



76 Staines Road

- Extension to Existing Outbuilding

Flood Risk Assessment

Job Number: 1382

Date	Version	Notes/Amendments
September 2023	1	Issued for Information

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Acronyms	
AOD	Above Ordnance Datum
CIRIA	Construction Industry Research and Information Association
EA	Environment Agency
SFRA	Strategic Flood Risk Assessment
NPPF	National Planning Policy Framework
PPG	Planning Practice Guidance

Introduction

Flume Consulting Engineers have been appointed to undertake a Flood Risk Assessment for the proposed development at 76 Staines Road, Wraysbury, TW19 5BS.

This FRA has been carried out in accordance with the National Planning Policy Framework (NPPF) and the Planning Practice Guidance 'Flood Risk and Coastal Change'. This FRA also incorporates advice and guidance from the Environment Agency (EA), the Strategic Flood Risk Assessment (SFRA) produced by Royal Borough of Windsor and Maidenhead and CIRIA documents.

The EA's indicative floodplain map shows that the site is located in Flood Zone 3. Our assessment will therefore focus on the flood risk to the site from watercourses as well as from other sources.

Site Description and Location

The existing building comprises a single storey detached outbuilding. Hardstanding areas surround the building including soft landscaped areas to the front of the building.

The existing building resides to the west of Staines Road, and the surrounding area is occupied entirely by similar dwelling types.

The Cole Brook runs east of the development, and the River Thames (Cookham to Egham) and a small ordinary watercourse to the west. These main watercourses appear to be the primary source of flood risk associated with the development.

The site postcode is TW19 5BS and the OS grid reference is TQ 00431 73604.

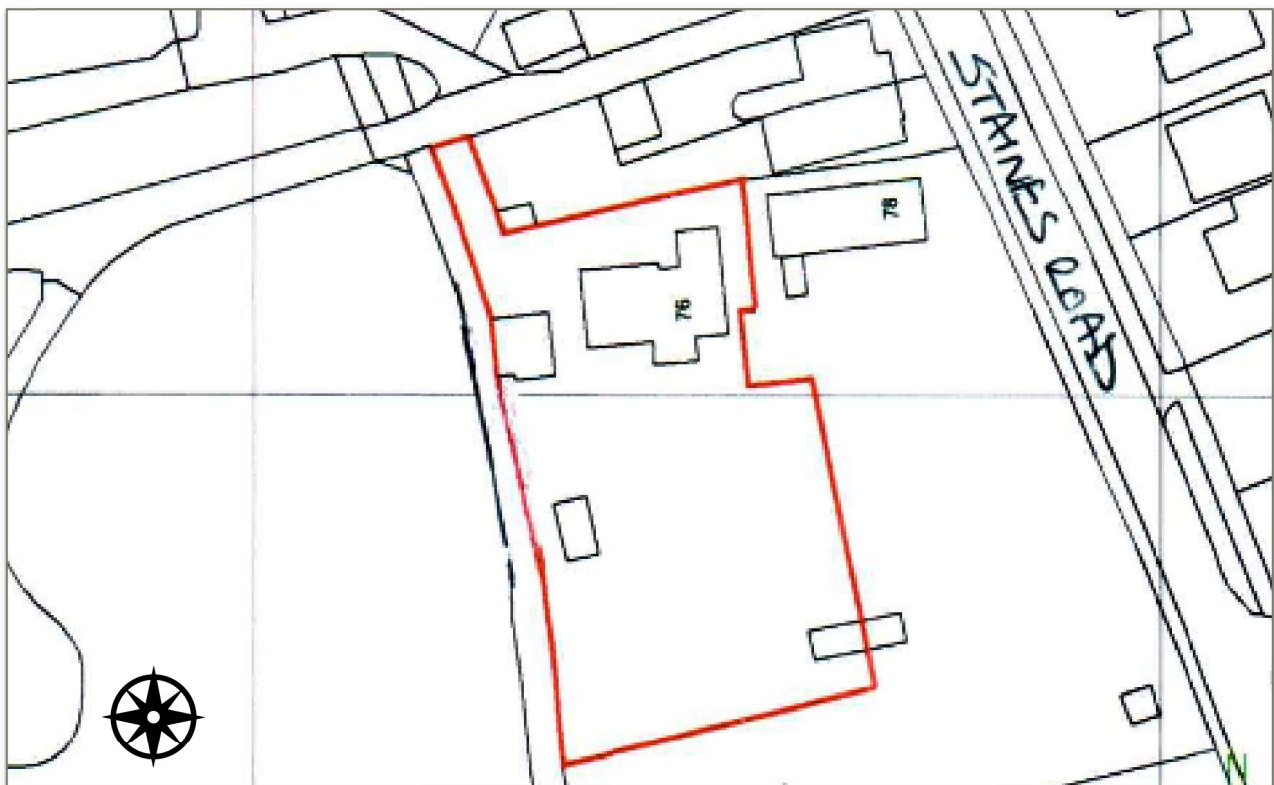


FIGURE 1. SITE LOCATION

Development Proposal

The proposals are for a small garage extension and the introduction of an additional storey to allow for a new home office space. The proposed garage extension is wholly concealed from the street view being contained within a courtyard adding approximately 25m² of new internal floorspace.

This extension will be constructed over the existing hard paved area. The ground floor extension will be finished throughout to the same floor level as the existing ground floor, and will be accessed via the main entrance. Vehicular and pedestrian street access will remain unaffected.



FIGURE 2. EXISTING AND PROPOSED SITE PLAN

Flood Risk Assessment

Flood Risk from Watercourses

The EA's indicative floodplain map shows that the site is located in Flood Zone 3 and is at risk of flooding from a combination of the *River Thames* and the *Colne Brook*, and as such the Local Planning Authority has requested a site specific Flood Risk Assessment to be carried out. Land in Flood Zone 3 is assessed as having annual probability of river flooding greater than 1%. The EA's indicative fluvial/tidal flood risk maps, Figure 3, does not suggest that the site is located in an area which benefits from flood defences. However, the EA's website also states that not all defences are shown on the map.

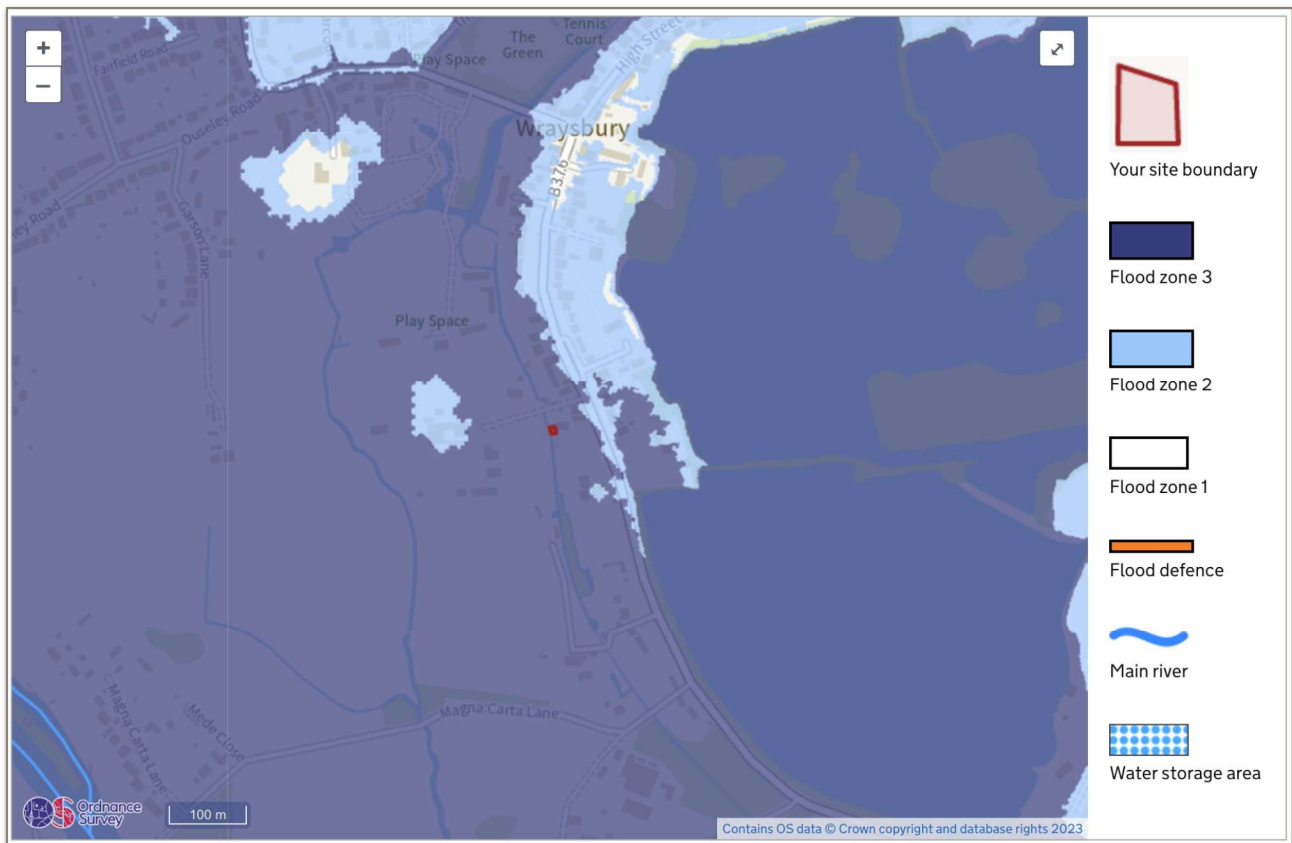


FIGURE 3. ENVIRONMENT AGENCY FLOOD RISK FROM RIVERS OR SEA MAP (GOV.UK, 2023)



FIGURE 4. FLOOD WARNING AREAS (EA, 2023)

The FFL of the ground floor extension will remain the same as the existing ground floor FFLs. These proposals are in accordance with the EA's Standing Advice¹, which states that floor levels within the proposed development should be set no lower than existing levels, and flood proofing should be incorporated in order to protect the extension from flooding.

¹ <https://www.gov.uk/guidance/flood-risk-assessment-standing-advice>

Flood Risk from Groundwater

A ground investigation report was not available at the time of writing this report. The British Geological Survey (BGS) Map indicates superficial deposits of Shepperton Gravel Member - Sand and Gravel underlay the site. The London Clay Formation - Clay, Silt and Sand, forms the bedrock geology.

The DEFRA/EA's 'Groundwater Vulnerability Maps' indicate a *medium-low* risk of groundwater flooding in the area, Figure 5.

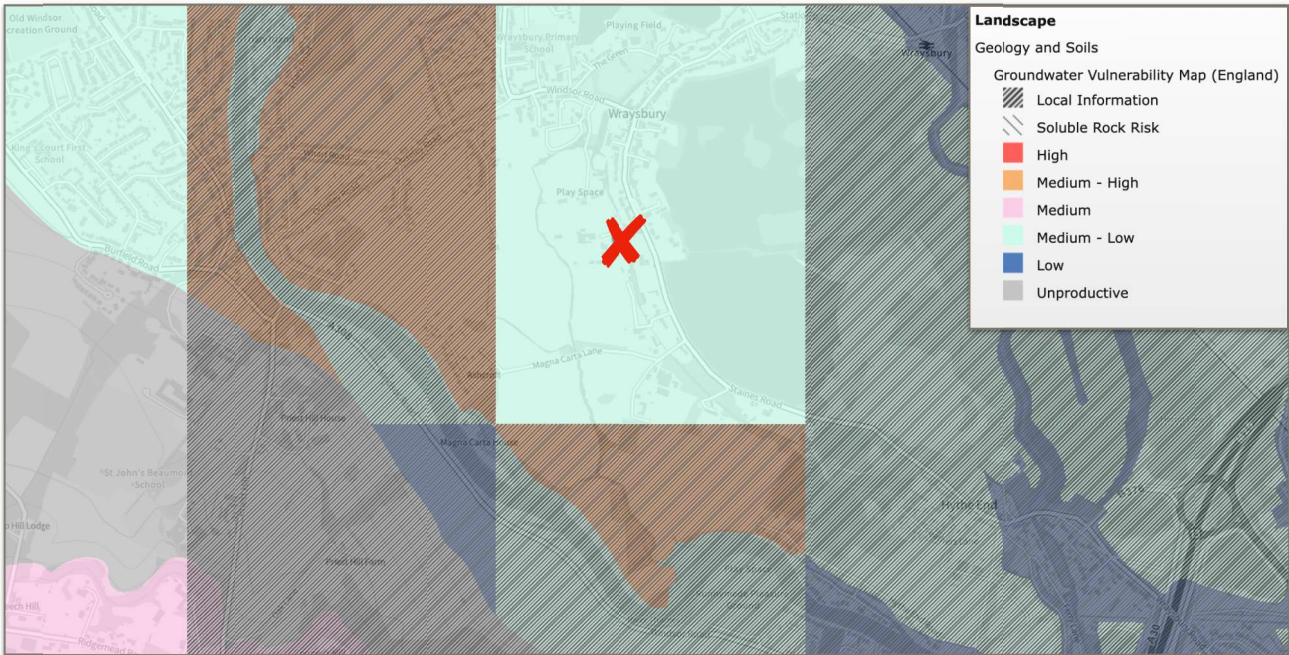


FIGURE 5. DEFRA'S GROUNDWATER VULNERABILITY MAPS (MAGIC, 2023)

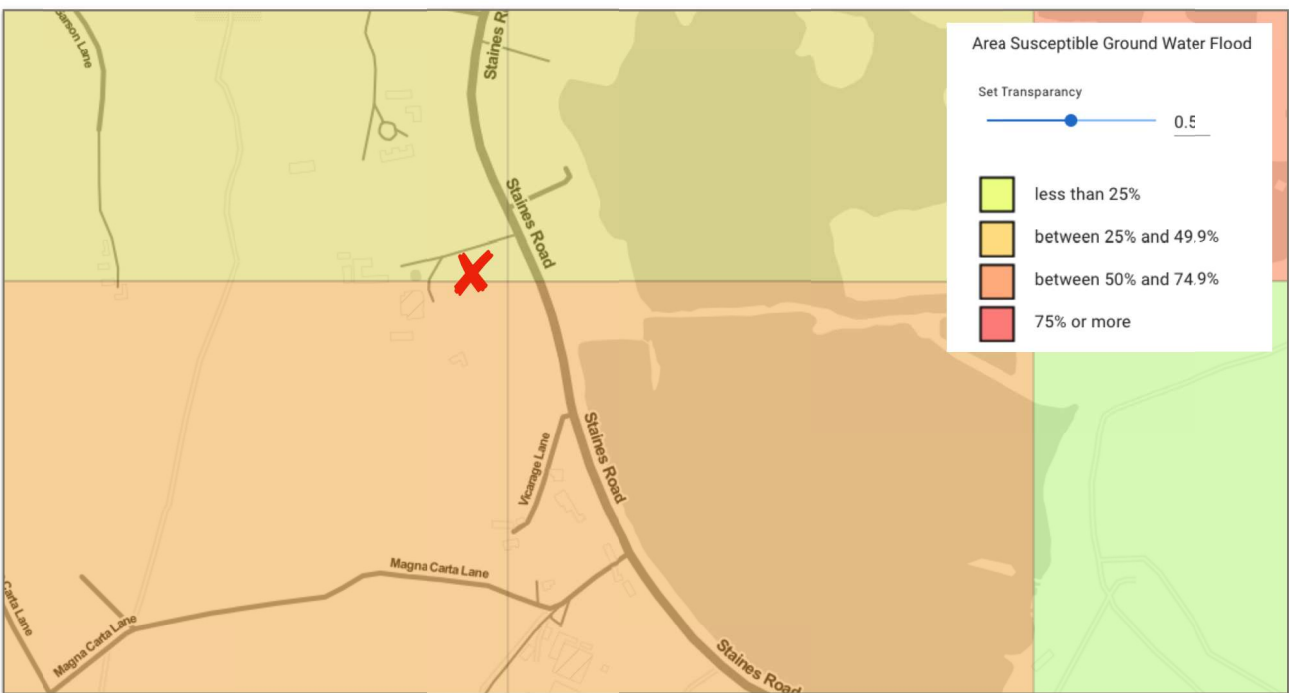


FIGURE 6. AREAS SUSCEPTIBLE TO GROUNDWATER FLOODING (SFRA, 2017)

Detailed flood mapping for groundwater flooding is not available, and classifications only supplemented with information in a resolution of 1km² areas. According to the '*Areas Susceptible to Groundwater Flooding*' map provided in the SFRA (Figure 6), the site resides in a region of 25-50% susceptibility of flooding. *Areas Susceptible to Groundwater Flooding* (AStGWF) is a strategic scale map showing where groundwater flooding could occur on a 1km square grid. It shows the proportion of each 1km grid square where geological and hydrogeological conditions show that groundwater flooding could occur. The susceptible areas are represented by one of four categories showing the proportion of each 1km square that is susceptible to groundwater emergence. It does not show the likelihood of groundwater flooding occurring.

These groundwater maps consider very large areas of the underlying geology, and can be challenging to appreciate any subtle shifts in local geology and ground levels. Furthermore, groundwater flooding is an important consideration for subterranean basements, however, the proposed development is a small rear extension. Furthermore, there are no recorded instances of flooding relating to groundwater in the vicinity of the proposed site, indicating that the flood risk from groundwater is low.

Groundwater flooding as a sole source is deemed to be relatively low risk to the site. Furthermore, any adjustment in external proposed levels will be designed to ensure surface water is directed away from building thresholds, should groundwater migrate to surface level.

Flood Risk from Surface Water and Overland Flows

Surface water flooding occurs when intense rainfall is unable to infiltrate into the ground or overwhelms the drainage system. This surface water runs across the surface of the ground causing flooding. Overland flows can also be generated by burst water mains, failed dams and any failure in a system storing or transferring water.

The EA's indicative Surface Water Flooding Map, Figure 7, shows that the proposed site is at “very low” risk of surface water flooding.

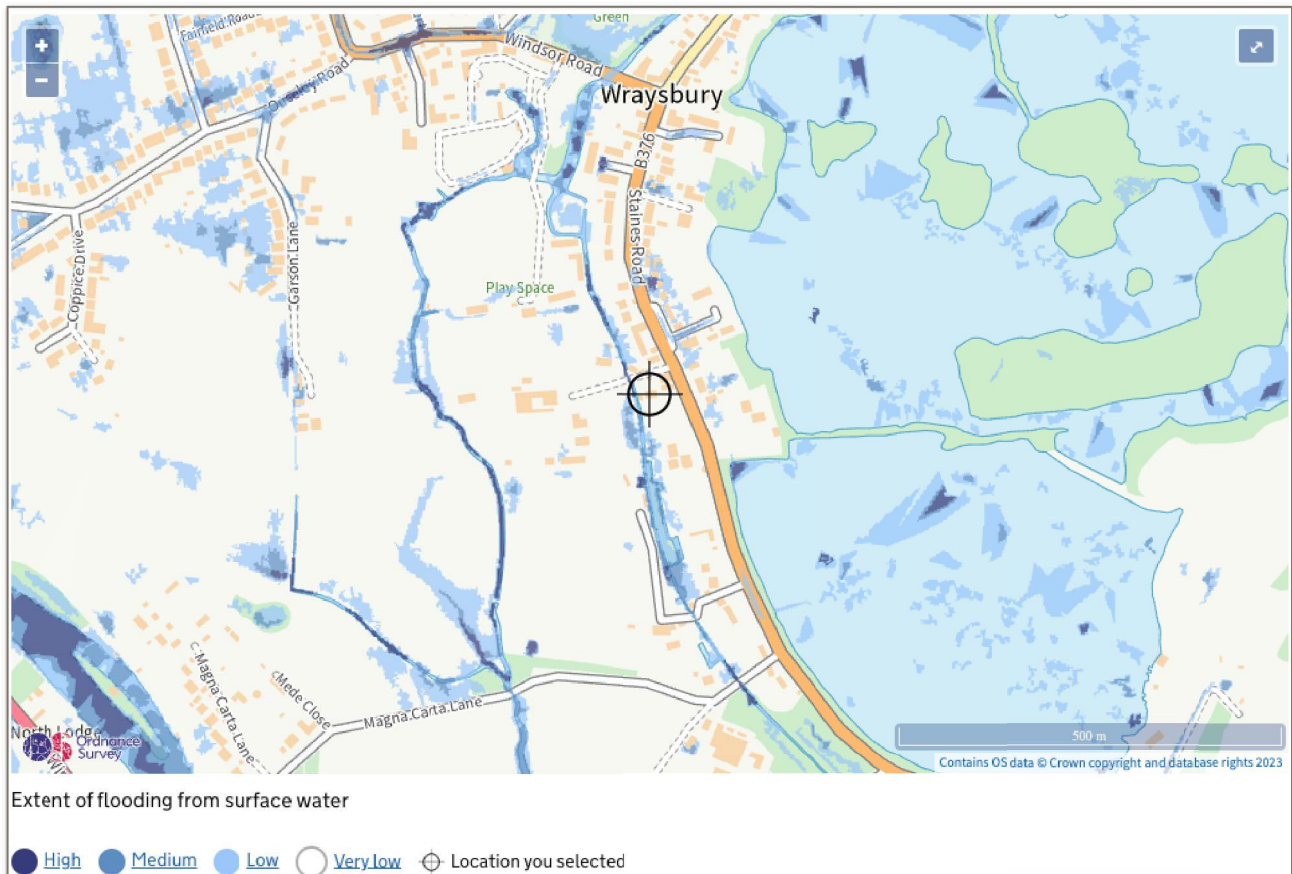


FIGURE 7. ENVIRONMENT AGENCY FLOOD RISK FROM SURFACE WATER MAP (GOV.UK, 2023)

The majority of the development is at “Very Low” risk of surface water flooding. *Very Low* risk means that each year this area has a chance of flooding of less than 0.1%. The map also shows that the building itself is in a region of *Very Low* risk of surface water flooding, which means that each year this area has a chance of flooding of less than 0.1%.

External ground levels immediately outside of the proposed extension should fall away from the building thresholds, ensuring the minimisation of storm water ingress. This can be achieved by either reducing the external ground levels below internal floor levels, and/or incorporating channel drainage system along the entrance into the building to positively drain overland flows. Furthermore, as part of the proposed development works, permeable paving and other SuDS features should be promoted within the design.

It is proposed that the Finished Floor Level (FFL) of the ground floor extension remains the same as the existing ground floor FFLs, ensuring that low laying areas are not created toward the building. Additionally, ground levels on site will be encouraged to fall away from the building thresholds and positively drained.

The additional surface water drainage provisions will be utilised in the form of channel drainage to all thresholds and slopes away from the building from all hardstanding areas. Therefore, the risk from surface water flooding is considered low.

Flood Risk from Reservoir Failure

The EA's information states that reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. The Reservoir Act of 1975 ensures that reservoirs are inspected regularly and essential safety work is carried out.

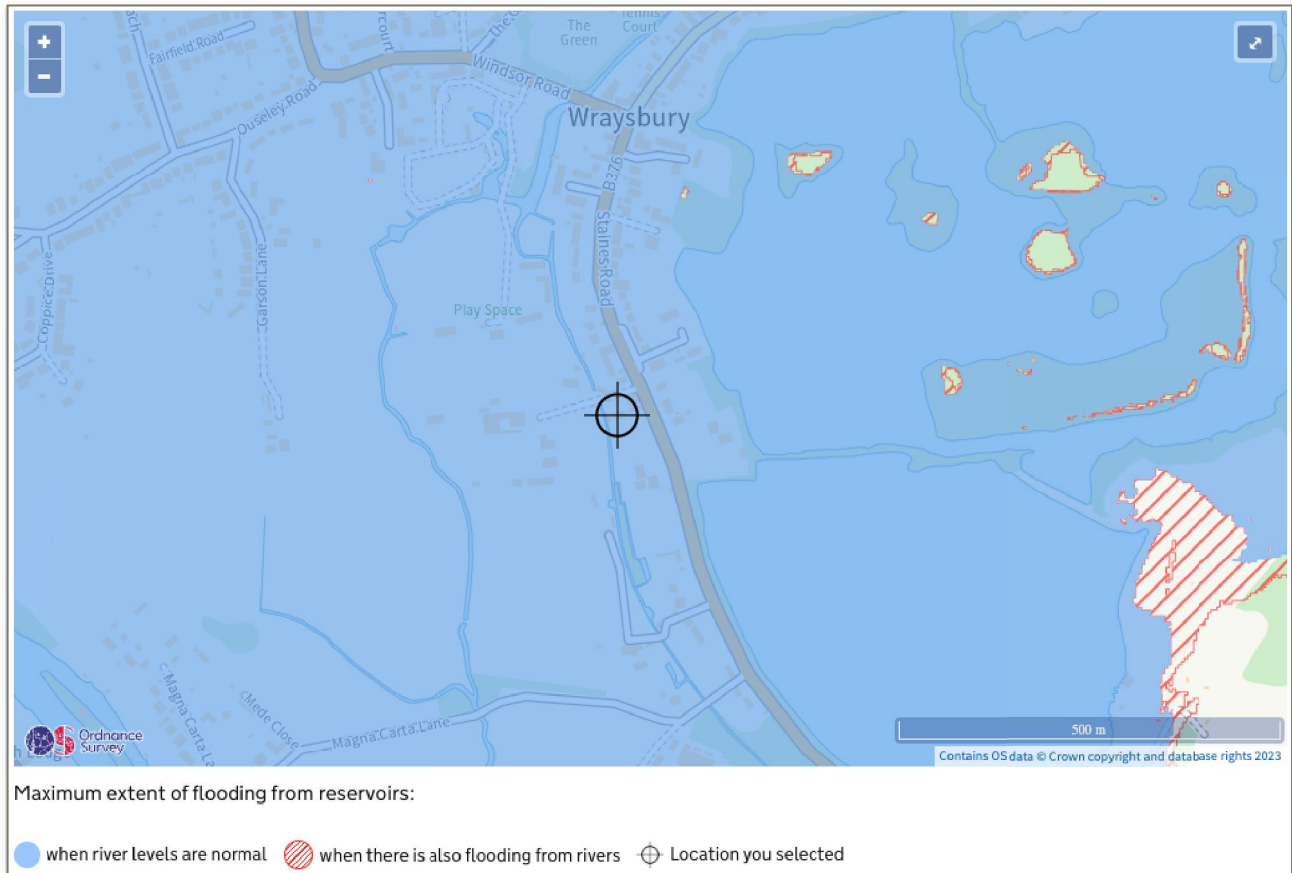


FIGURE 8. ENVIRONMENT AGENCY FLOOD RISK FROM RESERVOIRS MAP (GOV.UK, 2023)

The Environment Agency dataset ‘Risk of Flooding from Reservoirs’ identifies areas that could be flooded if a large reservoir was to fail and release the water it holds. The site is identified as having the potential to be inundated should a reservoir fail (Figure 8).

Reservoirs in the UK have an extremely good safety record. The Environment Agency is the enforcement authority for the Reservoirs Act 1975 in England and Wales. All large reservoirs must be inspected and supervised by reservoir panel engineers. It is assumed that these reservoirs are regularly inspected and essential safety work is carried out. These reservoirs therefore present a minimal risk.

Flood Evacuation Plan

- I. The proposed development is located within Flood Zone 3 and is at risk of fluvial flooding, however the site benefits from the presence of formal flood defences.
- II. Residents/tenants responsible for the Flood Plan should be registered to EA flood alerts, as these are important to enable safe flood evacuation of the site.
- III. A primary evacuation route has been identified. This route should be explained to residents/tenants and displayed in the proposed dwelling, all common areas and adjacent to entrances to the building (if applicable).
- IV. A contact list should be established by the site owner and regularly updated with changes in tenancy.
- V. A flood kit must be prepared and regularly checked.
- VI. It is recommended that further information is downloaded through the following link and distributed to residents of the site, and to advise residents of arrangements before a flood occurs: <https://www.gov.uk/government/publications/flooding-what-to-do-before-during-and-after-a-flood>
- VII. If not already listed, it is recommended that the property is registered with the EA's Flood Warning Service. If you are unsure and/or you wish to register for this free service please contact Floodline Warning Service. Floodline is a free service operated by the EA that provides flood warnings direct to occupants by telephone, mobile phone etc. The EA is responsible for monitoring flood events and for issuing warnings to people in properties and businesses at risk of flooding. To fulfil their responsibilities, the EA operates a coded warning system. This is a four-stage warning system and each stage will trigger a set of procedures for the various emergency services. This warning system is outlined below.

ONLINE FLOOD RISK FORECAST

Meaning

Be aware.
Keep an eye on the weather situation.

General advice

- Check weather conditions.
- Check for updated flood forecasts on the Environment Agency website.



FLOOD ALERT

Meaning

Flooding is possible
Be prepared.

General advice

- Be prepared to act on your flood plan.
- Prepare a flood kit of essential items.
- Monitor local water levels and the flood forecast on our website.



FLOOD WARNING

Meaning

Flooding is expected.
Immediate action required.

General advice

- Move family, pets and valuables to a safe place.
- Turn off gas, electricity and water supplies if safe to do so.
- Put flood protection equipment in place.



SEVERE FLOOD WARNING

Meaning

Severe flooding.
Danger to life.

General advice

- Stay in a safe place with a means of escape.
- Be ready should you need to evacuate.
- Co-operate with the emergency services.
- Call 999 if you are in immediate danger.

WARNING NO LONGER IN FORCE

Meaning

No further flooding is currently expected in your area.

General advice

- Be careful. Flood water may still be around for several days.
- If you've been flooded, ring your insurance company as soon as possible.

Flood Mitigation Measures

The extension is approximately 25m² in size. The proposed garage extension will not increase the flood risk to the building users, as it will not change the use of the development or introduce more people into a flood risk area. The extension will also be used for vulnerable uses only with a safe refuge available in the upper floors; benefitting the safe escape and refuge for site users compared with the existing scenario. The building will not be used for sleeping accommodation. Therefore, the development should be acceptable without providing any mitigation measures.

It is proposed that the Finished Floor Level (FFL) of the ground floor extension remains the same as the existing ground floor FFLs. These proposals are in accordance with the EA's Standing Advice², which states that floor levels within the proposed development should be set no lower than existing levels, and flood proofing should be incorporated in order to protect the extension from flooding. Furthermore, it is proposed flood resilient³ materials will be used for flooring and on the walls up to minimise the potential for damage, in the event flood water impacts the ground floor. Flood resilient fittings should be used to at least 0.1m above the design flood level.

It is recommended the building include flood resilience measures in the design, in accordance with the SFRA. Therefore, to further reinforce the flood resilience of the building, any new construction works at ground level should include an appropriate damp proof membrane. All drainage systems should be routinely maintained to reduce the risk of blockage and surface water flood risk. Furthermore, it is proposed flood resilient⁴ materials will be used for flooring and on the walls at ground floor level to minimise the potential for damage, in the unlikely event of flood water inundating the building footprint.

If not already listed, it is recommended that the property is registered with the EA's Flood Warning Service. If you are unsure and/or you wish to register for this free service please contact Floodline Warning Service. Floodline is a free service operated by the EA that provides flood warnings direct to occupants by telephone, mobile phone etc. The EA is responsible for monitoring flood events and for issuing warnings to people in properties and businesses at risk of flooding.

² <https://www.gov.uk/guidance/flood-risk-assessment-standing-advice>

³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7730/flood_performance.pdf

⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7730/flood_performance.pdf

Conclusions

The National Planning Policy Framework (NPPF) states that minor developments such as householder developments are unlikely to raise significant flood risk issues. The FRA has further demonstrated that the proposed outbuilding extension has an acceptable flood risk within the terms and requirements of NPPF and accompanying technical guidance.

The FFL of the ground floor extension will remain the same as the existing ground floor FFLs. These proposals are in accordance with the EA's Standing Advice, which states that floor levels within the proposed development should be set no lower than existing levels, and flood proofing should be incorporated in order to protect the extension from flooding.

If not already listed, it is recommended that the property is registered with the EA's Flood Warning Service.

The FRA has further demonstrated that the proposed development has an acceptable flood risk within the terms and requirements of the NPPF and accompanying technical guidance.

Note:

This report has been prepared for the purposes of submitting for planning to the local planning authority for review in relation to the associated flood risk for the proposed development, and uses the most up-to-date information available to us at the time. It should not be relied upon by anyone else or used for any other purpose. This report is confidential to our Client; it should only be shown to others with their permission. We retain copyright of this report which should only be reproduced with our permission.

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