy, the preferred method for disposal of surface water from the new development is via infiltration drainage.

7.2.5 In vicinity of the site, three boreholes (SU87NW5, SU87NW3, SU87NW56) all within 700m of the site boundary confirm that the geology in the area is clay over chalk. The nearest borehole (SU87NW5) indicates:

- Topsoil to 0.3m below ground level;
- Clay to 6m below ground level; and
- Chalk to 50m below ground level.

7.2.6 This is consistent with the BGS viewer records discussed in **Section 3.5**.

7.2.7 Based on the information available from the desktop study, the typically low permeability of clay indicates soakaways would not be a viable option for this site subject to further investigation post planning. Whilst there may be potential for deep bore soakaways, no geotechnical investigation has been carried out on site to confirm this is viable. Thus, it is recommended that geotechnical investigations are carried out post planning to determine the viability of infiltration.

7.2.8 Based on the above, infiltration has been discounted for the purpose of this planning stage assessment.

Discharge to a Surface Water Body/Watercourse

7.2.9 The next preference in the hierarchy is to discharge to a surface water body (i.e. lake or watercourse). The topographic survey (**Appendix C**) indicates that the site falls from the south to the north, towards a ditch running in a westerly direction outside the boundary of the site. This is consistent with the site's hydrological setting, discussed in **Section 3.3**. A site visit undertaken on 01/04/2025 confirms the presence of this ditch (see **Figure 4-5**), and that the site currently drains into it, as observed by the outfall seen in **Figure 3-4**. Thus, it is proposed to maintain the existing pattern of drainage over the site and discharge surface water from the new development via this ditch.

7.3 Design Criteria

7.3.1 The surface water drainage strategy has been developed based on the DEFRA 'National Standards for Sustainable Drainage Systems' (June 2025) and the 'Wokingham SuDS Strategy guidance on the use of sustainable drainage systems' (April 2016).

7.3.2 The impermeable areas that have been input into the model include a 10% allowance for urban creep for the house and driveway areas in accordance with WokBC-LS15 of the '*Wokingham SuDS Strategy*' guidance.

7.3.3 National standards for SuDS Standard 3: management of extreme rainfall and flooding states:

> *"When discharging to an above ground surface water body, sewer or other piped drainage system, the surface water runoff (rate and volume) for the 1% annual exceedance probability (AEP) event shall be controlled to ensure the runoff from the development does not increase flood risk elsewhere.*
>
> *The peak allowable discharge rate from the development to surface waters or sewers for the 50% AEP event shall be limited to the equivalent 50% AEP greenfield runoff rate, or 3 l/s/ha, whichever is the greater.*
>
> *Where the volume of runoff discharged from the development to surface waters or sewers for the 1% AEP, 6-hour rainfall event is greater than the volume of greenfield runoff for the same rainfall event, the peak allowable discharge rate from the development for the 1% AEP event shall be limited to the 50% AEP greenfield runoff rate or 3l/s/ha, whichever is the greater."*

7.3.4 The '*Wokingham SuDS Strategy*' guidance states the following in relation to peak flow and volume control:

> *"**WokBC-LS5** In addition to the requirements of S2, Wokingham requires demonstration that discharges from the proposed development for all return periods from the 1 in 1 through to the 1 in 100 year (inclusive), do not exceed their corresponding/previously developed discharge rates. Demonstration of this is required for the 1 in 1 year, 1 in 30 year, 1 in 100 year and 1 in 100 year including allowances for climate change.*
>
> ***WokBC-LS11** Long term storage must be provided to limit the volume of runoff from the 1 in 100 year event with an allowance for 40% climate change, unless discharge rates have been restricted to QBar."*

7.3.5 The site will drain to an attenuation basin located in the north west corner and include porous paving across the site.

7.3.6 Permeable pavement sub-bases have been designed with a porosity of 30%.

7.3.7 The equivalent greenfield runoff for the proposed impermeable area (0.519ha) was calculated using the FEH method (see **Appendix E**), giving 1.5l/s. Given the volume of long-term storage required to achieve this discharge and the spatial constraints on site, this is not a viable solution. Standard 3 of the national standards for SuDS states:

> *"3.21 For previously developed sites a 'relaxation factor' shall be applied to the target 50% and 1% AEP greenfield runoff rates where evidence is provided that demonstrates why greenfield runoff or 3l/s/ha rates cannot be achieved and this is agreed with the approving body.*
>
> *3.21.1 This relaxation factor shall be no greater than 5 times the greenfield runoff rate."*

7.3.8 As this is a brownfield site, in line with national guidance the maximum allowable discharge is 7.5 l/s. The greenfield Qbar rate was calculated considering the entire site area using the HR Wallingford greenfield runoff rate estimation tool[1] (see **Appendix E**), calculated to be 7.1l/s.

7.3.9 Due to a lack of information on existing drainage, the brownfield runoff rates based on the existing impermeable area was calculated using the modified rational method equation (see **Appendix E**) – see

7.3.10 Table 7-1.

Table 7-1 Existing Runoff Rates and Betterment Provided by the Proposed Rate

Return Period	Brownfield Runoff Rate l/s	Betterment
1 in 1 year	12.5	43%
1 in 2 year (Q_{BAR})	17.2	58%
1 in 30 year	37.8	81%
1 in 100 year	47.1	85%

7.3.11 The proposed greenfield runoff rate of 7.1l/s provides over 50% betterment for the existing Qbar, and all events up to the 1% AEP + 40% allowance for climate change rainfall event in accordance with the WBC local standards WokBC-LS11, and is within the limit of the 'relaxation factor' outlined in the national standards for SuDS.

7.4 Outline Surface Water Drainage Strategy

7.4.1 The proposed surface water drainage strategy is shown on Stantec drawing **332611948-001-P02** in **Appendix E** and is summarised as follows:

- 0.571ha of impermeable area (including 10% urban creep) discharging to the attenuation basin. The outfall from the attenuation basin to the ditch is restricted to a maximum of 7.1l/s for all modelled events (50% AEP, 3.33% AEP, 3.33% AEP + 40% CC, 1% AEP, and 1% AEP + 40% CC); and
- The proposed attenuation basin has a depth of 1.5m, average side slopes of 1 in 3, and storage volume of 566m^3..

7.4.2 The proposed development will result in a 60% decrease in impermeable area.

7.4.3 The InfoDrainage schedule and results are provided in **Appendix E**.

[1] https://www.uksuds.com/tools/greenfield-runoff-rate-estimation

7.4.4 The '*Wokingham SuDS Strategy*' guidance local standards WokBC-LS3 and WokBC-LS13 state that:

> *"**WokBC-LS3** If the SuDS system discharges to a water body, it should be demonstrated that high water levels within the receiving water body for the design storm event of the discharging system would not exacerbate flood risk to neighbouring property or affect the performance of the drainage system and its ability to discharge flow from the site."*
>
> ***WokBC-LS13** All surface storage features (ponds, wetlands and basins) must provide a 300mm freeboard above the maximum design water level, unless otherwise agreed".*

7.4.5 The inverts and extents of the proposed attenuation basin are constrained by the invert level of the receiving ditch, the presence of root protection areas (RPAs) and the wider topography. As such, the basins have a freeboard of 273mm for 1% AEP + 40% climate change event, and freeboards exceed 300mm for the present day 1% AEP event.

7.4.6 A scenario has been run within InfoDrainage with a surcharged outfall (based on the water levels reaching the lowest top of bank levels of the ditch at the outfall location (53.5mAOD)).

7.4.7 The InfoDrainage results shows that, should the ditch become completely full, the majority of the drainage system over the site remains unaffected. The freeboard of the pond during the 1% AEP + 40% climate change event is reduced to 136mm. For all other events, the pond maintains freeboard above 300mm. For all modelled events, a high water level within the receiving ditch does not result in flooding on site.

7.5 Designing for Exceedance

7.5.1 The InfoDrainage results in **Appendix E** confirm that there is no flooding of the proposed surface water drainage system up to and including the 1% AEP +40% climate change rainfall event.

7.5.2 Site levels can be designed to direct flows away from buildings towards parking and landscaped areas.

7.6 Other Considerations

Pollution Control

7.6.1 Appropriate pollution control measures will be included in the surface water drainage system to minimise the risk of contamination or pollution entering the receiving systems from surface water runoff from the development.

7.6.2 The drainage system will therefore be designed to comply with the requirements of the SuDS treatment train as laid out in CIRIA C753 'The SuDS Manual'. Taking the simple index approach (outlined in Table 26.1 of the SuDS Manual), the pollution hazard indices based on land use are shown in **Table 7-2**, and the SuDS mitigation indices for discharges to surface waters are shown in **Table 7-3**.

Table 7-2 Pollution hazard indices based on land use (taken from CIRIA C753)

Land Use	Pollution Hazard Level	TSS	Metals	Hydrocarbons
Residential roofs.	Very Low	0.2	0.2	0.05
Individual property driveways,	Low	0.5	0.4	0.4

residential car parks, low traffic roads.				

Table 7-3 SuDS mitigation indices for discharge to surface waters (taken from CIRIA C753)

Type of SuDS Component	TSS	Metals	Hydrocarbons
Permeable pavement	0.7	0.6	0.7
Detention Basin	0.5	0.5	0.6

7.6.3 The above indices demonstrate that the proposed SuDS strategy can minimise the risk of contamination or pollution entering the receiving systems from surface water runoff from the development.

7.6.4 Standard 2 of the national standards for SuDS emphasises the management of everyday rainfall (interception). To demonstrate that the design broadly aligns with this standard, porous paving has been incorporated within the InfoDrainage model in driveways and roads.

7.6.5 The final strategy for pollution control will be confirmed as part of the detailed design/reserved matters.

Adoption and Management

7.6.6 The ongoing management and maintenance of the proposed surface water management systems will likely be expected to fall under the responsibility of the relevant site management company.

7.6.7 Long term management of surface water drainage assets, including any SuDS components, is essential to ensure they continue to function to their design standard. As such, a management and maintenance plan will need to be developed to ensure the systems continue to work effectively. The final strategy for adoption of SuDS and the SuDS maintenance plan, including a maintenance schedule and details of easements and outfalls for the drainage system, will be produced at the detailed design phase, once details of the proposed drainage system have been finalised.

8 Conclusions

8.1.1 This Flood Risk Assessment (FRA) has been prepared by Stantec to support a full planning application for residential use development. The site is located off of Bath Rd, Hare Hatch, Reading (postcode RG10 9SB, site centre National Grid Reference 480,670m E 177,941m N).

Flood Risk

8.1.2 The main source of flood risk for the site is pluvial. The EA's Risk of Flooding from Surface Water (RoFSW) shows that, for both present day and climate change scenarios, the north of the site is at 'High' risk of surface water flooding due to an overland flood flow route centred along the A4, and a localised area up to 'Medium' risk is present in the south west of the site.

8.1.3 The entirety of the site is located in Flood Zone 1 with regards to fluvial and tidal sources. The remaining assessed sources of flood risk are considered to be a low risk.

8.1.4 The EA 'Historic Flood Map' shows no recorded historical flooding at the site.

8.1.5 The proposed development layout follows the sequential approach, with all residential development located in areas of lowest risk of surface water flooding. The risk of flooding from all sources to the development scheme is considered to be low or very low. As such, a Sequential Test is not deemed to be required in this instance.

Mitigation Strategy

8.1.6 The proposed mitigation strategy demonstrates the development is safe and does not increase the risk of flooding elsewhere through a number of measures as follows:

- The development layout follows the sequential approach, with the proposed built development located wholly within Flood Zone 1, and outside of the surface water flow route identified on site. Plots 16 and 19 include localised areas of 'Low' risk, but these are due to localised low points in the topography and will be allowed for in the surface water drainage strategy. All other proposed built development is in an area of 'Very Low' risk of surface water flooding.

- An access route will be constructed to the south of the site, connecting to Scarletts Lane. The proposed access route and Scarletts Lane are located in Flood Zone 1, and at 'Low' risk to surface water flooding. Thus, safe access and egress is available at all times;

- For the construction phase, a Construction Environmental Management Plan (CEMP) will be produced so that the potential impacts of construction are managed efficiently, including measures to mitigate the adverse impacts of construction and ensure that there is no detrimental impact on flood risk and surface water. The CEMP will be a live document that will be reviewed and updated at regular intervals throughout the construction phase;

- Based on an overlay of the EA's RoFSW mapping and the site topographic survey, the flood level of the surface water flow route on site is 54.3-54.7mAOD for the 0.1% annual exceedance probability event. Thus, the proposed development is set at a minimum level of 55mAOD (providing minimum 300mm freeboard); and,

- A surface water drainage strategy has been produced for the site (see **Section 7**), demonstrating the site can be drained in a sustainable manner, commensurate with local and national policy.

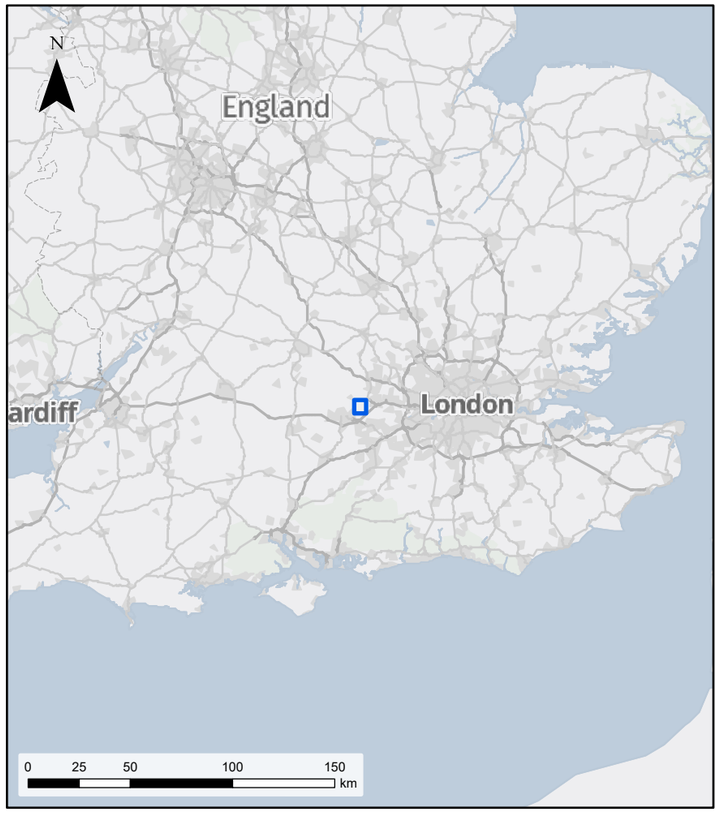
Summary

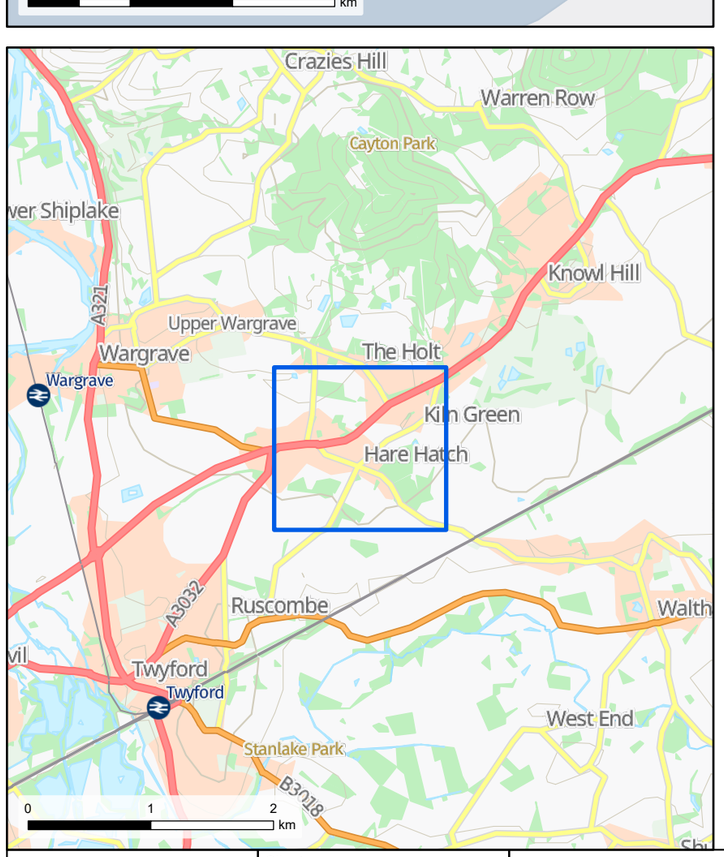
8.1.7 In conclusion, the future occupants and users of the proposed development will be at a low risk of flooding and the development will not increase flood risk elsewhere. It is demonstrated that

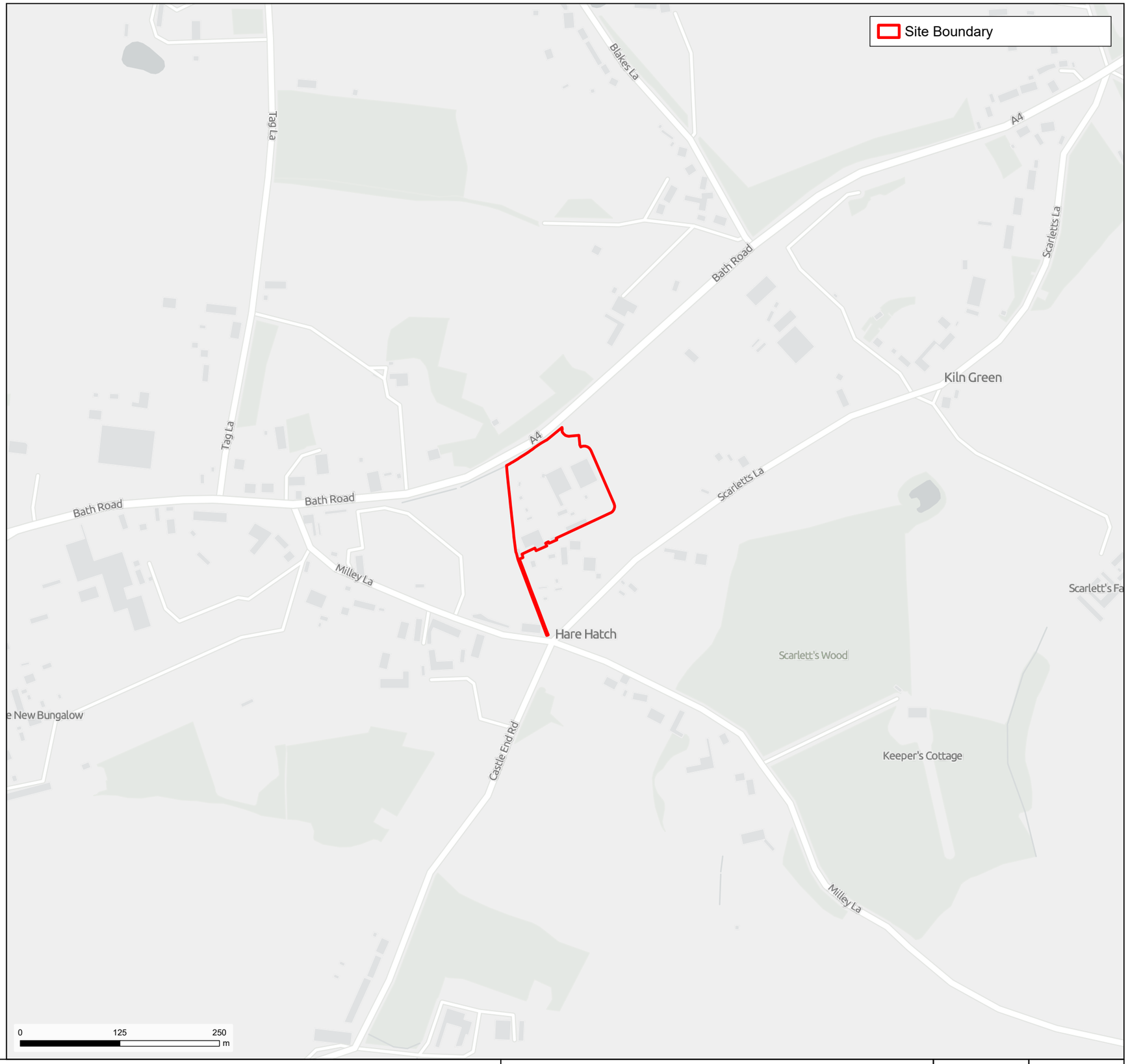
the proposal complies with the NPPF, Planning Practice Guidance (PPG) and the local planning policy with respect to flood risk and is an appropriate development at this location.

Appendix A OpenData Flood Maps

- Site Location Plan
- Site Location (Aerial Photography)
- Area Topography (LiDAR)
- EA Flood Zone Maps
- EA Surface Water Flood Risk
- EA Risk of Flooding from Rivers and the Sea
- Reservoir Flood Map
- EA Historic Flood Map







Stantec

Client: Westbourne Homes

LADDS GARDEN CENTRE

Site Location

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Drawn: JB	Checked: LW
Figure: 01	Rev: A

Document Path: C:\Projects\Ladds Garden Centre\new_rlb_gis\ladds new rlb gis\ladds new rlb gis.aprx

Stantec

Client: Westbourne Homes

LADDS GARDEN CENTRE

Site Location (Detailed)

0 125 250 m

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Drawn: JB	Checked: LW
Figure: 01.1	Rev: A

Document Path: C:\Projects\Ladds Garden Centre\new_rlb_gis\ladds new rlb gis\ladds new rlb gis.aprx

Stantec

Client

Westbourne Homes

LADDS GARDEN CENTRE

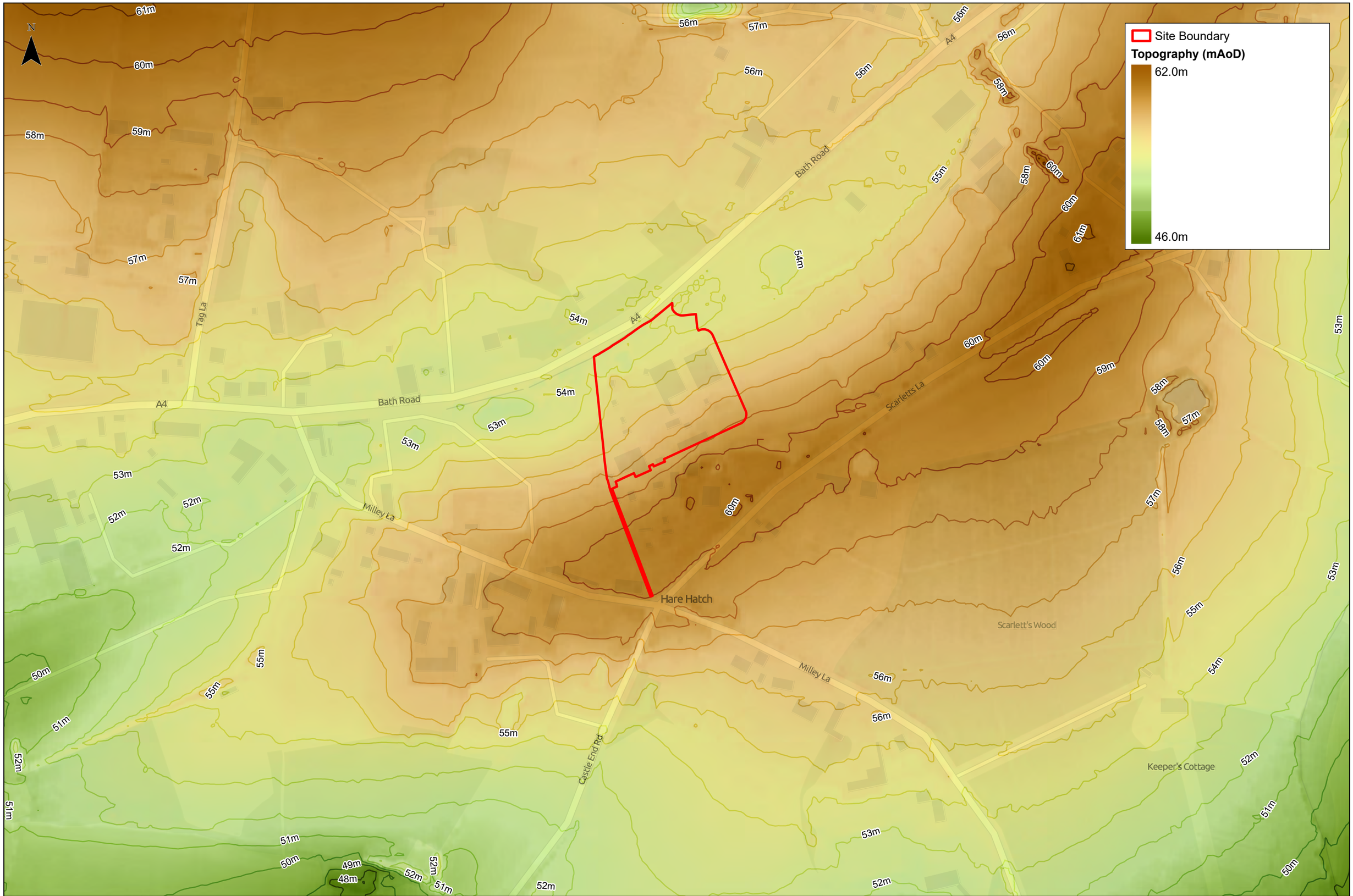
Site Location - Aerial

0 125 250 m

Maxar, Microsoft

1:2,500 @ A3	Date: 23/07/2025
Drawn: JB	Checked: LW
Figure: 02	Rev: A

Document Path: C:\Projects\Ladds Garden Centre\new_rlb_gis\ladds new rlb gis\ladds new rlb gis.aprx



Stantec	Client: Westbourne Homes	**LADDS GARDEN CENTRE** Topography	0 150 300 m Contains OS data © Crown Copyright and database right 2025 Contains data from OS Zoomstack Airbus, USGS, NGA, NASA, CGIAR, NLS, OS, NMA, Geodatastyrelsen, GSA, GSI and the GIS User Community.	1:3,000 @ A3	Date: 23/07/2025
				Drawn: JB	Checked: LW
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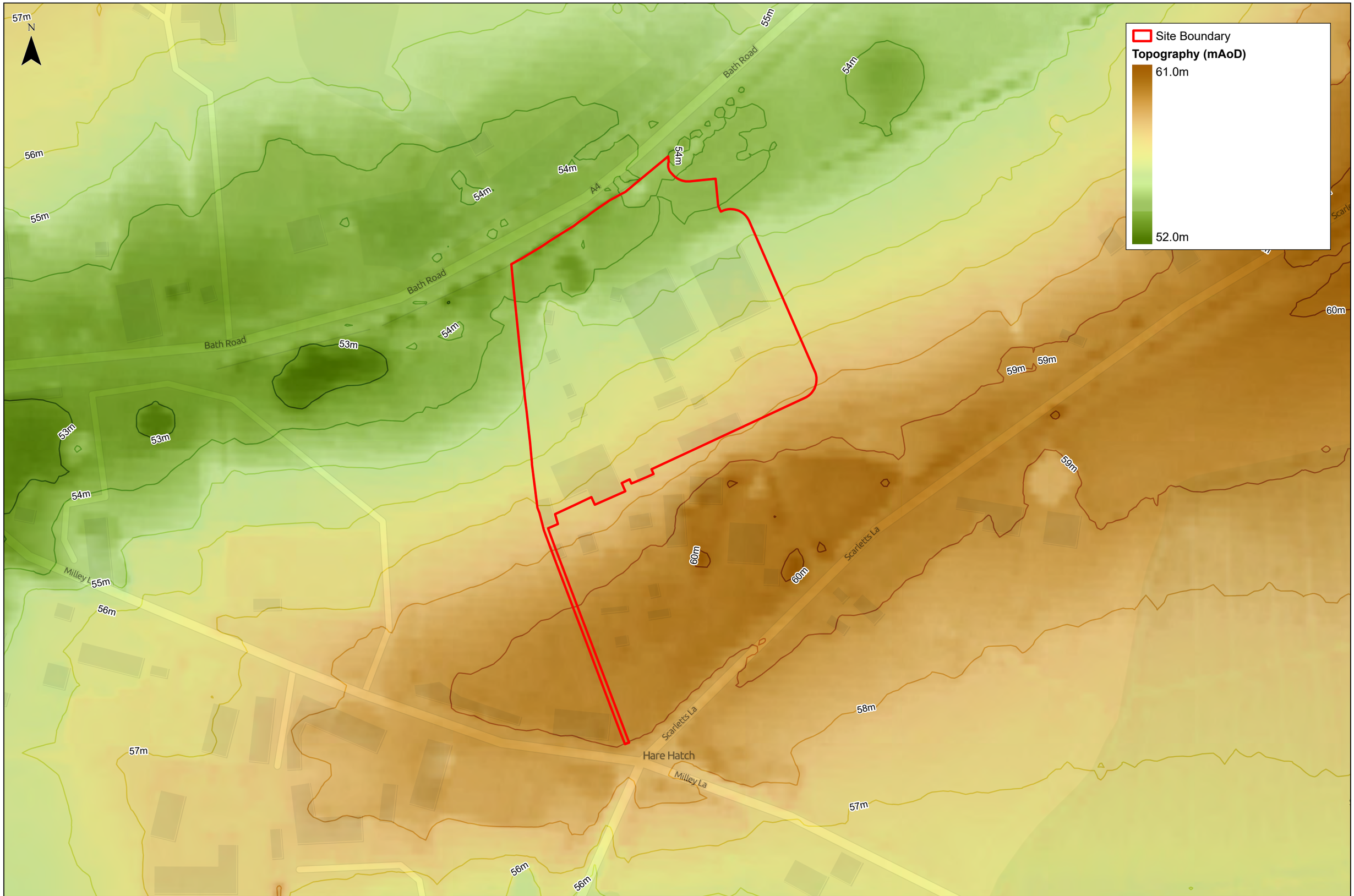

Stantec

Client: Westbourne Homes

LADDS GARDEN CENTRE

Topography - Detailed

0 75 150 m

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Drawn: JB	Checked: LW
Figure: 03.1	Rev: A

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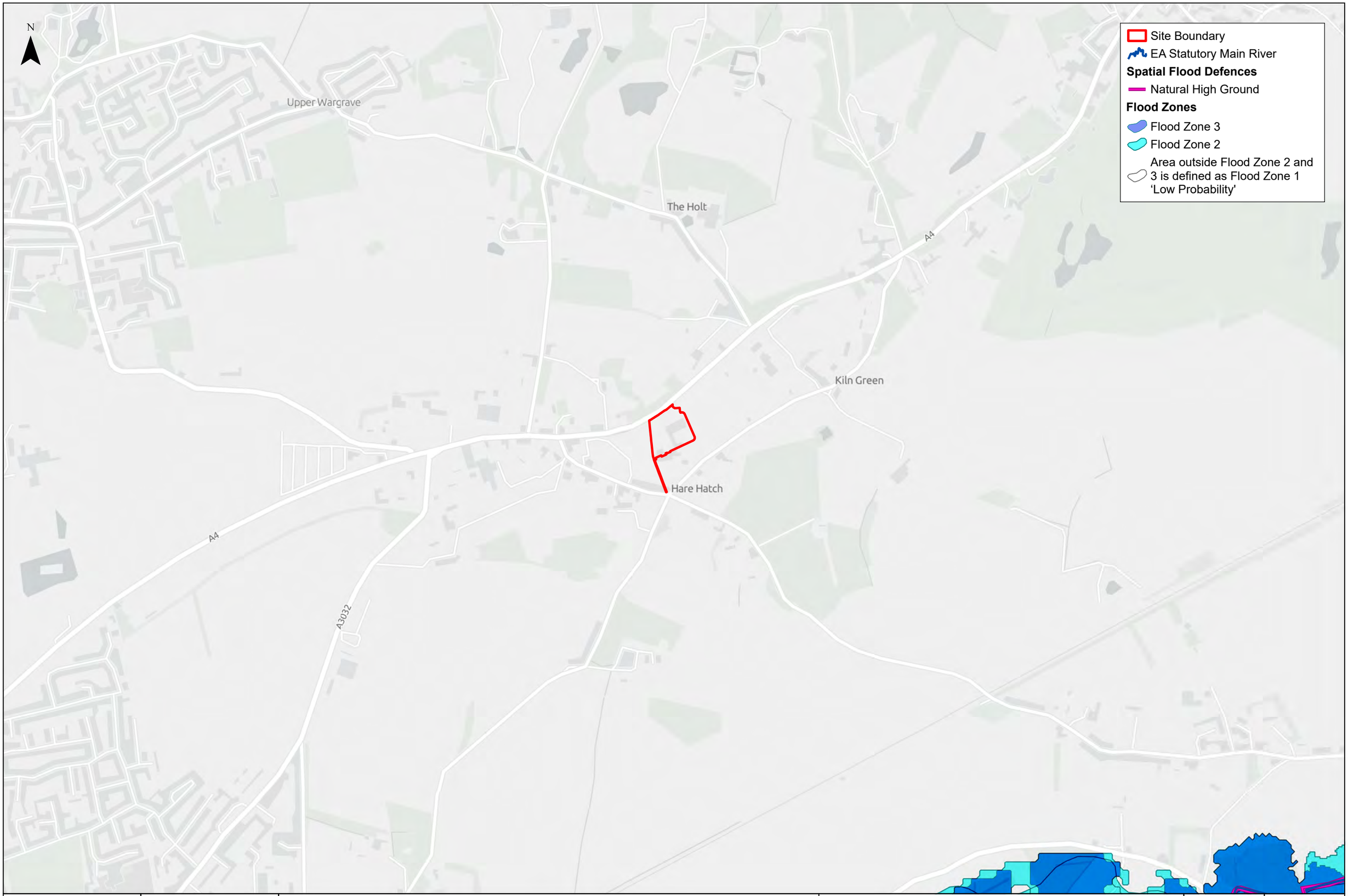

Stantec

Client: Westbourne Homes

LADDS GARDEN CENTRE

Environment Agency Flood Map for Planning

0 500 1,000 m

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Drawn: JB	Checked: LW
Figure: 04	Rev: A

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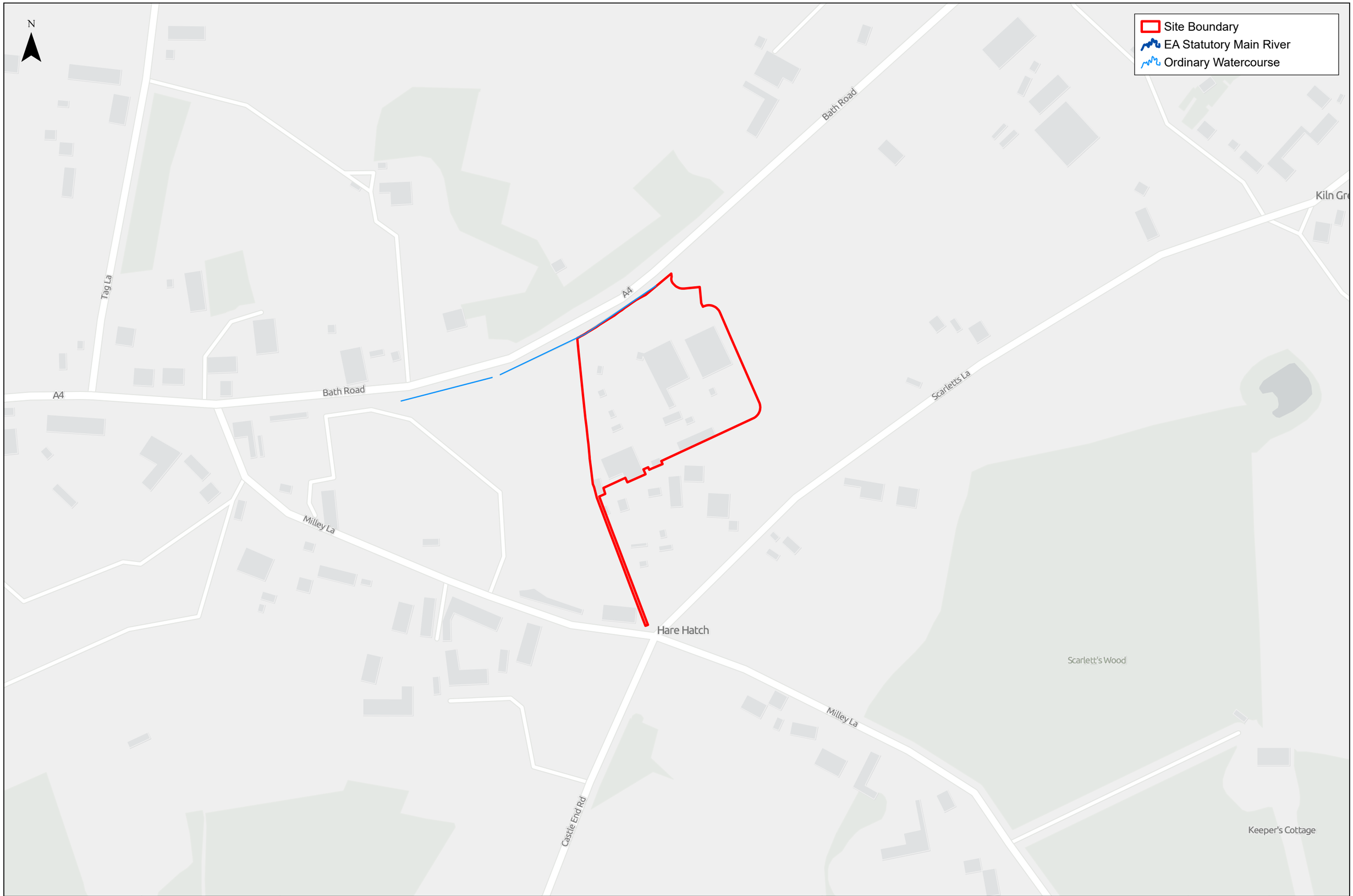

Stantec

Client: Westbourne Homes

LADDS GARDEN CENTRE

Watercourse Location

0 125 250 m

1:2,500 @ A3	Date: 23/07/2025
Drawn: JB	Checked: LW
Figure: 04.1	Rev: A

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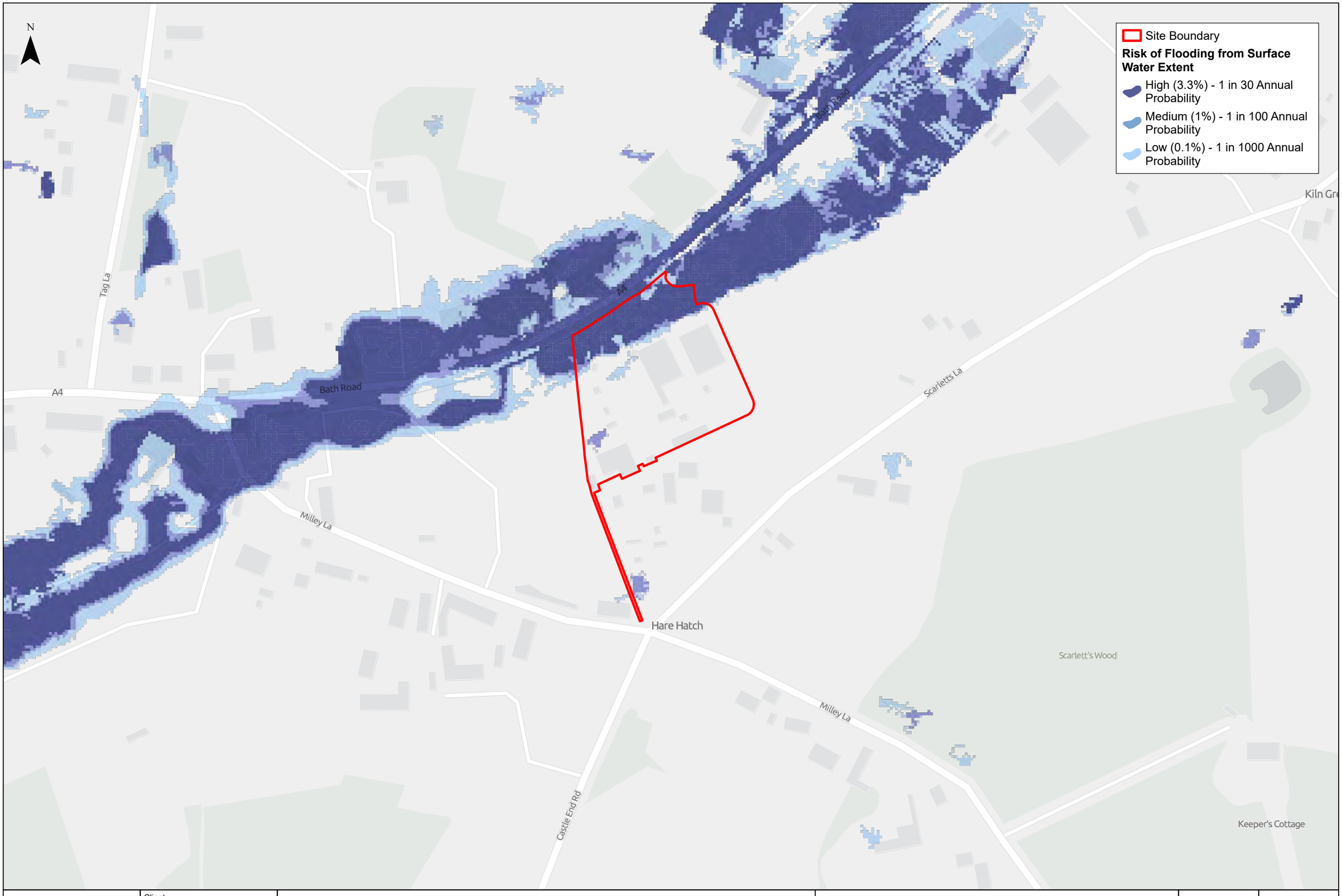


Stantec

Client: Westbourne Homes

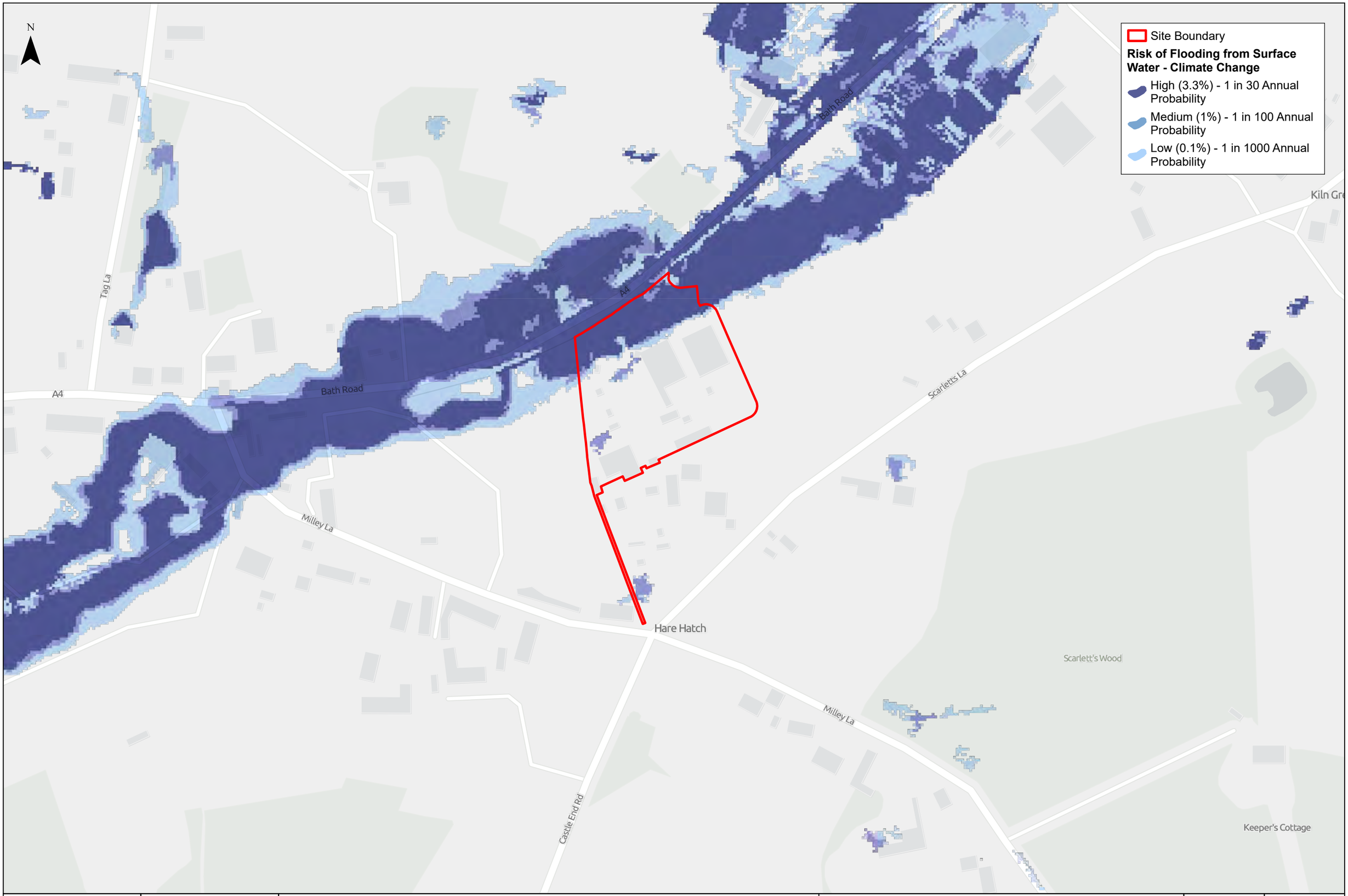
LADDS GARDEN CENTRE

EA Risk of Flooding from Surface Water Extent

0 125 250 m

1:2,500 @ A3	Date: 23/07/2025
Drawn: JB	Checked: LW
Figure: 05	Rev: A

Document Path: C:\Projects\Ladds Garden Centre\new_rlb_gis\ladds new rlb gis\ladds new rlb gis.aprx



Stantec

Client: Westbourne Homes

LADDS GARDEN CENTRE

EA Risk of Flooding from Surface Water - Climate Change Extent

0 125 250 m

1:2,500 @ A3	Date: 23/07/2025
Drawn: JB	Checked: LW
Figure: 06	Rev: A

Document Path: C:\Projects\Ladds Garden Centre\new_rlb_gis\ladds new rlb gis\ladds new rlb gis.aprx

Stantec

Client: Westbourne Homes

LADDS GARDEN CENTRE

EA Risk of Flooding from Rivers and Sea Extent

0 125 250 m

1:2,500 @ A3	Date: 23/07/2025
Drawn: JB	Checked: LW
Figure: 07	Rev: A

Document Path: C:\Projects\Ladds Garden Centre\new_rlb_gis\ladds new rlb gis\ladds new rlb gis.aprx

Stantec

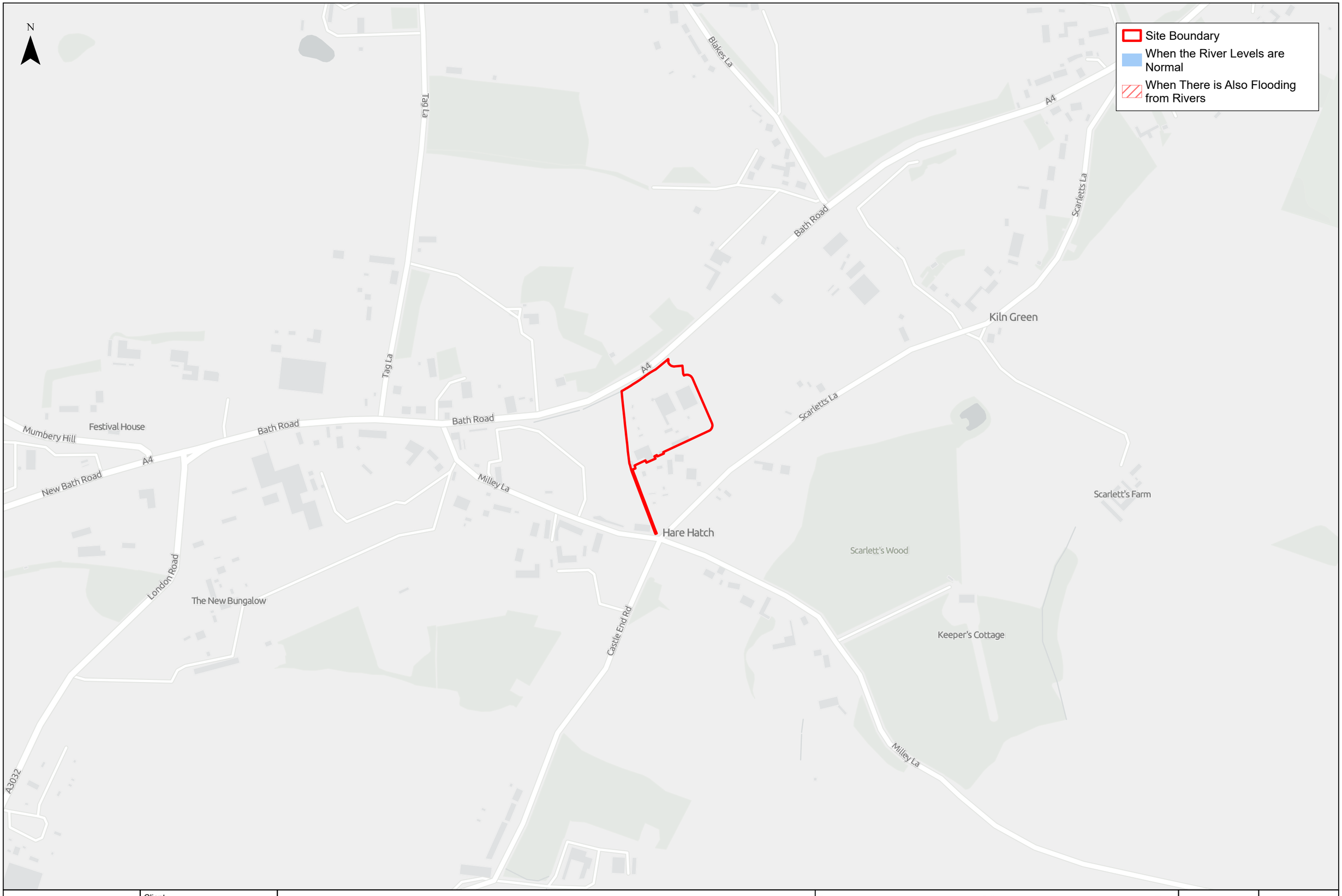
Client: Westbourne Homes

LADDS GARDEN CENTRE

EA Risk of Flooding from Rivers and Sea - Climate Change Extent

1:2,500 @ A3	Date: 23/07/2025
Drawn: JB	Checked: LW
Figure: 08	Rev: A

Document Path: C:\Projects\Ladds Garden Centre\new_rlb_gis\ladds new rlb gis\ladds new rlb gis.aprx



Stantec

Client: Westbourne Homes

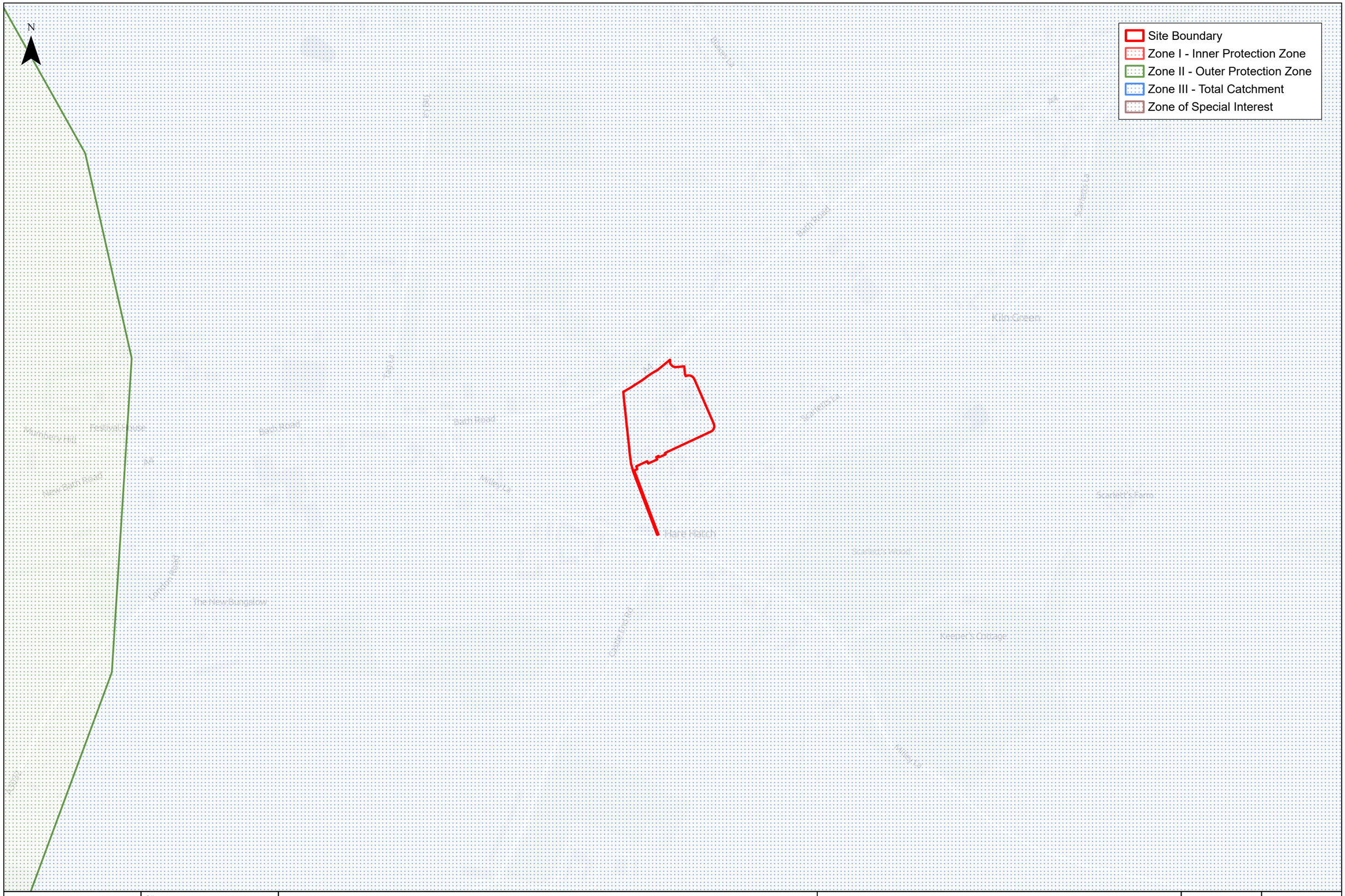
LADDS GARDEN CENTRE

Risk of Flooding from Reservoirs - Maximum Flood Extent

0 250 500 m

1:5,000 @ A3	Date: 23/07/2025
Drawn: JB	Checked: LW
Figure: 09	Rev: A

Document Path: C:\Projects\Ladds Garden Centre\new_rlb_gis\ladds new rlb gis\ladds new rlb gis.aprx



Stantec

Client: Westbourne Homes

LADDS GARDEN CENTRE

EA Ground Water Source Protection Zones

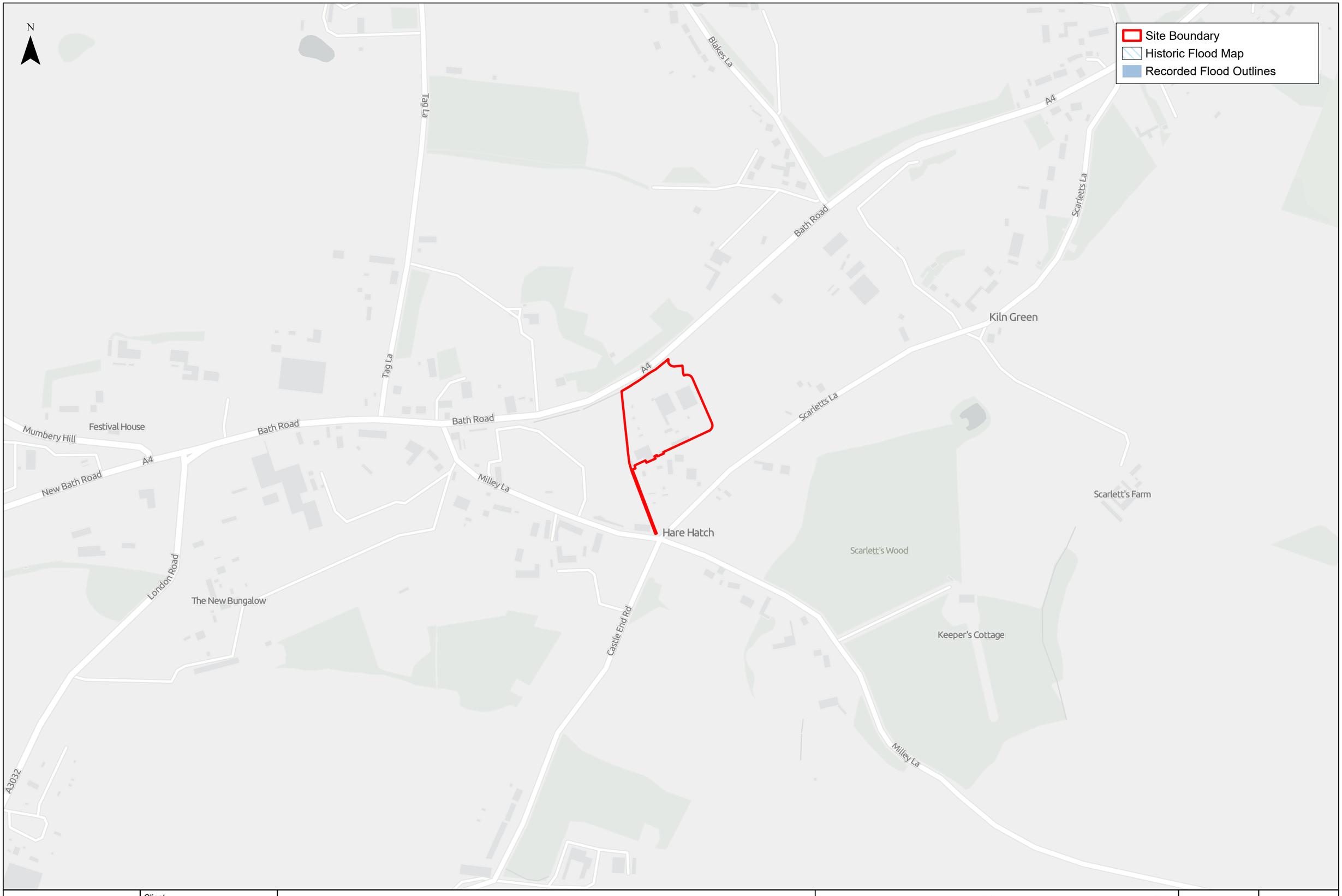
0 250 500 m

1:5,000 @ A3 | Date: 23/07/2025

Drawn: JB | Checked: LW

Figure: 10 | Rev: A

Document Path: C:\Projects\Ladds Garden Centre\new_rlb_gis\ladds new rlb gis\ladds new rlb gis.aprx



Stantec	Client: Westbourne Homes	**LADDS GARDEN CENTRE** EA Recorded Historic Flood Extents	0 250 500 m Contains OS data © Crown Copyright and database right 2025 Contains data from OS Zoomstack Contains Environment Agency information © Environment Agency and database right. Historic Flood Map shows the maximum extent of all individual Recorded Flood Outlines from river, the sea and groundwater springs and shows areas of land that have previously been subject to flooding in England. Recorded Flood Outlines shows all EA records of historic flooding from rivers, the sea, groundwater and surface water	1:5,000 @ A3	Date: 23/07/2025
				Drawn: JB	Checked: LW
				Figure: 11	Rev: A

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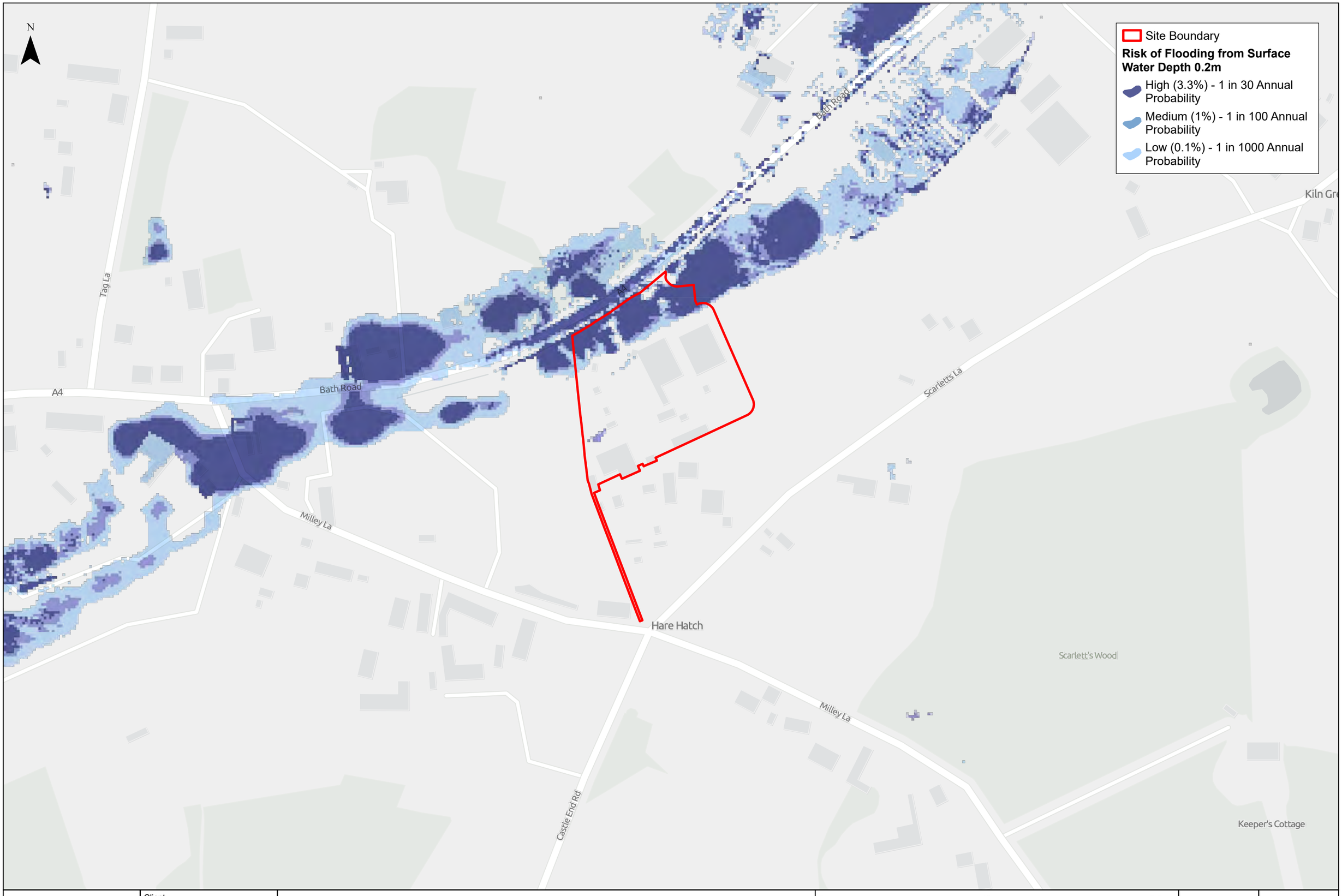


Stantec

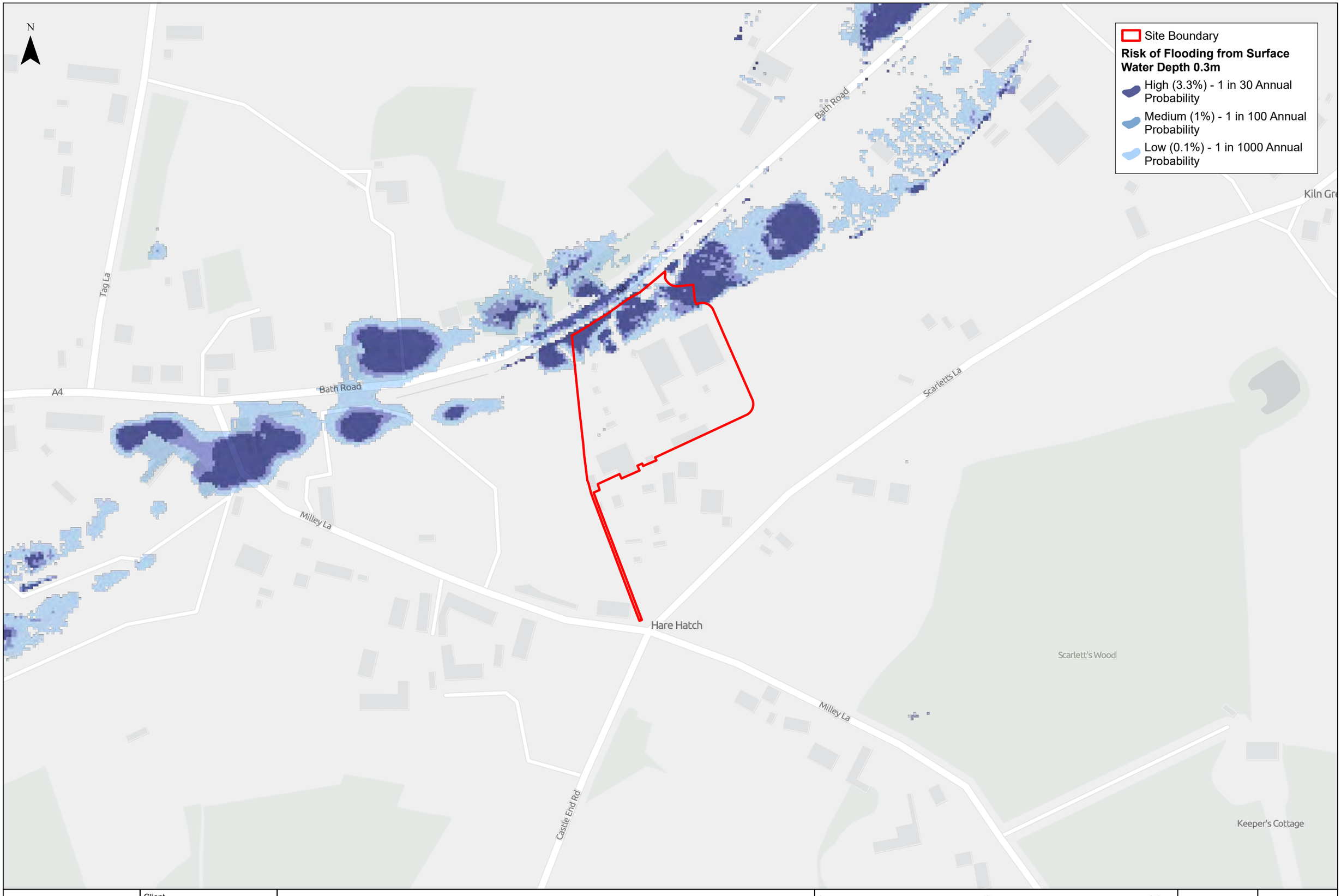
Client

LADDS GARDEN CENTRE

EA Risk of Flooding from Surface Water Depth 0.2m

0 125 250 m

1:2,500 @ A3	Date: 23/07/2025
Drawn:	Checked:
Figure: 12	Rev:



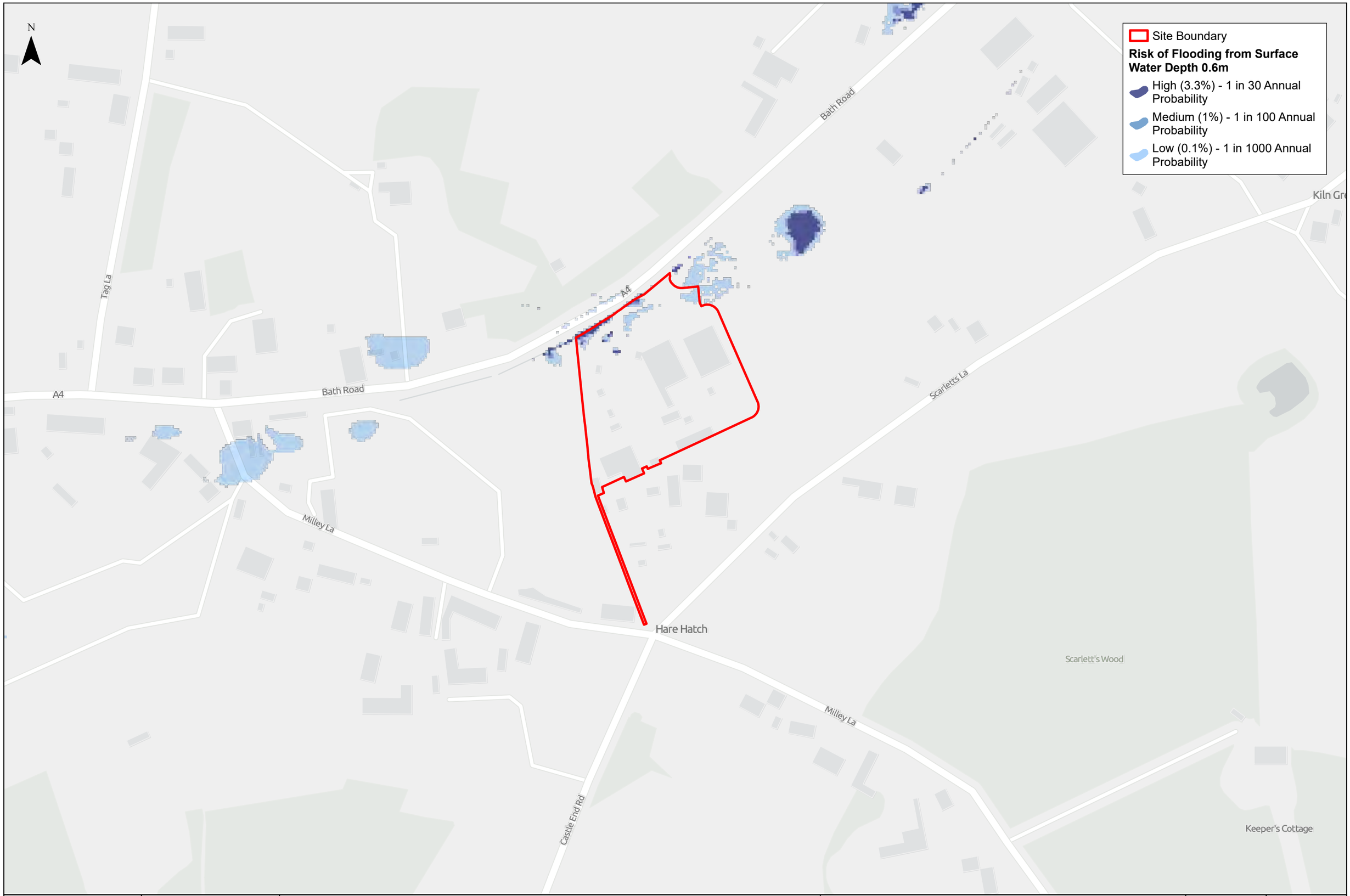
Stantec

Client

EA Risk of Flooding from Surface Water Depth 0.3m

0 125 250 m

1:2,500 @ A3	Date: 23/07/2025
Drawn:	Checked:
Figure: 13	Rev:



Stantec

Client

LADDS GARDEN CENTRE

EA Risk of Flooding from Surface Water Depth 0.6m

0 125 250 m

1:2,500 @ A3 | Date: 23/07/2025

Drawn: | Checked:

Figure: 14 | Rev:

Stantec

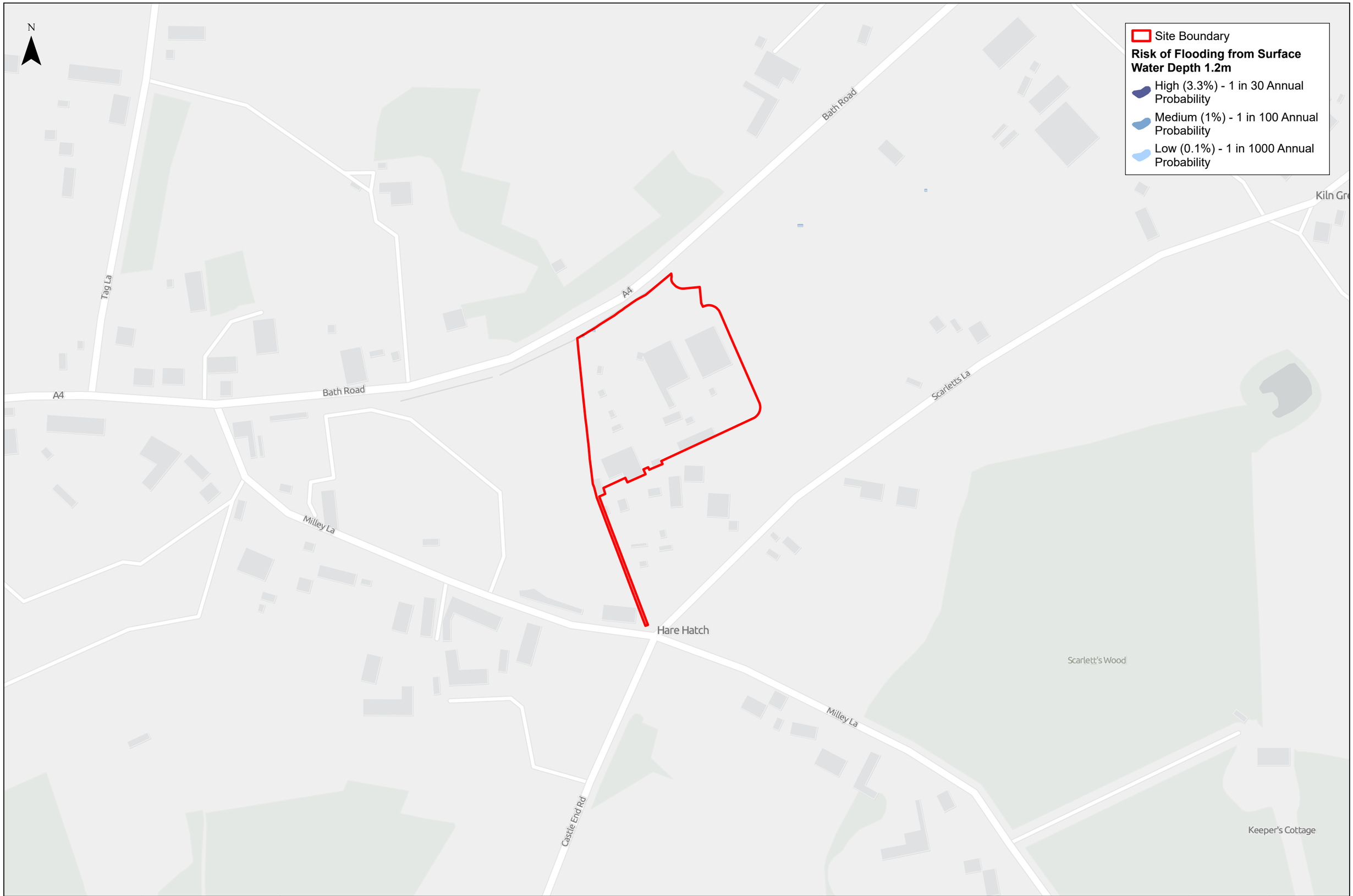
Client

LADDS GARDEN CENTRE

EA Risk of Flooding from Surface Water Depth 0.9m

0 125 250 m

1:2,500 @ A3	Date: 23/07/2025
Drawn:	Checked:
Figure: 15	Rev:



Stantec

Client

LADDS GARDEN CENTRE

EA Risk of Flooding from Surface Water Depth 1.2m

0 125 250 m

1:2,500 @ A3	Date: 23/07/2025
Drawn:	Checked:
Figure: 16	Rev:

Appendix B Development Proposals

- P25/09/S/101

Crossing point and pathway (in accordance with highways design)

New native tree planting to infill existing gap in 'green corridor'

A4 BATH ROAD

LAP
Details of LAP to be agreed

POS

timber fence

Access Road

POND
(Suds pond for surface water drainage management and to create biodiversity enhancement and habitats)

Understorey Planting

Understorey planting added to shady areas beneath existing tree canopies providing natural shelter, biodiversity enhancement and habitats

New native hedge and estate railing

Existing tree screening retained

New native trees located in the public realm

Existing tree screening retained

New screen planting

Existing tree screening retained

Dry means of escape (Emergency use only)

PLOTS 1-4

PLOT 5

PLOT 6

PLOT 7

PLOT 8

PLOT 9

PLOT 10

PLOT 11

PLOT 12

PLOT 13

PLOT 14

PLOT 15

PLOT 16

PLOT 17

PLOT 18

PLOT 19

Plot 1 Private Garden

Plot 2 Private Garden

Plot 3 Private Garden

Plot 4 Private Garden

BCP

V

5500

4200

P1.1 P2.1 P3.1 P3.2 P4.1 P4.2 P5.1 P5.2 P6.1 P6.2 P7.1 P7.2 P7.3

P8.1 P8.2 P8.3

P9.1 P9.2 P9.3

P10.1 P10.2 P10.3

P11.1 P11.2 P11.3

P12.1 P12.2 P12.3

P13.1 P13.2 P13.3

P14.1 P14.2 P14.3

P15.1 P15.2

P16.1 P16.2 P16.3

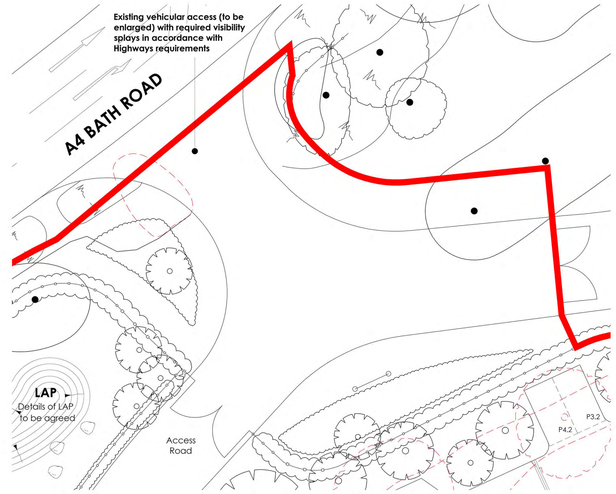
P17.1 P17.2

P18.1 P18.2

P19.1 P19.2 P19.3

ACCESS ROAD EXTRACT

Scale 1:250 @ A1



KEY

- Site boundary
- Existing trees retained (with RPA shown)
- Proposed new tree / shrub planting / hedge
- Timber close boarded fencing 1.8m high
- Sussex style timber post & rail fencing
- Paths / patios
- Private driveways (permeable)

Ordnance Survey
Licence No. 100022432

0 2m 4m 6m 8m 10m
Scale 1:250

Rev	Date	Details
-	-	-

Notes:

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All dimensions are in millimetres unless noted otherwise.

Any surveyed information incorporated on this drawing cannot be guaranteed as accurate unless confirmed by a fixed dimension.

This drawing is to be read in conjunction with all the relevant consultants, suppliers and manufacturers drawings and information.

THIS DRAWING IS TO BE READ IN STRICT ACCORDANCE WITH TREE PROTECTION PLAN PREPARED BY SPECIALISTS.

PLANNING

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Client: WESTBOURNE HOMES

Project: LADDS GARDEN CENTRE
BATH ROAD, HARE HATCH

Drawing: SITE LAYOUT & ROOF PLANS

Scale: 1:250 @ A1

Date: 08/09/25

Drawing Number: P25/09/S/101

Revision: -

Appendix C Topographic Survey