17 Lynhurst Crescent

Flood Risk Assessment

Job Number: 1548

Date	Version	Notes/Amendments
October 2024	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

Executive Summary

This Flood Risk Assessment (FRA) has been prepared to support the proposed single-storey outbuilding at 17 Lynhurst Crescent, Uxbridge, within Flood Zone 2. The development, intended as a gym and office, is located near the Yeading Brook, a key influence on the site's flood risk designation. This FRA evaluates fluvial, surface water, groundwater, and reservoir-related flood risks, in compliance with the National Planning Policy Framework (NPPF), Planning Practice Guidance (PPG), and West London Strategic Flood Risk Assessment (SFRA).

Modelled flood data confirms that the site is not affected by a 1 in 100-year flood event, even with a 20% climate change allowance—a conservative measure that enhances resilience against potential future flood levels. Surface water flood risk is classified as low to medium, while groundwater and reservoir risks are minimal.

To ensure further flood resilience, the development will include the following measures:

- A Finished Floor Level (FFL) 150mm above existing ground level to minimise risk from surface water pooling;
- Flood-resilient construction materials, particularly in lower wall and floor sections;

Additionally, registration with the Environment Agency's Flood Warning Service is advised as a precautionary step.

This FRA concludes that the proposed development meets national and local flood risk policies, supporting a safe and sustainable outcome. The proposed mitigation measures ensure that the development will not increase flood risk to the site or neighbouring areas, providing a flood-resilient design aligned with best practice standards.

Introduction

Flume Consulting Engineers have been appointed to prepare a FRA for the proposed development at 17 Lynhurst Crescent, Uxbridge, UB10 9EF, within the London Borough of Hillingdon. The proposed development involves the construction of a single-storey rear outbuilding to serve as a gym and office space. This FRA has been prepared in compliance with the NPPF and the PPG on Flood Risk and Coastal Change, as well as the West London SFRA guidelines.

The site is located in an area covered by the West London SFRA, which includes flood risk assessments and management recommendations for the boroughs of Barnet, Brent, Ealing, Harrow, Hillingdon, and Hounslow. Given the minor development status of the project as a householder development, this assessment will examine flood risk to the site from all relevant sources, including fluvial, surface water, and groundwater flooding, and will outline necessary mitigation measures to manage potential flood risks effectively.

This FRA considers the identified flood zones, flood mitigation requirements, and relevant site-specific guidance to ensure compliance with both local flood risk policy and best practices, supporting the planning application for the proposed development.

Site Description and Location

The site is located at 17 Lynhurst Crescent, Uxbridge, UB10 9EF, within the London Borough of Hillingdon. The Ordnance Survey grid reference for the property is TQ 08450 84427. This area is part of a well-established suburban neighbourhood predominantly composed of semi-detached and terraced homes. Lynhurst Crescent itself is a residential road lined with mature trees, and the properties fronting the street have a mixture of hardstanding and landscaped garden areas. The site's rear boundary opens into a private garden area, enclosed by neighbouring gardens and fenced boundaries typical of suburban rear garden settings.

The property lies approximately 20 metres south of the Yeading Brook, a tributary of the River Crane, the main watercourse influencing flood risk in the area. The Environment Agency classifies this site as being within Flood Zone 2, indicating a medium probability of fluvial flooding with an annual flood probability of between 1% and 0.1%. This risk designation is largely due to the site's proximity to the Yeading Brook, which can influence local flood patterns, especially during significant rainfall events.

The site is not located within a conservation area, and there are no listed buildings nearby. The West London Strategic Flood Risk Assessment (SFRA) applies to the area, guiding local planning on flood resilience and management practices.

FIGURE 1. SITE LOCATION

Development Proposal

The proposed development consists of a single-storey rear outbuilding within the garden area of 17 Lynhurst Crescent, Uxbridge, UB10 9EF. This outbuilding will serve as a gym and office space for household use and will be situated on an existing hard-paved surface at the rear of the property. Utilising this pre-existing paved area ensures that the proposed development will not increase surface water flow rates or volumes, as there will be no additional impermeable surfaces created.

Given the minimal impact on surface water drainage, a Sustainable Drainage System (SuDS) or a comprehensive drainage strategy is not required as part of this report. The use of the existing hard-paved area supports maintaining current site drainage conditions without affecting the flood risk profile of the property or adjacent areas.

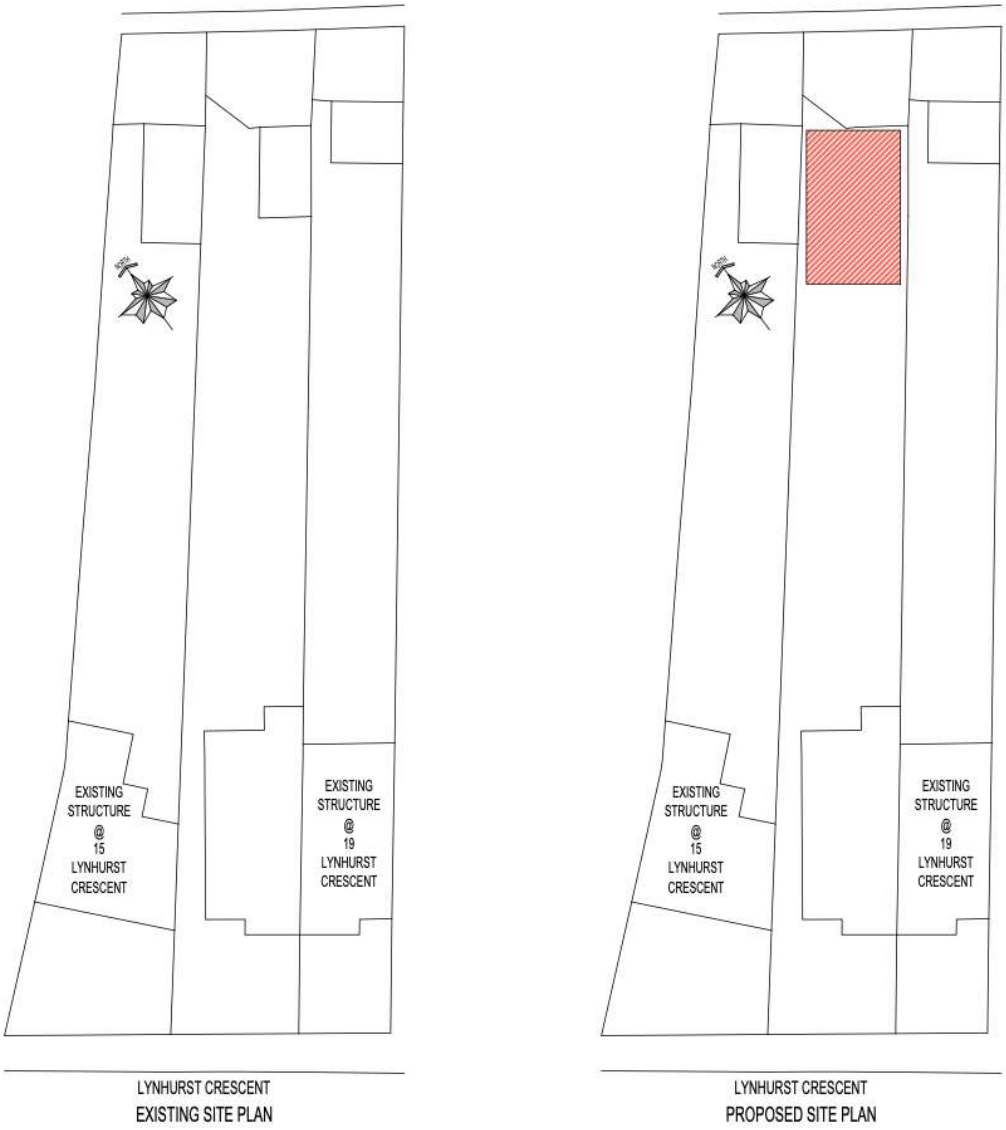

FIGURE 2. EXISTING AND PROPOSED SITE PLAN

Flood Risk Assessment

Flood Risk from Watercourses

The EA's indicative floodplain map shows that the site is located in Flood Zone 2 and is at risk of flooding from the *Yeading Brook~River Crane*, and as such the Local Planning Authority has requested a site specific Flood Risk Assessment to be carried out. Land in Flood Zone 2 is assessed as having annual probability of river flooding of between 0.1% and 1% (1 in 1000 year and 1 in 100 year return period). The EA's indicative fluvial/tidal flood risk maps, Figure 3, suggest that the site is located in an area which may benefit from flood defences, however the EA's website also states that not all defences are shown on the map.

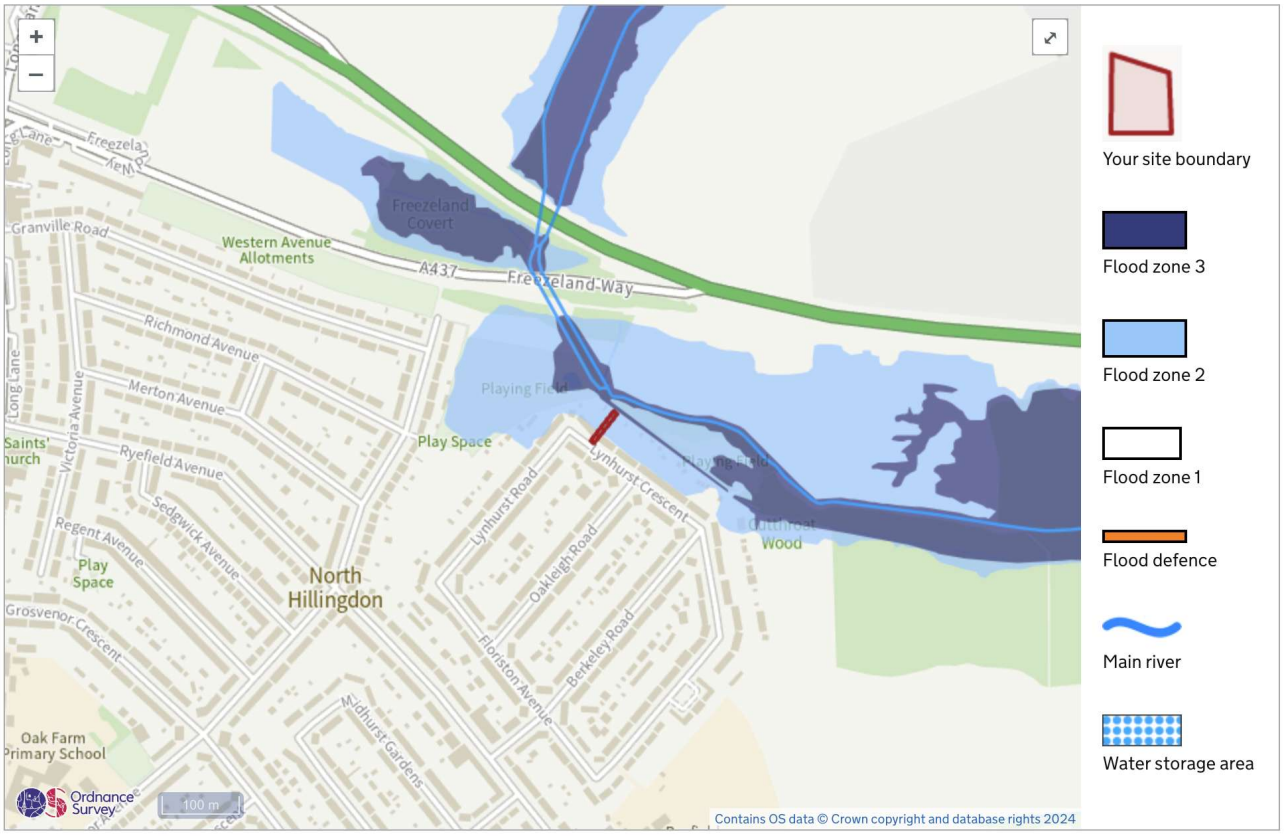

FIGURE 3. ENVIRONMENT AGENCY FLOOD RISK FROM RIVERS OR SEA MAP (GOV.UK, 2024)

FIGURE 4. FLOOD RISK FROM RIVERS - 1 IN 100-YEAR RETURN PERIOD (SFRA, 2017)

Modelled Flood Levels

According to the latest modelled flood data, the site remains flood-free during a 1 in 100-year flood event, even when factoring in a 20% climate change allowance (Figure 6). This indicates that the ground level at the site is sufficiently elevated to avoid direct inundation under these conditions, reducing immediate flood risk concerns from the Yeading Brook.

This modelled scenario is slightly more conservative than the 17% central climate change allowance typically recommended for “More Vulnerable” developments in Flood Zone 2. However, applying the 20% allowance provides an additional safety margin, ensuring the site’s resilience against potential future flood level increases due to climate change.

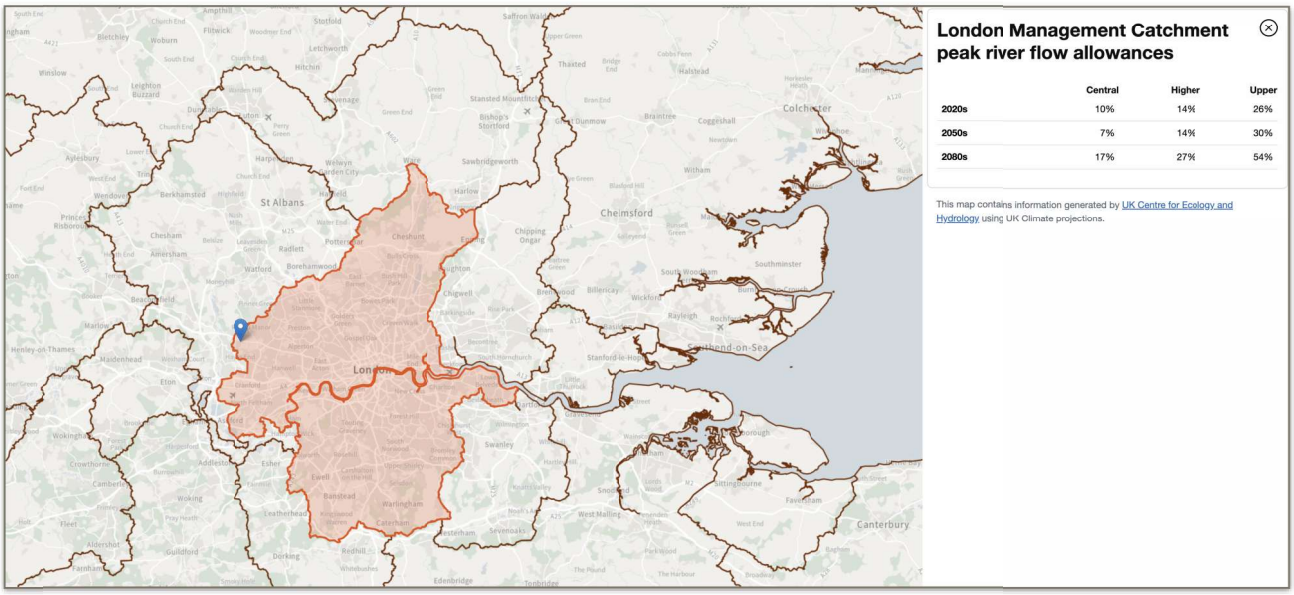

FIGURE 5. CLIMATE CHANGE ALLOWANCES (EA, 2024)

FIGURE 6. FLOOD RISK FROM RIVERS - 1 IN 100-YEAR RETURN PERIOD PLUS 20% CLIMATE CHANGE (EA, 2024)

Modelled Flood Levels and Compliance with Policy

The National Planning Policy Framework (NPPF) and the Planning Practice Guidance (PPG) emphasise the need to ensure flood resilience for developments in areas at risk of flooding, particularly in Flood Zones 2 and 3. According to the NPPF, development in these zones must be approached with a risk-based strategy, prioritising the safety of occupants and ensuring that flood risk is effectively managed without increasing risk to others. This strategy is reinforced by the West London Strategic Flood Risk Assessment (SFRA), which sets local standards for flood risk mitigation and resilience.

In line with these policies, the latest modelled flood data for the site indicates that it does not experience inundation during a 1 in 100-year flood event, even with an additional 20% allowance for climate change. This modelling, which applies a slightly more conservative approach than the 17% central allowance recommended for “More Vulnerable” developments, demonstrates that the site remains resilient against fluvial flooding up to this threshold. The use of this conservative allowance supports policy objectives by providing an extra safety margin, accounting for uncertainties in future climate projections.

Policy Implications of Flood Zone 2 Classification

For developments in Flood Zone 2, the NPPF and PPG stipulate that applications should be accompanied by a Flood Risk Assessment (FRA) that evaluates flood sources, probabilities, and impacts, including the implications of climate change. In this case, the FRA demonstrates compliance with these requirements by analysing modelled flood levels under a 1 in 100-year event with a climate change allowance, showing that the site remains unaffected at this level.

Moreover, the West London SFRA emphasises that “More Vulnerable” developments in Flood Zone 2, such as residential extensions or outbuildings, should utilise the central climate change allowance to assess future flood risk accurately. The application of the 20% allowance further aligns with the SFRA’s objectives by exceeding the minimum requirements, thereby contributing to the long-term resilience and safety of the site. This approach demonstrates adherence to the SFRA’s emphasis on safeguarding development against projected climate change impacts.

Flood Risk from Groundwater

The risk of groundwater flooding has been assessed based on data from both the Environment Agency (EA) 2017 map on susceptibility to groundwater flooding and the Greater London Authority (GLA) 2011 map on areas with increased potential for elevated groundwater levels. The site does not fall within a region identified as susceptible to groundwater flooding by either the EA or GLA (Figure 7). This absence of identified groundwater risk zones at the site location indicates that the likelihood of groundwater flooding impacting the proposed development is low.

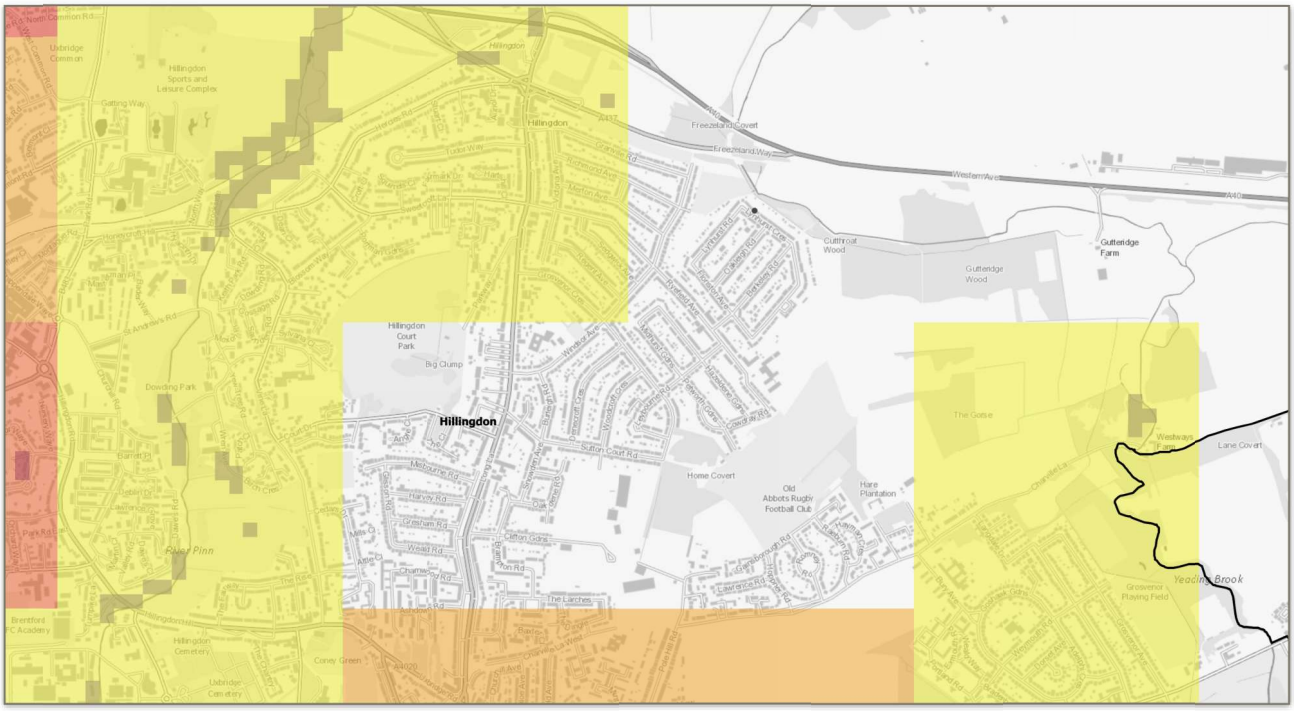

FIGURE 7. AREAS SUSCEPTIBLE TO GROUNDWATER FLOODING (SFRA, 2017)

Groundwater flooding typically occurs in areas underlain by permeable geological formations where the water table is shallow or has the potential to rise close to the surface, particularly after prolonged or intense rainfall. In the London Borough of Hillingdon, areas at higher risk of groundwater flooding are generally mapped and monitored to inform flood risk assessments. However, as this site does not fall within any designated zones of susceptibility, it suggests that the local groundwater conditions are stable, with a low risk of the water table rising to levels that could affect the surface.

In accordance with the NPPF and the West London SFRA, developments in Flood Zones 2 and 3 are required to consider all potential sources of flooding, including groundwater. However, given the site's absence from groundwater flood risk zones, the requirements for groundwater-specific mitigation measures are minimal for this development. The data provided by the EA and GLA supports the view that groundwater does not present a significant flood risk for the proposed outbuilding.

The groundwater flood risk is considered low, as confirmed by the site's location outside of EA and GLA-identified zones for groundwater flooding susceptibility. Consequently, the proposed development is unlikely to be impacted by groundwater flooding, aligning with national and local flood risk management

policies. This assessment indicates that no additional groundwater-specific mitigation measures are required, allowing the design to focus on other potential sources of flood risk, such as surface water and fluvial flooding.

Flood Risk from Surface Water and Overland Flows

The rear of the site, where the proposed outbuilding will be located, is classified as having a 'low' to 'medium' risk of surface water flooding (Figure 8). This designation implies a probability of surface water flooding during extreme rainfall events, with 'low' risk areas having an annual probability of less than 0.1% and 'medium' risk areas between 0.1% and 1%. Surface water flooding can occur in urban areas when intense rainfall exceeds the ground's infiltration capacity or overwhelms local drainage systems, leading to temporary surface water ponding.

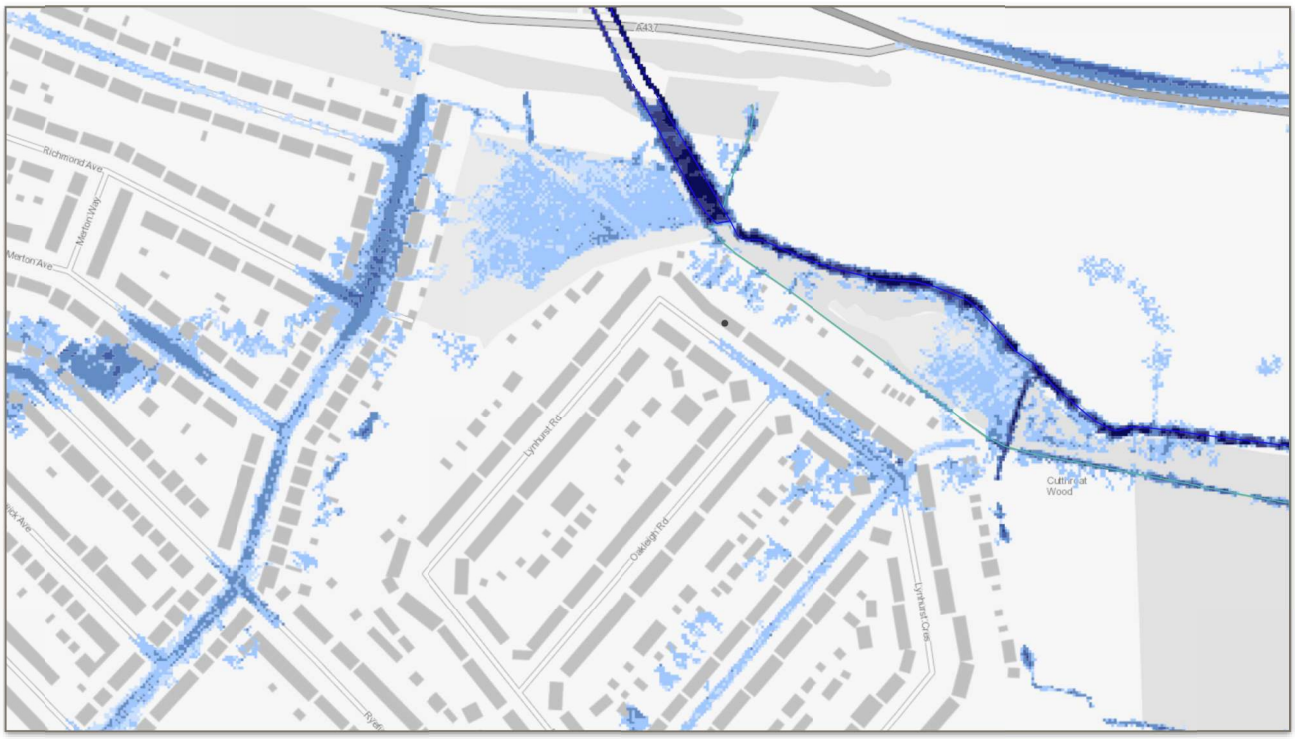

FIGURE 8. ENVIRONMENT AGENCY FLOOD RISK FROM SURFACE WATER MAP (GOV.UK, 2024)

The proposed outbuilding will be constructed over an existing hard-paved area, ensuring no additional impermeable surfaces are introduced, which maintains the current drainage profile and prevents an increase in surface water runoff rates or volumes. This approach aligns with the principles set out in national and local policies, ensuring that surface water flood risk is not exacerbated by the development.

The NPPF and PPG highlight the importance of managing surface water in flood-prone areas, including minor developments, by incorporating design strategies that avoid increasing flood risk. The West London SFRA also supports this approach, advocating for sustainable surface water management practices that respect natural drainage patterns. By retaining the existing impermeable surface, the proposal aligns with these policies, supporting a development that does not elevate the surface water flood risk.

Although a full SuDS strategy is not required for a minor development, preserving the current hard-paved surface aligns with the latest London Plan policy on sustainable drainage, Policy SI 13. This policy emphasises reducing flood risk through effective management of surface water, aiming to prevent

developments from exacerbating runoff. By maintaining the existing impermeable area, the proposal adheres to Policy SI 13, thereby protecting both the site and adjacent properties from increased flood risk.

In summary, the ‘low’ to ‘medium’ surface water flood risk designation is appropriately addressed by the design of the development, which preserves existing drainage characteristics without contributing to increased runoff. This approach meets the flood risk management objectives set out in the NPPF, PPG, and West London SFRA, ensuring compliance with current policies for a sustainable and resilient development.

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.

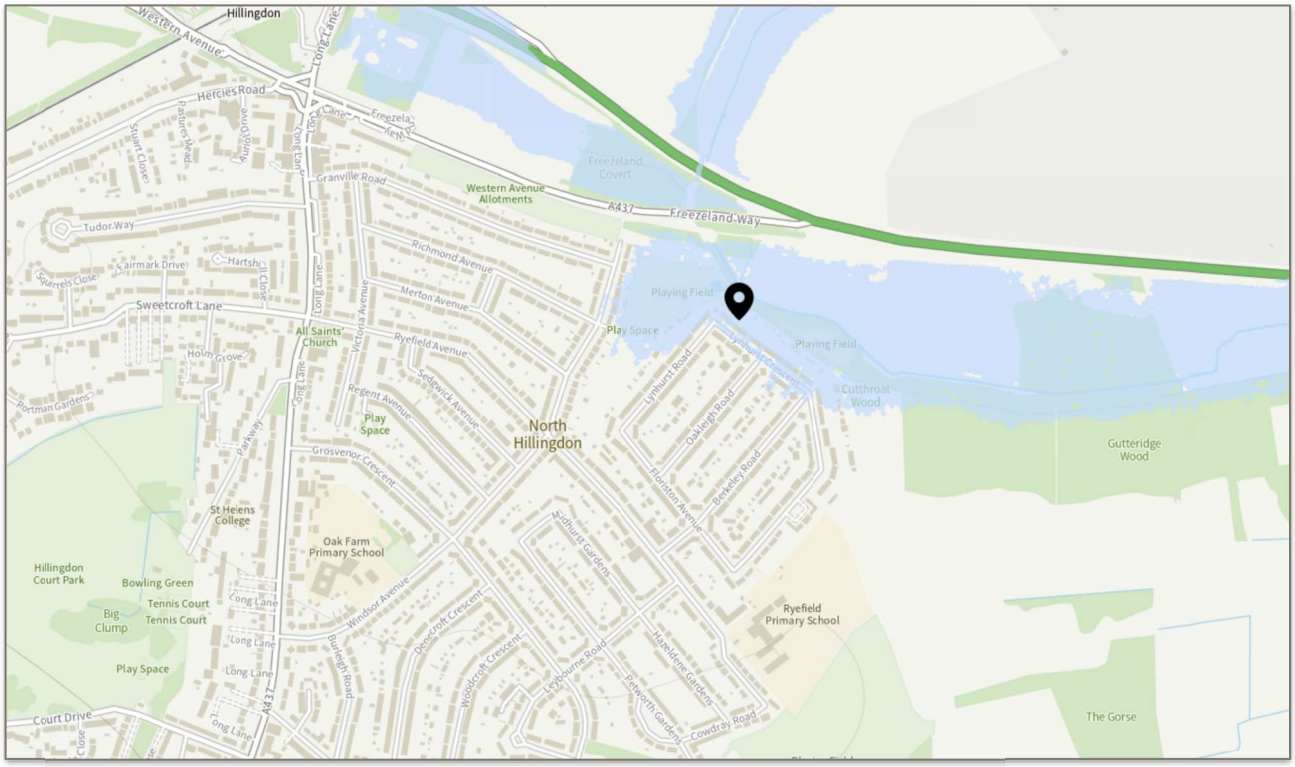

FIGURE 9. ENVIRONMENT AGENCY FLOOD RISK FROM RESERVOIRS MAP (GOV.UK, 2024)

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 9).

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 Mitigation Measures

The proposed development has been designed with a range of flood mitigation measures to ensure resilience against identified flood risks, in line with national and local policies, including the NPPF, PPG, and the West London SFRA. Although modelled data indicates that the site remains flood-free during a 1 in 100-year event with a 20% climate change allowance, the following measures are proposed to further minimise any potential flood impacts.

Finished Floor Levels

To protect the outbuilding from potential flood risks, the Finished Floor Level (FFL) will be set at a minimum of 150mm above the existing ground level. This elevation will help shield the building from surface water ingress, particularly in heavy rainfall conditions. Setting the FFL at this height will act as a precautionary measure against any pooling or overland flow that may occur in the area designated as 'low' to 'medium' surface water flood risk. This 150mm elevation aligns with best practice recommendations for flood resilience and provides a practical level of protection for minor developments in Flood Zone 2.

Flood-Resilient Construction

The outbuilding will be constructed using flood-resilient materials, particularly in the lower sections of the walls and floors, which are most likely to come into contact with floodwater if surface water pooling were to occur. These materials are chosen for their ability to withstand short-term water exposure, thereby minimising damage, reducing repair costs, and enabling quicker recovery in the unlikely event of water ingress.

Surface Water Management

The proposed development will not increase the impermeable area on-site, as it will be constructed over an existing hard-paved surface. However, the ground surrounding the outbuilding will be graded to slope away from the structure, directing surface water away from building thresholds. This approach helps prevent water pooling near entrances and supports the natural drainage of the site, in line with surface water management practices recommended by the SFRA.

Routine Drainage Maintenance

Regular maintenance of the drainage system, including clearing gutters and any existing channel drains, will be essential to manage surface water effectively. Ensuring that these systems remain clear and functional will reduce the potential for blockages and overflow, contributing to the long-term flood resilience of the outbuilding and preventing surface water build-up around the site.

Flood Warning Service Registration

Although the probability of reservoir failure impacting the site is extremely low, registering for the EA's Flood Warning Service is recommended as a precautionary measure. This service provides early warnings in the event of a significant flood, allowing occupants to take timely actions to protect property and ensure personal safety.

These flood mitigation measures—elevating the FFL by 150mm above ground level, using flood-resilient materials, managing surface water flow, maintaining drainage systems, and registering for flood warnings—will collectively strengthen the development's resilience to potential flood risks. The proposed design aligns with the NPPF, PPG, and West London SFRA requirements, ensuring a safe and sustainable outcome that adheres to national and local flood risk policies.

Flood Risk Assessment (FRA) Submission Checklist Compliance

The Flood Risk Assessment (FRA) for the proposed development at 17 Lynhurst Crescent has been prepared in line with the requirements of the West London Strategic Flood Risk Assessment (SFRA) and the National Planning Policy Framework (NPPF). The following outlines the FRA's compliance with the SFRA's FRA submission checklist for minor developments.

Site Details

The FRA includes comprehensive details on the site location, describing it as within Flood Zone 2, with proximity to the Yeading Brook, the primary source of fluvial flood risk. The development proposal is described as a single-storey outbuilding for gym and office use, situated on an existing hard-paved area to ensure no increase in impermeable surfaces.

Flood Risks and Climate Change

The site's Flood Zone 2 classification is documented, with an assessment based on the Environment Agency (EA) data and modelled flood levels. The FRA evaluates all potential sources of flood risk, including fluvial flooding from the Yeading Brook, surface water flooding, groundwater flooding, and reservoir flooding, utilising the latest EA data and local policy requirements. The FRA applies a 20% climate change allowance for the 1 in 100-year flood event, which is a conservative measure exceeding the 17% central allowance recommended for Vulnerable developments, providing an additional margin of safety.

Development Proposal Details

The Finished Floor Level (FFL) of the outbuilding will be set at a minimum of 150mm above the existing ground level, in line with best practice for flood risk mitigation in minor developments. The structure will incorporate flood-resilient materials, particularly in lower sections, to minimise potential damage in case of incidental water exposure.

Flood Risk Management

The proposal maintains the existing drainage profile by constructing the outbuilding on an existing hard-paved surface, ensuring no increase in surface water runoff. The external ground around the building will be graded to direct water away from thresholds, in alignment with surface water management practices recommended by the SFRA. Although a full Sustainable Drainage System (SuDS) strategy is not required, the retention of the existing paved area aligns with the latest London Plan Policy SI 13 on sustainable drainage, which aims to prevent increases in surface water flood risk.

Residual Risks

The FRA addresses residual risks from low-probability events, including reservoir failure, confirming that these risks are minimal due to the stringent regulatory controls under the Reservoirs Act 1975. Flood-resilient construction measures further mitigate these residual risks, supporting the building's ability to withstand water exposure without significant damage.

Additional Information

The FRA confirms that no additional flood risk activity permits are required, as the site is not within a designated buffer zone for a main river or an ordinary watercourse.

In conclusion, the FRA for the proposed development complies with the West London SFRA's submission checklist for minor developments in Flood Zone 2. It addresses all relevant flood risks, incorporates climate change allowances, and outlines appropriate mitigation measures, demonstrating adherence to the NPPF, PPG, and local policy requirements for safe and sustainable development.

Conclusions

The Flood Risk Assessment for the proposed single-storey outbuilding demonstrates that the development meets the requirements of the National Planning Policy Framework, Planning Practice Guidance, and the West London Strategic Flood Risk Assessment for developments in Flood Zone 2. The assessment has evaluated flood risks from all relevant sources, including fluvial, surface water, groundwater, and reservoir flooding.

The modelled data confirms that the site remains unaffected by inundation in a 1 in 100-year flood event with a 20% climate change allowance, indicating a low risk of fluvial flooding from the nearby Yeading Brook. While the rear of the site has a ‘low’ to ‘medium’ surface water flood risk classification, the development on an existing hard-paved area will not increase impermeable surface coverage, maintaining the site’s existing drainage profile and runoff characteristics.

Key mitigation measures, including setting the FFL of the outbuilding 150mm above existing ground level and incorporating flood-resilient materials, will enhance the building’s resilience to potential surface water flooding. The recommendations for regular drainage maintenance and registration with the Environment Agency’s Flood Warning Service provide additional precautionary measures.

The proposed development will be safe for its intended use and will not increase flood risk to the site or surrounding areas. By adhering to the SFRA checklist and incorporating appropriate mitigation measures, the FRA supports a safe and sustainable development in line with local and national flood risk policies.

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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