

New Reddam Boarding

Reddam House, Bearwood Road, Sindlesham, RG41 5BG

Flood Risk Assessment

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1. Executive Summary

Elliott Wood Partnership Ltd has been appointed by Inspired Education Holdings Limited to provide a Flood Risk Assessment (FRA) to support the full planning application for the proposed development at Reddam House, Bearwood Road, Sindlesham, RG41 5BG.

The application seeks planning permission for the following proposals. "Demolition of existing outhouses and erection of a two-storey boarding house, associated plant equipment, new landscaping and highways works and other associated works."

The development site is located entirely within flood zone 1, defined as 'land having a less than 0.1% (1:1000) annual probability of river flooding'.

A review of all other potential sources of flooding has found the site to be at low risk, providing a suitable drainage scheme is in place. It is considered that the information provided within this report satisfies the requirements of the National Planning Policy Framework, London Plan and local policy.

2. Introduction

This FRA will assess the risk of flooding to the site and reviews the impact the proposed development will have with regards to flood risk to surrounding properties. This is in line with the requirements of the National Planning Policy Framework (NPPF).

The Flood Risk Mechanisms being considered as part of this Flood Risk Assessment (FRA) are as follows:

- Rivers and Sea
- Overland Flow
- Flooding from Artificial Waterbodies
- Infrastructure Failure / Sewer Flooding
- Groundwater

3. Site Context

3.1 Site Location

The Reddam House School site is located along Hermes Close, which stretches between Mole Road and Bearwood Road, in the Borough of Wokingham. The site is centred on OS Co-ordinates E477848, N169086.

Winnersh train station and Sindlesham village are approximately 1.8km and 1km from the site, respectively.

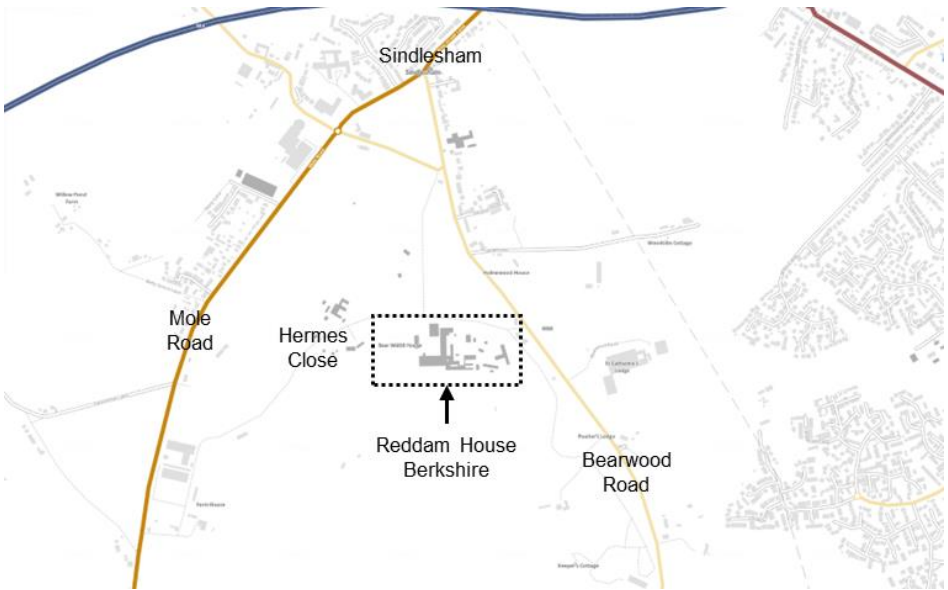


Figure 1: Site Location Plan (Ordnance Survey Map Extract)

3.2 Existing Development

The site is currently occupied by three school buildings and several trees. The proposed New Reddam Boarding House is surrounded by multiple school buildings. Boarding houses Drake House and Blake House exist directly east and north-west of New Reddam Boarding, respectively. The cadet building and science block are directly south and west of New Reddam Boarding, respectively.

Many other buildings occupy the Reddam House Berkshire site, including the main school, chapel, theatre, swimming pool, sports hall, kitchens, dining hall, and junior school. Bearwood Chapel and Bearwood College are Grade II and Grade II*, respectively.

Hermes Close provides a suitable access road to the site. However, the existing roads and paths on the site facilitate onsite pedestrian movement, so a new temporary or permanent access road to the site may be required to safely carry-out deliveries.

Proposals will need to consider these buildings, allowing for noise control and access, but this is perceived to be achievable constraints due to the recent school expansion projects.

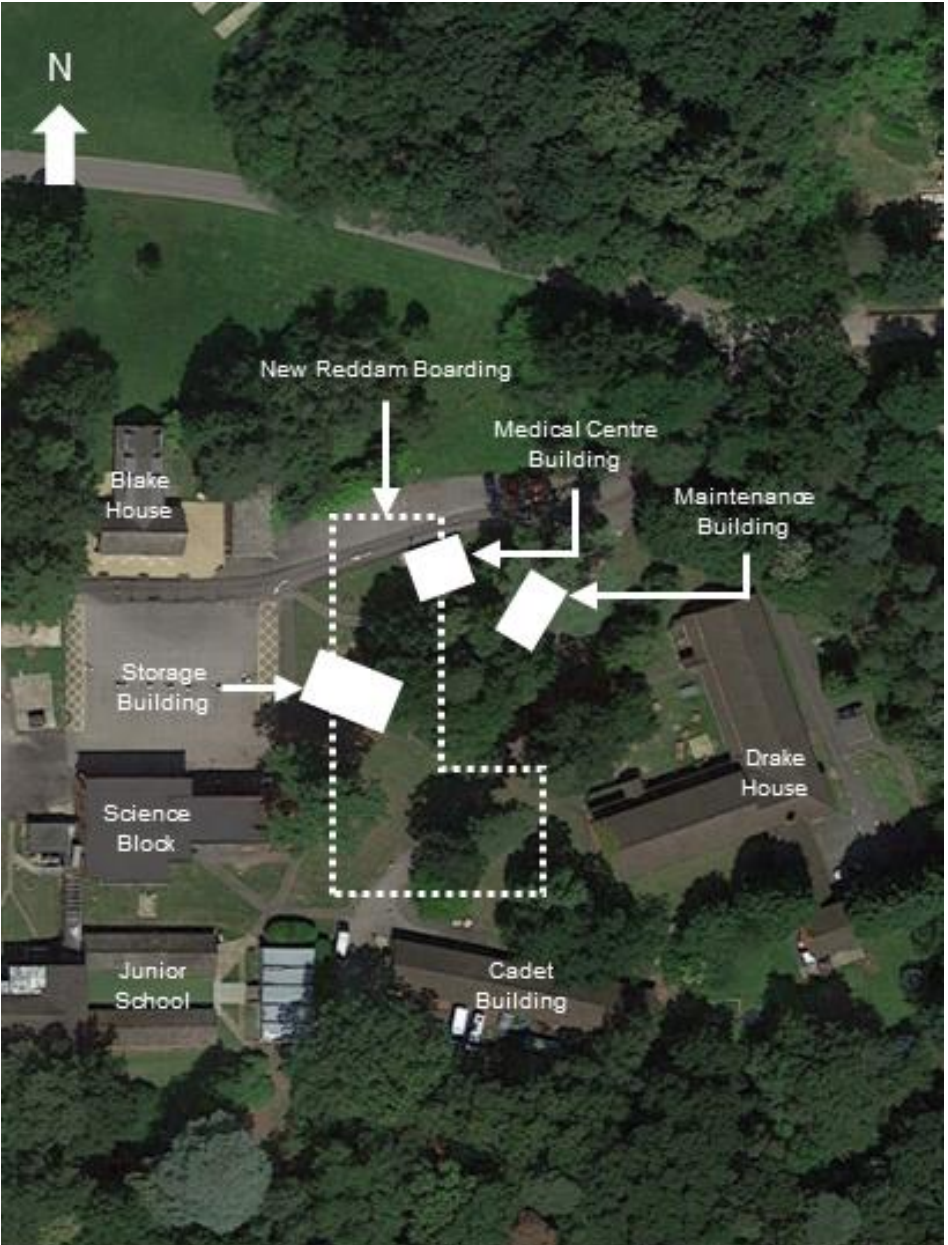


Figure 2: Site map with sketch overlay of existing and proposed buildings

3.3 Existing Site Topography

A topographic survey of the development site was undertaken by Tower Surveys in October 2014, prior to any works on site.

The topographic survey shows that, the levels generally fall from the east of the site (74.99mAOD) to the west (73.44mAOD). This equates to an average gradient of approximately 1:35, over a distance of approximately 53m.

Refer to **Appendix A** for topographic survey.

3.4 Ground Conditions

3.4.1 Geology

A site-specific geotechnical investigation has not yet been undertaken. We are currently investigating whether any records exist, associated with the sports hall and pool development on the school ground, in lieu of these, boreholes should be undertaken during the next design stage to determine the geotechnical properties of the ground on site.

Current conditions assumed in this report are based on geological information obtained from the British Geological Survey (BGS) website. The BGS maps indicate that the ground conditions for the proposed site may consist of London Clay Formation (clay, silt and sand) bedrock.

3.4.2 Ground Water

Three historic boreholes have been recorded to the west of the site. Groundwater was struck at 115ft (35m) below well top in borehole SU76NE24.

Site investigations will be required to establish a better understanding of the groundwater conditions especially considering that new foundations are required.

4. Proposed Development

4.1 Summary of Proposed Works

The application seeks planning permission for the following proposals. "Demolition of existing outhouses and erection of a two-storey boarding house, associated plant equipment, new landscaping and highways works and other associated works."



Figure 3: Proposed Ground Floor Layout

5. Planning and Flood Risk Management Policy

5.1 Policy Summary

This Flood Risk Assessment has been written in accordance with GOV.uk guidelines and the NPPF. Flood risk will be assessed for the following flood risk mechanisms:

- Rivers and Seas
- Overground Surface Water Flows
- Sewer Flooding / Infrastructure Failure
- Groundwater
- Artificial Waterbodies

The following documents have been reviewed in preparation of this flood risk assessment:

- Wokingham Borough Council Preliminary Flood Risk Assessment (PFRA) 2011
- Wokingham Borough Council Level 1 Strategic Flood Risk Assessment (SFRA) May 2023
- Wokingham Borough Council Level 2 Strategic Flood Risk Assessment (SFRA) August 2023
- Wokingham Borough Council Local Flood Risk Management Strategy (LFRMS) April 2015
- Wokingham SuDS Strategy (January 2017)
- Wokingham Borough Local Development Framework Sustainable Design and Construction Supplementary Planning Document
- Wokingham Borough Council Core Strategy (2010)
- Wokingham Borough Council Managing Development Delivery Plan (2014)
- Wokingham Borough Local Plan Update 2023-2040 Proposed Submission Plan
- GOV.uk flood risk maps

5.2 Flood Risk Vulnerability

In accordance with Table 2: Flood risk vulnerability classification of the "Flood risk and coastal change" PPG, the proposed development is classified as "more vulnerable" due to the residential use of the building.

5.3 Sequential Test

The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. Where there are no reasonably available sites in Flood Zone 1, local planning authorities in their decision making should take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2 & 3 (areas with a medium or high probability of river or sea flooding), applying the Exception Test if required.

In accordance with Table 3 of the Planning Practice Guidance: Flood Risk and Coastal Change, development classified as 'more vulnerable' is allowed within flood zone 1. As expanded upon in the following sections of this report, the site is considered to be located in an area at low risk of flooding from all sources. Therefore, the sequential test is considered to be passed.

5.4 Exception Test

The proposed development site is classified as "more vulnerable" and in accordance with Table 3 of the Planning Practice Guidance: Flood Risk and Coastal Change, passes the sequential test and therefore does not have to pass the Exception Test.

6. Sources of Potential Flooding

6.1 Fluvial and Tidal Flooding

The development site is located entirely within flood zone 1, defined as ‘land having a less than 0.1% (1:1000) annual probability of river flooding’.

Therefore, the risk of the development flooding from rivers and sea is **very low**.

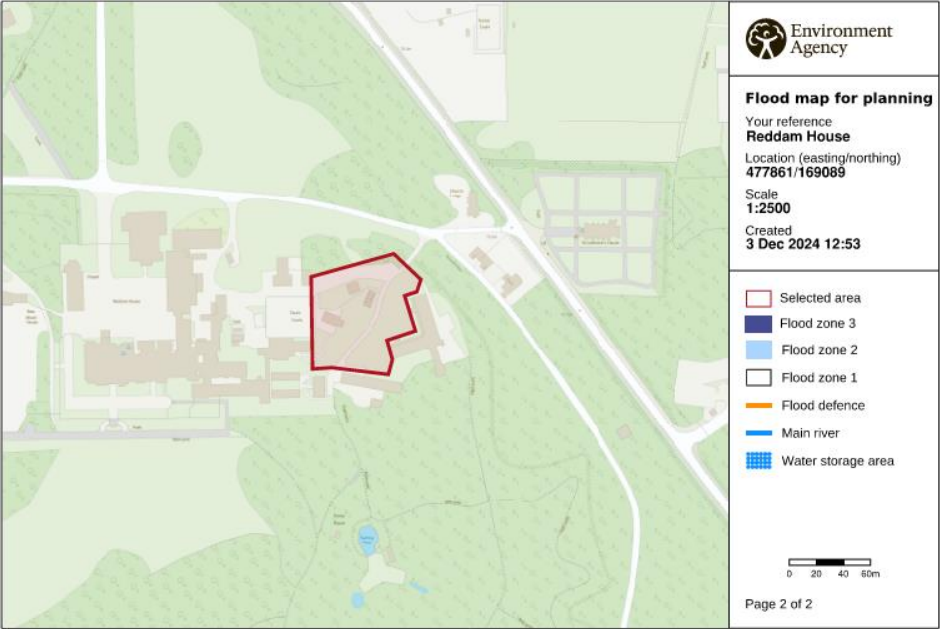


Figure 4: EA Flood map for planning

6.2 Surface Water Flooding and Overland Flow

Overland rainwater flows occur when the infiltration capacity of land or the drainage capacity of a local sewer network is exceeded. The extents of overland flooding will depend upon the rainfall event, the degree of saturation of the soil, the permeability of soils and the topography of the site.

Review of the GOV.uk flood risk from surface water map indicates that the majority of the site is at ‘very low’ risk of surface water flooding, with a small area in the west of the site at ‘low’ risk.

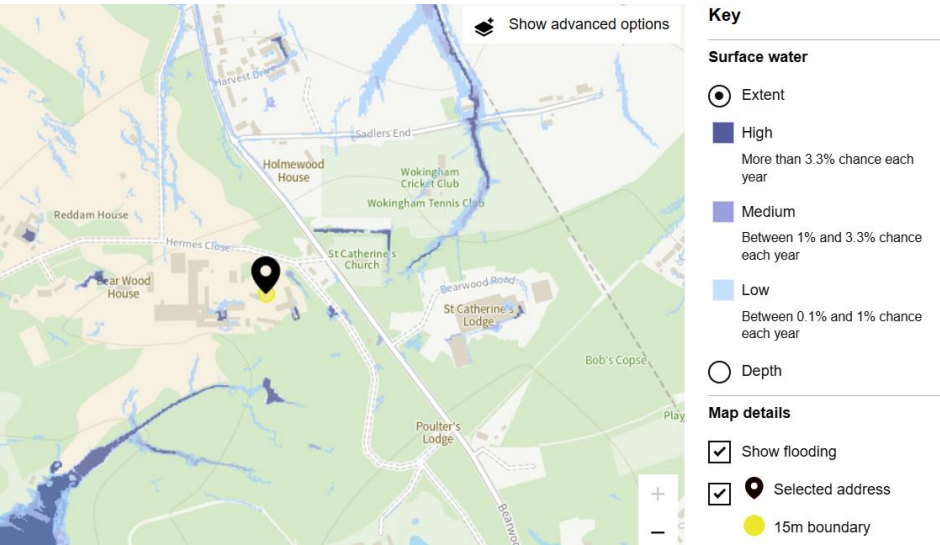


Figure 5: GOV.UK Surface water flood risk map

The proposed surface water drainage network for the development is to be designed to accommodate the 1 in 100 year + 40% climate change allowance event without flooding. The proposed levels will be designed to route surface water away from building edges, providing resilience to flooding from overland flow. Please refer to **Appendix C** for Overland Flow Routes for Exceedance Events Plan.

After review of the relevant information, the risk of flooding from overland surface water flow is considered to be **low**.

6.3 Groundwater Flooding

Groundwater flooding can occur following an extended prolonged period of low intensity rainfall. The future risk from this source is more uncertain than surface water as the climate change predictions indicate that although sea levels will rise, thus possibly raising groundwater levels, overall summer rainfall will decrease, therefore having a long-term effect of lowering the groundwater levels. However, long periods of wet weather are predicted to increase, and these are the type of weather patterns that can cause groundwater flooding to occur.

The BGS maps indicate that the ground conditions for the proposed site may consist of London Clay Formation (clay, silt and sand) bedrock.

Three historic boreholes have been recorded to the west of the site. Groundwater was struck at 115ft (35m) below well top in borehole SU76NE24.

Based on the Areas Susceptible to Groundwater Flooding Map within the Wokingham Borough Council LFRMS, the site is located within an area defined as being <50% susceptible to groundwater flooding. Refer to Appendix C for Flood Risk Maps.

The proposed structure will be newly constructed with fully waterproof construction techniques where required in line with NHBC Standards, Chapter 5.4 and BS18102.

Based on the above the risk of flooding from groundwater is considered to be **low**.

6.4 Flooding from Artificial Waterbodies

Reservoir Flooding

The consequence of flooding occurring as a result of reservoir failure is considered to be significant, as it can result in rapid inundation which can quickly obstruct emergency egress routes.

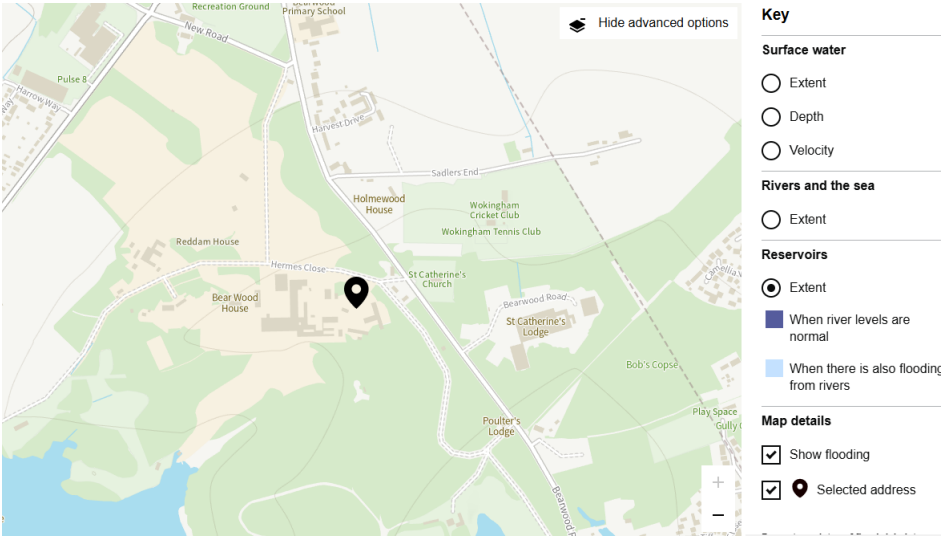


Figure 6: GOV.UK Flood risk from reservoirs map

Review of the GOV.uk flood risk from reservoirs map indicates that the site is located outside of the reservoir Flood Risk Zone.

Following review of the relevant information, the risk of flooding from artificial water bodies is considered to be **low**.

Waterway/Canal Flooding

There are no artificial waterways or canals within the vicinity of the site.

6.5 Infrastructure Failure and Sewer Flooding

Water Main Failure

In the event of water main failure, and water flooding would follow topographic falls and drain away from the existing buildings to areas of soft landscaping or the private drainage network. All new site access points will be designed so that levels fall away from the building, with threshold drainage provided.

Public Sewer Failure

Public sewer records have been obtained from Thames Water; these are included within **Appendix D**. These show that the wider area is served by a network of separate surface and foul water sewers, although there are no public sewers near to the site.

Thames Water are responsible for operating and maintaining their sewer infrastructure, therefore the likelihood of surcharge due to blockages is expected to be low.

Private Drainage

The proposed foul and surface water drainage networks are proposed to drain to the existing private drainage network via gravity. A CCTV survey of the existing drainage, from connection point to outfall, is to be carried out prior to construction to confirm the location, size and condition of the existing network. Any existing drainage found to be in an unsuitable condition is to be remediated or replaced prior to connection of the proposed development drainage.

The proposed surface water drainage network for the development is to be designed to accommodate the 1 in 100 year + 40% climate change allowance event without flooding.

As a result, the risk of flooding from infrastructure and sewer failure is considered to be **low**.

7. Conclusion

The development site is located entirely within flood zone 1, defined as ‘land having a less than 0.1% (1:1000) annual probability of river flooding’.

A review of all other potential sources of flooding has found the site to be at low risk, providing a suitable drainage scheme is in place. It is considered that the information provided within this report satisfies the requirements of the National Planning Policy Framework, London Plan and local policy.

Appendices

Appendix A – Topographical Survey

Appendix B – Flood Risk Maps

Flood map for planning

Your reference
Reddam House

Location (easting/northing)
477861/169089

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Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following:**

- bigger than 1 hectare (ha)
- In an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

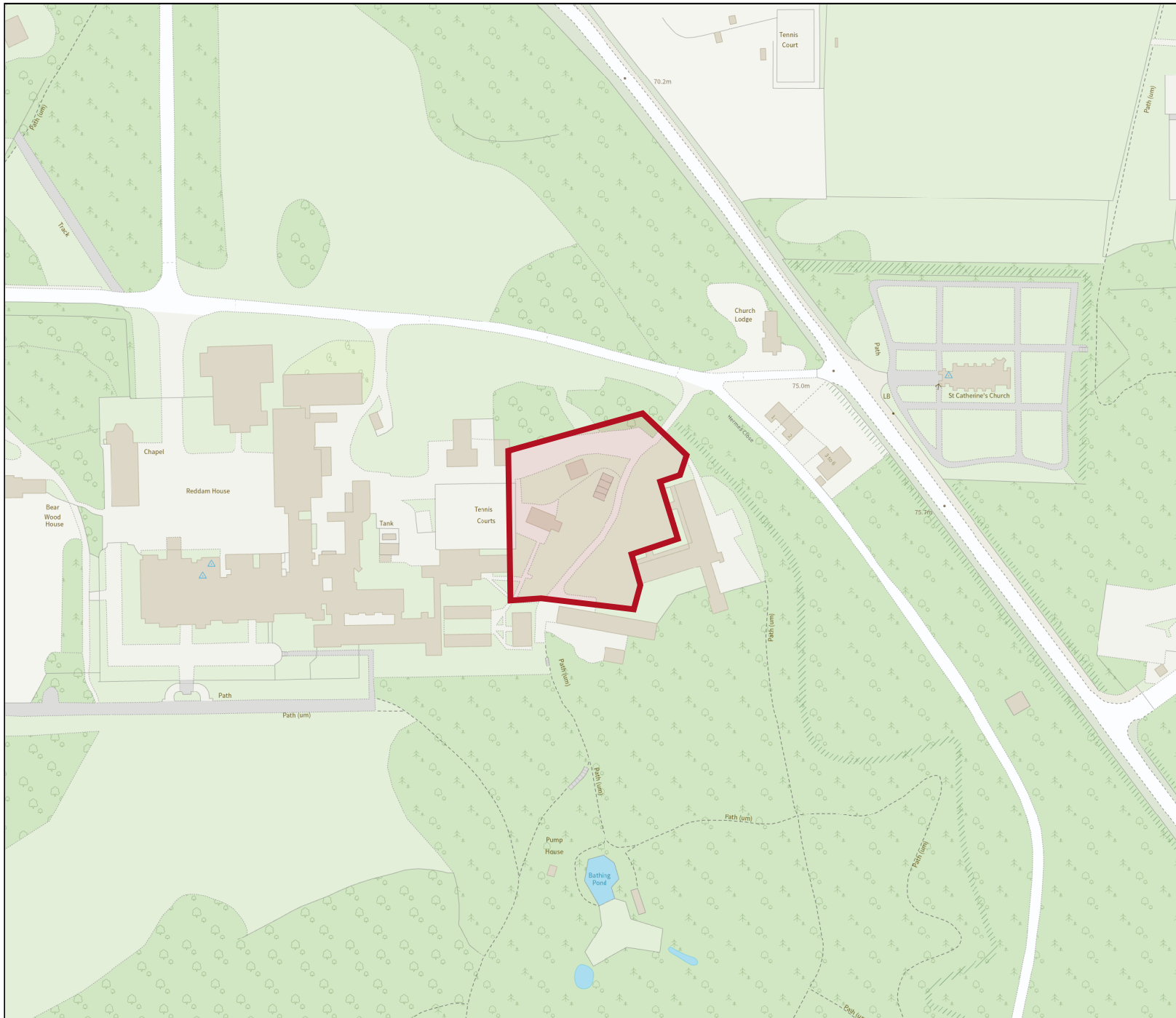
Notes

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

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

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Flood map for planning

Your reference
Reddam House

Location (easting/northing)
477861/169089

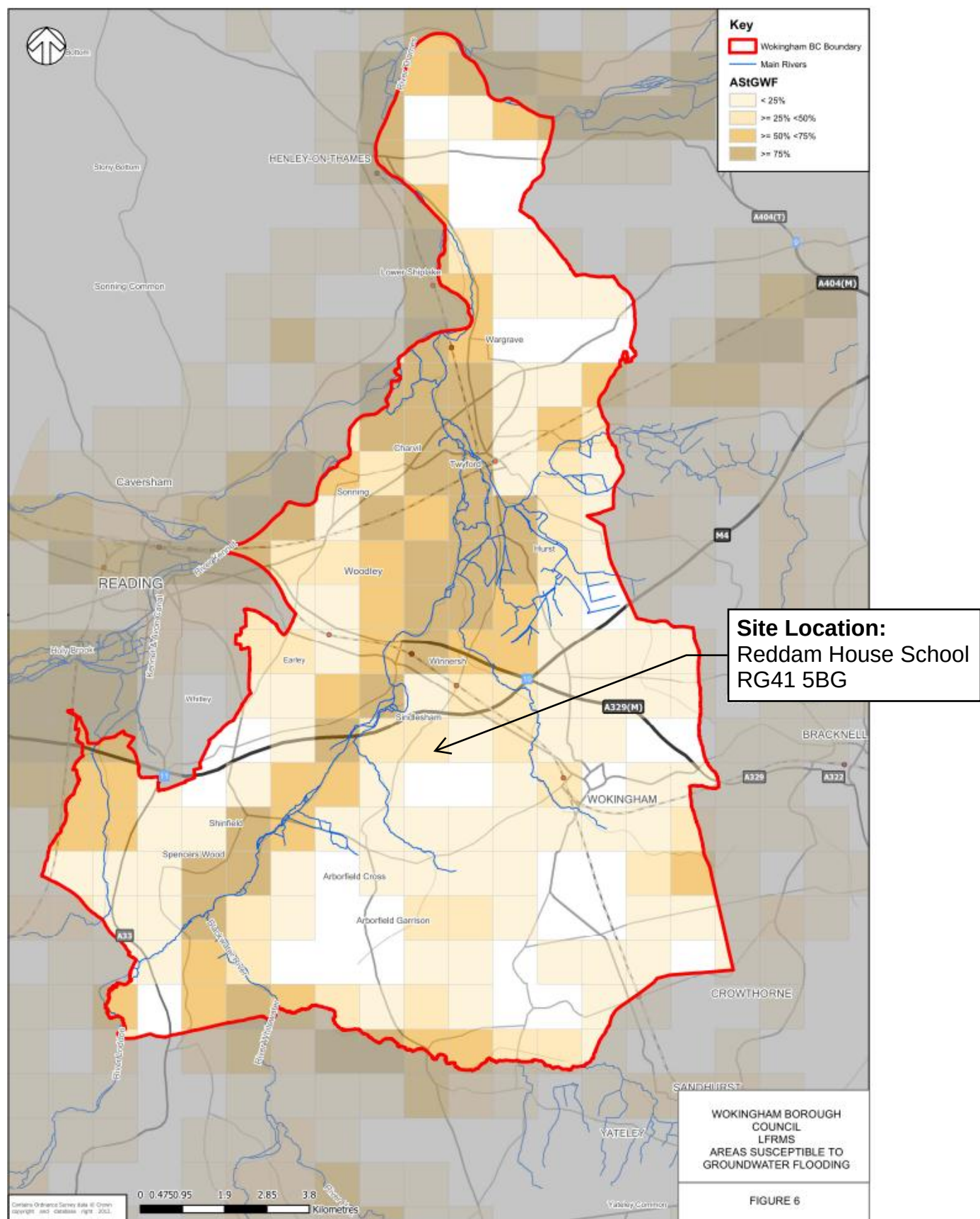
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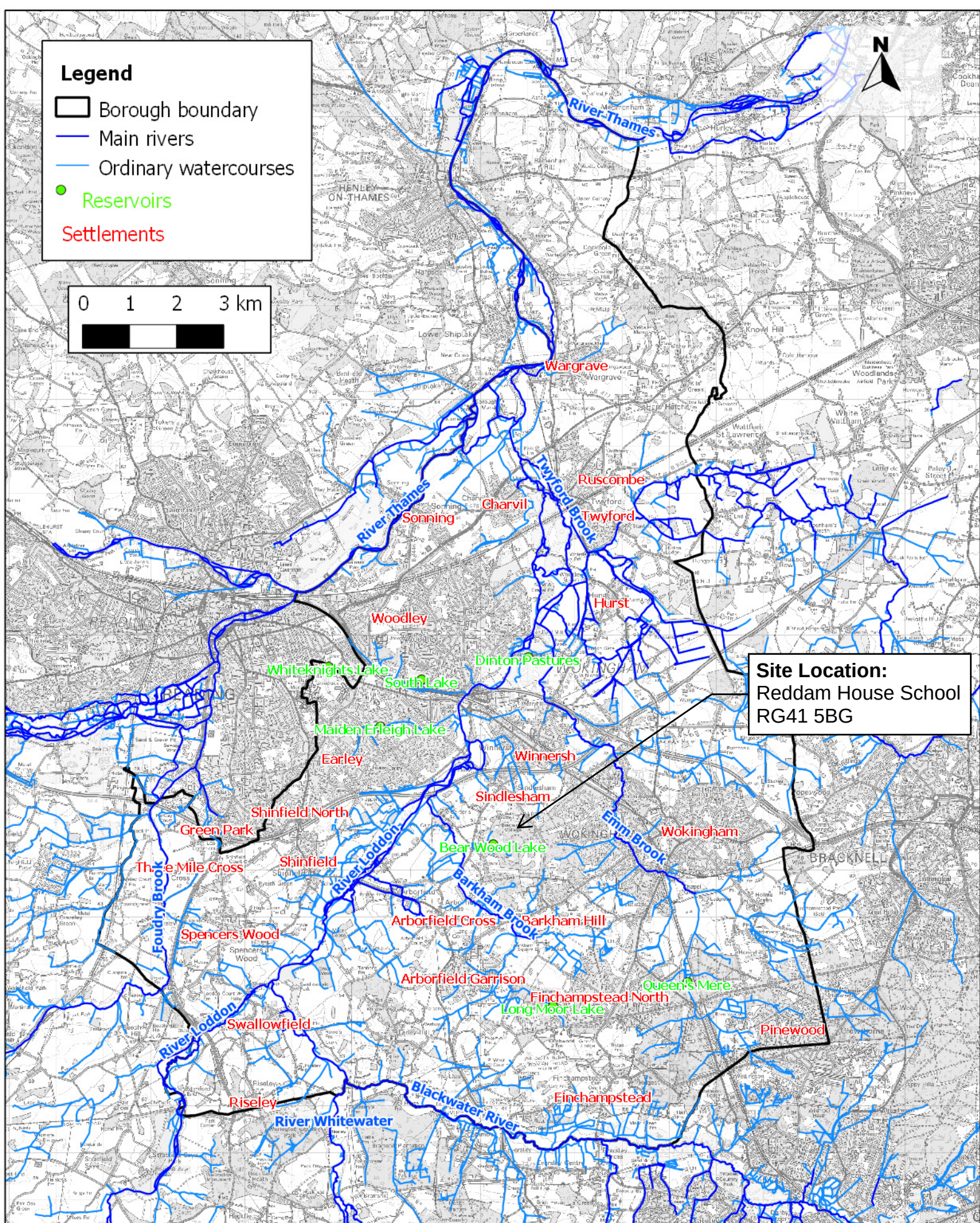
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-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area


0 20 40 60m

Figure 6. Areas Susceptible to Groundwater Flooding in Wokingham Borough





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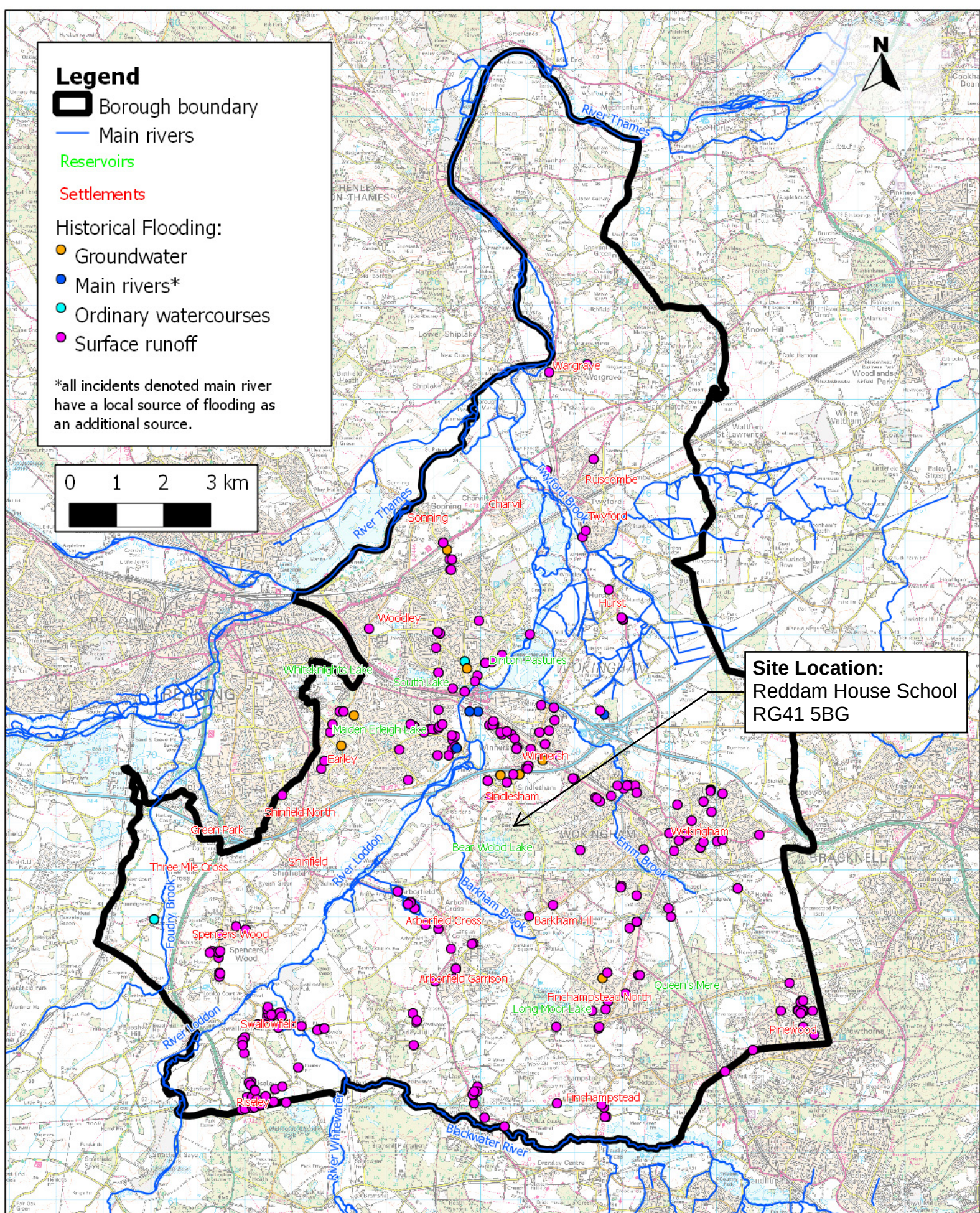
Figure 2-1: Study Area

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Checked by: BV

Revision: 3
Date: 10/06/11

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Figure 5-1: Historical flooding incidents from local sources of flooding

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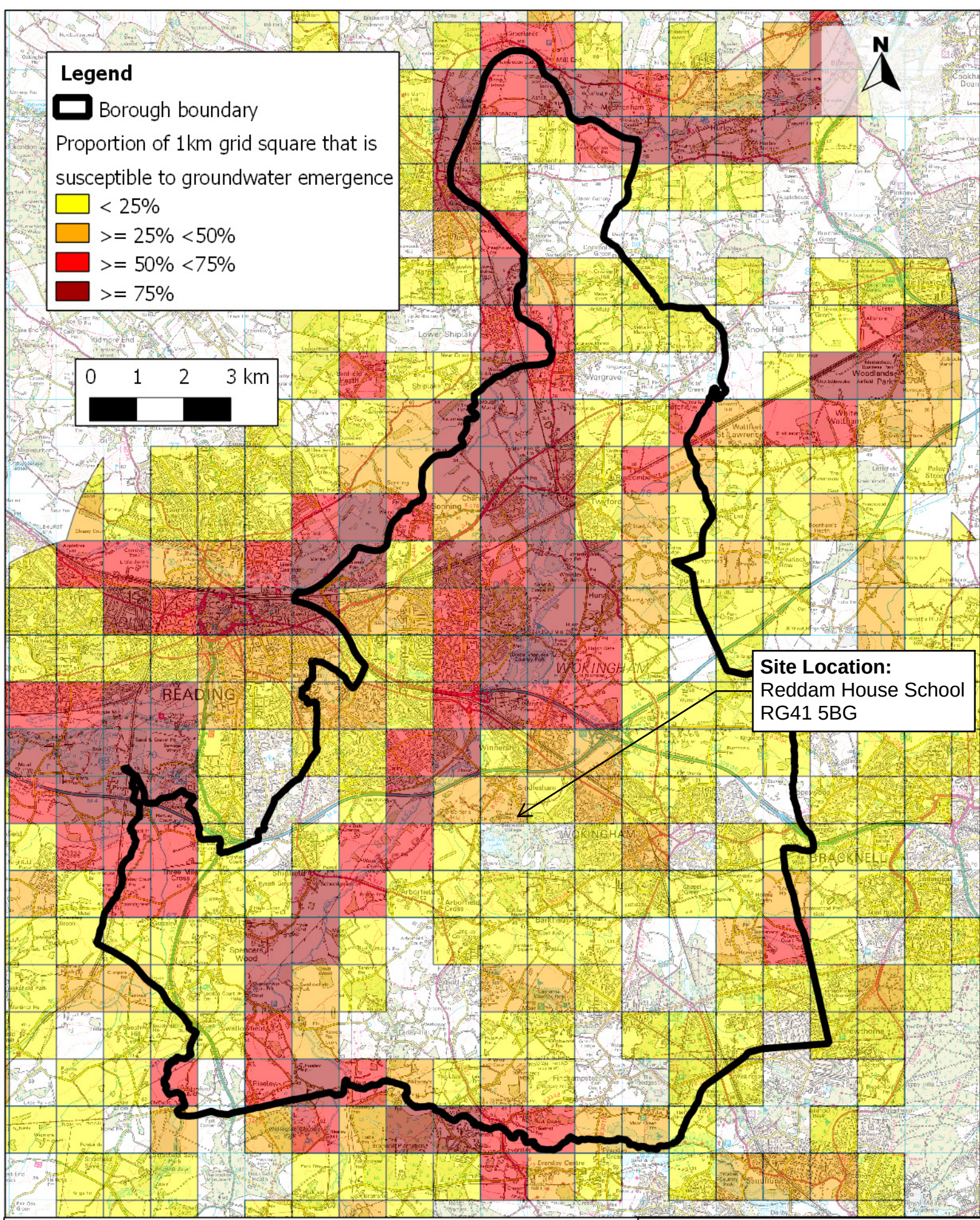
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Figure 6-2: Areas susceptible to groundwater flooding – proportion susceptible

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